DOCUMENT NUMBER S07-051-3E

FA125 Series

LC Plug Type Fixed Attenuator

TECHNICAL SPECIFICATIONS

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S07-051-0E	November	2000
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S07-051-2E	December	2005
S07-051-3E	June	2009

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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

xample: 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 Initial Optical characteristics

The following initial characteristics shall be confirmed.

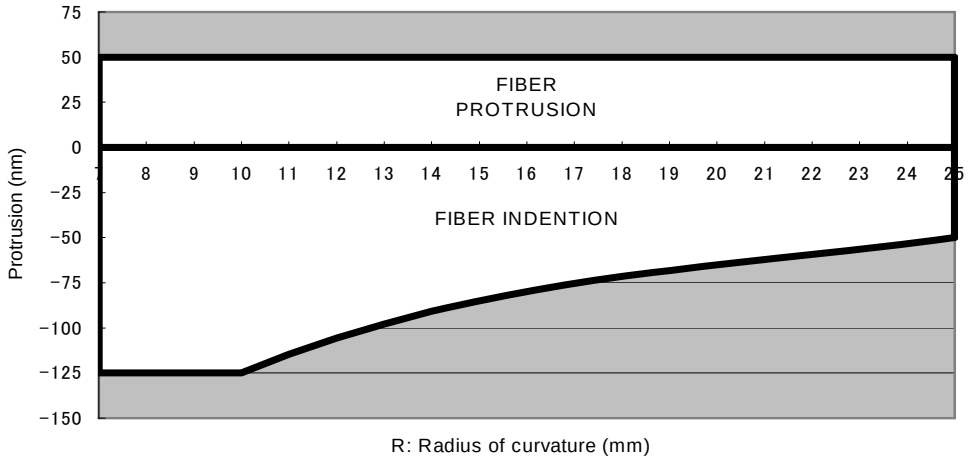
Operating wavelength		1290 ~ 1330nm and 1530 ~ 1570nm
Initial attenuation measured with 1310 +/- 10nm and 1550 +/- 10nm LD	0dB	IL≦0.5dB
	1-10dB	+/- 0.5dB (High performance) +/- 1.0dB (Standard)
	11-20dB	+/- 5% (High performance) +/- 10% (Standard)
Wavelength dependency variation of the attenuation within 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.

5.2Polishing 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) μ m	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

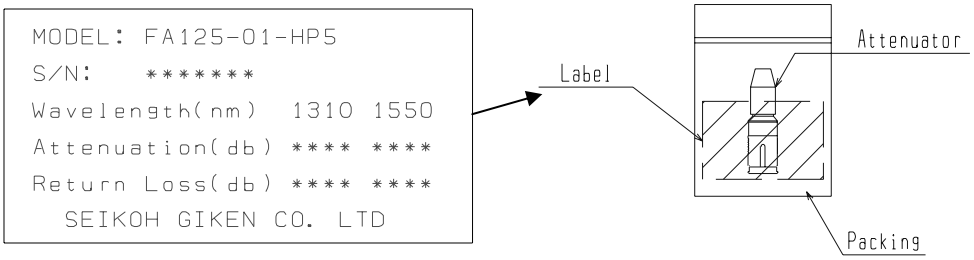
Test item	Conditions	Variation range of the attenuation		Backrefrection
		High performance	Standard	
Vibration	Frequency range: 10-55Hz Amplitude: 1.5mm 3 axis for 2 hours, 24 cycles (LC type)	+/- 0.5dB (1-10dB) +/- 5% (11-20dB)	+/- 1.0dB (1-10dB) +/- 10% (11-20dB)	>= 50dB (HP) >= 60dB (AP)
Repeatability	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, 90%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%

b. Storage temperature/humidity: -40 to +80 degree C/ 30 to 90% (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

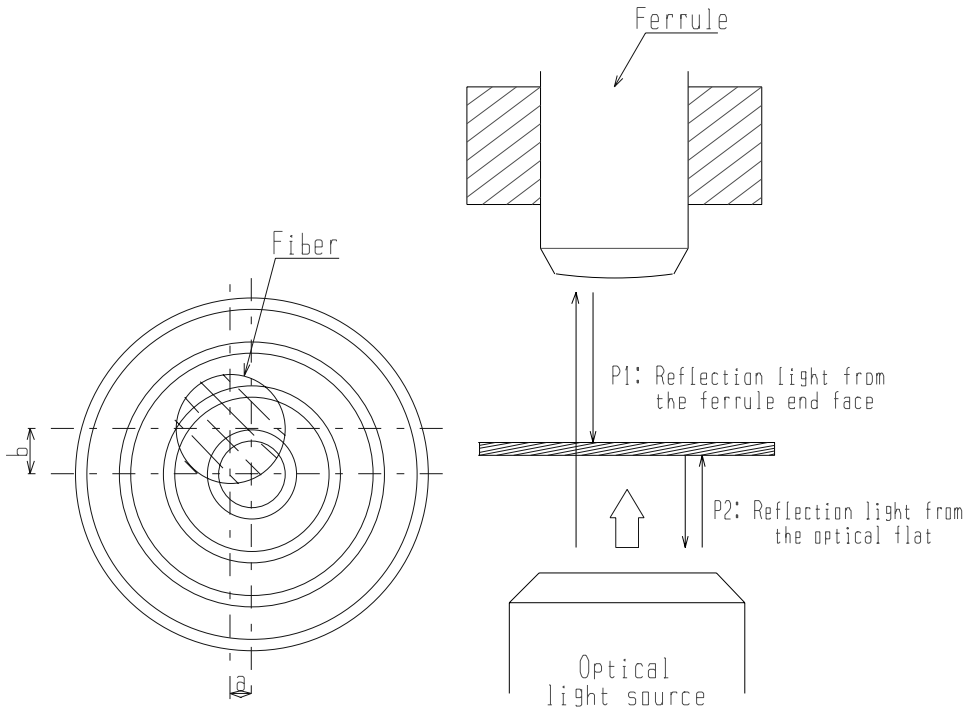
Disposal of the product shall be carried out as industrial waste in ecologically satisfactory manner.

9. Others

This specification may not be amended or modified unless the parties so agree in writing.

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

GRADING METHOD FOR THE PRECISION OF PC POLISHED CONVEX(FOR LC)



Description
Light, forming interference fringe: $\lambda=0.66\times10^{-3}$mm
Apex offset: $e=\sqrt{a^2+b^2}$
Choose two fringes of the mth and the (m+p)th (m<m+p), which are formed from P1 and P2, and then measure the diameter of those fringes.
Radius of curvature: $R=(D_{m+p}^2-D_m^2)/4p\lambda$
Criterion 1: Apex offset $e\leqq0.05$mm
Criterion 2: 7mm≦Radius of curvature R ≦25mm

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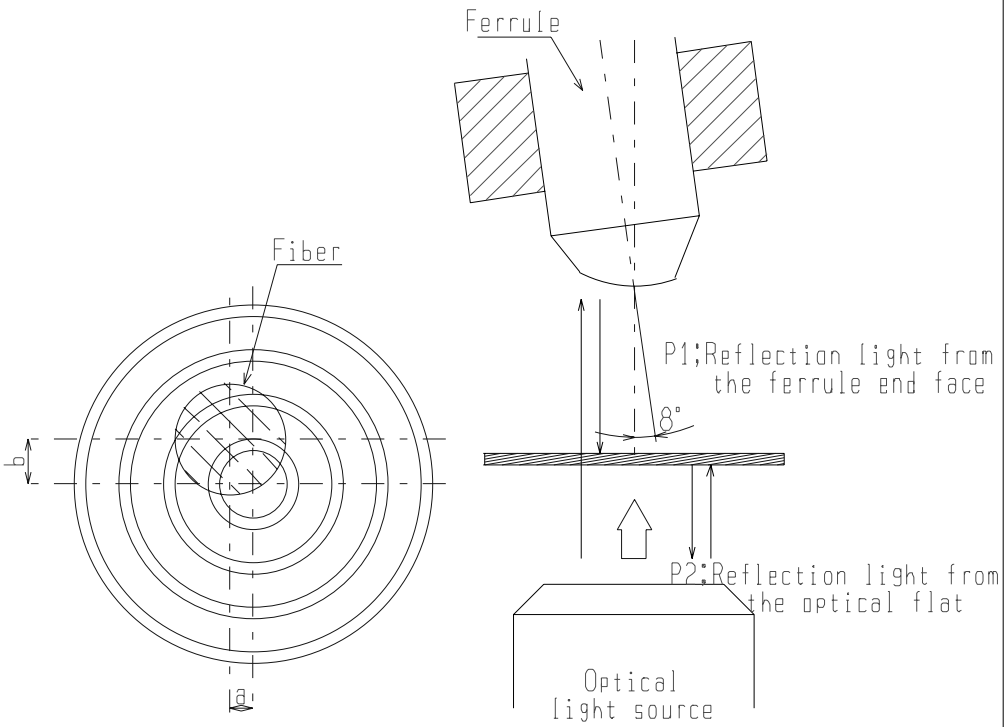
GRADING METHOD FOR THE PRECISION OF APC POLISHED CONVEX(FOR LC/APC)



Description
Light, forming interference fringe: $\lambda=0.66\times10^{-3}$mm
Apex offset: $e=\sqrt{a^2+b^2}$
Choose two fringes of the mth and the (m+p)th (m<m+p), which are formed from P1 and P2, and then measure the diameter of those fringes.
Radius of curvature: $R=(D_{m+p}^2-D_m^2)/4p\lambda$
Criterion 1: Apex offset e≦0.05mm
Criterion 2: 5mm≦Radius of curvature R ≦12mm

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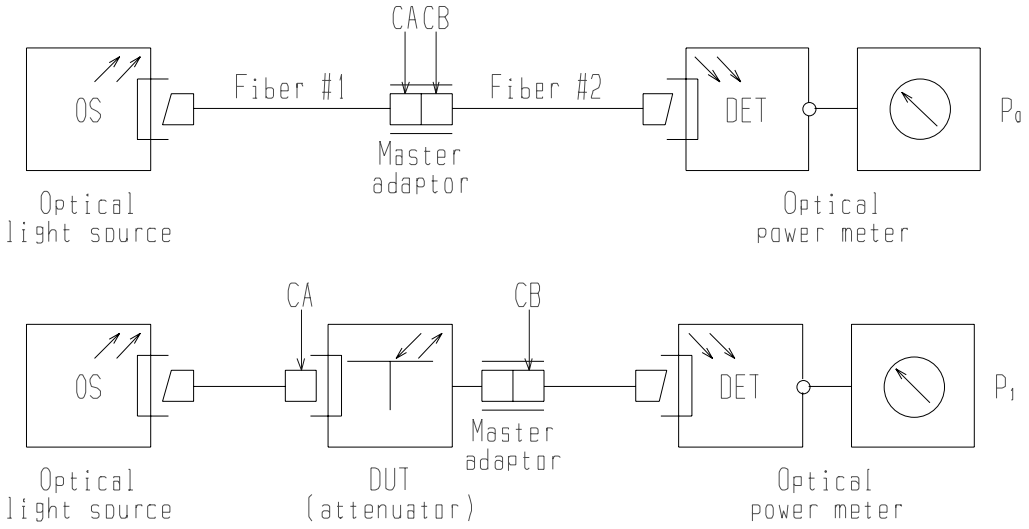
ATTENUATION MEASUREMENT METHOD OF HP PLUG (LC) TYPE FIXED ATTENUATOR



Description
CA,CB: PC/APC hybrid master connectors (PC side is the master) with more than 2m optical fiber
Optical light source and power meter: RM-B, RX series
SG standard for master connectors
Fiber spec.: JIS C 6830 OFC2.8-Y-SSMA-9.5/125
Ferrule diameter: ϕ1.249±0.0005mm
Tilt of the ferrule's hole: ≦0.2 deg
Apex offset: ≦30μm
Insertion loss: ≦0.1dB
Return loss: ≧50dB
Attenuation $=-10\log_{10}(P_1/P_0)$

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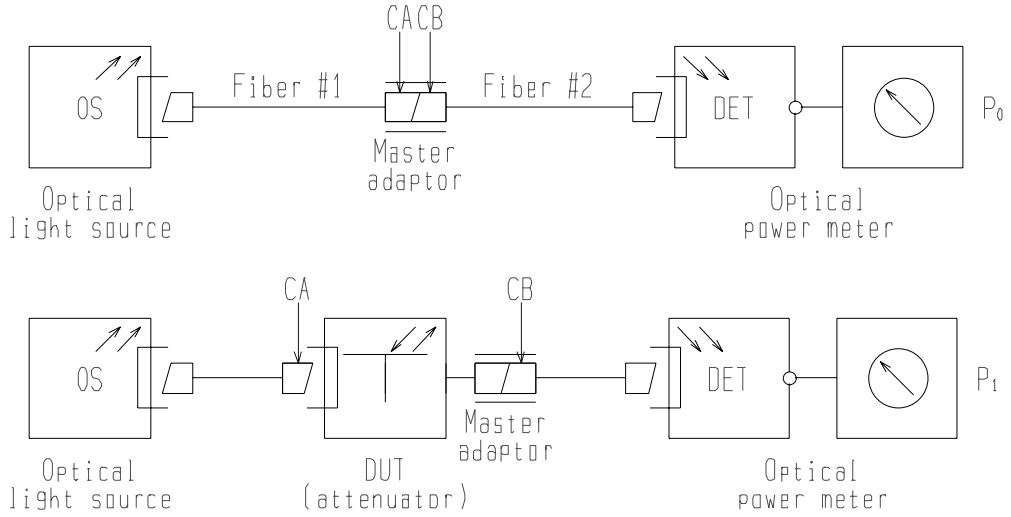
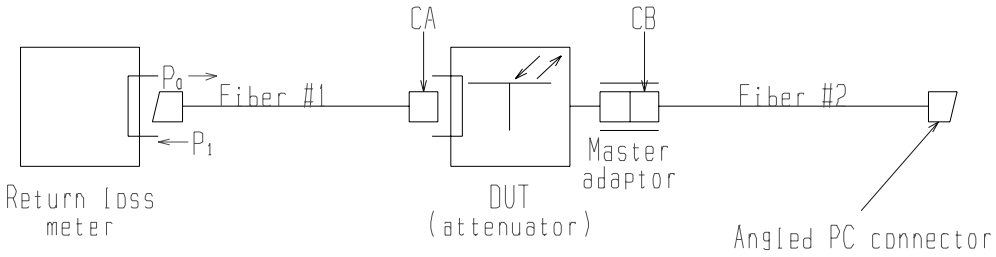
ATTENUATION MEASUREMENT METHOD OF AP PLUG (LC) TYPE FIXED ATTENUATOR



Description
CA,CB: APC master connectors with more than 2m optical fiber
Optical light source and power meter: RM-B, RX series
SG standard for master connectors
Fiber spec.: JIS C 6830 OFC2.8-Y-SSMA-9.5/125
Ferrule diameter: ϕ1.249±0.0005mm
Tilt of the ferrule's hole: ≦0.2 deg
Apex offset: ≦30μm
Insertion loss: ≦0.1dB
Return loss: ≧60dB
Attenuation $=-10\log_{10}(P_1/P_0)$

L07-017n

RETURN LOSS MEASUREMENT METHOD OF HP PLUG (LC) TYPE FIXED ATTENUATOR



Description

CA,CB: PC/APC hybrid master connectors (PC side is the master) with more than 2m optical fiber

Optical light source and power meter: RM-B, RX series

SG standard for master connectors

Fiber spec.: JIS C 6830 OFC2.8-Y-SSMA-9.5/125

Ferrule diameter: ϕ1.249±0.0005mm

Tilt of the ferrule's hole: ≦0.2deg

Apex offset: ≦30μm

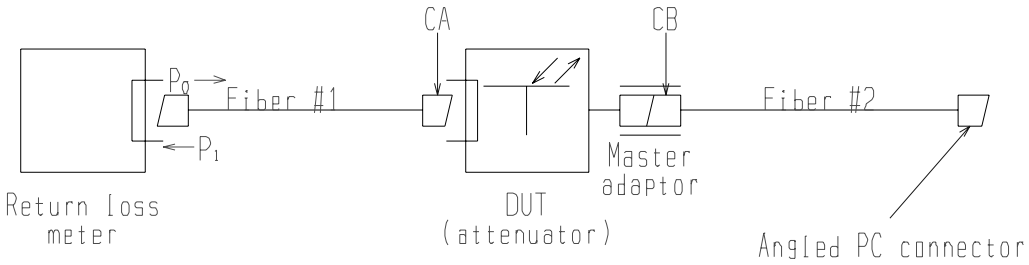
Insertion loss: ≦0.1dB

Return loss: ≧50dB

Return loss=$-10\log_{10}(P_1/P_0)$

R07-016n

RETURN LOSS MEASUREMENT METHOD OF AP PLUG (LC) TYPE FIXED ATTENUATOR



Description

CA, CB: APC master connectors with more than 2m optical fiber

Optical light source and power meter: RM-B, RX series

SG standard for master connectors

Fiber spec.: JIS C 6830 OFC2.8-Y-SSMA-9.5/125

Ferrule diameter: ϕ1.249±0.0005mm

Tilt of the ferrule's hole: ≦0.2deg

Apex offset: ≦30μm

Insertion loss: ≦0.1dB

Return loss: ≧50dB

Return loss=$-10\log_{10}(P_1/P_0)$

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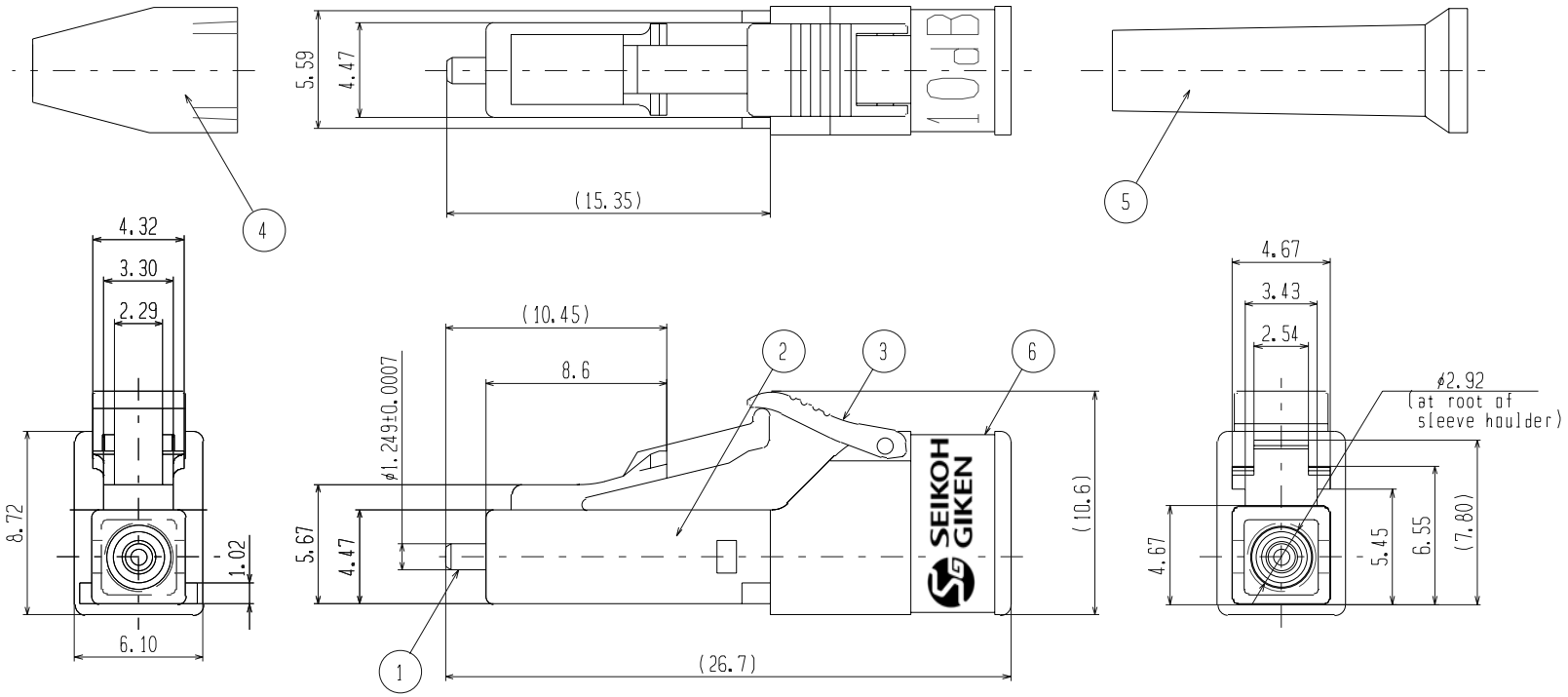
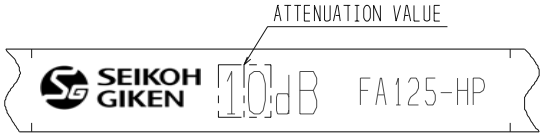
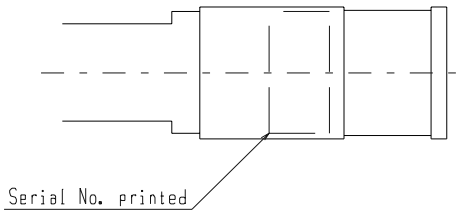




COLOR IDENTIFICATION LABEL
FOR ATTENUATION LEVEL

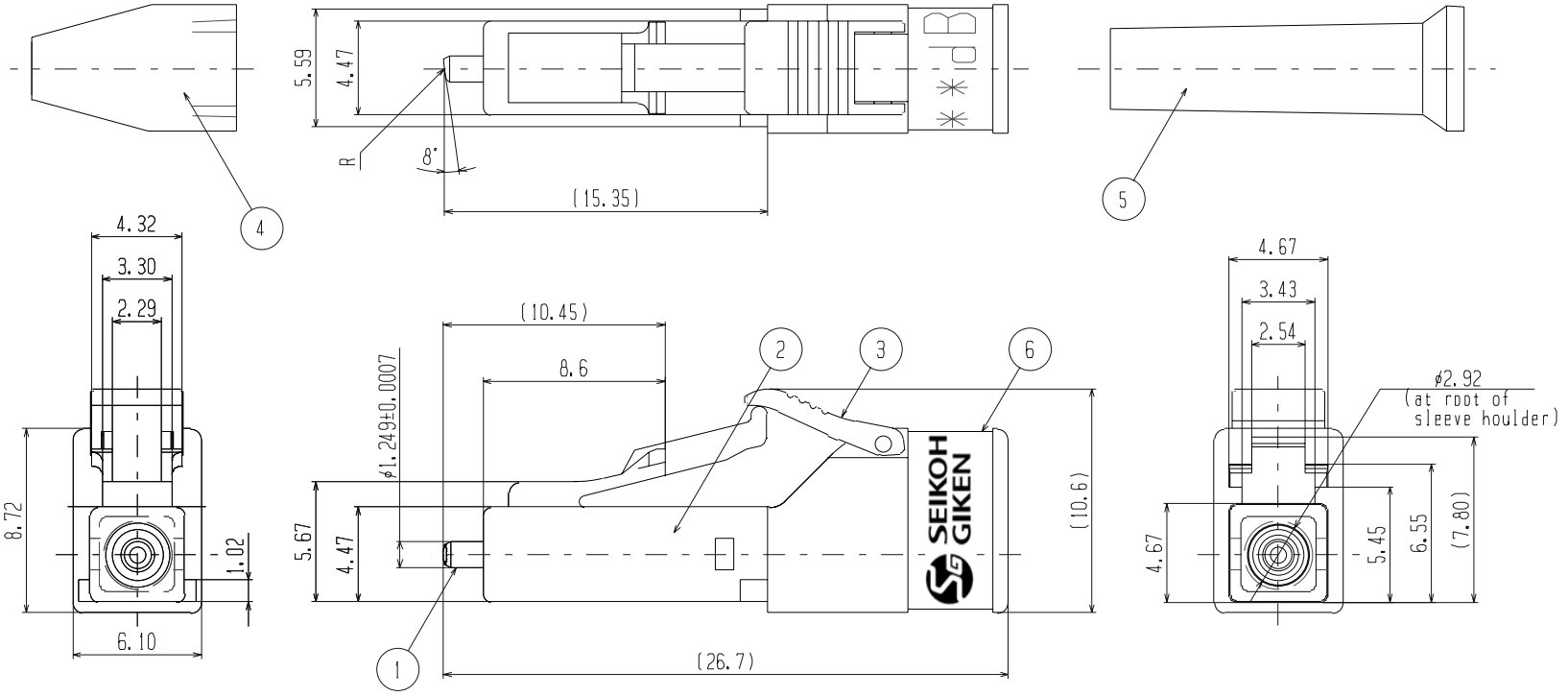
Attenuation	Back	letter
3dB	ORANGE	BLACK
5dB	YELLOW	BLACK
10dB	BLUE	WHITE
15dB	RED	WHITE
20dB	BLACK	WHITE
OTHER	MAT SILVER	BLACK

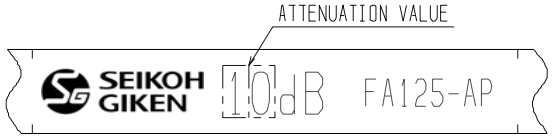


PART No	QTY	ITEM	MATERIAL / FINISH	
6	1	LABEL	ALMINUM	——
5	1	PROTECTION CAP(ADAPTOR SIDE)	PVC	WHITE
4	1	PROTECTION CAP(FERRULE SIDE)	PVC	BLUE
3	1	RELEASING LEVER	PP	BLUE
2	1	HOUSING	PEI	BLUE
1	1	FERRULE	ZIRCONIA	——

PARTS LIST

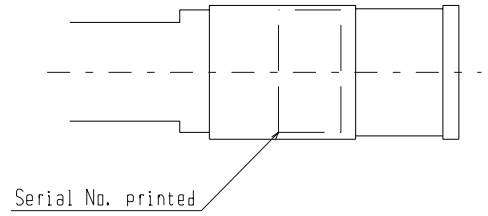
④	DRAWN	DATE	SEIKOH GIKEN	
③	CHECKED	DATE	TITLE FA125-HP* PLUG ATTENUATOR	
②	APPROVED	DATE		
①	MATERIAL		UNIT:<mm>	DWG. No. S07-051-3n
DESIGN CHANGE	FINISH		SCALE: 5/1	SHEET OF 1 OF 1





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	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