



Fiber Optics Product Catalogue





FIBER OPTICS

The optical communication technology of the next generation will be of increasing importance and extremely diversified. SEIKOH GIKEN Co., Ltd. uses revolutionary technology that leads the world. Their optical communications Products have received international acclaim in every field.

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INTERCONNECT

FERRULE
CONNECTOR
ADAPTOR
JUMPER
SPLICE-ON CONNECTOR
LENSED FIBER
FIBER ARREY
ATTENUATOR



[Ferrule for Fiber Optic Connector]

- High-quality and high-performance zirconia ceramic ferrules are offered through consistent production extending from material molding to machining and inspection
- Using precision injection mold process provides high density molecular structure and near flawless surface ferrule
- For more details, please visit our web site <http://www.seikoh-giken.co.jp/en/index.html> to download the product specifications

ø2.5mm Zirconia Ferrule for Single Mode



For SC and FC connectors

- SZ-1A: Flat
- SZ-3A: Pre-radius
- SFZ-3A: Pre-radius & FUNNEL inner shape

ORDERING INFORMATION

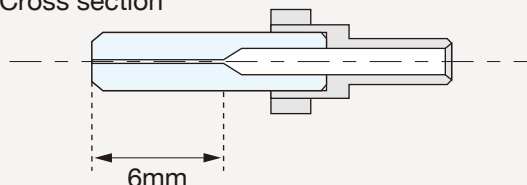
SZ-1A	a	b	c	d
SZ-3A				
SFZ-3A				
Ex.)				
SZ-3A	14	12F	8	0G

a	Flange I.D.	φ1.0mm	14
b	Ferrule I.D.	125μm	125
		125.5μm	12F
		126μm	126
c	Eccentricity	0.5μm or lessφ	8
d	Required		0G

SFZ-3A

- Groove is funnel shape → Smooth fiber insertion
- Bare fiber length is 6mm → Low stress for fiber

Cross section



U.S. Pat. No. 5,464,361

ø2.5mm Zirconia Ferrule for Single Mode Angle PC



For SC-APC and FC-APC connectors

SNZ: Conical shape

- SNZ-1A: Flat
- SNZ-3A: Pre-angle

SGZ: Step shape

- SGZ-1A: Flat
- SGZ-3A: Pre-angle

ORDERING INFORMATION

SNZ-1A	a	b	c	d
SNZ-3A				
SGZ-1A				
Ex.)				
SNZ-1A	14	12F	0	0G

a	Flange I.D.	φ1.0mm	14
b	Ferrule I.D.	125μm	125
		125.5μm	12F
		126μm	126
c	Eccentricity	0.5μm or less	0
d	Required		0G

U.S. Pat. No. 5,140,660

ø1.25mm Zirconia Ferrule for Single Mode



MUZ-1A: for MU connector

- Complies with JIS C5983, IEC 61754-6

LCZ-2A: for LC connector

- Complies with IEC 61754-20

ORDERING INFORMATION

MUZ-1A **a** **b** **c** **d**
 LCZ-2A
 Ex.)
 MUZ-1A 14 12F 8 00G
 LCZ-2A 14 12F 8 01G

a	Flange I.D.	φ1.0mm	14
b	Ferrule I.D.	125μm	125
		125.5μm	12F
		126μm	126
c	Eccentricity	0.5μm or less	8
d	Required		00G MUZ-1A 01G LCZ-2A

ø1.25mm Zirconia Ferrule for Single Mode Angle PC



MUNZ-1A: for MU-APC connector

- Conical shape ferrule for Angle PC application
- Applicable housing: SMU-CN1, SMU-CN2

LCNZ-1A: for LC APC connector

- Conical shape ferrule for Angle PC application
- Applicable housing: SLC-CN1, SLC-CN2

ORDERING INFORMATION

MUNZ-1A **a** **b** **c** **d**
 LCNZ-1A
 Ex.)
 MUNZ-1A 14 125 0 00G
 LCNZ-1A 14 125 0 01G

a	Flange I.D.	φ1.0mm	14
b	Ferrule I.D.	125μm	125
		125.5μm	12F
		126μm	126
c	Eccentricity	0.5μm or less	0
d	Required		00G MUNZ-1A 01G LCNZ-1A

U.S. Pat. No. 6,886,990

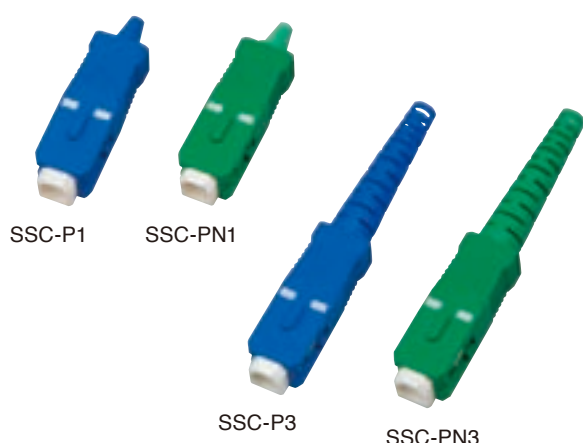
[SC Type Fiber Optic Connector]

- Equivalent to NTT specifications (SC)
- Complies with IEC 61754-4 and JIS C 5973
- Models meet Telcordia test specification GR-326-CORE are available
- Models satisfy Vertical Burning Test for Classifying Materials UL94V-0 are available

- Available precision crimping tool
Part Number: MDTK-02-120G
- For more details, please visit our web site <http://www.seikoh-giken.co.jp/en/index.html> to download the product specifications

SC Housing for ø0.9mm Buffer Cable

SC Housing for ø2mm / ø3mm Cable



■ SC ø 0.9mm

- Using plastic stop ring offering low cost, light weight and easy assembly
- Total length of 33mm is optimum for use inside system equipment and devices

	Part Number
For PC	SSC-P1511F3151G
For Angle	SSC-PN1811G3151G

■ SC ø 2mm / ø 3mm

- Complies with Telcordia GR-326-CORE

	Part Number
ø2mm for PC	SSC-P25B1F30 * G
ø2mm with short boot for PC	SSC-P2S5D1F30 * G
ø2mm for Angle PC	SSC-PN28B1G30 * G
ø2mm with short boot for Angle PC	SSC-PN2S8D1G30 * G
ø2.4mm for PC	SSC-P45A1F30 * G
ø2.4mm for Angle PC	SSC-PN48A1G30 * G
ø3mm for PC	SSC-P35C1F30 * G
ø3mm for Angle PC	SSC-PN38C1G30 * G

SC Plug for PC



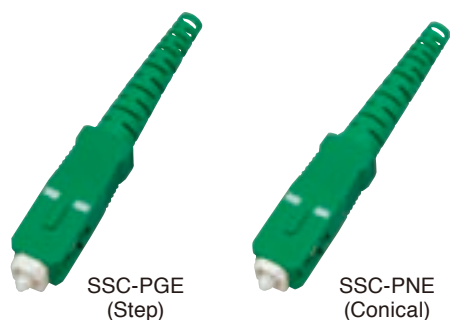
- One-piece design for easy assembly
- Pre-radius Zirconia ferrule enables easy polishing
- Plastic boot complies with Telcordia GR-326-CORE

ORDERING INFORMATION

SSC-PE [a] [b] [c] [d] [e] [f] [g]
Ex.) SSC-PE 5 C 125 1 F 3 00G

a	Boot Color	Blue	5
b	Boot I.D.	ø0.9mm (flame-resistant rubber)	1
		ø0.9mm (plastic)	9
		ø2mm (plastic)	B
		ø3mm (plastic)	C
c	Ferrule I.D.	125µm	125
		126µm	126
d	Marking of Grip	SG/SSC-P	1
e	Cap	Blue	F
f	Package	Bulk	3
g	Required		00G

SC Plug for Angle PC



- One-piece design for easy assembly
- Pre-angle Zirconia ferrule enables easy polishing
- Plastic boot complies with Telcordia GR-326-CORE
- SSC-PNE: Conical ferrule type
- SSC-PGE: Step ferrule type

ORDERING INFORMATION

SSC-PNE a b c d e f g
 SSC-PGE
 Ex.)
 SSC-PNE 8 B 125 1 G 3 00G

a	Boot Color	Green	8
b	Boot I.D.	φ0.9mm (flame-resistant rubber)	1
		φ0.9mm (plastic)	9
		φ2mm (plastic)	B
		φ3mm (plastic)	C
c	Ferrule I.D.	125μm	125
		126μm	126
d	Marking of Grip	SG/SSC-P	1
e	Cap	Green	G
f	Package	Bulk	3
g		Required	00G

[ST™ Intermateable Fiber Optic Connector]

- Intermateable with OFS ST connector
- Easy connection with bayonet housing
- Applicable to LAN systems and equipment

- Available precision crimping tool
Part Number: MDTK-02-110G
- For more details, please visit our web site <http://www.seikoh-giken.co.jp/en/index.html> to download the product specifications

ST™ Plug for PC



- SLP-1: for Single-mode
- SLP-2: for Multi-mode

ORDERING INFORMATION

SLP-1 a b c d e f g
 SLP-2
 Ex.)
 SLP-2 4 0 127 1 0 3 00G

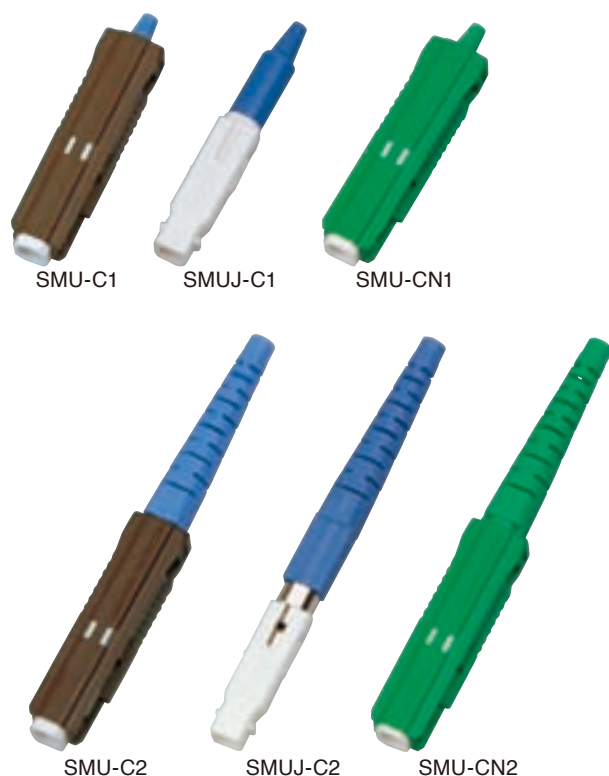
a	Ferrule Type	Flat (SLP-1)	2
		Pre-radius (SLP-1)	8
		Flat (SLP-2)	4
b	Boot I.D.	φ3mm	0
		φ0.9mm	1
		φ3mm + φ0.9mm	2
c	Ferrule I.D.	125μm (SLP-1)	125
		126μm (SLP-1)	126
		127μm (SLP-2)	127
d	Boot Color	Black	1
e	Marking of Body	SG	0
f	Package	BulkFlat (SLP-1)	3
g		Required	00G

[MU Type Fiber Optic Connector]

- Complies with IEC 61754-6 and JIS C 5983
- Models meet Telcordia test specification GR-326-CORE are also available
- Satisfies Vertical Burning Test for Classifying Materials UL94V-0 (excluding cap)
- Unique design for quick assembly while maintaining high performance
- Satisfies MU connector intermateability test by NTT-AT
- Available precision crimping tool Part Number: MDTK-02-130G
- For more details, please visit our web site <http://www.seikoh-giken.co.jp/en/index.html> to download the product specifications

MU Housing for PC

MU Housing for Angle PC



■ MU Housing for PC

- Total length of 28mm is optimum for use inside system equipment and devices (SMU-C1)
- Use of plastic stop ring offers low cost, light weight and easy assembly (SMU-C1)
- Use of heat-shrink tube with adhesive offers compatibility with $\phi 1.5 \sim 2\text{mm}$ cables (SMU-C2)
- Connect to MU Package Housing and our FA140 series high density MU plug attenuators (SMUJ-C1, SMUJ-C2)
- SMU-C1: for $\phi 0.9\text{mm}$
- SMU-C2: for $\phi 1.5 \sim 2\text{mm}$
- SMUJ-C1: for $\phi 0.9\text{mm}$ jack housing
- SMUJ-C2: for $\phi 1.5 \sim 2\text{mm}$ jack housing

	Part Number
$\phi 0.9\text{mm}$	SMU-C1910C301G
$\phi 1.5 \sim 2\text{mm}$	SMU-C2920C301G
$\phi 0.9\text{mm}$ Jack Housing	SMUJ-C191C301G
$\phi 1.5 \sim 2\text{mm}$ Jack Housing	SMUJ-C292C301G

■ MU Housing for Angle PC

- Total length of 28mm is optimum for use inside system equipment and devices (SMU-CN1)
- Use of plastic stop ring offers low cost, light weight and easy assembly (SMU-CN1)
- Use of heat-shrink tube with adhesive offers compatibility with $\phi 1.5 \sim 2\text{mm}$ cables (SMU-CN2)
- SMU-CN1: for $\phi 0.9\text{mm}$
- SMU-CN2: for $\phi 1.5 \sim \phi 2.0\text{mm}$

	Part Number
$\phi 0.9\text{mm}$	SMU-CN1810C301G
$\phi 1.5 \sim 2\text{mm}$	SMU-CN2820C301G

MU Plug for PC



- One-piece design with Zirconia MU ferrule for easy assembly
- Connector series equipped with core adjust capability
- Use of heat-shrink tube with adhesive offers compatibility with $\phi 1.5\sim\phi 2\text{mm}$ cables ($\phi 2\text{mm}$)
- Total length of 28mm is optimum for use inside system equipment and devices ($\phi 0.9\text{mm}$)

ORDERING INFORMATION

SMU-P a b c d e f g

Ex.) SMU-P 9 1 125 1 C 3 01G

a	Boot Color	Lavender	9
b	Boot I.D.	$\phi 0.9\text{mm}$	1
		$\phi 2\text{mm}$	2
c	Ferrule I.D.	125 μm	125
		125.5 μm	12F
		126 μm	126
d	Marking of Grip	SG/SMU-P	1
e	Cap	White frame cap	C
f	Package	Bulk	3
g	Required		01G

MU Plug for Angle PC



- One-piece design with Zirconia MU ferrule for easy assembly
- Connector series equipped with core adjust capability
- Use of heat-shrink tube with adhesive offers compatibility with $\phi 1.5\sim\phi 2\text{mm}$ cables ($\phi 2\text{mm}$)
- Total length of 28mm is optimum for use inside system equipment and devices ($\phi 0.9\text{mm}$)

ORDERING INFORMATION

SMU-PN a b c d e f g

Ex.) SMU-PN 8 1 125 1 E 3 01G

a	Boot Color	Green	8
b	Boot I.D.	$\phi 0.9\text{mm}$	1
		$\phi 2\text{mm}$	2
c	Ferrule I.D.	125 μm	125
		125.5 μm	12F
		126 μm	126
d	Marking of Grip	SG/SMU-P	1
e	Cap	Green frame cap	E
f	Package	Bulk	3
g	Required		01G

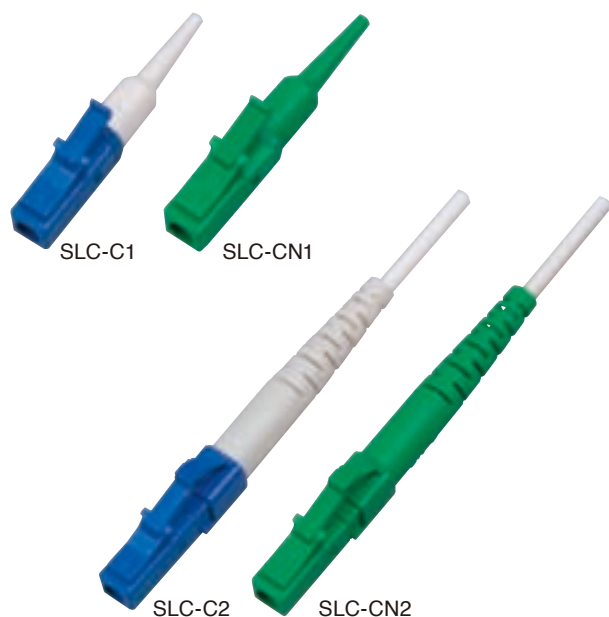
[LC Type Fiber Optic Connector]

- Complies with IEC 61754-20, TIA/EIA-604-10-A and JIS C 5964-20
- Models meet Telcordia test specification GR-326-CORE are also available
- Satisfies Vertical Burning Test for Classifying Materials UL94V-0
- Unique design for quick assembly while maintaining high performance

- Duplex Clip can combine two simplex $\phi 2.0\text{mm}$ connectors as duplex connector (6.25mm pitch)
- Available precision crimping tool
Part Number: MDTK-02-140G (except Short Length type)
- For more details, please visit our web site <http://www.seikoh-giken.co.jp/en/index.html> to download the product specifications

LC Housing for PC

LC Housing for Angle PC



LC Housing for PC

- SLC-C1: for $\phi 0.9\text{mm}$
- SLC-C2: for $\phi 1.6 \sim \phi 2.0\text{mm}$

	Part Number
$\phi 0.9\text{mm}$	SLC-C1310F303G
$\phi 1.6 \sim 2.0\text{mm}$	SLC-C2320F302G

LC Housing for Angle PC

- SLC-CN1: for $\phi 0.9\text{mm}$
- SLC-CN2: for $\phi 1.6 \sim \phi 2.0\text{mm}$

	Part Number
$\phi 0.9\text{mm}$	SLC-CN1810F303G
$\phi 1.6 \sim 2.0\text{mm}$	SLC-CN2820F302G



Duplex Clip
Part Number: DK24920013G

LC Housing for PC Short Length

LC Housing for Angle PC Short Length



- Total 40.5mm short length LC connector
- Available for only 2mm O.D. cable
- Uses crimping assembly method and not require heat-shrink tube
- Original crimping tool is needed
- Available precision crimping tool Part Number : SCT-L010

LC Short Housing for 2mm Cable

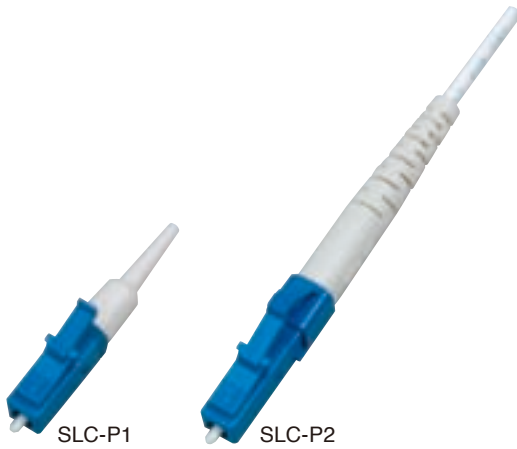
	Part Number
$\phi 1.6 \sim 2.0\text{mm}$	SLC-C2S520F301G

LC Short Housing (Angled PC) for 2mm Cable

	Part Number
$\phi 1.6 \sim 2.0\text{mm}$	SLC-CN2S820F301G

U.S. Pat. No. 7,377,699

LC Plug for PC



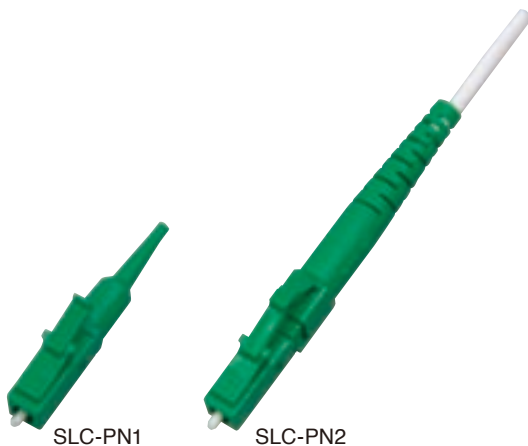
- One-piece design with Zirconia LC ferrule for easy assembly
- Connector series equipped with core adjust feature
- Use of heat-shrink tube for compatibility with $\phi 1.6 \sim 2\text{mm}$ cables (SLC-P2)
- SLC-P1: for $\phi 0.9\text{mm}$
- SLC-P2: for $\phi 1.6 \sim \phi 2\text{mm}$

ORDERING INFORMATION

SLC-P1	a	b	c	d	e	f	g
SLC-P2							
Ex.)							
SLC-P1	3	1	125	1	F	3	03G

a	Boot Color	White (SLC-P2)	3
		Light gray (SLC-P1)	
b	Boot I.D.	$\phi 0.9\text{mm}$	1
		$\phi 2.0\text{mm}$	2
c	Ferrule I.D.	125 μm	125
		125.5 μm	12F
		126 μm	126
d	Marking of Boot	SG	1
e	Cap	White dust cap	F
f	Package	Bulk	3
g	Required		0 * G

LC Plug for Angle PC



- One-piece design with Zirconia LC ferrule for easy assembly
- Connector series equipped with core adjust feature
- Use of heat-shrink tube for compatibility with $\phi 1.6 \sim 2\text{mm}$ cables (SLC-PN2)
- SLC-PN1: for $\phi 0.9\text{mm}$
- SLC-PN2: for $\phi 1.6 \sim \phi 2\text{mm}$

ORDERING INFORMATION

SLC-PN1	a	b	c	d	e	f	g
SLC-PN2							
Ex.)							
SLC-PN1	8	1	125	1	F	3	03G

a	Boot Color	Green	8
b	Boot I.D.	$\phi 0.9\text{mm}$	1
		$\phi 2.0\text{mm}$	2
c	Ferrule I.D.	125 μm	125
		125.5 μm	12F
		126 μm	126
d	Marking of Boot	SG	1
e	Cap	White dust cap	F
f	Package	Bulk	3
g	Required		0 * G

[FC Type Fiber Optic Connector]

- Equivalent to NTT specification (FC)
- Complies with IEC 61754-13 and JIS C 5970
- Models achieve Telcordia optic connector test specification GR-326-CORE are available
- Models satisfy Vertical Burning Test for Classifying Materials UL94V-0 are available
- For more details, please visit our web site <http://www.seikoh-giken.co.jp/en/index.html> to download the product specifications

Keying width

Unit: mm

	PC	Wide key (N-type) Angle PC	Narrow key (R-type) Angle PC
Housing Plug	2.0 ±0.14	2.14 ⁰ _{-0.05}	2.02 ⁰ _{-0.05}
Adaptor	2.4 ±0.2	2.15 ⁰ _{-0.05}	2.03 ⁰ _{-0.05}

FC Housing for PC & Angle PC



- Plastic boot complies with GR-326
- Applicable for standard PC and Angle PC (Wide key type, Narrow key type) by selection of plug frame and boot color
- Possible to use plug frame of Narrow key type for standard PC application
- Possible to use same crimping assembly method as SC (crimping tool part number: MDTK-02-120G)
- Satisfies Vertical Burning Test for Classification Materials UL94V-0 (excluding cap)
- SAP-3: for ø2, ø2.4, ø3mm
- SAP-6: for ø0.9mm

ORDERING INFORMATION

SAP-3	a	b	c	d	e	f	g
SAP-6							
Ex.)							
SAP-3	1	7	1	A	0	D	1G

a	Boot Color	Black	1
		Green	8
b	Boot I.D.	ø0.9mm (flame-resistant rubber)	8
		ø2mm (plastic)	6
		ø3mm (plastic)	7
		ø2.4mm (plastic)	A
c	Marking of Boot	SG (SAP-3)	1
		No marking (SAP-6)	0
d	Cap	Black ferrule cap	A
		Green ferrule cap	B
e	Package	Bulk	0
f	Keying Width	Wide key	D
		Narrow key	K
g		Required	1G

FC Housing for PC



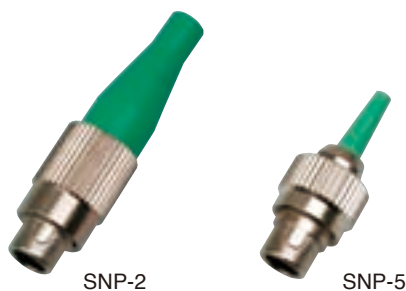
- Equivalent to NTT specifications(FC-P)(SAP-1)
- Total length of 24mm is optimum for use inside system equipment and devices(SAP-4)
- Models Satisfy Vertical Burning Test for Classifying Materials UL94V-0 are available(SAP-4)
- Widely used for LD/PD modules
- SAP-1 : for ø2mm, ø3mm
- SAP-4 : for ø0.9mm

ORDERING INFORMATION

SAP-1	a	b	c	d	e	f
SAP-4						
Ex.)						
SAP-4	1	8	0	3	1	00G

a	Boot Color	Black	1
		ø0.9mm(flame-resistant rubber)	8
b	Boot I.D.	ø2mm(rubber)	2
		ø3mm(rubber)	3
c	Marking of Boot	No Marking	0
d	Cap	White (Plastic)	3
		Black ferrule cap	A
e	Package	Bulk	1
f		Required	00G

FC Housing for Angle PC



- Housing designed for Angle PC application
- Total length of 24mm is optimum for use inside system equipment and devices (SNP-5)
- Wide and narrow key width are available
- SNP-2: for $\phi 2$, $\phi 3$ mm
- SNP-5: for $\phi 0.9$ mm

ORDERING INFORMATION

SNP-2	a	b	c	d	e	f	g
SNP-5							
Ex.)							
SNP-2	8	3	0	B	1	D	1G

a	Boot Color	Green	8
b	Boot I.D.	$\phi 0.9$ mm (rubber)	1
		$\phi 0.9$ mm (flame-resistant rubber)	8
		$\phi 2$ mm (rubber)	2
		$\phi 3$ mm (rubber)	3
c	Marking of Boot	No marking	0
d	Cap	Green (PVC)	8
		Green ferrule cap	B
		White (plastic)	3
e	Package	Bulk	0
		Pre-assy	1
f	Keying Width	Wide key	D
		Narrow key	K
g		Required	1G

FC Housing with 360° Variable Tuning



- 360° variable tuning
- Uses same crimping assembly method as SC (crimping tool part number: MDTK-02-120G)
- Satisfies Vertical Burning Test for Classification Materials UL94V-0
- SGP-3, 4: for PC application. Ferrule SZ-3A15 series (Flange o.d. $\phi 4.7$ mm, pre-radius) should be used together.
- SGP-N3, N4: for APC application. Narrow key type is available as standard. If wide key type is required, please contact us. Ferrule SGZ-1A15 series (Flange o.d. $\phi 4.7$ mm, step type) should be used together.

U.S. Pat. No. 5,946,436

	Part Number
$\phi 0.9$ mm for PC (flame-resistant rubber)	SGP-418011K0G
$\phi 0.9$ mm for Angle PC (flame-resistant rubber)	SGP-N488081K0G
$\phi 2$ mm for PC	SGP-356011K0G
$\phi 2$ mm with short boot for PC	SGP-3S5D011K0G
$\phi 3$ mm for PC	SGP-357011K0G
$\phi 2$ mm for Angle PC	SGP-N386081K0G
$\phi 2$ mm with short boot for Angle PC	SGP-N3S8D081K0G
$\phi 3$ mm for Angle PC	SGP-N387081K0G

FC Plug for PC



SAP-8

- One-piece design for easy assembly
- Pre-radius Zirconia ferrule enables easy polishing
- Plastic boot complies with Telcordia GR-326-CORE
- Uses same crimping assembly method as SC (crimping tool Part Number: MDTK-02-120G)
- Satisfies Vertical Burning Test for Classification Materials UV94V-0.

ORDERING INFORMATION

SAP-8	a	b	c	d	e	f	g	h
Ex.)								
SAP-8	1	3	125	1	A	3	D	OG

a	Boot Color	Black	1
b	Boot I.D.	φ0.9mm (flame-resistant rubber)	1
		φ0.9mm (plastic)	9
		φ3mm (plastic)	3
		φ2mm (plastic)	6
c	Ferrule I.D.	125μm	125
		126μm	126
d	Marking of Boot	No marking-φ0.9 (flame-resistant rubber)	0
		SG-φ0.9 ~ 3 (plastic)	1
e	Cap	Black (PVC)	1
		Black ferrule cap	A
f	Package	Bulk	3
g	Frame	Machined	0
		Molded	D
h	Required		OG

FC Plug for Angle PC



SGP-8
(Step)



SNP-8
(Conical)

- One-piece design for easy assembly
- Pre-angle Zirconia (step shape or conical shape) enables easy polishing
- Plastic boot complies with Telcordia GR-326-CORE
- Uses same crimping assembly method as SC (crimping tool Part Number: MDTK-02-120G)
- Wide and narrow key width available
- Satisfies Vertical Burning Test for Classification Materials UV94V-0.
- SGP-8: Step ferrule type
- SNP-8: Conical ferrule type

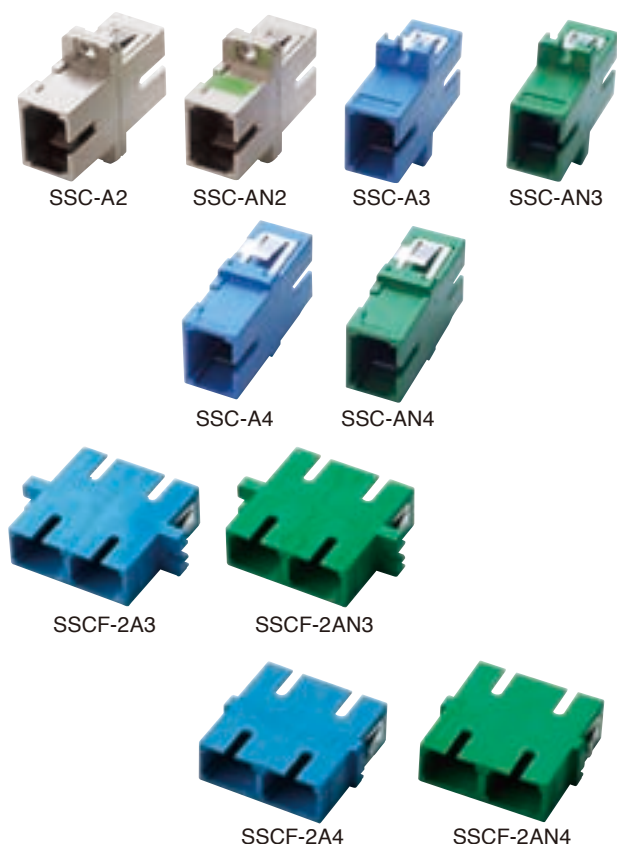
ORDERING INFORMATION

SNP-8	a	b	c	d	e	f	g	h
SGP-8								
Ex.)								
SNP-8	8	3	125	1	B	3	D	1G

a	Boot Color	Green	8
b	Boot I.D.	φ0.9mm (flame-resistant rubber)	1
		φ0.9mm (plastic)	9
		φ3mm (plastic)	7
		φ2mm (plastic)	6
c	Ferrule I.D.	125μm	125
		126μm	126
d	Marking of Boot	No marking-φ0.9 (flame-resistant rubber)	0
		SG-φ0.9 ~ 3 (plastic)	1
e	Cap	Green (PVC)	8
		Green ferrule cap	B
f	Package	Bulk	3
g	Keying Width	Wide key (SNP-8 Only)	D
		Narrow key	K
h	Required		1G

[Adaptor]

SC Adaptor



U.S.Pat. No.6,431,762

- Complies with IEC 61754-4 and JIS C 5973
- Integrated solid body design for significant improvement in strength and durability over conventional design (excluding SSC-A2, SSC-AN2)
- Precision Zirconia split sleeve
- High-dense type with short flange available also (SSC-A4, SSC-AN4, SSCF-2A4, SSCF-2AN4)

	Part Number
Simplex for PC (Metal)	SSC-A222A02G
Simplex for Angle PC (Metal)	SSC-AN222B02G
Simplex for PC	SSC-A322701G
Simplex for Angle PC	SSC-AN322701G
Simplex short flange for PC	SSC-A4227C1G
Simplex short flange for APC	SSC-AN4227C1G
Duplex for PC	SSCF-2A322700G
Duplex for Angle PC	SSCF-2AN322700G
Duplex short flange for PC	SSCF-2A422700G
Duplex short flange for Angle PC	SSCF-2AN422700G

FC Adaptor



- Complies with IEC 61754-13 and JIS C 5970
- Precision Zirconia split sleeve
- Integrated solid body design for significant improvement in strength and durability over conventional design

	Part Number
Standard for PC	SAA-422200G
Standard for Angle PC (Wide key)	SNA-1224D0G
Standard for Angle PC (Narrow key)	SNA-1224K0G
Without flange for PC (D-hole type)	SAA-322200G
Without flange for Angle PC (D-hole Wide key)	SNA-3224D0G
Without flange for Angle PC (D-hole Narrow key)	SNA-3224K0G
Oval flange for PC	SAA-621A00G
Oval flange for Angle PC (Narrow key)	SNA-621BK0G
Without flange for PC	SAA-521A00G
Without flange for PC (D-hole with knurl)	SAA-721A00G

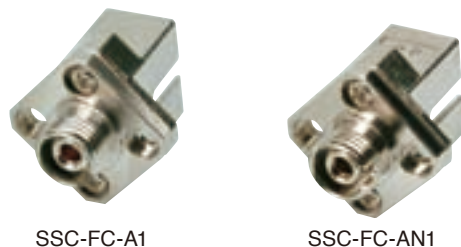
LC Adaptor



- Complies with IEC 61754-20, TIA/EIA-604-10-A and JIS C 5964-20
- Integrated solid body design for significant improvement in strength and durability over conventional design (SLCFP-2A1, SLCFP-2AN1, SLCFP-2A4, SLCFP-2AN4)
- Precision Zirconia Slit sleeve
- High-dense type with Flange available also (SLCFP-2A4, SLCFP-2AN4, SLCFP-4A4, SLCFP-4AN4)
- SLCFP series also available with internal metal shutter to shield light for safe

	Part Number
Simplex for PC	SLC-A121100G
Simplex for Angled PC	SLC-AN121100G
Duplex for PC	SLCF-2A221100G
Duplex Low Profile for PC	SLCF-2A121100G
Duplex Low Profile for Angled PC	SLCF-2AN121100G
Duplex SC-Footprint for PC	SLCFP-2A122701G
Duplex SC-Footprint for PC With Shutter On One End	SLCFP-2A1227X1G
Duplex SC-Footprint for PC With Shutter On Both Ends	SLCFP-2A1227W1G
Duplex SC-Footprint For Angled PC	SLCFP-2AN122701G
Duplex SC-Footprint For Angled PC With Shutter On One End	SLCFP-2AN1227X1G
Duplex SC-Footprint For Angled PC With Shutter On Both Ends	SLCFP-2AN1227W1G
Duplex SC-Footprint Short Flange for PC	SLCFP-2A422701G
Duplex SC-Footprint Short Flange for PC With Shutter On One End	SLCFP-2A4227X1G
Duplex SC-Footprint Short Flange for PC With Shutter On Both Ends	SLCFP-2A4227W1G
Duplex SC-Footprint Short Flange for Angled PC	SLCFP-2AN422701G
Duplex SC-Footprint Short Flange for Angled PC With Shutter On One End	SLCFP-2AN4227X1G
Duplex SC-Footprint Short Flange for Angled PC With Shutter On Both Ends	SLCFP-2AN4227W1G
Quad SC-Footprint for PC	SLCFP-4A121100G
Quad SC-Footprint Short Flange for PC	SLCFP-4A421100G

Conversion Adaptor



- Precision Zirconia split sleeve

	Part Number
FC/SC	SSC-FC-A122A02G
FC/SC Angle PC (Narrow key)	SSC-FC-AN122BK1G

[Jumper Cable]

- Our precision optical cable manufacturing services can provide a wide range of standard and custom cables to meet a wide range of requirements
- Specialty cables, master reference and key adjust cables available
- All cables are tested, serialized, labeled in individual bags with complete test information

- Production facility meets the strictest quality control under ISO9001 and connector components meet or exceed industry standard performance levels
U.S. Pat. No. 5,668,905

Standard Jumper



ORDERING INFORMATION

SM, ø2.0mm, SC/PC-SC/PC, 6m length

Part Number [a] - [b] - [c] - [d] - [e]

Ex.)

JJ - SSCP2 - 2 - W - 6

a	Jumper Type	Jumper	JJ
		Pigtail	JP
		Master jumper	MJ
		Master pigtail	MP
b	Connector Type	See Table 1	
c	Fiber Diameter	ø0.9mm buffer	1
		ø2.0mm cable	2
		ø3.0mm cable	3
d	Fiber Type	Single-Mode	W
		Multi-Mode(50/125µm)	M1
		Multi-Mode(62.5/125µm)	M2
e	Length	5m	5
		10m	10

Hybrid Jumper



ORDERING INFORMATION

SM, ø2.0mm, SC/PC-LC/AP, 6m length

Part Number [a] - [b] / [c] - [d] - [e] - [f]

Ex.)

JJ - SSCP2 / SLCPN2 - 2 - W - 6

a	Jumper Type	Jumper	JJ
		Master jumper	MJ
b/c	Connector Type	See Table 1	
d	Fiber Diameter	ø0.9mm buffer	1
		ø2.0mm cable	2
		ø3.0mm cable	3
e	Fiber Type	Single-Mode	W
		Multi-Mode(50/125µm)	M1
		Multi-Mode(62.5/125µm)	M2
f	Length	5m	5
		10m	10

Table 1. Connector Type

	Type	φ1	φ2	φ3
PC RL ≥ 50dB	FC	SAP4 SGP4	SAP3 SGP3	SAP3 SGP3
	SC	SSCP1	SSCP2	SSCP3
	MU	SMUC1	SMUC2	—
	LC	SLCC1	SLCC2	—
Angle PC RL ≥ 60dB	FC Narrow key (R)	SGPN4 (SNP5K)	SGPN3 (SNP3K)	SGPN3 (SNP3K)
	FC Wide key (N)	SNP5D	SNP3D	SNP3D
	SC(step)	SSCPG1	SSCPG2	SSCPG3
	SC(conical)	SSCPN1	SSCPN2	SSCPN3
	MU	SMUCN1	SMUCN2	—
	LC	SLCCN1	SLCCN2	—

Option

- Available custom designed jumper cable
- AR coating, and fiber metalization are available
- FC/Angle PC connector ferrule combination
 - Narrow key (R) ... Step ferrule
 - Wide key (N) ... Conical ferrule

PM Jumper

PM Hybrid Jumper



PM Jumper

ORDERING INFORMATION

SC/PC-SC/PC, Key=Y, 1310nm

ø2.0mm, 6m length

Part Number [a] - [b] - [c] - [d] - [e]

Ex.)

PJ - PC12B - Y - 13 - 6

a	Number of Connector	PM jumper	PJ
		PM pigtail	PP
b	Connector Type	See Table 2	
c	Axis (See Table 3)	Free (FC Only)	F
		Fast	X
		Slow	Y
		Other	O
d	Wavelength	1310nm	13
		1550nm	15
e	Length	10m	10

PM Hybrid Jumper

ORDERING INFORMATION

SC/PC-FC/APC, Key=X, 1550nm,

ø2.0mm, 8m length

Part Number [a] - [b] - [c] / [d] - [e] - [f] - [g]

Ex.)

PJ - PC12B - X / PF12C - X - 15 - 8

a	Number of Connector	PM jumper	PJ
		PM pigtail	PP
b	Connector Type	See Table 2	
c	Axis (See Table 3)	Free (FC Only)	F
		Fast	X
		Slow	Y
		Other	O
d	Connector Type	See Table 2	
e	Axis (See Table 3)	Free (FC Only)	F
		Fast	X
		Slow	Y
		Other	O
f	Wavelength	1310nm	13
		1550nm	15
g	Length	10m	10

• Available ER ≥ 30dB Jumper

Table 2. Connector Type

	Type	φ1	φ2
PC RL ≥ 50dB	FC	PF11	PF12B
	SC	PC11	PC12B
	MU	PU11	PU12
	LC	PL11	PL12
Angle PC RL ≥ 60dB	FC Narrow key (R)	PF11A	PF12C
	FC Wide key (N)	PF11AN	PF12CN
	SC	PC11A	PC12C

Table 3. Polarization Axis

Polarization	F (Free)	X (Fast)	Y (Slow)	O (Other)
Direction of the stress producing members against the key				
	The stress producing members are free to the key. (the key is not fixed)	The stress producing members are horizontal to the key : 0°±3°	The stress producing members are perpendicular to the key : 0°±3°	The stress producing members are at the designated angle to the key

- Custom Options Available

MPO Jumper Cable Assembly



- Low I.L. with multi-channel connection and premium grade quality proven by reliability test

Fanout Cable Assembly



- Original design of fanout breakout can realize lowest I.L. variation against temperature cycling.

MPO Fanout Cable Assembly



- Flexible support to customized design requirement with any connector types and fibers



[Splice-On Connector]

- Field-termination connector with no epoxy or polishing required
(A fusion splicer and an original holder are required)
- Fibers to be fusion-spliced
- No matching gel enables low reflection and high reliability
- Applicable for interconnection needing high reliability under environmental conditions

- Various types available such as FC, SC, LC or PC, APC types
- Comply with Telcordia GR-326-CORE Service Life Test
U.S.Pat. No.7,507,031 B2
- MM types are also available



SC Single Mode

Type	Part Number	Applicable cable
SC/UPC	SSCS-P1EUA	φ0.9mm
	SSCS-P2EUA	φ2mm
	SSCS-P3EUA	φ3mm
SC/APC	SSCS-PN1EUA	φ0.9mm
	SSCS-PN2EUA	φ2mm
	SSCS-PN3EUA	φ3mm

FC Single Mode

Type	Part Number	Applicable cable
FC/UPC	SAPS-358EUA	φ0.9mm
	SAPS-356EUA	φ2mm
	SAPS-357EUA	φ3mm
FC/APC	SAPS-388EUA	φ0.9mm
	SAPS-386EUA	φ2mm
	SAPS-387EUA	φ3mm

LC Single Mode

Type	Part Number	Applicable cable
LC/UPC	SLCS-P1U	φ0.9mm
	SLCS-P2EUA	φ2mm
	SLCS-P3EUA	φ3mm
LC/APC	SLCS-PN1U	φ0.9mm
	SLCS-PN2EUA	φ2mm
	SLCS-PN3EUA	φ3mm

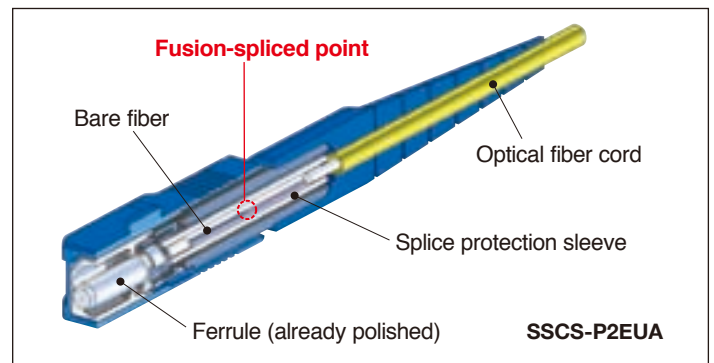


SSCS-PN3EUA



SLCS-P2EUA

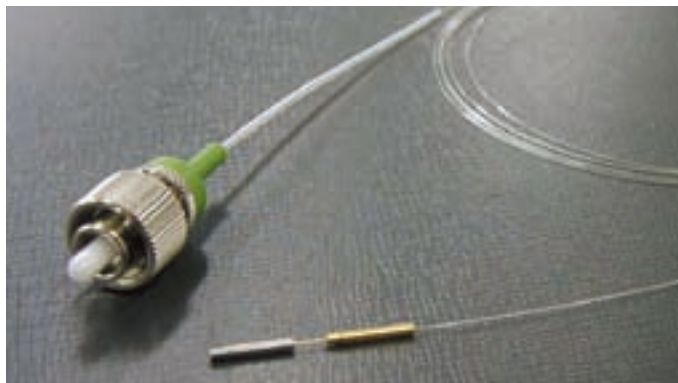
Structure (after assembled)



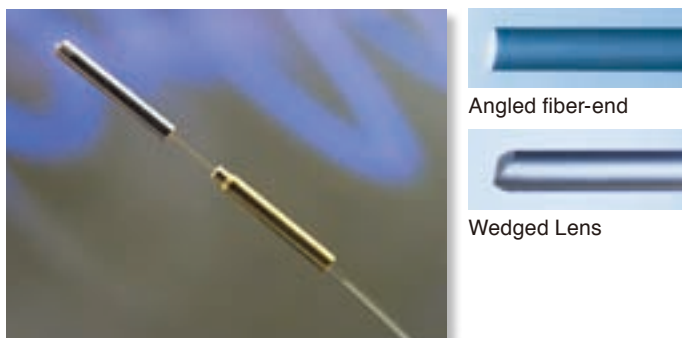
[Lensed Fiber Assembly]

Application:

- Perfect for coupling fiber to LD's and PD's for various applications such as DFB Lasers, pump lasers or receivers. Our high quality specialty pigtailed will improve coupling efficiency, increase product performance, and save you costs



FC/APC Wedged Fiber Assembly For 980nm LD Coupling



Welding and hermetic ferrules

- We offer total solution for photonic packaging with our completed fiber to chip assemblies

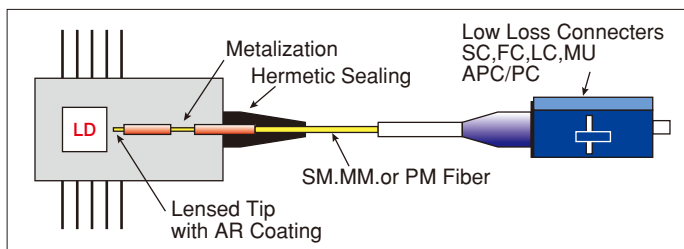
Key Feature:

- High precision fiber-end shaping
- Multiple lens shapes available for any application
- High quality AR coating for various wavelengths
- Kovar ferrules for welding and hermetic sealing
- Low insertion loss terminations
- Ni/Au Metalization for exceptional solderability

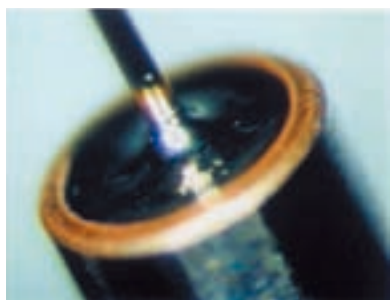
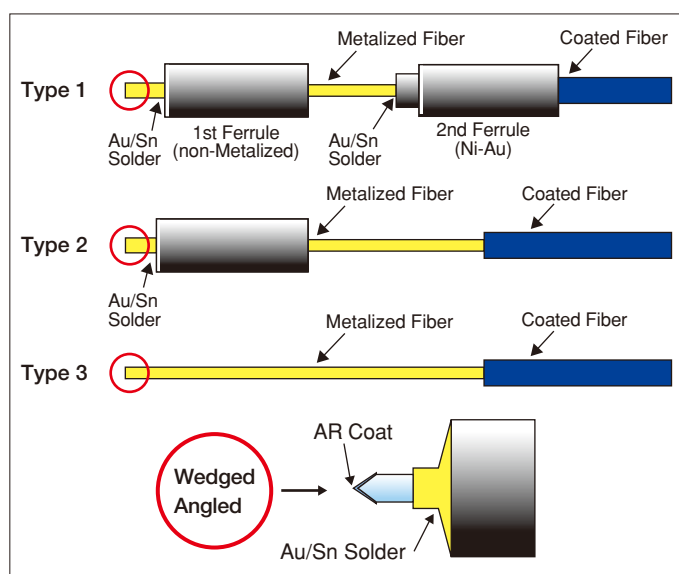
Options

Fiber to the chip assemblies may include:

- Fiber end-shaping
- AR coating
- Bare fiber metalization
- Hermetic and welding ferrules
- Low loss connector
- Singlemode, Multimode, and Polarization Maintaining Fiber



Basic Configuration



Soldering

AR Coating :

- Ion assisted deposition
- Low reflection
- Reflection ratio less then 0.3%, typically 0.1%
- High environmental stability
- Various wavelengths available
980nm, 1310nm, 1480nm, 1550nm
- Single or broadband available

Metalization :

- Sputtering or plating process
- Ni based Au plating or sputtering
- High level of hermeticity and pull strength

Specifications

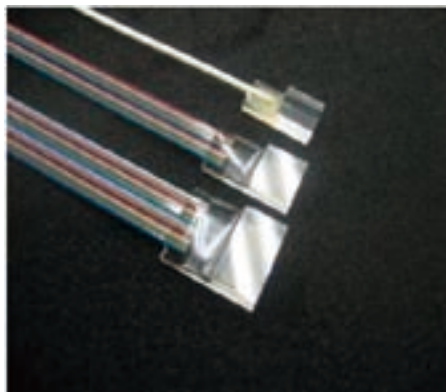
Fiber Tip Shape	Wedge	Angle
Fiber Type	SMF28, HI1060, PANDA, MMF	
Fiber Buffer O.D.	250μm, 900μm	
Taper Angle	90 degree, 110 degree	0, 8, 45 deg
Lens Radius	3-10μm	N/A
Metalization	Ni / Au	
Soldering & Hermeticity	Au/Sn $\leq 1 \times 10^{-10}$ Pa.m ³ /sec $\leq 1 \times 10^{-9}$ atm.cc/sec	
AR Coating	980, 1310, 1480, 1550± 20nm Available broadband coating Reflection Ratio $\leq 0.3\%$	

[Fiber Array]

Features

- Fiber array is an essential component used in the WDM systems to connect optical fiber and AWG chips

- Our precision processing technology, which we have developed for years, provides high fidelity, quality and core pitch accuracy
- High quality Seikoh-Giken connectors are available at the end of fibers



- High precision core pitch accuracy
- High reliability

ORDERING INFORMATION

Ex.1 8ch, 250 μ m pitch, Tempax, 90-degree polishing, 8ch ribbon fiber, 2m length

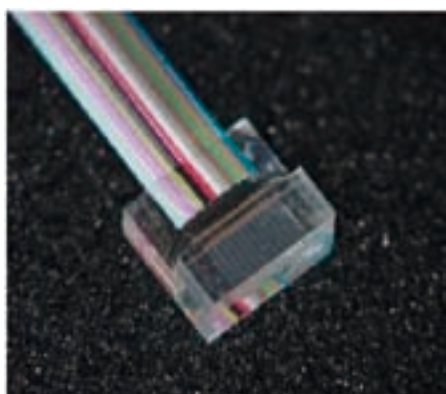
SFA -

a	b	c	d	-	e	f	g	L	h
F	08	F	T	-	1	E	08	L	20

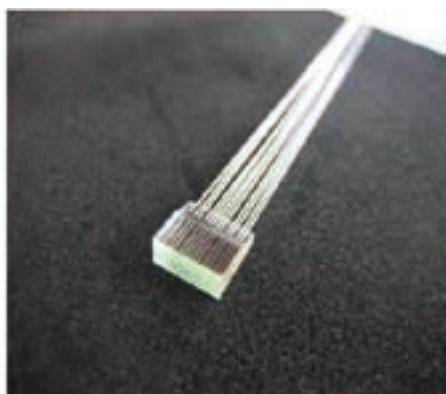
Ex.2 48ch, 127 μ m pitch, Silica glass, 98-degree polishing, 12ch ribbon fiber, \times 4pcs, 2m length

SFA -

a	b	c	d	-	e	f	g	L	h
H	48	A	S	-	4	T	12	L	20



Miniature Size Fiber Array : Base Length 5mm



Available AR coating on Endface



Available Fanout Connectorization Assembly

a	Pitch	250 μ m	F
		127 μ m	H
		1ch	N
b	channel	1ch	01
		8ch	08
		16ch	09
		32ch	32
		48ch	48
c	Polishing Angle	90 degree	F
		98 degree	A
		82 degree	R
d	Material	Tempax (Borofloat)	T
		Pyrex	P
		Silica glass	S
e	Q'ty of ribbon fiber	4pcs (example)	4
f	Fiber Type	ϕ 0.25 UV	S
		4ch ribbon fiber	F
		8ch ribbon fiber	E
		12ch ribbon fiber	T
		ϕ 0.9 (SMF-28)	B
g	channel per ribbon fiber	8ch ribbon fiber (example)	08
h	Length	2m (standard)	20

SPECIFICATION

Materials	Tempax (borofloat) (CTE : 3.3 \times 10 $^{-6}$)
	Pyrex (CTE : 3.25 \times 10 $^{-6}$)
	Silica Glass (CTE : 5 \times 10 $^{-7}$)
Channel	1, 8, 16, 32, 48 (other channel available)
Pitch	127, 250 μ m
Pitch Accuracy	\pm 0.5 μ m
Fiber	SMF28e, Ribbon Fiber (4, 8, 12)
Polishing Angle	90, 98, 82 degree

[Plug Type Fixed Attenuator]

- Available in FC, SC, LC, ST and MU plug type. They are suitable for connection through panel-mounted adapters.
- Precision polished endface are available for both PC and Angle PC types.

- Standard wavelength is 1310/1550nm and also C/L band or any other custom specifications are available.
U.S. Pat. No. 5,321,790
- For more details, please visit our web site <http://www.seikoh-giken.co.jp/en/index.html> to download the product specifications

FA100 Series (FC Plug Type)



FA100-HP

FA100-AP

- Key width for APC is narrow type.

ORDERING INFORMATION

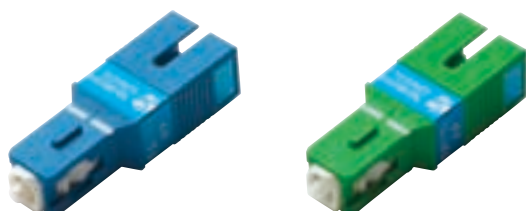
FA100 - [a] - [b]

Ex.)

FA100 - 01 - HP

a	Attenuation	See Table 4	
b	Polishing	PC polishing / Standard	HP
		PC polishing / High grade	HP5
		Angle PC polishing / Standard	AP
		Angle PC polishing / High grade	AP5

FA110 Series (SC Plug Type / Plastic Housing)



FA110-HP

FA110-AP

ORDERING INFORMATION

FA110 - [a] - [b]

Ex.)

FA110 - 01 - HP

a	Attenuation	See Table 4	
b	Polishing	PC polishing / Standard	HP
		PC polishing / High grade	HP5
		Angle PC polishing / Standard	AP
		Angle PC polishing / High grade	AP5

FA115 Series (SC Plug Type / Metal Housing)



FA115-HP

FA115-AP

ORDERING INFORMATION

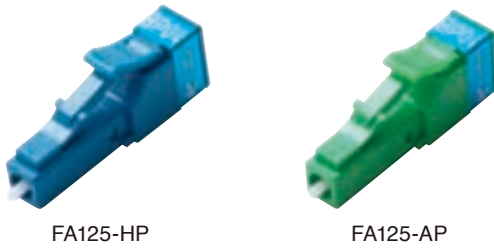
FA115 - [a] - [b]

Ex.)

FA115 - 01 - HP

a	Attenuation	See Table 4	
b	Polishing	PC polishing / Standard	HP
		PC polishing / High grade	HP5
		Angle PC polishing / Standard	AP
		Angle PC polishing / High grade	AP5

FA125 Series (LC Plug Type)



- 6.25mm of high-density mounting space

ORDERING INFORMATION

FA125 - [a] - [b]

Ex.)

FA125 - 01 - HP

a	Attenuation	See Table 4	
b	Polishing	PC polishing / Standard	HP
		PC polishing / High grade	HP5
		Angle PC polishing / Standard	AP
		Angle PC polishing / High grade	AP5

FA130 Series (ST Plug Type)



ORDERING INFORMATION

FA130 - [a] - [b]

Ex.)

FA130 - 01 - HP

a	Attenuation	See Table 4	
b	Polishing	PC polishing / Standard	HP
		PC polishing / High grade	HP5

FA140 Series (MU Plug Type)



- 4.5mm of high-density mounting space
- Compatible with MU-J plug from various manufacturers

ORDERING INFORMATION

FA140 - [a] - [b]

Ex.)

FA140 - 01 - HP

a	Attenuation	See Table 4	
b	Polishing	PC polishing / Standard	HP

U.S. Pat. No. 7,090,409

Table 4. Attenuation and corresponding notation

Attenuation (dB)	Notation	Attenuation (dB)	Notation	Attenuation (dB)	Notation
0	00	6	06	11	11
1	01	7	07	12	12
2	02	8	08	13	13
3	03	9	09	14	14
4	04	10	10	15	15
5	05	—	—	20	20

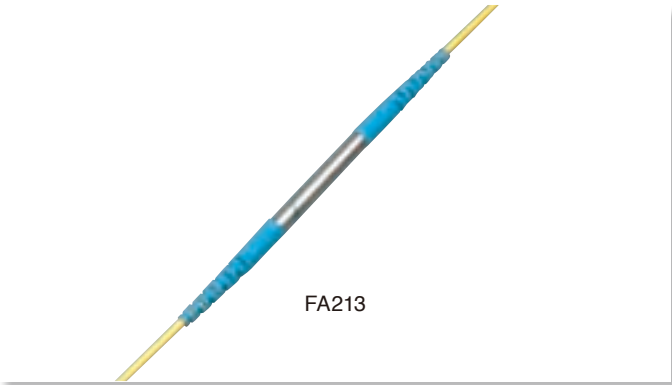
SPECIFICATION

Series	Attenuation
FA100, FA110, FA115, FA125, FA130	Standard : $\pm 1.0\text{dB}$ (1-10dB), $\pm 10\%$ (11-15dB, 20dB) High Grade : $\pm 0.5\text{dB}$ (1-10dB), $\pm 5\%$ (11-15dB, 20dB)
FA140	$\pm 0.5\text{dB}$ (1-2dB), $\pm 1.0\text{dB}$ (3-10dB), $\pm 10\%$ (11-15dB, 20dB)

[Inline Type Fixed Attenuator]

- In-line type attenuator for S/M application
- Custom spec available in attenuation, wavelength and length

FA213 Series (ø3mm Cable Type)



ORDERING INFORMATION
FA213-35 - a - b - c
Ex.)
FA213-35 - 01 - 2 - SSCP3

a	Attenuation	See Table 4 (P26)	
b	Connector Qty	None	0
		One side	1
		Both side	2
c	Connector Type	FC (PC)	SGP3
		FC (Angle PC narrow key)	SGPN3
		FC (Angle PC wide key)	SNP3D
		SC (PC)	SSCP3
		SC (Angle PC)	SSCPN3

INSTRUMENT

POLISHING MACHINE
POLISHING HOLDER
POLISHING FILM
REPAIR POLISHING MACHINE
CLEANER
MICROSCOPE
INTERFEROMETER
ELECTRIC FIELD SENSOR
OPTICAL REMOTE ANTENNA



[Polishing Machine]

- The widest range of production polishers utilizing our proprietary turntable design
- With our exclusive rotation-revolution mechanism, polishing films and polishing processes, and with over two decades of connector polishing expertise all contribute to the highest quality optical performance
U.S.Pat. No.5,351,445

SFP-550S3



The SFP-550S3 Polisher Series is Seikoh Giken's newest top of the line mass production model developed under our recently introduced concept of "Ez-Maintenance and High Duty Cycle" series. Compared to the previous SFP-550 series, there is drastic improvement in ease of maintenance and machine robustness that has achieved reduction in maintenance cost (90% less per our internal test). It features a full function, programmable LCD touch panel for installation and modification of various polishing processes allowing unlimited customization of process detailed parameters. Additionally, it features a slow start function, user controlled, programmable turntable speed and voltage-free power input for world-wide versatile installation. The most notable feature is our unique auto polishing time distribution which allows the polishing time to gradually change after each use of the polishing film. It provides stable grinding force for uniform endface geometry and extends film service life. Developed for use in high volume mass-production environments where critical geometry performance is required.

Application	Mass production
Pressure Source	4 coil springs
Dimensions	W260xD320xH295mm
Weight	18.5kg
Input Voltage	100-240 VAC, 50/60Hz
Polishing Capacity(maximum)	48
# of max programmable process	12
# of max steps in one process	8
Speed of Turntable	Rotation : 0.1-2rpm Revolution : 10 - 200rpm
Connector Type	φ2.5mm PC, APC φ1.25mm PC, APC MT, mini-MT, Fiber Array

OFL-15A



This model also offers excellent production throughput capability with up to 24 ferrules polishing simultaneously. Extremely versatile, the OFL-15A can polishing both connectors, ferrules and MT ferrules. It features a LCD touch panel for easy programming of various connector polishing processes which offers ease of operation. Additionally, it features an active polishing pressure control through it's closed-loop load-cell sensor and stepping motor. This combination provides excellent polishing results while exceeding industry specifications for geometry performance.

Application	High volume production
Pressure Source	Stepping motor with load-cell sensor
Polishing Capacity (max)	24
Programmable Process	5(max)
Number of Programs	15
Speed of Turntable	Revolution: 100~280rpm
Dimensions	240x390x510mm
Weight (approx.)	30kg
Input Voltage	100/115/220/240 VAC, 50-60Hz
Connector Type	φ2.5mmPC, APC φ1.25mmPC, APC MT, mini-MT, Fiber Array

U.S.Pat. No.5,516,328 / 5,743,787 / 6,126,519 / 6,439,973 / 6,280,293

SFP-550E3



The SFP-550E3 Polisher Series is Seikoh Giken's mid-range polisher offering a competitive priced, high volume programmable mass production model under our recently introduced concept "Ez-Maintenance and High Duty Cycle" series. Compared to the previous SFP-550 series, there is drastic improvement in ease of maintenance and machine robustness that has achieved reduction in maintenance cost (90% less per our internal test). Unlike the previous model SFP-550E which had 4 individual timers, this new model SFP-550E3 features Multi Timer on LCD Touch Panel (4 timers). In addition, it features simplified polishing process programming (8 steps each x 12 processes). Polishing speed is variable from 70rpm to 200rpm for revolution and rotation speed is automatically adjusted as per revolution speed. A notable feature of this polisher series provides the option to add a Center Pressure Module, which converts this machine to be used as an advanced multi fiber polisher. (Note: the Center Pressure Module can be mounted to all SFP-550 series).

Application	Mass production
Pressure Source	4 coil springs
Dimensions	W260xD320xH290mm
Weight	18.5kg
Input Voltage	100-240 VAC, 50/60Hz
Polishing Capacity(maximum)	48
# of max programmable process	12
# of max steps in one process	8
Speed of Turntable	Rotation : 0.7-2rpm (auto) Revolution : 70 - 200rpm
Connector Type	φ2.5mm PC, APC φ1.25mm PC, APC MT, mini-MT, Fiber Array

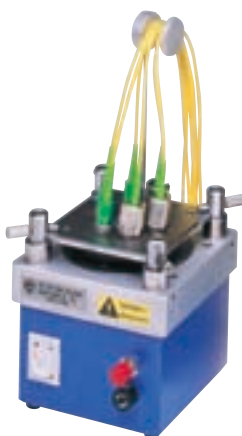
SFP-550C



The SFP-550C Polisher Series is Seikoh Giken's entry level mass production model. The 550C series model was also developed under the recently introduced concept of "Ez-Maintenance and High Duty Cycle" series. And, compared to the previous SFP-550 series, there is dramatic improvement in the ease of maintenance and machine robustness that has achieved reduction in maintenance cost (90% less per our internal test). The addition of the high speed turntable technology allows the SFP-550C model to increase productivity by more than 20% (according to our internal test) over previous entry level polishers. All Seikoh Giken polishing holders come equipped with the proprietary IPC (Individual Pressure Control) system that provides even pressure to each ferrule regardless of its protrusion length while achieving stable and high-quality output. Efficient large scale mass production lines focused on cost/production savings can be established by installing this combination of polishing machine and IPC holder for each polishing step.

Application	Mass production
Pressure Source	4 coil springs
Polishing Capacity(maximum)	48
Dimensions	W250xD305xH240mm
Weight (approx.)	16kg
Input Voltage	100-120 VAC, 50/60Hz or 220-240 VAC, 50/60Hz
Connector Type	φ2.5mm PC, APC φ1.25mm PC, APC MT, mini-MT, Fiber array

SFP-70D



This model is intended for light production capacity. The SFP-70D provides 6 axis simultaneous polishing and can be operated on AC or DC power for field use.

Application	Laboratory
Pressure Source	4 coil springs
Polishing Capacity (max)	6
Dimensions	130x145x130mm
Weight (approx.)	3.2kg
Input Voltage	100-240VAC, 50/60Hz
Connector Type	φ2.5mmPC, APC φ1.25mmPC, APC POF,Fiber Polishing

SFP-70D2



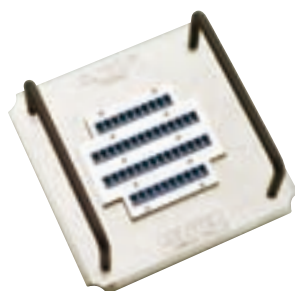
This model provides 2 axis simultaneous polishing at competitively low cost and is most suitable for light production environments like field termination and laboratory use.

Application	Laboratory
Pressure Source	Holder weight
Polishing Capacity (max)	2
Dimensions	120x115x90mm
Weight (approx.)	3.2kg
Input Voltage	100-240VAC, 50/60Hz
Connector Type	φ2.5mmPC, APC φ1.25mmPC, APC POF,Fiber Polishing

[Polishing Holder]

- Enables to polish 48 terminations at once and realize cost reduction
- Use of receptacle allows easy connector installation (SC, LC and MU)

- Holders for MT, MPO, MT-RJ and fiber array are also available- Please contact us for custom holders
U.S. Pat. No.5,640,475 / 7,369,737



for SFP-550
LC 48-axis



for OFL-15A
ø2.5mm ferrule 24-axis

		SFP-550 (S/E)	OFL-15A	SFP-70D	SFP-70D2
PC	φ2.5mm Ferrule	○	○	○	○
	FC Plug	○	○	○	○
	SC Plug	○	○	○	○
	ST Plug	○	○	○	○
	φ1.25mm Ferrule	○	○	○	○
	LC Plug	○	○	○	○
	MU Plug	○	○	○	○
Angle PC	φ2.5mm Ferrule	○	○	○	○
	FC Plug	○	○	○	○
	SC Plug	○	○	○	○
	LC Plug	○	○	○	○
	MU Plug	○	○	○	○
MT	MT	○	○	○	○
	MT8°(MPO)	○	○	—	○
	MiniMT(MT-RJ)	○	○	—	—
	Fiber Array	○	○	—	—

[Polishing Film]

For SFP series

Film P/N	Application	Material	Particle Size
GA5D / GA07	Adhesive removal	SiC	Large
GC5D			Small
GI5D	Polishing	Diamond	Large
GK5D			Small
DA5D-30u/EDA5D-30U			Large
DR5D-9u/EDR5D-9u/DR07-9u			Small
DG5D-5u/EDG5D-5u			Small
DH5D-3u/EDH5D-3u/DH07-3u			Small
DJ5D-1u/EDJ5D-1u/DJ07-1u			Small
AR5D			Large
AJ5D	Final polishing	Al ₂ O ₃	Small
SF5D		SiO ₂	Small
XF5D / XF07		CeO ₂	Small
EF5D		CeO ₂	Small
BX5D	Buff polishing	Buff	
CF5D / CF07	Cleaning		

*Please contact us for polishing consumables not listed in this page.

For OFL series

Film P/N	Application	Material	Particle Size
KJW100100G	Adhesive removal	SiC	Large
KJW100110G			
KJW101110G	Polishing	Al ₂ O ₃	—
KJW101200G			
KJW101300G			
KJW100240G			
KJW100300G		Diamond	
KJW100440G			
KJW100700G		Metal Bonded Sheet	
KJW100800G			
KJW101000G	Final polishing	CeO ₂	Small
KJW101530G		SiO ₂	
KJW100900G	Buff polishing	Buff	
KJW101601G	Cleaning		

[Repair Polishing Machine]

- Based on our proprietary rotation mechanism and with our long experience in polishing technology, this machine was specially designed for repolishing damaged connector endface

SFP-Lite (Repair Mate™)



Structure

- 1-axis polishing & portable (weight only 600g)
- User-friendly one touch button operation

Features

- New rotation mechanism enables the removal of fiber end-face scratches while maintaining ferrule endface geometry
- Polishing holder equipped with IPC mechanism provides stable polishing result regardless of ferrule length
- Suitable for field use (AA battery operation)
- Polishing holders for various connector types are available

Application	Repolishing only
# of axis	1
Dimension	94 × 75 × 140mm
Weight	600g
Power	Size AA battery X 4pcs / AC/DC power adapter (100V ~ 240V)
Connector Type	SC, FC, ST, LC, MU (PC/APC)
Polishing Process	2 polishing steps

[END-FACE CLEANER]

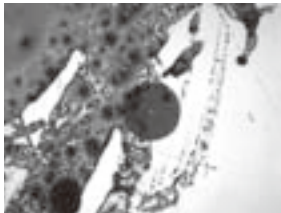
- Compact and reliable cleaner for connector end-face
- Easy cleaning in field installation or factory

SHM-501 (HandiMate™)



- Handy and high performance cleaner that fits in your hand and achieves cleaning more than 500 times
- Just one sliding motion enables to remove contamination such as dust or oil on optical connector end-face
- Connector to be set on guide holder enables stable and even cleaning result always

Part No.	SHM-501
Application	Clean simplex connector tip
Dimension	H110xW68xD28mm (Cap opened)
Weight	75g
Operation	Slide type
Life	More than 500 times
Applicable connector	SC, FC, ST, LC, MU



Before



After

SFM-250/125 (Ferrule Mate™)

- Latest concept in endface cleaner
- Proprietary mechanism for simultaneously forwarding and rotating cleaning cloth provides effective endface cleaning
U.S.Pat. No.7,476,279



- Handy and high performance cleaner that fits in your hand and equips cleaning cloth achieves cleaning more than 300 times
- Originally developed mechanism for simultaneously forwarding and rotation of cleaning cloth removes contamination easily from ferrule endface
- Tapered tip is ideal for cleaning inside of adapter. Also, by using protection cap, single connector endface can be cleaned

Part Number	SFM-250(φ2.5mm)	SFM-125(φ1.25mm)
Application	Ferrule endface cleaning for inner adapter or single connector	
Dimension (body)	L163xW20xH44 mm	
Dimension (tip)	L=63mm	L=110mm
Weight	SFM-250 60g / SFM-125 66g	
Operation	Push button operation	
Life	More than 300 times	
Connector/Adapter Type	SC, FC, ST (both PC and Angle PC)	MU, LC (both PC and Angle PC)



Before



After

Automatic Desktop Cleaner SPR-1 (Ferrule Pro™)



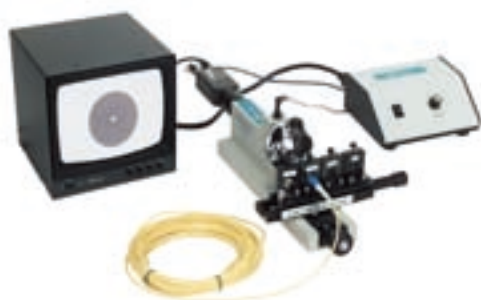
FerrulePro™ is the world's first fully automated desktop fiber connector cleaner for cable assembly production environments and laboratory.

FerrulePro™ automates the cleaning of all types of terminated fiber products, a critical task where performance once depended largely on the production line worker's skill.

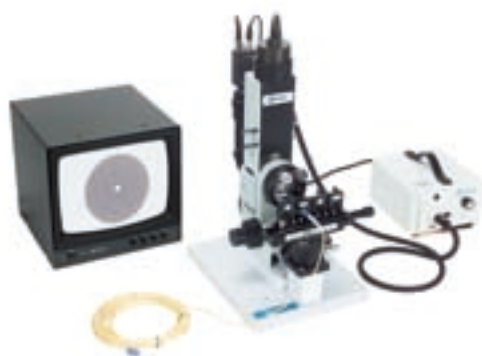
Dimensions	120(W)×260(D)×200(H)mm
Weight	Main unit:2kg, Replaceable cassette:0.5kg
PowerSupply	AC100-240V 50/60HZ
Cleaning Media	Cleaning paper, Replaceable cassette
Applicable Connector	SC/FC/ST/LC/MU connectors and ferrules PC, APC tips MT, MPO(without pins), LC-Duplex, E-2000
Life pf Cleaning Cassete	10.000 times cleaning per cassette
Cleaning time	3sec. / connector
Standard set	Main unit(1pce), Cassete(1pce), Cleaning Holder(7pcs), AC power cable(1pce), Opetating Manual(1pce)

[Microscope]

Microscope for Mass Production Use (ME2503/3200)



ME2503

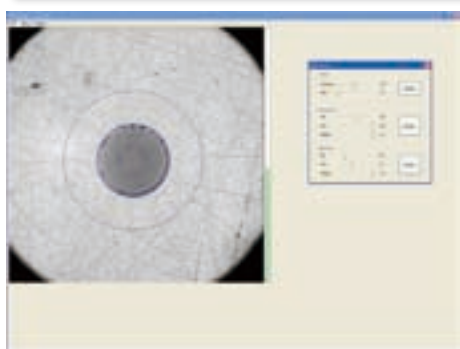
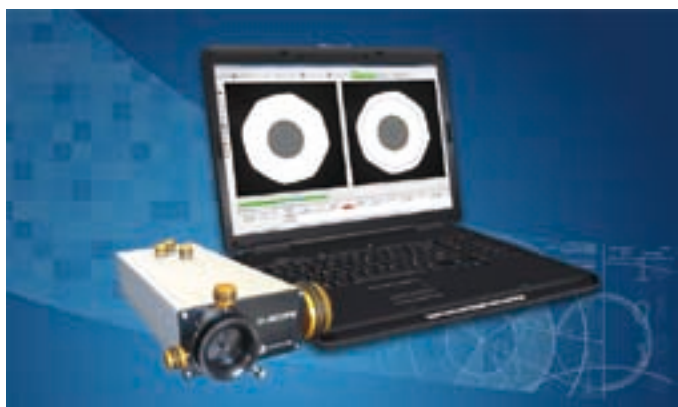


ME3200

- These video microscope systems manufactured by Micro Enterprises Inc. are ideal for use in mass production line
- Key features are easy and quick setting of inspection area, focus and magnification
- Four common adapters are furnished as standard and mounted on to the stage at a time
- Various adapters are also available as option including MT, fiber array and APC endface
- Suitable adapter can be easily selected by sliding the stage to the objective lens position
- 12" monochrome monitor is equipped as standard. Upper grade ME3200 features halogen light source and higher resolution 2/3" CCD camera that enables to monitor micro scratch more clearly

	ME2503	ME3200
Monitor	Monochrome 12" monitor	
Objective Lens	5x, 10x, 20x	5x, 10x, 20x, 40x
Magnification	200x, 400x, 800x	150x, 300x, 600x, 1200x
Connector Adapter (standard option)	φ2.5mmPC, φ2.5mmAPC, φ2.0mm, φ1.25mm	
Power	AC100V 50/60Hz	
Optional Adapter	MT, Mini-MT, MT-RJ, MPO, MPX, Array, SMA	

Microscope for Mass Production Use (D-Scope)



This unique microscope combines high quality optics with a modern and ergonomic design ideally suited to fiber optic inspection applications.

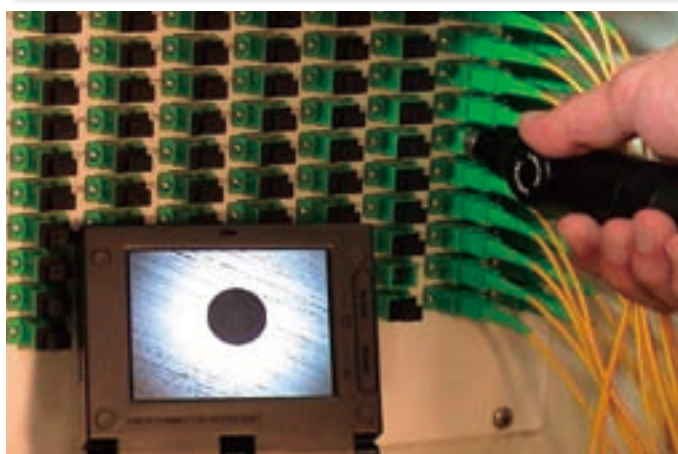
Until the D-Scope, most microscopes were suffering from poor illumination quality yielding variable and non-reproducible image quality even amongst scopes of the same kind.

- True Koehler optical design for perfectly homogeneous lighting
- D-Scope software detects in real-time the fiber location and overlays inspection zones
- Unique ability to define independent gain and contrast levels for the fiber and ferrule regions for optimized simultaneous viewing of both areas
- Adaptors for all PC & APC, SF & MF connectors
- High-speed USB 2.0 for live digital image
- Field-stop and Aperture-stop diaphragms
- Deep-blue long-life LED light source
- Ergonomic fine focus control
- Focus quality indicator in D-Scope software
- Software and Hardware automation capabilities
- Ergonomic fine focus control
- Real-time PM Fibers angular alignment measurement capability
- Real-time automated visual inspection software "Blink" (option)

CI-1100



CI-1100



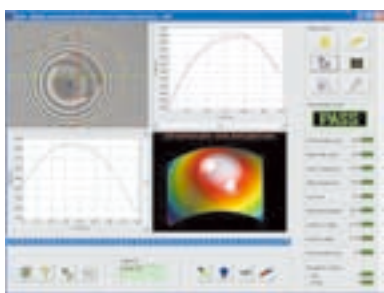
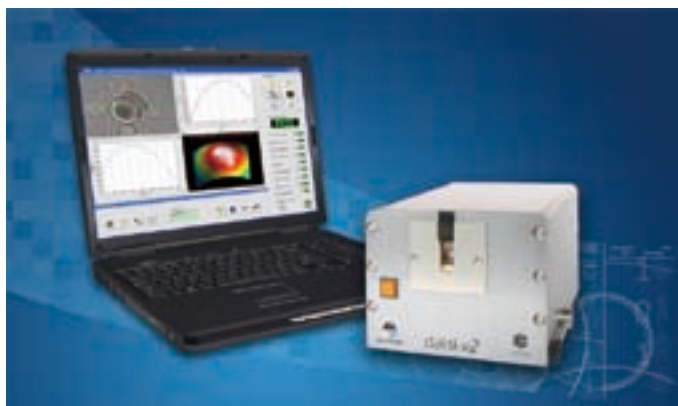
- Video microscope system ideal for installation site
- Enables the user to inspect mounted connector endface from the other side of adapter
- Connectable to a portable monitor, PC through USB and stationary monitor
- Easy adapter replacement allows the microscope to inspect a wide range of connector types
- Automated visual inspection software is available

CI-1100	
Dimension(mm)/ Weight(kg) (Scope)	175xφ32 / 0.16
Dimension(mm)/ Weight(kg)(Monitor)	105x95x45 / 0.45
Magnifications	180x (3.5"LCD)
Light Source	Blue LED
Power	110-220V 50/60Hz 9.6V AC/DC adapter Internal rechargeable battery
Battery Life	4 hours 1 hours for charging
Monitor	3.5"LCD

Optional Items	
USB Video Capture Device	Available
Connector Attachment	2.5mm ferrule, FC, SC, 1.25mm ferrule, MU, LC, MTP, MPO, MT-RJ, MT ferrule
Bunkhead Attachment	FC, SC, MU, LC, ST, MTP, MPO, MT-RJ Optional Items

[Interferometry Instrument]

DAISI V2



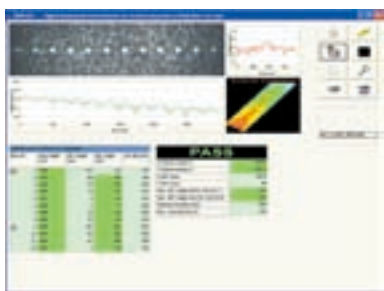
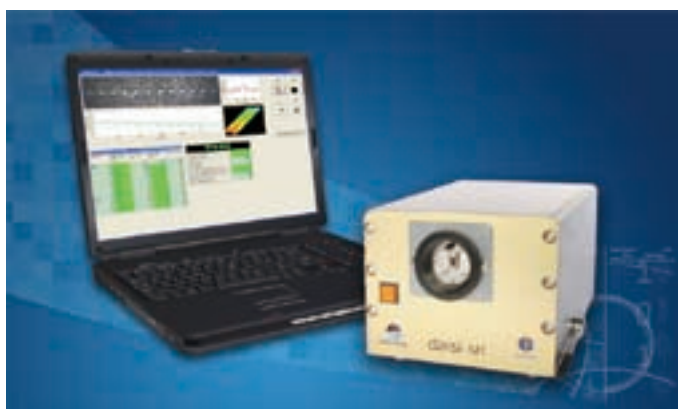
DAISI V2 (Digital Automated Interferometer for Surface Inspection) achieves the high workability and repeatability with the features such as auto-focus function, auto-calibration function and auto connector fixing system. Measuring single ferrule fiber connectors also can be conducted as well as MT-RJ connector. The use of a USB2.0 interface enables to use this system on laptop PC.

Accuracy of Geometry Measurement

Radius of Curvature	$\pm 0.2\%$
Fiber Height	$\pm 1.5\text{nm}$
Apex Offset	$\pm 1\mu\text{m}$

*One sigma values

DAISI-MT V2



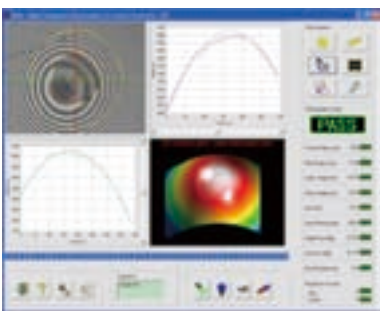
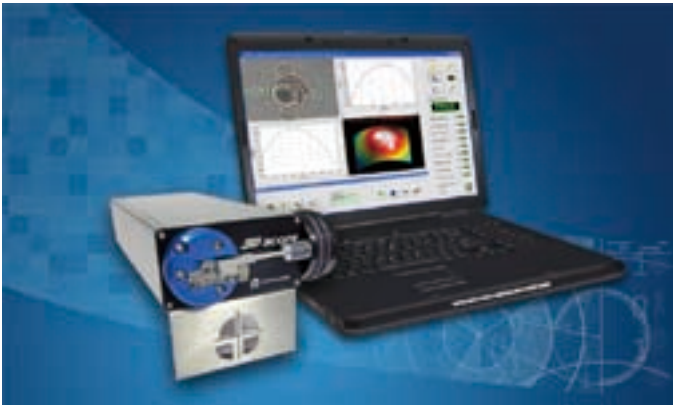
DAISI-MT V2 (Digital Automated Interferometer for Surface Inspection of MT) has same technologies as DAISI V2 while adding high resolution CCD camera to achieve excellent accuracy and repeatability for MT geometry measurement.

Accuracy of Geometry Measurement

Flatness	$\pm 0.5\%$
Polishing Angle Error	$\pm 0.01^\circ$
Fiber Protrusion/Undercut	$\pm 0.01\mu\text{m}$

*One sigma values

3D Scope



3D-Scope is the new interferometer for the use in the production environment. It was designed with speed, precision, simplicity, robustness and cost in mind.

Non-compressed, real time and high quality images are transferred from the hardware to the software via a USB2.0 high speed link in addition to the automation and control commands.

3DScope is portable and can be interfaced to laptop or desktop computers through one single USB link only (including power).

All calibration steps are automated and embedded into a user-friendly software interface in order to yield error-free and reliable measurements.

Radius of Curvature	±0.4%
Fibre Height (nm)	±2µm
Apex Offset (µm)	±1.5µm

[Eccentricity Measurement Instrument]

KONCENTRIK V2



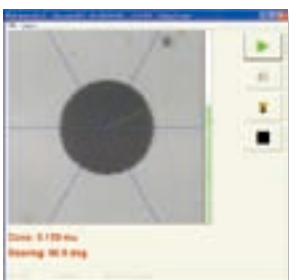
Ferrule concentricity
+ index measurement



Patchcord concentricity
+ index measurement

Multi-functional system for test and measurement of fiber optic ferrules & cable assemblies

- Fast and automated measurements
- Measurement data exported in standard CSV format
- Easy calibration and simple Konkentrik software
- Magnification : x900 or x450
- Single Link Cable (USB2.0)



	Measured parameter (unit)	Range	Accuracy
Connector Module	Eccentricity (µm)	0 to 100	±0.15 µm
	Indexing (degrees)	0 to 360	Up to 1°
	Measurement speed (seconds)	10 + (user variable)	
Ferrule Module	Eccentricity (µm)	0 to 100	±0.15 µm
	Indexing (degrees)	0 to 360	Up to 1°
	Ferrule outside φ (mm)	1 to 4	
	Ferrule bore φ (µm)	5 to 500	
	Measurement speed (seconds)	3 + (user variable)	

[Optical Electric Field Sensor]

Isotropic Miniaturized 3 Axis Optical Electric Field Sensor (SH-10EL)

Isotropic Miniaturized 3 Axis Optical Electric Field Sensor (SH-10EL) can measure an electric field strength by laser light without supplying electricity to the sensor head.

3 directional antennas are installed in the very small housing ($\phi 12\text{mm}$) and it enables a narrow space electrical field strength measurement in 3 dimensions.

It can calculate a synthesized electrical field strength by measuring 3 directional electrical field strength.

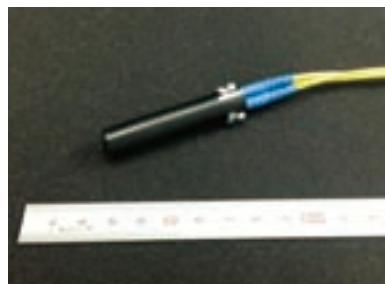
This system enables a highly accurate electrical field strength measurement which has never been before without distorting the surrounding electrical field strength.

This can be realized thanks to the sensor head (which does not contain a metal except for the thin film antenna and mirror) and its signal transmission by optical fiber.

In addition to the electrical field strength, frequency and phase can be measured as well.

Special fixing jig enables the electrical field measurement for horizontal directions (X and Y) and vertical direction (Z).

Please contact us for the electrical field strength measurement which frequency is lower than 200MHz.



Specifications

Electrical Strength	0.5 ~ 25,000V/m
Frequency Response	200M ~ 10GHz
Maximum Input	50,000V/m
Isotropy	$\pm 0.5\text{dB}$ individual output from 3 directional antennas
Sensor Size	$\phi 12 \times 70\text{mm}$
Performance Warranty Temperature	20 ~ 30°C

*Above specification can be measured by Controller (C3-1055) with sensor head (SH-10EL).

Isotropic High-sensitive 3 axis Optical Electric Field Sensor (SH-03EX)

Isotropic High-sensitive 3 Axis Optical Electric Field Sensor (SH-03EX) can measure an electric field strength by laser light without supplying electricity to the sensor head.

Compared with the prior model, this sensor head improves the directional characteristic for each 3 antenna with high accuracy even over the GHz frequency measurement.

This can be realized thanks to the high-performance forming material which is used for the housing.

3 directional antennas are installed in the small housing ($\phi 30\text{mm}$) and it enables a narrow space electrical field strength measurement in 3 dimensions.

It can calculate a synthesized electrical field strength by measuring 3 directional electrical field strength.

This system enables a highly accurate electrical field strength measurement which has never been before without distorting the surrounding electrical field strength.

This can be realized thanks to the sensor head (which does not contain a metal except for the thin film antenna and mirror) and its signal transmission by optical fiber.

In addition to the electrical field strength, frequency and phase can be measured as well.

Special fixing jig enables the electrical field measurement for horizontal directions (X and Y) and vertical direction (Z).



Specifications

Electrical Strength	0.06 ~ 100V/m
Frequency Response	100kHz ~ 300MHz
Electrical Strength	0.002 ~ 100V/m
Frequency Response	300MHz ~ 3GHz
Maximum Input	200V/m
Isotropy	$\pm 1.0\text{dB}$ individual output from 3 directional antennas
Sensor Size	$\phi 30 \times 75\text{mm}$
Performance Warranty Temperature	20 ~ 30°C

Isotropic Wide Range 3 Axis Optical Electric Field Sensor (SH-10EX)

Isotropic Wide Range 3 Axis Optical Electric Field Sensor (SH-10EX) can measure an electric field strength by laser light without supplying electricity to the sensor head.

This sensor head is suitable for immunity test thanks to its stability of isotropy for all the frequency bands especially for 100kHz ~ 10GHz.

3 directional antennas are installed in the housing ($\phi 40\text{mm}$) and it enables a narrow space electrical field strength measurement in 3 dimensions.

It can calculate a synthesized electrical field strength by measuring 3 directional electrical field strength.

This system enables a highly accurate electrical field strength measurement which has never been before without distorting the surrounding electrical field strength.

This can be realized thanks to the sensor head (which does not contain a metal except for the thin film antenna and mirror) and its signal transmission by optical fiber.

In addition to the electrical field strength, frequency and phase can be measured as well.

Special fixing jig enables the electrical field measurement for horizontal directions (X and Y) and vertical direction (Z).



Specifications

Electrical Strength	0.3 ~ 500V/m
Frequency Response	100kHz ~ 300MHz
Electrical intensity	0.01 ~ 500V/m
Frequency Response	300MHz ~ 10GHz
Maximum Input	1,000V/m
Isotropy	$\pm 1.0\text{dB}$ individual output from 3 directional antennas
Sensor Size	$\phi 40 \times 75\text{mm}$
Performance Warranty Temperature	20 ~ 30°C

*Above specification can be measured by Controller (C3-1055) with sensor head (SH-10EX).

Optical Probe Head (PH-0255, PH-0455M, PH-0655)

Optical Probe Head (PH-0255, PH-0455M, PH-0655) can measure an electricity from any small antenna which is installed on this probe head via SMA connector.

This probe head can directly convert E/O signal and transfer the optical signal to Controller through optical fiber.

This system enables a highly accurate measurement of the electrical voltage, frequency and phase thanks to the optical fiber signal transmission which can shut out the common mode noise intrusion.

Depending on the transmitting frequency band, we can provide three types of optical probe heads.



Specifications

Sensor Size (metal portion)	10 × 10 × 20mm	
Measurement Frequency Range	300k ~ 2GHz	PH-0255
	300k ~ 4GHz	PH-0455M
	300k ~ 6.5GHz	PH-0655
Transmission Loss	5 ±5dB	PH-0255
	10 ±5dB	PH-0455M
	15 ±5dB	PH-0655
Stability	±0.2dB (24°C, 5hrs)	

Special Optical Probe for the measurement of MIMO (2CH)

This system is developed to measure the reception performance of MIMO (2CH) antenna which has been installed in LTE-capable cell-phone unit.

It enables a measurement of antenna outputs and phases from different 2CH simultaneously thanks to WDM technology.

It also enables a measurement of antenna outputs and phases from different 2CH simultaneously in times of infinite rotational motion thanks to its optical rotary joint.

Please contact us for the details of the performance.



Controller



C3 - 10 55

Laser Wavelength: 53 (= 1.53um), 55 (= 1.55um)
Upper Limit Frequency: 10 (= 10GHz), 03 (= 3GHz)

Controller should be used in combination with either Optical Electric Field Sensor or Optical Probe Head.

Controller is available in two types of frequency range, one is for 100kHz ~ 3GHz and the other for 100kHz ~ 10GHz.

We use 1.55um laser wavelength as standard but 1.53um laser wavelength is available optionally.

We use 20mW laser power which is categorized class 3B for the laser safety, however, it can be assured the safest class 1 in case the laser light leaks to outside thanks to the protective function.

[Optical Remote Antenna System (RoF Unit L Series)]

Optical Remote Antenna System (RoF Unit L Series) can transmit an optical signal between Receiving Unit and Transmitting Unit through optical fiber.

RF signal is directly converted to the optical signal via E/O conversion in the receiving unit which does not require a power source. This system allows a freedom of the receiving point location only extending the optical fiber.

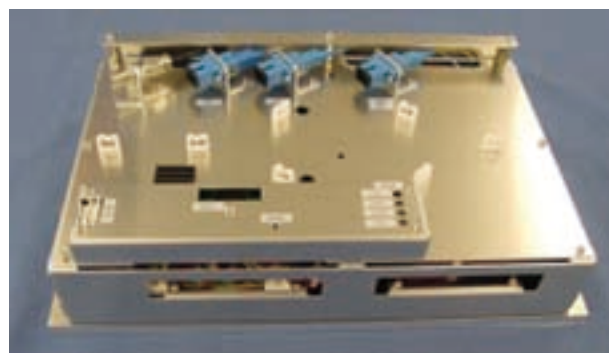
It can be used for various fields such as a countermeasure for the purpose of overcoming unperceivable RF signal issue.

Standard Specifications

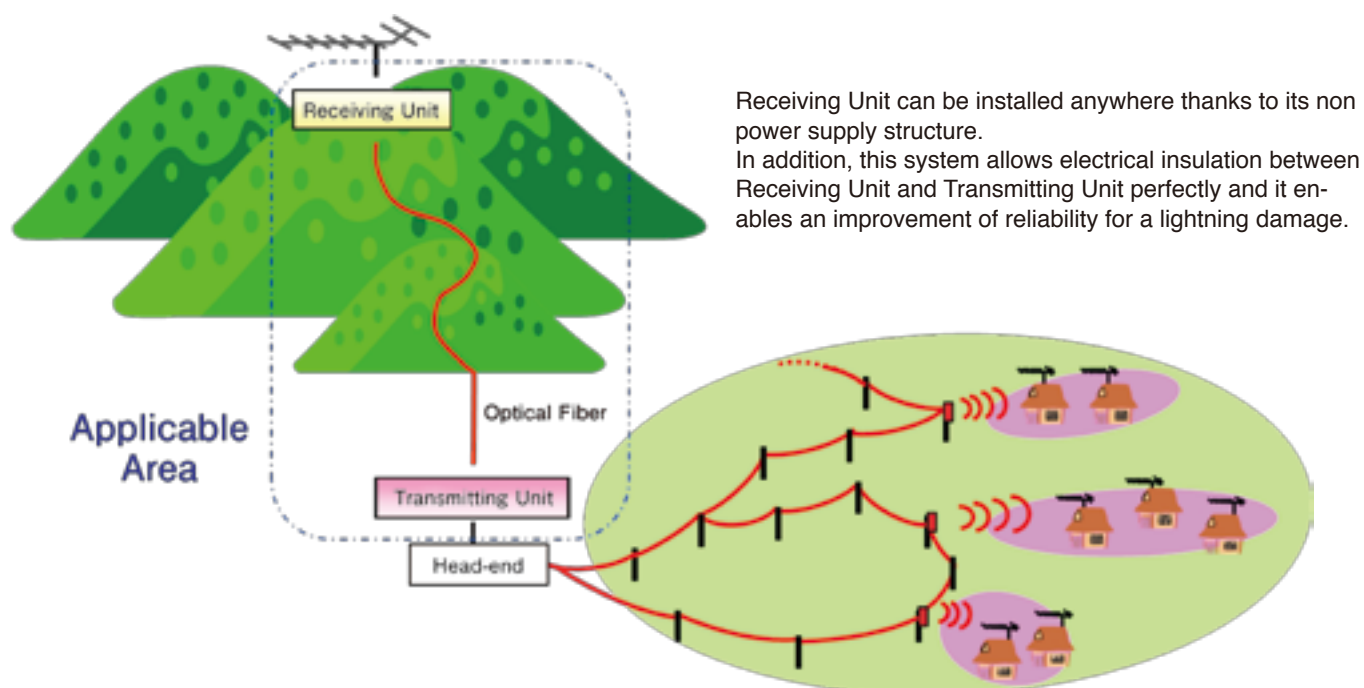
Transmission Channel	13 ~ 52ch (470 ~ 710MHz)
Max RF Input Level	-35dBm (Total input power)
RF Output Level	RF Input Level +10dB (0 ~ -10dB Variable)
RF Input/Output impedance	75Ω Imbalance
Optical Connector	SC/SPC (ORL \geq 40dB) 3Port
RF Input/Output connector	Input : F/J (1port) Output : F/J (1port)
Noise Figure	5dB typ.
IM3	\leq -46dBc
Transmission Distance	\leq 3km
Performance Warranty Temperature	-10 ~ +40°C
Power Supply	DC+5V, Below 35W
Used Fiber	SC/SPC both ends SFM 3pcs
Dimension	Transmitting Unit : 286 × 73.1 × 170 (mm)*
	Receiving Unit : 72.5 × 40 × 179 (mm)*



LTR-240 Receiving Unit



LTR-20B Transmitting Unit



[Optical Remote Antenna System / SHF and FM band]

Optical Remote Antenna System can transmit an optical signal between Receiving Unit and Transmitting Unit through optical fiber. RF signals at each frequency are directly converted to the optical signal via E/O conversion in the receiving unit which does not require a power source.

This system enables a long-distance transmission of RF signals at each frequency without power supply through optical fiber.

Standard Specifications

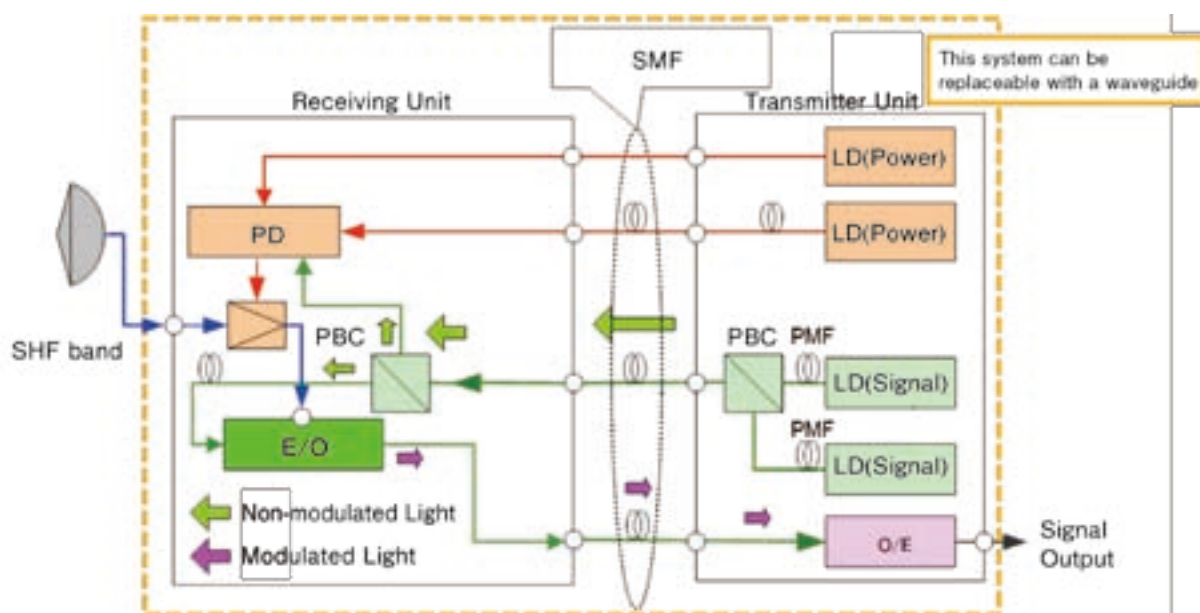
Items	SHF Band Unit	FM Band Unit	UHF Band Unit
Transmission Signal	SHF band	FM band	UHF band
Max RF Input Level	-40dBm (Total input power)	-27dBm/ch	-27dBm/ch
RF Output Level	RF Input Level +10dB (0 ~ -10dB Variable)	RF Input Level +10dB (0 ~ -10dB Variable)	RF Input Level +10dB
RF Input/Output impedance	50Ω Imbalance	50Ω Imbalance	50Ω Imbalance
Optical Connector	FC/SPC (ORL ≥ 40dB)	FC/SPC (ORL ≥ 40dB)	FC/SPC (ORL ≥ 40dB)
RF Input/Output connector	Input : N/J Output : N/J	Input : N/J Output : TNC/J	Input : N/J Output : TNC/J
Noise Figure, C/N	Noise Figure : 5dB typ.	C/N : 55dB typ.	Noise Figure : 5dB typ.
IM3	≤ -36dBc	—	≤ -50dBc
Transmission Distance	≤ 1km (Please contact us above 1km need)	≤ 1km (Please contact us above 1km need)	≤ 3km
Performance Warranty Temperature	-10 ~ +45°C	-10 ~ +45°C	-10 ~ +45°C
Power Supply	DC+48V, 80VA	DC+48V, 80VA	DC+48V, 80VA
Used Fiber	FC/SPC both ends SFM 4pcs	FC/SPC both ends SFM 3pcs	FC/SPC both ends SFM 3pcs (For Wtype 5pcs)
Dimension	Transmitting Unit(MTU-50N):480x322x149(mm)	Transmitting Unit(ORA-3ST(F)):480x322x99(mm)	Transmitting Unit(5ST-50):480x320x99(mm)
	Receiving Unit(MRB-67N):381.5x162x341.5(mm)	Receiving Unit(FRB-14):584x169.5x442(mm)	Receiving Unit(SRU-60):480x230x49(mm)



SHF Band Receiving Unit (MRB-67N)



SHF Band Transmitting Unit (MTU-50N)



This system easily enables a long-distance transmission by replacing a waveguide transmission with an optical fiber transmission. This system is also suitable for an installation of tentative receiving point thanks to its optical fiber for easy laying and dismantlement.

■ JAPAN

SEIKOH GIKEN Co.,Ltd.

296-1, Matsuhidai, Matsudo-Shi,
Chiba, 270-2214 JAPAN

TEL: +81-47-388-6111

FAX: +81-47-388-4477

E-mail:sales.div@seikoh-giken.co.jp

URL:http://www.seikoh-giken.co.jp



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■ U.S.A.

SEIKOH GIKEN USA, Inc.

4405 International Blvd., Suite B109

Norcross, GA 30093 USA

TEL: +1-770-279-6602 FAX: +1-770-279-8839

E-mail:sales@sg-USA.com

URL:http://www.sg-USA.com

■ EUROPE

SEIKOH GIKEN Europe GmbH

Siemensstrasse 9, D-63263 Neu-Isenburg, Germany

TEL: +49-6102-297-701 FAX: +49-6102-297-750

■ CHINA

SEIKOH GIKEN Hangzhou Co.,Ltd.

526 Binkang Road Binjiang District, Hangzhou, Zhejiang,
China 310052, P.R. China

TEL: +86-571-8777-4098 FAX: +86-571-8777-4099