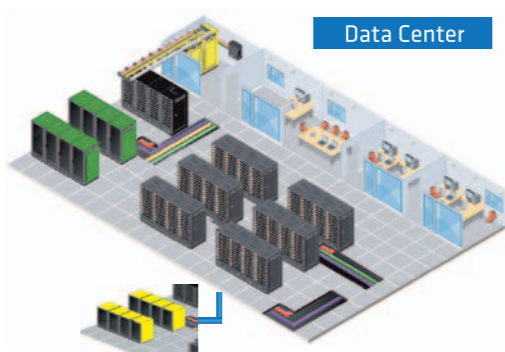## 4th Level™ product concept

The "4" of 4th Level comes from "Tier 4", which shows the highest grade of reliability for Data Center facility.
Sumitomo Electric offers 4th Level products for efficient cabling and removal of cable congestion so that we can contribute Data Center improvements of the entire reliability, the power consumption and the total cost.

Data Center

4th Level™
Network Solutions

Cabling Solution for Data Center

SUMITOMO ELECTRIC INDUSTRIES, LTD.

SUMITOMO ELECTRIC GROUP

4th Level™ Network Solutions
Reliable and easy-to-use Data Center cabling solution

Features and advantages

MPO connector solution →P16

Multi-fiber MPO connector for trunk cable connection
Much compact cable end than LC or SC termination
✓Make installation work of Plug & Play cable smooth
✓Realize high density and quick termination at rack

8-core cabling solution, 4th Level™-8Core
✓40G upgrade from 10G keeping same trunk cable
✓Low insertion loss 40G configuration without cassette

MPO connectorized cable   MPO cassette

| 40G 40GBASE-SR4 10G×4 | Q8MPO-8MPO Patch Cord | MPO Adaptor | 8MPO Trunk cable | MPO Adaptor | Q8MPO-8MPO Patch Cord | 40G 40GBASE-SR4 10G×4 |
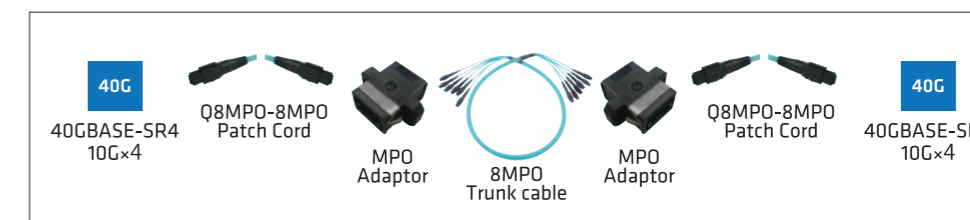
40G 8-core cabling solution

Q8MPO connector for QSFP+

Field installable connector solution →P22

Lynx2 CustomFit™ splice-on connector
Can decide cable length exactly at site by field termination
✓Remove cable congestion in and around rack
✓Make easy install, move, add and change of connection

Just use standard bulk cable and connector kit
✓Short product lead time by no custom-made cables

Lynx2-LC

Lynx2-MPO

Conventional cabling solution   Field installable connector solution

CONTENTS

SUMITOMO ELECTRIC

2

4th Level™ cabling solution for Data Center

As a pioneer of optical cable, Sumitomo Electric offers Data Center cabling solution with high quality and easy-to-use products.

Main Distribution Area (MDA)

MDA Cable aggregation area to terminate outside plant cables of telecom operators and to distribute the lines to each floor, each user, cloud service areas etc by trunk cables.

Zone Distribution Area (ZDA)

ZDA In ZDA, cables from MDA are connected and distributed to user racks etc in each floor.

User Area / Equipment Distribution Area (EDA)

EDA User network area having equipment such as switch, server and storage.

To outside network

Small-scale user

Large-scale user

MDF

MDF

IDF

User rack

Network rack (Switch)

Cabling rack

Server rack (Server / Storage)

Cabling solution

MPO connector solution

Realize high density cabling by MPO connector

Plug & Play
Simplify and shorten cable connection work by MPO cable

MPO splice-on connector
Install MPO at field to remove cable congestion

19-inch panel →P9
MPO cassette →P11
High strength cord →P13
MPO cable →P16
Break-out cable for MPO →P18
Lynx2-MPO →P22
MPO cassette →P11
High strength cord →P13

Ribbon splice solution

Splice fan-out assembly to ribbon cable for efficient connection work

Ribbon slot cable →P6
19-inch panel →P9
High strength cord →P13
Ribbon slot cable →P6
19-inch panel →P9
High strength cord →P13

Single fiber connector solution

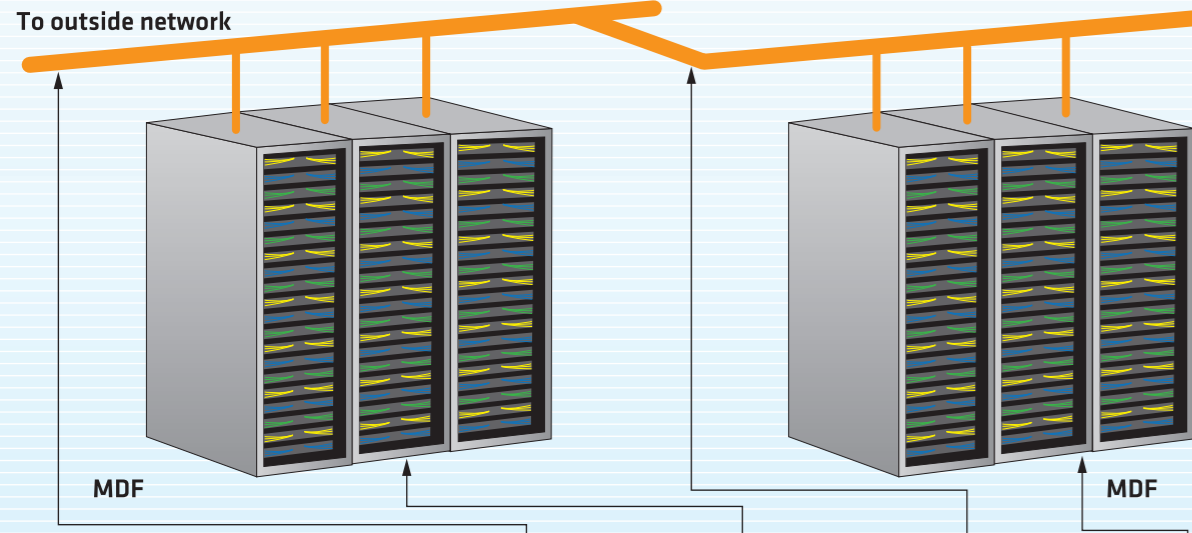Single fiber connection by connectorized cable or field installable connector

Plug & Play
Simplify cable connection work by connectorized cable

Single fiber splice-on connector
Install SC/LC at field to remove cable congestion

19-inch panel →P9
High strength cord →P13
Connectorized cable →P14
Break-out cable (cord) →P14
Lynx2-LC Lynx2-SC →P22
19-inch panel →P9
High strength cord →P13

ZDA:
MPO cable →P16
Break-out cable for MPO →P18
Lynx2-MPO →P22
MPO cassette →P11
High strength cord →P13
LED identifiable connector →P15
Ribbon slot cable →P6
19-inch panel →P9
High strength cord →P13
LED identifiable connector →P15
Connectorized cable →P14
Lynx2-LC Lynx2-SC →P22
19-inch panel →P9
High strength cord →P13
LED identifiable connector →P15

EDA (Small-scale user):
Ribbon slot cable →P14
High strength cord →P13
19-inch panel →P9
High strength cord →P13
LED identifiable connector →P15

EDA (Large-scale user):
MPO cable →P16
Break-out cable for MPO →P18
Lynx2-MPO →P22
19-inch panel →P9
High strength cord →P13
Ribbon slot cable →P6
Connectorized cable →P14
Break-out cable (cord) →P14
Lynx2-LC Lynx2-SC →P22

Network rack:
MPO cassette →P11
High strength cord →P13
LED identifiable connector →P15
19-inch panel →P9
High strength cord →P13
LED identifiable connector →P15
19-inch panel →P9
High strength cord →P13
LED identifiable connector →P15

Universal products

Cabling rack (MDF, IDF, Network rack) →P8
Rack accessories →P12
Connector cleaner →P20
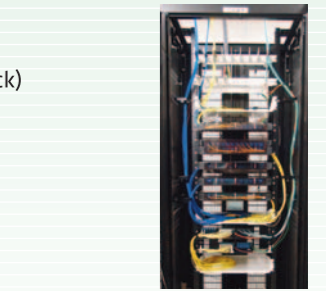
Fusion splicer
T-81C
T-71M →P26～P29

DCIM product

Management tool for Data Center infrastructure and temperature sensor

Total management system [iDC Visual Manager]

Fiber optic temperature distribution sensor [OP Thermo FTR3000] →P30

Slotted core ribbon cable

Ribbon cable suitable to outside cable termination in MDA and multi-fiber connection between MDF and IDF or inter-connection in EDA.

Optional	Optional	Optional	
PE sheath	Water blocking	Flame retardant	Metal free

- Small diameter and light weight by slotted design for fiber ribbon.
- Efficient ribbon splice available.
- Water blocking available by dry water swellable tape.
- Other fiber count available upon request.

300 fiber type

800 fiber type

1200 fiber type

4-fiber ribbon type (SZ)

Fiber count	24	60	100	200	300
Fiber diameter [mm]			0.25		
Cable diameter [mm] *	8.5	9.5	11.5	15.5	20.5
Cable weight [kg/km]*	65	75	110	180	320
Strength member [mm]	1.4	1.6	2.0	2.3	2.6
Maximum load [N]	900	1180	1850	2440	3120
Bending radius [mm] After installation	85	95	115	155	205
Bending radius [mm] During installation	170	190	230	310	410

8-fiber ribbon type (SZ)

Fiber count	400	640	800
Fiber diameter [mm]		0.25	
Cable diameter [mm] *	20	22	28.5
Cable weight [kg/km]*	290	400	600
Strength member [mm]	2.6	7/1.4	
Maximum load [N]	3120	5700	
Bending radius [mm] After installation	200	220	285
Bending radius [mm] During installation	400	440	570

8-fiber ribbon type (Helical)

Fiber count	1000	1200
Fiber diameter [mm]	0.25	
Cable diameter [mm] *	23	31
Cable weight [kg/km]*	420	830
Strength member [mm]	7/1.2	7/2.0
Maximum load [N]	4190	11600
Bending radius [mm] After installation	230	310
Bending radius [mm] During installation	460	620

* Values of PE sheath cable.
Note: Values for some types may differ from the above tables. Please contact us for your specific inquiry.

Ordering information

4-fiber ribbon type (SZ)	[Fiber count] [Fiber type] - SZ4R(EZB) - WB - E Ex. 300SM(PAPB)-SZ4R(EZB)-WB-E
8-fiber ribbon type (SZ)	[Fiber count] [Fiber type] - SZ8R(EZB) - WB - E Ex. 800SM(PAPB)-SZ8R(EZB)-WB-E
8-fiber ribbon type (Herical)	[Fiber count] [Fiber type] - TS8 - WB - E Ex. 1000SM(PAPB)-TS8-WB-E

Available fibers	※1 SM	PAPB	※2 1G	※2 10G	※2 10G+

※1 Except 400, 640 and 800 fiber types.
※2 Available to 24, 60 and 100 fiber types.

"SZ slotted core ribbon cable" for easy mid-span joint

- Sicne required fiber ribbons can be picked up at any point of the cable without cable cutting, mid-span joint is easily available for demand increase after the cable installation.

What is "SZ slotted core"?

Optical cable is usually twiested the fiber in spirals, hence it is difficult to pick up some fiber at middle of the cable. The SZ slotted core ribbon cable has the twisted fiber with periodically reversed direction. This makes fiber ribbon to be picked up easily from middle of the cable.

Standard (helical) slotted core ribbon cable

Slot

Fiber ribbon

SZ slotted core ribbon cable
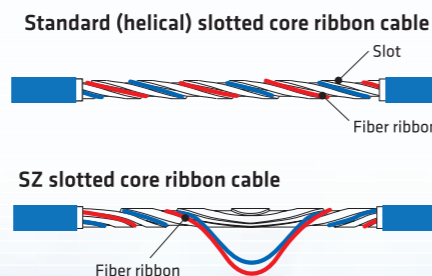
Fiber ribbon

19-inch cabling rack is used for cable termination of large cabling network in MDA or ZDA or EDA.
Cabing rack products of Sumitomo Electric realize reliable and quick cable installation by the following features.

①Optical panel Y-OP4 series

Panel to terminate ribbon cable and to connect it to SC/LC connectors.
Y-OP4 series with pre-terminated fan-out (FO) realize reliable and quick cable connection.

⇒P. 9, 10

②MPO Cassette ・ MPO Connectorized cable

MPO cassette is to connect MPO connectorized cable and SC/LC patchcord by built-in FO assembly.
MPO connector realizes easy multi-fiber connection and max 192 fiber termination in 1U panel.

⇒P. 11, 16～21

③High strength optical cord/cable

High strength optical cord/cable for patchcord and connectorized cable in and between rack.
Realize high reliability wiring as resistant to kink and binding.

⇒P. 13

④Accessories for 19 inch rack

Wide range rack accessories including cable fixture, cable management panel etc.
Enable various cable routing and termination in rack.

⇒P. 12

Example of cabling rack products
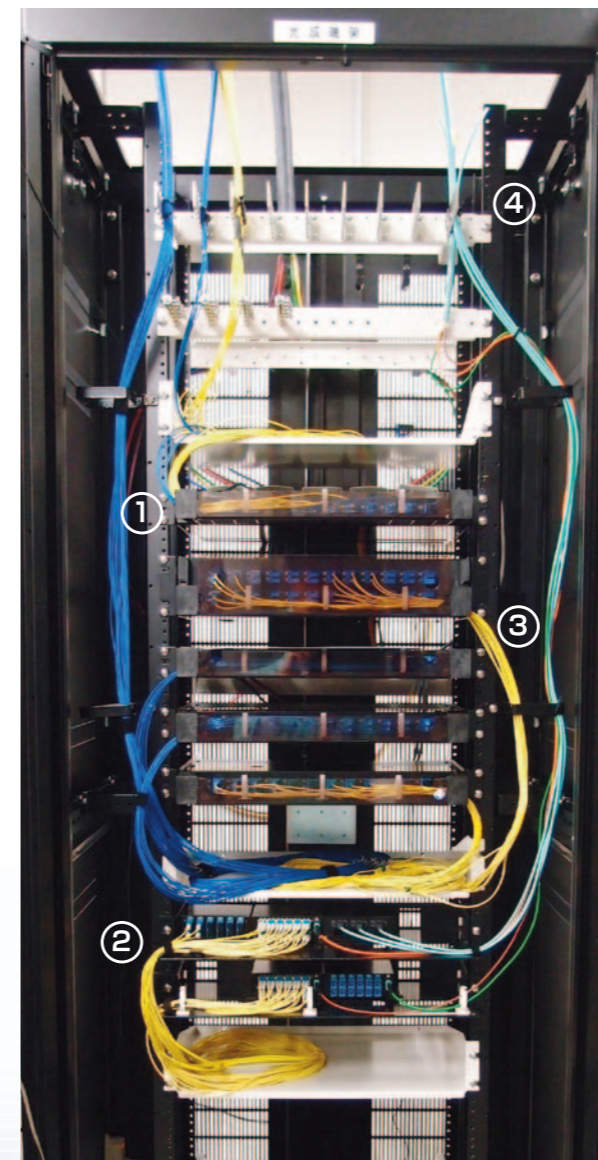
Cabling rack products

To outside network

Slotted core ribbon cable

Breakout cable

To ZDA

Trunk cable with MPO connectors

Cable clamp panel

④ Accessories for 19-inch rack

Excess length storage panel

Splice

Pre-terminated FO fibers

①Optical panel Y-OP4 series

Cable management panel

③High strength optical cord/cable

Pre-terminated FO fibers

②MPO cassette Cassette base

MPO connector for easy multi-fiber connection

Cabling model

19-inch network rack / cabling rack

The 19 inch rack suitable to cabling and mounting of network equipment in Data Center.

■ 600mm width and 800mm width types available.
■ The height can be choosen from 42U, 45U and 47U types.
■ Light weight and strong structure.
■ Split level side panels for convenient access to installed equipment.

■ Dimensions conform to EIA-310E, IEC-60297-2.
■ Tested to salt spray under ASTM-D610-01 and ASTEM-B117.
■ All materials comply to RoHS requirement.

Type	600mm width			800mm width		
Depth	1,000mm			1,000mm		
Height	42U	45U	47U	42U	45U	47U
Overall height: mm	1,994	2,127	2,216	1,994	2,127	2,216
Usable rack height	42U	45U	47U	42U	45U	47U
Net weight: kg	102	106	108	121	129	135
Maximum mounting depth: mm	890	890	890	890	890	890
Static load: kg	1,400	1,400	1,400	1,000	1,000	1,000

800mm width type   600mm width type

Optical panel [Y-OP4 series] NEW

■ Fiber-slack slide system

■ High-density capacity allowing 100 fibers in 2U by SC connector

■ The lightweight housing of aluminum and plastic enables the installation by single person.

■ Applicable for EIA/JIS-standard 19-inch rack.

· Various cable supports and cable management parts are available as options.

Splice tray
· Max 12 splices of single fiber or 6 splices of 4-fiber ribbon per tray.
· Can reduce the cord-end preparation time for termination.
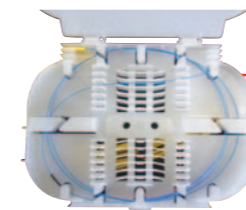
Cable guide
· Protect fiber and cord when connection unit is slide.

Cable clamps
· Add on for type up to 4 cables.
· Optional type:Max 6 cables in 1U, Max 12 cables in 2U.
· Clamp for indoor and drop cables are available.
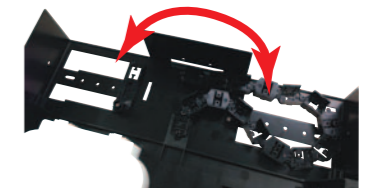
Easy change of cable-entry direction from right to left side

Adjustable bracket
· The mounting position of the bracket can be adjusted at 25-mm intervals.

Front cord support, front panel (Option)
Product name:
For 1U : OP4-1FTR
For 2U : OP4-2FTR
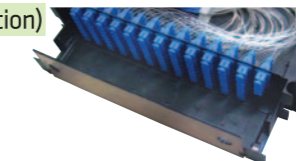
Cable clamps (Option)

Multi cable clamp kit

For 6 cables

For 12 cables (2U only)
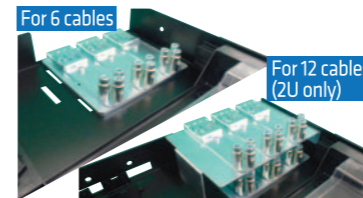
· Cable entry capacity : 6 or 12 cables
Applicable cable diameter : ≤14mm
Product name:
For 6 cables:OP4-MCL3
For 12 cables:OP4-MCL6

Rear mounting cable clamp kit

Vertical mounting

Horizontal mounting
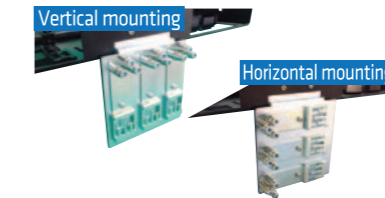
· Cble entry capacity : 2 or 6 cables
Applicable cable diameter : ≤14mm
Product name:
For 2 cables : OP4-RCL1
For 6 cables : OP4-RCL3

Drop cable clamp kit

For 24 cables

For 48 cables (2U only)
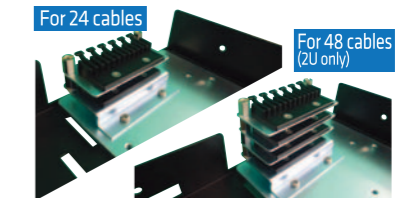
· Cable entry capacity : 24 or 48 cables
Applicable cable diameter :
1.8 ~ 2.5 x 3.0 ~ 4.5mm
Product name:
For 24 cables:OP4-DCL24
For 48 cables:OP4-DCL48

Features and benefits of pre-terminated system

Pre-terminated type Y-OP4 panels have Fan-out pigtails (for ribbon cable) or Pigtails (for single fiber cable) pre-installed at factory.

■ No need of pigtail installation at site simplifies and shortens the cable installation work.
■ Inspection of all pre-terminated fibers before shipment supports the improvement of installation quality.
■ Pre-terminated pigtails adopt bend insensitive fibers so that the compact wiring can achieve high density termination.

Comparison of processes				
Conventional Pigtail-splice on site	Cable-end preparation and fixing	Pigtail-end preparation and storage	Splice to terminate	Installation of outgoing cables
Pre-terminated system	Cable-end preparation and fixing		Splice to terminate	Installation of outgoing cables

This portion can be skipped

[Example] 85 minutes can be reduced in case of 200-fiber cable with 4-fiber ribbons

Pre-terminated system   Pre-terminated module

19-inch rack-mounted optical panel

Pre-terminated type with FO cords [Y-OP4-PC4FO]

■ Termination panelfor 4-fiber ribbon cable. 2-,8-fiber types available.
■ Pre-terminated type with simplified 4-fiber Fan-Out(FO) cords.
■ Simplify and shorten the cable installation work
■ Easy termination just by 4-fiber ribbon splicing to pre-installed FO cords.
■ Easy to add/remove pre-installed FO cords and able to use common FO cords together.

Pre-installed FOcords
Incoming cable   Splice
FO cords factory-installed
Outgoing cords
Pre-installed FO cords

Simplified FO pre-wired
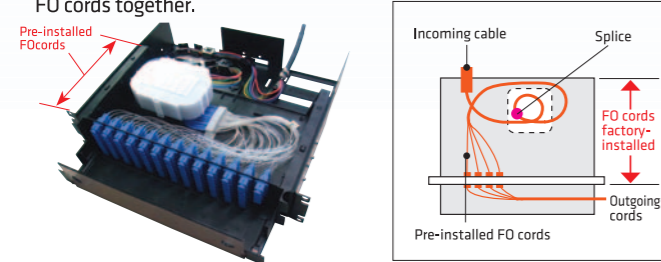
＊ Front panal is optional.
＊ The product does not include cables or cords other than the pre-installed FO.

For SC   [SC] [SPC] [APC]

Type	1U		2U	
Product name	Y-OP4-PC4FO〈24C〉〈P1〉〈P2〉〈P3〉(○)	Y-OP4-PC4FO〈40C〉〈P1〉〈P2〉〈P3〉(○)	Y-OP4-PC4FO〈48C〉〈P1〉〈P2〉〈P3〉(○)	Y-OP4-PC4FO〈100C〉〈P1〉〈P2〉〈P3〉(○)
Configuration	Splice + Connector			
Splice capacity (4-fiber ribbon)	6 splices (24 fibers)	10 splices (40 fibers)	12 splices (48 fibers)	25 splices (100 fibers)
Connector/adapter type	SC/SPC, SC/APC			
Weight	Approx. 3.0kg		Approx. 3.5kg	Approx. 4.0kg

For LC   [LC] [SPC]

Type	1U	2U
Product name	Y-OP4-PC4FO〈48C〉〈LC〉〈P1〉〈P2〉(○)	Y-OP4-PC4FO〈96C〉〈LC〉〈P1〉〈P2〉(○)
Configuration	Splice + Connector	
Splice capacity (4-fiber ribbon)	12 splices (48 fibers)	24 splices (96 fibers)
Connector/adapter type	LC/SPC	
Weight	Approx. 3.0kg	Approx. 4.0kg

(Note) P1, P2 and P3 are defined in a box of the next page

Pre-terminated type with FO fibers [Y-OP4-PFO]

■ Termination panel for 4-fiber ribbon cable. 2-,8-fiber types available.
■ Pre-terminated type with 4-fiber Fan-Out(FO) fibers.
■ Simplify and shorten the cable installation work
■ Easy termination just by 4-fiber ribbon splicing to pre-installed FO fibers.

Pre-installed FO fibers
Incoming cable   Splice
FO cords factory-installed
Outgoing cords
Pre-installed FO fibers

Pre-terminated system

For SC   [SC] [SPC] [APC]
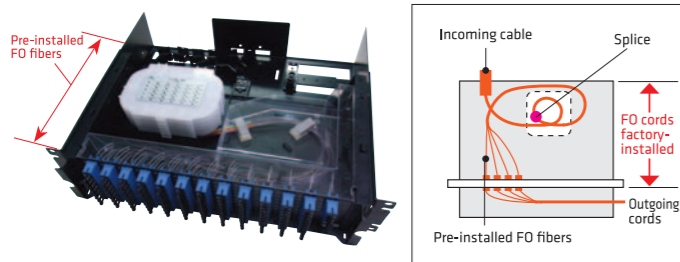
Type	1U		2U	
Product name	Y-OP4-PFO〈24C〉〈P1〉〈P2〉〈P3〉(○)	Y-OP4-PFO〈40C〉〈P1〉〈P2〉〈P3〉(○)	Y-OP4-PFO〈48C〉〈P1〉〈P2〉〈P3〉(○)	Y-OP4-PFO〈100C〉〈P1〉〈P2〉〈P3〉(○)
Configuration	Splice + Connector			
Splice capacity (4-fiber ribbon)	6 splices (24 fibers)	10 splices (40 fibers)	12 splices (48 fibers)	25 splices (100 fibers)
Connector/adapter type	SC/SPC, SC/APC			
Weight	Approx. 2.5kg		Approx. 3.5kg	

For LC   [LC] [SPC]

Type	1U	2U
Product name	Y-OP4-PFO〈48C〉〈LC〉〈P1〉〈P2〉(○)	Y-OP4-PFO〈96C〉〈LC〉〈P1〉〈P2〉(○)
Configuration	Splice + Connector	
Splice capacity (4-fiber ribbon)	12 splices (48 fibers)	25 splices (100 fibers)
Connector/adapter type	LC/SPC	
Weight	Approx. 2.5kg	Approx. 3.5kg

(Note) P1, P2 and P3 are defined in a box of the next page
＊ Passive components such as splitter cab be accommodated. Please contact us for the detail.

Conventional type for 4-fiber ribbon cable [Y-OP4-FO]

■ Termination with common FO cords suitable for 4-fiber ribbon cable.

Common FO cords installed on site
Incoming cable   Splice
FO cords Installed on site
Outgoing cords
FO cord
＊ Need to prepare FO cords separately

＊ The product does not include cables or cords other than the module.

For SC   [SC] [SPC] [APC]

Type	1U		2U	
Product name	Y-OP4-FO〈24C〉〈P1〉〈P2〉(○)	Y-OP4-FO〈40C〉〈P1〉〈P2〉(○)	Y-OP4-FO〈48C〉〈P1〉〈P2〉(○)	Y-OP4-FO〈100C〉〈P1〉〈P2〉(○)
Configuration	Splice + Connector			
Splice capacity (4-fiber ribbon)	6 splices (24 fibers)	10 splices (40 fibers)	12 splices (48 fibers)	25 splices (100 fibers)
Connector/adapter type	SC/SPC, SC/APC			
Weight	Approx. 2.5kg		Approx. 3.5kg	

For LC   [LC] [SPC]

Type	1U	2U
Product name	Y-OP4-FO〈48C〉〈LC〉〈P1〉(○)	Y-OP4-FO〈96C〉〈LC〉〈P1〉(○)
Configuration	Splice + Connector	
Splice capacity (4-fiber ribbon)	12 splices (48 fibers)	24 splices (96 fibers)
Connector/adapter type	LC/SPC	
Weight	Approx. 2.5kg	Approx. 3.5kg

(Note) P1, P2 and P3 are defined in a box of the next page

Conventional type for single-fiber cable [Y-OP4-U]

■ Termination suitable for single-fiber cable with common pigtails.

Incoming cable
Splice
Outgoing cords
Pigtail
＊ Need to prepare pigtails separately

＊ The product does not include cables or cords other than the module.

For SC   [SC] [SPC] [APC]

Type	1U	2U
Product name	Y-OP4-U〈24C〉〈P1〉〈P2〉(○)	Y-OP4-U〈48C〉〈P1〉〈P2〉(○)
Configuration	Splice + Connector	
Splice capacity (Sigle fiber)	24 splices (24 fibers)	48 splices (48 fibers)
Connector/adapter type	SC/SPC, SC/APC	
Weight	Approx. 2.5kg	Approx. 3.5kg

For LC   [LC] [SPC]

Type	1U	2U
Product name	Y-OP4-U〈24C〉〈LC〉〈P1〉(○)	Y-OP4-U〈48C〉〈LC〉〈P1〉(○)
Configuration	Splice + Connector	
Splice capacity (4-fiber ribbon)	24 splices (24 fibers)	48 splices (48 fibers)
Connector/adapter type	LC/SPC	
Weight	Approx. 2.5kg	Approx. 3.5kg

(Note) P1, P2 and P3 are defined in a box of the next page

Specifications common to Y-OP4 series products

Size (hight)	1U	2U
Dimensions	480（W）×372（D）×43.5（H）mm（1U）	480（W）×372（D）×88（H）mm（2U）
Structure	Slide-type,Fixed-type	
Connector/Adapter type	SC、SC-APC、LC	
Cable entry capacity	≤15mm	
Installation	EIA / JIS 19-inch rack	
Paint color	Black	

Ordering code

Y-OP4-○〈○C〉〈P1〉〈P2〉〈P3〉(○)

Number of mounted fibers

■ U ⋯⋯ Single-fiber splice + Connector
■ FO ⋯⋯ 4-fiber ribbon splice + Connector
■ PFO ⋯⋯ 4-fiber ribbon splice + Connector (Pre-terminated FO fibers)
■ PC4FO⋯ 4-fiber ribbon splice + Connector (Pre-terminated FO cords)

For SC
24 ⋯⋯1U, 24-fiber panel
40 ⋯⋯1U, 40-fiber panel
48 ⋯⋯2U, 48-fiber panel
100 ⋯⋯2U, 100-fiber panel

For LC
24 ⋯⋯1U, 24-fiber panel
48 ⋯⋯1U, 48-fiber panel
96 ⋯⋯2U, 96-fiber panel
100 ⋯⋯2U, 100-fiber panel

■ SC ⋯⋯ Duplex SC adapter for PC/SPC (blue)
■ SC-APC ⋯⋯ Duplex SC adapter for APC (green)
■ LC ⋯⋯ LC quadruple adapter (other than Y-OP4-PFO) LC 10-fold adapter (Y-OP4-PFO only)

Y-OP4-PFO/-PC4FO only
■ SM ⋯SM fiber
■ GI ⋯GI fiber
※GI : only for MM(50), MM(62.5) is not available

■ S⋯Slide-type
■ F⋯Fixed-type

Patch Panal [Y-PP]

■ MAX 32 connector connections
■ Patch panel for 19inch rack
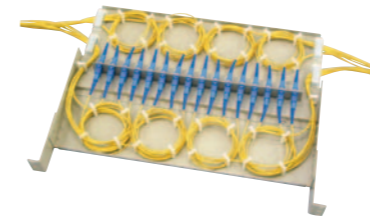
＊ The product does not include cables or cords.

Type	1U Type		2U Type	
Product name	Y-PP<P1><P2>			
Connector type	SC,LC	8MPO,12MPO, 24MPO	SC,LC	8MPO,12MPO, 24MPO
Adapter	16		24,32	
Max fiber count	16	384	32	768
Weight	2.5kg		3.5kg	

Parameter	Item	Options
P1	Adapter type	SC、LC、8MPO、12MPO、24MPO
P2	Number of adapters	16、24、32

MPO cassette solution

MPO cassette to connect MPO connectorized cable to SC or LC patchcord
■ To be installed to 19-inch rack and realize Plug & Play
■ Up to 192-fiber connection by 24-fiber cassette in 1U

MPO cassette base

Part name	MPO cassette base A	MPO cassette base B
Part number	AS360501	AS360591
Size:mm	470(W)×210(D)×43.5(H) (without bracket)	462(W)×139(D)×43.5(H) (without bracket)
19-inch rack-mountable	✓	✓
cord tray	✓	-
Number of MPO cassette per cassette base	4 cassettes/cassette base	4 cassettes/cassette base
Number of adaptor panel per cassette base	4 panels/cassette base	4 panels/cassette base

Cassette base
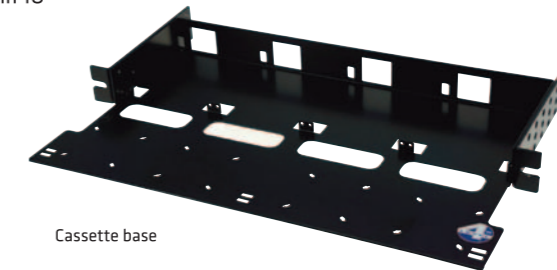
MPO cassette

Fiber count	Fiber type	MPO	MPO adaptor location	Single fiber connector	Insertion loss:dB	Ordering code
12	OS1	12MPO×1	Rear	SC×12	1.25	CSR-SM-1X12MPOM-SC-SD
					0.65	CSR-SM-1X12MPOM-SC-LL
	OM3	12MPO×1	Rear	SC×12	1.05	CSR-OM3-1X12MPOM-SC-SD
					0.55	CSR-OM3-1X12MPOM-SC-LL
			Front	SC×12	1.05	CSF-OM3-1X12MPOM-SC-SD
					0.55	CSF-OM3-1X12MPOM-SC-LL
24	OS1	12MPO×2	Rear	LC×24	1.25	CSR-SM-2X12MPOM-LC-SD
					0.65	CSR-SM-2X12MPOM-LC-LL
	OM3	8MPO×3	Rear	LC×24	1.05	CSR-OM3-3X8MPOM-LC-SD
					0.55	CSR-OM3-3X8MPOM-LC-LL
		12MPO×2	Rear	LC×24	1.05	CSR-OM3-2X12MPOM-LC-SD
					0.55	CSR-OM3-2X12MPOM-LC-LL
		24MPO×1	Front	LC×24	1.05	CSF-OM3-1X24MPOM-LC-SD
					0.95	CSF-OM3-1X24MPOM-LC-LL
Size		108(W)×116(D)×39(H)mm (excluding protrusion)				

The MPO plugs inside MPO cassettes are fitted with guide pins.
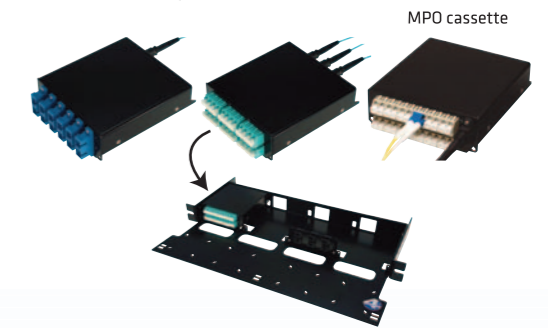
MPO cassette

MPO adaptor panel

■ Mountable on MPO cassette base
■ Six MPO adaptors mountable on a MPO adaptor panel

Part name	Part number
MPO adaptor panel 6 for MPO cassette base	AS238550

Various accessories for 19-inch rack are offered with rack and panel to complete the cabling design.

Front
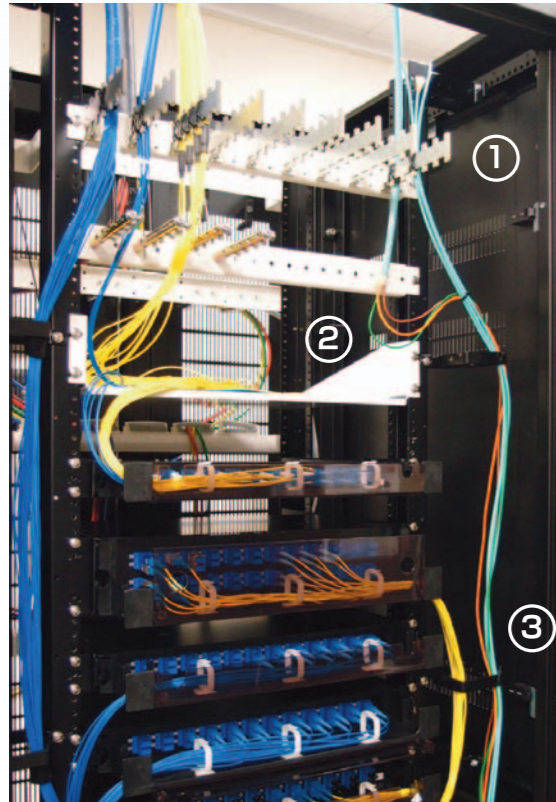
① **In-plant cable/cord fixture panel**

· For securing In-plant cable/cord

② **Excess length storage panel**

· For storing the excess length of cords

③ **Cable holder**

· For wiring cords vertically on the side of the rack

④ **Cable clamp panel**

· For securing out-side-plant cable/ trunk cable
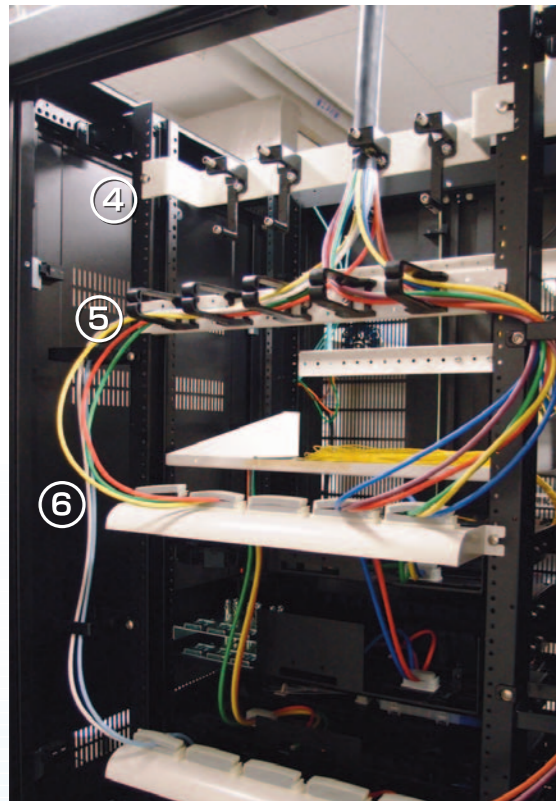
⑤ **Cable management panel**

· For wiring cords horizontally to the sides

⑥ **Bending guide**

· For wiring cords to each panel with proper bending radius

Back

High strength cord / cable

Double strength cord against conventional type with resistance to kink

■ Strong to cord breakage due to the nip by door etc.
■ Easy cabling and coiling.
■ Resistant to kink and residual bending.
■ Applicable to flat cable and round breakout cable.

Resistant to residual bending
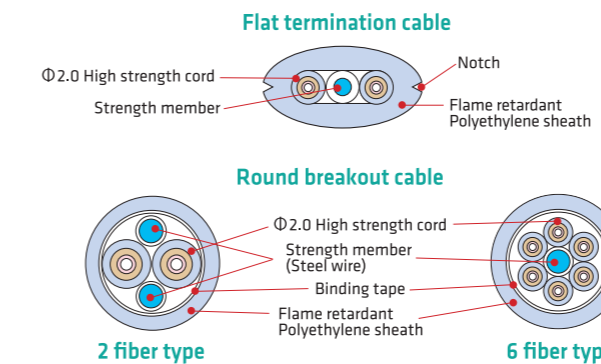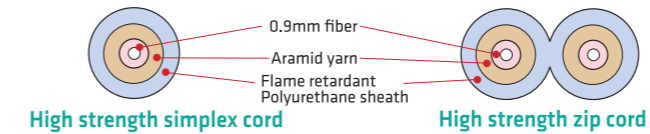
Cord type	Simplex	Duplex (Zip)
Fiber diameter [mm]	0.9	0.9
Cord diameter [mm]	2.0	2.0×4.0
Cord weight [kg/km]	4	8
Maximum load [N]	80	160
Bending radius	Fiber bending radius	
Flame retardancy	JIS C 3005(Horizontal test)	

Cable type	Flat	Round							
Fiber count	2	2	4	6	8	12	16	24	32
Fiber diameter [mm]	0.9	0.9							
Cord diameter [mm]	2.0	2.0							
Cable diameter [mm]	4.0×8.0	6.5	7.5	9.0	10.0	13.0	16.0	15.0	18.0
Cable weight [kg/km]	40	45	55	65	85	140	215	175	250
Maximum load [N]	240	480	460	460	660	660	660	660	660
Bending radius [mm]	40	65	75	90	100	130	160	160	180
Flame retardancy	JIS C 3005(Inclining test)								

0.9mm fiber
Aramid yarn
Flame retardant Polyurethane sheath

High strength simplex cord　　**High strength zip cord**

Flat termination cable

Φ2.0 High strength cord
Strength member
Notch
Flame retardant Polyethylene sheath

Round breakout cable

Φ2.0 High strength cord
Strength member (Steel wire)
Binding tape
Flame retardant Polyethylene sheath

2 fiber type　　**6 fiber type**

Simplex cord

A-end — Length — B-end

Duplex zip cord

A-end — 0.3m* — Length — 0.3m* — B-end

Flat cable / Round breakout cable

A-end — 0.8m* — Length — 0.8m* — B-end

＊The length can be changed by order.

Examples
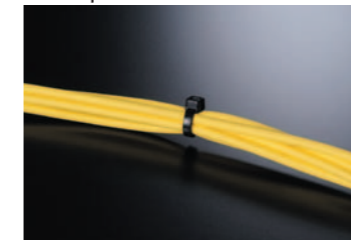
①Binding with 9kgf
【No loss increase】
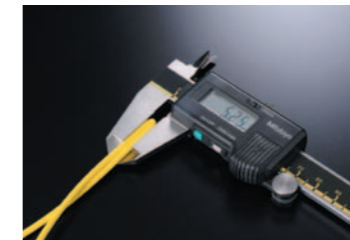
②Doubling back
【No fiber breakage】
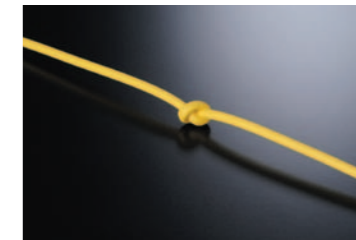
③Knotting
【No fiber breakage】

Not for operation condition. Fiber may have the shorter lifetime wound in less than minimum bending radius.

Ordering information

Connector types to be choosen from p32※.

Ordering code (example)

Cord ⇒ SM(PAPB) - 2 - SC - LC - EC (3M) (KG150416)
Flat cable ⇒ SM(PAPB) - 2 - SC - SC - ECTM (15M)(KG150424)
Round cable⇒ SM(PAPB) - 4 - SC - SC - ECRC (20M) (KG150426)

Fiber count　　Length

Connector A (※)
Connector B (※)
("0" for no connector)

High strength cord type
〔Cord: EC〕
〔Flat: ECTM〕
〔Round: ECRC〕

Type	Cord diameter	Fiber type	Cord color
Simlex	2mm	SM (PAPB)	Yellow
		SM (PA-A2)	Yellow
		GI (PE-A1G)	Yellow green
		GI (PE-A10G)	Aqua
Duplex (Zip)	2mm	SM (PAPB)	Yellow
		SM (PA-A2)	Yellow
		GI (PE-A1G)	Yellow green
		GI (PE-A10G)	Aqua

Type	Cord diameter	Fiber type	Cable color	Cord color	Fiber count							
					2	4	6	8	12	16	24	32
Flat	2mm	SM (PAPB)	Yellow	Yellow	○	—	—	—	—	—	—	—
		GI (PE-A1G)	Yellow green	Yellow green	○	—	—	—	—	—	—	—
Round	2mm	SM (PAPB)	Yellow	Yellow	○	○	○	○	○	○	○	○
		GI (PE-A1G)	Yellow green	Yellow green	○	○	○	○	○	○	○	○

＊Standard PVC jacket types are also available.

Low friction optical cable for Data Center cabling

Smooth and slippery surface cable having up to 60% lower friction force

■ Make cable installation and removal work easy

Flat Termination Cable (TM)

Single Fiber Cord
Strength Member
Low friction material

2-fiber TM

Tensile strength (N) vs Load (g)
①General cables
②General cable/Low friction cable 40% decrease
③Low friction cables 60% decrease

A-end
B-end
0.8m   Total length   0.8m
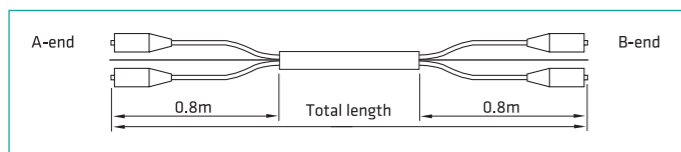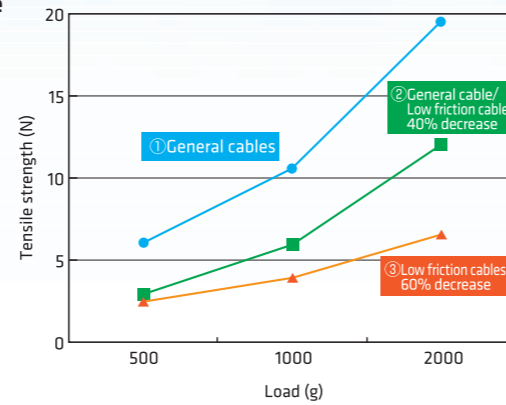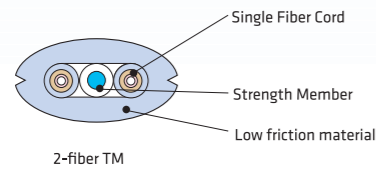
Item	Specification
Fiber count	2
Optical fiber diameter［mm］	0.9
Cord sheath diameter［mm］	1.7
Cable sheath diameter［mm］	3.5×6.5
Weight［kg/km］	40
Maximum load［N］	240
Bending radius［mm］	30
Flame retardancy	JIS C 3005(Inclining test)

Round Breakout Cable (RC)

Single Fiber Cord
Strength Member
Binding tape
Low friction material

6-fiber RC

A-end
B-end
0.8m   Total length   0.8m
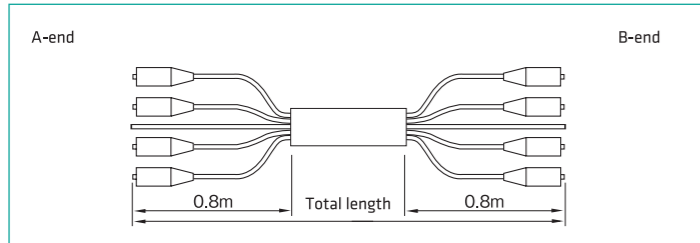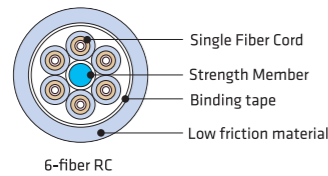
Item	Specification							
Fiber count	2	4	6	8	12	16	24	32
Optical fiber diameter［mm］	0.9							
Cord sheath diameter［mm］	1.7							
Cable sheath diameter［mm］	6.0	6.5	7.5	8.5	11	13	13	15
Weight［kg/km］	40	45	50	65	100	140	130	180
Maximum load［N］	480	240	240	240	430	430	430	660
Bending radius［mm］	40	40	45	50	70	80	80	90
Flame retardancy	JIS C3005 (Inclining test)							

Ordering information

2 - SC・UPC - SC・UPC - SM(PAPB) - RCLE1.7 - Y - 10 - Y - 0.8 - 0.8

Fiber count
A-end connector
B-end connector
FIber type
Cable type
TMLE:Low friction termination cable
RCLE:Low friction round cable
Cable color
Cord color
Total length

FIber type	Connector type	
	Connector	Polishing
SM(PAPB)	SC,LC	UPC,APC
GI(PE-A1G)	SC,LC	PC
GI(PE-A10G)	SC,LC	PC

Cable type	FIber type	Cable color	Cord color	Filer type							
				2	4	6	8	12	16	24	32
TMLE1.7	SM(PAPB)	Y(Yellow)	Y(Yellow)	○							
	GI(PE-A1G)	B(Blue)	B(Blue)	○							
	GI(PE-A10G)	AQ(Aqua)	AQ(Aqua)	○							
RCLE1.7	SM(PAPB)	Y(Yellow)	Y(Yellow)	○	○	○	○	○	○	○	○
	GI(PE-A1G)	B(Blue)	B(Blue)	○	○	○	○	○	○	○	○
	GI(PE-A10G)	AQ(Aqua)	AQ(Aqua)	○	○	○	○	○	○	○	○

High strength cord is also available to single fiber cord.

LED identifiable optical connector / Light detection adapter

LED identifiable connector - Lumiconnector™ NEW

Lumiconnector™ patchcord have LED at both end connectors linked by copper twist line.
Both LEDs are brightened when the Checker (power supply) is connected to one end.

■ Can identify the other end of the patchcord without the disconnection from panel.
■ Prevent incorrect disconnection of patchcord.
■ Standard SC and LC connector interface.
■ High strength cord and Termination cable types also available.
■ Max distance of light emission: 550m for standard cord, 250m for high strength cord.

Connector name	LUSC		LULC	
Connector type	SC/SPC	SC/PC	LC/SPC	LC/PC
Fiber type	SM(PAPB)	GI(PE-A10G)	SM(PAPB)	GI(PE-A10G)
Insertion Loss	≦0.5dB	≦0.3dB	≦0.5dB	≦0.3dB
Return Loss	≧40dB	≧25dB	≧40dB	≧25dB
Cord diameter［mm］	2mm		2mm	
Coupling method	push-on		push-on	
Standard	IEC 61754-4		IEC 61754-20	

example
Lumiconnector SC
Lumiconnector LC

Power Supply Box
Electricity Teminal
Checker (Power Supply)

optical fibar
Soft copper twist line
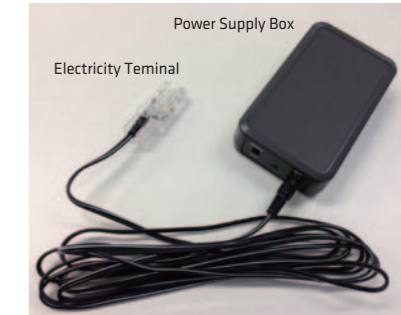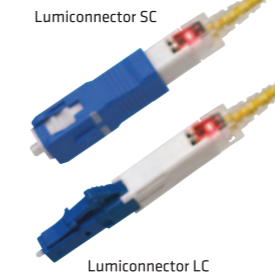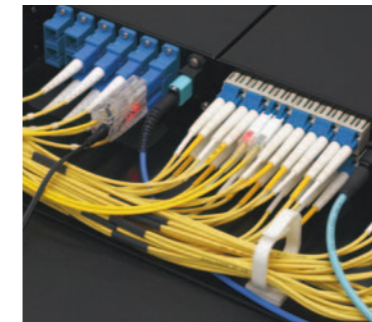
Simplex cord   Duplex zip cord   2-fiber TM cable
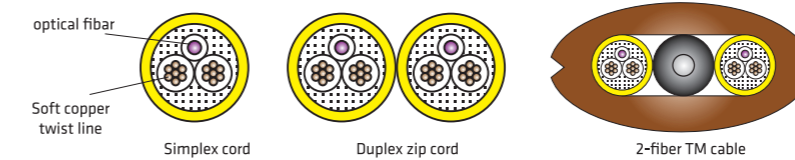
type	Simplex cord standard type	Simplex cord high strength cord	Duplex cord standard type	Duplex cord high strength cord	2-fiber TM cable high strength cord
Max distance of light emission［m］	550	250	550	250	250
Cord diameter［mm］	2	2	2×4	2×4	4×8
Cord weight［kg/km］	6	4.5	12	9	40
Maximum load［N］	80	80	160	160	240

Checker

name	LU-Power supply
Ordering code	AS238347
Power Supply Box size［mm］	105×70×27
Weight［kg］	150
Power supply	9V form alkali dry cell

Ordering information

2 - LUSC・SPC - LULC・SPC - SM(PAPB) - 2 - Y - L - 0.3 - 0.3

Fiber count
A-end connector
B-end connector
Fiber type
Cord color
Length(m)

structure	Fiber count	Fiber type	Cord color
Simplex cord	1	SM(PAPB)	Y(yellow)
	1	GI(PE-A10G)	AQ(aqua)
Duplex cord	2	SM(PAPB)	Y(yellow)
	2	GI(PE-A10G)	AQ(aqua)

Light detection adapter

The light detection adapter is brightened by visible light (650nm) insertion.

■ Easy identification of patchcord end.
■ 2 adapter types available.
  Transmission type: Pass the visible light with low insertion loss.
  Blocking type: Stop the visible light with more than 30dB insertion loss.
■ No influence to transmission wavelength.

Product name	Light detection adapter	
Structure	SC plug Jack type	
Optical fiber	SM (λ=1310nm、1550nm)	MM (GI50) (λ=850nm、1300nm)
Insertion Loss	≦1.2dB	≦0.8dB
Return Loss	≧40dB	≧25dB
Standard	IEC 61754-4 equivalency	

SC plug jack adapter-transnission type

High Density and Quick Cabling

■ Using MPO connector realize high density greatly.
■ Plug & Play make cable installation smooth.

MPO Trunk Cable   MPO LC Cassette

12MPO wiring solution

10G

High density with MPO

10G

10GBASE-SR
10G×1

LCF Patch Cord

connection1
LC 12MPO
Cassette

connection2
12MPO
Trunk Cable

connection3
12MPO LC
Cassette

connection4
LCF Patch Cord

10G
connection
point:4

40G

With No Change
Same MPO trunk

40G

40GBASE-SR4
10G×4

Q8MPO-8MPO
Patch Cord

connection1
8MPO-12MPO
Cassette

connection2
12MPO
Trunk Cable

connection3
8MPO-12MPO
Cassette

connection4
Q8MPO-8MPO
Patch Cord

40G
connection
point:4

Q8MPO   8MPO   12MPO   8MPO   Q8MPO

Q8MPO connector - Benefits of Q8MPO-8MPO patch cord -

Q8MPO

Optical fiber   MT ferrule

total 8ch

4ch for Tx

4ch for Rx

8MPO

40GBASE-SR4
10G×4
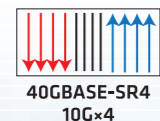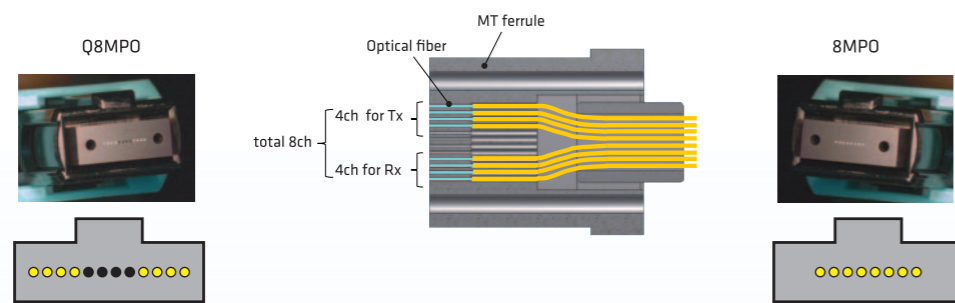
■ Only both side 4 fibers used in QSFP+ are embeded in Q8MPO.
8-fiber round cord can be connected to QSFP+.
The other end has standard 8MPO.
■ No waste fiber and realize Low Cost.

Minimun Cost and Minimum Insertion loss

■ Construct the network with 8 fibers.
■ MPO Cassette not required from 10G To 40G/100G upgrade miuimize cost.
■ Fewer connection point realize minimun insertion loss.

8Core 8MPO wiring solution

10G

High density with MPO

10G

10GBASE-SR
10G×1

LCF Patch Cord

connection1
LC 8MPO
Cassette

connection2
8MPO
Trunk Cable

connection3
8MPO LC
Cassette

connection4
LCF Patch Cord

10G
connection
point:4

40G

MPO cassette
Not required

With No Change
Same MPO trunk

MPO cassette
Not required

40G

40GBASE-SR4
(10G×4)

Q8MPO-8MPO
Patch Cord

connection1
MPO
Adaptor

8MPO
Trunk Cable

connection2
MPO
Adaptor

Q8MPO-8MPO
Patch Cord

40G
Low loss
connection
point:2

Q8MPO   8MPO   Q8MPO

With No Change
Same Wiring

100G

100G

100GBASE-SR4
(25G×4)

Q8MPO   8MPO   Q8MPO

100G

Round cord with MPO connectors

- 8-fiber round cord:Optimized for 40GBASE-SR4 cabling **NEW**
- Round cross section for any direction bending at installation
- UL1651 flammability (Plenum grade)

8Core 8-fiber round cord **NEW**   12-fiber round cord

Optical fiber
Cord sheath (Flame retardant PVC)
Strength member (Aramid yarn)
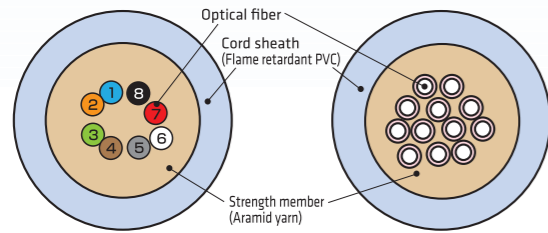
Fiber count	8	12	24
Fiber diameter [mm]	0.25	0.25	0.25
Cord diameter [mm]	3.0	3.0	3.8
Cord weight [kg/km]	8	9	13
Maximum load [N]	100		
Bending radius [mm]	25		

A-end   B-end   Total length
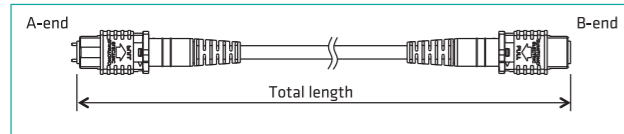
Ordering information

A-end connector   B-end connector   Cord type (Round cord)   Total length (m)

Ordering code (example)

12 - 12MPO/R - 12MPO/R - GI(10G) - RND - AQ - LL - F -3

Fiber count	Fiber type	Connector and polishing type	Fiber code	Cord color	MPO polarity (TIA-568-C.3)	Note
8	OM3	8MPO/R	GI(10G)	AQ	Type-A	*1
		Q8MPO/R	GI(10G)	AQ	Type-B	*2
12	OS2	12MPO/A	SM(PAPB)	Y	Type-A	-
	OM3	12MPO/R	GI(10G)	AQ	Type-A	*1
					Type-B	*2
	OM4	12MPO/R	GI(10G+)	AQ	Type-A	*1
					Type-B	*2
24	OS2	24MPO/A	SM(PAPB)	Y	-	-
	OM3	24MPO/R	GI(10G)	AQ	-	*3
	OM4	24MPO/R	GI(10G+)	AQ	-	*3

*1:Ex.10GBASE-SR
*2:Ex.40GBASE-SR4
*3:Ex.100GBASE-SR10

Insertion loss grade	Code
Standard loss	SD
Low loss	LL

Color code	Y	AQ
Color	Yellow	Aqua

Configuration of MPO guide pin	Code
Male to Male	M
Female to Female	F
Male to Female	MF

Ribbon cord with MPO connectors

- Flat multi-fiber cord with 8 or 12 fiber ribbon
- RBCR type having tension member enables max 300m connection
- UL1666 flammability (Riser grade)

12-fiber ribbon cord

12-fiber ribbon
Tension member (RBCR type only)
Cord sheath (Flame retardant PVC)

A-end   B-end   Total length
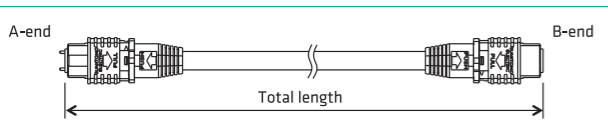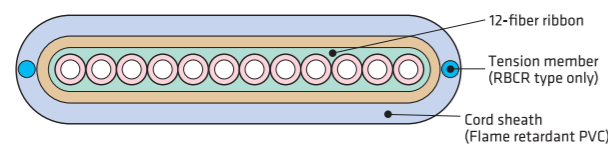
Fiber count	8-fiber ribbon with tension member	12-fiber ribbon with tension member
Ribbon dimension [mm]	0.4×2.1	0.4×3.1
Cord weight [kg/km]	0.25	
Cord dimension [mm]	2.5×4.5	2.5×4.9
Maximum load [N]	220	
Bending radius [mm]	30	
Flame retardant	UL 1666 RISER	

Ordering information

A-end connector   B-end connector   Total length (m)

Ordering code (example)

8 - 8MPO/A - 8MPO/A - SM - RBCR - Y - LL - F - 3

Fiber count	Fiber type	Connector and polishing type	Fiber code	Configuration	Cord color	MPO polarity (TIA-568-C.3)
8	OS1	8MPO/A	SM	RBCR	Y	Type-A
12	OS1	12MPO/A	SM	RBCR	Y	Type-A
	OM2	12MPO/R	GI(50)	RBCR	D	Type-A
	OM3	12MPO/R	GI(10G)	RBC	AQ	Type-A
	OM4	12MPO/R	GI(10G+)	RBC	AQ	Type-A

Insertion loss grade	Code
Standard loss	SD
Low loss	LL

Color code	Y	D	AQ
Color	Yellow	Orange	Aqua

Configuration of MPO guide pin	Code
Male to Male	M
Female to Female	F
Male to Female	MF

Fan-out assembly with MPO and single fiber connectors

- Fan-out assembly with MPO connector at one end and single fiber connector at the other end
- Suitable to connect MPO connectorized cable and patch panel / equipment with SC / LC connector

single-fiber connectors
MPO connector   Fan-out
L (m)   L1 (m)
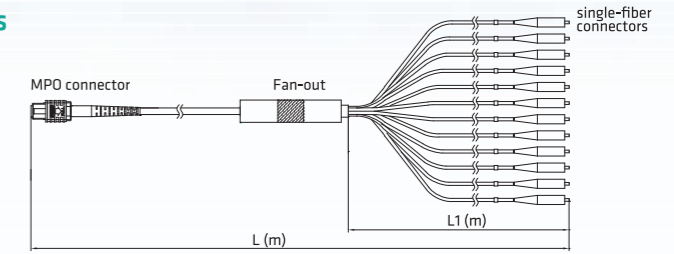
Ordering information

Ordering code (example)   Total length (m)   Fan-out length (0.2 to 2m available)

12 - 12MPO/R - LC - GI(10G) - FO - RND - AQ - SD - M - L - L1

Fiber count	Fiber type	MPO connector and polishing type	Single fiber connector	Fiber code	Configuration	Cord color
8	OS1	8MPO/A	P1 · SPC	SM	FO-RBCR	Y
12	OS1	12MPO/A	P1 · SPC	SM	FO-RND	Y
	OM3	12MPO/R	P1	GI(10G)	FO-RND	AQ
		Q8MPO/R	P1	GI(10G)	FO-RND	AQ
	OM4	12MPO/R	P1	GI(10G+)	FO-RND	AQ
		Q8MPO/R	P1	GI(10G+)	FO-RND	AQ

P 1:selectable single fiber connector in page 32

*Q8MPO Fan-out has 8 single fiber connectors

Insertion loss grade	Code
Standard loss	SD
Low loss	LL

Color code	Y	AQ
Color	Yellow	Aqua

Configuration of MPO guide pin	Code
Male	M
Female	F

Multi-fiber ribbon cord cable with MPO connectors

- Ruggedized cable with 12-fiber ribbon cord
- Suitable to rack-to-rack connection because of the cable sheath over the ribbon cord for mechanical strength
- Fan-out assembly available

Optical fiber ribboon cord
Strength member (Aramid yarn)
Metal strength menber
Cable sheath

Fiber count	12
Ribbon dimension [mm]	0.3×3.1
Cord dimension [mm]	1.5×4.5
Cable dimension [mm]	3.5×7.5
Cable weight [kg/km]	45
Maximum load [N]	480
Bending radius [mm]	35
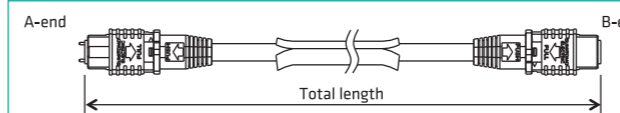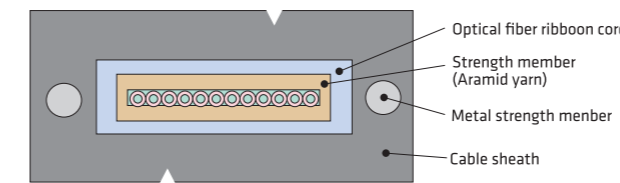
Ordering information

A-end connector   B-end connector   Total length (m)

Ordering code (example)

12 - 12MPO/R - 12MPO/R - GI(10G) - RBCA - AQ - LL - F - 3

A-end   B-end   Total length

Fiber count	Fiber type	Connector and polishing type	Fiber code	Cord color	MPO polarity (TIA-568-C.3)
12	OS1	12MPO/A	SM	Y	Type-A
	OM2	12MPO/R	GI(50)	YG	Type-A
	OM3	12MPO/R	GI(10G)	AQ	Type-A
		12MPO/R	GI(10G)	AQ	Type-B

Insertion loss grade	Code
Standard loss	SD
Low loss	LL

Configuration of MPO guide pin	Code
Male to Male	M
Female to Female	F
Male to Female	MF

Color code	Y	YG	AQ
Color	Yellow	Yellow green	Aqua

Ordering information (MPO fan-out type)

Fan-out portion of B-end
Cable   Fan-out   Single-fiber connector

A-end connector   B-end connector   Total length (m)   Fan-out length (m)

Ordering code (example)

12 - MPO/A-SC.SPC - SM - FO - RBCA - Y - LL - F - 50 - 0.8

Fiber count	Fiber type	Connector and polishing type	Connector and polishing type	Fiber code	Configuration	Cord color
12	OS1	12MPO/A	P1 · SPC	SM	FO-RBCA	Y
	OM2	12MPO/R	P1	GI(50)	FO-RBCA	YG
	OM3	12MPO/R	P1	GI(10G)	FO-RBCA	AQ

Configuration of MPO guide pin	Code
Male	M
Female	F

Insertion loss grade	Code
Standard loss	SD
Low loss	LL

MPO connector - Cable assembly

Trunk cable with MPO connectors（Break-out cable）

- Break-out cable with 8-fiber or 12-fiber round cord for trunk cable
- Suitable to MPO connectorized cable because of fiber protection by round cord till MPO end
- Realize Plug & Play with combination of MPO cassette

Metal strength menber

Round cord

Cable sheath

48-fiber trunk cable

72-fiber trunk cable with MPO
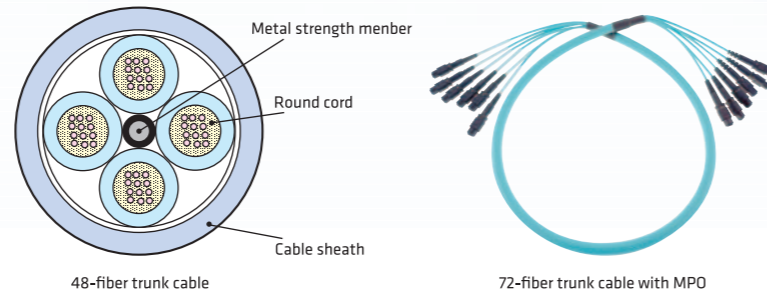
Connector cleaner

CLETOP (Reel Type)

- Designed to achieve high quality cleaning for any operator without alcohol
- Cleaning tape is replaceable and cost effective.
- One cleaning tape can be used for over 400 wipes.

Product name	CLETOP(B)	CLETOP(MPO)
Part no.	AS740638	AS740639
Applicable connector	SC,LC MPO w/o pin	MT MPO with pin
Size(mm)	130W×75H×40D	
Weight(g)	160	
Usage count	400	

Consumables		
Product name	Replacement reel blue (6pcs/set)	Replacement reel white (6pcs/set)
Part no.	AS740640	AS740641

NEOCLEAN™-M Pen Type Cleaner (for MPO)

- One-push operation with no special skills required.
- Over 600 cleanings
- Compact design with good workability.
- In addition of optical port adaptors, attaching the cap (included) allows you to clean plugs too.

Product name	NEOCLEAN-M
Part no.	AS740998
Applicable connector	MPO
Applicable end face	Flat and 8 degree angle
Size(mm)	197L×15W×51H
Usage count	600

Direct Attach Cable with Micro Coax

Direct Attach Cable (DAC)　1～3m(Micro coaxial cable)

NEW

- Outline
  - Supporting 10/40Gbps Ethernet for Datacenter interconnect
  - Compliant with SFP+ and QSFP+ MSA
- Application
  Interconnection with 10/40G Ethernet for switches, servers, routers and storage systems, etc.
- Features
  - Using micro coaxial cable
  - Flexible and easy to handle compared to Twinax cable
  - Minimum bending radius can be equal to the cable outer radius
  Cable outer diameter: SFP+(1m)　3.2mm　SFP+(3m)　3.6mm
  　　　　　　　　　QSFP+(1m) 4.9mm　QSFP+(3m) 6.3mm

Micro coaxial

Twinax (reference)

Bit Rate	10Gb/s (1lane x 10.3125Gbps)	40Gb/s (4lane x 10.3125Gbps)
Part Number	SPPD010G1STYKHM0 : 1m SPPD020I1STYKHM0 : 2m SPPD030I1STYKHM0 : 3m	QPPF010G1STYKHM0 : 1m QPPF020K1STYKHM0 : 2m QPPF030K1STYKHM0 : 3m
Form Factor	SFP+	QSFP+
Cable length	1m to 3m	1m to 3m
Operating Case temperature	0 to 70 degC	0 to 70 degC
Supply Voltage	3.3V	3.3V

Note: There are 5,7 m models with Twinax cable.

MPO connector - Polarity and connectivity

10GBASE-SR (with MPO cassette)

10G SFP+

A　　　B
B　　　A

TIA568-C.3 A-to-B duplex patch cord

MPO cassette →P11

Key up　　　　　Key down

MPO trunk cable

Type-A-F
MPO polarity：TIA568-C.3 Type-A
Configration of MPO guide pin:Female to Female

MPO cassette →P11

TIA568-C.3 A-to-A duplex patch cord

A　　　B
B　　　A

10G SFP+
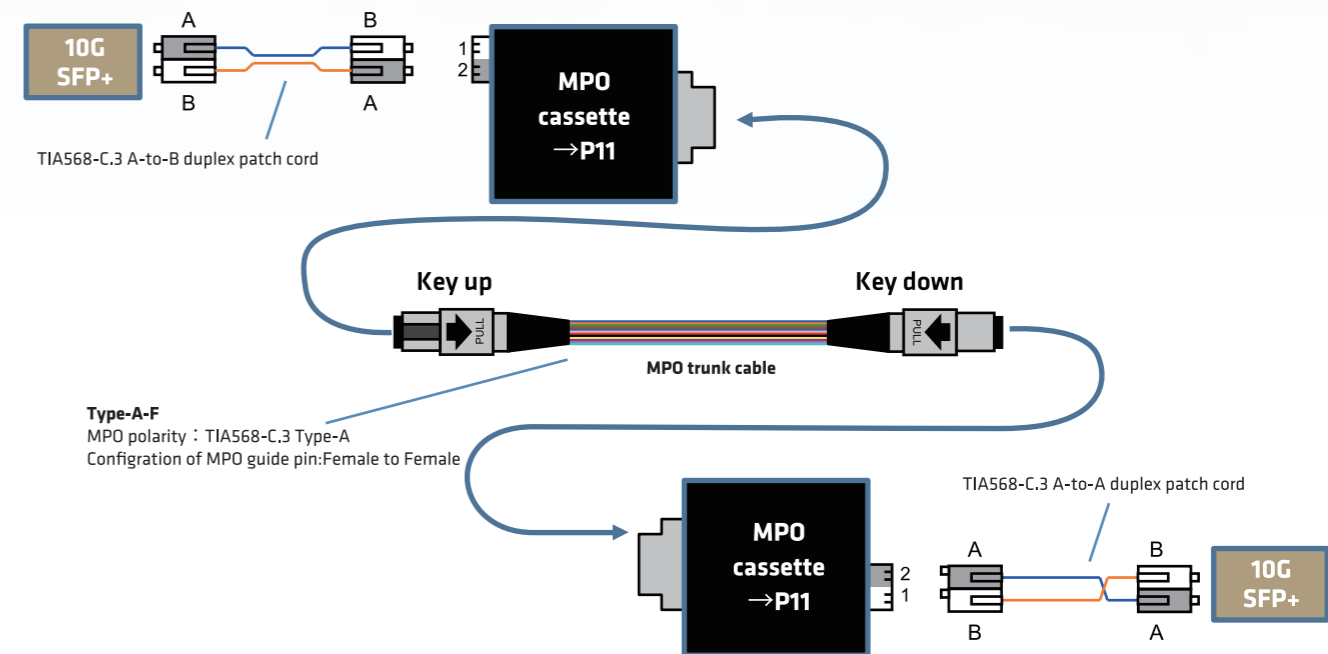
40GBASE-SR4 (without MPO patch cord)

40G QSFP+

Key up　　　MPO trunk cable　　　Key up

40G QSFP+

Type-B-F
MPO polarity:TIA568-C.3 Type-B
Configration of MPO guide pin:Female to Female
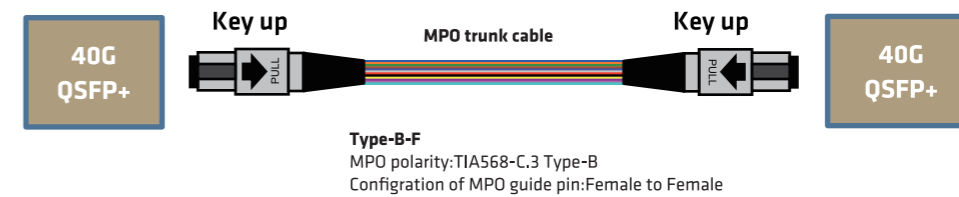
40GBASE-SR4 (with MPO patch cord)

40G QSFP+

Key up　　　　　Key up

MPO patch cord

MPO adaptor (Type-A) AZZZY201

Key up　　　Type-A-F　　　Key down

MPO trunk cable

Type-A-MF
MPO polarity:TIA568-C.3 Type-A
Configration of MPO guide pin:Male to Female

Type-B-MF
MPO polarity:TIA568-C.3 Type-B
Configration of MPO guide pin:Male to Female

Key up　　　　　Key down

MPO patch cord

40G QSFP+

MPO adaptor (Type-A) AZZZY201
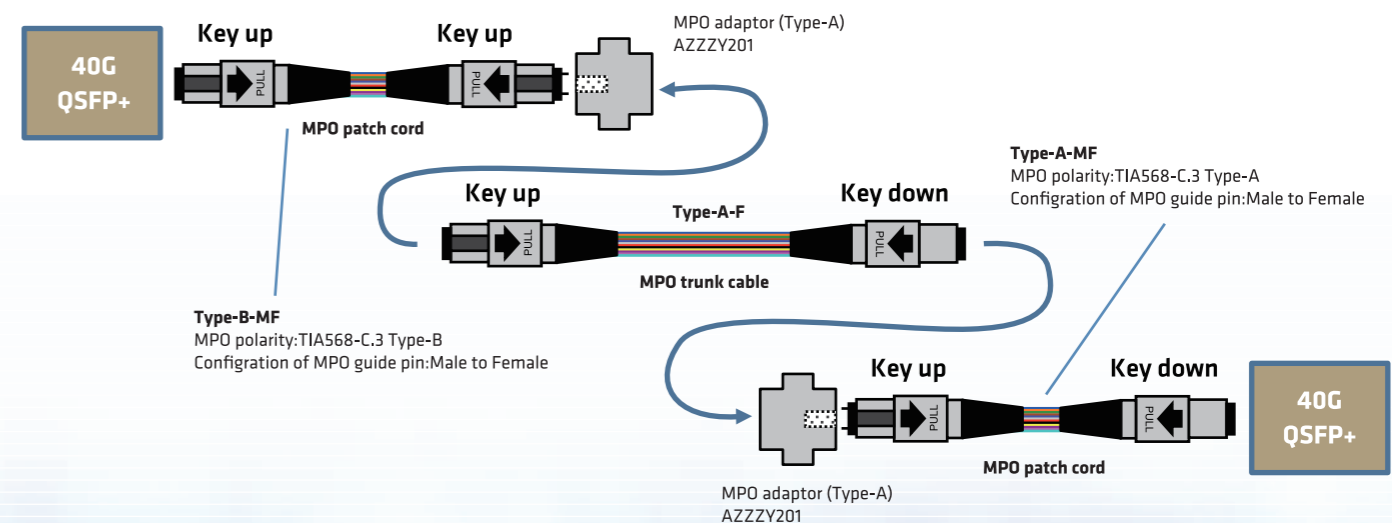
Lynx2 CustomFit™ Splice-on Connector

Field installable connector assembled by Fusion Splicer
- Easy termination with "factory made" quality
- No polishing, no adhesive
- Assembled by standard Sumitomo Fusion Splicer

Enable to decide cable length exactly at site by field termination
- Remove cable congestion in and around rack
- Make easy install, move, add and change of connection

Just use standard bulk cable and connector kit
- Short product lead time by no custom-made cables
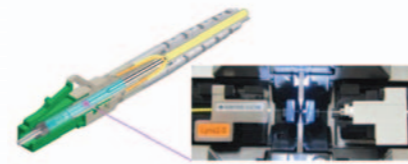
Conventional cabling solution

Field installable connector solution

Wide product line-up

LYNX2-SC　　LYNX2-LC　　LYNX2-FCM　　LYNX2-12MPO
LYNX2-8MPO
LYNX2-Q8MPO

Applicable Fusion splicer to Lynx2-CustomFit™

	TYPE-81C	TYPE-71M12	TYPE-81M12	TYPE-201e-VS/M4
Single-fiber connector	●	●	●	●
MPO connector	—	●	—	—

	TYPE-39	TYPE-66M	TYPE-25e
Single-fiber connector	●	●	●
MPO connector	—	—	—

〈Assembly process〉

① Set stub to holder　　②Fusion splicing　　③Put protection sleeve　　④ Fix aramid yarn
Easier assembly
Process introduced　　⑤Completed

Configuration

Ferrule holder
＊1 pc is enclosed per
100 connectors

Fiber
stub

Polished
ferrule

Optical fiber

Fusion splice point　　Protection sleeve　　Kevlar Stopper to
hold Kevlar on Housing

TYPE-81C　　　　TYPE-71M12
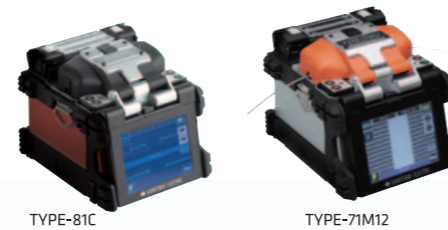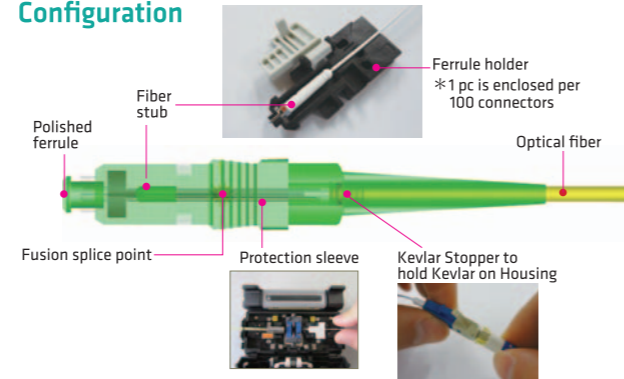
Specification for Lynx2-CustomFit™ Splice-on Connector

	LYNX2-SC	LYNX2-LC	LYNX2-FCM	LYNX2-MPO
Standard	IEC61754-4	IEC61754-20	IEC61754-13	IEC61754-7
Insertion Loss	SMF：0.2dB(average)　0.3dB(Max) MMF：0.1dB(average)　0.25dB(Max)			SMF,MMF/Low loss: Max 0.4dB SMF/Std. loss: Max 0.75dB
Return Loss	SMF: Min 60dB (APC)　Min 55dB (UPC) MMF: Min 30dB (PC)			

Single-fiber connector

Ordering code: LYNX2-P1,P2-P3-P4
P1: Connector, P2: Polishing, P3: Fiber, P4: Cord diameter
Example: LYNX2-SC.UPC-SM-250/900, LYNX2-SC.APC-SM-2

P1: Connector		P2: Polishing		P3: Fiber		P4: Cord [mm]	
P1	Connector	P2	P3	Connector color		P4	Diameter [mm]
SC LC FCM	SC connector LC connector FC connector	APC	SM	Green		250/900 2 3	0.25mm/0.9mm 2mm 3mm
		UPC	SM	Blue			
		PC	M5(OM2)	Black			
			M5(OM3)	Aqua			
			M6	Beige			

12MPO connector

Ordering code: LYNX2-12MPO(P1)-P2-P3
P1: Guide pin, P2: Fiber, P3: Cord type
Example: LYNX2-12MPO(M)-M5(OM3)LL-RBN

P1: Guide pin		P2: Fiber			P3: Cord type	
P1	Guide pin	P2	Fiber	Connector color	P3	Cord type
M F	M: Male (with pin) F: Female (w/o pin)	SMLL	SMLow loss	Yellow	RBN RND RBC	RBN: 12f bare ribbon RND: 12f round cord (Φ3mm) RBC: 12f ribbon cord (Φ3mm)
		SM	SM Std loss	Green		
		M5(OM2) LL	M5(OM2) Low loss	Black		
		M5(OM3) LL	M5(OM3) Low loss	Aqua		
		M6LL	M6Low loss	Beige		

8MPO / Q8MPO connector - For 4th Level™-8Core 8MPO solution ⬆NEW

Ordering code: LYNX2-8MPO(P1)-P2-P3 / LYNX2-Q8MPO(P1)-P2-P3
P1: Guide pin, P2: Fiber, P3: Cord type
Example: LYNX2-Q8MPO(M)-M5(OM4)-RND

P1: Guide pin		P2: Fiber			P3: Cord type	
P1	Guide pin	P2	Fiber	Connector color	P3	cord type
M F	M: Male (with pin) F: Female (w/o pin)	M5(OM4)LL	M5(OM3) Low loss	aqua	RBN RND	RBN: 8f bare ribbon RND: 8f round cord(Φ3mm)

Q8MPO connector

MT ferrule

Optical fiber

4ch for Tx

Total 8ch

4ch for Rx

4ch Rx　　4ch TX
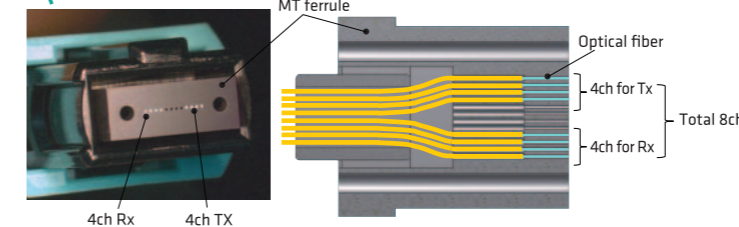
Lynx2-Q8MPO converts 8-fiber ribbon into QSFP+ channel assignment.
Realize direct connection of 8-fiber ribbon to QSFP+.

8Core →For more details in Page 17

Round cord with 8-fiber pliable ribbon ⬆NEW
- Enable to assemble Lynx2-MPO without ribbonization process

8-fiber pliable round cord
FR PVC sheath

8-fiber pliable ribbon

250μm fiber

Aramid yarn

Connector kit

LYNX2-SC　　　　　LYNX2-LC　　　　　LYNX2-MPO
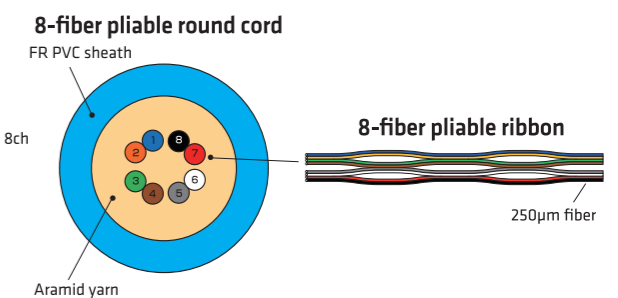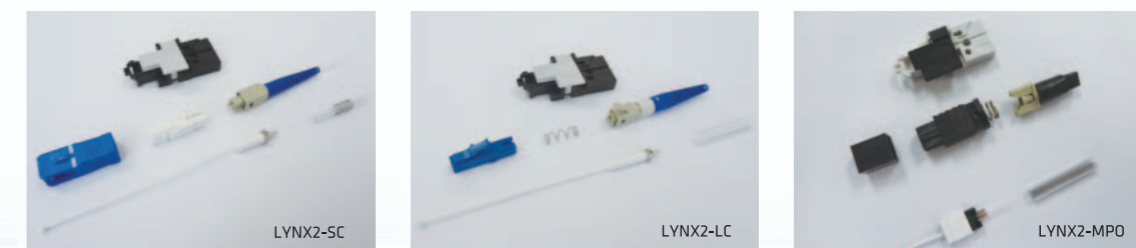
Field installable connector (Fusion splice type)

Assembly tool for Lynx2-Customfit™ Splice-on Connector

Tool name	Fiber cleaver [FC-7R-M] / [FC-6 Series]	Jacket remover [JR-M03]	Hot Jacket remover [JR-6]	LYNX sheath splitter [LYNX2-CORDTOOL-1.6-2.4]	LYNX sheath splitter [LYNX2-CORDTOOL-2.0-3.0]	Kevlar snips [N-57]
Tool						
Single-fiber connector — For cord	●	●	—	● for 1.6mm	● for 2mm/3mm	●
For fiber	●	●	●	—	—	—
For stub	—	—	—	—	—	—
MPO connector — For cord	●	—	●	—	● for round/ ribbon cord	●
For bare ribbon	●	—	●	—	—	—

Tool name	Cord /0.9mm fiber [LYNX2-UML-S]	0.9mm fiber [FHS-09]	0.25mm fiber [FHS-025]	Stub holder [LYNX2-UML-C]	12f bare ribbon [FHM-12]
Tool (Fiber holder)					
Single-fiber connector — For cord	●	—	—	—	—
For fiber	● for 0.9mm	● for 0.9mm	● for 0.25mm	—	—
For stub	—	—	—	● (Optional)	—
MPO connector — For cord	—	—	—	—	●
For bare ribbon	—	—	—	—	●

⟨Fiber holder recommendation⟩ For Lynx2 single-fiber types

Fiber	Fiber holder Left	Right
0.25mm fiber	FHS-025	LYNX2-UML-C / Plastic holder attached in Lynx2 connector kit
0.9mm fiber	FHS-09 / LYNX2-UML-S	
Cord	LYNX2-UML-S	

Assembly procedure　Lynx2-PLUS (Cord type)

1 Slide Rear Parts and remove the Spring Holder.

2 Open Cord Tool and set the cord on the proper groove. Rotate the cord, then remove the outer sheath. Keep contact. Rotate the cord.

3 Set the cord on the proper groove. Mark on the 900um fiber. Keep contact. Marking.

4 Open Cord Tool and set the cord. Grip Cord Tool and pull the cord to separate the outer sheath into two pieces. Sheath end. Pull out.

5 ⚠ Kevlar should be longer than protection sleeve for the strength. Slide Protection Sleeve onto the cord. Cut the Kevlar at 2mm away from the protection sleeve edge. 2mm. Slit edge.

6 Remove the fiber coating from the marking point. (JR-M03) Clean the fiber. Cleaning.

7 Set the fiber on the holder. ⚠ Do not touch bare fiber.

8 Cleave the fiber at 10mm. 10mm.

Field installable connector (Fusion splice type)

9 Set Fiber Holder on the splicer (Left side). ⚠ Place fiber on V-groove gently

10 Pick up the Stub and set the Stub on the Plastic Holder (Stub Holder). ⚠ Do not touch bare fiber.

11 Set the Stub Holder on the splicer (Right side). ⚠ Place fiber on V-groove gently

12 Fusion splice. Close gently. Splice completed.

13 Open the Fiber Holder and the Stub Holder. Hold the assembly lightly to prevent bending.

14 Slide Protection Sleeve until it covers the projection of the flange. ⚠ No twisting

15 Pull out the sheath and Kevlar from Protection Sleeve. Slide the spring onto separated sheath. Pull out sheath and Kevlar from the Sleeve.

16 Set Protection Sleeve into the heater. Heat the Sleeve. ⚠ No twisting ⚠ No gap

17 Disassemble Boot / Kevlar Stopper and Rear Stopper. Rotate counter-clockwise. Boot. Kevlar Stopper.

18 Insert the Stub to Front Housing with correct key alignment. Assemble Front Housing and Rear Stopper. LC. SC. APC: Dot to Lever side. PC/UPC: Flat surface to Lever side.

FC

19 Pull out outer Sheath and Kevlar from Rear Stopper. Sheath. Rear Stopper.

20 Divide the Kevlar to two bunch. Slide Boot and Kevlar Stopper.

21 Secure Kevlar by Kevlar Stopper. ⚠ Not rotate Rear Stopper. Rotate Kevlar Stopper clockwise.

22 Cut the tether. Rotate to cut.

SC SC: Assemble Outer Housing. Key alignment.

23 Complete. LC. SC. FC.

Direct core monitoring fusion splicer TYPE-81C

| Single fiber | Core alignment |

- Ultra fast splicing in approx. 7 s and fast heat shrinking of approx. 28 s (with FPS-1 sleeve) on independent dual ovens (US patent 7,412,146)
- Fully navigational touchscreen and intuitive GUI for user friendliness
- Built-in help videos play on the splicer display
- Universal fiber clamps (patent pending) works with 0.25/0.9 mm tight buffer fibers and 0.9 mm loose buffer fibers
- Switchable to fiber holders for Splice-on connector and drop cable
- Shock, water and dust resistance for use in harsh environments
- Software updates and remote diagnosis via Internet
- User selectable heater clamp operation (patent pending)

RoHS compliant

Durable and rugged **Simple and versatile** **Carrying case with work tray**
Touch-screen operation

Standard package

Part name	Part no.	Qty.
Main unit	TYPE-81C	1pc
Battery pack	BU-11	1pc
AC adapter	ADC-1430S	1pc
Power cord	PC-AC〈X〉	1pc
Cooling tray	—	1pc
Spare electrodes	ER-10	1pair
Operating CD manual	—	1pc
Quick guide	—	1pc
Carrying case with work tray	CC-81	1pc
Hand strap	—	1pc
USB cable	—	1pc

Environmental durability*

	Test details
Shock resistance	Operates normally after being dropped from 76 cm onto five faces (excluding top face)
Water resistance	Equivalent to IPx2 (Operates normally after being exposed to water dripping at 3 mm/min, for at least 2.5 min on each of 4 surfaces tilted at 15°.)
Dust resistance	Equivalent to IP5x (Operates normally after 8 hours in a dust chamber containing dust of particle size 75 µm or below.)

* Confirms the battery operation in tests carried out by Sumitomo.
  Does not guarantee that the product is free of faults or damage.

Specifications

Items		TYPE-81C
Optical fiber requirement	Material	Silica glass
	Profile types	SMF(ITU-T G.652), MMF(ITU-T G.651), DSF(ITU-T G.653), NZDSF(ITU-T G.655), BIF(ITU-T G.657),EDF
	Fiber count	Single fiber
	Cladding diameter	80~150µm
	Coating diameter	100~1,000µm
	Applicable cable	Drop cable(2.0mm×3.1 or 2.6mm) Indoor cable(2.0mm×1.6mm)
	Cleave length	5~16mm(Drop/Indoor: 10mm only)
Standard performance	Splice loss (typ.)*1	SMF:0.02dB, MMF:0.01dB, DSF:0.04dB, NZDSF:0.04dB
	Splice time (typ.)	Approx. 7 s (SM Quick mode) Approx. 7.5 s (SM Std. mode) Approx. 8 s (Auto mode)
	Heating time (typ.)	Approx. 28 s (with FPS-61-2.1)
	Splice & heat cycles per fully charged battery*2	Approx. 200 (with BU-11)
	Fiber view and magnification	Two CMOS cameras 320x (ZOOM: 700x) for X or Y single axis view 88x for both X & Y dual axis view
Programs	Splice programs	Max. 300
	Heating programs	Max. 100
Functions	Loss estimation	Provided
	Attenuation splice	0.1 to 15 dB in 0.1 dB increments
	Splice image capture/ Splice data storage	64 images/10,000 splices
	Proof test (typ.)	1.96N(200gf)
	Help videos	Videos provided for basic operation and daily maintenance
	Automatic arc calibration	Automatically optimizes arc power according to environmental conditions (Auto mode)
Size/ Weight	Size	120 (W) x 154 (D) x 130 (H) mm (without shock absorbing rubber)
	Weight	2.1 kg (with BU-11)
	Monitor	4.1 inch color LCD monitor with touchscreen
Terminals	DC output	DC 12 V
	USB	USB2.0 (mini-B type)
	Storage media	SD and SDHC
Power supply	AC input	100 to 240 V 50/60 Hz
	DC input	10~15V, 4A
	Battery pack	Li-ion 11.1V, 4,600mAh (Typ.) (BU-11)
Operating conditions		Altitude: 0 to 6,000 m; Humidity: 0% to 95% (non-condensing) Temperature: -10°C to +50°C; Wind velocity: up to 15 m/s
Storage conditions		Temperature: -40°C to +80°C; Humidity: 0% to 95% (non-condensing) Temperature for battery: -20°C to +20°C (up to 12 months)
Electrode life*3		3,000 arcs
Software updates		Internet
Data management		Can be stored, edited and analyzed by dedicated PC software
Remote diagnosis		Provided

*1. When the fibers used are identical to Sumitomo's fibers.
*2. Splice & Heat cycles may vary depending on the battery status and the operating environment.
*3. Electrode life may vary depending on the operating environment.

Optional accessories for main unit

Part name	Part no.	Application/Description
Battery pack	BU-11S/11	Li-ion battery for TYPE-81 series
AC adapter	ADC-1430S	For TYPE-81 series and BC-11
Car battery cable	PCV-11	For car battery operation (cigarette socket type)
Electrodes	ER-10	—
V-groove cleaning jig	VGT-2	Brush for cleaning V-groove
Battery charger	BC-11	Battery charger for BU-11S/11
Fiber holders	FHS-025	For φ0.25 mm single fiber
	FHS-09	For φ0.9 mm single fiber
	FHD-1	For drop and indoor cables (Single fiber)

Accessories

Part name	Part no.	Description
Fiber cleaver	FC-6S-C	Bench top fiber cleaver for single fiber
	FC-6RS-C	Fiber cleaver for single fiber (automatic and manual blade rotation)
	FC-7R-S	Handheld fiber cleaver for single fiber
Jacket remover	JR-M03	Jacket remover for single fiber
Fiber protection sleeve	FPS-1	60 mm sleeve for single fiber
	FPS-40	40 mm sleeve for single fiber
	FPS-S-40	40 mm sleeve for single fiber
	FPS-D60	60 mm sleeve for drop and indoor cables
	FPS-N4-XX FPS-N9-XX	Nano Sleeve series for optical components (The suffix "XX" following the part number denotes sleeve length.)
Alcohol dispenser	HR-3	Alcohol dispenser

Note: Specifications, standard package, etc. are subject to change without prior notice.

Fixed V-groove fusion splicer TYPE-71M series

TYPE-71M12 | 1C~12C | Fixed V-groove |

- Ultra Fast splicing in approx. 14 s with (12-fiber ribbon) and fast heat shrinking of approx. 55 s (FPS-6 sleeves) with independent dual ovens (US patent 7,412,146)
- Fully navigational touchscreen and intuitive GUI for user friendliness
- Built in help videos play on the splicer display
- Shock, water and dust resistance for use in harsh environments
- Software updates and remote diagnosis via Internet
- User selectable heater clamp operation (patent pending)

RoHS compliant

Durable and rugged **Simple and versatile** **Carrying case with work tray**
Touch-screen operation

Standard package

Part name	Part no.	Qty.
Main unit	TYPE-71M12	1pc
Battery pack	BU-11	1pc
AC adapter	ADC-1430S	1pc
Power cord	PC-AC〈X〉	1pc
Cooling tray	—	1pc
Spare electrodes	ER-10	1pair
Operating CD manual	—	1pc
Quick guide	—	1pc
Carrying case with work tray	CC-71	1pc
Hand strap	—	1pc
USB cable	—	1pc

Environmental durability*

	Test details
Shock resistance	Operates normally after being dropped from 76 cm onto five faces (excluding top face)
Water resistance	Equivalent to IPx2 (Operates normally after being exposed to water dripping at 3 mm/min, for at least 2.5 min on each of 4 surfaces tilted at 15°.)
Dust resistance	Equivalent to IP5x (Operates normally after 8 hours in a dust chamber containing dust of particle size 75 µm or below.)

* Confirms the battery operation in tests carried out by Sumitomo.
  Does not guarantee that the product is free of faults or damage.

Specifications

Items		TYPE-71M12
Optical fiber requirement	Material	Silica glass
	Profile types	SMF(ITU-T G.652), MMF(ITU-T G.651), DSF(ITU-T G.653), NZ-DSF(ITU-T G.655), BIF(ITU-T G.657)
	Fiber count	1,2,4,5,6,8,10,12
	Cladding diameter	125 µm
	Coating diameter	Single fiber coating dia: 250 µm, 500 µm, 900 µm Ribbon fiber thickness: 280~400 µm
	Applicable cable	Drop cable(2.0mm×3.1mm) Indoor cable(2.0mm×1.6mm)
	Cleave length	10mm
Standard performance	Splice loss (typ.)*1	SMF:0.05dB, MMF:0.02dB, DSF:0.08dB, NZDSF:0.08dB (With identical Sumitomo fibers)
	Splice time (typ.)	9sec. (Single fiber), 14sec. (8-fiber, 12-fiber)
	Heating cycle time (typ.)	55sec. (12-fiber). 45sec. (4/8-fiber)
	Splice & heat cycles per fully charged battery*2	Approx. 110 (4/8/12-fiber)
	Fiber view and magnification	Two CMOS cameras obsevation 23X (ZOOM: 46X) for X or Y single axis view, 23X for both X & Y dual axis view
Programs	Splice programs	Max. 200
	Heating programs	Max. 100
Functions	Loss estimation	Provided
	Splice image capture/ Splice data storage	64 images/10,000 splices
	Proof test	1.96N(200gf)~2.09N(213gf)
	Help videos	Videos provided for basic operation and daily maintenance
	Auto-start	Splice/Heating
	Automatic arc calibration	Automatically optimizes arc power according to environmental conditions (Auto mode)
	Automatic fiber count detection	Provided
	Auto clamping adjustment system	Provided
Size/ Weight	Size	120 (W) x 154 (D) x 130 (H) mm (without shock absorbing rubber)
	Weight	Approx. 2.0 kg (with BU-11)
	Monitor	4.1 inch color LCD monitor with touchscreen
Terminals	DC output	DC 12 V (for JR-6)
	USB port	USB2.0 mini-B
	Storage media	SD and SDHC
Power supply	AC input	100~240V, 50/60Hz
	DC input	10~15V, 4A
	Battery	Li-ion 11.1V, 4,600mAh (Typ.) (BU-11)
Operating conditions		Altitude: 0 to 3,660 m; Temperature: -10°C to +50°C; Humidity: 0% to 95% (non-condensing); Wind velocity: up to 15 m/s
Storage conditions		Temperature: -40°C to +80°C; Humidity: 0% to 95% (non-condensing); Temperature for battery: -20°C to +20°C (up to 12 months)
Electrode life*3		1,500 arc discharges
Software updates		Internet
Data management		Can be stored, edited and analyzed by dedicated PC software
Remote diagnosis		Provided

*1. When the fibers used are identical to Sumitomo's fibers.
*2. Splice & Heat cycles may vary depending on the battery status and the operating environment.
*3. Electrode life may vary depending on the operating environment.

Optional accessories for main unit

Part name	Part no.	Description
Battery pack	BU-11S/11	Li-ion battery for TYPE-71 series
AC adapter	ADC-1430S	For TYPE-71 series and BC-11
Car battery cable	PCV-11	For car battery operation (cigarette socket type)
Electrodes	ER-10	—
V-groove cleaning jig	VGT-2	Brush for cleaning V-groove
Battery charger	BC-11	Battery charger for BU-11S/11

Accessories

Part name	Part no.	Description
Fiber cleaver	FC-6RM-C	Fiber cleaver for single fiber and up to 12-fiber ribbon
Handheld fiber cleaver	FC-7R-M/F	Handheld fiber cleaver for single fiber and up to 8-fiber ribbon
Jacket remover	JR-M03	Jacket remover for single fiber
	JR-6	Hot jacket remover for ribbon fiber
Fiber protection sleeve	FPS-1	60 mm sleeve for single fiber
	FPS-40	40 mm sleeve for single fiber
	FPS-5	40 mm sleeve for single fiber and up to 8-fiber ribbon
	FPS-6	40 mm sleeve for single fiber and up to 12-fiber ribbon
	FPS-D60	60 mm sleeve for single-fiber drop and indoor cables
Alcohol dispenser	HR-3	Alcohol dispenser

Fiber holders

FHS-025	FHS-09	FHM-2	FHM-4	FHM-5	FHM-8	FHM-10	FHM-12	FHD-1
0.25 mm single fiber	0.9 mm single fiber	For 2-fiber ribbon	For 4-fiber ribbon	For 5-fiber ribbon	For 8-fiber ribbon	For 10-fiber ribbon	For 12-fiber ribbon	For drop and indoor cables (single fiber)

Note: Specifications, standard package, etc. are subject to change without prior notice.

Hot jacket remover JR-6
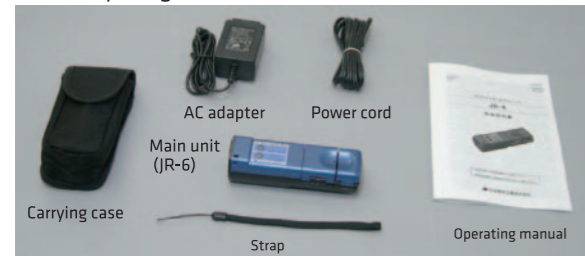*Handy series*

`1C-12C`

Lightweight, compact and easy to use

- The new design of grip and the downsized main body make the JR-6 ergonomic and comfortable to use. The coating removing force is less required. Downsized battery and reinforced plastic housing have enabled a 10% weight reduction from the previous model.
- Rugged design
- Built-in battery charger
- Easy maintenance and field replaceable blade
- A shock-resistant and drip-proof IPX1*

  * IPX1 is a drip-proof standard code specified in JIS C 0920 and indicates that water drops falling vertically have no detrimental effects on IPX1-rated items.

Items		JR-6
Applicable fiber	Material	Silica glass
	Fiber count Coating thickness	Single fiber: Fiber coating φ0.25 to φ0.4 mm 2 to 12-fiber ribbon: 0.3 to 0.4 mm in coating thickness (Used with fiber holders)
	Cladding diameter	125µm
	Coating material	UV cured resin
Coating removal length		Max. 30 mm
Power supply		Battery operation (with BU-6): 7.4 V in nominal voltage and 1620 mAh in nominal capacity DC operation (power supplied from fusion splicer): 9 to 15 V DC*1 AC operation (with ADC-1220S): 100 to 240 V AC, 50/60 Hz
Operating duration		Approx. 10 h*2
Number of removal cycles per fully-charged battery		Approx. 200*3
Battery charging time		Approx. 2 h (JR-6 cannot be used while the battery is being charged.)
Function		Temperature settings: 4 levels Power saving function: normal mode/power saving mode One of four LEDs shows battery level upon power up
Environmental conditions	Operation	Temperature: 0°C to +40°C Humidity: 0% to 95%RH (non-condensing)
	Storage	Temperature: −40°C to +60°C Humidity: 0% to 95%RH (non-condensing) This is not applicable to batteries.
Size		45 (W) ×138 (D) ×38 (H) mm
Weight		Approx. 235 g (including battery)

*1. The battery-powered TYPE-25e fusion splicer does not have a DC power supply function. An optional DC cord is required for DC operation.
*2. In power saving mode and with factory default temperature settings
*3. The figure is the result of using a fully-charged brand new battery and repeating coating removal every three minutes at a room temperature of approximately 25°C.

Standard package

AC adapter   Power cord

Main unit (JR-6)

Carrying case

Strap

Operating manual

Standard package
The package below is an example.

Part name	Part no.	Qty.	Description
Main unit	JR-6	1pc	Including one BU-6 battery
AC adapter	ADC-1220S	1pc	Used for AC power operation and battery charging
Power cord	—	1pc	For AC adapter
Strap	—	1pc	
Operating manual	OME0926019	1pc	
Carrying case	—	1pc	

Options

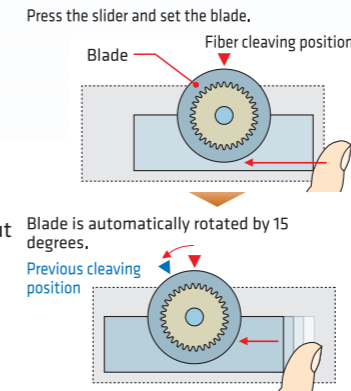| Part name	Part no.	Qty.	Description
Spare battery	BU-6	1pc	
AC adapter	ADC-1220S	1pc	
Spare blades	JR-6BL	Pair of upper and lower blades	
Single-fiber adapter	SFA-6	1pc	For removing a single-fiber coating
DC power cord	PC-B(C)	1pc	For power supply from fusion splicer

Jacket remover JR-M03

`1C`

- No fiber nick design
- Removes 2-3mm jacketing insulation, 250µm & 900µm fiber coatings
- Comfort grip handle
- Optimal shape for visibility during the jacket removing process
- Lockable when not in use

Items	JR-M03
Weight	Approx. 100 g
Applicable coating diameter	250µm to 3mm
Applicable cladding diameter	125µm

Note: Specifications, standard package, etc. are subject to change without prior notice.

Handheld optical fiber cleaver FC-7R series
Handy series

`1C-8C`

The industry's first optical fiber cleaver with automatic blade rotation to ensure high precison cleaves.

- Lightweight and compact
- Single-handed operation with minimal steps
- The FC-7R can make 60,000 cleaves. Manual blade rotation and blade height adjustment are not necessary.
- Advanced automatic fiber offcut collection
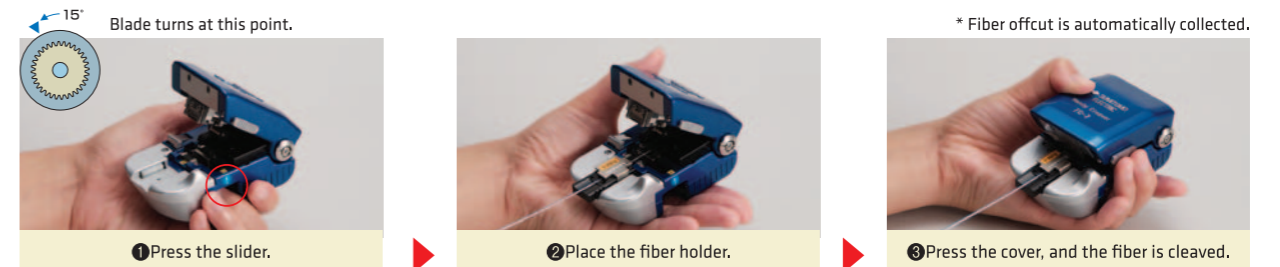- Does not use spacers required for mechanical splicing. (FC-7R-M)

Press the slider and set the blade.

Blade   Fiber cleaving position

Blade is automatically rotated by 15 degrees.

Previous cleaving position

US Patent #7,305,169 #8,443,705

Items		FC-7R-F	FC-7R-S
Applicable fiber	Fiber count	Single fiber and up to 8-fiber ribbon	Singe fiber (for fiber coating φ 0.25 to 0.9 mm)
	Cladding diameter	125µm	
Cleave length		10mm	6~20mm(φ0.25mm) 10~20mm(φ0.9mm) * Built-in scale for measurement of cleave length
Size		98(W)×58(D)×47(H)mm	
Weight		Approx. 300 g	
Description		For use in fusion splicing and field installable connector	Single fiber cleaving

FC-7R-F   **FC-7R-S**

Supplied shock-resistant semi-hard case

Springs inside the cleaver do not allow the fiber holder to fall

Single fiber adapter pre- attached

Options/Consumables

Part name	Part no.	Description
Single-fiber adapter	AP-FC7	Standard accessory to FC-7R-S
Fiber offcut collector	TR-FC7	Two pieces come as standard with FC-7R series.
Spare blade	FCP-20BL(7R)	Dedicated blade for FC-7R/6R series

FC-7R-F/M operating procedure

15°   Blade turns at this point.

* Fiber offcut is automatically collected.

❶Press the slider.   ❷Place the fiber holder.   ❸Press the cover, and the fiber is cleaved.

Optical fiber cleaver FC-6 series

`1C-12C`

Newly launched FC-6R series with automatic blade rotation

- The FC-6R series can make 60,000 cleaves. Manual blade rotation and blade height adjustment are not necessary.
- Fiber offcuts are automatically stored in the large capacity offcut collector.
- User selectable blade rotation.

FC-6RS-C

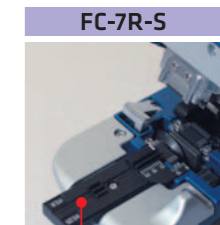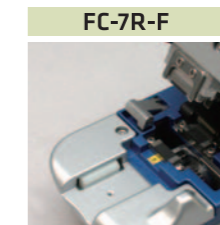* Automatic/manual blade rotation mechanism (patent pending)

Items		FC-6RS-C	FC-6S-C
Applicable fiber	Fiber count	Single fiber (φ0.25 & φ0.9 mm)	
	Cladding diameter	125µm	
Automatic blade rotation		Provided	—
Cleave length		5~20mm (φ0.25 mm) / 10~20mm (φ0.9 mm)	
Size		100(W)×81(D)×63(H)mm	
Weight		Approx. 420 g	

Items		FC-6RM-C	FC-6M-C
Applicable fiber	Fiber count	Single fiber (φ0.25 & 0.9 mm) and up to 12-fiber ribbon*	
	Cladding diameter	125µm	
Automatic/blade rotation		Provided	—
Cleave length		10mm	
Size		100(W)×81(D)×63(H)mm	
Weight		Approx. 420 g	
Options		Single fiber adapter: AP-FC6M	

* Fiber holders suitable for the fiber count in use (single fiber and up to 12-fiber ribbon) are required. (→ p.23)

Note: Specifications, standard package, etc. are subject to change without prior notice.

iDC Visual Manager : Integrated Connectivity & Asset Management System for Data Center

All kind of documentations and drawings (floor plan, rack implementation, connectivity, equipment, assets, trouble) are compiled into database and enable the data center operation management in a great accurate and effective manner.

■ **Floor Layout Management**
 ・Equipment implementation in the rack and cable routing can be managed in the ground plan drawing easily.
 ・Accurate dimension measurement and indication with the AutoCAD drawings.
■ **Rack Implementation Management**
 ・Rack implementation drawing can be created easily just by selecting equipment template by drag & drop operation
 ・Automatic calculation of open space in rack (open unit and maximum consecutive open units), electric consumption and equipment weight.
 ・Rack implementation drawing can be created automatically by importing equipment list in the MS Excel format.
■ **Network, Cable Management**
 ・Cables are illuminated in the screen that is convenient to route the cable.
 ・Port connections between Network equipment, servers, wiring panels, breaker outlet box can be easily done.
■ **Documentation of Equipment**
 ・All equipment can be registered and documented in any format. Maximum managerial fields are 250.
■ **Alliance with Environment and Network Monitoring Systems**
 ・With allied monitoring system, location and other information for alerted equipment (rack, panel, breaker, etc) will be provided to the system administrator.
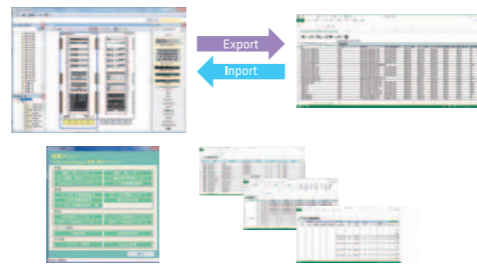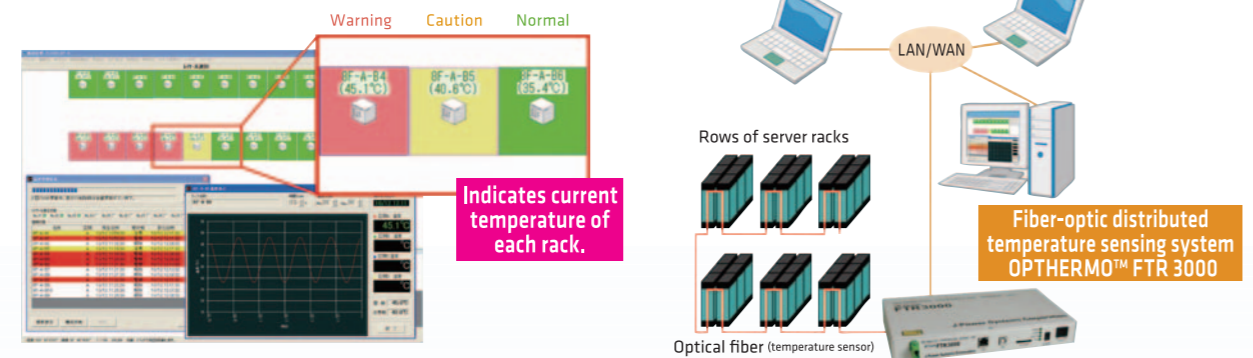
OPTHERMO™ FTR 3000 Fiber-optic distributed temperature sensing system

■ Monitors temperatures with only one line of optical fiber (GI50/125) up to a length of 2 km.
■ Temperature sensing accuracy: ±1°C (over a length of 2 km, in 60 s measuring time intervals)
■ Gives warnings and alarms.
■ No performance degradation by EMI
■ Long-life, maintenance-free optical fiber
■ Small and light design: 300 (W) x 160 (D) x 37 (H) mm, approx. 3 kg
■ Multi-Route monitoring can be set up with multi-unit connection or the combination with optical switch.

* OPTHERMO is a registered trade name of J-Power Systems Corporation.

Sample image for display of temperature sencing system

Warning   Caution   Normal

Indicates current temperature of each rack.

Rows of server racks

LAN/WAN

Optical fiber (temperature sensor)

Fiber-optic distributed temperature sensing system OPTHERMO™ FTR 3000

Optical fiber line-up

Single-mode optical fibers

|	SM SM	PureAccess®-PB PAPB	PureAccess®-A2 PAA2
Product name	SM	SM(PAPB)	SM(PA-A2)
Standards compliance	ITU-T G.652.B OS1 ※2	ITU-T G.652.D ITU-T G.657.A1 OS1,OS2 ※2	ITU-T G 652.D ITU-T G.657.A2 OS1,OS2 ※2
Mode field Diameter	9.2±0.5μm (λ=1310nm)	8.6±0.4μm (λ=1310nm)	8.6±0.4μm (λ=1310nm)
Cable cut-off wavelength	Max. 1260 nm	Max. 1260 nm	Max. 1260 nm
Attenuation	Max. 0.35 dB/ (λ=1310nm)	Max. 0.35 dB/ (λ=1310nm) Max. 0.33 dB/ (λ=1383nm) Max. 0.21 dB/ (λ=1550nm)	Max. 0.35 dB/ (λ=1310nm) Max. 0.33 dB/ (λ=1383nm) Max. 0.21 dB/ (λ=1550nm)
Zero dispersion wavelength	1300~1324nm	1300~1324nm	1300~1324nm
Minimum ※1 bending radius	30mm	10mm	7.5mm
		Bending property improved	Same characteristic as SM(PA), and more improved bending property

Multi-mode optical fibers

	PureEther®-Access1G 1G	PureEther®-Access10G 10G	PureEther®-Access10G+ 10G+
Product mame	GI(PE-A1G)	GI(PE-A10G)	GI(PE-A10G+)
Standards compliance	IEC60793-2-10 A 1a.1 type OM2※2-compliant	IEC60793-2-10 A 1a.2 type OM3※2-compliant	Compatible with upper grade of IEC60793-2-10 A 1a.2 type OM4※2-compliant
Attenuation	3.0 dB/km max. (λ=850nm) 1.0 dB/km max. (λ=1300nm)	3.0 dB/km max. (λ=850nm) 1.0 dB/km max. (λ=1300nm)	3.0 dB/km max. (λ=850nm) 1.0 dB/km max. (λ=1300nm)
Transmission band	500 MHz•km min. (λ=850nm) 500 MHz•km min. (λ=1300nm)	1500 MHz•km min. Effective band 2000 MHz•km min. (λ=850nm) 500 MHz•km min. (λ=1300nm)	3500 MHz•km min. Effective band 4700 MHz•km min. (λ=850nm) 500 MHz•km min. (λ=1300nm)
Minimum ※1 bending radius	15mm	15mm	15mm
		Can transmit signals to a maximum distance of 300 m at a rate of 10 gigabits	Can transmit signals to a maximum distance of 550 m at a rate of 10 gigabits

※1 Value in fiber　※2 Classified fiber in ISO/IEC 11801

Bend insensitive optical fiber Access series

Accomplish from one half to one quarter minimum bending radius compare to conventional SM fiber.
Can realize smarter wiring and compact fiber placing
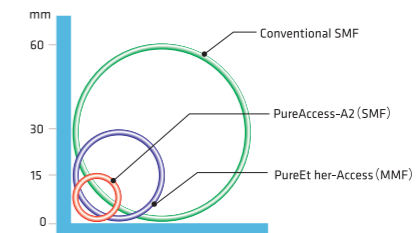
Can connect with conventional optical fiber at low insertion loss

Fiber combination	At fusion splicing	At optical connector
Pure Access-PB vs. conventional SM fiber	Ave. 0.03dB Max. 0.06dB	Ave. 0.13dB* Max. 0.30dB*

* vs. our optical connector with conventional SM fiber

Conventional SMF
PureAccess-A2 (SMF)
PureEt her-Access (MMF)

Ethernet standards and transmission distance using optical fiber

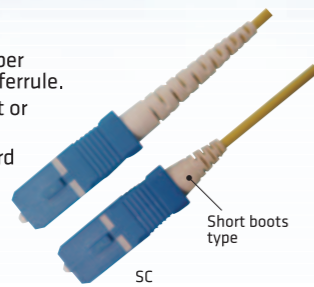|	Stand and name		Transmission rate	Wavelength	Form connector	Optical connector	MM:OM2 1G	MM:OM3 10G	MM:OM4 10G+	SM:OS1 SM	SM:OS1,OS2 PAPB PAA2
100 gigabit Ethernet	IEEE802.3bm	100GBASE-SR4	100Gbps	850nm		MPO	-	-	-	-	-
	IEEE802.3ba	100GBASE-SR10	100Gbps	850nm	CFP/CXP	MPO	-	100m	150m	-	-
		100GBASE-LR4	100Gbps	LAN-WDM	CFP/CFP2/CFP4	LC	-	-	-	-	10,000m
		100GBASE-ER4	100Gbps	LAN-WDM	CFP	LC	-	-	-	-	40,000m
40 gigabit Ethernet	IEEE802.3ba	40GBASE-SR4	40Gbps	850nm	CFP/QSFP+	MPO	-	100m	150m	-	-
		40GBASE-LR4	40Gbps	CWDM	CFP/QSFP+	LC	-	-	-	10,000m	10,000m
	IEEE802.3bm	40GBASE-ER4	40Gbps	CWDM		LC	-	-	-		
	IEEE802.3bg	40GBASE-FR	40Gbps	1550nm	CFP	LC	-	-	-	2,000m	2,000m
10 gigabit Ethernet	IEEE802.3ae	10GBASE-SR	10Gbps	850nm	SFP+	LC	82m	300m	550m	-	-
		10GBASE-LR	10Gbps	1310nm	SFP+	LC	-	-	-	10,000m	10,000m
		10GBASE-ER	10Gbps	1550nm	SFP+	LC	-	-	-	40,000m	40,000m
gigabit Ethernet	IEEE802.3z	1000BASE-SX	1Gbps	850nm	SFP	LC	550m	550m	550m	-	-
		-	1Gbps	850nm	SFP	LC	-	1000m*	1000m*	-	-
		1000BASE-LX	1Gbps	1300nm	SFP	LC	550m	550m	550m	-	-
			1Gbps	1310nm	SFP	LC	-	-	-	5,000m	5,000m

*Our experimental data. It might be different value in case of different network appatus constructions

Single-fiber optical connector

SC

Features
- One of the most popular single fiber connector with 2.5mm diameter ferrule.
- Push-on design is easy to connect or disconnect.
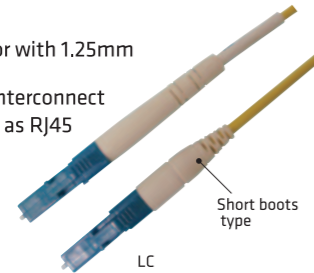- Can be attached to any optical cord or cable.

Short boots type

SC

Fiber type	Single mode			Multi mode
Fiber name	SM, SM(PAPB), SM(PA-A2)			GI(PE-A) Series
Type of polishing	SPC	UPC	APC	PC
Connecting loss※	< 0.5dB	< 0.5dB	< 0.5dB	< 0.3dB
Return loss	> 40dB	> 55dB	> 60dB	> 25dB
Standard	IEC61754-4			

※Against master plug
※For SMF, low loss type (Insertion loss is 0.3dB or less) available.
※For MMF, SPC polishing (return loss is 40dB or more) available.

LC

Features
- Small Form Factor (SFF) connector with 1.25mm diameter ferrule
- Suitable for high density optical interconnect
- Simple push-on connection same as RJ45
- Can be attached to any optical cord or cable.

Short boots type

LC

Fiber type	Single mode			Multi mode
Fiber name	SM, SM(PAPB), SM(PA-A2)			GI(PE-A) Series
Type of polishing	SPC	UPC	APC	PC
Connecting loss※	< 0.5dB	< 0.5dB	< 0.5dB	< 0.3dB
Return loss	> 40dB	> 55dB	> 60dB	> 25dB
Standard	IEC61754-20			

※Against master plug
※For SMF, low loss type (Insertion loss is 0.3dB or less) available.
※For MMF, SPC polishing (return loss is 40dB or more) available.

Duplex optical connector

Features ● Two single fiber connectors are coupled. One push-on/off action realize two fiber connection/dis-connection.

SCF

Features
- Duplex SC connector.
- Suitable for LAN, connection pitch is 12.7mm.
- Compatible with SC connector.

SCF

Fiber type	Single mode			Multi mode
Fiber name	SM, SM(PAPB), SM(PA-A2)			GI(PE-A) Series
Type of polishing	SPC	UPC	APC	PC
Connecting loss※	< 0.5dB	< 0.5dB	< 0.5dB	< 0.3dB
Return loss	> 40dB	> 55dB	> 60dB	> 25dB
Standard	IEC61754-4			

※Against master plug
※For SMF, low loss type (Insertion loss is 0.3dB or less) available.
※For MMF, SPC polishing (return loss is 40dB or more) available.

LCF

Features
- Duplex LC connector
- Connection pitch is 6.25mm.
- Compatible with LC connector.
- Suitable for high density termination.

LCF

Fiber type	Single mode			Multi mode
Fiber name	SM, SM(PAPB), SM(PA-A2)			GI(PE-A) Series
Type of polishing	SPC	UPC	APC	PC
Connecting loss※	< 0.5dB	< 0.5dB	< 0.5dB	< 0.3dB
Return loss	> 40dB	> 55dB	> 60dB	> 25dB
Standard	IEC61754-20			

※Against master plug
※For SMF, low loss type (Insertion loss is 0.3dB or less) available.
※For MMF, SPC polishing (return loss is 40dB or more) available.

DLCSB connector

- Two LC connectors can be bundled with the parts.
- Can use as LCF connector and can check each connector respectively.

Parts

After assembly
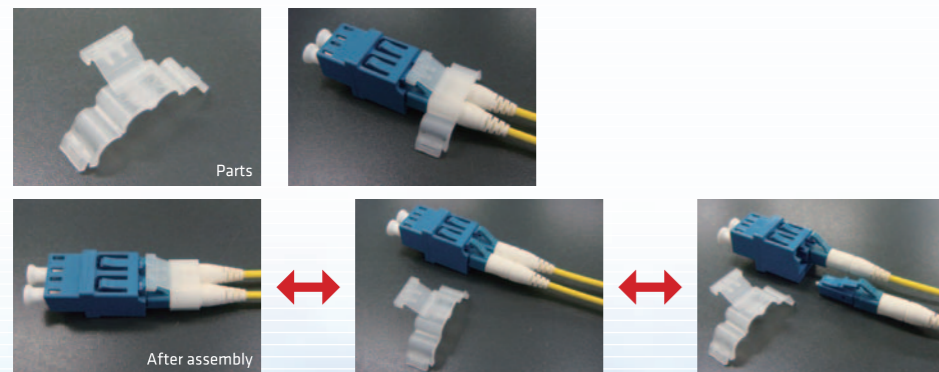
Multi-fiber optical connector

8MPO,12MPO

Features
- Easy to attach/detach by a push-on action
- Enables high-density connection by compact dimension with multi-fibers
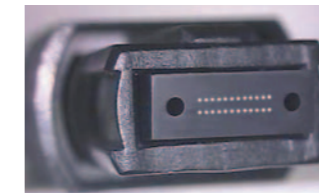
Application
- 10GBASE-SR, 40GBASE-SR4 etc

MPO

Connector	MPO (1 row type)	
Fiber Type	SM,SM(PAPB)	GI(PE-A) Series
Fiber Count	8,12	12
Polish	APC	Flat PC
Insertion Loss (against master plug)	Std. Loss: ≤ 0.75dB Low Loss: ≤ 0.35dB	
Return Loss (against master plug)	≥ 55dB	—
Housing Color	SM.Std Loss Green / SM.Low Loss Yellow	MM62.5 Beige / MM50 Black / MM50(10G) Aqua
Reliability	Telcordia GR-1435-CORE	
Interface	IEC 61754-7	

24MPO

Features
- 24-fiber connector with two 12-fiber ribbons arranged in parallel on a ferrule
- Most suitable for high-density fiber connection

Application
- 100GBASE-SR10 etc

MPO (2 row)

Connector	MPO (2 row type)	
Fiber Type	SM,SM(PAPB)	GI(PE-A) Series
Fiber Count	24	
Polish	APC	Flat PC
Insertion Loss (against master plug)	Std. Loss: ≤ 0.75dB Low Loss: N/A	Std. Loss: ≤ 0.75dB Low Loss: ≤ 0.35dB
Return Loss (against master plug)	≥ 55dB	—
Housing Color	SM.Std Loss Green / SM.Low Loss Yellow	MM62.5 Beige / MM50 Black / MM50(10G) Aqua
Reliability	Telcordia GR-1435-CORE	
Interface	IEC 61754-7	

Ferrule polishing

Connector charecteristics differ according to the ferrule polishing method.

	Polishing shape	Polishing method	Connection	Features
Single fiber	Retangular spherical	PC		Ferrule endface is polished spherically so as to ensure fiber to fiber contact(PC connection). Gurantee return loss of 25dB(SM)..
		SPC		An evolution of PC polishing. Achieve a return loss of 40dB. (against master plug)
		UPC		Moreover evolution of SPC polishing. Achieve a return loss of 55dB. (against master plug)
	Angled spherical (8 degree)	APC		Ferrule endface is angle polishied spherically and realized PC connection and low return loss of 60dB. (can NOT connect with rectangular spherical polising:PC, SPC, UPC)
Multi-fiber	Retangular	PC(Code:R)		Retangular special polishing of the endface. Realize PC connection. Index matching material is Not necessary MPO connector for GI fiber is generally rectangular PC polishing.
	Angle (8 degree)	PC(Code:A)		Angled special polishing of the endface. Realize PC connection and low retrun loss. Index matching material is Not necessary MPO connector for SM fiber is generally angled PC polishing.