

|| Contents

Company Profile

- Introduction
- KOC History

Certificate 06P

Main Exhibitions 07P

Development Process 08-09P

Product Introduction

Field Assembly Optical Connector

- V-groove type 10~11P

Optical Fiber Patch Cords 12~13P

Optical Fiber Pigtail 14~15P

Fiber Optic Attenuator

- Fixed Type 16~17P

- Attenuated Patch Cord/ In-Line Attenuator 18~19P

PLC Splitter 20~21P

Fiber Optic Coupler 22~23P

FTTH Drop Jumper Cord(Standard) 24~25P

Mini FTTH Drop Jumper Cord 26~27P

Multi-fiber Fan-out Patch Cord 28~29P

MCP(Mode Conditioning Patch Cord) 30~31P

MPO High-density Fiber Optic Connectivity Solutions

- MPO Patch Cord 32P

- MPO Cassettes 33P

- MPO OFD 34P

- MPO Rack 35P

Optical Adapter 36~37P

Optical Connector Kits 38~39P

Fiber Optic Splice Closure 40P

Fiber Distribution Frame 41P

Splice on Connector(SOC) 42~43P

Fiber Optic Cable 44~59P

MEMS Scanner Chip 60~61P

Smart Lite Measurement System(SLM Series) 62~65P

Leisure Power Portable Battery Pack 66~67P

BTS Energy Storage System (LiFePo4) 68~69P

Off Grid Battery Energy Storage System 70~71P

On Grid Battery Energy Storage System 72~74P

Connecting the World and Light Up the Future

KOC, based in South Korea, is a globally recognized manufacturer of fiber optic products and specializes in integrated fiber optic solutions and service. KOC has been supplying high level of quality and cost-effective fiber optic products more than 30 countries around the world and have done our best to understand and meet our customer's requirements since 1997.

KOC possesses cutting edge manufacturing facilities, world-class technologies and a strong R&D capability. Our product range includes an extensive variety of optical connectors, Optical Patch Cords, Optical Adaptors, Fixed and Variable Optical Attenuators, MPO products, PLC Splitters, FDF, Optical Couplers / WDMs and so on. All the products are manufactured in ISO9001, ISO14001 and TL9000 certified facilities and comply with applicable international standards.

KOC's Optical Attenuators and Field Assembly Optical Connectors, MPO Products have been recognized as "Korean World-Class Product" by the Ministry of Commerce, Industry and Energy of Korea. In addition, We have been supplying over 4,000,000pcs of Fiber Optic products to KT(Korea Telecom), and SK broadband as their first vendor.

KOC has launched Optical MEMS Scanner certified by the Ministry Of Trade, Industry & Energy of Korean Government in 2014, which was hybrid technology of MEMS and Optics. KOC's Optical MEMS Scanner can be applied to various kinds of industry as the role of bio/industrial imaging or other scanning system for information technology. Furthermore, KOC has stepped in the field of green energy industry through the intensive researching and successive development. Due to endless hard work, KOC has not only become the leading supplier of Energy Storage System and Solution to the world-wide, but also contributes to the environmental protection from pollution caused by depletion of fossil energy as a social enterprise. KOC will do its best to be a pioneer of the future technology and to remain continuously dedicated to the improvement of all its products and services.



KOC History

- 2016.06 Investment by Korea Development Bank
- 2015.03 Appointed as Samsung Electronics Venture Partner
- 2015.01 Designated as globally competitive hidden champions by Government.
- 2014.04 Certified as New Excellent Technology by Government with MEMS Scanner Chip
- 2013.12 Awarded as "Korean World Class product Award 2013" with MPO Ribbon Cable Unit
- 2013.05 Developed MEMS Scanner Chip
- 2013.01 Designated as Global Valuable Company Korea by Small and Medium Business Administration
- 2012.10 Approved E-2000 Patch cord quality by R&M
- 2012.02 Appointed as a superior partner by Korea Telecom
- 2011.12 Awarded as "Korean World Class product Award 2011" with FAOC
- 2011.02 Appointed as the first vendor of SK Broadband with FAOC
- 2010.05 Awarded KOTRA Seal of Excellence from Korea Trade-Investment Promotion Agency
- 2009.12 Appointed as KT's first vendor with Optical Fiber Distribution Frame and Optical Patch Cords.
- 2008.08 BMT passed by Korea Telecom and appointed as their first vender with FAOC
- 2007.12 KOC's passive components have been passed KT Bench Marking test
- 2007.08 Developed Field Assembly Optical Connector
- 2006.07 Developed 120Gbps Arrayed VCSEL transceiver module which was midterm challenge task of Ministry of Knowledge Economy, Korea
- 2005.02 INNO-BIZ certified by Small and Medium Business Administration
- 2002.12 Awarded as "Korea World-Class Product Award 2002" with Optical Attenuator
- 2002.01 TL9000-HR3.0 certified
- 2001.05 Small Business corporation investment (Capital sum total 702,000,000 won)
- 2000.06 ISO9001 certified
- 2000.05 New construction and relocation of factory / ISO9001 certified
- 2000.02 Venture enterprise awarded by Mayor of Gwangju city
- 1997.06 KOC established



ISO9001



ISO14001



TL9000



OFC

CommunicAsia

ECOC



WORLD-CLASS ATTENUATOR



WORLD-CLASS FAOC



WORLD-CLASS MPO



SUPERIOR VENDOR
APPROVED FROM KT



KT BMT RESULT



SK BMT RESULT



KOTRA GLOBAL BRAND 2012



PROMISING EXPORT FIRM



E-2000 R&M CERTIFICATE

Development Process

Project	Term	Authority
Development of mobile 3-dimensional MEMS Scanner probe applied SDPD and embedded software to detect skin cancers within 2mm depth	2016~2018	Small and Medium Business Administration
Development of 3-dimensional high speed inspection probe with 2-channel MEMS scanner for micro-defect detection on 6" mobile display panel	2016~2018	Ministry of Trade, Industry and Energy
Development of security finger vein Imaging Device using MEMS Scanner	2014~2015	Korea Industrial Complex Corp.
Packaging for commercialization of 2 degree of freedom MEMS scanner and secure responsibility	2014~2015	Korea Industrial Technology Association
Development of drug heart toxicity inspection system	2013~2017	Ministry of Commerce, Industry and Energy
Development of miniaturized (smaller than 5mm in diameter) optical probe for 3-diameter endoscopy	2012~2014	Gwangju Institute of Science and Technology

Project	Term	Authority
New product development under procurement conditions with Korea Telecom [multi-channel fiber optic cable FDF]	2011~2012	Small and Medium Business Administration
Development of LC Type Field Assembly Optical Connector	2008~2009	Small and Medium Business Administration
120 Gbps arrayed VCSEL transceiver development for parallel optical connection	2005~2009	Ministry of Commerce, Industry and Energy
Attenuated Patch Cord	2003~2004	Small and Medium Business Administration
Integrated TO can SFP type of WDM transceiver module development	2002~2005	Ministry of Commerce, Industry and Energy
VOA components analysis using MEMS technology	2002~2003	Inter-research Consortium
High reliability packaging technology for optical internet core components	2001~2004	Korea Electronics and Telecommunications Research Institute
Semiconductor optical device technology for optical information processing	2001~2002	Korea Advanced Institute of Science and Technology

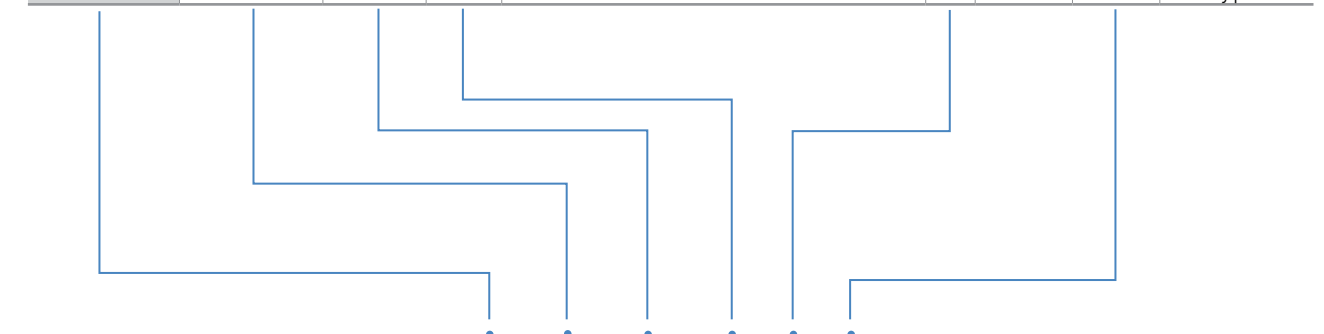


Interferomrter	UPC type	APC type
Radius of Curvature	7mm ~ 25mm	5mm ~ 12mm
Apex Offset	MAx. 50μm	MAx. 50μ
Fiber Height	-50nm ~ 50nm	-50nm ~ 50nm
Tilt Error on APC 8'	None	±0.3

	SC type	LC type	ST type	FC type
Conformance	TIA/EIA 604-3	TIA/EIA 604-10	TIA/EIA 604-2	TIA/EIA 604-4
Ferrule	Ceramic (Zirconia)			
Housing Color	Single Mode PC type: Blue Single Mode APC type : Green OM2 PC type: Beige OM3,4 PC type: Aqua			
Cable type	250μm/900μm 2.0mm/3.0mm 2.0mm X 3.0mm 1.6mm X 2.0mm Universal Type	250μm/900μm 2.0mm 1.6mm X 2.0mm	250μm/900μm 2.0mm	250μm/900μm 2.0mm/3.0mm 2.0mm X 3.0mm 1.6mm X 2.0mm Universal Type

Ordering Information

Item	Connector Type	Ferrule Type	Fiber Type		Cable Type		Cable Diameter	
Field Assembly Optical Connector	SC	UPC	SM	Single Mode Fiber	R	Round	20	2.0mm
	LC	APC	OM1	Multimode 62.5/125μm Fiber	F	Flat	30	3.0mm
	ST		OM2	Multimode 50/125μm Fiber			25	250μm
	FC		OM3	Multimode 50/125μm Fiber(10Gb/s)			25/90	900μm
			OM4	Multimode 50/125μm Fiber(100Gb/s)			21	2.0x1.6mm
							23	2.0x3.0mm
							UT	Universal type



Ordering code: **FAOC - SC - UPC - SM - R - 90**

KOC Field Assembly Optical Connector is designed for fast and simple field termination of single fiber, without polishing or epoxy. The FAOC is made with precision and high quality Zirconia ferrules and provides a highly reliable connection in most of the network application. The FAOC is available with 250/900μm buffed fiber, 2.0mm, 1.6mm x 2.0mm, 2.0mmX3.0mm and 3.0mm jacket cable.

The universal type FAOC is also available, which is suitable for all of the 250/900um, 2mm and 3mm, 2.0mmX3.0mm cable diameter. These connectors strictly conform to international standards and provide consistent long-term mechanical and optical performance. The FAOC offers terminations in less than 1 min which allows you greatly to reduce the installation and set up time. The KOC's Field assembly Optical Connector has been recognized as a "Korean World-class Product" by the Ministry of Knowledge Economy.

Features

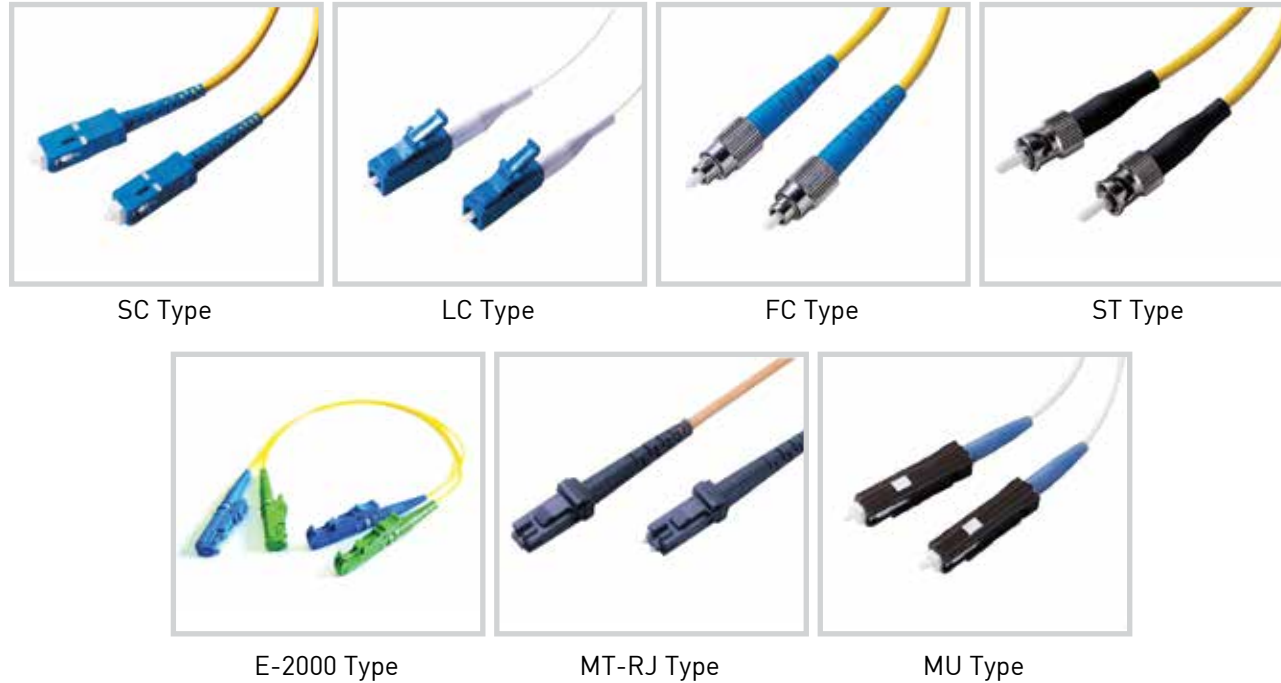
- Comply with TIA/EIA and IEC
- Quick and easy fiber termination
- RoHS compliant
- Reusable termination capability [up to 5 times]
- Easy to deploy fiber solution
- High success rate of connections
- Low Insertion & Back Reflection
- No special tools required

Applications

- All fiber interconnection
- Telecom Distribution and Local Area Networks
- FTTH and FTTx
- Passive optical networks [ATM, WDM, Ethernet]
- Broadband, Cable TV (CATV)

Specification

Insertion Loss	Typ. 0.3dB / Max. 0.5dB
Return Loss	PC type : ≥50dB / APC type : ≥55dB
Endurance	1,000 mating cycles change in attenuation 0.1dB
Tension	≤0.2dB change [2.0mm,3.0mm, 1.6mm X 2.0mm, 2.0mm X 3.0mm] / 3.0kg ≤0.2dB change [250μm, 900μm] / 0.75kg
Vibration	≤0.2dB change / 10-55Hz / 0.75 amplitude
Temperature change	≤0.2dB change / -40 to +75°C/ 21 cycle



KOC offers high performance and an extensive line of fiber optic patchcords for use in all types of fiber optic networks. The patchcords are manufactured using state-of-the-art controlled manufacturing processes to operate over a wide range of wavelengths, ranging from 850nm ~ 1300nm for Multimode and 1310nm ~ 1550nm for Singlemode fiber. They are terminated with high quality connectors, which provide low insertion loss and high return loss. Each patch cord is individually tested and supplied with test reports.

Features

- Comply with TIA(GR-326-Core) / EIA and IEC
- Wide variety of connector options and cable options available
- Available in custom lengths meets your specific requirements
- All assemblies tested and inspected individually and test data available upon request
- RoHS compliant
- Easy to install

Applications

- FTTH deployments
- CATV, CCTV, LAN and Telecom networks
- Datacenter and Datacom
- Testing and measurement equipment
- Telecommunications

Specification

Insertion Loss	Typ. 0.2dB / Max. 0.3dB	
Return Loss	UPC type : ≥ 50 dB / APC type : ≥ 60 dB	
Durability	1,000 mating cycles change in attenuation 0.1dB	
Operating Temperature	≤ 0.2 dB / -40°C to $+75^{\circ}\text{C}$	
Interferometer	UPC type	APC type
Radius Of Curvature	7mm ~ 25mm	5mm ~ 12mm
Apex Offset	Max. 50 μm	Max. 50 μm
Fiber Height	-50nm ~ 50nm	-50nm ~ 50nm
Tilt Error on APC 8'	None	± 0.3

► Interferometer measuring equipment : CC6000 / Norland

Ordering Information

Item	Connector Type	Ferrule Type	Fiber Type		Cable Type		Cable Material		Cable Color		Cable Diameter		Cable Length	
Optical Patch-Cord	SC	UPC	SM	Single Mode Fiber	SX	Simplex	P	PVC	Y	Yellow	09	0.9mm	01	01m
	LC	APC	OM1	Multimode 62.5/125µm Fiber	DXZ	Duplex Zipcord	L	LSZH	O	Orange	20	2.0mm	02	02m
	ST		OM2	Multimode 50/125µm Fiber	DXF	Duplex Flat			W	White	25	2.5mm	03	03m
	FC		OM3	Multimode 50/125µm Fiber(10Gb/s)					G	Green	30	3.0mm	04	04m
	MU		OM4	Multimode 50/125µm Fiber(100Gb/s)					B	Blue			.....	.....
	MT : MT-RJ								A	Aqua				
	MD : MPO												98	98m
	EZ : E2000												99	99m

Ordering code: **OJC - LC - UPC - SM - SX - P - Y - 09 - 02**



Optical Fiber Pigtail

KOC manufactures the pigtails to be used for splice application when terminating outside plant cable. We offer a wide range of specialty pigtails using various connectors such as LC, SC, MU, MTRJ, MPO ribbon cable and more . We also offer individual single pigtails and 6 or 12 fiber jacketed pigtails. All fiber optic pigtails can be made to any length to fit your project.

A fiber pigtail is a single short piece of optical fiber, that has an optical connector on one end and a length of exposed fiber at the other end. The end of the pigtail is stripped back and fusion spliced to another single fiber. All of our pigtails are factory inspected and tested, with available interferometer data upon request. And the unique serial number provides traceability of every single product.

Features

- Comply with TIA(GR-326-Core) / EIA and IEC
- Wide variety of connector options and cable options available
- All assemblies tested and inspected individually and test data available upon request
- Easy to install
- RoHS compliant
- Custom assemblies are available

Applications

- FTTH application
- Premise installations
- Data processing networks
- Wide Area Networks
- Telecommunications
- Industrial, mechanical and military

Specifications

Insertion Loss	Typ. 0.2dB / Max. 0.3dB	
Return Loss	UPC type : ≥ 50 dB / APC type : ≥ 60 dB	
Durability	< 0.1 dB / 1000 mating	
Operating temperature	≤ 0.1 dB / -40°C to $+75^{\circ}\text{C}$,	
Interferometer	UPC type	APC type
Radius Of Curvature	7mm ~ 25mm	5mm ~ 12mm
Apex Offset	Max. 50 μm	Max. 50 μm
Fiber Height	-50nm ~ 50nm	-50nm ~ 50nm
Tilt Error on APC 8'	None	± 0.3

► Interferometer measuring equipment : CC6000 / Norland

Ordering Information

Item	Connector Type	Ferrule Type	Fiber Type	Core type		Cable Material		Type	Cable Diameter		Cable Length	
Optical Pigtail	LC	UPC	SM Single Mode Fiber	04	4core	P	PVC	G00 General Pigtail type	09	0.9mm	01	01m
	SC	APC	OM1 Multimode 62.5/125 μm Fiber	08	8core	L	LSZH	D10 Distribution type 10cm breakout	20	2.0mm	02	02m
	ST		OM2 Multimode 50/125 μm Fiber	12	12core			D20 Distribution type 20cm breakout	25	2.5mm	03	03m
	FC		OM3 Multimode 50/125 μm Fiber(10Gb/s)	.....	.....			.....	30	3.0mm	04	04m
	MU		OM4 Multimode 50/125 μm Fiber(100Gb/s)	144	144core			D99 Distribution type 99cm breakout			.....	.....
	MT : MT-RJ											
	MD : MPO										98	98m
	EZ : E2000										99	99m

Ordering code: **OP - LC - UPC - SM - 12 - P - D30 - 09 - 02**

Fiber Optic Attenuators(Fixed Type)



Fixed Attenuator SC

Fixed Attenuator ST

Fixed Attenuator MU



Fixed Attenuator LC

Fixed Attenuator FC

Attenuators are used to reduce excess optical power from the transmitter that can results in over-saturation of the receiver. These attenuators are available in SC, LC, ST, FC and MU style with APC, UPC. The front of the attenuator is a male plug connector style that allows the attenuators to be plugged directly into receiver equipment or adaptors in patch panel. KOC's optical attenuators have been recognized as "Korean World-class Products" by the Ministry of Knowledge Economy.

Features

- Wavelength insensitive
- Mode noise suppression
- Low polarization dependent loss
- High power endurance
- Fixed and variable attenuation
- Low polarization dependent loss
- High power endurance
- Fixed and variable attenuation

Applications

- Telecommunication Systems
- Cable Television Networks
- Test Equipment
- Data Communications Networks
- Local Area Networks

Product Specifications

Attenuation Range		1 to 30dB (1dB increment)
Operating Wavelength		1310nm / 1550nm (SM), 850nm (MM)
Tolerance	Attenuation 1 to 10dB	±0.5dB
	Attenuation 11 to 30dB	±1.0dB
Return Loss		UPC type : ≥50dB / APC type : ≥60dB
Polarization Dependent Loss		≤0.5dB
Operation Temperature		-40℃ to +75℃

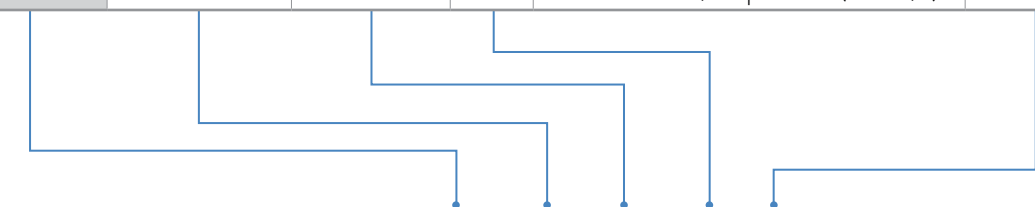
Interferometer	UPC Type	APC Type
Radius Of Curvature	7mm ~ 25mm	5mm ~ 12mm
Apex Offset	Max. 50μm	Max. 50μm
Fiber Height	-50nm ~ 50nm	-50nm ~ 50nm
Tilt Error on APC 8´	None	± 0.3

Design

	LC Type	SC Type	ST Type	FC Type	MU Type
International standard	Telcordia GR-910-CORE				
Ferrule	Ceramic(Zirconia)				
Housing Color	UPC	Blue	Blue & Metal Housing	Metal	Brown
	APC	Green	Green & Metal Housing		

Ordering Information

Item	Connector Type	Ferrule Type	Fiber Type		Attenuation Value	
Optical Fiber Attenuator-Fixed Type	LC	UPC	SM	Single Mode Fiber	01	1dB
	SC	APC	OM1	Multimode 62.5/125μm Fiber	02	2dB
	ST		OM2	Multimode 50/125μm Fiber	03	3dB
	FC		OM3	Multimode 50/125μm Fiber(10Gb/s)	.....	.....
	MU		OM4	Multimode 50/125μm Fiber(100Gb/s)	30	30dB



Ordering code: **OFA-F - LC - UPC - SM - 01**



Attenuated Patchcord



In-Line Attenuator

High performance Attenuated PatchCords are used to attenuate optical power in an optical system. The attenuated Patchcord can be used to replace the conventional cable assembly and attenuator combination.

It is compact, multi-purpose passive device designed to operate at the 1310 and 1550nm wavelengths. Korea Optron Corp. provides Attenuated PatchCords with various connector styles SC, ST, FC, LC, MU and hybrid type.

Features

- Provides the functions of attenuator and patch cord assembly simultaneously
- Connector varieties available
- Conform to the requirements of EIA/TIA standards
- 100% Insertion Loss testing
- Wavelength insensitive
- Mode noise suppression
- Low polarization dependent loss
- High laser power endurance
- Fixed and variable attenuation

Applications

- Telecommunication systems
- Cable television networks
- Test equipment
- Data communications networks
- Local Area Networks

Product Specifications

Attenuation	1 to 30dB (1dB increment)	
Operating Wavelength	1310nm / 1550nm	
Tolerance	Attenuation 1 to 10dB	±0.5dB
	Attenuation 11 to 30dB	±1.0dB
Attenuated Patch cord Length	Up to 2m	
In-Line Attenuator Length	Up to 10m	
Return Loss	UPC type : ≥50dB / APC type : ≥60dB	
Polarization Dependent Loss	≤0.5dB	
Operation Temperature	-40°C to +75°C	

Interferometer	UPC Type	APC Type
Radius Of Curvature	7mm ~ 25mm	5mm ~ 12mm
Apex Offset	Max. 50μm	Max. 50μm
Fiber Height	-50nm ~ 50nm	-50nm ~ 50nm
Tilt Error on APC 8'	None	± 0.3

Ordering Information

CODE	Connector Type	Ferrule Type	Fiber Type		Attenuation Value		Cable Diameter		Cable Length	
Attenuated Patchcord	LC	UPC	SM	Single Mode Fiber	01	1dB	09	0.9mm	01	01m
	SC	APC	OM1	Multimode 62.5/125μm Fiber	02	2dB	20	2.0mm	02	02m
	ST		OM2	Multimode 50/125μm Fiber	03	3dB	25	2.5mm		
	FC		OM3	Multimode 50/125μm Fiber(10Gb/s)	.....	.....	30	0.9mm		
	MU		OM4	Multimode 50/125μm Fiber(100Gb/s)	30	30dB				

Ordering Information:

OFA-AP - LC - UPC - SM - 02 - 09 - 01

Item	Connector Type	Ferrule Type	Fiber Type		Attenuation Value		Cable Diameter		Cable Length	
In-Line Attenuator	LC	UPC	SM	Single Mode Fiber	01	1dB	09	0.9mm	03	03m
	SC	APC	OM1	Multimode 62.5/125μm Fiber	02	2dB	20	2.0mm	04	04m
	ST		OM2	Multimode 50/125μm Fiber	03	3dB	25	2.5mm	05	05m
	FC		OM3	Multimode 50/125μm Fiber(10Gb/s)	.....	.....	30	0.9mm	.....	.....
	MU		OM4	Multimode 50/125μm Fiber(100Gb/s)	30	30dB			10	10m

Ordering code:

OFA-IN - LC - UPC - SM - 02 - 09 - 03



Optical splitters are main FTTH products which can be provided from the chip to the module. Single mode 1xN & 2xN splitter divides uniformly optical signals from input ports to multiple outputs. Splitters can also be operated in the reverse direction to combine multiple wave- lengths into one or two fibers.

Features

- Optimum insertion loss and reflection loss
- Fan-out type / Non Fan-out type
- SC / LC / ST / FC connector types
- Wide range of operating wavelength
- Up to 64 ports

Applications

- Fiber optic equipment & systems
- CATV networks
- Data communications
- Passive optical networks (ATM, WDM, Ethernet)

Optical Specification (without connector)

Parameter	1x2	1x4	1x8	1x16	1x32	1x64	2x4	2x8	2x16	2x32	2x64
Operation Wavelength	1260nm to 1650nm										
IL max(dB)	≤3.8	≤7.5	≤10.5	≤13.6	≤17.0	≤20.2	≤4.4	≤11.0	≤14.3	≤17.5	≤21.2
IL Uniformity(dB)	≤0.6	≤0.6	≤1.0	≤1.0	≤1.3	≤1.8	≤0.8	≤1.0	≤1.5	≤1.8	≤3.0
PDL(dB)	≤0.2	≤0.2	≤0.3	≤0.3	≤0.3	≤0.3	≤0.3	≤0.3	≤0.3	≤0.3	≤0.4
Return Loss(dB)	≥ 55										
Directivity(dB)	≥ 55										
Storage Temperature(°C)	-40 ~ +85										
Operation Temperature(°C)	-40 ~ +85										

(Insertion Loss with connector = Insertion Loss without connector +0.3dB)

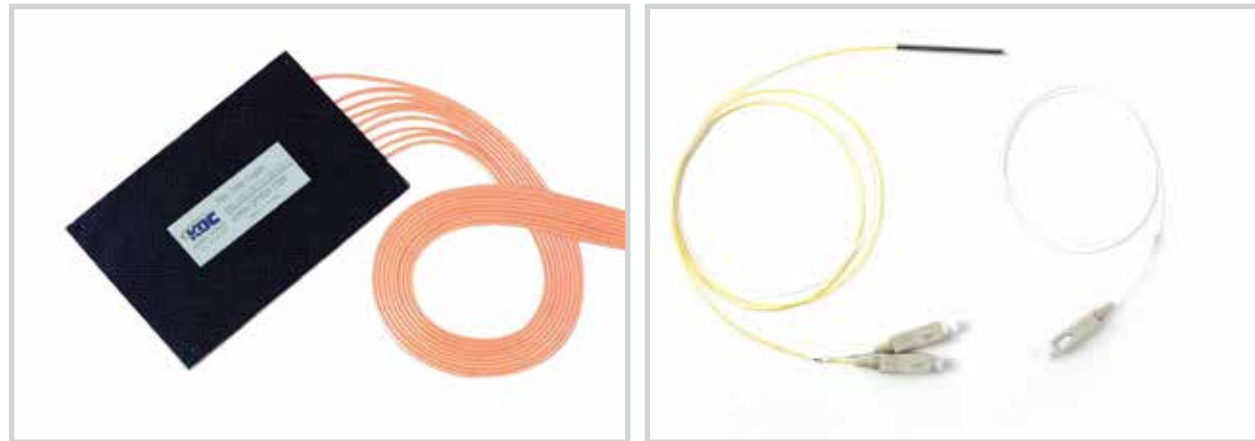
Mechanical Specification

Parameter	Unit	Specifications					
		1x2	1x4	1x8	1x16	1x32	1x64
Module size	Width	7	7	7	12	20	40
	Height	4	4	4	4	6	6
	Length	55	55	55	60	80	100
Fiber type		G.657A1					
Input fiber type (Color)		900um tight buffered fiber (White Color)					
Input fiber length	mm	1,500 (+50mm/-0mm)					
Output fiber type		900um loose tube (Hytrel)					
900um tube color		White Color					
Output 900um tube length	mm	1,500 (+50mm/-0mm)					
Connector type - IN		SC-UPC connector					
Connector type - OUT		SC-UPC connector					

Ordering information

CODE	Configuration		Connector Type	Ferrule Type	Fiber Type		Splitter Type		Package		Cable Length	
											Input	Output
PLC Splitter	0102	1 x 2	SC	UPC	SM	Single Mode Fiber	FO	Fan-out	B	250µm Buffered Fiber	0	0
	0104	1 x 4	LC	APC	OM1	Multimode 62.5/125µm Fiber	NFO	Non Fan-out	L	Loose Tube	1	1
	0108	1 x 8	FC		OM2	Multimode 50/125µm Fiber			C	Cord	2	2
	0116	1 x 16	ST		OM3	Multimode 50/125µm Fiber(10Gb/s)					3	3
	0132	1 x 32			OM4	Multimode 50/125µm Fiber(100Gb/s)					4	4
	0164	1 x 64									5	5
	0204	2 x 4									6	6
	0208	2 x 8									7	7
	0216	2 x 16									8	8
	0232	2 x 32									9	9
	0264	2 x 64										

Ordering code: **PLCS - 0102 - SC - UPC - SM - FO - B - 11**



Features

- Low excess loss and high performance
- PCB mountable
- Excellent uniformity
- Low polarization dependent loss
- Coupling ratio of 50:50 or as customer ordered

Application

- Telecommunication systems
- Cable television networks
- Test equipment
- Fiber optic sensor

Specifications – Single mode fiber optic coupler

Model	SMSC0102			SMSC0103, 0303		SMSC0104, 0404		SMSC0108, 0808	
Configuration	1×2, 2×2			1×3, 3×3		1×4, 4×4		1×8, 8×8	
Wavelength(nm)	1310 or 1550			1310 or 1550		1310 or 1550		1310 or 1550	
Grade	S	A	B	A	B	A	B	A	B
Typ. Excess Loss(dB)	0.07	0.1	0.15	0.25	0.3	0.3	0.5	0.5	0.9
Max. Insertion Loss(dB)	3.4	3.7	4.3	5.5	5.7	6.8	7.2	10	11
Uniformity(dB)	0.6	1.0	1.5	1.2	1.5	0.8	1.2	1.2	3.0
Directivity(dB)	>55			>55		>55		>55	
PDL(dB)	<0.1			<0.1		<0.1		<0.1	
Dimension(nm)	Ø3.0×54			Ø3.0×54		Ø3.0×54		100×80×7.5	
S type	Ø3.0×70			Ø3.0×70		Ø4.0×70		100×80×7.5	
L type	85×17.5×7.5			100×80×7.5		100×80×7.5		136×96×7.5	
A type(L×W×H)									

Specifications – Multimode fiber optic coupler

Model	MMSC0102, 0202		MMSC0103, 0303		MMSC0104, 0404		MMSC0108, 0808	
Configuration	1×2, 2×2		1×3, 3×3		1×4, 4×4		1×8, 8×8	
Wavelength(nm)	1310 or 1550		1310 or 1550		1310 or 1550		1310 or 1550	
Grade	A	B	A	B	A	B	A	B
Typ. Excess Loss(dB)	1.0	1.5	1.5	1.0	1.5	2.0	2.0	2.5
Max. Insertion Loss(dB)	4.0	4.8	6.5	7.0	7.5	8.5	11	12
Uniformity(dB)	0.5	1.0	1.0	1.2	1.0	1.5	1.0	2.0
Directivity(dB)	>40		>40		>40		>40	
Dimension(nm)	Ø3.0×54		Ø3.0×54		Ø3.0×54		100×80×7.5	
S type	Ø3.0×70		Ø4.0×70		Ø4.0×70		100×80×7.5	
L type	85×17.5×7.5		100×80×7.5		100×80×7.5		136×96×7.5	
A type(L×W×H)								

Ordering Information

Item	Configuration		Coupling Ratio		Fiber		Package		Connector Type	Ferrule Type	Cable Length	
											Input	Output
Fiber optic coupler	0102	1x2	5050	50%:50%	SM	Single Mode Fiber	B	250µm Buffered Fiber	SC	PC	0	0
	0104	1x4	1090	10%:90%	OM1	Multimode 62.5/125µm Fiber	L	Loose Tube	FC	APC	1	1
	0108	1x8	1111	Uniform	OM2	Multimode 50/125µm Fiber	C	Cord	ST		2	2
					OM3	Multimode 50/125µm Fiber(10Gb/s)			BI		3	3
					OM4	Multimode 50/125µm Fiber(100Gb/s)			D4		....	....
											9	9

Ordering code: **FOC – 0102 – 5050 – SM – B – SC –PC – 11**

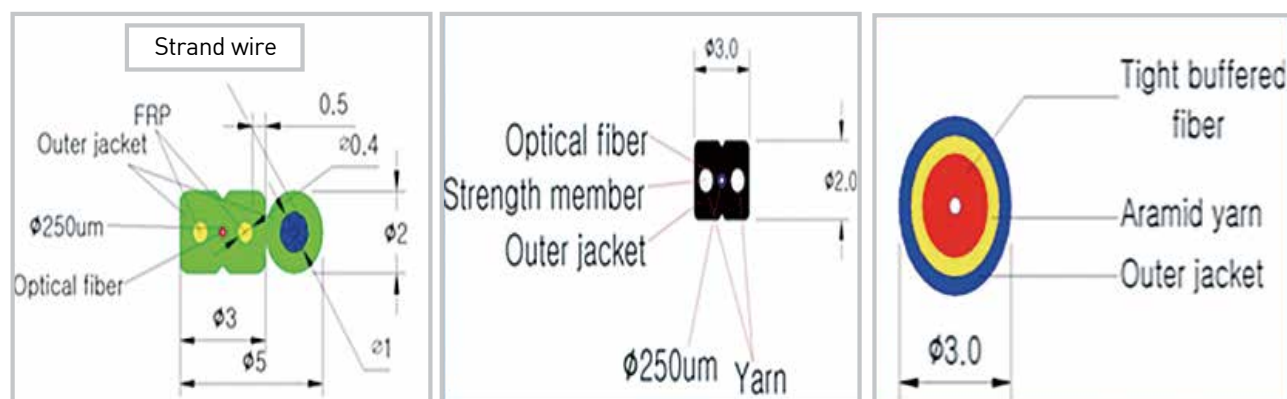


KOC's FTTH drop cable jumper is for connecting to customer premises. It has stable curvature property and high tensile strength considering laying strength. Also it is superior mechanical and environmental characteristics for external pressure and impact, climate changes.

Features

- Move closer to end-user
- Superior fiber optic characteristics
- Appropriate tensile strength in the field
- Easy cable pulling as lighter weight and smaller size than loose tube type
- Excellent flexibility and bending characteristics
- Various connector termination : SC, LC, ST, FC type
- Available drop cable jumper length : 1~100mtr
- Customized packing method
 - Protection cap or pulling eye as individual packing

Cable Structure



Cable Specifications

Standard		IEC794-1, EIA455		
Cable type		Round(O) type	8type	Square(□) type
Fiber type		Singlemode (9/125) / G657A1 / G657A2 / G657B3		
Cable diameter		3.0mm	3.5mmX6.5mm	2.0mmX3.0mm
Cable jacket color		Black / Gray/White		
Tight buffer fiber color		Blue /Gray		
Cable weight		8kg/km	20kg/km	7 ~10kg/km
Tensile strength		50kgf		
Bending Radius	During installation	20times of cable outer diameter		
	After installation	10times of cable outer diameter		
Operating temperature		-40°C ~ +70°C		

Specifications

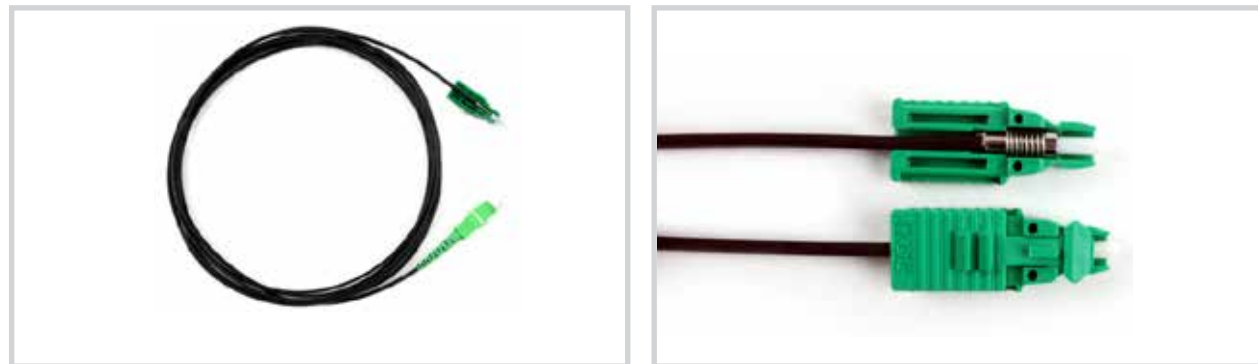
Standard	TIA/EIA-604-3[SC], TIA/EIA-604-10[LC], TIA/EIA-604-2[ST], TIA/EIA-604-4[FC]
Connector type	SC / LC / ST / FC
Ferrule type	UPC / APC
Connecting type	Both ends connector / One side end connector
Length	1mtr ~ 100mtr
Insertion loss	Typ.0.2dB / Max.0.3dB
Return loss	PC type ≥50dB / APC type ≥60dB
Durability	<0.2dB / 500 times reconnection
Operating temperature	<0.2dB / -40°C ~ +75°C

Packing Model

Type 1	Both ends: Protection cap on the connector housing	
Type 2	End 1: Protection cap on the connector housing End 2: Protection cap on the connector frame + connector housing (separately)	
Type 3	End 1: Protection cap on the connector housing End 2: Adding to pulling eye mesh on the protection cap on the connector frame + connector housing (separately)	

Ordering Information

Item	A Type		B Type		Fiber Type		CableType		Cable Meterial		Cable Diameter		Cable Length	
	Connector Type	Ferrule Type	Connector Type	Ferrule Type										
FTTH Drop Jumper	SC	UPC	SC	UPC	SMD	SM 652D	R	Round	P	PVC	20	2.0 mm	1	1m
	FC	APC	FC	APC	SM1	SM 657A1	F	Flat	L	LSZH	1620	1.6X2.0mm	2	2m
	LC		LC		SM2	SM 657A2			U	PU	30	3.0mm	3	3m
	ST		ST		SM3	SM 657B3					23	2.0X3.0mm	.	.
													.	.
													.	.
													.	.
														100	100m



The FTTH Mini Drop Jumper Cord of SC type connector is used to connect to an optical modem in the customer's. One side has a standard sized connector, but the other side has a small size connector that consists of a Ferrule with Flange and Body. Because of the small size connector, installer just need the minimum size of hole in window or wall of the subscriber's house. It also has superior mechanical and environmental characteristics for external pressure, impact and climate changes.

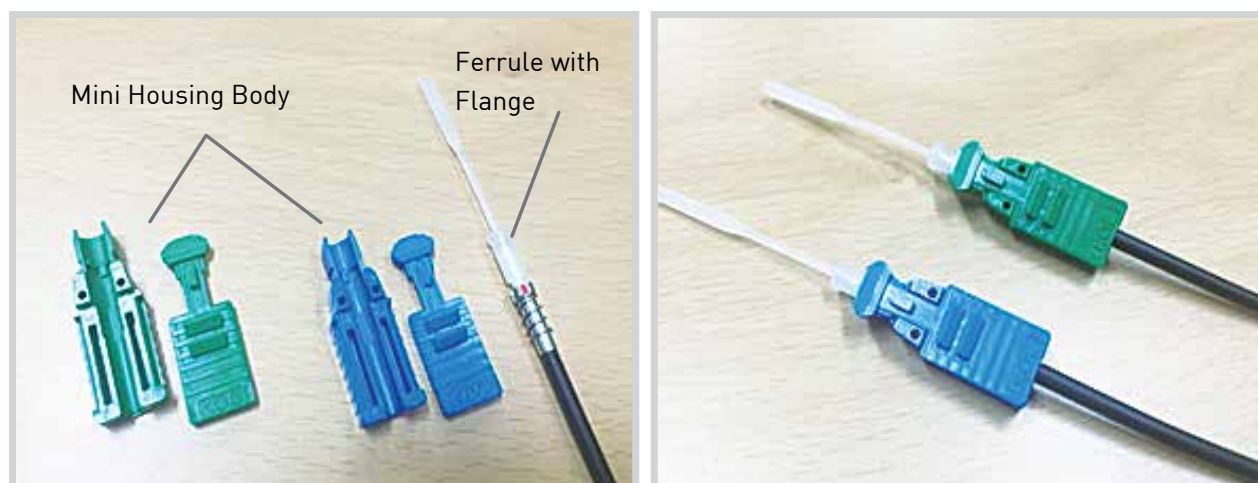
* Patent Pending[KOR] 10-2015-0147434

Features

- Installable with small hole($\phi 4.5$) of the window or wall in subscriber's house($\phi 11 \rightarrow \phi 4.5$)
- Easy to assemble with Ferrule with flange and Body
- Superior fiber optic characteristics
- Excellent tensile strength
- Easy to install because of lighter weight and smaller size than loose tube type
- Excellent flexibility and bending characteristics

Application

- Fiber Optic Telecommunication
- Fiber Distribution Frame
- FTTH Outlets
- Optical Cable Interconnection



Specifications

Standard	TIA/EIA-604-3[SC]
Connector type	SC
Ferrule type	UPC / APC
Connecting type	Standard connector / Mini housing connector
Length	1mtr ~ 100mtr
Insertion loss	Typ.0.2dB / Max.0.3dB
Return loss	PC type ≥ 50 dB / APC type ≥ 60 dB
Durability	< 0.2 dB / 500times reconnection
Tension	10kgf
Operating temperature	< 0.2 dB / $-40^{\circ}\text{C} \sim +75^{\circ}\text{C}$

Ordering Information

Item	A Type		B Type		Fiber Type		CableType		Cable Material		Cable Diameter		Cable Length	
	Connector Type	Ferrule Type	Connector Type	Ferrule Type										
FTTH Drop Jumper	SC	UPC	MSC (MINI SC)	UPC	SMD	SM 652D	R	Round	P	PVC	20	2.0 mm	1	1m
		APC		APC	SM1	SM 657A1	F	Flat	L	LSZH	1620	1.6X2.0mm	2	2m
					SM2	SM 657A2			U	PU	30	3.0mm	3	3m
					SM3	SM 657B3							.	.
													.	.
													.	.
													100	100m

Ordering code: **FMDJ-SC-UPC-MSC-OPC-SMD-R-U-30-1**



Multi-fiber Fan-out patch cord is composed of several jacketed simplex optical fibers packaged together inside an outer jacket. It is suitable for a short riser and plenum applications and also for use in conduits, where a very simple cable run is planned to avoid the use of any splice box or spliced fiber pigtails. Both ends of breakout cable patch cord are assembled with connectors in factory to be used immediately in the field.

Features

- Conform to IEC, EIA-TIA, and Telcordia performance requirements
- Available in different connector type of both ends.
- Available in standard and custom lengths
- High Reliability and Stability
- Low Insertion loss, high return loss

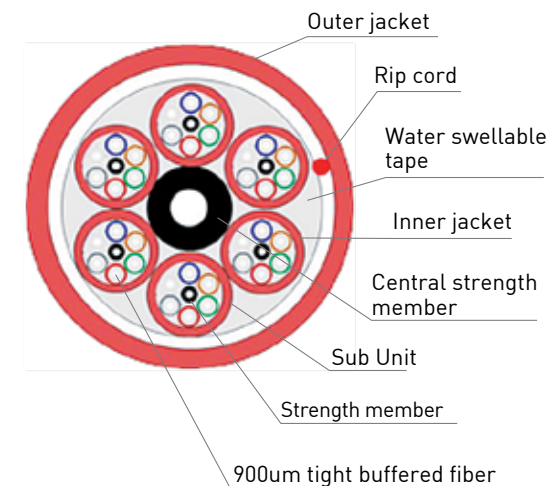
Application

- Fiber Optic Telecommunication Networks
- Fiber Distribution Frame
- CATV Systems, FTTX/FTTH, LAN
- Mobile Station Application
- Optical Repeater System

Connector Specification

Item	Specification		
Standard	TIA / EIA 604 (SC, FC, LC, MU)		
Insertion Loss	Typ. 0.2dB / Max. 0.3dB		
Parameter	Singlemode UPC	Singlemode APC	Multimode UPC
Insertion Loss	≤0.3 dB	≤0.3 dB	≤0.3 dB
Return Loss	≥50 dB	≥60 dB	≥20 dB
Temperature Cycle	-40°C to +75°C		
Durability	1000 matching		

Cable Structure



Cross Section

Cable Specification

Item	Specification		
Fiber	- SMF: G652D, G657 - MMF: OM1, OM2, OM3, OM4		
Tight Buffer	Material	PVC, LSZH, Nylon	
	Diameter	0.90 ± 0.05mm	
Sub Unit	Strength member	Aramid yarn	
	Jacket material	PVC, LSZH	
	Jacket Diameter	4.50 ± 0.3mm Jacket thickness: 0.5 ± 0.2mm	
Outer Jacket	Central Strength member	FRP	1.0 or 2.0
		Jacket	PVC, LSZH
	Strength member	Aramid yarn	
	Water swellable tape	Only 24, 36C	
	Material	PVC, LSZH	
Attenuation Coefficient	@ 1310 nm	≤0.37 dB/km	
	@ 1550 nm	≤0.28dB/km	

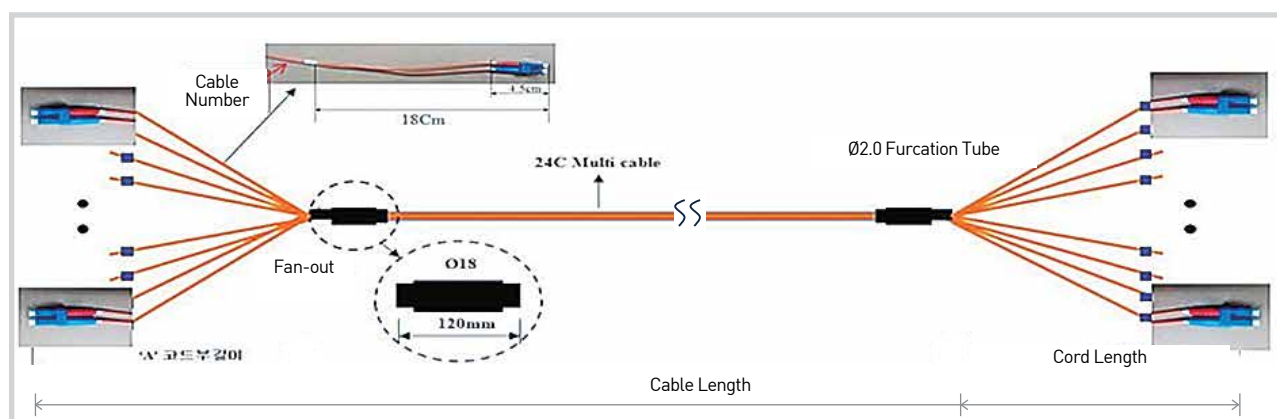
Fiber Count	8	12	16	24	36
Outer Diameter(mm)	6.1 ± 0.3	6.5 ± 0.3	8.0 ± 0.3	13.5 ± 0.5	16.0 ± 0.7
Weight(kg/km)	35	41	53	122	190
Max pulling Strength	800N	800N	800N	1,200N	1,600N

Ordering Information

Item	Connector type & Ferrule type				Fiber type		Cord Length		Cable Length	
	Input		output							
Multi-fiber Patch Cord	SC	UPC	SC	UPC	SM1	Singlemode, G652D	1	01m	1	01m
	LC	APC	LC	APC	SM2	Singlemode, G657	2	02m	2	02m
	FC		FC		OM1	Multimode 62.5/125um Fiber				
	MU		MU		OM2	Multimode 50/125um Fiber				
					OM3	Multimode 50/125um Fiber(10Gb/s)				
					OM4	Multimode 50/125um(100Gb/s)	99	99m	99	99m

Ordering code: **BCP - SCPC - SCPC - SM1 - 1 - 10**

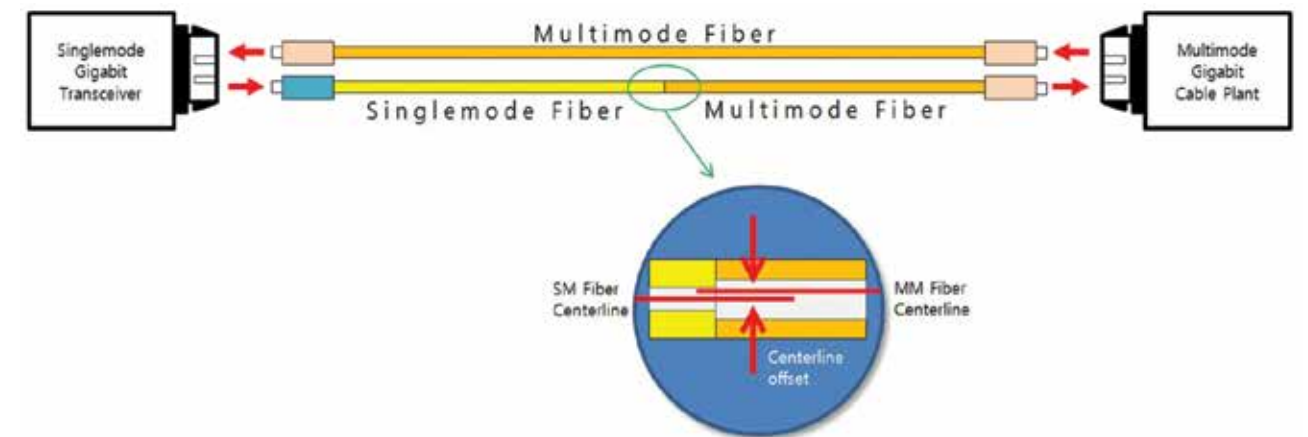
Configuration



MCP (Mode Conditioning Patch Cord)



Structure



Ordering Information

Item	Connector Type		Fiber Type				Cable Diameter		Cable Length	
	Input (SM)	Output (MM)	Input (SM)	Output (MM)						
Mode conditioning Patchcord	SC	SC	SM	Single Mode Fiber	OM1	Multimode 62.5/125μm Fiber	09	0.9mm	01	01mm
	LC	LC			OM2	Multimode 50/125μm Fiber	20	2.0mm	02	02mm
	ST	ST			OM3	Multimode 50/125μm Fiber(10Gb/s)	25	2.5mm	03	03mm
	FC	FC			OM4	Multimode 50/125μm Fiber(100Gb/s)	30	3.0mm	04	04mm
									99	99mm

Ordering code : **MCP – SCSC – SMOM1 – 09 – 01**

Specifications

Operating wavelength		1310nm
Fiber type		SM(9/125μm) and MM(62.5/125μm, 50/125μm)
Insertion Loss		≤0.3dB(against master connector)
Return Loss (End of SM)	UPC	≥55dB
	APC	≥65dB
Optical offset		IEE802.5
Durability		≤0.1dB / 1,000 mating
Operating temperature		≤0.3dB / -40℃ ~ 75℃

Applications

Apply for connecting between exit multi-mode [50/125μm fiber, 62.5/125μm fiber] cable and Gigabit Ethernet 1000base Lx Router, Switch.

MPO Patchcord

MPO jumpers and pigtails provide high-density connections in a small footprint and MPO fan-outs provide dependable, high-quality transitions from ribbon fibers or cables to individual fiber connection ports. MPO fan-outs are available with up to 24 cores featuring SC and LC connectors. These fan-outs offer low insertion loss and reflectance, and are available in both ruggedized and bare ribbon formats

Our MPO patch cords are 100% tested at our factory to deliver optimal performance and reliability. KOC's MPO patch cords are Telcordia GR-1435 compliant and also complies with industry green initiative.



MPO-MPO Ribbon Cable



MPO-MPO Round Cable



MPO-Fan-out

Features & Benefits

- Improves and simplifies fiber routing
- Decrease fiber management space
- OEM or customized for special applications
- Low insertion loss and reflectance
- High Density

Applications

- Patch cords and Fan-Out assemblies
- Optical system Access Network
- Telecommunications networks
- Broadband/CATV networks

Specification

Fiber Count available	12ch or 24ch
Fiber type	Single Mode Fiber : G652D, G657A1, G657A2 Multi-Mode Fiber : OM1, OM2, OM3, OM4
Connector Options	Option#1 MPO to MPO Option#2 MPO to Connector (Connector type : SC and LC)
Cable type	Round Cable, Ribbon Cable, Ribbon Fiber

NOTE All cable types are based on distribution cable, only jacket type is different

MPO Cassettes

KOC's MPO Cassettes provide a seamless connection between MPO backbone cables and SC or LC patching in the network environment. This pre-terminated modular system is easily deployed and simplifies future expansions and modifications. Cassettes are enclosed units that contain 12 or 24-fiber factory terminated fan-outs inside.

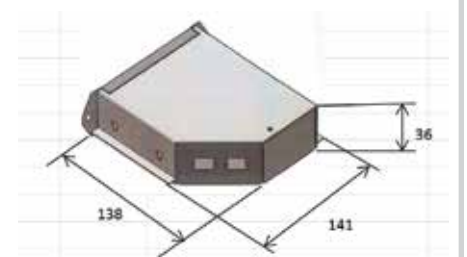
These cassettes serve to "transition" small diameter ribbon cables terminated with an MPO connector to the more common LC or SC interface used on the transceiver terminal equipment. The fan-outs typically incorporate SC, LC, ST-style of MT-RJ connectors plugged into adapters on the front side of the cassette and an MPO connector plugged into an MPO adapter mounted at the rear of the cassette. MPO Cassettes are ideally suited for data centers, enterprise, and datacom networks.



MPO Cassette for SC 12ch



MPO Cassette for LC 24ch



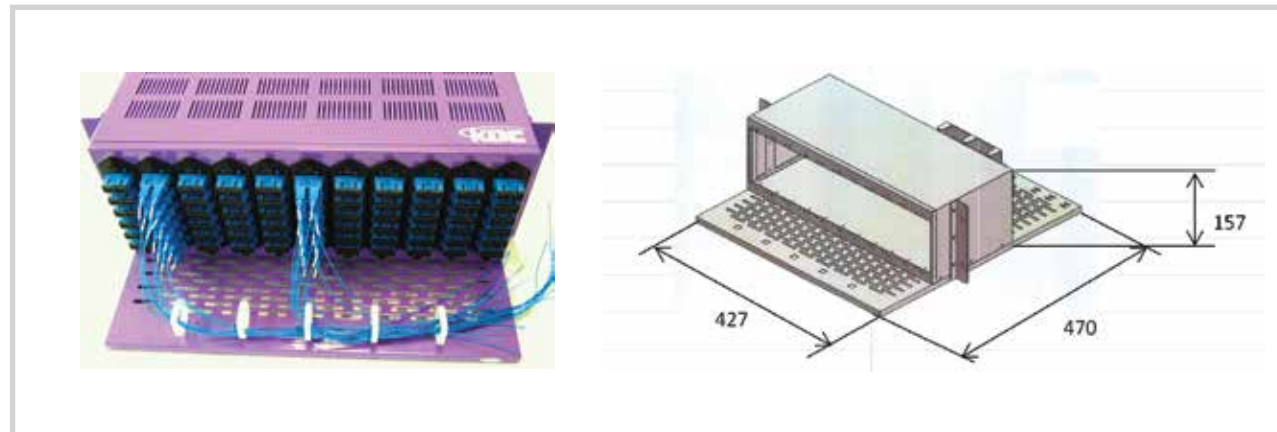
Features & Benefits

- LC or SC front panel interface (other connector options also available)
- OS1/OS2, OM1, OM2, OM3, OM4 options
- 100% terminated and tested at KOC Factory
- Cassette modularity provides quick and easy installation
- Makes future moves, adds, and changes simple
- Factory terminated and tested module ensures high quality performance and reliability
- Customizable for particular applications
- Push-lock system without screw when fixing adaptor
- Using one-touch lock retainer for assembling/disassembling OFD

Ordering Information

Cassette type	SC type : 12ch connector LC type : 12 , 24ch connector
Dimension	138(W) x 141 (D) x 36 (H) mm
Weight	About 0.3 kg (Cassette only)
Ordering Options	Option#1 Cassette Only Option#2 Cassette + Adaptor only (without MPO Patchcords) Option#3 Fully assembled. (Cassette + Adaptor + MPO Patchcords)

MPO OFD



Features & Benefits

- High Improvement on optical port density
- Simplification on connection process with jumper cords
- Modularization of cables with MT ferrules
- Improvement on optical performance and reliability
- Improvement on compatibility and interoperability in operation
- Using clips for organizing cables in the front.
- Using brackets for organizing patch cord cables in the back.

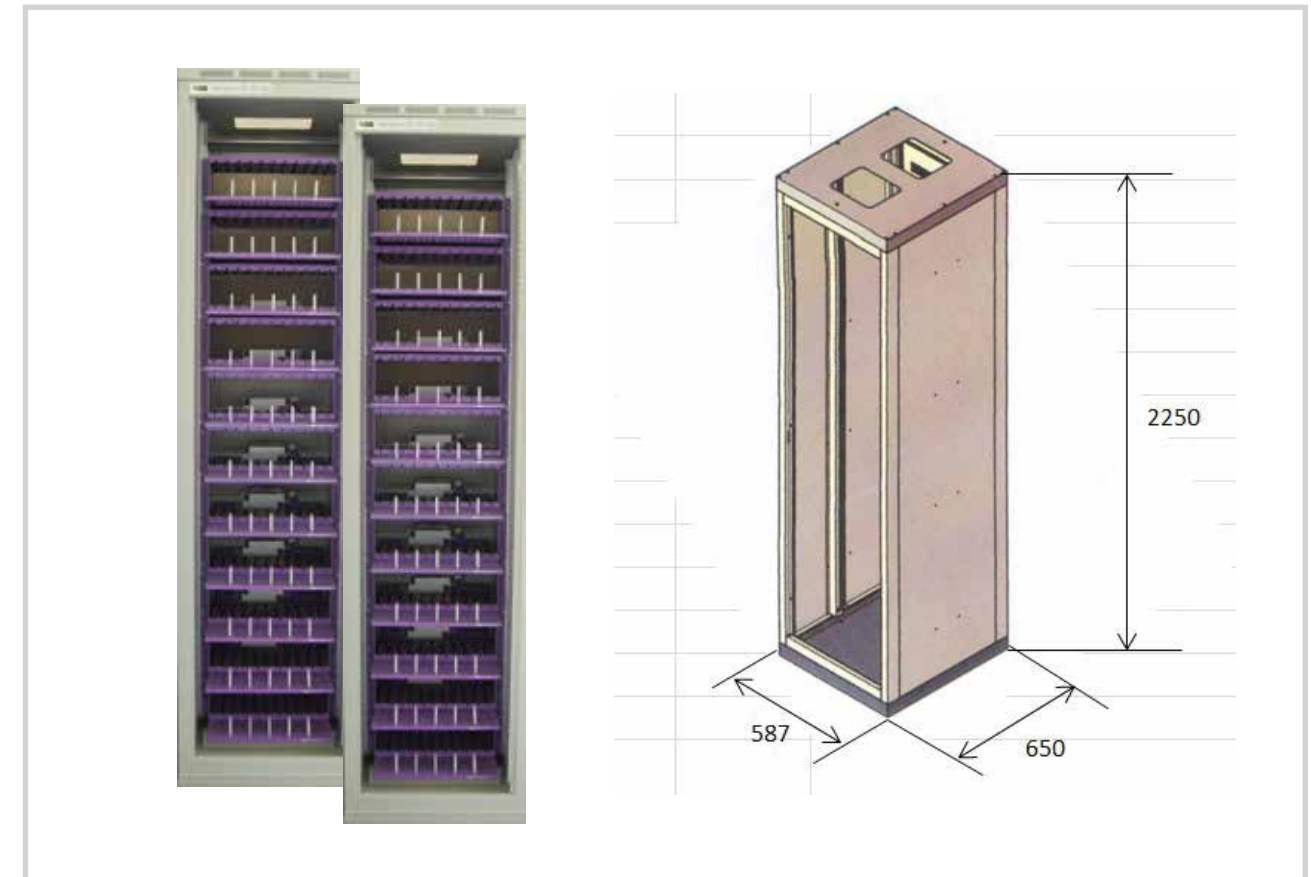
Applications

- High Capacity Network System
- LTE Network & Solution Construction
- Replacement of Existing Complicated Optic Lines

Ordering Information

Capacity	11 MPO Cassettes for 1 OFD SC type : 132ch (12ch x 11 cassette) LC type : 264ch (24ch x 11 cassette)
Dimension	470(W) x 427 (D) x 157 (H) mm
Weight	About 5 kg (OFD only)
Ordering Options	Option#1 OFD Only Option#2 Fully assembled. (OFD + Cassette + MPO Patchcords)

MPO Rack



Features & Benefits

- Installed 'Duct area' on the ceiling of rack makes effective ventilation and air circulation.
- Cable molding box for easy to open/close in front and back of the rack inside.

Ordering Information

Capacity	11 OFD (121 cassettes) for 1 Rack SC type : 1,452 channels (11 OFD x 12ch x 11 cassette) LC type : 2,904 channels (11 OFD x 24ch x 11 cassette)
Dimension	587 (W) x 650 (D) x 2,250 (H) mm
Weight	About 60 kg (MPO Rack only)
Ordering Options	Option#1 Rack Only Option#2 Rack + OFD (without Cassette & MPO Patchcords) Option#3 Fully assembled. (Rack + OFD + Cassette + MPO Patchcords)

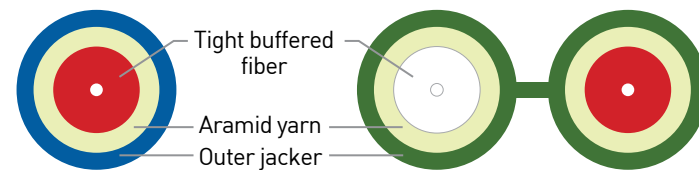
OPTICAL FIBER CORD (Simplex, Duplex)

RIBBON CORD



Description

- Simplex and Duplex cord are of stable construction coated around the outside of Tight Buffer Fiber one more time with resin in order to maintain the outstanding mechanical, environmental&transmission characteristics for indoor installation.
- The product is manufactured with the Aramid Yarn inserted to enhance the Tensile Load and protect the optical fiber.
- Particularly, the coating can be conveniently removed without using any special equipments or tools in the event of indoor installation.



Features

- Single-mode or Multimode optical fiber used
- Compact & high flexible
- Easy peeling for enabling fast connection
- High reliability design (Guaranteed long life cycle)
- Made with Aramid Yarn
[Tensile Load & impact resistance enhanced]
- Coating materials: Flame retardant PVC, PU, LSZH & etc.
[Certified with UL-OFNR & GOST]
- Operating Temperature Range: -10~70°C

Applications

- Indoor or outdoor duct cabling
- Indoor cable network (FTTH)
- Horizontal cabling inside building
- LAN cabling
- Connection of pigtail & optical fiber cable connector

Characteristics

Item	No. of Cores	Outer Diameter(mm)	Weight(kg/km)	Max. Tensile Load(kg-f)	Min. Bending Radius(mm)	
					Installation	Operation
Simplex	1	1.6	2.9	10	Dx20	Dx10
		1.8	3.3	15		
		2.0	3.7	15		
		2.4	4.7	25		
		3.0	6.7	30		
Duplex	2	1.6x3.2	5.8	20		
		1.8x3.6	6.6	30		
		2.0x4.0	7.4	30		
		2.4x4.8	9.4	50		
		3.0x6.0	13.4	60		

Specifications

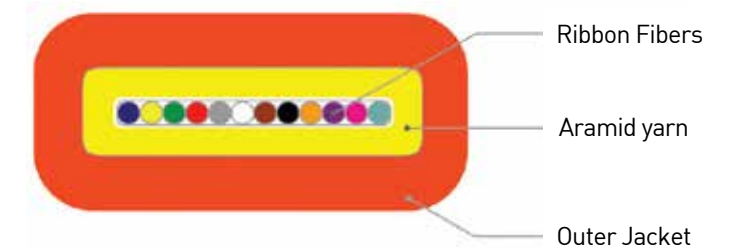
Type/Wavelength(nm)		850	1300	1310	1383	1550	1625
Attenuation (dB/km)	Single-Mode(9/25)	-	-	≤0.40	≤1310mm	≤0.30	≤0.35
	Multimode	50.0/125	≤3.00	≤1.00	-	-	-
		62.5/125	≤3.50	≤1.50	-	-	-

#Above cable construction & feature may be revised without prior notice to implement the quality improvement.



Description

- Designed to allow easy connection within tight space by arranging the 4~12 core optical fibers in regular distance.
- Use of Ribbon Cable allows realizing the economical efficiency resulted from reduced connection cost & work process.



Features

- High density optical fiber cable
- No. of standard optical fiber cable core : 4, 8, 12
- High Tensile Load
- Ease of connection
- Coating materials : Flame retardant PVC, PU, LSZH & etc.
- Operating Temperature Range : -20~70°C

Applications

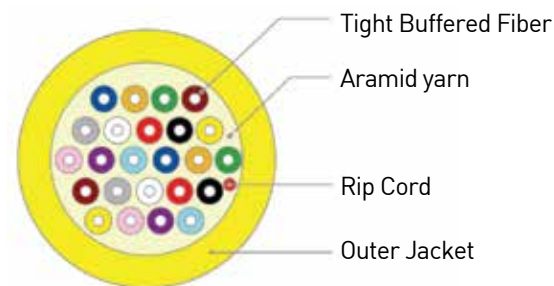
- Mutual connection between equipments
- Able to connect inside panel board & workstation
- Distribution network of main line

Characteristics

No. of Cores	Outer Diameter(mm)	Weight(kg/km)	Max. Tensile Load(kg-f)	Min. Bending Radius(mm)	
				Installation	Operation
4	2.0X2.2	9.5	50	D X 20	D X 10
8	4.3X2.2				
12	4.3X2.2				

Description

- Designed to improve the flexibility and Tensile Load to conveniently use at both indoor & outdoor installation.
- The Aramid Yarn is inserted in the number of tight buffered fiber to enhance the Tensile Load.
- For the cable exceeds 12 cores, the excellent mechanical & environmental characteristics are provided with the multiple Sub-unit construction.



Features

- Single-mode or Multimode optical fiber used
- Tight buffered fiber used
- Ease of identification using 12 colors
- Ease of handling with flexibility & light weight
- Coating materials : Flame retardant PVC, PU, LSZH & etc (Certified with UL-OFNR, GOST)
- Operating Temperature Range : -20~70°C

Applications

- FTTx Networking
- Indoor/outdoor applications
- Backbone within building
- LAN

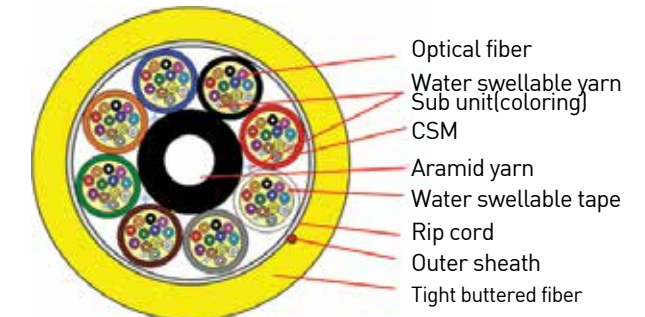
Characteristics

◆ D:Outer Diameter

No. of Cores	Outer Diameter(mm)	Weight(kg/km)	Max. Tensile Load(kg-f)	Min. Bending Radius(mm)	
				Installation	Operation
4	4.7	20	66	D X 20	D X 10
6	5.5	23	66		
8	6.1	39	66		
12	6.5	40	66		
24	9.0	80	132		

Description

- Used in trenching, LAN and distribution applications where versatile installation capability is required for ducts, plenums, and air-handling spaces
- Design allows sub cables to be routed to multiple locations such as wiring racks and closets



Features

- High performance components and construction.
- Cable materials are indoor/outdoor - UV, water and fungus resistant
- Operating Temperature Range : -20°C~70°C
- Helically stranded core for greater flexibility.

Applications

- Single mode @ 1310nm ≤ 0.40 dB/km
@ 1383nm ≤ 0.36 dB/km
@ 1550nm ≤ 0.30 dB/km
@ 1625nm ≤ 0.35 dB/km
PMD ≤ 0.2dB(ps/km^{1/2}), Cut-off wavelength ≤ 1260nm
- Multi mode @ 850nm ≤ 3.5 dB/km
@ 1300nm ≤ 1.5 dB/km
50/125μm(OM2, OM3, OM4), 62.5/125μm(OM1)

Characteristics

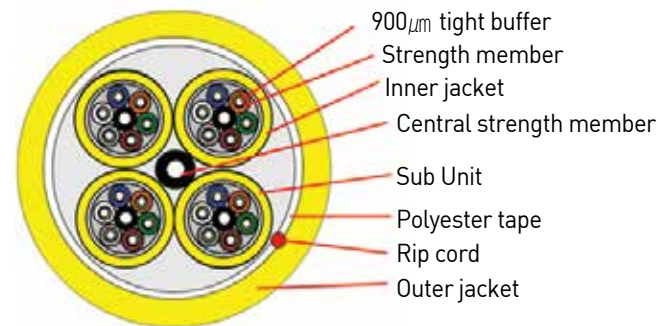
No. of Cores	Outer Diameter (mm)	Weight (Net.kg/km)	Max. Tensile Load (N)	Min. Bending Radius(mm)		Temperature Range(°C)
				Installation	Operation	
48F	15.5±0.5	257	2,500	Cable Dia * 15	Cable Dia * 10	-20 ~ + 70
72F	18.1±0.5	290	2,500			
96F	22.9±0.5	257	4,000			

#Above cable construction & feature may be revised without prior notice to implement the quality improvement.



Description

- Used in trenching, LAN and distribution applications where versatile installation capability is required for ducts, plenums, and air-handling spaces
- Design allows sub cables to be routed to multiple locations such as wiring racks and closets



Features

- High performance components and construction.
- Cable materials are indoor/outdoor - UV, water and fungus resistant
- Operating Temperature Range : -20°C to +85°C
- Helically stranded core for greater flexibility and mechanical protection of the optical fibers

Applications

- Single mode @ 1310nm ≤ 0.40 dB/km
@ 1383nm ≤ 0.36 dB/km
@ 1550nm ≤ 0.30 dB/km
@ 1625nm ≤ 0.35 dB/km
PMD ≤ 0.2dB(ps/km^{1/2}), Cut-off wavelength ≤ 1260nm
- Multi mode @ 850nm ≤ 3.5 dB/km
@ 1300nm ≤ 1.5 dB/km
50/125μm (OM2, OM3, OM4), 62.5/125μm (OM1)

Characteristics

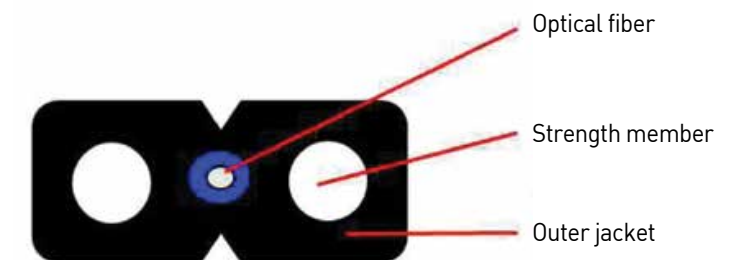
No. of Cores	Outer Diameter (mm)	Weight (Net.kg/km)	Max. Tensile Load (N)	Min. Bending Radius(mm)		Temperature Range(°C)
				Installation	Operation	
2F	7.5±0.3	40	800	Cable Dia * 15	Cable Dia * 10	-20 ~ + 70
4F	7.5±0.3	40	800			
6F	8.5±0.5	75	1,000			
8F	10.0±0.5	90	1,200			
12F	12.5±0.5	150	1,800			
16F	16.0±0.8	300	1,800			
24F	19.0±0.8	450	2,000			

#Above cable construction & feature may be revised without prior notice to implement the quality improvement.



Description

- Tensile load & compression characteristics are enhanced by inserting two FRP or ARP, offering protection for optical fiber from physical impact outside with the gap provided inside the cable there by resulting in excellent optical & mechanical characteristics.



Features

- Use for indoor connecting
- Small size
- Light weight and cost efficient
- Structure used for pushing install

Applications

- Conduit, duct laying
- CATV, FTTH
- Office building, government office

Characteristics

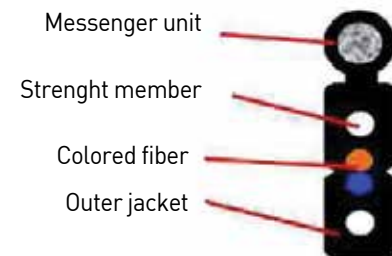
Item	No.of Cores	Outer Diameter (mm)	Weight (kg/km)	Min.Bending Radius(mm)	Max.Tensile load(kg.f)	Crush force (N/100mm)	Temperature cycling
Indoor Dropcable	1F	[W x H] 2.0mmx3.1mm	8.5kg/km(NET.)	15mm, 10 turn	20.0kg.f (200N)	600	-20°C+70°C

Standard color : Blue Optical Fiber : G.657A2



Description

- Tensile load & compression characteristics are enhanced by inserting two steel wires or FRP offering protection for optical fiber from physical impact outside with the gap provided inside the cable there by resulting in excellent optical & mechanical characteristics.
- Possible to pushing wiring without using lead wire because of low friction in cable jacket.



Features

- Applicable for conduit & aerial installation
- Excellent mechanical & optical characteristics
- Light weight and cost efficient

Applications

- Conduit, duct, aerial laying
- Office buildings, Government offices
- CATV, Internet cafe

Characteristics

Item	No.of Cores	Outer Diameter (mm)	Weight (kg/km)	Min.Bending Radius(mm)	Max.Tensile load(kg.f)	Crush force (N/100mm)	Temperature cycling
Drop Cable	1F, 2F	[W x H] 2.3mmx5.3mm	25kg/ km(NET.)	15mm, 10 turn	130kg.f (1,300N)	600	-20℃+70℃

Standard color : Blue, Orange, Green, Gray, White, Red, Black, Pink, Aqua
Optical Fiber : G657 A/B

Optical Specifications

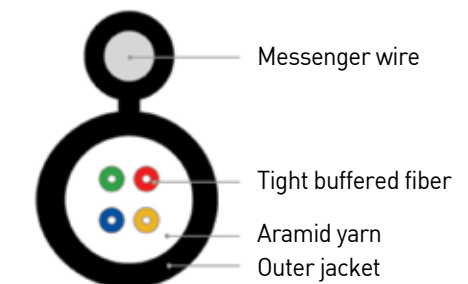
Type/Wavelength(nm)		850	1300	1310	1383	1550	1625
Attenuation (dB/km)	SMF[G.657A2]	-	-	≤0.350	≤0.350	≤0.215	≤0.350

#Above cable construction & feature may be revised without prior notice to implement the quality improvement.



Description

- An outdoor type manufactured for ease of cabling between the electric poles or leading into building from pole, manufactured with the self standing, "8" shape construction.
- Designed to have the appropriate Tensile Load considering the cable laying stress and stable Bending characteristic.
- Offering excellent mechanical & environmental characteristics that may occur after the cable laying works considering the stress & impact from outside and weather change.



Features

- Light weight, compact & ease of handling
- Economical construction for aerial cabling application
- Outstanding mechanical & environmental characteristics
- Coating materials : Flame retardant PVC, PU, LSZH & etc.
- Operating Temperature Range: -40~70℃

Applications

- LAN
- Subscriber network
- CATV, PC Cafe

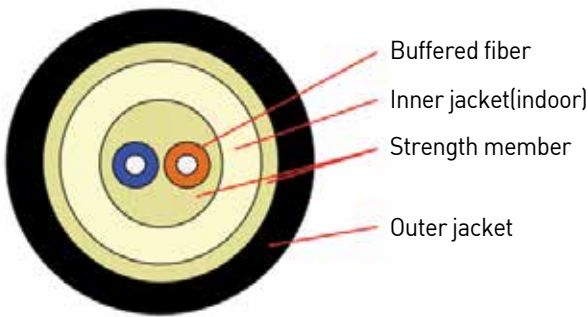
Characteristics

No. of Cores	Outer Diameter (HeightxWidth)	Weight(kg/km)	Max. Tensile Load(kg.f)	Min. Bending Radius(mm)	
				Installation	Operation
2	4.7 X 8	27	80	D X 20	D X 10
4	4.7 X 8	28	80		
6	5. 5X 9	29	80		



Description

- Highly flexible & light weight
- Ease of peeling enabling fast connection
- Coating material : flame retardant PVC, PU, LSZH etc.
- Operating Temperature Range : -40~70℃



Features

- Patch cords
- LAN distribution
- Outdoor cable

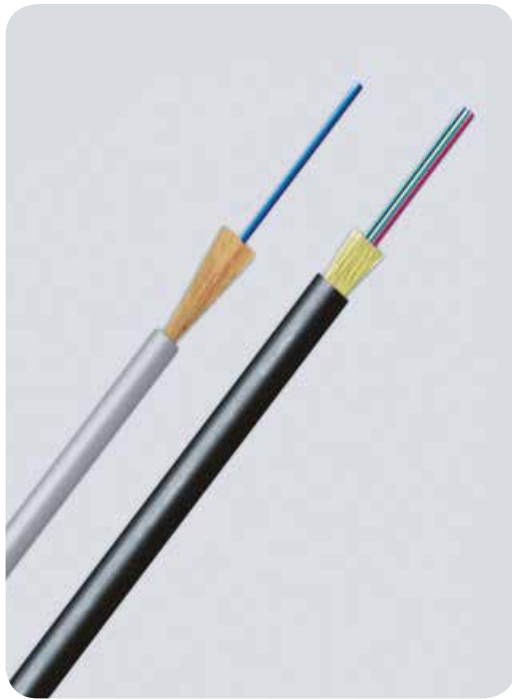
Applications

- Single mode @ 1310nm ≤ 0.40 dB/km
@ 1383nm ≤ 0.36 dB/km
@ 1550nm ≤ 0.30 dB/km
@ 1625nm ≤ 0.35 dB/km
PMD ≤ 0.2dB(ps/km^{1/2}), Cut-off wavelength ≤ 1260nm
- Multi mode @ 850nm ≤ 3.5 dB/km
@ 1300nm ≤ 1.5 dB/km
50/125μm(OM2, OM3, OM4), 62.5/125μm(OM1)

Characteristics

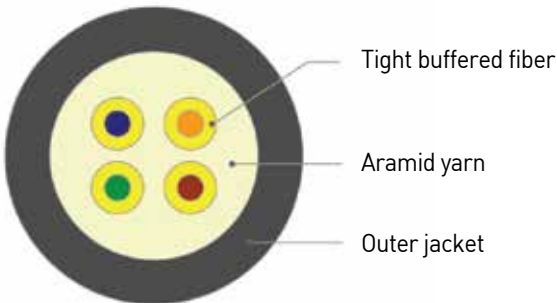
No. of Cores	Outer Diameter (mm)	Weight (Net. kg/km)	Max. Tensile Load (N)	Min. Bending Radius(mm)		Temperature Range(℃)
				Installation	Operation	
2	4.6 ± 0.2	23	800	Cable Dia * 10	Cable Dia * 5	-20 ~ + 70
4	5.0 ± 0.2		1,000	Cable Dia * 15	Cable Dia * 10	-20 ~ + 60

#Above cable construction & feature may be revised without prior notice to implement the quality improvement.



Description

- Designed to allow the mixed use of Single mode & multimode optical fiber cables together within the same cabling.
- Allow using maximum 6 cores of optical fiber or tight buffer cables, inserted with Aramid Yarn for excellent mechanical & environmental characteristics.



Features

- Easy connection of optical fiber connectors
- Outstanding workability for vertical & horizontal installations
- Use of complex type cable available (Single mode, Multimode)
- Ease of handling with light weight & thin diameter
- Coating materials : Flame retardant PVC, PU, LSZH & etc. (Certified with UL-OFNR, GOST)
- Operating Temperature Range : - 20~70℃

Applications

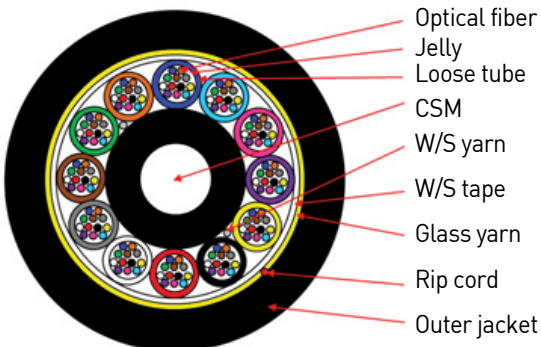
- Indoor / Outdoor
- Condominium
- LAN
- Integrated Residential Network (Internet, Home Automation System, Communication Training & etc.)

Characteristics

Class		Outer Diameter(MM)	Weight(kg/km)	Max. Tensile Load(kg.f)	Min. Bending Radius(mm)	
No. of Cores	Type				Installation	Operation
1	TBF(ϕ 0.9)	3.0	8	66	D X 20	D X 10
2~4	TBF(ϕ 0.53)	3.6	14			
4	SM 2	3.8	11			
	MM 2					
6	SM 2	5.0	25			
	MM 4					
	SM4 MM 2					

Description

- Ideal for installations requiring a rugged and reliable cable design where maximum mechanical and environmental protection is necessary
- Typical industrial uses are factory automation, power generation and other utilities, oil and gas refining, and surface mining



Features

- Best design for multimode and single-mode fiber hybrid/composite cables
- Design allows multi-fiber sub cables to be routed to multiple locations such as wiring racks and closets
- Designed for indoor/outdoor installations, including cable trays
- 12-288 fiber configurations are available with 6-12 fibers per tube

Applications

- Single mode @ 1310nm ≤ 0.36 dB/km
@ 1383nm ≤ 0.35 dB/km
@ 1550nm ≤ 0.22 dB/km
@ 1625nm ≤ 0.25 dB/km
PMD ≤ 0.2dB(ps/km^{1/2}), Cut-off wavelength ≤ 1260nm
- Multi mode @ 850nm ≤ 3.0 dB/km
@ 1300nm ≤ 1.0 dB/km
50/125μm(OM2, OM3, OM4), 62.5/125μm(OM1)

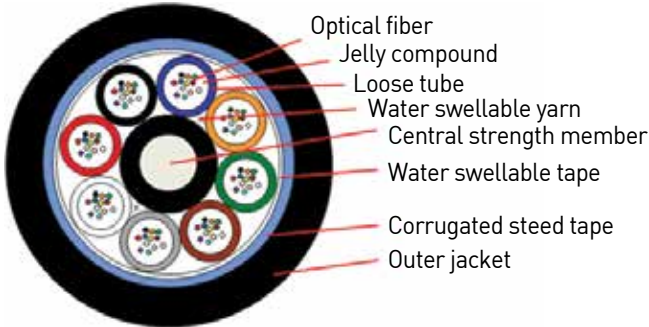
Characteristics

No. of Cores	Outer Diameter (mm)	Weight (Net. kg/km)	Max. Tensile Load (N)	Min. Bending Radius(mm)		Temperature Range(°C)
				Installation	Operation	
4 ~ 36F	11.8 ± 0.7	95	1,500	Cable Dia * 20	Cable Dia * 15	-20 ~ + 70
48 ~ 72F	12.0 ± 0.7	110				
96F	13.7 ± 0.7	140	2,000			
144F	16.3 ± 0.7	205	2,500			
288F	20.0 ± 0.7	300				

#Above cable construction & feature may be revised without prior notice to implement the quality improvement.

Description

- Ideal for installations requiring a rugged and reliable cable design where maximum mechanical and environmental protection is necessary
- Typical industrial uses are factory automation, power generation and other utilities, oil and gas refining, and surface mining



Features

- Best design for multimode and single-mode fiber hybrid/composite cables
- Design allows be routed to multiple locations such as wiring racks and closets
- Designed for indoor/outdoor installations, including cable trays
- 12-288 fiber configurations are available with 6-12 fibers per tube

Applications

- Single mode @ 1310nm ≤ 0.36 dB/km
@ 1383nm ≤ 0.35 dB/km
@ 1550nm ≤ 0.22 dB/km
@ 1625nm ≤ 0.25 dB/km
PMD ≤ 0.2dB(ps/km^{1/2}), Cut-off wavelength ≤ 1260nm
- Multi mode @ 850nm ≤ 3.0 dB/km
@ 1300nm ≤ 1.0 dB/km
50/125μm(OM2, OM3, OM4), 62.5/125μm(OM1)

Characteristics

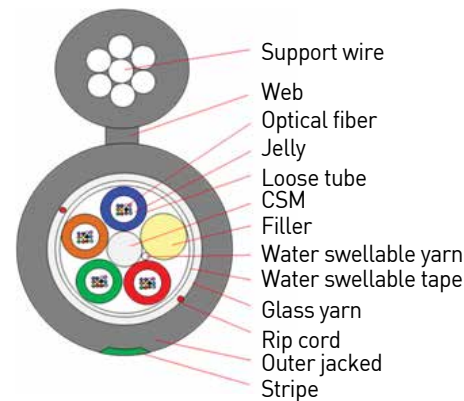
No. of Cores	Outer Diameter (mm)	Weight (Net. kg/km)	Max. Tensile Load (N)	Min. Bending Radius(mm)		Temperature Range(°C)
				Installation	Operation	
4 ~ 24F	12.2 ± 0.7	150	1,500	Cable Dia * 20	Cable Dia * 15	-40 ~ + 70
36 ~ 72F	12.5 ± 0.7	160				
96F	14.0 ± 0.7	190	2,000			
144F	16.3 ± 0.7	250	2,500			
288F	20.3 ± 0.7	350				

#Above cable construction & feature may be revised without prior notice to implement the quality improvement.



Description

- Light weight, compact & ease of handling
- Economic construction for aerial cabling application
- Outstanding mechanical & environmental characteristics
- Operating Temperature Range : -40~70°C



Features

- Aerial type
- Outdoor cable
- FTTH (Fiber To The Home)

Applications

- Single mode @ 1310nm ≤ 0.36 dB/km
@ 1383nm ≤ 0.35 dB/km
@ 1550nm ≤ 0.22 dB/km
@ 1625nm ≤ 0.25 dB/km
PMD ≤ 0.2 dB(ps/km^{1/2}), Cut-off wavelength ≤ 1260 nm
- Multi mode @ 850nm ≤ 3.0 dB/km
@ 1300nm ≤ 1.0 dB/km
50/125 μ m (OM2, OM3, OM4), 62.5/125 μ m (OM1)

Characteristics

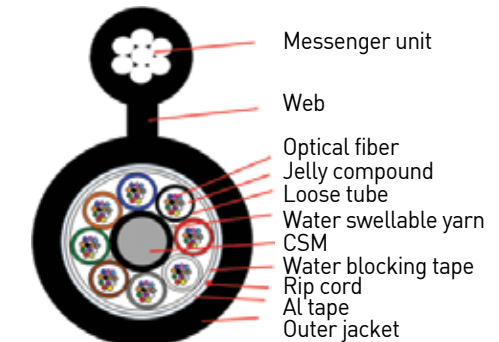
No. of Cores	Outer Diameter (mm)	Weight (Net. kg/km)	Max. Tensile Load (N)	Min. Bending Radius(mm)		Temperature Range(°C)
				Installation	Operation	
4F	8.6 \pm 0.5* 13.3 \pm 0.5	93	1,200N	Cable Dia * 20	Cable Dia * 15	-40 ~ + 70
8F						
12F						
24F						
36F	9.0 \pm 0.5* 13.7 \pm 0.5	105				
48F						

#Above cable construction & feature may be revised without prior notice to implement the quality improvement.



Description

- Figure-eight construction for use with standard messenger clamping and support hardware.
- Ideal for new installations. The figure-eight messenger cable reduces installation time and cost by approximately 50% compared to separate installation of a messenger wire and the lashing of the cable to the messenger.
- Operating Temperature Range of -40°C to +70°C



Features

- Outdoor aerial installations along utility poles for cable television, telecom or other outside plant campus backbone applications without the need for cable lashing
- Galvanized messenger standard
- Polyethylene outer cable jacket for excellent UV and weather resistance

Applications

- Single mode @ 1310nm ≤ 0.36 dB/km
@ 1383nm ≤ 0.35 dB/km
@ 1550nm ≤ 0.22 dB/km
@ 1625nm ≤ 0.25 dB/km
PMD ≤ 0.2 dB(ps/km^{1/2}), Cut-off wavelength ≤ 1260 nm
- Multi mode @ 850nm ≤ 3.0 dB/km
@ 1300nm ≤ 1.0 dB/km
50/125 μ m (OM2, OM3, OM4), 62.5/125 μ m (OM1)

Characteristics

No. of Cores	Outer Diameter (mm)	Weight (Net. kg/km)	Max. Tensile Load (N)	Min. Bending Radius(mm)		Temperature Range(°C)
				Installation	Operation	
4 ~ 72F	10.5 \pm 0.7* 17.6 \pm 0.7	160	5,000	Cable Dia * 20	Cable Dia * 15	-40 ~ + 70
96F	12.7 \pm 0.7* 19.8 \pm 0.7	205				
144F	15.3 \pm 0.7* 22.4 \pm 0.7	270				

#Above cable construction & feature may be revised without prior notice to implement the quality improvement.

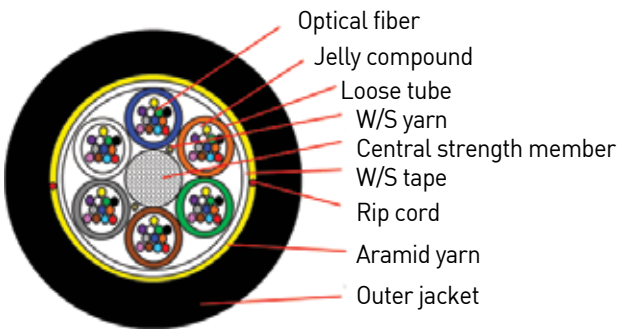
LOOSE TUBE CABLE FOR AERIAL
(ADSS Single Jacket : KP Type)

LOOSE TUBE CABLE FOR DIRECT BURIAL
(Double Jacket Single Armor : DJSA Type)



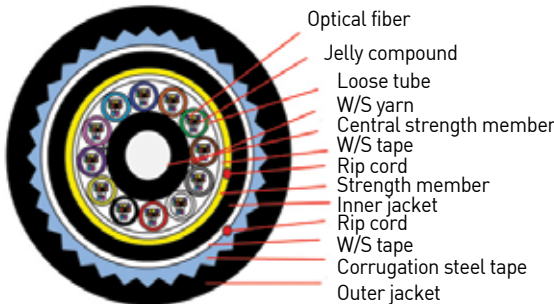
Description

- Ideal for installations where direct burial or rodent protection is required
- Design allows sub cables to be routed to multiple locations such as wiring racks and closets



Description

- Ideal for installations where direct burial or rodent protection is required
- Design allows sub cables to be routed to multiple locations such as wiring racks and closets
- Ideal for installations requiring an extremely rugged and reliable cable design where maximum mechanical and environmental protection is necessary



Features

- Inner cable is a fully G-Series Sub grouping riser-rated cable
- High-performance components and construction 6-fiber or 12-fiber per tube available

Applications

- Single mode @ 1310nm ≤ 0.36 dB/km
@ 1383nm ≤ 0.35 dB/km
@ 1550nm ≤ 0.22 dB/km
@ 1625nm ≤ 0.25 dB/km
PMD ≤ 0.2dB(ps/km^{1/2}), Cut-off wavelength ≤ 1260nm
- Multi mode @ 850nm ≤ 3.0 dB/km
@ 1300nm ≤ 1.0 dB/km
50/125μm (OM2, OM3, OM4), 62.5/125μm (OM1)

Characteristics

No. of Cores	Outer Diameter (mm)	Weight (Net. kg/km)	Max. Tensile load (N)	Min. Bending Radius(mm)		Temperature Range(°C)
				installation	Operation	
12F~72F	11.0 ± 0.7	95	20.0kg.f (200N)	Cable Dia*20	Cable Dia*15	-40°C~+70°C

#Above cable construction & feature may be revised without prior notice to implement the quality improvement.

Features

- High-performance components and construction 6-fiber or 12-fiber per tube available
- The steel-armor is easily removed with an internal ripcord, leaving a fully functional intact riser-rated inner cable with original cable markings for identification
- Helically stranded core for greater flexibility and mechanical protection of the optical fibers

Applications

- Single mode @ 1310nm ≤ 0.36 dB/km
@ 1383nm ≤ 0.35 dB/km
@ 1550nm ≤ 0.22 dB/km
@ 1625nm ≤ 0.25 dB/km
PMD ≤ 0.2dB(ps/km^{1/2}), Cut-off wavelength ≤ 1260nm
- Multi mode @ 850nm ≤ 3.0 dB/km
@ 1300nm ≤ 1.0 dB/km
50/125μm (OM2, OM3, OM4), 62.5/125μm (OM1)

Characteristics

No. of Cores	Outer Diameter (mm)	Weight (Net. kg/km)	Max. Tensile Load (N)	Min. Bending Radius(mm)		Temperature Range(°C)
				Installation	Operation	
12 ~ 72F	14.4 ± 1.0	220	2,500	Cable Dia * 20	Cable Dia * 15	-40 ~ + 70
96F	16.6 ± 1.0	285	3,000			
144F	19.3 ± 1.0	350				

#Above cable construction & feature may be revised without prior notice to implement the quality improvement.



KOC's Adapters offer great performance with very high repeatability and low insertion loss. KOC's Adapters are available in snap and flange mount options and support single mode and multimode applications, including OM3 fiber specifications, making them suitable for 10G applications.

Features

- Excellent changeability and directivity
- 100% Optic test (Insertion Loss)
- Ceramic and phosphor bronze sleeve tube optional
- Accurate mounting dimensions
- ITU standard

Applications

- Fiber optic transmission system
- Optical Fiber CATV networks
- Optical Fiber LAN
- Testing and Medical Devices

Specifications

Insertion Loss	≤0.3dB
Durability	≤0.2dB / 1000 matings
Operating temperature	-40℃ ~ 75℃

Item	Connector Type	Ferrule Type	Sleeve Type		Channel		Clip Type	
Optical Fiber Adapter	SC	UPC	ZR	Zirconia	SX	Simplex	WC	With Clip
	ST	APC	BR	Phosphor Bronze	DX	Duplex	WOC	Without Clip
	LC				QX	Quadruple		
	FC							
	SC-FC							
	ST-FC							
	SC-LC							
	MU							
	EZ : E2000							

Ordering code : **OFAD - SC - UPC - ZR - SX - WC**



MPO connector kit



E-2000 connector kit



FC connector kit



SC connector kit



ST connector kit



LC connector kit



MU connector kit



MT-RJ connector kit

KOC's Connector Kits offer superior performance with very high repeatability. These products are fully satisfied with IEC61754/GR326 International Standard and deliver long term stability under a wide range of applications and conditions.

Features

- High precision
- High connect ability
- Low back reflection
- Easy to handle
- Environmentally stable

Applications

- High Speed Transmission System
- Fiber Optic Telecommunications
- Optical Network Equipment
- CATV System

Specifications

Insertion Loss	$\leq 0.2\text{dB}$	
Durability	$\leq 0.1\text{dB}$	1,000 matings
Humidity Cycling	$\leq 0.2\text{dB}$	75°C, 95% / 336hr
Impact	$\leq 0.2\text{dB}$	1.5m Drop / 8 times
Coupling	$\leq 0.2\text{dB}$	40N \pm 1N / 120sec
Vibration	$\leq 0.2\text{dB}$	10 ~ 55Hz / 2hrs
Temperature Cycling	$\leq 0.2\text{dB}$	-40°C ~ 75°C / 42Cycles

Ordering Information

Item	Connector Type	Ferrule Type	Fiber Type		Boot Color		Cable Diameter	
Optical Fiber Connector Kit	SC	UPC	SM	Single Mode Fiber	GR	Green	09	0.9mm
	FC	APC	OM1	Multimode 62.5/125 μm Fiber	BL	Blue	20	2.0mm
	ST		OM2	Multimode 50/125 μm Fiber	BE	Beige	30	3.0mm
	LC		OM3	Multimode 50/125 μm Fiber(10Gb/s)	BK	Black		
	MU		OM4	Multimode 50/125 μm Fiber(100Gb/s)	YL	Yellow		
	MT : MT-RJ							
	MD : MPO							
	EZ : E2000							

Ordering code : **OFC - SC - UPC - SM - GR - 09**

- All product available customized specifications.



Splice closures offer a versatile, watertight and UV stabilized hardened plastic closure and they withstands impact, freeze-thaw stresses add rodents. Each closure can be mounted in a variety of ways such as cabinet, aerial, wall, above ground, aerial tap mount bracket and pedestal.

Features

- Quick and convenient installation
- Up to 6 round ports for single cable entry
- Maximum 29mm cable diameter
- Large fiber optic splice up to 320 fibers

Applications

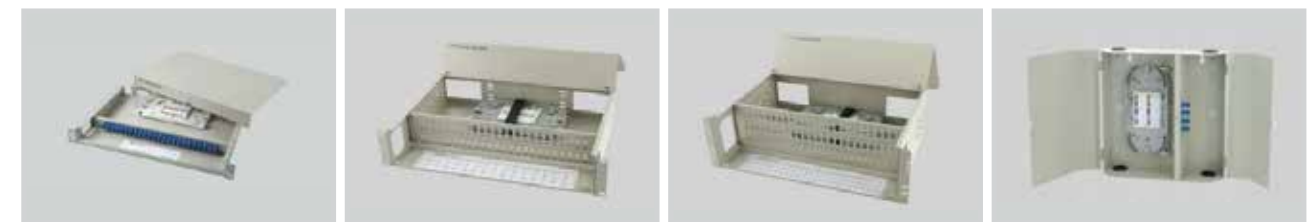
- Telecommunication network
- Fiber in the Loop
- Local Area Networks
- Wide Area Networks

Specification

Parameter	Small Size	Large Size
Dimension	330(L) X 186(W) X 125(H) mm	574(L) X 222(W) X 138(H) mm
Weight	2.2 kg (excluding trays)	4.55 kg (excluding trays)
Max. diameter of cable	Ø17	Ø27
Cable inlet ports	6 (3 ports at each ends)	6 (3ports at each ends)
Air pressurization valve	1(for testing air leakage)	1(for testing air leakage)
Max. stack of trays	4 (max.3 trays for attaching splitter)	6 (max.5 trays for ribbon-fibers connecton)

Features

- Telecommunication networks
- Local area networks
- FTTH outlets
- CATV System
- Active device termination
- Fiber termination / Connection port
- Option available
- Compact design
- Compatible with most cable management system
- Optical splicing capability



FDF-1U(12core/24core)

FDF-2U(48core)

FDF-3U(72core)

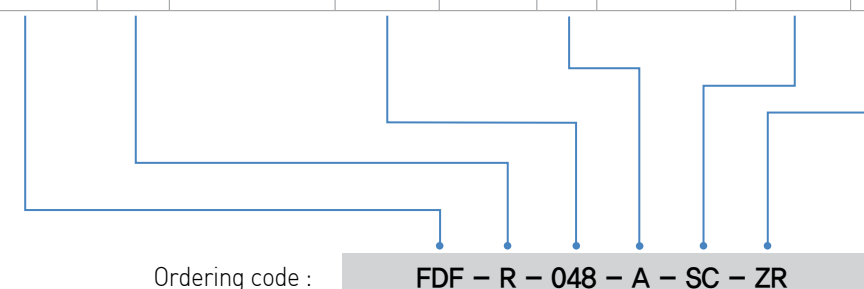
FDF-Wall

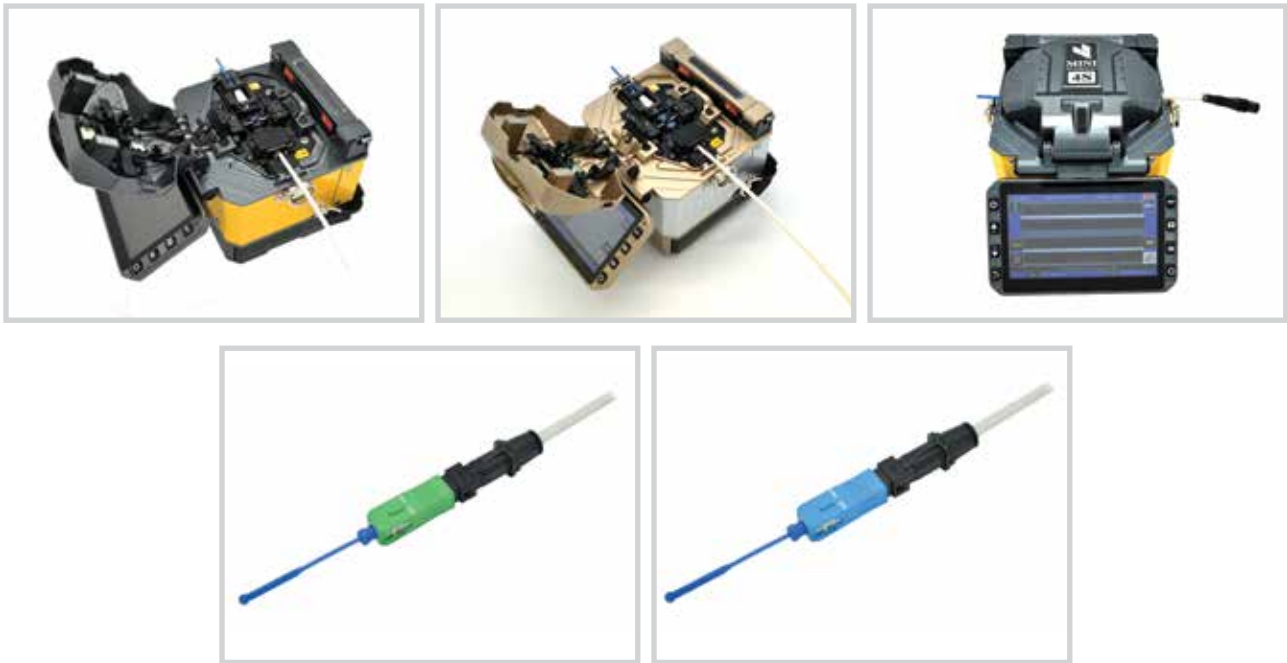
Specification

Parameter	Unit	FDF-1U	FDF-2U	FDF-3U	FDF-Wall
Fiber Capacity	core	≤24	≤48	≤72	≤24
Number of Tray	pcs	1	2	4	2
Dimension	Height	1U	2U	3U	305
	Width	mm	482	482	305
	Depth	mm	305	305	95
Remark		Rack Mount	Rack Mount	Rack Mount	Wall Mount

Ordering Information

CODE	Type	Core count	Adaptor	Adaptor Type	Sleeve type
Fiber Distribution Frame	R	Rack Mount	012	12ch	A Including NO ZR Zirconia Ceramics
	W	Wall Mount	024	24ch	N None SC PB Phosphorous Bronze
			048	48ch	LC
			072	72ch	ST
			096	96ch	FC
			144	144ch	MTRJ





Features

- Compliant with IEX51754-4, KS C6974(F04), JIS C5973(F04)
- Compliant with Telcordia GR-326-core
- Able to terminate the fiber with a connector in the field
- Unnecessary of extra connection as jointing point is located inside of connector
- Higher quality, better insertion loss and return loss
- Easy to assemble with one step system

Specification

Type	Item		SM	MM		
General Connector	Fiber Type		9/125	OM1	OM2	OM3
	Insertion Loss	UPC	≤ 0.2dB			
		APC	≤ 0.2dB			
	Return Loss	UPC	≤ 50dB			
		APC	≤ 60dB			
	Repeating Test		500Cycles, ≤ 0.2dB			
	Operation Temp		-45℃ ~85℃			
SC	Type of Fiber		0.9mm fiber, 2.0mm, 2.4mm, 3.0mm cable, 3x2 Indoor Cable			
	Tensile Force		≥30N(≥3.1kgf)for 3.0mm code or 0.9mm fiber / ≥80N(≥8.0kgf) for 3x2 Indoor Cable			

Assembly Procedure



1. Pass the cable through the boot and the boot cap.



2. Strip the indoor cable with a stripper.



3. Clean the stripped cable with alcohol soaked tissue.



4. Cleave it with a cleaver.



5. Take the fiber protector off from the ferrule.



6. Put the ferrule and cable on the V-groove.



7. Splice.



8. Put the spliced connector in the oven, then it will start heating automatically.



9. Get the heated sleeve cooled.



10. Assemble the boot and the cap.



11. Assemble the housing.



12. Completed.



Micro-electro-mechanical systems (MEMS) technology, which initially stems from semiconductor micro-fabrication, enables the creation of micro-optical elements, such as MEMS scanners. Made from silicon material, which has good electrical and mechanical properties, KOC MEMS scanners feature a reflective mirror, torsional springs, and electrical paths.

The mirror redirects incident beam toward specific direction where users want to scan the target object. The incident beam is usually laser, but other kinds of light sources can also be used. The torsional springs, which connect the mirror with frame anchors, makes the mirror to rotate at specific angles. For two-axis scanner, the mirror can rotate in two dimensional ways around torsional springs, which are placed in orthogonal direction on each axis. The electrical signal is the main source that generates forces to rotate the mirror.

Features

- Anti-Reflection(AR) Coated High Efficiency Windows
- Leadless Chip Carrier (LCC)
- Reflective mirror with torsional springs

Applications

- Optical Communications
- Miniaturized projection displays
- Bio imaging
 - Optical Coherence Tomography
 - Finger vein identification
 - Handheld Skin care system
- Industrial imaging
 - LCD panel inspection system
- Various scanning system

Specification

Performance		Unit	Type 1	Type 2	Type 3	Type 4
Dimension	MEMS Scanner chip size	mm ³	≤ 5.0 x 5.0 x 0.7	≤ 6.0 x 6.0 x 0.7	≤ 8.0 x 8.0 x 0.7	≤ 8.0 x 8.0 x 0.7
	Mirror diameter	mm	1	1	2	3
	Packaged MEMS scanner size (WxDxH)	mm ³	≤ 12.0 x 12.0 x 4.0			
Mechanical Property	Drive shaft	Axis	2 axis (rotate)			
	Speed	Fast-axis	Hz	2000	≤ 100	≤ 100
		Slow-axis	Hz	≤ 100	≤ 100	≤ 100
	Total Optical Scan Angle	Fast-axis	deg.	16	20	20
		Slow-axis	deg.	8	20	20
Reliability	Operating temperature	°C	10 ~ 40			
	Storage temperature	°C	-20 ~ 60			
	Operating humidity	%RH	30 ~ 70			
	Storage humidity	%RH	20 ~ 80			
Power consumption	MEMS scanner chip	mW	≤ 50			
	Packaged MEMS scanner	mW	≤ 50			

Ordering Information

Item	Type	Chip Size (mm)		Mirror Diameter (mm)		Operating Mode #1 (Hz)		Operating Mode #2 (Hz)	
KMS	01	05	≤ 5.0 x 5.0 x 0.7	MC1	1	XR	2000	YS	≤ 100
KMS	02	06	≤ 6.0 x 6.0 x 0.7	MC1	1	XS	≤ 100	YS	≤ 100
KMS	02	08	≤ 8.0 x 8.0 x 0.7	MC2	2	XS	≤ 100	YS	≤ 100
KMS	02	08	≤ 8.0 x 8.0 x 0.7	MC3	3	XS	≤ 100	YS	≤ 100

Ordering code: **KMS -01- 05 - MC1 - XR - YS**

※ All product available customized specification



SLM - Smart Lite Measurement is a new designed platform for realize to smart measurement, management and monitoring of passive/active components. SLM can support wide measurement range not only single mode and multimode fibers, multi-fibers as well as various passive and active components. In order to realize Smart Factory, SLM is really ideal system because it is support smart management solution - data management, modular self-checking and monitoring performance by changing over time.

Smart Lite Measurement System (SLM Series)

SLM is a Windows based operating system and realize high reliable and powerful features. There are two advantage, one is graphic user interface – KOC is offering customized GUI according to customer requirement. The other is offering customized measurement application what customer wants.

SLM has two main platform. One is SLM-4000(Mini-Tower Style) and other is SLM-2000(Compact). Both platform have 5 slots in order to support measurement modular. Below is key features of both platform.

SLM-4000 platform

- Mini-Tower Style (Silver)
- Intel i3 processor
- 4Gbyte RAM
- External 23inch-Touch Display Monitor(DELL)
- Support 5 x Measurement slots
- Support 2 x USB Measurement ports
- AC Power Supply



SLM-2000 platform

- Compact Style (Black) · 1.2GHz VIA Eden X4(fanless)
- 4Gbyte TAM · Internal/External Touch Display Monitor(optional)
- Support 5 x Measurement slots
- Support 2 x USB Measurement ports
- DC Power Supply(+12V)

SLM is support up to 5 slots and able to plugged individual measurement module's depending on measurement application. Following is typical measurement module's, and each type of module is assigned certain number of slot.

- Single-Mode IL/RL Module (SLM-RL1315)
- Multi-Mode IL/RL Module (SLM-RL0813)
- MPO IL/RL Module(SLM-MPO-12 ot 24)
- Power Meter
- Reference Variable Reflectance Module
- Optical Switch (Up to 32)
- Customized Optical Module



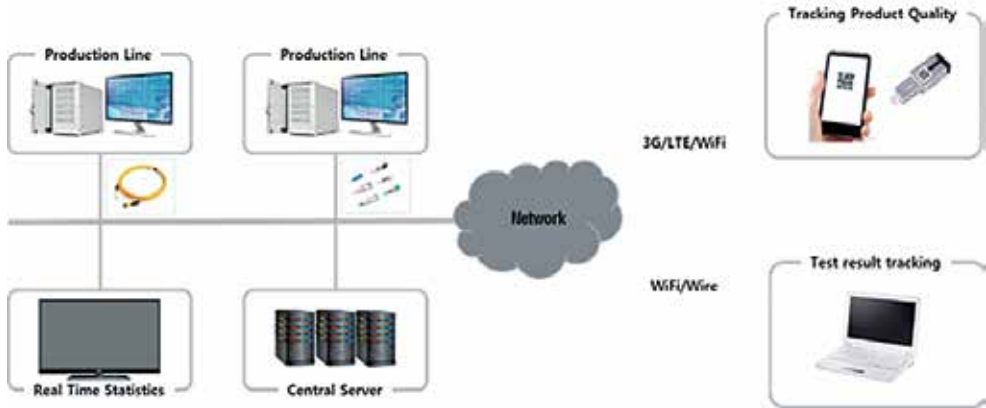
All measurement module can be "Hot-Swap" during power on status. So it is easy to changing measurement application without power off on system.



Key Applications

- Insertion loss
- Return loss
- SM fiber / Connector
- MM Fiber / Connector
- Coupler
- Splitter
- MPO Connector Ribbon Fiber

Smart Management option is enabling to monitoring each test system status of performance as well as recording test result data by real time to central management station(High performance desktop or server). Once network(via LAN port) is connected to SLM, then central server is recognized and distinguished SLM according to scanning feature. Then server is try to make connection with SLM (including test module) and acquire performance status periodically. By this solution, customer can trace and manage any quality of changing over the time and do action in advanced before system fault or problem. Also test result at production is transferring to central database and analysis daily statistics of passive/active component production quality with production rate.



Specification(Platform)

Parameters	SLM-4000	SLM-2000	Notes
OS	Windows 10	Windows 10 or Linux	
CPU	Intel i5 or Above	Intel i5 or Cortex	
Display	External Touch Monitor	External Touch Monitor	
Dimension(HxWxD)	305mmx210mmx456mm	250mmx180mmx300mm	
Power	110 to 220VAC	12V DC	
# No of Measurement Slots	5	5	
# No of USB port	2	2	
Interface	Ethernet, WiFi, Bluetooth	Ethernet	

Ordering Information

Part Number	Description	Notes
SLM-4000-P	SLM-4000 Main platform	
SLM-2000-P	SLM-2000 Main platform	
SLM-M-10	SLM External 10inch Touch Monitor	
SLM-M-20	SLM External 20inch Touch Monitor	
SLM-SM-Client	SLM Smart Management Software, Enable data management and transferring functions	Need Consulting
SLM-SM-Central	Central Application SW for Server with database	

SLM Insertion Loss and Return Loss Module

SLM platform is support insertion loss and return loss measurement by IL /RL application module. IL/RL application module is covered wide products not only optical patch cord to MPO patch cord as well as directional or bi-directional measurement is available depending on configuration. One of SLM option, Smart management, is enable networking features and it can help to monitoring SLM itself and managing production line qualities by real time.

Insertion and Return Loss Application Module

IL/RL Application module is operating over SLM platform(SLM-4000/20000). This module is perform insertion loss(IL) and return loss(RL) of passive components by real time. Key method to measuring RL is OCWR and need to material wrapping of end of fiber. However, this method is much accurate result bring on then OTDR method for RL measurement. And this module can support dual wavelength measurement at the same for IL/RL which can help to reduce measuring time, show compared between both wavelengths.

This is typical IL/RL application module for SLM

- Single channel IL/RL Module for SM/MM
- Multi channel IL/RL Module for SM/MM
- Optional) Customized Multi channel IL/RL module for SM/MM

Single channel IL/RL application module is traditional concept. There are one in/out port for return loss and one power meter port for insertion loss. Supported wavelengths is typically 1310/1550nm at singlemode fiber, 850/1300nm at multimode fiber.

Multi channel IL/RL application module

is more advanced concept. There are 12 or 24 in/out port for return loss and several power meter options – 12 or 24 port power meter, 1 port power meter and remote power meter. Key feature of this module is 12 or 24 laser source is turn on at the same time and output laser source to multi channel power meter. then multi channel power meter reading 12 or 24 input power level at the same time. 12 or 24 IL measurement is only take 1s as well as it can help to make polarity testing for MPO patch cord without additional effort.



Optional customized application module is support inte-gration with 1x2 to 1x12 optical switch by single channel IL/RL module. This is support various type of optical patch cord testing without changing optical adaptor like as SC, LC or FC



Key Applications

- Insertion loss
- Return loss
- SM fiber / Connector
- MM Fiber / Connector
- Coupler
- Splitter
- MPO Connector
- Ribbon Fiber

Specifications (IL/RL Application Module)

IL/RL Module (Single Port)

Parameters	SLM–SM	SLM–MM	Notes
Wavelength(nm)	1310, 1550	850, 1300	Additional Wavelengths is on demand
Type of Fiber	9/125um	50/125um or 62.5/125um	
Retuen Loss Measurement			
Measurement Range	0 to 70dB	0 to 45dB	
Accuracy	±0.5dB @ 0 to 60dB, ±0.7dB @ >60dB	±0.5dB @ 0 to 45dB	
Repeatability	±0.2dB		
Display resolution	0.1 or 0.01		
Connector	FC/APC		
Insertion Loss Measurement			
Measurement Wavelengths	1310/1550nm	850/1300nm	Set by 1nm or IL
Measurement Range	+10dBm to -60dBm		
Accuracy	±0.02dB		
Display resolution	0.01 or 0.001		
Supportable adaptor	1.25/2.5mm Universal, SC/FC/LC		

MPO Module

Parameters	SLM–SM	SLM–MM	Notes
Wavelength(nm)	1310, 1550	850, 1300	Additional Wavelengths is on demand
Type of Fiber	9/125um	50/125um or 62.5/125um	
Retuen Loss Measurement			
Measurement Range	0 to 70dB	0 to 45dB	
Accuracy	±0.5dB @ 0 to 60dB, ±0.7dB @ >60dB	±0.5dB @ 0 to 45dB	
Repeatability	±0.2dB		
Display resolution	0.1 or 0.01		
Connector	MPO/APC		
Measurement Time	<2s @ 24port		
Insertion Loss Measurement			
Measurement Wavelengths	1310/1550nm	850/1300nm	Set by 1nm or IL
Measurement Range	+10dBm to -60dBm		
Accuracy	±0.05dB		
Display resolution	0.01 or 0.001		
Measurement Time	<2s @ Multi Channel Power Meter <15s @ Single Channel Power Meter, Remote Head		
Supportable adaptor	1.25/2.5mm Universal, SC/FC/LC for Single Channel Power Meter, Remote Head SC/LC for Multi Channel Power Meter		

Ordering Information

Part Number	Description	Notes
SLM-ILRL-1-1315	SLM, Insertion and Return loss application module for 1310/1550nm, singlemode, 9/125um	
SLM-ILRL-1-0813	SLM, Insertion and Return loss application module for 850/1300nm, multimode, 50/125um	
SLM-ILRL-12-1315	SLM, Insertion and Return loss application module for MPO, 1310/1550nm, singlemode, 9/125um, MPO/APC output with 12 ribbon fiber	
SLM-ILRL-12-0813	SLM, Insertion and Return loss application module for MPO, 850/1300nm, multimode, 50/125um, MPO/APC output with 12 ribbon fiber	
SLM-ILRL-24-1315	SLM, Insertion and Return loss application module for MPO, 1310/1550nm, singlemode, 9/125um, MPO/APC output with 24 ribbon fiber	
SLM-ILRL-24-0813	SLM, Insertion and Return loss application module for MPO, 850/1300nm, multimode, 50/125um, MPO/APC output with 24 ribbon fiber	
SLM-ILRL-n-1315 or 0813	SLM, Insertion and Return loss application module for customized no of ports, No of Port is from 2 to 12, selectable SM or MM and output type of connector(PC or APC)	

With adapter and solar module, 'Leisure Power' can be charged by itself, therefore, it is imperatively necessary product to the user who wants to utilize electric apparatus in the place where power is in short supply or power outage occurs frequently, or for outdoor activities, like camping and fishing.

This is a small-sized energy storage system that AC and DC power can be used for respective purpose, and Bluetooth speaker is provided with which you can enjoy music outdoors, using smart devices like mobile phone or tablet PC.



At stores



Outdoors

Q Did you know this?
It is very useful in these cases.

► Emergency power source at the time of

- ✓ Power outage
- ✓ Camping
- ✓ Fishing
- ✓ Outdoor activities

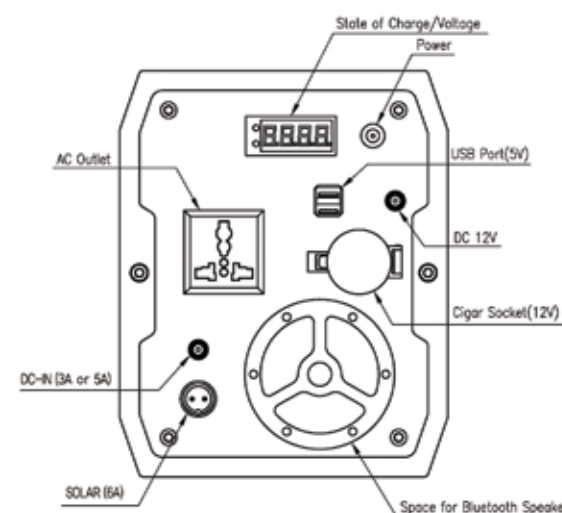
Specification

Item	Contents		Note
Model No.	LEISURE POWER KLP-400	LEISURE POWER KLP-600	
Battery Type	Lithium-Iron Phosphate (LiFePO4-4S6P)	Lithium Iron Phosphate (LiFePO4-4S9P)	
Battery Capacity	384Wh(12.8V,30Ah)	576Wh(12.8V, 45Ah)	
Charging Time	About 10 hours by 3A Adapter About 5 hours by 6A Solar Panel	About 9 hours by 5A Adapter About 7 hours by 6A Solar Panel	
Dimension	300mm(L) x 210mm(H) x 166mm(W)	300mm(L) x 210mm(H) x 166mm(W)	
Weight	6.5 kg	8.5 kg	
Input Voltage	DC 10~25V	DC 10~25V	
Input Port	DC Jack 1ea(3A), Solar Plug 1ea(6A)	DC Jack 1ea(5A), Solar Plug 1ea(6A)	
Output Port	Cigar socket 1ea(12V/7A) USB Port 2ea(5V, 1A/2.1A) AC Socket 1ea(220V/1.4A)	Cigar socket 1ea(12V/7A) USB Port 2ea(5V, 1A/2.1A) AC Socket 1ea(220V/2.2A)	
Operating Temperature	-20~60 °C	-20~60 °C	
Battery Life Time	2,000 deep cycle	2,000 deep cycle	DOD 80%
Component	DC Charging Adapter, Solar Panel Connector Cable	DC Charging Adapter, Solar Panel Connector Cable	
Display	State of charge, Voltage of battery, State of AC output	State of charge, Voltage of battery, State of AC output	
Functions	Over charging/discharging protection Over-current protection True sine-wave INVERTER Bluetooth Speaker(option)	Over charging/discharging protection Over-current protection True sine-wave INVERTER Bluetooth Speaker(option)	

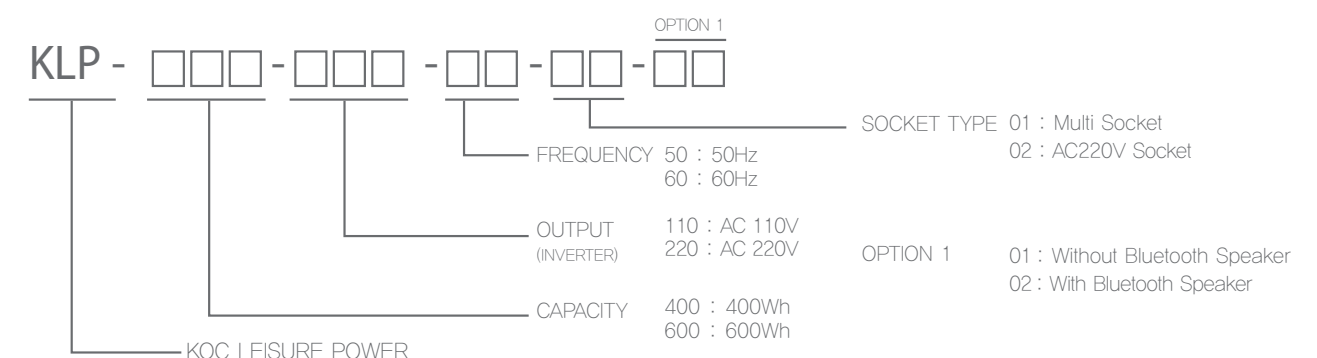
Features

- Provide DC 12V and AC 110V or 220V power
- True sine-wave INVERTER
- Wide range of input voltage (10~25V)
- Displaying State of charge & battery voltage
- Longer battery life (2,000 deep cycle)
- Much safer than any other lithium ion technology
- Bluetooth speaker
- Safety protections
 - Short circuit
 - Over charge and discharge
 - Over current
- Options : Bluetooth speaker

Figure



Ordering Information



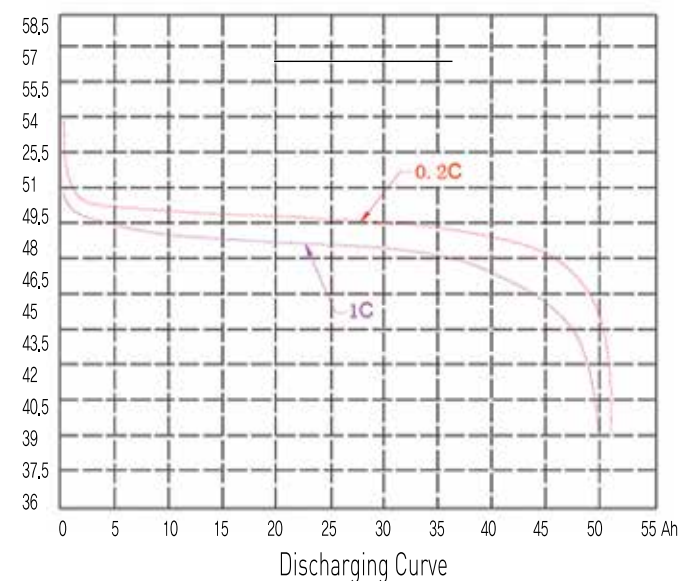
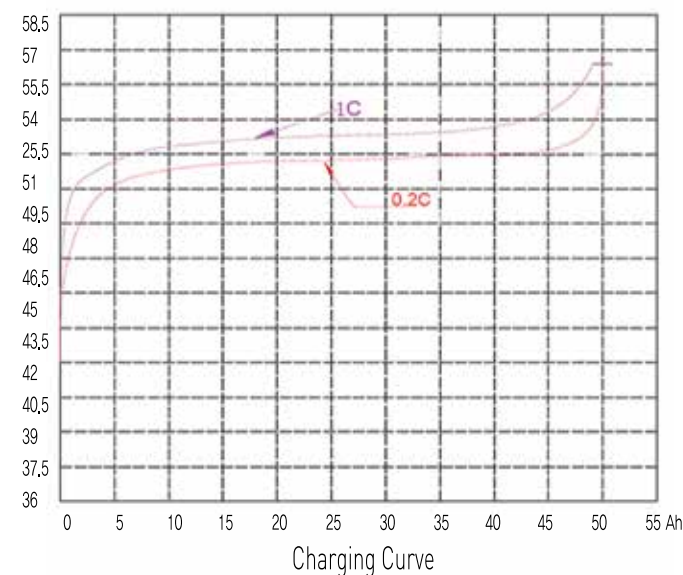


Features

- Attractive cycle life
- Extended safety performance
- Wide operating temperature range
- Unrivalled high temperature performance
- High capacity
- Steady output voltage
- Little self-discharge
- Double safety protection
- Withstanding very high level of vibrations and shocks

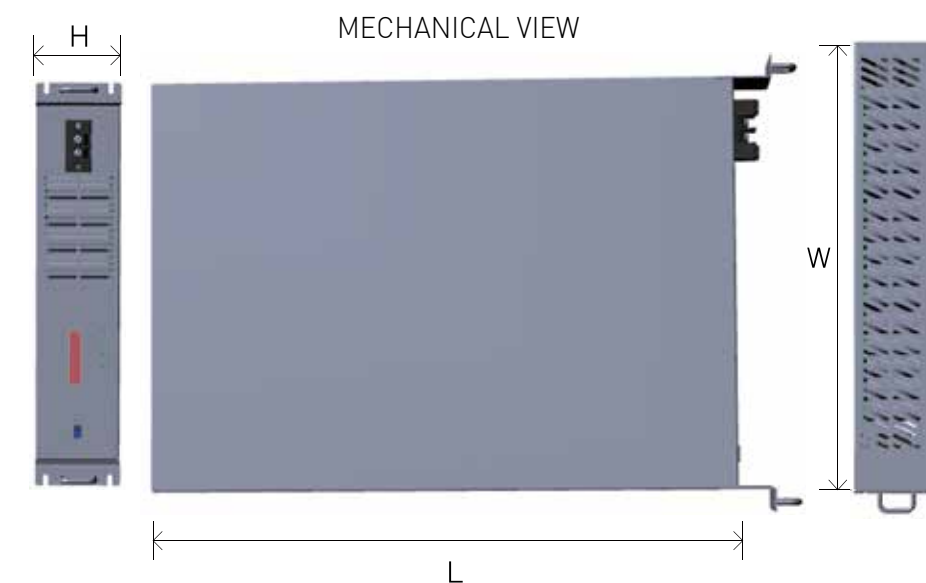
Safety Characteristics(Battery Cell)

- Over-charge/Over-discharge Ability to withstand over-charge/withstand over-discharge, and there is no fire, no exploding and work well
- Short circuit Ability to withstand short circuit, and there is no fire, no exploding
- Acupuncture Ability to withstand nail puncturing, and there is no fire, no exploding
- Thermal shock Ability to withstand thermal shock, and there is no fire, no exploding



Specification

Electrical Characteristics	
Nominal Voltage	48V
Nominal Capacity (at 0.5C, 25 °C)	50Ah
Impedance (Max. at 1000Hz)	≤3mΩ
Expected Cycle Life	More than 2000 cycles, with 1C charge and discharge rate, at 25 °C
Mechanical Characteristics	
Size	480(W)*660(L)*100(H)*mm ³
Operation Conditions	
Charge Method	CC-CV
Continuous Charge Current	0.2C
Max. Charge Voltage	55V
Charge Temperature	0 °C ~ 45 °C
Continuous Discharge Current	1C
Max. Discharge Current	2C
Peak Instant Discharge Current(10 Seconds)	3C
Discharge Cut-off Voltage	38V
Discharge Temperature	-20 °C ~ 65 °C
Storage Temperature	-20 °C ~ 40 °C
Self Discharge (Stored at 50% SOC)	≤2%/month



Off Grid ESS is a standalone system allowing the residents living in islands or remote areas with poor electrical power environment and effectively use electricity independent to the utility power system. This product is a MPPT converter that charges the battery from solar power. Since the output of solar panels are changed by temperature, humidity and intensity of light, the converter uses MPPT algorithm to operate automatically according to the state of the solar panels' output.



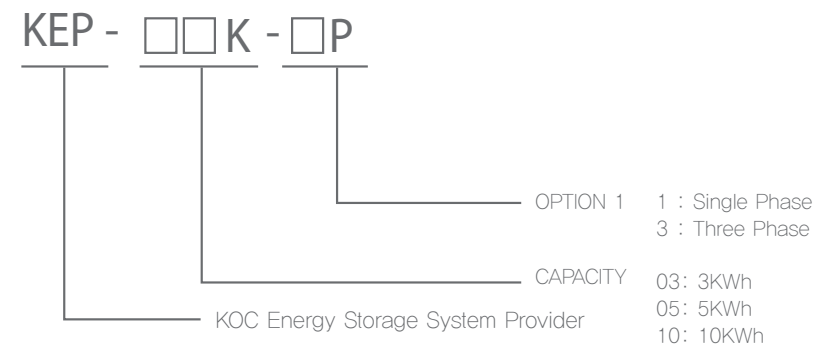
Features

- Provide AC 220V power
- Efficiency 96%
- Isolation with transformer
- PV Charger with MPPT
- Pure Sine wave Output
- Change over time <4ms
- Displaying State of charge & battery voltage
- Longer battery life (2,000 deep cycle)
- Much safer than any other lithium ion technology
- Safety protections
 - Short circuit
 - Over charge and over discharge
 - Over current

Application

- Connect with solar power plant
- Backup Power role

Ordering Code



Off Grid Battery Energy Storage System - 3kW

Sing Phase 3kW Energy Storage System

With On LINE UPS / KEP-3K1P



Specification

Model		KEP-3K1P
Power	Phase	Single Phase Type
	Rated POWER	3KW
	Rated Voltage	AC220V±10%
	Rated Frequency	50/60Hz
PCS	Rated Power Capacity	3KVA
	Input Current	Load 50% +BATTERY Charge 50%
	Inverter Efficiency	96%
	Distortion(THD)	Total no more than 5%, (each order of 3% or less): At rated output
	Control	PWM
	Switching frequency	10.0 ~ 20.0[Khz]
	Isolation	Transformer
PV	Control Method	MPPT
	Min Voltage	70Vdc
	Max Voltage	150Vdc
Battery	Battery Type	Lithium-Ion(TBD)
	Rated Voltage	48Vdc
	Min Voltage	40.8Vdc
	Max Voltage	57.6Vdc
	MAX Capacity	63A
Operation	GRID Connection Operating	SGSF-04-2012-07
	UPS	<4 ms
Protection	Voltage Range	-30% Under<Rated Voltage<+20% Over
	Over Heat	Over 85℃(IGBT Heat Sink Temperature)
	Frequency Range	-10%(50/60Hz)<+10%
	Over Load	Over 150% (1 min)
	Battery Over Voltage	Rated Voltage×120%
	Fail	TBD
Interface	Communication	RS485
Dimention	Cooling System	AC FAN
	IP Rate	IP20
	Machine Noise	Under 60db
	Size	240(W)×325(H)×445(D)
	Weight	50Kg
Environment	The operating temperature range	10℃ ~ +50℃
	Storage temperature range	20℃ ~ +65℃
	Humidity	Under RH 90%(No Condensation Condition)
	Vibration	Under 5.9m/sec
	Condition	No Corrosive gas, Flammable Gas, Oil, Dust

ESS consists of MPPT dc-dc converter, bidirectional dc-dc converter, battery and bidirectional inverter. DC power generated by solar module and AC input power supplied from grid are consumed in the load and stored in the battery. By storing the surplus energy, ESS can supply the energy when it is needed. This product is used for peak shaving at the house or small building. EDS'S ESS satisfies 19' rack standards. It can be driven with freely-configurable UI, management scheduler, UPS mode and On-Grid mode.



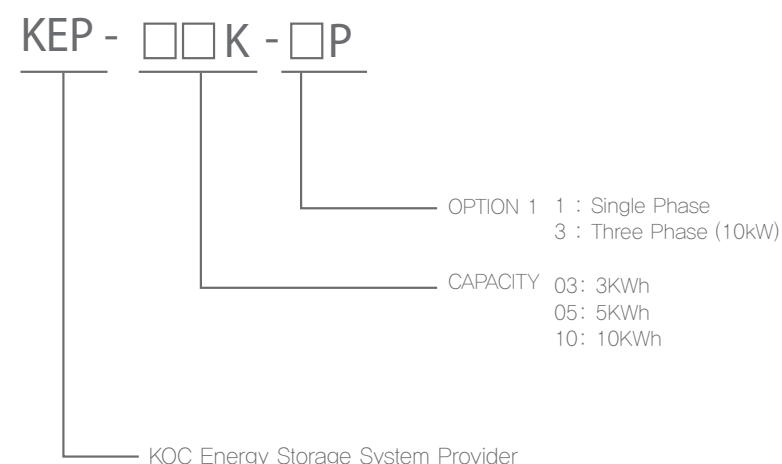
Features

- Provide AC 220/380V power
- Efficiency →95.5% (5kW, 10kW)
- PV Charger with MPPT
- Pure Sine wave Output
- anti islanding <0.5 sec
- Displaying State of charge & battery voltage
- Longer battery life (2,000 deep cycle)
- Much safer than any other lithium ion technology
- Safety protections
 - Short circuit
 - Over charge and over discharge
 - Over current

Application

- Connect with solar power plant
- Connect with small wind power plant
- EV station
- backup Power role
- house, small building - Peak shaving

Ordering Code



On Grid Battery Energy Storage System - 5kW

Sing Phase 5kW Energy Storage System
With On LINE UPS / KEP-5K1P



Specification

Model		KEP-5K1P
Power	Phase	Single Phase Type
	Rated POWER	5KW
	Rated Voltage	AC220V±10%
	Rated Frequency	50/60Hz
PCS	Rated Power Capacity	5KVA
	Input Current	Load 50% +BATTERY Charge 50%
	Inverter Efficiency	95.50%
	Distortion(THD)	Total no more than 5%,(each order of 3% or less): At rated output
	Control	PWM
	Switching frequency	10.0 ~ 20.0 [Khz]
	Isolation	Non
PV	Control Method	MPPT
	Voltage Range	300Vdc ~ 700Vdc
	MAX Current	10A ~ 500A
Battery	Battery Type	Lithium-Ion(TBD)
	Rated Voltage	240Vdc
	Voltage Range	204Vdc ~ 288Vdc
	MAX Capacity	TBD
Operation	GRID Connection Operating	SGSF-04-2012-07
	UPS	<4ms
	Anti-islanding	<0.5 Sec
Protection	Voltage Range	-15% Under<Rated Voltage<+15% Over
	Over Heat	Over 85°C(IGBT Heat Sink Temperature)
	Frequency Range	-0.7Hz<50/60Hz<+0.5Hz
	Over Load	Over 120% (1 min)
	Battery Over Voltage	Rated Voltage×120%
	Fail	TBD
Interface	Communication	RS485
Dimention	Cooling System	AC FAN
	IP Rate	IP20
	Machine Noise	Under 60db
	Size	TBD
	Weight	TBD
Environment	The operating temperature range	10°C ~ +50°C
	Storage temperature range	20°C ~ +65°C
	Humidity	Under RH 90%(No Condensation Condition)
	Vibration	Under 5.9m/sec
	Condition	No Corrosive gas, Flammable Gas, Oil, Dust

On Grid Battery Energy Storage System

On Grid Battery Energy Storage System – 10kW

Sing Phase 10kW Energy Storage System

With On LINE UPS / KEP-10K1P



Specification

Model		KEP-10K1P	KEP-10K3P
Power	Phase	Single Phase Type	Three Phase Type
	Rated POWER	10KW	
	Rated Voltage	AC220V±10%	AC 380V±10%
	Rated Frequency	50/60Hz	
PCS	Rated Power Capacity	10KVA	
	Input Current	Load 50% +BATTERY Charge 50%	
	Inverter Efficiency	95.50%	
	Distortion(THD)	Total no more than 5%,(each order of 3% or less): At rated output	
	Control	PWM	
	Switching frequency	10.0 ~ 20.0 [KHz]	
PV	Isolation	Non	
	Control Method	MPPT	
	Voltage Range	300Vdc ~ 700Vdc	
	MAX Current	10A ~ 500A	
Battery	Battery Type	Lithium-Ion(TBD)	
	Rated Voltage	240Vdc	380Vdc
	Voltage Range	204Vdc ~ 288Vdc	326Vdc ~ 461Vdc
	Max Capacity	TBD	
Operation	GRID Connection Operating	SGSF-04-2012-07	
	UPS	<4ms	
	Anti-islanding	<0.5 Sec	
Protection	Voltage Range	-15% Under<Rated Voltage<+15% Over	
	Over Heat	Over 85°C(IGBT Heat Sink Temperature)	
	Frequency Range	-0.7Hz<50/60Hz<+0.5Hz	
	Over Load	Over 120% [1 min]	
	Battery Over Voltage	Rated Voltage×120%	
	Fail	TBD	
Interface	Communication	RS485	
Dimention	Cooling System	AC FAN	
	IP Rate	IP20	
	Machine Noise	Under 60db	
	Size	TBD	
	Weight	TBD	
Environment	The operating temperature range	10°C ~ +50°C	
	Storage temperature range	20°C ~ +65°C	
	Humidity	Under RH 90%(No Condensation Condition)	
	Vibration	Under 5.9m/sec	
	Condition	No Corrosive gas, Flammable Gas, Oil, Dust	