

LS FTTH Solutions

Highway to the Ubiquitous Life





Leading Solution

LS aims to develop into a company that provides its clients with a **Leading Solution**, contributes to the overall society, and offers a business environment where the employees can realize their dreams.

Always with our customers

LS Cable is leading the cable, telecommunication industry. It also represents the LS Group. With its company vision, "Always with our customers." LS Cable continuously drives towards becoming the global leading company providing the technology as required by customers and the solution that others cannot offer.

Towards the global leading company

All employees of LS Cable stand behind the vision of becoming Your No.1 Creative Partner and are doing their best to realize our customers' satisfaction. Securing and establishing a firm growth engine, LS Cable will be reborn as an enterprise to leap worldwide





Introduction

LS Cable is proud to carry total FTTH solution products ranged from Network Core, RAS, Media Gateways, G-PON, E-PON, Switching Router, IT Security, IP/VPN Service System, NG SDH/SONET to Home networks solutions as well as diverse Fiber-optic cables, DATA and Coax cables and OSP materials. With a long history of serving customers in the industry worldwide, we have been bringing the total solutions and services to the world by integrating data, voice and video to build the most innovative and reliable networks for world's Telco Carriers, ISPs, Government and enterprise market. With outstanding performance and value-added services, we are confident in creating the best networking solutions to meet customers' maximum benefits, and to foster and guarantee a better quality of service

With the fast development on information and networks infrastructure, broadband applications such as high definition television (HDTV), video on demand (VOD) and etc are getting popular. Compared with other communication media, optical fiber obviously has superiority because of its high bandwidth and tremendously low data loss. Due to these advantageous features, it has been rapidly developed and gradually replacing with copper wire-based transmission system. At present, the WAN and MAN markets have been saturated with optical fiber and now the LAN has also been slowly developed towards the optical fiber transmission. Only the network access speeds between MAN and LAN markets are still slow, which is commonly called the "Last Mile Bottleneck". To solve this problem, optical fiber has increasingly penetrated to the customer premises. Today, everyone knows that optical fiber is a better solution for increasing network bandwidth

Thus, now we're going to propose these value added FTTH solutions to help you to achieve your prospective last mile solution.

In this product literature, we introduce the turn-key solutions from supply, installation to maintenance of the FTTH/FTTB equipment and other elements of networking that is necessary to enable the FTTH network

We aim to create a "Leading Solution" for our customers

Broadband Access Network Equipment

GPON Solution

- All ITU-T G.984.x Standard compatible
- Layer 2 and Layer 3 Switch functions
- support full redundancies
- Web-based management
- support TDM services

EPON Solution

- All IEEE802.3ah Standard compatible
- High-density and Cost-effective

P2P Solution

- Layer2, 3 Switches
- Aggregate sub-networks
- Customer Premise Equipment

VoIP Solution

- support all voice service through Ethernet network

Fiber Optic Cable & Connectivity

Optical Fibers

- Zero Water Peak Fiber
- Bend Intensity Fiber
- Non-Zero DSF
- Laser Optimized Multimode Fiber

Outdoor & Indoor Cables

- All areas applicable

Air Blown Solutions

- ABF, ABC, Blown Tube Cables

FTTH Drop Cables

- Flexible and Various

Passive Optical Solutions

- Fiber Distribution Hub
- Optical Splitter
- Fiber Optic Splice Closure
- Optical Distribution Frame
- Optical Termination Box
- Fiber Optic Outlet
- Rack & Cabinet
- Field Installable Connector
- Optical Patch Cords & Adapters

Broadband Network Integration Service

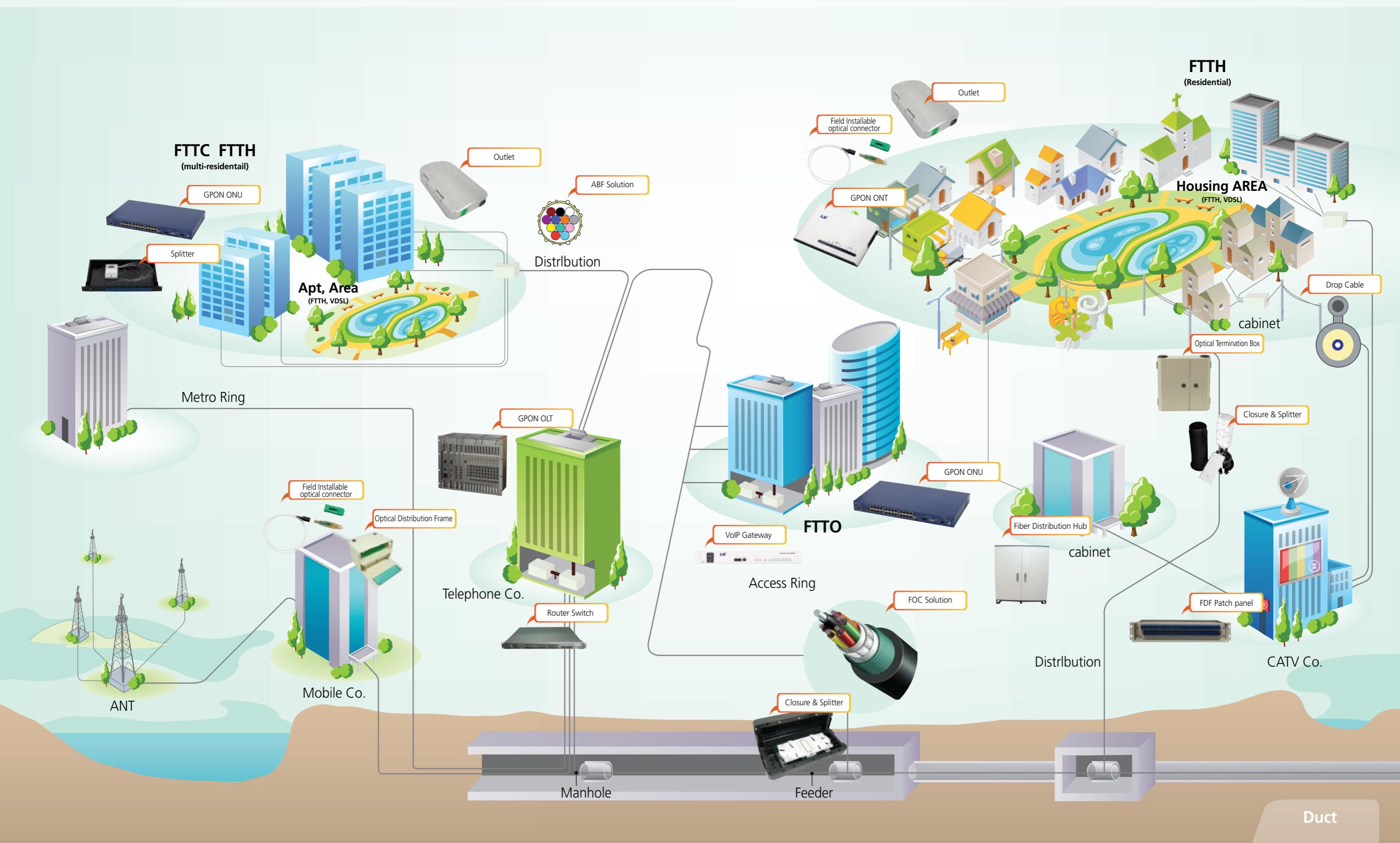
Consulting Services

- Suggesting Optimized Business Models
- Advanced Network Architecture Design
- Customizing Services for Customers

Constructions

- Integrating Various Services
- Effective Network Deployment
- Providing Stable Network Maintenance

Realization of FTTx Total Solution by LS Cable





GPON Solution

LS GPON provides downstream capacity of 2.488 Gbps and an upstream capacity of 1.244 Gbps. It is designed to provide high speed internet service for subscribers and optimized environments for service providers.



EPON Solution

LS EPON provides various types of Interfaces and it is designed to fit in any service provider's plan and/or environments.



VolP Solution

LS VolP solution is fully compatible with LS GPON/GPON equipments to complete service provider's faultless Triple Play Service solutions. (VoIP, Video, and Data)



P2P Solution

LS P2P solution provides intelligent networking services like advanced QoS, rate limiting, high availability, and security to enhance network operations while simple network configuration is still maintained.

Broadband Access Network Equipment

• GPON Solution

GPON OLT LST20016	10
GPON ONU LST204	12
GPON ONT LST402	14
GPON ONT LST110G/111G	15
GPON ONT LST400F	16
GPON ONT LST020G/022G	17
GPON ONT LST442E/422E	18
GPON ONT LST412V	19
GPON ONT LST204A	20
GPON EMS	21

EPON Solution

EPON OLT LSTE9024	22
EPON ONU LSTE2024FE/LSTE400	24
EPON ONU LSTE2024DSL	25

P2P Solution

Router Switch LST3524G	26
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VolP Solution

VolP Gateway LST320VEF	28
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GPON Solution

GPON OLT LST20016

Descriptions

LST20016 GPON OLT is a full carrier-class, future-proof GPON system that provides Ethernet, video, TDM and voice services in a single platform with the open architecture to easily accommodate future service requirements. Based on the ASIC for GPON functionality, it is flexible and efficient solution for the optical last-mile network.



Key Features

Full support of telco-grade power, cooling, reliability and management

- Rack-mountable front-access chassis
- Modular design with dual power, built-in FAN, controller & uplink redundancy
- Universal slot for flexible network design
- GPON modularity with SFP type transceiver

Environment-friendly and future-enable system

- Lower CO₂ emission due to minimized power consumption
- Support of user-friendly linux-based EMS

Scalable architecture

- Non-blocking 216Gbps throughput switching capacity
- Selective uplink of 10Gbps XFP and 4x1Gbps SFP
- Up to 40 GPON port (ex, 2560 subscriber @64 splitting ratio)
- Support of splitting ratio up to 128

QoS management for triple play service

- L2/L3 switching/routing protocol including RIP, OSPF, BGP
- Multicast protocol of PIM-SM & IGMP
- Tailor-made S/W feature set including PPPoE intermediate agent, DHCP option82

Ordering Information

LST20016	GPON OLT with max. 40 PON ports
Part Name	Description
SHF	LST20016 GPON Shelf with 16 slot and FAN
SCU	Packet switching and CPU management
GPU	4-port GPON ports with SFP type
GEU	4-ports 1000BaseX SFP type
XEU	1-port 10Gbit Ethernet with XFP type
TDU	Circuit Emulation with 16 E1 ports
PSU-AC	Power conversion from 110/220VAC to 12VDC
PSU-DC	Power conversion from -48VDC to 12VDC

Specification

General

- L2/3 wire speed forwarding rate
- Full or half duplex operation
- Max. 40 1000Base-X or 1000 Base-T) or Max. 2 ports 10Giga interface
- 40 Ports PON interface
- 3 Built-in fans 1000RPM/26.8CFM

Switching Architecture

- High speed non-blocking switch fabric
- Store and Forward switching
- 32K MAC address
- 4K Active 802.1Q VLAN support
- 216Gbps switching capacity

Features

- ITU-T G.984 compliant
- 802.1D STP
- 802.1w RSTP
- 802.1s MSTP
- 802.1Q tagged VLAN
- Q-in-Q Stacked VLAN
- IGMP snooping
- IGMP report proxy
- Broadcast/Multicast storm filtering
- Port/ Flow Base mirroring
- Per-port MAC address limiting
- MAC address filtering
- DHCP Server/ Relay/ Client
- DHCP Filtering
- NetBIOS, NetBEUI, NBT filtering
- 802.3ad Link aggregation
- RIPv1/2/ OSPF v2/ BGP4/ IS-IS
- IP Multicasting (PIM-SM/ SSM, IGMP v2/3, IGMP Snooping)
- Bandwidth Control (100Kbps unit)
- Rate limiting per port and Flow
- ACL (Access-Control-List)
- QoS, CoS traffic management
- CPU protection

- RFC 2271 SNMP Management frameworks
- RFC 1643 Ethernet MIB
- RFC2233 Interface MIB
- RFC3195 Syslog
- Enterprise MIB
- Web-based Management

Management

- RFC 854 Telnet
- RFC 959 FTP
- RFC 783 TFTP
- RFC 1157 SNMPv1/v2c
- RFC 1213 MIB-II
- RFC 1493 Bridge MIB

Physical and Environmental

- Dimension (WxHxD) :482x399x240(mm)
- Operating Temperature : 0°C to 50°C
- Storage Temperature : -30°C to 70°C
- Humidity : 10% to 90% non-condensing
- Power : 110/220VAC 50/60Hz Free Volt, DC -44 ~ 60VDC
- Power Consumption: Max 450W when option modules populated
- ETSI (Many ETSI Environmental specs)
- IEC 60950/ EN 60950-1
- ETSI/EN 300-019-2.3
- ETSI/EN 300-019-2.1
- EN 300 386 V1.3.2
- EN 55022
- EN 61000-4-2, 3, 4, 5, 6
- FCC Part 15B
- CE/MIC EMI/EMC compliant

GPON Solution

GPON ONU LST2024

Descriptions

LST2024 GPON ONU is modular type GPON ONU used in small / medium size business building structures allowing the service provider to select uplink-interface card for each selected service. The uplink-interface contains GPON interface card and Gigabit Ethernet interface card.



Key Features

Flexible architecture for business user

- Rack-mountable main frame with 19" 1RU height
- Modular design with various uplink
 - GPON uplink interface with 2.5G for downstream, 1.25G for upstream
 - Gigabit uplink interface as 1000BaseT or 1000BaseF

Environment-friendly and cost-effective design

- Lower CO² emission due to minimized power consumption
- 24 Built-in 10/100BaseT ports for subscriber

Fully compatible S/W architecture

- Compliant to ITU-T G.984: AES, FEC, DBA, 8 T-cont, 32 Port-ID
- L2 bridge/switching: 802.1q(VLAN), 802.1p(4Q), IGMP snooping
- Remote OAM: Remote download, Alarm, Optical monitoring

Environment-hardened HW

- 100/220VAC free voltage input (power consumption < 40W)
- Temperature -20~60°C, Humidity 10~90% (Non condensing)

Ordering Information

LST2024 GPON ONU with 24 port FE and various uplink card

Part Name	Description
LMF	LST2024 Main Frame with 24FE and 2 uplink slot
GPM	1-port GPON card for uplink
GEM	1-port 1000BaseT card for uplink
GFM	1-port 1000BaseF card for uplink as SFP type

Specification

General

- L2 wire speed forwarding rate
- Full or half duplex operation
- 24 ports All Fast Ethernet(100Base-T)
- Auto MDI/MDI-X
- 2 slot for various type of uplink

Switching Architecture

- High speed non-blocking switch fabric
- Store and Forward switching
- 16K MAC address
- 4K Active 802.1Q VLAN support

Features

- ITU-T G.984 compliant
- 802.1D STP
- 802.1w RSTP
- 802.1s MSTP
- 802.1Q tagged VLAN
- Q-in-Q Stacked VLAN
- IGMP snooping
- IGMP report proxy
- Broadcast/Multicast storm filtering
- Port/ Flow Base mirroring
- Per-port MAC address limiting
- MAC address filtering
- DHCP Server/ Relay/ Client
- DHCP Filtering
- NetBIOS, NetBEUI, NBT filtering
- 802.3ad Link aggregation
- IP Multicasting (IGMP Snooping)
- Bandwidth Control (100Kbps unit)
- Rate limiting per port and Flow
- ACL (Access-Control-List)
- QoS, CoS traffic management
- CPU protection

Protocols and Standards

- 802.1D Bridge standard(STP)1998 edition
- 802.1p Priority and Class of Service standard
- 802.1Q VLAN standard
- 802.1s Multiple STP configuration
- 802.1w Rapid STP configuration
- 802.1x Authentication
- 802.3 10BaseT Ethernet standard
- 802.3u Fast Ethernet standard
- 802.3z Gigabit Ethernet standard
- 802.3ab Gigabit UTP standard
- 802.3x Flow control standard
- 802.3ad Port trunking
- RFC 768 UDP
- RFC 783 TFTP
- RFC 791, 950, 919, 922 IP
- RFC 792 ICMP
- RFC 793 TCP
- RFC 826 ARP
- RFC 854, 855 Telnet
- RFC 959 FTP
- RFC 1112 IGMP
- RFC 2236 IGMP v2
- RFC 3376 IGMP v3
- RFC 1157 SNMP v1, RFC 1905 SNMP v2
- RFC 1213 MIB-II
- RFC 1293 Inverse ARP
- RFC 1305 NTPv3
- RFC 1350 TFTP
- RFC 1492 TACACS+
- RFC 2663 NAT
- RFC 2096 IP Forwarding
- RFC 2338 VRRP
- ISO10589 IS-IS
- RFC 1757 RMON MIB (4 groups)
- RFC 2021, 2074 RMON II
- RFC 2271 SNMP Management frameworks
- RFC 1643 Ethernet MIB
- RFC2233 Interface MIB
- RFC3195 Syslog
- Enterprise MIB
- Web-based Management

Management

- RFC 854 Telnet
- RFC 959 FTP
- RFC 783 TFTP
- RFC 1157 SNMPv1/v2c
- RFC 1213 MIB-II
- RFC 1493 Bridge MIB

Physical and Environmental

- Dimension (WxHxD) : 483x44x240 (mm)
- Operating Temperature : -20°C to 60°C
- Storage Temperature : -30°C to 70°C
- Humidity : 10% to 90% non-condensing
- Power : 110/220VAC 50/60Hz Free Volt,
- Power Consumption: Max 40W
when option modules fully loaded

GPON Solution GPON ONT LST402

Descriptions

LST402 GPON ONT is wall-mountable residential equipment supporting the both 4 FE and 2 VoIP interface. This model are adaptive to deliver IP based service such as high speed data, IPTV, and VoIP.

Specification

Simple architecture with user-friendly interface

- Wall/Desktop mountable indoor ONT (DxWxH) :127x170x40 (mm)
- Support of triple service
- 4 x 10/100BaseT ports for subscriber
- 2 x VoIP ports for subscriber
- Remote OAM: Remote download, Alarm, Optical monitoring



ITU-T G.984 GPON fully complying GPON interface

- SFF type laser compliant with ITU-T G.984.2 Amd1, Class B+
- 2.5Gbps downstream/1.25G upstream (1490nm/1310nm)
- Min. 20Km length
- Support single T-CONT mode and multiple T-CONTs mode
- Support of ASE-128, FEC, DBA and 802.1p mapper service
- Enhanced GPON performance with max. 40 T-cont and 256 Port-ID
- OMCI interface fully meets ITU-T G.984.4 and 983.2

L2 bridge/switiching: 802.1q(VLAN), 802.1p(4Q), IGMP snooping

- Up to 256 MAC address and 4 VLAN group
- VLAN tagging per Ethernet port and VLAN stacking (Q-in-Q)
- MAC address limit and Rate limit
- IGMP v2/v3 snooping for IP-TV multicast service

VoIP service connecting to analog telephone with RJ11 connector

- Embedded DSP for two VoIP protocol (H.248 or SIP)
- Multiple codecs including G.711/G.729/G.723.1
- 5-REN per line, blanced ring at 55V RMS and 54ms Echo cancellation
- Support various CLASS services - Caller ID, Call Waiting, Call Forwarding, Call Transfer, Call Toggle, Three Way Calling, Distinctive Ringing, etc
- G.711 for FAX and T.38 FAX

Environment-hardened HW

- 12V 3A, AC adaptor (Power consumption <15W)
- Temperature -5~50°C pt, Humidity 10~85% (Non condensing)
- ETSI, CE certified

Ordering Information

LST402	GPON ONT with 4FE and 2VoIP
LST110G	GPON ONT with 1GEand 1FE
LST111G	GPON ONT with 1GE, 1FE and 1VoIP

GPON Solution GPON ONT LST110G/LST111G

Descriptions

LST110G/LST111G GPON ONT is wall-mountable residential equipment supporting the 1 FE and 1GE or 1 FE, 1 GE and 2 VoIP interface, respectively. These model are adaptive to deliver IP based service such as high speed data, IPTV, and VoIP.

Specification

Simple architecture with user-friendly interface

- Wall/Desktop mountable indoor ONT (DxWxH) :127x170x40 (mm)
- Supports triple service
- 1 x 10/100BaseT port and 1 x 10/100/1000BaseT port for subscriber
- 2 x VoIP ports for subscriber
- Remote OAM: Remote download, Alarm, Optical monitoring



LST110G

ITU-T G.984 standard fully complying GPON interface

- SFF type laser compliant with ITU-T G.984.2 Amd1, Class B+
- 2.5Gbps downstream/1.25G upstream (1490nm/1310nm)
- Min. 20Km length
- Support single T-CONT mode and multiple T-CONTs mode
- Support of ASE-128, FEC, DBA and 802.1p mapper service
- Enhanced GPON performance with max. 40 T-cont and 256 Port-ID
- Standard compliant OMCI interface as defined by ITU-T G.984.4 and G.983.2



LST111G

L2 bridge/switiching: 802.1q(VLAN), 802.1p(4Q), IGMP snooping

- Up to 256 MAC address and 4 VLAN group
- VLAN tagging per Ethernet port and VLAN stacking (Q-in-Q)
- MAC address limit and Rate limit
- IGMP v2/v3 snooping for multicasting IP-TV service

VoIP service connecting to analog telephone with RJ11 connector for LST111G

- Embedded DSP for two VoIP protocol (H.248 or SIP)
- Multiple codecs including G.711/G.729/G.723.1
- 5-REN per line, blanced ring at 55V RMS and 54ms Echo cancellation
- Support various CLASS services - Caller ID, Call Waiting, Call Forwarding, Call Transfer, Call Toggle, Three Way Calling, Distinctive Ringing, etc
- G.711 for FAX and T.38 FAX

Environment-hardened HW

- 12V 3A, AC adaptor (Power consumption <15W)
- Temperature -5~50°C, Humidity 10~85% (Non condensing)
- ETSI, CE certified

Ordering Information

LST402	GPON ONT with 4FE and 2VoIP
LST110G	GPON ONT with 1GEand 1FE
LST111G	GPON ONT with 1GE, 1FE and 1VoIP

GPON Solution GPON ONT LST400F

Descriptions

LST400F GPON ONT is the wall-mountable residential equipment optimized for data only subscriber. It is supporting the both of 4 FE and 2 VoIP interface. This model are adaptive to deliver IP based service such as high speed data, IPTV, and VoIP.

Specification

Simple architecture with user-friendly interface

- Wall/Desktop mountable indoor ONT (DxWxH) : 110x160x35 (mm)
- Support of triple service
- 4 x 10/100BaseT ports for subscriber
- Remote OAM: Remote download, Alarm, Optical monitoring

GPON interface fully compliant with ITU-T G.984 standard

- SFF type laser compliant with ITU-T G.984.2 Amd1, Class B+
- 2.5Gbps downstream/1.25G upstream (1490nm/1310nm)
- Min. 20Km length
- Support of ASE-128, FEC, DBA and 802.1p mapper service
- Enhanced GPON performance with max. 8 T-cont and 256 Port-ID
- Standard compliant OMCI interface as defined by ITU-T G.984.4 and G.983.2

L2 bridge/switiching: 802.1q(VLAN), 802.1p(4Q), IGMP snooping

- Up to 1K MAC address and 4 VLAN group
- VLAN tagging per Ethernet port and VLAN stacking (Q-in-Q)
- IEEE 802.1x port-based and MAC-based network access control
- IGMP v2/v3 snooping/proxy for multicasting IP-TV service
- MAC address flood guard for DoS attack prevention

Environment-hardened HW

- 5V 2A, AC adaptor (Power consumption <10W)
- Temperature 0~50°C, Humidity 5~90% (Non condensing)
- ETSI, CE certified

Ordering Information

LST400F	GPON ONT with 4FE
LST020G	GPON ONT with 2GE
LST022G	GPON ONT with 2GE and 2VoIP

GPON Solution GPON ONT LST020G/LST022G

Descriptions

LST110G/LST111G GPON ONT is wall-mountable residential equipment supporting the 1 FE and 1GE or 1 FE, 1 GE and 2 VoIP interface, respectively. These model are adaptive to deliver IP based service such as high speed data, IPTV, and VoIP.

Specification

Simple architecture with user-friendly interface

- Wall/Desktop mountable indoor ONT (DxWxH) : 110x160x35 (mm)
- Support of triple service
- 2 x 10/100/1000BaseT ports for subscriber
- 2 x VoIP ports for subscriber
- Remote OAM: Remote download, Alarm, Optical monitoring

GPON interface fully compliant with ITU-T G.984 standard

- SFF type laser compliant with ITU-T G.984.2 Amd1, Class B+
- 2.5Gbps downstream/1.25G upstream (1490nm/1310nm)
- Min. 20Km length
- Support of ASE-128, FEC, DBA and 802.1p mapper service
- Enhanced GPON performance with max. 8 T-cont and 256 Port-ID
- Standard compliant OMCI interface as defined by ITU-T G.984.4 and G.983.2

L2 bridge/switiching: 802.1q(VLAN), 802.1p(4Q), IGMP snooping

- Up to 1K MAC address and 4 VLAN group
- VLAN tagging per Ethernet port and VLAN stacking (Q-in-Q)
- IEEE 802.1x port-based and MAC-based network access control
- IGMP v2/v3 snooping/proxy for multicasting IP-TV service
- MAC address flood guard for DoS attack prevention
- Classification by L2/L3/L4 field in the packet incoming
- Marking and remarking of COS, DSCP or IP precedence

POTS interface with RJ11 connector for LST022G

- Embedded DSP for two VoIP protocol (H.248, H.323v4 or MGCP)
- Multiple codecs including G.711/G.729/G.723.1
- 5-REN per line, balanced ring at 55V RMS
- Max of 64msec fixed, adaptive echo cancellation buffer
- CID, DTMF, VAC, CNF, G.168 & T.38 Fax relay
- G.711 for FAX and T.38 FAX

Environment-hardened HW

- 5V 2A, AC adaptor (Power consumption <10W)
- Temperature 0~50°C, Humidity 5~90% (Non condensing)
- ETSI, CE certified

GPON Solution

GPON ONT LST442E/LST422E

Descriptions

As GPON SBU (Single Business Unit) equipment, ONT LST442E/LST422E incorporates interoperability, key customers' specific requirements and cost-efficiency. Equipped with ITU-T G.984 compliant, supporting both 4FE and VoIP interface including voice, video, and high speed internet access. To serve the business customers, it also supports E1 transmission over the PON network, based on CES (Circuit Emulation) technology.

Specification

Simple architecture with user-friendly interface

- Wall/Desktop mountable indoor ONT (DxWxH) :200x267x66 (mm)
- Support of triple service as well as TDM service
- 4 x 10/100BaseT ports and 2xVoIP ports for subscriber
- 2 or 4 E1 interface for subscriber



LST442E



LST422E

ITU-T G.984 fully complying GPON interface

- SFF type laser compliant with ITU-T G.984.2 Amd1, Class B+
- 2.5Gbps downstream/1.25G upstream (1490nm/1310nm)
- Support of ASE-128, FEC, DBA and 802.1p mapper service
- Enhanced GPON performance with max. 8 T-cont and 256 Port-ID

L2 bridge/switiching: 802.1q(VLAN), 802.1p(4Q), IGMP snooping

- VLAN tagging per Ethernet port and VLAN stacking (Q-in-Q)
- IGMP snooping v2/v3 for IP-TV multicast service

VoIP service connecting to analog telephone with RJ11 connector

- Embedded DSP for two VoIP protocol (H.248 or SIP)
- Multiple codecs including G.711/G.729/G.723.1
- Supports various CLASS services – CID, CW, CF, CT, Call Toggle, Three Way Calling, etc

E1 TDM interface with RJ48 connector using CES technology

- IETF, MEF and ITU-T standard compliant encapsulation
- Conformance with ITU-T G.703 and G.704
- Multiple timing recovering mode
- Selectable system timing sources when applicable
- Compliant with G.823, ETSI EN 300 912 or G.824 specifications clauses dealing with frequency stability and accuracy

Environment-hardened HW

- 12V 3A, AC adaptor (Power consumption <15W)
- Temperature -5~50°C, Humidity 10~85% (Non condensing)
- ETSI, CE certified

Ordering Information

LST442E	GPON ONT with 4FE, 2VoIP and 4 E1
LST422E	GPON ONT with 4FE, 2VoIP and 2 E1
LST412V	GPON ONT with 4FE, 2VoIP and 1 RF video

GPON Solution

GPON ONT LST412V

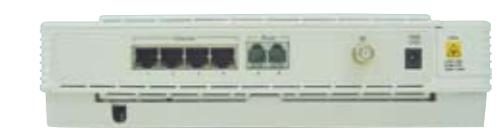
Descriptions

LST412V GPON ONT is wall-mountable residential equipment supporting the 4FE, 2VoIP as well as 1 RF video.

Specification

Simple architecture with user-friendly interface

- Wall/Desktop mountable indoor ONT (DxWxH) :200x267x66 (mm)
- Supports triple and TDM service
 - 4 x 10/100BaseT ports and 2xVoIP ports for subscriber
 - 2 or 4 E1 interface for subscriber



ITU-T G.984 standard fully complying GPON interface

- SFF type laser compliant with ITU-T G.984.2 Amd1, Class B+
- 2.5Gbps downstream/1.25G upstream (1490nm/1310nm)
- Support of ASE-128, FEC, DBA and 802.1p mapper service
- Enhanced GPON performance with max. 8 T-cont and 256 Port-ID

L2 bridge/switiching: 802.1q(VLAN), 802.1p(4Q), IGMP snooping

- VLAN tagging per Ethernet port and VLAN stacking (Q-in-Q)
- IGMP snooping for IP-TV multicast service

VoIP service connecting to analog telephone with RJ11 connector

- Embedded DSP for two VoIP protocol (H.248 or SIP)
- Multiple codecs including G.711/G.729/G.723.1
- Supports various CLASS services – CID, CW, CF, CT, Call Toggle, Three Way Calling, etc

Analog RF video interface with 75Ohm F connector

- Compliant to ITU-T G.984.2 for optical specification
- Wavelength: 1540nm~1560nm and Optical input power: -8 ~ +2dBm
- Full RF range 46MHz~870MHz with 14dBmV
- Stability and accuracy

Environment-hardened HW

- 12V 3A, AC adaptor (Power consumption <15W)
- Temperature -5~50°C, Humidity 10~85% (Non condensing)
- ETSI, CE certified

GPON Solution Outdoor GPON ONT LST204A

Descriptions

LST204 is located on the subscriber side over the GPON network to provide multiple services such as Internet data service, voice service, video service, IPTV, and CATV overlay. This system is adequate for Fiber To The Home (FTTH).

LST204 is outdoor cabinet type, which basically provides Ethernet 2 ports and POTS (VoIP) 4 ports and mainly installed on the outside of a detached house or a townhouse,. Additionally, the CATV is available for the option.

Specification

Simple architecture with user-friendly interface

- Wall mountable outdoor ONT
- Support of triple service and optional RF video TDM service
- 2 x 10/100BaseT ports for subscriber
- 4 VoIP interface for subscriber

GPON interface is fully compliant with ITU-T G.984 standard

- SFF type laser compliant with ITU-T G.984.2 Amd1, Class B+
- 2.5Gbps downstream/1.25G upstream (1490nm/1310nm)
- Support of ASE-128, FEC, DBA

L2 bridge/switiching: 802.1q(VLAN), 802.1p(4Q)

- MAC management and port-based rate limiting
- IGMP v2 snooping for multicasting IP-TV service

VoIP service connecting to analog telephone with RJ11 connector

- Embedded DSP for two VoIP protocol (H.248 or SIP)
- Multiple codecs including G.711/G.729/G.723.1
- Support various CLASS services – CID, CW, CF, CT, Three Way Calling, etc

Environment-hardened HW

- Water-proof outdoor closure
- Built-in splicing tray
- 12V 2A, AC adaptor (Power consumption <12W)
- Temperature -5~50°C, Humidity 10~85% (Non condensing)
- CE certified



GPON Solution GPON EMS

Descriptions

LS EMS will provide the service operator centrally monitoring and management by using fully redundant single application software with the required hardware platform (Unix platform) with high availability capability of software, application, database and hardware to proactively manage and monitor all Active EMS network elements, namely the OLT and the ONU and its services



Specification

Management and monitoring of all the NE with following functionalities:

- Fault Management
- Performance Management
- Configuration Management
- Security Management

User-friendly GUI interface in unix-based platform.

- Topology Management : physical and logical graphical topology view.
- Resource Management :record the inventory of the network resources and the service creation.
- EMS Log Management: record of all network and EMS activities and the security audit trail.
- Report Form Management: report for fault alarm, network performance, EMS performance, network activities, service creation and security audit trail.

Centralized operation and maintenance (O&M) of the NE

- Single EMS platform with In-band management
- Interface and integration with other existing or B/OSS (Business/Operation Support EMS)

1+1 active-active server redundancy for high reliability

- High Availability (HA) features in primary and secondary location with its connectivity for southbound and northbound interface.

Web based client access

Ordering Information

LST204A	Outdoor GPON ONT with 2FE and 4VoIP
GPON ONT ODBK	Outdoor closure for GPON ONT

Ordering Information

UNES2000	LS Element Management System
----------	------------------------------

EPON Solution

EPON OLT LSTE9024

Descriptions

LSTE9024 EPON OLT is L3 based multi service platform providing flexible number of GEPON ports and GE ports combination up to 24 ports including 2 x 10G uplink ports for future migration.



Key Features

OLT configuration

- 19" rack-mountable main frame: 482mm x 177(mm) x 280(mm), (W x H x D)
- Up to 20 GEPON ports supports for max 640 subscriber accommodation
- Flexible GE(Gigabit Ethernet) uplink interface up to 10xGE ports
- FAN is integrated with main shelf, but it is detachable

Switching & routing function

- Non-block 24G L2 bridge/switiching: 802.1q(VLAN), 802.1p(4Q), IGMP snooping
- L3 routing protocol: RIP v1/v2, OSPF v1/v2, BGP+
- IP multicast with PIM-SM/SSM, IGMP v2/3, IGMP snooping
- 32K MAC address table & 4K 802.1Q VLAN
- 8 ports /group link aggregation (802.3ad)

Dual mode operation of GEPON and Turbo GEPON

- IEEE802.3ah MPCP, OAM compliant
- 1.25G(DS)/1.25G(US) GEPON for 32 splits (max. 30Mbps BW allocation for subscriber)
- State-of-art 2.5G(DS)/1.25(US) GEPON for 64 splits

Network management

- CLI, telnet & SNMP v1/2 based network control
- Remote system upgrade using FTP, TFTP protocol

Environment-hardened HW

- AC 200~240VAC or DC -42.5~-56.5V (power consumption < 700W)
- Temperature 0~40°C, Humidity 20~80% (Non condensing)

Ordering Information

LSTE9024		EPON OLT with 4FE, 2VoIP and 1 RF video port
Part Name		Description
SHF		LSTE9024 GEPON Shelf with FAN
PIU-E1		1.25G GEPON Line card
PIU-E2		Turbo(2.5G) GEPON Line card
SCU	SCU-PC	CPU unit
	SCU-PS	Switch unit
LIU		4-ports 100BaseX SFP Type
XIU		1-port 10G Ethernet XFP type
PSU-PA		AC power unit
PSU-PD		DC power unit

Specification

General

- L2/ 3 wire speed forwarding rate
- Full or half duplex operation
- 8 ports All Giga(1000Base-X or 1000Base-T or 100Base-Fx) Installed
- Auto MDI/MDI-X
- 20 Ports PON interface

Switching Architecture

- High speed non-blocking switch fabric
- Store and Forward switching
- 32K MAC address
- 4K Active 802.1Q VLAN support

Features

- 802.3ah GEPON
- 802.1D STP
- 802.1w RSTP
- 802.1s MSTP
- 802.1Q tagged VLAN
- Q-in-Q Stacked VLAN
- IGMP snooping
- IGMP report proxy
- Broadcast/Multicast storm filtering
- Port/ Flow Base mirroring
- Per-port MAC address limiting
- MAC address filtering
- DHCP Server/ Relay/ Client
- DHCP Filtering
- NetBIOS, NetBEUI, NBT filtering
- 802.3ad Link aggregation
- RIPv1/2/ OSPF v2/ BGP4/ IS-IS
- IP Multicasting (PIM-SM/ SSM, IGMP v2/3, IGMP Snooping)
- Bandwidth Control (100Kbps unit)
- Rate limiting per port and Flow
- ACL (Access-Control-List)
- QoS, CoS traffic management
- CPU protection

Protocols and Standards

- ISO10589 IS-IS
- RFC 1757 RMON MIB (4 groups)
- RFC 2021, 2074 RMON II
- RFC 2271 SNMP Management frameworks
- RFC 1643 Ethernet MIB
- RFC2233 Interface MIB
- RFC3195 Syslog
- Enterprise MIB
- Web-based Management

- RFC 854 Telnet
- RFC 959 FTP
- RFC 783 TFTP
- RFC 1157 SNMPv1/v2c
- RFC 1213 MIB-II
- RFC 1493 Bridge MIB

Management

- Dimension (WxDxH) :440x325x44 (mm)
- Operating Temperature : 0°C to 50°C
- Storage Temperature : -30°C to 70°C
- Humidity : 10% to 90% non-condensing
- Power : 110/220VAC 50/60Hz Free Volt, DC -42 ~ 54VDC
- Power Consumption: Max 500W when option modules fully loaded

Physical and Environmental

EPON Solution

EPON ONU/ONT LSTE2024FE/LSTE400

Descriptions

LSTE2024FE provide the EPON uplink and 24FE.



LSTE2024



LSTE400

Specification

Architecture

- 19" Rack mounted ONU: 440mm x 280mm x 44mm
- GEPON uplink interface with 1.25G for down and 1.25G for up
- 24 x 10/100BaseT ports

Key Feature

- Compliant to IEEE 802.3ah: AES, FEC, DBA
- L2 bridge/switiching: 802.1q(VLAN), 802.1p(4Q), IGMP snooping, STP
- Remote OAM: Remote download, Alarm, Optical monitoring
- QoS : Classification, Marking/Remarketing, SPQ, WRR, WFQ
- DHCP relay

Power Supply

- 220V AC (Power consumption <100W)
- Dying Gasp

Operation Environment

- Temperature -5~50°C, Humidity 10~85% (Non condensing)

Ordering Information

LSTE2024FE	EPON ONU with 24FE port
LSTE400	EPON ONT with 4FE port
LSTE2024DSL	EPON ONU with 24 VDSL port

EPON Solution

EPON ONU LSTE2024DSL

Descriptions

LSTE2024DSL provide the EPON uplink and 24 VDSL lines, respectively.

Specification

Architecture

- 19" Rack mounted ONU: 440mm x 280mm x 44mm
- GEPON uplink interface with 1.25G for down and 1.25G for up
- 24 x VDSL ports

Key Feature

- Compliant to IEEE 802.3ah: AES, FEC, DBA
- L2 bridge/switiching: 802.1q(VLAN), 802.1p(4Q), IGMP snooping, STP
- Remote OAM: Remote download, Alarm, Optical monitoring
- QoS : Classification, Marking/Remarketing, SPQ, WRR, WFQ
- DHCP relay

Power Supply

- 220V AC (Power consumption <100W)
- Dying Gasp

Operation Environment

- Temperature -5~50°C, Humidity 10~85% (Non condensing)



Router Switch LST3524G

Descriptions

LST3524G Router Switch is the intelligent Ethernet router switch to provide the broadband multimedia service. LST3524G support the carrier-class availability, flexible scalability and strong security function accommodated by the professional experience.



Key Features

Flexible architecture for business user

- Rack-mountable main frame with 19" 1RU height
- 24 port Gigabit interface with 4 port combo interface

Switching & routing function

- L2 bridge/switiching: 802.1q(VLAN), 802.1p(4Q), IGMP snooping
- L3 routing protocol: RIP, OSPF, BGP
- IP multicast with PIM-SM/SSM, IGMP v2/3, IGMP snooping
- 32K MAC address table & 4K 802.1Q VLAN
- 8 ports /group link aggregation (802.3ad)
- 802.1w/1s Fast/Multiple Spanning Tree Protocol 지원

Traffic & security management

- Bandwidth management for each port
- Prevention of CPU overflow
- Broadcast/Multicast storm control
- MAC, DHCP, NetBIOS, NetBEUI, NBT filtering
- MAC address learning limiting per port
- Support of TACACS+

Network management

- CLI & telnet based control
- SNMP v1/2c based network control
- Support of MIB-II, RMON MIB, Bridge MIB
- Remote system upgrade using FTP, TFTP protocol

Environment-hardened HW

- 100~240VAC free voltage input (power consumption < 72W)
- Temperature 0~50°C, Humidity 10~90% (Non condensing)

Ordering Information

LST3524G

24 SFP Ports and 4 Ports combo Uplink

Specification

General

- L2/3 wire speed forwarding rate
- Full or half duplex operation
- 24 ports All Giga(1000Base-X or 1000Base-T or 100Base-Fx) Installed
- Auto MDI/MDI-X
- 4 Ports Gigabit(1000Base-T) Combo Ports

Switching Architecture

- High speed non-blocking switch fabric
- Store and Forward switching
- 32K MAC address
- 4K Active 802.1Q VLAN support

Features

- 802.1D STP
- 802.1w RSTP
- 802.1s MSTP
- 802.1Q tagged VLAN
- Q-in-Q Stacked VLAN
- IGMP snooping
- IGMP report proxy
- Broadcast/Multicast storm filtering
- Port/ Flow Base mirroring
- Per-port MAC address limiting
- MAC address filtering
- DHCP Server/ Relay/ Client
- DHCP Filtering
- NetBIOS, NetBEUI, NBT filtering
- 802.3ad Link aggregation
- RIPv1/2/ OSPF v2/ BGP4/ IS-IS
- IP Multicasting (PIM-SM/ SSM, IGMP v2/3, IGMP Snooping)
- Bandwidth Control (100Kbps unit)
- Rate limiting per port and Flow
- ACL (Access-Control-List)
- QoS, CoS traffic management
- CPU protection

Protocols and Standards

- 802.1D Bridge standard(STP)1998 edition
- 802.1p Priority and Class of Service standard
- 802.1Q VLAN standard
- 802.1s Multiple STP configuration
- 802.1w Rapid STP configuration
- 802.1x Authentication
- 802.3 10BaseT Ethernet standard
- 802.3u Fast Ethernet standard
- 802.3z Gigabit Ethernet standard
- 802.3ab Gigabit UTP standard
- 802.3x Flow control standard
- 802.3ad Port trunking
- RFC 768 UDP
- RFC 783 TFTP
- RFC 791, 950, 919, 922 IP
- RFC 792 ICMP
- RFC 793 TCP
- RFC 826 ARP
- RFC 854, 855 Telnet
- RFC 959 FTP
- RFC 1112 IGMP
- RFC 2236 IGMP v2
- RFC 3376 IGMP v3
- RFC 1157 SNMP v1, RFC 1905 SNMP v2
- RFC 1213 MIB-II
- RFC 1293 Inverse ARP
- RFC 1305 NTPv3
- RFC 1350 TFTP
- RFC 1492 TACACS+
- RFC 2328 OSPFv2
- RFC 1058 RIP v1, 2
- RFC 1771 BGPv4
- RFC 2131 DHCP
- RFC 2474 DiffServ
- RFC 4601 PIM-SM
- RFC 3569 PIM-SSM
- RFC 2663 NAT
- RFC 2096 IP Forwarding
- RFC 2338 VRRP
- ISO10589 IS-IS

- RFC 1757 RMON MIB (4 groups)
- RFC 2021, 2074 RMON II
- RFC 2271 SNMP Management frameworks
- RFC 1643 Ethernet MIB
- RFC2233 Interface MIB
- RFC3195 Syslog
- Enterprise MIB
- Web-based Management

Management

- RFC 854 Telnet
- RFC 959 FTP
- RFC 783 TFTP
- RFC 1157 SNMPv1/v2c
- RFC 1213 MIB-II
- RFC 1493 Bridge MIB

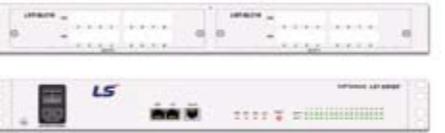
Physical and Environmental

- Dimension (WxDxH) : 440x325x44 (mm)
- Operating Temperature : 0°C to 50°C
- Storage Temperature : -30°C to 70°C
- Humidity : 10% to 90% non-condensing
- Power : 110/220VAC 50/60Hz Free Volt, DC -42 ~ 54VDC
- Power Consumption: Max 74W when option modules populated

VoIP Gateway LST320VEF

Descriptions

LST320VEF is the 1.5U rack-mountable voice gateway subsidiary to make phone call over IP network with various signaling protocol such as SIP, MGCP. LST320VEF has 2 slots for pluggable I/O interface card for user interface which is composed of 16 voice port with RJ-11 connector. LST320VEF secures high quality of voice and provides stable performance. For the purpose of expanding voice port LST320VEF is cascaded to LST300U ONU and managed by a GUI based Management System.



Key Features

Flexible architecture for business user

- Rack-mountable main frame with 19" 1.5RU height :193.8mm x 43.7mm x 255.9mm
- Modular design with 2 pl
- 2 pluggable I/O slots for VoIP service (Max. 32 port)
- Internal fan controled by temperature sensor

Switching & additional function

- VLAN and bridge feature
- User security by IP access-list
- Remote software upgrade using FTP & TFTP
- IEEE 802.1p packet prioritization

Voice feature

- Various voice codecs: G.723.1, G.729a, G.729b, G.711
- RFC 3261 SIP protocol, H.248 and MGCP
- CID, DTMF, VAD, CNG, G.168 and T.38 G3 Fax Relay
- Max. 32ms fixed, adaptive jitter buffering
- Echo Canceller Length – max. 128ms
- Traffic queruing and SNMP MIB v2 for Network Management
- Noise suppression, G.168-2002 Echo cancellation
- Voice quality of over MOS 4.0

Environment-hardened HW

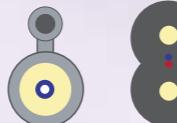
- 200~250VAC free voltage input (power consumption < 80W)
- Temperature 0~50°C, Humidity 10~90% (Non condensing)

Environment-hardened HW

- 100~240VAC free voltage input (power consumption < 72W)
- Temperature 0~50°C, Humidity 10~90% (Non condensing)

Ordering Information

LST320VEF		VoIP Gateway for business users
Part Name		Description
MDU		LST320VEF Main Frame with 2 slot
VC16		Voice Card with 16 VoIP interfaces



Optical Fibers and Cables

LS Cable brings you from G652D to G657 Optical Fibers and various Optical Fiber Cables at its best quality.

Air Blown Solutions

LS Cable's Ez blowing system, our own cost effective and time saving ABF solution, simply made the optical network so easy.

FTTH Drop Cables

LS Cable's various types of Drop Cables are featuring the last mile FTTH network.

Connectivity

LS Cable's various types of Drop Cables are featuring the last mile FTTH network.

Fiber Optic Cable and Connectivity

Optical Fibers and Cables

Zero Water Peak Fiber (G652.D)	32
Bend Insensitive Fiber (G657)	33
Nivzero DSF (G655)	34
Laser Optimized Multimode Fiber	35
Outdoor Cable/Indoor Cable	36

Air Blown Solutions

Air Blown Solutions Overview	38
Air Blown Fiber Unit (EPFU)	40
3.5/5mm Outdoor Micro Duct	42
3.5/5mm Indoor Micro Duct (LSZH)	43
Air Blown Cable (Ez Blow® Micro ABC)	44
Micro Duct (Direct Install) for Ez Blow® Micro ABC	46
Micro Duct (Direct Bury) for Ez Blow® Micro ABC	47

FTTH Drop Cables

Flat Type Drop Cable Overview	48
Flat Type Drop Cable	
Figure-8 Type Aerial Drop Cable	
Round Type Drop Cable	

Connectivity

Fiber Distribution Hub (FDH)	50
Splitter & Panout Splitter	52
Mount Splitter on ODF	53
Fiber Optic Splice Closure	54
Optical Distribution Frame (ODF)	56
Optical Termination Box	57
Fiber Optic Outlet	58
Fiber Distribution Rack	59
Ez-SC, Field Installable Optical Connector	62
Ez-SC Assembly Procedure	63
Optical Patch Cords & Adapters	64

Optical Fibers and Cables Zero Water Peak Fiber (G652.D)

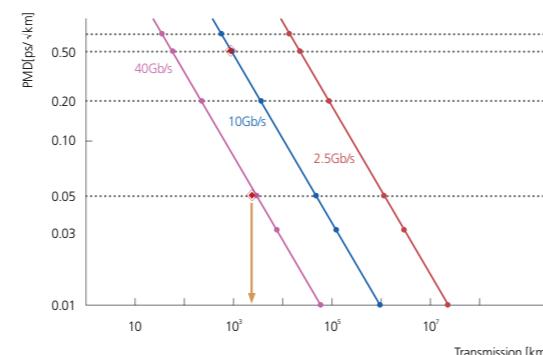
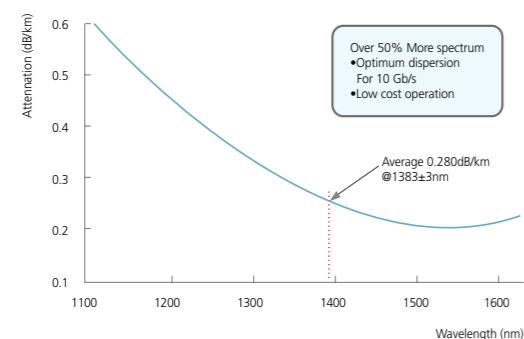


Descriptions

- Extremely low water peak
- Full spectrum from 1260nm to 1625nm
- Designed to cover the entire wavelength

Key Features

- Long term attenuation reliability by absence of hydrogen aging defects
- Excellent geometrical properties for active alignment splicing technique
- Extremely low PMD performance



The PMD link design value is a term used to describe the PMD of concatenated lengths of fiber (also known as PMDQ). This value represents a statistical upper limit for total link PMD. Individual PMD values may change when cabled.

Optical Properties

Attenuation	1310nm	≤ 0.34	dB/km
	1383nm	≤ 0.31	dB/km
	1490nm	≤ 0.21	dB/km
	1550nm	≤ 0.20	dB/km
	1625nm	≤ 0.21	dB/km
Mode Field Diameter	1310nm (typical)	9.2	μm
	1550nm (typical)	10.4	μm
Cutoff Wavelength	Cable	≤ 1260	nm
	1550nm	≤ 18	ps/(nm-km)
Chromatic Dispersion	1625nm	≤ 22	ps/(nm-km)
	Zero Dispersion Wavelength	1310~1324	nm
	Slope @ λ_0	≤ 0.092	ps/(nm ² -km)
Macrobending Attenuation	$\varnothing 32\text{mm}$ 1550nm	≤ 0.03	dB
	100turns, $\varnothing 50\text{mm}$ 1310nm & 1550nm	≤ 0.03	dB
	100turns, $\varnothing 60\text{mm}$ 1625nm	≤ 0.03	dB
PMD	Link Design Value	≤ 0.06	ps/ $\sqrt{\text{km}}$
	Maximum Individual Fiber	≤ 0.2	ps/ $\sqrt{\text{km}}$

Optical Fibers and Cables Bend Insensitive Fiber (G657)



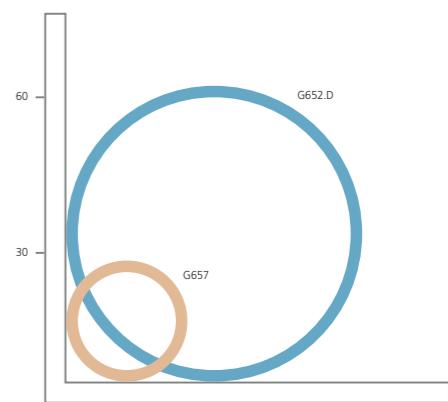
Descriptions

- Germanium doped core and silica cladding
- Dual protective arylate coating applied over fiber
- Environmental-proof tested and complying ITU-T Standards

Key Features

- Bend Insensitivity at 20° bending
- Low water peak grade attenuation
- G657.A : Compatible with G652.D
- G657.B : FTTH optimized bending performance

Maximum bending radius (G652.D vs. G657)



Optical Properties

		G657.A	G657.B
Attenuation	1310nm	≤ 0.35	dB/km
	1383nm	≤ 0.34	dB/km
	1490nm	≤ 0.21	dB/km
	1550nm	≤ 0.21	dB/km
Mode Field Diameter	1310nm (typical)	8.9	8.6
Cutoff Wavelength	Cable	≤ 1260	nm
	1550nm	≤ 18	ps/(nm-km)
Chromatic Dispersion	1625nm	≤ 22	ps/(nm-km)
	Zero Dispersion Wavelength	1310~1324	nm
	Slope @ λ_0	≤ 0.092	ps/(nm ² -km)
Macrobending	1 turn, $\varnothing 20\text{mm}$ 1550nm	≤ 0.3	dB
Attenuation	1 turn, $\varnothing 20\text{mm}$ 1625nm	≤ 1.0	dB
PMD	Link Design Value	≤ 0.06	ps/ $\sqrt{\text{km}}$
	Maximum Individual Fiber	≤ 0.2	ps/ $\sqrt{\text{km}}$

Optical Fibers and Cables Nonzero DSF (G655)

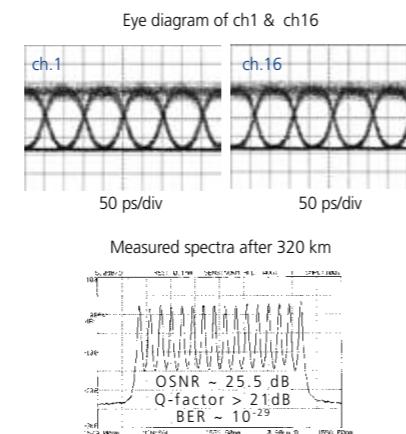
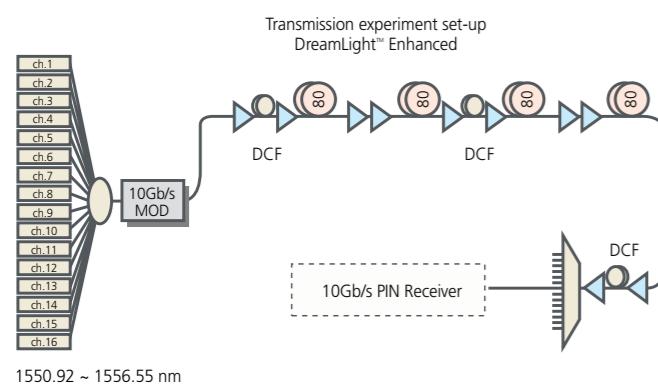
DreamLight™

Descriptions

LSC DreamLight™ is designed for long-haul, high data rate and high capacity DWDM system. By optimizing dispersion and effective area, the generation of non-linear effects in 50 GHz channel spacing system is successfully surpassed.

Key Features

- Provide optimum performance for 10Gb/s 50GHz channel spacing in the C band
- Make it feasible the next generation 40 Gb/s transmission system
- Compatible with future DWDM amplifier regions such as S band
- Wide band design provide CWDM application
- Enhanced PMD performance



Optical Properties

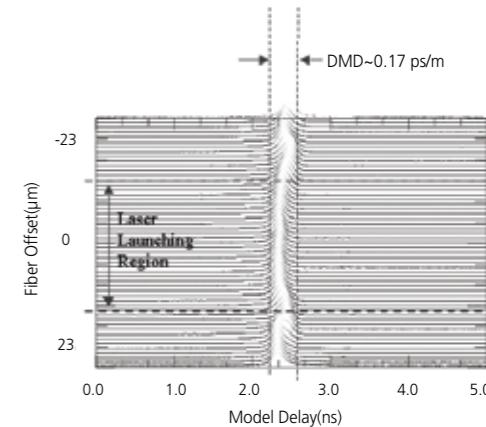
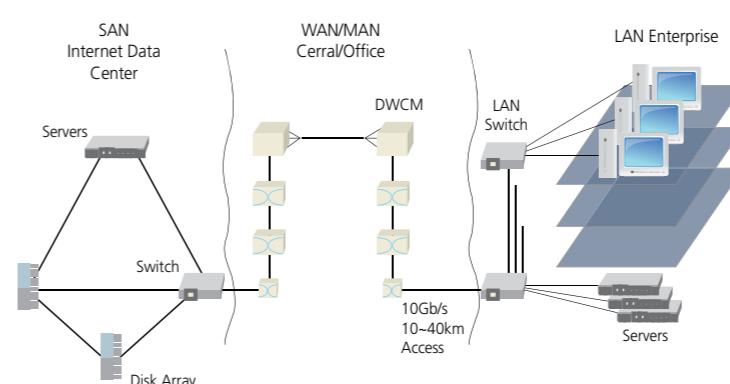
	A	B	
Attenuation	1550nm 1625nm	≤ 0.22 ≤ 0.24	dB/km dB/km
Mode Field Diameter	1310nm (typical)	9.6	9.3 μm
Cutoff Wavelength	Cable	≤ 1480	nm
Chromatic Dispersion	1530~1565nm Zero Dispersion Wavelength	2~6 ≤ 1520	5.5~10 ≤ 1440 $\text{ps}/(\text{nm}\cdot\text{km})$ nm
PMD	Link Design Value Maximum Individual Fiber	≤ 0.1 ≤ 0.2	$\text{ps}/\sqrt{\text{km}}$ $\text{ps}/\sqrt{\text{km}}$

Optical Fibers and Cables Laser Optimized Multimode Fiber

Giga™

Descriptions

- High performance Laser Optimized MMF produced using sophisticated MCVD process
- High bandwidth and low attenuation to ensure attenuation margin in LAN/WAN
- Uniform DMD profile for 10Giga data rate



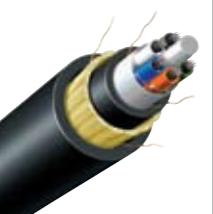
Optical Properties

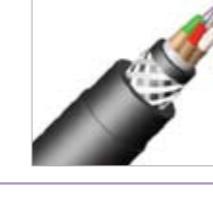
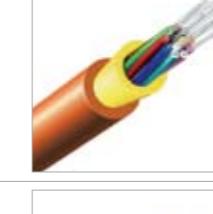
Characteristics	Units	50 μm	62.5 μm	OM3 (50 μm)
Attenuation coefficient	dB/km			
850nm		≤ 2.4	≤ 2.8	≤ 2.4
1300nm		≤ 0.6	≤ 0.7	≤ 0.6
Bandwidth	MHz.km			
Premium				
850nm / 1300nm		$\geq 500 / 1000$	$\geq 200 / 600$	$\geq 1500 / 500$
Standard				
850nm / 1300nm		$\geq 400 / 800$	$\geq 140 / 400$	$\geq 400 / 800$
Laser Bandwidth	MHz.km			
850nm				≥ 2000
Numerical Aperture	(typical)	0.2	0.275	0.2
DMD	ps/m			≤ 0.30
10G Transmission Distance	m			300

Optical Fibers and Cables

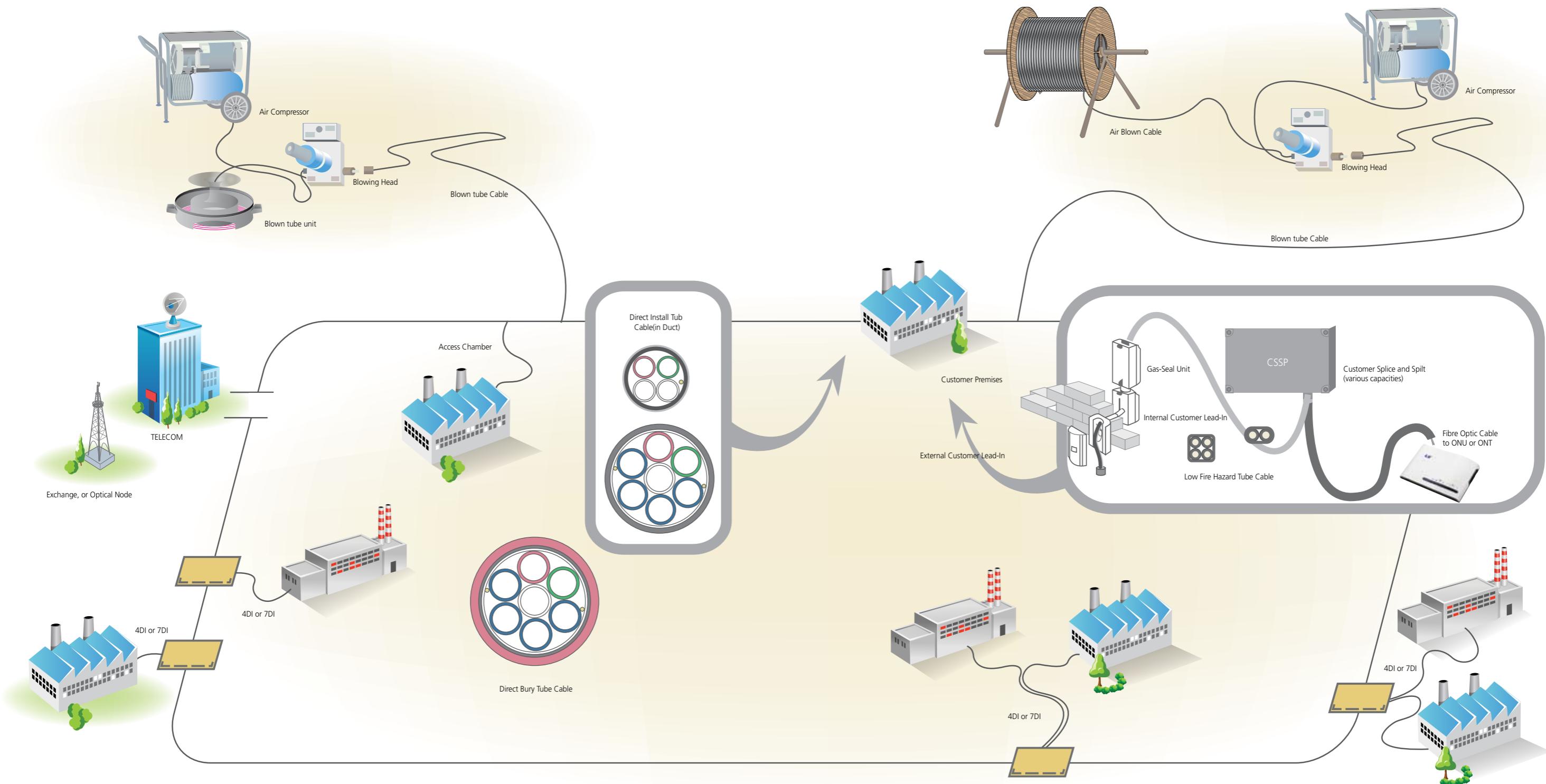
Outdoor Cable/Indoor Cable

Outdoor Cable

Type	Construction	Fiber count	Feature
Multi Loose Tub		2~576	<p>The Loose tube designs from LS Cable meet the needs for customer's requirements, and provide excellent performance.</p> <p>LS offers various cables with increased fiber density and easy deployment for a wide range of installations, including duct, aerial (lashed and self-supporting), direct buried, and outdoor/indoor.</p>
Ribbon CentralLoose Tube		24~432	<p>The Central Ribbon Cable designs meet the needs of the variety of applications.</p> <p>These cables are available in all dry designs with dielectric and metallic sheath.</p>
Ribbon Multi Loose		72~864	<p>The Central Ribbon Cable designs meet the needs of the variety of applications.</p> <p>Ribbon cable can be deployed in a limited space, while streamlining fiber termination and saving time and money with easy mass fusion splicing.</p> <p>These cables are available in all dry designs with dielectric and metallic sheath.</p>
Ribbon Slot		4~1000	<p>LS's ribbon slot cable provides excellent optical transmission and physical performance. Ribbon slot cable is a design that has high tensile strength and flexibility in a compact cable size for use in conduit, direct buried and aerial applications.</p>
Micro Unit		2~144	<p>High capacity & fiber density Advanced "dry" water blocking materials</p> <p>Virtually gel-free design Rapid installation (small & lightweight)</p> <p>Easy break-out of bundles & tubes (QAW)</p>
ADSS		2~288	<p>ADSS Optical Cables are all-dielectric, self-supporting aerial cables designed for easy and economical installation.</p> <p>High modulus aramid yarns provides high tensile strength and long term reliability.</p>

Type	Construction	Fiber count	Feature
Figure-8 type		2~288	<p>Figure-8 type optical cables are self-supporting aerial cables that are designed for easy and economical installation.</p> <p>The loose tube design provides stable performance over a wide temperature range and is compatible with any grade optical fiber.</p>
Marine & Off-Shore		2~48	<p>The LS's Marine and Offshore fiber optic cables is designed especially for the harsh environments of commercial marine vessels, oil platforms and other similar applications.</p> <p>Low smoke/zero halogen, flame retardant cables offer the versatility and ease of use of our other offshore cables in a construction suited for marine applications.</p>
Indoor Cable			
Simplex & Duplex cord		1 or 2	<p>Short Run Office & Computer Room Cabling Patch cords, Pigtailed and Jumpers Equipment Interconnects</p> <p>OFNR(riser rated), OFNP(plenum rated) or LSZH(low smoke zero halogen rated)</p>
Distribution (single Unit)		2 ~ 24	<p>TDistribution cables are rugged, high performance optical communication cables for inside plant installations Backbone & Computer Room Cabling Compact design for limited conduit space OFNR(riser rated), OFNP(plenum rated) or LSZH (low smoke zero halogen rated)</p>
Distribution (Sub Unit)		24 or 144	<p>The Central Ribbon Cable designs meet the needs of the variety of applications.</p> <p>Ribbon cable can be deployed in a limited space, while streamlining fiber termination and saving time and money with easy mass fusion splicing.</p> <p>These cables are available in all dry designs with dielectric and metallic sheath.</p>
Breakeout		2~12	<p>Distribution cables are rugged, high performance optical communication cables for inside plant installations</p> <p>Backbone & Computer Room Cabling</p> <p>Compact design for limited conduit space</p> <p>OFNR(riser rated), OFNP(plenum rated) or LSZH (low smoke zero halogen rated)</p> <p>Direct Termination on 2.0 mm Sub-Unitsns.</p>

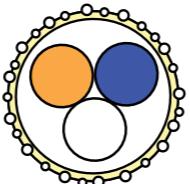
Air Blown Solutions Overview



Air Blown Fiber Unit (EPFU)

2 Fiber Unit (with ripcord)

Diameter	1.02 ± 0.06
Weight	0.90 ± 0.05
Fibers colors	Blue, Orange
Fiber Type	SM, 50MMF, 62.5MMF



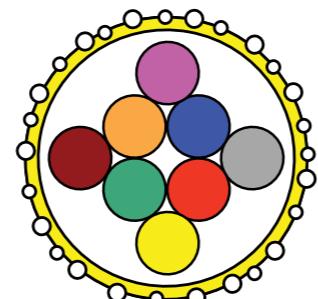
4 Fiber Unit

Diameter	1.02 ± 0.06
Weight	0.90 ± 0.05
Fibers colors	Blue, Orange, Green, Red
Fiber Type	SM, 50MMF, 62.5MMF



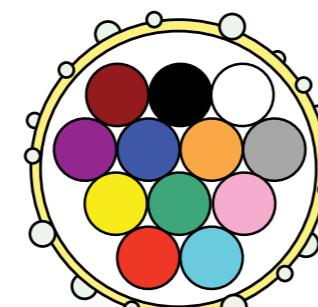
8 Fiber Unit

Diameter	1.40 ± 0.05
Weight	1.70 ± 0.05
Fibers colors	Blue, Orange, Green, Red, Grey, Yellow, Brown, Violet
Fiber Type	SM, 50MMF, 62.5MMF



12 Fiber Unit

Diameter	1.55 ± 0.07
Weight	2.20 ± 0.05
Fibers colors	Blue, Orange, Green, Red, Grey, Yellow, Brown, Violet, Black, White, Pink, Turquoise
Fiber Type	SM, 50MMF, 62.5MMF



Optical Properties

	Wavelength (nm) ^a	single Mode (G. 652b)	LWPF Single Mode (G.652d)	Multi Mode (62.5/125) OM1	Multi Mode (50/125) OM2	Multi Mode (50/125) OM3	Multi Mode (50/125) OM3+
Maximum Attenuation [dB/km]	850	-	-	3.5	2.6	2.6	2.6
	1300/1310	0.38	0.36	1.0	0.8	0.8	0.8
	1383	-	0.36	-	-	-	-
	1550	0.28	0.25	-	-	-	-
Bandwidth [Mhz.km]	850nm Min. Modal	-	-	200	500	1500	3500
	850nm Effective Modal	-	-	-	-	2000	4700
	1300/1310	-	-	600	500	500	500

Mechanical & Environmental Properties

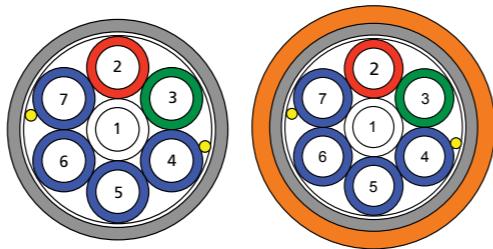
Item	Standard	Test Condition	Performance
Tensile Strength	IEC 60794-1-2 E1	9.81 X W N (W: mass of 1km)	PASS Fiber strain Max. load: $\leq 0.4\%$ Residual Fiber strain: $\leq 0.05\%$ No change in Attenuation After test No significant damage
Crush	IEC 60794-1-2 E3	100N 60seconds	PASS No change in Attenuation After test No significant damage
Bend	IEC 60794-1-2 E11	40mm (2 & 4 F)P 60mm (8 F)	ASS No change in Attenuation After test No significant damage
Cold Test	BS EN 60068-2-1	-20 °C 96hrs	PASS SMF $\leq \pm 0.5\text{dB/km}$ (1310, 1550nm) MMF $\leq \pm 0.25\text{dB/km}$ (850, 1300nm)
Change of Temperature (Condensation)	BS EN 60068-2-38	-10 °C ~ 65 °C for 10cycles RH : 93% Cycle Duration: 24Hrs	PASS SMF $\leq \pm 0.07\text{dB/km}$ (1310, 1550nm) MMF $\leq \pm 0.25\text{dB/km}$ (850, 1300nm)
Temperature Cycle	IEC 60794-1-2 F1	-10 °C ~ 60 °C for 3cycles	PASS SMF $\leq \pm 0.07\text{dB/km}$ (1310, 1550nm) MMF $\leq \pm 0.25\text{dB/km}$ (850, 1300nm)
Water Immersion	CW 1500 Part4 3.2.4	+20°C $\pm 2.0^{\circ}\text{C}$ for 2000Hrs	PASS SMF $\leq \pm 0.07\text{dB/km}$ (1310, 1550nm) MMF $\leq \pm 0.25\text{dB/km}$ (850, 1300nm)

Air Blown Solutions

3.5/5mm Out door Micro Duct

Features & Benefits

- The tube bundle is protected by a polyethylene sheath with an aluminum water barrier bonded inside.
- No tensile risk to fibers, since they are installed later.
- Can be customized to suit user requirements
- Low weight, low cost product, with great flexibility
- DB bundles have all the advantages of the DI design, but with an additional tough sheath that acts like a subduct once buried, with superior resistance to crush, distortion and corrosion.



Product List and Installation Guide Line (Direct Install)

No. of Tube	Nom. O.D. (mm)	Min. Bend Radius (mm)	Tensile (N)	Nom. Weight (kg)	Max. Drum Length (m)
1	8.4	85	500	50	4000
2	8.5 X 13.5	135	800	78	4000
4	15.4	300	1200	121	4000
7	18.5	280	1700	167	4000
12	23.7	355	2500	247	2000
19	27.8	420	3300	338	2000
24	33.0	500	3800	440	2000

Product List and Installation Guide Line (Direct Bury)

No. of Tube	Nom. O.D. (mm)	Min. Bend Radius (mm)	Tensile (N)	Nom. Weight (kg)	Max. Drum Length (m)
1	10.0	85	600	67	4000
2	10.5X15.5	135	800	115	4000
4	19.4	300	1500	162	4000
7	22.3	280	1800	208	4000
12	28.3	355	2700	377	2000
19	31.1	420	3500	485	2000
24	36.8	500	4400	560	2000

Mechanical Properties

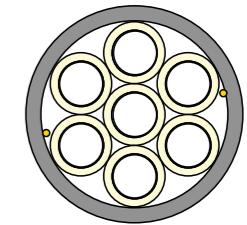
Item	Standard	Test Condition	Performance
Tensile Strength	IEC 60794-1-2 E1	Applied load refer to Tensile above Table 5 minute	PASS No permanent damage, or localized diameter reductions greater than 7%
Crush	IEC 60794-1 E2	700N 60seconds for Direct In stall type and 1,000N 60seconds for Direct In Bury type	PASS No permanent residual deformation greater than 15%, no splitting, nor permanent damage

Air Blown Solutions

3.5/5mm Indoor Micro Duct (LSZH)

Features & Benefits

- The tube cables with flame retardant material
- No tensile risk to fibers, since they are installed later, when required- Low Smoke Emission and no contains halogens- Low installation tension required
- Can be customized to suit user requirements



Product List and Installation Guide Line

No. of Tube	Nom. O.D. (mm)	Min. Bend Radius (mm)	Tensile (N)	Nom. Weight (kg)	Max. Drum Length (m)
1	7.4	75	100	35	4000
2	7.4 x 12.4	150	250	80	4000
4	14.5	290	400	130	4000
7	17.4	265	600	195	4000
12	22.8	345	900	310	2000
19	26.7	400	1300	440	2000
24	32.5	490	1800	585	2000

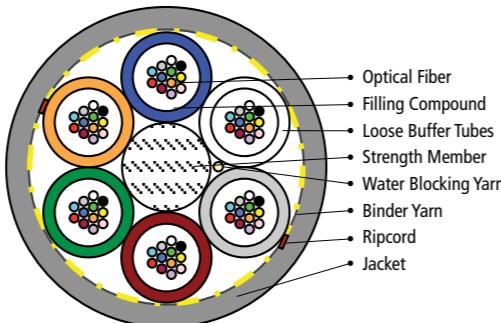
Mechanical Properties

Item	Standard	Test Condition	Performance
Tensile Strength	IEC 60794-1-2 E1	Applied load refer to Tensile above Table 5 minute	PASS No permanent damage, or localized diameter reductions greater than 7%
Crush	IEC 60794-1 E3	300N 60seconds then removed. Wait 1hour	PASS No permanent residual deformation greater than 15%, no splitting, nor permanent damage
Flame retardant	IEC60332-1 & 3		PASS
Smoke emission	IEC61034-1/2		PASS
Halogen contents	IEC60754-1		PASS
Acidity	IEC60754		PASS

Air Blown Cable (Ez Blow® Micro ABC)

Features & Benefits

- All dielectric Single Jacket Multi Loose Tube cables are UV-stabilized fully water blocked for Micro duct applications.
- Loose tube design provides stable and highly reliable transmission parameters for a variety of voice, data, video and imaging applications.
- This lightweight cable offers durability and flexibility required for many outside plant uses.
- RoHS (Restriction of the use of Certain Hazardous Substances Directive)
- Telcordia GR-20-CORE
- IEC 60793 / IEC 60794



Specification Sheet

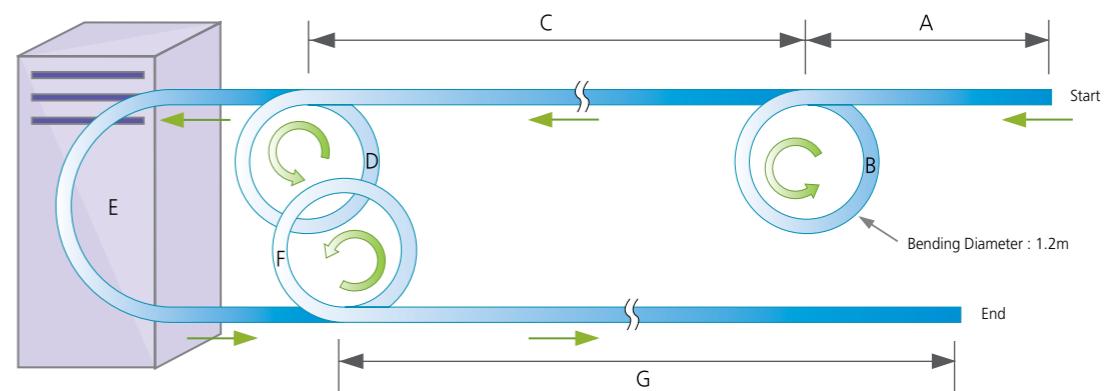
Items		Specifications			
Fiber Counts	Max 24	Max 72	96	144	
Outer Diameter (mm)	Nom. 4.5	Nom. 5.8	Nom. 6.8	Nom. 8.9	
Cable Weight (kg/km)	19	28	48	67	
Minimum Bending Radius (mm)	Installation	90	120	140	180
	Residual	45	60	70	90
Maximum Tensile Loading (N)	Incidental	450	600	900	1000
	Residual	150	150	250	300
Temperature Range	Installation	-10°C ~ +40°C	-10°C ~ +40°C	-10°C ~ +40°C	-10°C ~ +40°C
	Operation	-40°C ~ +70°C	-40°C ~ +70°C	-40°C ~ +70°C	-40°C ~ +70°C
	Storage	-40°C ~ +70°C	-40°C ~ +70°C	-40°C ~ +70°C	-40°C ~ +70°C
Sheath material	Nylon or HDPE				
Fiber Type	G.652b & d SMF, 62.5MMF(OM1), 50MMF(OM2, OM3, OM3+)				
Recommendation of Duct Size (ID/OD mm)	5.5/7 6/8 8/10	8/10 10/12	8/10 10/12	10/12 12/14	
Blowing Distance	2000m	2000m	1000m 2000m	1000m 2000m	

Shipping Information

Standard Reel Length	4000m
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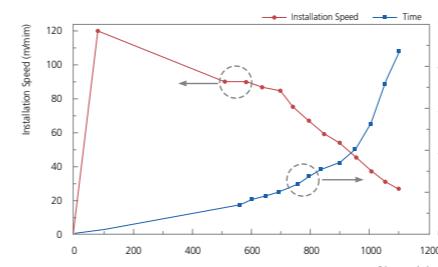
* Other Cable lengths may be available upon request.

Schematic Air blown cable installation route (96 F Ez Blow™ Micro ABC)



Test Result from Blowing of 96F Ez Blow™ Micro ABC in Test Site (Micro duct size O.D/I.D: 10/8mm)

- The micro cable was blown the total length of 1100 m in just over 35 minutes in this test.
- The cable comparing with others in the market has excellent blowing performance.



* Graph showing test result from blowing of micro ABC in test site.

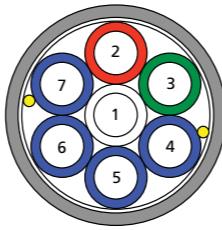
Items	Specifications
Equipment	• PR-140 from Plumettaz with 6.1~6.5mm steel tire (U-groove)
Compressor	• KAESER M12E - Air capacity (FAD) : 0.82 m³/min - Working pressure : 13.0 bar (g)
Installation method	• Start to install the cable 100m without any air (120m/min) • Gradually increase the airflow as shown in the installation manual

Air Blown Solutions

Micro Duct (Direct Install) for Ez Blow® Micro ABC

Features & Benefits

- The tube bundle is protected by a polyethylene sheath with an aluminum water barrier bonded inside.
- No tensile risk to fibers, since they are installed later.
- Can be customized to suit user requirements
- Low weight, low cost product, with great flexibility



Product List and Installation Guide Line

Tube Size (O.D./I.D.)	No. of Tube	Nom. O.D. (mm)	Min. Bend Radius (mm)	Tensile (N)	Max. Drum Length (m)
10/8	1	13.7	150	800	2000
	2	13.7 X 23.7	150	1200	2000
	4	27.9	420	2000	2000
	7	33.8	510	2700	2000
12/10	1	15.4	160	1100	2000
	2	15.4 X 27.4	160	1800	2000
	4	32.8	500	2700	2000
	7	39.8	600	3500	1000

Mechanical Properties

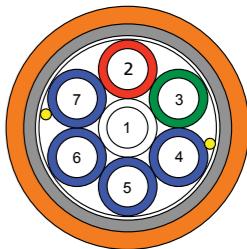
Item	Standard	Test Condition	Performance
Tensile Strength	IEC 60794-1-2 E1	Applied load refer to Tensile above Table 5 minute	PASS No permanent damage, or localized diameter reductions greater than 7%
Crush	IEC 60794-1-2 E3	700N 60seconds then removed. Wait 1hour	PASS No permanent residual deformation greater than 15%, no splitting, nor permanent damage

Air Blown Solutions

Micro Duct (Direct Bury) for Ez Blow® Micro ABC

Features & Benefits

- DB bundles have all the advantages of the DI design, but with an additional tough sheath that acts like a subduct once buried, with superior resistance to crush, distortion and corrosion.
- No tensile risk to fibers, since they are installed later.
- Can be customized to suit user requirements



Product List and Installation Guide Line

Tube Size (O.D./I.D.)	No. of Tube	Nom. O.D. (mm)	Min. Bend Radius (mm)	Tensile (N)	Max. Drum Length (m)
10/8	1	13.7	170	1000	2000
	2	26.6 X 16.6	170	1500	2000
	4	30.9	470	2200	2000
	7	36.6	560	3000	1000
12/10	1	20.8	250	1800	2000
	2	20.8 X 32.8	250	2700	2000
	4	37.8	570	3300	1000
	7	44.8	680	4700	1000

Mechanical Properties

Item	Standard	Test Condition	Performance
Tensile Strength	IEC 60794-1-2 E1	Applied load refer to Tensile above Table 5 minute	PASS No permanent damage, or localized diameter reductions greater than 7%
Crush	IEC 60794-1-2 E3	1000N 60seconds then removed. Wait 1hour	PASS No permanent residual deformation greater than 15%, no splitting, nor permanent damage

FTTH Drop Cable Overview

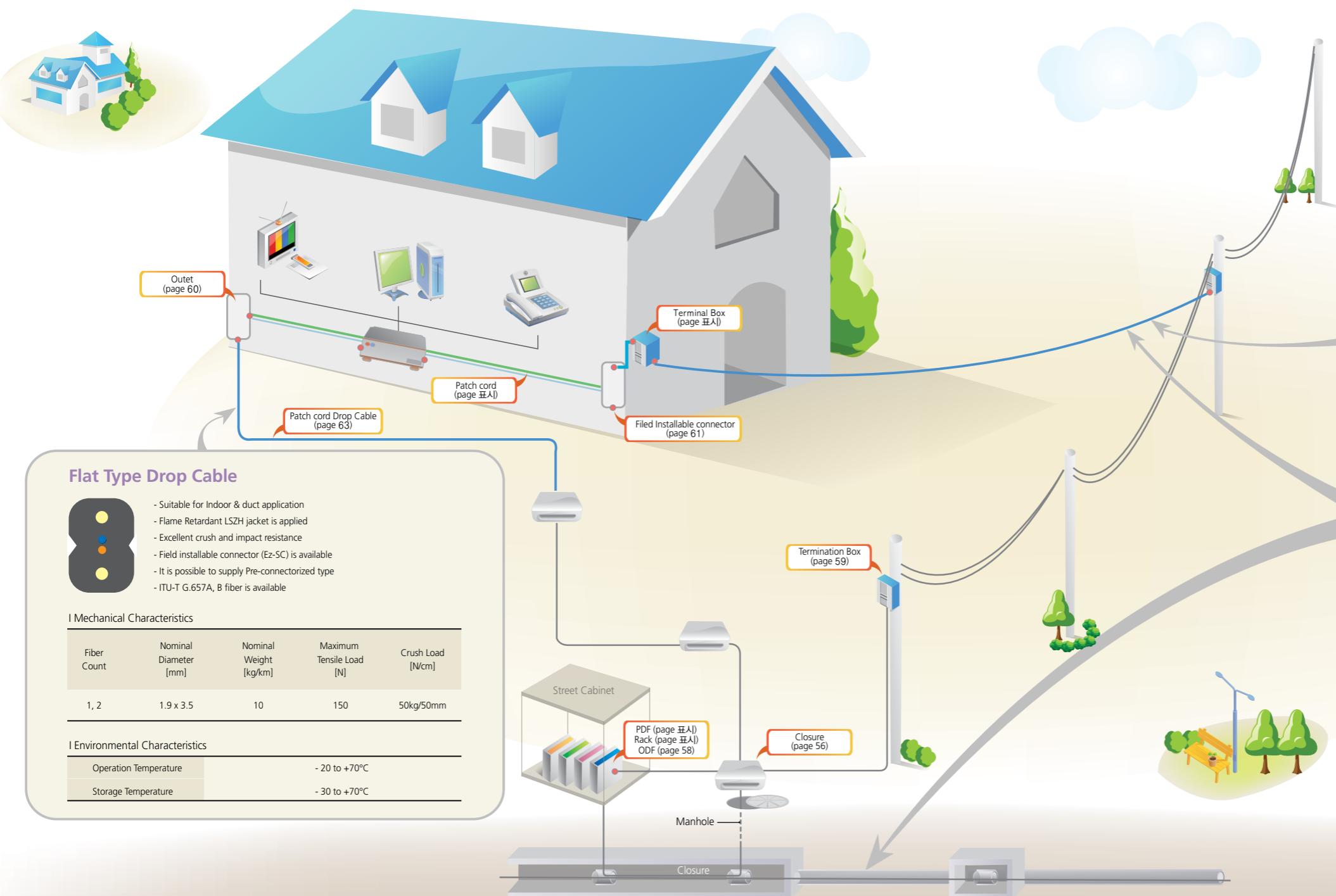


Figure-8 Type Aerial Drop Cable



- Suitable outdoor application (Aerial Installation)
- Flame Retardant PU or LSZH jacket is available
- Metal or dielectric messenger wire is available
- Field installable connector (Ez-SC) is available
- It is possible to supply Pre-connectorized type
- ITU-T G.657A, B fiber is available

I Mechanical Characteristics

Fiber Count	Nominal Diameter [mm]	Nominal Weight [kg/km]	Maximum Tensile Load [N]	Crush Load [N/cm]
1, 2	5.0 x 2.9	11	1000N	50kg/50mm

I Environmental Characteristics

Operation Temperature	-40 to +70°C
Storage Temperature	-40 to +70°C

Round Type Drop Cable



- Suitable in/outdoor application (Duct and Aerial Installation is possible)
- Flame Retardant PU jacket is applied
- Small size and light weight
- Field installable connector (Ez-SC) is available
- It is possible to supply Pre-connectorized type
- ITU-T G.657A, B fiber is available

I Mechanical Characteristics

Fiber Count	Nominal Diameter [mm]	Nominal Weight [kg/km]	Maximum Tensile Load [N]	Crush Load [N/cm]
1	3.0	8	500	50kg/50mm

I Environmental Characteristics

Operation Temperature	-40 to +70°C
Storage Temperature	-40 to +70°C

Connectivity

Fiber Distribution Hub (FDH)

Descriptions

LS Cable Fiber Distribution Hub is designed to provide a local convergence point for outside plant FTTH application, housing optical splitters that connect feeder cables from the central office to distribution cables serving customer premises. The FDH can accommodate trays for splitter modules, they provide termination and storage functions. The FDH has splitter capacity for 1x32, 1x16 and dual 1x8 modules. All splitter modules are compatible with all sized of FDH. All components of the FDH shall be of high quality design, workmanship and finish.



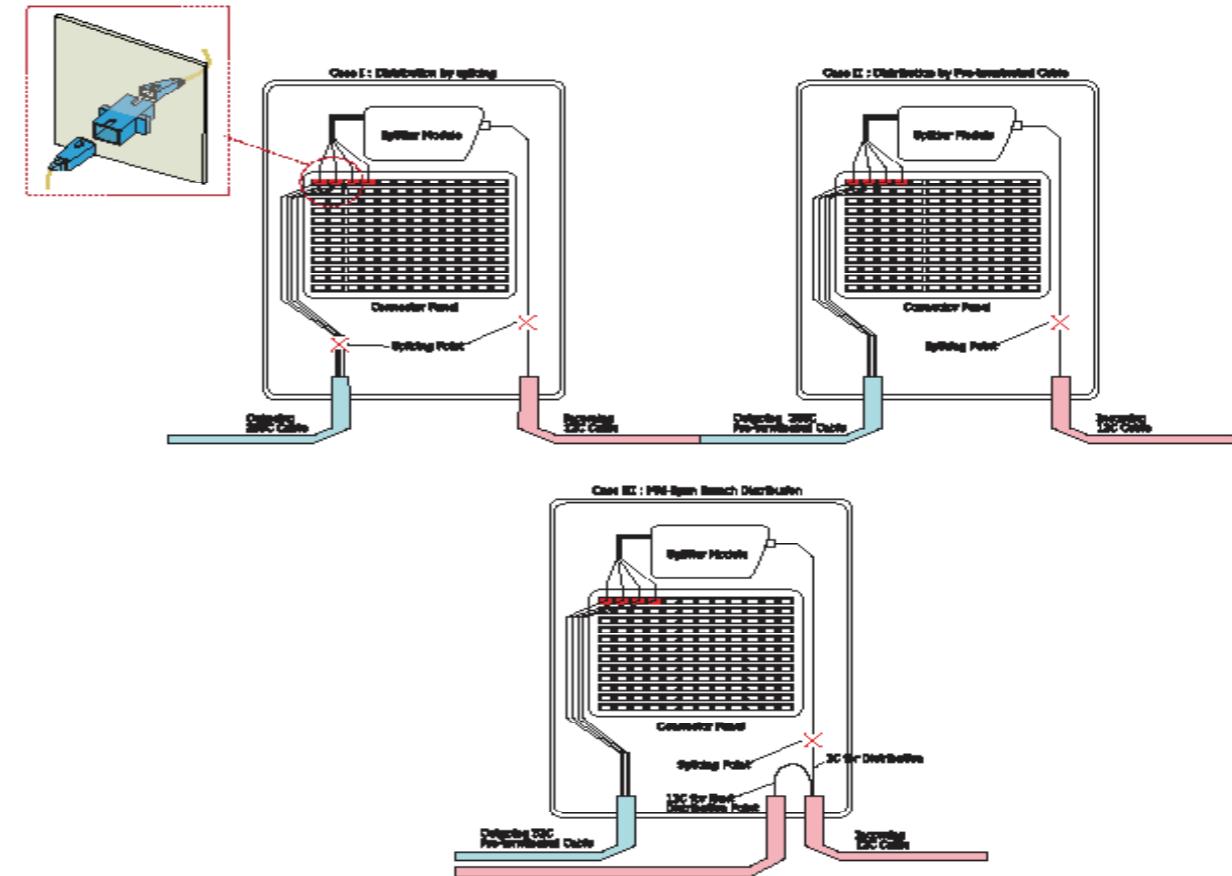
Features

- Intelligent design
- Simple and clearly arranged cable management
- Integrated slack storage spool
- All front access
- Accommodates 12 or 24 splitter modules
- IEC 529 IP-54 Protected

Specification

PARAMETER	FODH-288-A	FODH-432-A
Dimension(H x W x D)	1100mm x 720mm x 520mm	990mm x 1320mm x 520mm
Max. Capacity	288	432
No. of Splitter Module	12	24
Splitter Module Type	1:4 / 1:8 / 1:16 / 1:32	
Cable port(In/Out)	1/2	2/4
Cable Diameter	Max.20 mm	
Adaptor Type	SC / FC	
No. of Adaptor	288	432
Input Parking Lot	Max.12	Max.24
Output Parking Lot	Max.48	Max.96
Material	Aluminum	
Mounting Options	Ground / Pedestal / Pole	

Distribution Type



Splitter Module Specification



Part Number	ODFH-SPMD - ① – ②
Module Case	Stainless Steel (*other material available)
Dimension (L x W x D, mm)	150 x 80 x 15 (*other type available)
Connector Type	SC/APC (*other type available)
① Splitter Module type	② Connector type
A : 1:4	SC/APC
B : 1:8	SC/APC
C : 1:16	FC/APC
D : 1:32	FC/APC
	* Other type available

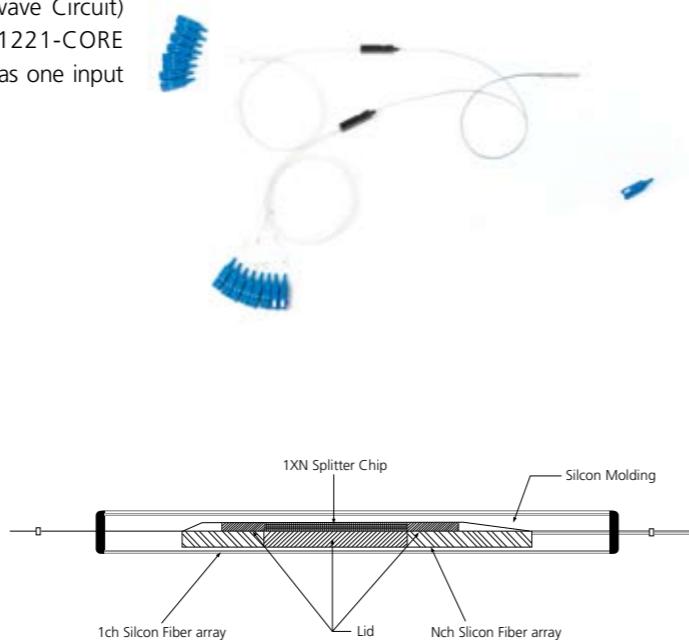
Connectivity Splitter & Panout Splitter

Descriptions

LS Cable supply high performance PLC (Planar Lightwave Circuit) Splitter Modules which are GR-1209-CORE, GR-1221-CORE requirements compliant. A single mode 1 x N Splitter has one input port and output ports (N) for dividing an optical signal.

Key Features

- Low Insertion Loss
- Good Uniformity
- Wide Operation Wavelength Range
- Ultra Small Design
- Low P01
- GR-1209 & 1221-CORE Compliant
- Fine Tuning of FHD & PECVD



Applications

- FTTH, FTTB, FTTC
- CATV networks
- PON (Passive Optical Network) System
- Fiber Optic Equipment and System

Specification Sheet

Model	FOSP1x4	FOSP1x8	FOSP1x16	FOSP1x32	FOSP1x64	FOSP2x4	FOSP2x8	FOSP2x16	FOSP2x32
1xN or 2xN	1 x 4	1 x 8	1 x 16	1 x 32	1 x 64	2 x 4	2 x 8	2 x 16	2 x 32
Packing Size (mm)	40 x 4 x 4 or 50 x 5 x 4	40 x 4 x 4 or 55 x 7 x 4	50 x 5 x 4 or 55 x 7 x 4	55 x 7 x 4	70 x 22 x 8	40 x 4 x 4 or 50 x 5 x 4	40 x 4 x 4 or 50 x 5 x 4	60 x 7 x 4	
Return Loss						≥ 55dB			
Directivity						≥ 55dB			
Operating Wavelength						1.26 ~ 1.60 μm			
Temperature						-40 ~ 80°C			
Pigtails	Input 250 μm dia. and output/ribbon fiber normal length : 1m or customer specified (un-connectorized or connectorized)								

Connectivity Mount Splitter on ODF

Descriptions

- Rackmount Type Splitter is FTTH-Ready component and useful to set-up at a rack type system in a central office such as Equipment Room (ER) or Telecommunication Room (TR).
- There is no need to handle splitter module or optical fiber because all components are inside the frame.
- It includes a splitter inside the rackmount. (4ch, 8ch, 16ch, 32ch available)

Key Features

- Same as LS's Panout Splitter
- Fiber Termination/Connection Ports Option
- Optical Splice Capability
- Compact Design
- Compatible with most cable management system



Applications

- Same as LS's Panout Splitter

Part Number

FOSP-①-②-③④

- | | |
|--|------------|
| ① Mount type | ② In x out |
| S: Splitter | 1x4 |
| F: PANOUT type splitter | 1x8 |
| R: mount Splitter on Rack mount ODF | 1x16 |
| W: mount Splitter on wall mount cassette | 1x32 |
| C: mount Splitter on closure tray | 1x64 |
| | 2x4 |
| | 2x8 |
| | 2x16 |
| | 2x32 |

③ Connector Type

- | | |
|-----------------|-----------------|
| N : None | DLC : LC Duplex |
| LC : LC Simplex | SC : SC Duplex |
| SC : SC Simplex | DSC : SC Duplex |
| ST : ST Simplex | FC : FC Simplex |
| MU : MU Simplex | |

④ Polishing type

- | |
|----------------------------------|
| SP : PC or SPC (RL ≥40dB) for SM |
| UP : UPC (RL ≥55dB) for SM |
| AP : APC (RL ≥60dB) for SM |

Connectivity

Fiber Optic Splice Closure

Aerial/Manhole/Mounted Closure

Descriptions

LS Cable Fiber Optic Closures are designed for efficient and scalable operation. It is meant to be infrastructure solutions for FTTH networks. The closure simplifies FTTH network installation, maintenance and management from central office to the each outside plants. The Closures provide for connections between fiber optic cables and passive optical splitters in the outside plant. The closure protects fiber optic splicing point and can be mounted to support aerial applications.

The special feature of FOSC-S-XX-YY-B/C is easy installation applying handle-locking structure which is non-bolt system to closure assembly. One-body structure supports easy and fast aerial installation. The cone type gasket allows to adjust the its diameter and completely protect water.

FOSC-T series is designed to terminate, splice and interconnect fiber optic cables in an outdoor environment. This enclosure accommodates FTTH applications by mounting to the exterior surface of a dwelling and connecting between the feeder cable and distribution cable to individual living units.



FOSC-S-XX-YY-B/C series



FOSC-S-3.3-72-A



FOSC-T-3.3-144-A

Dome Type Closure

Descriptions

- Fiber Optic Splice Closures FOSC-D are designed for operational efficiency and scalability for FTTx infrastructure network solutions. The closure simplifies FTTx network installation, maintenance and management from central office to the each outside plants.

- FOSC-D provides connections between fiber optic cables and passive optical splitters in the outside plant. The closure protects fiber optic splicing point and can be mounted to support aerial and duct applications. FOSC-D have high mechanical strength against any environmental conditions and allows rapid network installation.



FOSC-D Series

Features

- Qualified to GR-771-CORE for FOSC-S series
- Maximum 16 sc connector can be mounted for FOSC-S series
- Easy installation, specially for FOSC-S-XX-YY-B/C by applying handle-locking structure
- Accommodate any size of cable diameter
- Compact Design and High Strength
- Connector mounting available
- Environmental conservation structure and material

Specification

Part Number	FOSC-S-3.3-72-B	FOSC-S-3.3-192-C	FOSC-S-3.3-72-A	FOSC-T-3.3-144-A
Dimension(LxWxH)	430 x 190 x 100	430 x 190 x 135	430 x 170 x 110	375 x 340 x 145
Weight(kg)	3.0	4.2	3.0	8.5
Max. Capacity	72C(144C)	192C(384C)	72C	144C
No. of Splice Tray	3	8	3	6
Splice capacity per tray		24C(48C)		
Cable port(In/Out)	3/3(Standard Sheath Gasket)		3/3	
Cable Diameter(In/Out)	8-26mm		8-22mm	
No. of optical adaptor	16 sc type		-	
Installation Type	Aerial / Manhole		Mount to exterior surface	

Specification

Part Number	FOSC-D-5.1-144-A	FOSC-D-6.1-288-A
Dimension (H*R)	560mm x 175mm	710mm x Ø 210mm
Weight	3.5kg	7.0kg
Entrance	Single : 5 Oval : 1	Single : 6 Oval : 1
Suitable cable dia.	Single : less than Ø 20mm Oval : Ø 8-28mm	Single : less than 26mm Oval : less than 52mm
Max. No. of Splice tray	6	12
Capacity of tray		Max : 24 cores
Max. Capacity	144	288
Splice method	Fusion	
Cable Blocking	Heat Shrinkable Tube	
Material	PP, ABS	

Connectivity

Optical Distribution Frame (ODF)

Descriptions

- LS ODFs (Optical Distribution Frame) provide efficient cable connections between outside plant cable and equipment in the buildings and communication facilities, ODF integrates fiber splicing, storage and cable connections together in single unit. The frontal access and the unique adaptor arrangement design will increase your work speed and maintenance efficiency.

Application

- Indoor installation.
- Rack Mountable Type.
- FTTH.
- Data communications.



Descriptions

- Durable and rust free housings
- Efficient distribution capacity per unit space
- Easy identification, distribution and connection
- Low loss variation while operation
- All steel constructions except splice tray that is plastic

Specification

Part Number	FODF-R-S-SC-12	FODF-R-F-FC-24	FODF-R-D-SC-96	FODF-R-S-SC-144
Type	Swing	Fixed	Draw	Swing
Dimension (WxDxH, mm)	483x310x44	483x310x133	435x310x220	435x310x176
Fiber capacity	12 fibers	24 fibers	96 fibers	144 fibers
Unit	1U	3U	5U	4U
Cable port	1	2	3	2
Cable diameter	ø 8~32	ø 8~32	ø 8~32	ø 8~32
Number of splice tray	1	1	4	2
Splice tray capacity	12fiber/tray		24fiber/tray	
Adaptor type	SC/FC	FC	SC	SC
Splice method	Fusion	Fusion	Fusion	Fusion

Connectivity

Optical Termination Box

Descriptions

- LS Cable Optical Termination Box is mounted to outside or inside wall of building to distribute and connect optical cable for distribution of subscriber. It is designed with controls that maintain the fiber bend radius throughout the unit on the segregated customer and provider sides. For convenient cable management, they provide termination, splicing and storage functions for fiber optic cable systems.



Application

- Outdoor installation.
- Wall / Pole Mountable Type.
- Distribution point for subscriber.
- FTTH.
- Data communications.

Features

- Simple and clearly arranged cable management.
- Engineered fiber routing protects bend radius throughout the unit to ensure signal integrity.
- Enough work space and efficient splicing.
- Splice tray has 4 way of in/outlet for easy installation.

Specification

Part Number	FOTB-I-N-96-A	FOTB-E-N-96-A	FOTB-I-N-24-A	FOTB-E-N-24-A
Dimension(mm)	530 x 410 x 170	525 x 600 x 225	250 x 240 x 65	370 x 270 x 100
Capacity	96	96	24	24
No. of Splice Tray	4	4	1	1
Splice capacity per tray	24	24	24	24
Cable port(In/Out)	3/12	12/5	2/2	2/2
Cable Diameter(In/Out)	8-22mm / 3-6mm	Max.8mm	8-22mm	8-22mm
Splice Method		Fusion		
Color	Ivory	Grey	Ivory	Ivory
Material	Steel	Aluminum	Steel	Aluminum
Installation Type		Wall / Pole		

Connectivity Fiber Optic Outlet

Descriptions

• LS Cable Fiber Optic Outlet FOOL-SCX-N-X is mounted to inside wall of building to distribute and connect optical cable for distribution of subscriber. FOOL-SCX-N-X is designed with controls that maintain the fiber bend radius throughout the unit on the segregated customer and provider sides. For convenient cable management, they support termination, splicing and storage functions for fiber optic cable systems. The outlet has a simple design and enough work space to arrange clearly for cable management, and engineered fiber routing protect bend radius through the unit to ensure signal integrity.

Application

- Outdoor installation.
- Wall / Pole Mountable Type.
- Distribution point for subscriber.
- FTTH.
- Data communications.



Specification

	Part Number	FOOL-SC2-N-A	FOOL-SC2-N-B	FOOL-SC8-N-A	FOOL-SC2-R1-A
Interface	Material	Plastic			
	Color	White / Grey			
	Dimension(L x W x D)	93mmx185mmx28mm	90mmx150mmx25mm	135mmx170mmx45mm	120mm x 70mm x 16mm
	Capacity	2 FO	8 FO		2 FO / 1 Copper
	Splicing	Fusion splice / Field Assembly Connector		Fusion splice /Field Installable Connector	
Performance	Surplus Fiber Storage	Radius bending: ≥30 mm		Radius bending: ≥15 mm (G.657 fiber applied)	
	Adaptor Capacity	2 SC	8 SC	2 SC adaptor	
	Cable Entry	2	1	2	2(Rear and Bottom)
	Applied Cable dia.	3 ~ 6 mm			
	Installation Type	Wall-flat type			
Circumstance	Operating Temperature	-20 ~ +50°C			
	Application	Indoor			

Connectivity Fiber Distribution Rack

Cabinet Rack

Description & Application

All standard 19" cabinets generally conform to (IEC297-Part1,2,3), (EIA RS-310-C), (DIN 41494 100) 19" standard. LS SimpleTM Cabinet Rack provides unsurpassed strength, stability and durability for supporting FDF, patch panels, high-density blocks, cabling and other telecommunication equipment.

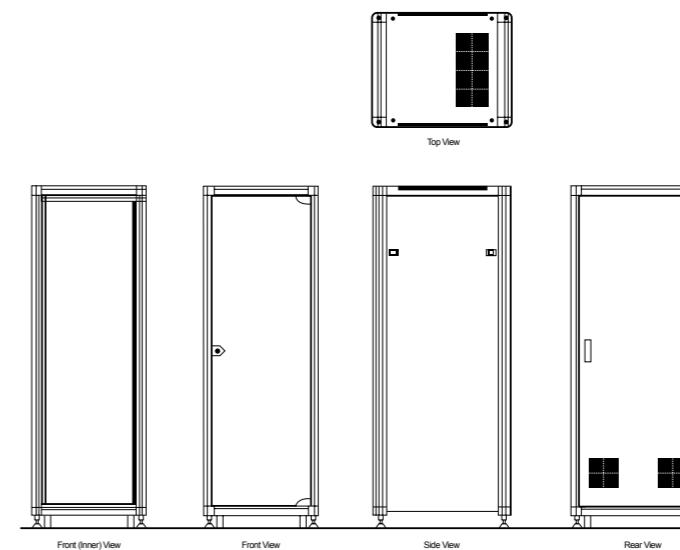
- ULight Weight
- Material : 6063-T5 Aluminum Construction - 5.0T safety glass front door / slide latch type side door / 1.2T steel rear door / side, rear cable bracket / ground bar / caster and level foot
- UFinish : Ivory Powder Coat



Dimension

No.	Dimension (H x D x W)				Part Number
	H	U	D	W"	
1	1,000	18	750	600 (19")	LS-CR-1000
2	1,200	22	750	600 (19")	LS-CR-1200
3	1,400	27	750	600 (19")	LS-CR-1400
4	1,600	31	750	600 (19")	LS-CR-1600
5	1,800	36	750	600 (19")	LS-CR-1800
6	2,000	40	750	600 (19")	LS-CR-2000
7	2,200	45	750	600 (19")	LS-CR-2200

Configuration



Connectivity

Fiber Distribution Rack

Open Rack



Description & Application

All standard 19", 23" rack generally conform to (IEC297-Part1,2,3), (EIA RS-310-C), (DIN 41494 100) 19" standard. LS SimpleTM Open Rack provides unsurpassed strength, stability and durability for supporting FDF, patch panels, high-density blocks, cabling and other telecommunication equipment. Available various accessories.

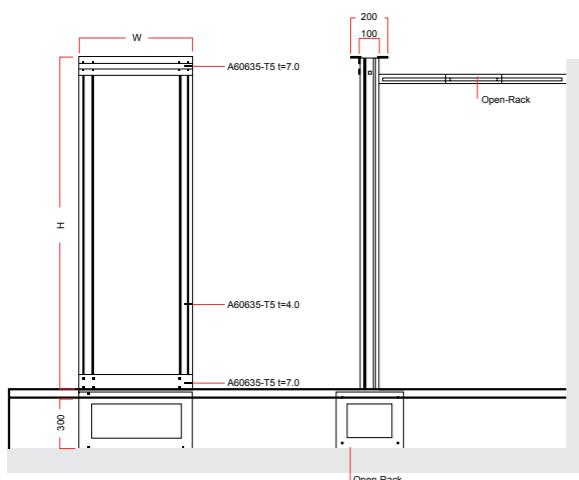
- ULight weight
Material : 6063-T5 Aluminum Construction. All 2 post vertical frames / 3.0T insulated plate / ground bar / rear cable bracket

- UOptions
Rack Support(Min. 600 ~ Max.1200 mm)
Plinths (H200, 250, 300mm)
Vertical Cable Management
Cable Bracket and Panels
- UFinish : Black Powder Coat

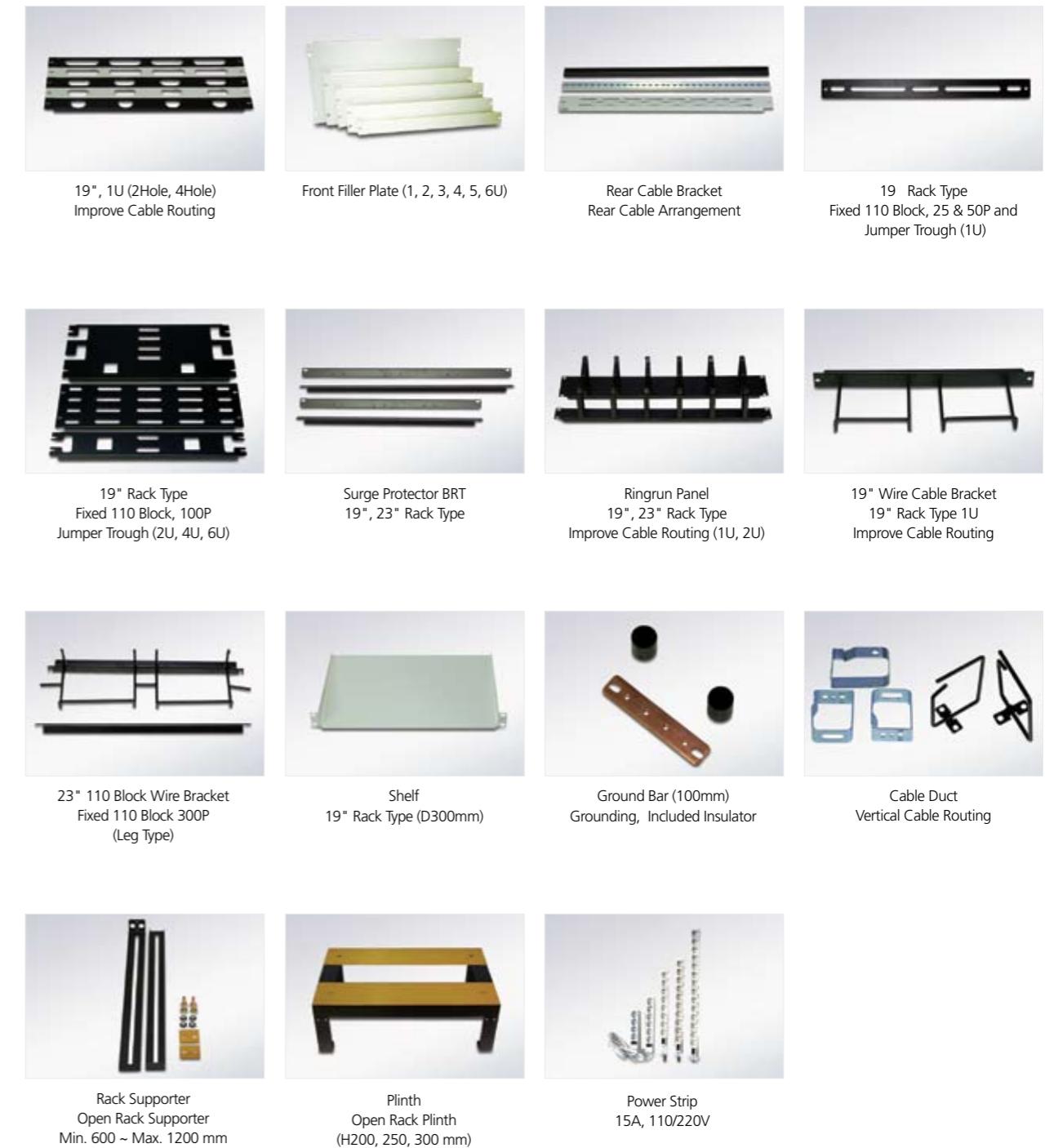
Dimensions

No.	Description	Dimension (H x D x W)				Part Number
		H	U	D	W"	
1	Open Rack 19"	1,800	36	360	600 (19")	LS-OR-19-1800
2	Open Rack 19"	2,000	40	360	600 (19")	LS-OR-19-2000
3	Open Rack 19"	2,200	46	360	600 (19")	LS-OR-19-2200
4	Open Rack 23"	1,800	36	360	700 (23")	LS-OR-23-1800
5	Open Rack 23"	2,000	40	360	700 (23")	LS-OR-23-2000
6	Open Rack 23"	2,200	46	360	700 (23")	LS-OR-23-2200
7	Vertical Rack	1,800	-	160	150	LS-VR-1800
8	Vertical Rack	2,000	-	160	150	LS-VR-2000
9	Vertical Rack	2,200	-	160	150	LS-VR-2200

Configuration



Rack Management



Connectivity

Ez-SC, Field Installable Optical Connector

Descriptions

- Easy installation in the field without adhesive & polishing
- Compatible with conventional SC connector
- Performance exceeds ANSI/TIA/EIA-568-A
- Telcordia GR-1081-CORE



Key Features

- Easy operation & Quick assembly
- Connector & fiber re-use available
- Neither adhesive nor polishing necessary
- Additional tool does not necessary
- Can be installed to 0.25mm, 0.9mm and 3.0mm cord

Specification

Item	PCA	PC 50	APC 60 <small>NOTE 1)</small>
Insertion Loss (against master plug)	≤ Max. 0.5dB	≤Max. 0.5dB	≤ Max. 0.5dB
Return Loss	≥ 45	≥ 50	≥ 60
Cable retention		≥10N	
Application cable diameter	0.25mm fiber, 0.9mm tight buffer, 3.0mm cord or cable, 2.0mm Flat type cable		
Standard	IEC61754-4 GR-1081-CORE		
Operation Temperature	-40°C ~ 70°C		

* Note 1) 3.5° Cleaving Modify

Specification Sheet

FOFC-①-②-③

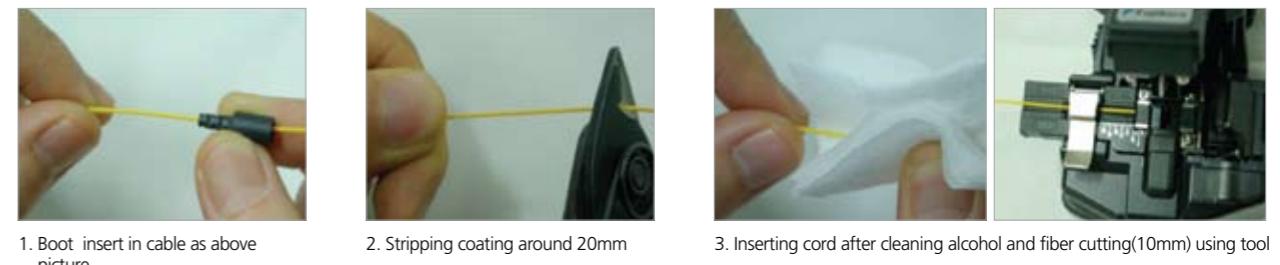
① Connector Type
SC : SC connector
LC : LC connector

② Polishing type
PC : PC type
A5 : APC type (Return loss ≥ 50)
A6 : APC type (Return loss ≥ 60)

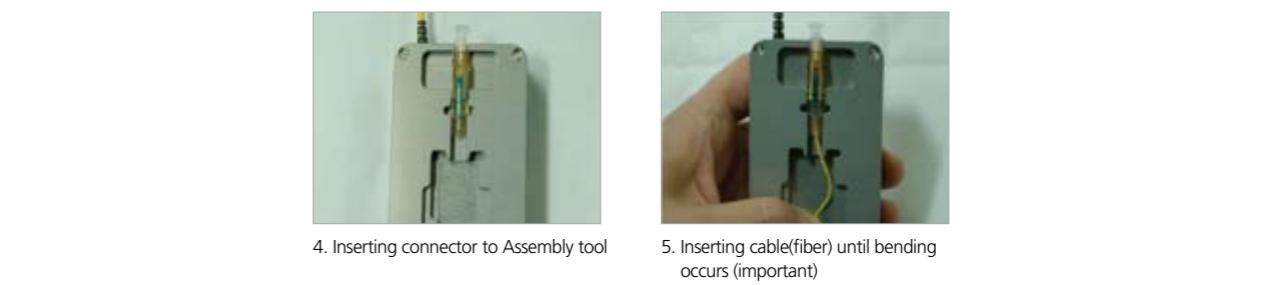
③ Cable outer Diameter
025 : Fiber
090 : 900 μ m Tight buffer
200 : 2.0mm Flat
300 : 3.0mm cord

Connectivity

Ez-SC Assembly Procedure



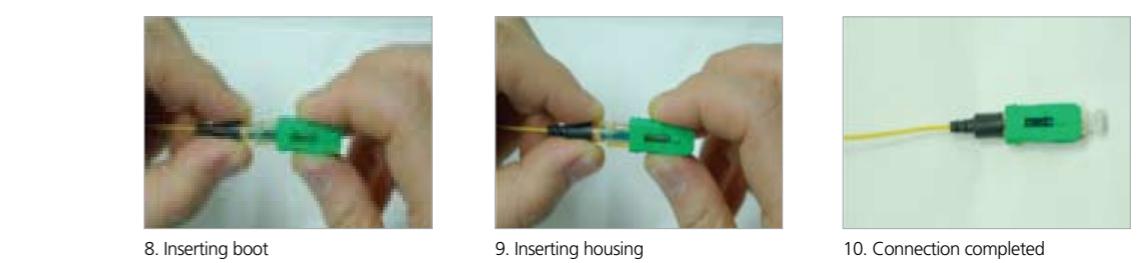
1. Boot insert in cable as above picture
2. Stripping coating around 20mm
3. Inserting cord after cleaning alcohol and fiber cutting(10mm) using tool



4. Inserting connector to Assembly tool
5. Inserting cable(fiber) until bending occurs (important)



6. Push push-holder toward front
7-1. Connect Ez-SC to patch cord and beaming light (SUCCESS)
7-2. Connect Ez-SC to patch cord and beaming light (FAILUE)



8. Inserting boot
9. Inserting housing
10. Connection completed

Optical Patch Cords & Adaptor

SC type Patch Cord & Adaptor



- The most popular connector with 0.25mm diameter ferrule
- Used in a wide range of application
- Push-on design makes easy to connect or dis-connect
- RoHS compliant

Performance requirements for Optical Patch Cord

Connector type	Fiber Type	SM (1310/1550nm)			MM (850/1310nm)
		SPC	UPC	APC	
SC, ST, FC	Polishing Type	SPC	UPC	APC	PC
	Insertion Loss		≤ 0.3 dB		≤ 0.4 dB
	Return Loss	≥ 40 dB	≥ 55 dB	≥ 60 dB	≥ 25 dB
LC, MU	Polishing Type	SPC	UP	PC	
	Insertion Loss		≤ 0.3 dB		≤ 0.4 dB
	Return Loss	≥ 40 dB	≥ 55 dB	≥ 25 dB	
MT-RJ	Polishing Type	SPC	PC		
	Insertion Loss		≤ 0.75 dB		≤ 0.75 dB
	Return Loss		≥ 40 dB		≥ 25 dB

Note : SPC(Super Physical Contact), UPC(Ultra Physical Contact), APC(Angled Physical Contact)

LC type Patch Cord & Adaptor



- Small form factor (SFF) connector with 1.25mm diameter ferrule
- Used in a wide range of application
- Simple push-on design same as RJ45 connector
- RoHS compliant

Part Number Information

Adapter

FOAD-①-②-③

① Adapter/Connector Type

LC : LC Simplex	DLC : LC Duplex
SC : SC Simplex	DSC : SC Duplex
ST : ST Simplex	FC : FC Adapter
MU : MU Simplex	MTRJ : MTRJ Adapter
BICON : Biconic Adapter	
PIG: Open (pigtail)	

Patchcord

FOPC-① ④-①④-⑤⑥⑦-⑧

② Sleeve Material

PB : Phosphor Bronze
ZC : Zirconia Ceramic
OO : No Alignment Sleeve

④ Polishing Type

PC : PC for MM
SP : SPC for SM
UP : UPC for SM
AP : APC for SM

⑤ Fiber Type

SC : Conventional Single Mode Fiber (G.652B)
SE : Enhanced Single Mode Fiber (G.652D)
BE : Bend Insensitive Fiber (G.657)
MC : 50MMF Conventional
MG : 50MMF Giga Grade (OM2)
MX : 50MMF 10 Giga Grade (OM3)
HC : 62.5MMF Conventional (OM1)
HG : 62.5MMF 1 Giga Grade

⑥ Cable Type

S : Simplex Cord
Z : Duplex Zipcord

⑦ Cable Outer Diameter

09 : 0.9mm Tight Buffer
16 : 1.6mm Sheath Cable
18 : 1.8mm Sheath Cable
20 : 2.0mm Sheath Cable
24 : 2.4mm Sheath Cable
30 : 3.0mm Sheath Cable

⑧ Jacket Material

V : PVC
Z : LSZH

⑨ Jacket Material

V : PVC
Z : LSZH

FC type Patch Cord & Adaptor



- Screw-coupled connector
- Used in a wide range of application
- RoHS compliant

LS FTTH Activities

LS Cable is a proud vendor member of the Full Service Access Network Group, FSAN which is an interest group for the world's leading telecommunications services providers, independent test labs, and equipment suppliers to work towards a common goal of truly broadband fiber access networks. The Mission of FSAN is to drive applicable standards, where they already exist, into the services and products in the industry, while simultaneously advancing its own specifications into the appropriate standard bodies to provide further definition to the Full Service Access Network. FSAN has more than 50 members representing the leading implementers of Gigabit rate G-PON and B-PON Passive Optical Networking. LS Cable has been actively testing Interoperability and Assessing the Implementation of ITU G.984 Standards, and also participating to establish Standards for FSAN members.

As a proud foundation member of FTTH council Asia Pacific, LS Cable has been enthusiastic board member representing all areas of broadband industries, including telecommunications, computing, networking, system integration, engineering and content-provider companies, as well as traditional telecommunications service providers, utilities and municipalities. Our aim is to educate, promote and accelerate FTTH and resulting economic and quality of life enhancements.



**FTTH Leading
Solution Provider**

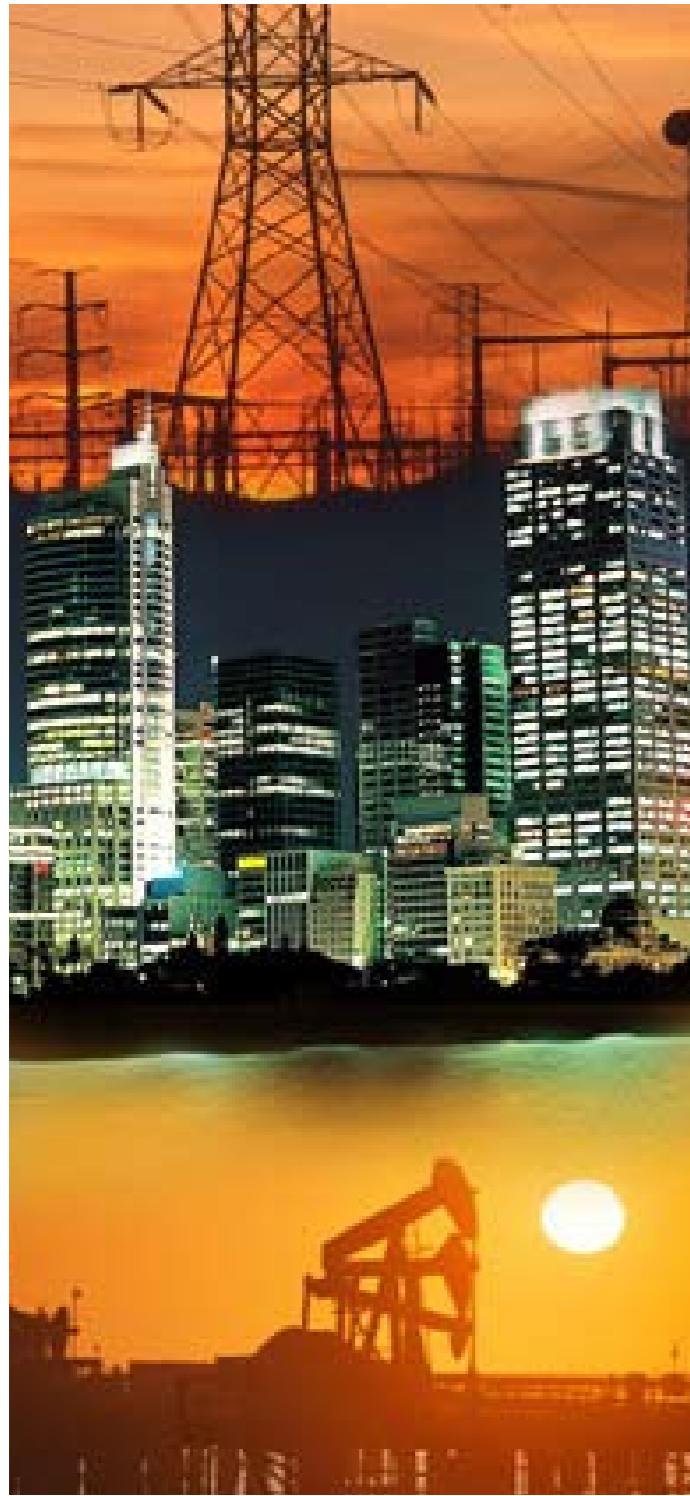
FSAN
Full Service
Access Network

Vendor Member
Test Interoperability and Assess the
Implementation of ITU G.984 Standards
Participates establishing FSAN Committee
Standards

**FTTH
OUNCIL
ASIA PACIFIC**

Foundation Member
BoD Member
Regional Committee Technical Committee
Market Development Committee

Products & Systems of LS Cable



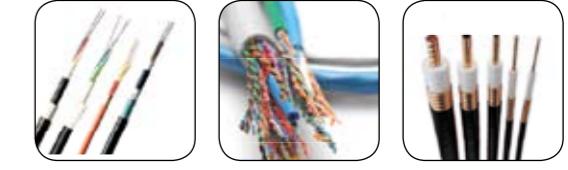
Power Transmission & Distribution System

Extra High Voltage Cable System
Overhead Transmission Line System
OPGW | Busduct System
Onshore & Offshore Cable System
Medium & Low Voltage Cable
Control & Instrumentation Cable



Telecommunication System

Optical Fiber
Optical Fiber Cable
RF Feeder Cable
LAN Cable
FTTH
HFC (Hybrid Fiber Coaxial Cable)



Global Network

