

COMMScope®



BOS™
BrightPath® Optical Solutions
Guide

We Thank You...

for your interest in CommScope's BrightPath® Optical Solutions (BOS™) products. You are the reason we are a world leader in broadband products. Our Solutions Guide includes the products which you request most often. However, if you do not see the product that you need listed in this guide, contact the sales representative in your area or contact our Customer Service Department.

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CommScope's BrightPath® Optical Solutions (BOS™) provides customers with a true "end to end" system approach to FTTH architectures from a single partner. With a full suite of headend, outside plant and end user solutions, BOS allows an operator to choose the right technology and architecture to meet the unique needs of residential, MDU, commercial and cellular backhaul applications.

BOS supports state-of-the-art, cutting-edge technologies such as RFoG, 10G EPON, and DPoE and provides a choice of physical architectures such as tapped, distributed or centralized splits. Complementing CommScope's complete family of fiber optic cables, splitters, taps, and enclosures is a broad set of industry-leading multi-wavelength transmitters, EDFAs, low-noise return path receivers and RFoG ONU's to enable operators to migrate to deep fiber infrastructures.



At Home, At Work, On the Go

CommScope provides essential infrastructure that makes communication possible. Empowering network operators to deliver advanced broadband services, CommScope's portfolio of innovative optical and RF infrastructure solutions provides the foundation to support the increasing bandwidth and service level expectations of residential and commercial customers. Our solutions and services for wired and wireless networks enable high-bandwidth data, video and voice applications everywhere—at home, at work and on the go. Through every wave of technology, CommScope helps the world connect and evolve.

Known for Exceptional Customer Service

CommScope is a solid business partner with an impressive service track record. Our professional account teams are aligned to respond quickly and efficiently. Our vast network of trained sales associates and distributors embody experience and professionalism combined with a commitment to finding the right solution for every customer.



Key Customer Service Contact Numbers

Toll Free Telephone Number 1-800-982-1708
 Telephone 828-324-2200
 Domestic Fax 828-328-3400
 International Fax..... 828-323-4989
 Email custserv@commscope.com

Unparalleled Quality and Innovation

With over 1,300 patents, we offer thousands of cable, conduit, components and connectivity options. With more than 30 years experience, every product features details manufactured to exacting standards. Only high quality materials and products manufactured within tight tolerances are worthy of bearing the CommScope name. Production operations located on 5 continents produce high performance solutions selling into more than 130 countries.





Research & Development

CommScope is dedicated to innovation. Our engineers participate in industry standards groups and critical committees. Bringing to market the most comprehensive choice of quality solutions remains a primary focus. Our products meet the requirements of existing electronics, yet empower service providers like you to push the limits of services offered by means of scalable architecture and optimal throughput.

Experienced Technical Staff

Our customer commitment extends to strong field and lab support coupled with installation training materials offered in both English and Spanish. Tap into CommScope's deep knowledge base and support provided at no additional cost. You will also find a wide array of technical documents, white papers and software online at www.commscope.com

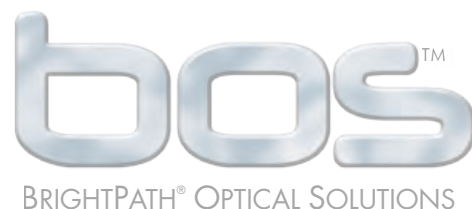


Strong Industry Involvement

CommScope has long been a supporter of broadband industry trade associations. We exhibit in many industry-tradeshows which demonstrates our commitment to educating our customer base and bring to market new product enhancements and solutions that complement our core product portfolio.



Please Note: The products mentioned within this solutions guide are by no means comprehensive. To request more information on any CommScope product or service, please contact your sales representative or call CommScope's Customer Service Center at 1-800-982-1708.



The BrightPath® Laser Transmitter is the latest cutting-edge technology from CommScope's BrightPath® Optical Solutions (BOS) portfolio. This addition to the BOS product line is a result of our commitment to supporting service providers with a complete end-to-end FTTx solution from the electronics in the headend or central office to the outside plant passive devices to the optical network unit at the customer premise. The BOS Laser Transmitter is an innovative "chirp-free" transmitter with the distance independent performance of external modulation,

making it well suited for Radio Frequency over Glass (RFoG) applications. Both the standard one-wavelength transmitter and the four-wavelength transmitter come in a 1-RU 19" housing. Each wavelength supports a 1 GHz RF spectrum (50 – 550 MHz analog, 550 – 1002 MHz digital). In addition to an SBS threshold of up to 19 dBm, into 20 km of fiber, this transmitter also provides exceptional CNR, CSO, and CTB performance.



Feature

- 1 GHz RF spectrum
- Multiple wavelengths in one unit
- SBS suppression
- Front panel RF test points
- Support for various link lengths

Benefit

- Extended RF capacity
- Reduces transmission cost per output fiber
- Supports high optical launch powers
- Enables easy, convenient troubleshooting
- Flexible deployment options



Performance

Optical Specifications

Peak Wavelength on ITU Channels (single quad)	1530 to 1562 nm
Optical Output Power	5 dBm / λ
Optical Power Variation between Wavelengths	± 0.5 dB
Link Performance	
CNR* at -5 dBm for 4 MHz BW	≥ 47 dB
CSO*	≤ 60 dBc
CTB*	≤ 63 dBc
SBS Threshold	14 dBm into 45 km 18 dBm into 20 km

* With 77 NTSC channels plus 75 QAM, up to 40 km of fiber -5 dBm received power into analog receiver with noise current density $< 5 \text{ pA}/\sqrt{\text{Hz}}$, with built-in EDFA.

RF Specifications

Frequency Bandwidth	50 to 1002 MHz
Flatness (peak to valley)**	
50 to 550 MHz	0.8 dB (Typ)
50 to 1002 MHz	1.2 dB (Typ)
Broadcast Port RF Input Level for MGC Version: (Analog 80 CW Channels + 73 QAM at 6 dB below Analog)	15 dBmV (Typ)
Narrowcast Port RF Input Level for MGC Version: (QAM 6 dB below Broadcast Analog Signal Level)	15 dBmV (Typ)
Broadcast Port RF Input Level for AGC Version: (Analog 80 CW Channels + 73 QAM at 6 dB below Analog)	18 dBmV (Typ)
Narrowcast Port RF Input Level for AGC Version: (QAM 6 dB below Broadcast Analog Signal Level)	18 dBmV (Typ)
Range Available to Offset from Nominal AGC Set-point	± 2.0 dB (Typ)
RF Test Point Level (Analog)	-2.0 dBmV (Typ)
Test Point Flatness with respect to Input	± 0.8 dB (Typ)
Input Return Loss	16 dB (Typ)

** Measured with a reference receiver using a network analyzer using appropriate levels from 50 to 1002 MHz

General Specifications

Environmental	
Operating Temperature	32° to 122° F (0° to 50° C)
Power Power	
Power Consumption	<80 W
Powering	85 – 240 VAC -42 – 56 VDC
Mechanical	
Optical Interface	SC/APC Female Connector
RF Interface	Female "F" Connector (75 Ω)
Serial Interface	RS-232
Network Interface	RJ45
Dimensions	19" x 17" x 1.75" (48.26 cm x 43.18 cm x 4.45 cm)
Weight	18 lbs (8.16 kg)
Standards and Certifications	
FCC Class A, Part 15 compliant, UL, CE	

Ordering Information

Model #	Description
BOS-TX-05-0033-LHANA-SC	1550 nm, 5 dBm output AC powering, high SBS
BOS-TX-05-3731-LSANA-SC	ITU Ch. 37-31, 5 dBm output/ λ 4 port, AC powering, std SBS
BOS-TX-05-3731-LSAND-SC	ITU Ch. 37-31, 5 dBm output/ λ 4 port, DC powering, std SBS



CLASS 3B LASER PRODUCT

CommScope's BrightPath® Optical Amplifier is the latest cutting-edge product offering that is part of the BrightPath® Optical Solutions (BOS) portfolio. This addition to the BOS product line is a result of our commitment to supporting service providers with a complete end-to-end FTtx solution from the electronics in the headend or central office to the outside

plant passive devices to the optical network unit at the customer premise. The BOS Optical Amplifier is an innovative amplifier well suited for Radio Frequency over Glass (RfOG) applications. Both the 4-port and 8-port optical amplifiers come in a 1-RU 19" housing.



Feature

- Low noise figure
- Automatic Power Control
- SNMP capable
- Front panel alarm indicators
- Multiple output ports

Benefit

- Improves system performance
- Stable output power
- Remote management
- Enables easy, convenient troubleshooting
- Reduces cost per port

Optical Specifications

Operating Wavelength	1540 to 1565 nm
Input Power	0 to 10 dBm
Output Power per Port	18 dBm (4 and 8 port) 21 dBm (4 port)
Port to Port Variation	1.0 dB (Max)
Noise Figure (+6 dBm Input)	3.7 dB (Typ)
CSO	-70 dBc (Typ)
CTB	-70 dBc (Typ)
Port Return Loss	>45 dB
Polarization Mode Dispersion	0.8 ps (Max)
Polarization Dependent Loss	0.4 dB (Max)

Ordering Information

Model #	Description
BOSOAC1-1808-NAF/SC	8-port, 18 dBm/port, AC powering
BOSOAC1-1804-NAF/SC	4-port, 18 dBm/port, AC powering
BOSOAC1-2104-NAF/SC	4-port, 21 dBm/port, AC powering
BOSOAC1-1808-NDF/SC	8-port, 18 dBm/port, DC powering
BOSOAC1-1804-NDF/SC	4-port, 18 dBm/port, DC powering
BOSOAC1-2104-NDF/SC	4-port, 21 dBm/port, DC powering

General Specifications

Environmental	
Operating Temperature	14° to 131° F (-10° to +55° C)

Power Power

Power Consumption	<60 W
Powering	100 to 240 VAC -72 to -36 VDC (-48 VDC Nom)

Mechanical

Optical Interface	SC/APC Female Connector
Serial Interface	RS-232
Network Interface	RJ45
Dimensions	18.82" x 14.96" x 1.73" (47.8 cm x 38.0 cm x 4.4 cm)
Weight	13.1 lbs (6.0 kg)

Standards and Certifications

CSA and ANSI/UL, CE
EN 60950-1 "Information Technology Equipment – Safety – Part 1: General Requirements"
Telcordia GR-1089-CORE – Safety and EMC
EN 300 386 v1.3.3 EMC



CLASS 3B LASER PRODUCT

Specifications subject to change without notice.



The BrightPath® Low Noise Receiver is an industry leading, low noise, optical receiver from CommScope's BrightPath® Optical Solutions (BOS) portfolio. This addition to the BOS product line gives service providers a complete end-to-end FTTx solution. Included in the solution is headend/central office electronics, outside plant cable, passive optical devices and enclosures, and a family of subscriber MicroNodes. The BOS low noise receiver's high gain and low noise performance make it ideally suited for both Radio Frequency over Glass (RfOG) and Passive Optical Network (PON). Other features such as Radio Frequency (RF) output muting, front

test points and LED indications make the BOS low noise receiver an exceptionally flexible and user friendly element in an FTTx system.

Built on a chassis platform, up to 20 dual receiver cards can be placed in a 3 RU/19" rack space. The chassis can support redundant power supplies and is Simple Network Management Protocol (SNMP) manageable. Each receiver supports a 5-85 MHz RF spectrum and an optical link budget of up to 28 dB.



Feature

- 5-85 MHz operating range
- Low Noise
- Low optical input range
- High gain
- Dual RX card
- SNMP manageable

Benefit

- Supports extended return and Euro-DOCSIS
- Improves performance and dynamic range
- Supports RfOG Optical Networks
- Reduces need for post amplification in headend
- High density minimizes space requirements
- Enables remote monitoring of equipment



Optical Specifications

Operating Wavelength Range	1260 to 1620 nm
Optical Input Range	-13 to -28 dBm

RF Specifications

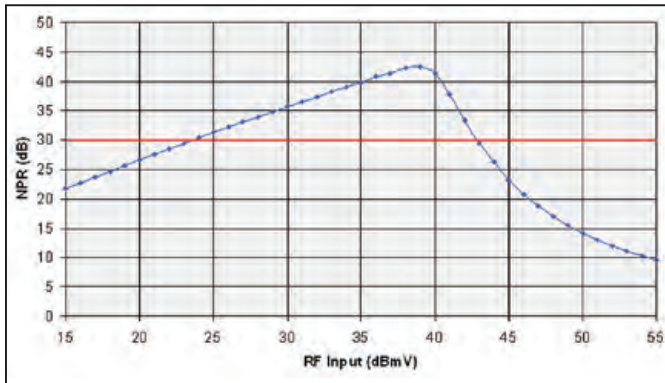
Operating Bandwidth	5 to 85 MHz
RF Output Level*	35 dB (Min)
Tilt	±2.0 dB
Frequency Response	±1.5 dB
RF Test Point	-20 ± 0.5 dB
Return Loss	16 dB (Min)
RF Mute Isolation	≥65 dB

*Single carrier, 17.5% OMI, -20 dBm optical input

RF Specifications

Equivalent Input Noise (EIN)	≤0.75 pA/√Hz
30dB NPR Dynamic Range**	≥16 dB

**1610 nm DFB source, -20 dBm optical receive level.



Typical NPR Curve: 1610 nm DFB source, -20 dBm optical receive level.

Module SNMP Parameters

Hardware/Firmware Version	Optical Level
Current	
Voltage	RF Attenuation
Temperature	

General Specifications

Environmental

Operating Temperature	32° to 122° F (0 to 50° C)
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Power

Power Consumption	3.1 W (per Card)
Powering	24 VDC (from Chassis)

Mechanical

Optical Interface	SC/APC Female Connector
RF Interface	Female MCX Connector (75 Ω)
Dimensions	4.81" H x 0.68" W x 8.47" D (12.2cm H x 11.7cm W x 2.15cm D)
Weight	0.8 lbs (0.37 kg)

Standards and Certifications

FCC	Part 15B
UL	
CE	

Ordering Information

Model #	Description
BOS-RX-02-1-11	Dual RX, single wide card, low optical input range, MCX and SC/APC connectors
BOS-CH-03-019	20 slot, 3RU chassis
BOS-PS-00-3N-00	-48 VDC Power Supply
BOS-PS-01-00-00	110 VAC/60 Hz Power Supply
BOS-PS-02-00-00	220 VAC/50 Hz Power Supply

Specifications subject to change without notice.

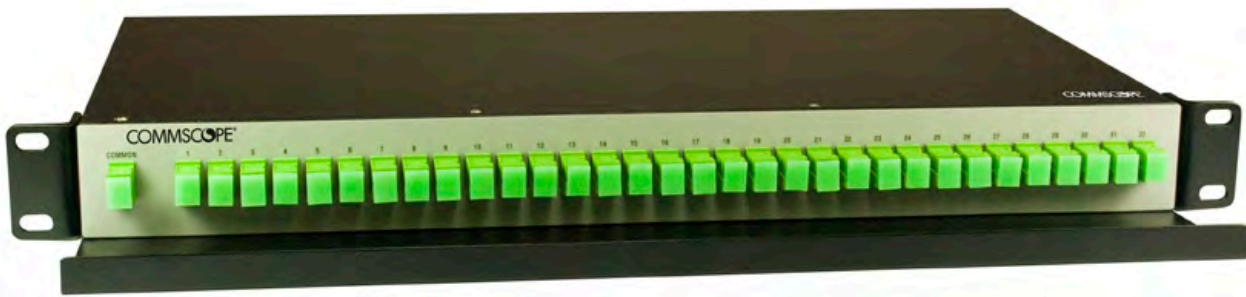


The BrightPath® Optical Solutions (BOS) Headend Optical Splitters are a family of components that enable an operator to share Headend equipment over a number of subscribers by dividing one optical signal to a number of output ports. It is an ideal solution for Radio Frequency over Glass (RfOG) and Passive Optical Network (PON) deployments where subscribers are close to the Headend, and it is a cost-effective alternative to utilizing an outside plant splitter enclosure.

Mounted in a standard 19" rack, the 1 RU BOS Headend splitter enclosure houses a high performance, Planar Light-wave Circuit (PLC) that supports a wavelength range from 1260 to 1620 nm.

This feature makes it fully compatible with RfOG and PON wave lengths. The PLC splitter inputs and outputs are brought to the face of the enclosure and are terminated with SC/APC connectors and matching adapters. A small ledge on the face of the enclosure protects fiber jumpers terminating on the device and helps with management of the fiber cables.

The components of the splitter module are compliant with Telcordia GR-1209, GR-1221, and GR-326 standards assuring excellent optical performance and high reliability. To accommodate a wide variety of architecture implementations, the splitter family is comprised of 1x8, 1x16, and 1x32 devices.



Feature

- 1 RU 19" shelf
- 1260 to 1620 nm wavelength range
- PLC optical components
- SC/APC front panel connectors
- Telcordia GR-1209/1221 compliant
- Telcordia GR-326 compliant

Benefit

- Common headend footprint
- Supports RFOG/PON wavelengths
- High performance optics
- Easy access and management
- High reliability components
- High reliability/performance connections



Optical Specifications

Operating Wavelength Range	1260 to 1620 nm
Device Type	PLC
Polarization Mode Dispersion	0.3 ps (Max)
Directivity	55 dB (Min)
Optical Return Loss	55 dB (Min)
TDL*	0.5 dB (Max over Temp)
Optical Power	300 mW (Max)

1x32 Splitter

Insertion Loss**	18.3 dB (Max)
Uniformity	2.2 dB (Max)
PDL***	0.45 dB (Max)

1x16 Splitter

Insertion Loss**	14.7 dB (Max)
Uniformity	1.7 dB (Max)
PDL***	0.4 dB (Max)

1x8 Splitter

Insertion Loss**	11.5 dB (Max)
Uniformity	1.2 dB (Max)
PDL***	0.3 dB (Max)

Notes

* TDL: Temperature Dependent Loss

** Insertion Loss & Uniformity: Based on room temperature measurements over the wavelength range. Loss includes connectors.

*** PDL: Polarization Dependent Loss

General Specifications

Environmental

Operating Temperature	32° to 122° F (0 to 50° C)
Humidity	5 to 95% non-condensing

Mechanical

Connector Interface	SC/APC
Dimensions	19.0" L 11.6" W 1.75" H (48.26cm L x 29.57cm W x 4.45cm H)
Weight	3.45 lbs (1.56 kg)

Standards and Certifications

Telcordia GR-1209, and GR-1221
Telcordia GR-326

Ordering Information

Model #	Description
BOS-SP-10008	Rack mount 1x8 splitter, w/ SC/APC connectors.
BOS-SP-10016	Rack mount 1x16 splitter, w/ SC/APC connectors
BOS-SP-10032	Rack mount 1x32 splitter, w/ SC/APC connectors.

The BrightPath® Optical Solutions (BOS) Headend Wave Division Multiplexers (WDMs) are a family of filters that enable an operator to combine and filter multiple wavelengths on a single fiber network architecture. It is an ideal solution for Radio Frequency over Glass (RFOG) and Passive Optical Network (PON) deployments where two or more wavelengths coexist and operate on the fiber network.

The WDM is mounted in a standard LGX style chassis. The single wide BOS headend WDM module houses one or more high performance, Thin Film Filters (TFF) that combine and filter standard 1310, 1490, 1550, and 1610 nm

wavelengths. The filter inputs and outputs are brought to the face of the module and are terminated with SC/APC connectors and matching adapters. A 19" LGX chassis can hold up to 12 modules.



The components of the WDM module are compliant with Telcordia GR-1209, GR-1221, and GR-326 standards assuring excellent optical performance and high reliability. To accommodate a wide variety of architecture implementations, the WDM family is comprised of a 1310/1550 nm filter, a 1610/1550 nm filter, and a 1610/1510/(1490/1310) nm filter.

Feature

- Single wide, LGX style module
- 1260 to 1620 nm wavelength range
- Thin film filter optical components
- SC/APC front panel connectors
- Telcordia GR-1209/1221 compliant
- Telcordia GR-326 compliant

Benefit

- Common Headend form factor
- Supports RFOG and PON wavelengths
- High performance optics
- Easy access and management
- High reliability components
- High reliability and performance connections



Optical Specifications

General

Device Type	Thin Film Filter (TFF)
Polarization Mode Dispersion	0.1 ps (Max)
Polarization Dependent Loss	0.15 dB (Max)
Directivity Isolation	40 dB (Min)
Optical Return Loss	45 dB (Min)
Wavelength Thermal Stability	2 pm/°C (Max over Temp)
Optical Power	500 mW (Max) 50 dB (Min)

1310/1550 nm WDM

Operating Wavelength Range:	
1550 nm Port	1540 to 1620 nm
1310 nm Port	1260 to 1360 nm
Insertion Loss	1.0 dB (Max, all Ports)

1610/1550 nm WDM

Operating Wavelength Range:	
1550 nm Port	1540 to 1565 nm
1610 nm Port	1600 to 1620 nm
Insertion Loss	1.0 dB (Max, all Ports)

1610/1550/(1490/1310) nm WDM

Operating Wavelength Range:	
1550 nm Port	1540 to 1565 nm
1610 nm Port	1600 to 1620 nm
1490/1310 nm Port	1260 to 1360 nm 1480 to 1500 nm
Insertion Loss	
1550 nm Port	1.5 dB (Max)
1610 nm Port	1.3 dB (Max)
1490/1310 nm Port	1.0 dB (Max)

***Note**

Insertion Loss: Based on room temperature measurements over the wavelength range. Loss includes connectors.

General Specifications

Environmental

Operating Temperature	32° to 122° F (0 to 50° C)
Humidity	5 to 95% non-condensing

Mechanical

Connector Interface	SC/APC
Dimensions	6.25" L x 1.15" W x 5.12" H (15.87cm L x 2.92cm W x 13.0cm H)
Weight	0.9 lbs (0.41 kg)

Standards and Certifications

Telcordia GR-1209, and GR-1221
Telcordia GR 326

Ordering Information

Model #	Description
BOS-WD-00201-1	LGX module, dual 1550/1310 nm WDM, SC/APC connectors
BOS-WD-00202-1	LGX module, dual 1550/1610 nm WDM, SC/APC connectors
BOS-WD-00303-1	LGX module, single 1550/1610/(1490/1310) nm WDM, SC/APC connectors

The BrightPath® optical tap enclosure has expanded capabilities that provide cabling flexibility and facilitate simpler installations. Additionally, the tap is wavelength compatible with Passive Optical Network (PON) technologies and provides a future proof network architecture.

The BrightPath Optical Solutions (BOS™) tap consists of a plastic enclosure, a mounting bracket, and an optical tap module. The tap module, spliced in-line with the distribution fiber, couples or taps off some of the power from the distribution fiber, divides it and feeds it to the fiber drops connected to the tap. Tap ports are connectorized to facilitate a simple connect and disconnect of the customer drop cable, but are also available without connectors when direct fusion splicing is desired. Similar to the Radio Frequency (RF) tap in a Hybrid Fiber/Coax (HFC) plant, the tap is available in a number of different tap values and port counts. Selection of a particular tap value will determine the optical signal level that the MicroNode (MN) will receive.



The optical tap enclosure provides an environmentally sealed housing for the tap module. It contains a distribution and drop area, each with its own access doors.

Each area has fiber management features for both the cable and the exposed fiber and storage for fiber splice protection sleeves. The distribution side can accommodate management of up to 36 fibers



and can also accommodate a branch cable to facilitate service to an adjoining area or a business customer. The drop side can accommodate up to 8 fiber drops as well as the splicing of associated pigtails. The access plate covers and protects the optical tap module and provides the mounting platform for the bulkheads, which provide tap port access on the drop side of the enclosure.

The BOS taps accommodate a wide variety of fiber cables; including armored, all dielectric, and flat-drop style cables. The family of BOS taps consists of 2, 4 and 8 port taps that can be installed in aerial or pedestal mount applications.

Feature

- Aerial or pedestal mount
- Separate drop/distribution access
- Weather hardened/impact resistant enclosure
- Fiber routing/management
- Grommeted cable entry
- Integral cable retaining features
- Integral splice sleeve holders
- Branch cable
- Indoor/outdoor use

Benefit

- Flexible deployment options
- Prevents accidental disruption of service
- Increases network reliability
- Protects bend radii, provides slack storage
- Allows use of multiple fiber cable types
- Prevents cable pullout/damage
- Enables field drop termination and branch splicing
- Facilitates service to business customers/adjoining areas
- Assures components reliability



Optical Performance

Wavelength Window	1260 to 1620nm
Port-to-Port Isolation	>55 dB
Tap to Out Isolation	>55 dB
Return Loss	>55 dB

Optical Interfaces

Input/Output Fiber	900 mm, no connector
Tap Port Fiber	900 mm, SC/APC connector

Enclosure Specification

Physical Access	Separate distribution & drop access doors. Inner access plate for tap module
Tap Module Access	
Drop	SC/APC bulkheads in drop access area
Distribution	Bare fibers passed through to distribution area
Sealing	
Cabling	Grommets for DA, DF, SLT cables
Environment	Door gasket, bell house design
Mounting	Universal aerial/pedestal bracket

General Specifications

Environmental

Operating Temperature	-40° to 149°F (-40 to +65°C)
Humidity	5 to 95%

Mechanical

Dimension	
Tap Module	4.375" L x 2.8" W x 0.50" H (11.1cm L x 5.08cm W x 1.27cm H)
Enclosure	14.46" L x 7.62" W x 4.4" H (36.72cm L x 19.35cm W x 11.18cm H)
Weight	
Tap Module	0.30 lbs (0.136 kg)
Enclosure (w/o bracket)	3.0 lbs (1.36 kg)

Standards

Optical Tap Mod/Assembly	Telcordia GR-1221-CORE Telcordia GR-1209-CORE
SC/APC Connectors	Telcordia GR-326-CORE

Optical Tap Types

2-PORT

Value	Typical IL (dB)	Max IL (dB)	Typical Tap Loss (dB)	Max Tap Loss (dB)
17	0.6	0.7	15.4	17.1
15	0.8	0.9	14.0	15.4
14	1.1	1.3	12.3	13.4
12	1.3	1.4	11.7	12.1
10	2.0	2.2	9.3	10.2
8	2.6	2.9	8.2	8.8
7	4.0	4.5	6.4	7.3
5	5.8	6.4	5.4	6.0
4T	Terminated	Terminated	3.6	3.8

4-PORT

Value	Typical IL (dB)	Max IL (dB)	Typical Tap Loss (dB)	Max Tap Loss (dB)
17	1.1	1.3	15.8	17.1
15	1.3	1.4	14.6	15.8
13	2.0	2.2	12.9	13.9
11	2.6	2.9	11.9	12.5
10	4.0	4.5	10.1	11.0
9	5.8	6.4	9.0	9.7
7T	Terminated	Terminated	7.1	7.5

8-PORT

Value	Typical IL (dB)	Max IL (dB)	Typical Tap Loss (dB)	Max Tap Loss (dB)
17	2.0	2.2	16.0	17.3
15	2.6	2.9	14.5	15.9
14	3.6	4.5	13.7	14.4
12	5.8	6.4	11.8	13.1
11T	Terminated	Terminated	10.2	11.0

*Tap Loss values do not include connector.

BrightPath Fiber Optic Pigtails

CommScope offers pigtails that can be spliced to the Drop Armored or Flat Drop cable design to facilitate the connection to the MicroNodes and Taps within the BrightPath architecture. The part number for these pigtails is BPRFT01RF09-8W-SCA-01. It consists of a 1m length of buffered fiber with a factory terminated pre-connectorized SC/APC connector on one end.

Specifications subject to change without notice.



The BrightPath® Optical Solutions (BOS) below grade optical tap is a cost effective solution for deployment of below grade, aerial and pedestal mount applications. The enclosure provides superior sealing capability and meets all industry requirements for below grade applications. The body to cover seal in the enclosure is accomplished with a clamp ring and cured rubber gasket to ensure a positive and repeatable fit and sealing of components even after multiple closure entries. Service cables in the enclosure are sealed with a cured rubber grommet.

The BrightPath optical tap consists of a plastic enclosure, a mounting bracket, and an optical tap module. The tap module, spliced in-line with the distribution fiber, couples ("taps off") some of the power from the distribution fiber, divides it and feeds it to the fiber drops connected to the tap. Tap ports can be connectorized or non-connectorized in accordance with the customer's specifications. Similar to a Radio Frequency (RF) tap in a Hybrid Fiber/Coax (HFC) plant, the tap is available in a number of different tap values and port counts. Selection of a particular tap value will determine the optical signal level that the MicroNode will receive.



The tap enclosure provides an environmentally sealed housing for the tap module and cable connections. Distribution and drop cable connections are freely accessible when the enclosure dome is removed. An integral slack storage basket provides storage and fiber management for unused buffer tubes in the distribution cable. The distribution cable is spliced to the tap

input and output ports in the distribution splice tray.

Fiber drops are spliced to the tap ports in the drop splice tray. For connectorized taps, an integral SC/APC bulkhead is provided for connectivity.

The enclosure can accommodate a wide variety of distribution and drop cables in the six entry ports. Distribution cables up to 0.51 inches can be accommodated in the two larger ports and drop cables up to 0.31 inches can be accommodated in the four smaller ports. The enclosure can be configured to accommodate up to eight drop armored cables and up to twelve flat drop cables.

A variety of mounting brackets are available for the below grade enclosure that allows it to be mounted on a strand, pole, pedestal, wall or inside a vault. The enclosure can also be direct buried for additional cost savings.

Feature

- Aerial, pole, pedestal or UG mount
- Can be direct buried
- Weather hardened/impact resistant enclosure
- Fiber routing/management
- Grommeted cable entry
- Integral cable retaining features
- Integral splice sleeve holders
- Branch cable
- Qualified to industry standards

Benefit

- Flexible deployment options
- Decreases installation cost
- Increases network reliability
- Protects bend radii, provides slack storage
- Allows use of multiple fiber cable types
- Prevents cable pull out/damage
- Enables field drop termination and branch splicing
- Facilitates service to business customers/adjointing areas
- Assures component reliability



Optical Performance

Wavelength Window	1260 to 1620nm
Port-to-Port Isolation	>55 dB
Tap to Out Isolation	>55 dB
Return Loss	>55 dB

Optical Interfaces

Input/Output Fiber	900 mm, no connector
Tap Port Fiber	900 mm, SC/APC connector

Enclosure Specification

Physical Access	Dome enclosure with rubber gasket and sealing clamp
Tap Module Access	
Drop	Bare Fibers or SC/APC bulkheads in drop splice tray
Distribution	Bare fibers passed through to distribution splice tray
Sealing	
Cabling	Washer-grommet-washer for LA, LN DA and DF cables
Environment	Rubber seal with sealing clamp
Mounting	Pole, pedestal, aerial or direct bury

General Specifications

Environmental

Operating Temperature	-40° to 149°F (-40 to +65°C)
Humidity	NA

Mechanical

Dimension	
Tap Module	4.375" L x 2.00" W x 0.50" H (11.1cm L x 5.08cm W x 1.27cm H)
Enclosure	18.50" L x 8.26" D (47.0cm L x 21.0cm D)
Weight	
Tap Module	0.30 lbs (0.136 kg)
Enclosure (w/o bracket)	11.66 lbs (5.3 kg)

Standards

Optical Tap	Telcordia GR-1221-CORE
Enclosure	Telcordia GR-1209-CORE Telcordia GR-771-CORE IEC 60529 IP68 Rating
SC-APC Connectors	Telcordia GR-326-CORE

Specifications subject to change without notice.

Optical Tap Types

2-PORT

Value	Typical IL (dB)	Max IL (dB)	Typical Tap Loss (dB)	Max Tap Loss (dB)
17	0.6	0.7	15.4	17.1
15	0.8	0.9	14.0	15.4
14	1.1	1.3	12.3	13.4
12	1.3	1.4	11.7	12.1
10	2.0	2.2	9.3	10.2
8	2.6	2.9	8.2	8.8
7	4.0	4.5	6.4	7.3
5	5.8	6.4	5.4	6.0
4T	Terminated	Terminated	3.6	3.8

4-PORT

Value	Typical IL (dB)	Max IL (dB)	Typical Tap Loss (dB)	Max Tap Loss (dB)
17	1.1	1.3	15.8	17.1
15	1.3	1.4	14.6	15.8
13	2.0	2.2	12.9	13.9
11	2.6	2.9	11.9	12.5
10	4.0	4.5	10.1	11.0
9	5.8	6.4	9.0	9.7
7T	Terminated	Terminated	7.1	7.5

8-PORT

Value	Typical IL (dB)	Max IL (dB)	Typical Tap Loss (dB)	Max Tap Loss (dB)
17	2.0	2.2	16.0	17.3
15	2.6	2.9	14.5	15.9
14	3.6	4.5	13.7	14.4
12	5.8	6.4	11.8	13.1
11T	Terminated	Terminated	10.2	11.0

*Tap Loss values do not include connector.

BrightPath Fiber Optic Pigtails

CommScope offers pigtails that can be spliced to the Drop Armored or Flat Drop cable design to facilitate the connection to the MicroNodes and Taps within the BrightPath architecture. The part number for these pigtails is BP-RFT01RF09-8W-SCA-01. It consists of a 1m length of buffered fiber with a factory terminated pre-connectorized SC/APC connector on one end.



The 1302 MicroNode is the next generation of subscriber electronics for the BrightPath® Optical Solutions (BOS) product line. Its new mechanical and electrical design provides greater component durability, flexibility and upstream performance.

Installed at the customer's location, the MicroNode provides the transition from an optical network to a Radio Frequency (RF) network and provides an interface to the customer's inside wiring. In the downstream direction, it contains an optical receiver to convert the signal back to its original RF format, and an RF amplifier to supply the designated RF signal level into the home. In addition, the MicroNode utilizes an Automatic Gain Control (AGC) circuit to keep the RF output constant over the optical input range. The output RF connection is a standard female "F" connector, which can also be used for local powering from the home via a power inserter. A second "F" port is also available when a dedicated powering option is preferred. In the upstream direction, the MicroNode contains an optical transmitter to carry the RF signals, generated by cable modems and set top boxes inside the customer's location, back to the headend. With its

new transmitter drive circuitry, the MicroNode provides faster laser activation and higher upstream link performance.

To prevent unwanted RF signals from entering the network, the reverse transmitter utilizes a threshold circuit that stops it from being activated by signals that are below a preset level. If a signal coming from inside the residence is below that threshold, the transmitter will not be activated. In order to operate over a single fiber network, the MicroNode is also equipped with a Wave Division Multiplexer (WDM) filter, which multiplexes the 1310nm upstream and 1550nm downstream wavelengths.

The MicroNode circuitry is mounted in a die-cast aluminum housing that protects the electronics from the outside environment and provides a high level of RFI shielding.



Feature

- 1 GHz RF spectrum
- Transparent return path
- Return transmission threshold
- Lower RF drive level
- RF based AGC
- High RF output with up-tilt
- Diecast aluminum housing
- "F" port powering

Benefit

- Extended RF capacity
- Allows use of existing Customer Premises Equipment (CPE)
- Suppresses noise from the subscriber's residence
- Enables higher link performance
- Constant RF output over optical input range
- Reduces need for in home amplifier
- Protects electronics and provides excellent shielding
- Allows in home powering over coax cabling

Downstream Performance

Optical Specifications

Input Wavelength	1540 to 1565 nm
Optical Input Power	-6 to 0 dBm
Link Performance	
CNR*	≥48 dB
CSO**	≤60 dBc
CTB**	≤65 dBc
LED	Optical input power

*50-552 MHz CW Analog, 552-1002 MHz Digital, -4 dBm receive.
**50-552 MHz CW Analog, 552-1002 MHz Digital, 0 dBm receive.

RF Specifications

Frequency Bandwidth	54 to 1002 MHz
RF Output Level*	17 dBmV/Chnl (Typ)
Tilt	5 dB (Typ)
Flatness	±2.0 dB
Return Loss	≥16 dB

* Measured @550 MHz.

Upstream Performance

Optical Specifications

Output Wavelength	1310 nm (Nom)
Optical Output Power	3.0 dBm (Typ)
30 dB NPR Dynamic Range*	≥15 dB
Laser Activation Time	≤1.5 μs
Laser Type	Fabry-Perot Class I
LED	Upstream RF activity

*25 dB optical link.

RF Specifications

Frequency Bandwidth	5 to 42 MHz
RF Input Activation Level	14 dBmV (Typ)
RF Input Range	20 to 45 dBmV
Flatness	±1.0 dB
Return Loss	≥16 dB

General Specifications

Environmental

Operating Temperature	-40° to 149° F (-40° to +65° C)
Humidity	5 to 95% non-condensing

Power

Power Consumption	<2.5 W @12VDC
Powering	8.5-18 VDC (12V-400mA Nom) 120 VAC, AC/DC converter with "F" type power connector
Surge Protection	6KV (IEEE EC62.41, A3/B3 RF/Pwr)
LED	DC input power

Mechanical

Optical Interface	SC/APC Female Connector
RF Interface	Female "F" Connector (75 Ω)
Dimensions	4.15" L x 3.53" W x 0.97" H (10.54cm L x 8.96cm W x 2.46cm H)
Weight	0.40 lbs (0.18 kg)

Standards and Certifications

FCC Part 15B
TÜV, IEC-60825-1

Ordering Information

Model #	Description
BOS-MN-1302	1550 nm receiver, 1310 nm transmitter. Includes power inserter.
BOS-PS-12V0400-1	110 VAC/60 Hz input, 12 VDC/400mA output w/ F connector



CLASS 1 LASER PRODUCT

Specifications subject to change without notice.



The 1303 MicroNode is the next generation of subscriber electronics for the BrightPath® Optical Solutions (BOS) product line. Its new mechanical and electrical design provides greater component durability, flexibility and upstream performance. In addition, with a 65/85 MHz duplex filter, the MicroNode can operate on networks carrying PAL B/G signals.

Installed at the customer's location, the MicroNode provides the transition from an optical network to a Radio Frequency RF network and provides an interface to the customer's inside wiring. In the downstream direction, it contains an optical receiver to convert the signal back to its original RF format, and an RF amplifier to supply the designated RF signal level into the home. In addition, the MicroNode utilizes an Automatic Gain Control (AGC) circuit to keep the RF output constant over the optical input range. The output RF connection is a standard female "F" connector, which can also be used for local powering from the home via a power inserter. A second "F" port is also available when a dedicated powering option is preferred. In the upstream direction, the MicroNode contains an optical transmitter to carry the RF signals, generated by cable modems and set top boxes

inside the customer's location, back to the headend. With its new transmitter drive circuitry, the MicroNode provides faster laser activation, and higher upstream link performance.

To prevent unwanted RF signals from entering the network, the reverse transmitter utilizes a threshold circuit that stops it from being activated by signals that are below a preset level. If a signal coming from inside the residence is below that threshold, the transmitter will not be activated. In order to operate over a single fiber network, the MicroNode is also equipped with a Wave Division Multiplexing (WDM) filter, which multiplexes the 1310nm upstream and 1550nm downstream wavelengths. The MicroNode circuitry is mounted in a cast metal housing that protects the electronics from the outside environment and ensures a high level of RFI shielding.



Feature

- 1 GHz RF spectrum
- Transparent return path
- Return transmission threshold
- Lower RF drive level
- RF based AGC
- High RF output with up-tilt
- Diecast aluminum housing
- "F" port powering

Benefit

- Extended RF capacity
- Allows use of existing Customer Premises Equipment (CPE)
- Suppresses noise from the subscriber's residence
- Enables higher link performance
- Constant RF output over optical input range
- Reduces need for in home amplifier
- Protects electronics and provides excellent shielding
- Allows in home powering over coax cabling



Downstream Performance

Optical Specifications

Input Wavelength	1540 to 1565 nm
Optical Input Power	-6 to 0 dBm
Link Performance	
CNR*	≥48 dB
CSO**	≤60 dBc
CTB**	≤65 dBc
LED	Optical input power

*50-552 MHz CW Analog, 552-1002 MHz Digital, -4 dBm receive.

**50-552 MHz CW Analog, 552-1002 MHz Digital, 0 dBm receive.

RF Specifications

Frequency Bandwidth	85 to 1000 MHz
RF Output Level*	77 dBmV/Chnl (Typ)
Tilt	5 dB (Typ)
Flatness	±2.0 dB
Return Loss	≥16 dB

* Measured @550 MHz.

Upstream Performance

Optical Specifications

Output Wavelength	1310 nm (Nom)
Optical Output Power	3.0 dBm (Typ)
30 dB NPR Dynamic Range*	≥15 dB
Laser Activation Time	≤1.5 μs
Laser Type	Fabry-Perot-Class I
LED	Upstream RF activity

*25 dB optical link.

RF Specifications

Frequency Bandwidth	5 to 65 MHz
RF Input Activation Level	74 dBmV (Typ)
RF Input Range	80 to 105 dBmV
Flatness	±1.0 dB
Return Loss	≥16 dB

General Specifications

Environmental

Operating Temperature	-40° to 149° F (-40° to +65° C)
Humidity	5 to 95% non-condensing

Power

Power Consumption	<2.5 W @12VDC
Powering	8.5-18 VDC (12V-400mA Nom) 230 VAC, AC/DC converter with "F" type power connector
Surge Protection	6KV (IEEE EC62.41, A3/B3 RF/Pwr)
LED	DC input power

Mechanical

Optical Interface	SC/APC Female Connector
RF Interface	Female "F" Connector (75 Ω)
Dimensions	4.15" L x 3.53" W x 0.97" H (10.54cm L x 8.96cm W x 2.46cm H)
Weight	0.40 lbs (0.18 kg)

Standards and Certifications

CE Mark
RoHS

Ordering Information

Model #	Description
BOS-MN-1303	1550 nm receiver, 1310 nm transmitter. Includes power inserter
BOS-PS-12V0400-2	220 VAC/50 Hz input, 12 VDC/400mA output w/ bayonet connector and F-connector to bayonet adapter



CLASS 1 LASER PRODUCT

Specifications subject to change without notice.



The 1602 MicroNode is the next generation of subscriber electronics for the BrightPath® Optical Solutions (BOS) product line. Its new mechanical and electrical design provides greater component durability, flexibility and upstream performance. In addition, with a 1610 nm upstream transmitter, the 1602 MicroNode can operate on networks utilizing G/GEAPON compliant systems.

Installed at the customer's location, the MicroNode provides the transition from an optical network to a Radio Frequency (RF) network and provides an interface to the customer's inside wiring. In the downstream direction, it contains an optical receiver to convert the signal back to its original RF format, and an RF amplifier to supply the designated RF signal level into the home. In addition, the MicroNode utilizes an Automatic Gain Control (AGC) circuit to keep the RF output constant over the optical input range. The output RF connection is a standard female "F" connector, which can also be used for local powering from the home via a power inserter. A second "F" port is also available when a dedicated powering option is preferred. In the upstream direction, the MicroNode contains an optical transmitter to carry the RF signals, generated by cable modems and set top boxes inside the customer's location, back to the headend. With its

new transmitter drive circuitry, the MicroNode guarantees faster laser activation, and higher upstream link performance.

To prevent unwanted RF signals from entering the network, the reverse transmitter utilizes a threshold circuit that stops it from being activated by signals that are below a preset level. If a signal coming from inside the residence is below that threshold, the transmitter will not be activated. To operate over a single fiber network, the MicroNode also contains a Wave Division Multiplexing (WDM) filter, which multiplexes the 1610nm upstream and 1550nm downstream wavelengths. The filter also blocks G/GEAPON signals, operating at 1490/1310 nm, so the MicroNode can operate simultaneously on networks utilizing PON systems. The MicroNode circuitry is mounted in a cast metal housing that protects the electronics from the outside environment and ensures a high level of RFI shielding.



Feature

- 1 GHz RF spectrum
- Transparent return path
- Return transmission threshold
- 1610 nm transmitter
- RF based AGC
- High RF output with up-tilt
- Diecast aluminum housing
- "F" port powering

Benefit

- Extended RF capacity
- Allows use of existing Customer Premises Equipment (CPE)
- Suppresses noise from the subscriber's residence
- Enables operation on G/GEAPON networks
- Constant RF output over optical input range
- Reduces need for in home amplifier
- Protects electronics and provides excellent shielding
- Allows in home powering over coax cabling



Downstream Performance

Optical Specifications

Input Wavelength	1540 to 1565 nm
Optical Input Power	-6 to 0 dBm
Link Performance	
CNR*	≥48 dB
CSO**	≤60 dBc
CTB**	≤65 dBc
LED	Optical input power

*50-552 MHz CW Analog, 552-1002 MHz Digital, -4 dBm receive.

**50-552 MHz CW Analog, 552-1002 MHz Digital, 0 dBm receive.

RF Specifications

Frequency Bandwidth	54 to 1002 MHz
RF Output Level*	17 dBmV/Chnl (Typ)
Tilt	5 dB (Typ)
Flatness	±2.0 dB
Return Loss	>16 dB

* Measured @550 MHz.

Upstream Performance

Optical Specifications

Output Wavelength	1610 nm (Nom)
Optical Output Power	3.0 dBm (Typ)
30 dB NPR Dynamic Range*	≥15 dB
Laser Activation Time	≤1.5 μs
Laser Type	DFB Class I
LED	Upstream RF activity

*25 dB optical link.

RF Specifications

Frequency Bandwidth	5 to 42 MHz
RF Input Activation Level	14 dBmV (Typ)
RF Input Range	20 to 45 dBmV
Flatness	±1.0 dB
Return Loss	≥16 dB

General Specifications

Environmental

Operating Temperature	-40° to 149° F (-40° to +65° C)
Humidity	5 to 95% non-condensing

Power

Power Consumption	<2.5 W @12VDC
Powering	8.5-18 VDC (12V-400mA Nom) 230 VAC, AC/DC converter with "F" type power connector
Surge Protection	6KV (IEEE EC62.41, A3/B3 RF/Pwr)
LED DC input power	

Mechanical

Optical Interface	SC/APC Female Connector
RF Interface	Female "F" Connector (75 Ω)
Dimensions	4.15" L x 3.53" W x 0.97" H (10.54cm L x 8.96cm W x 2.46cm H)
Weight	0.40 lbs (0.18 kg)

Standards and Certifications

FCC Part 15B
TÜV, IEC-60825-1

Ordering Information

Model #	Description
BOS-MN-1602	1550 nm receiver, 1610 nm DFB transmitter, PON compatible MicroNode Includes power inserter
BOS-PS-12V0400-1	110 VAC/60 Hz input, 12 VDC/400mA output w/ F connector



CLASS 1 LASER PRODUCT

Specifications subject to change without notice.

The 1603 MicroNode is the next generation of subscriber electronics for the BrightPath® Optical Solutions (BOS) product line. Its new mechanical and electrical design provides greater component durability, flexibility and upstream performance. With a 65/85 MHz diplex filter, the MicroNode can operate on networks carrying PAL B/G signals. In addition, with a 1610 nm upstream transmitter, the MicroNode can operate on networks utilizing G/GEAPON compliant systems.

Installed at the customer's location, the MicroNode provides the transition from an optical network to a Radio Frequency (RF) network and supplies an interface to the customer's inside wiring. In the downstream direction, it contains an optical receiver to convert the signal back to its original RF format and an RF amplifier to afford the designated RF signal level into the home. In addition, the MicroNode utilizes an Automatic Gain Control (AGC) circuit to keep the RF output consistent over the optical input range. The output RF connection is a standard female "F" connector, which can also be used for local powering from the home via a power inserter. A second "F" port is also available when a dedicated powering option is preferred. In the upstream direction, the MicroNode contains an optical transmitter to carry the RF signals, generated by cable modems and set top boxes inside the customer's location, back to the headend.

With its new transmitter drive circuitry, the MicroNode provides faster laser activation, and higher upstream link performance.

To prevent unwanted RF signals from entering the network, the reverse transmitter utilizes a threshold circuit that stops it from being activated by signals that are below a preset level. If a signal coming from inside the residence is below that threshold, the transmitter will not be activated. To operate over a single fiber network, the MicroNode also contains a Wave Division Multiplexing (WDM) filter, which multiplexes the 1610nm upstream and 1550nm downstream wavelengths. The filter also blocks G/GEAPON signals, operating at 1490/1310 nm, so the MicroNode can operate simultaneously on networks utilizing PON systems. The MicroNode circuitry is mounted in a cast metal housing that protects the electronics from the outside environment and provides a high level of RFI shielding.



Feature

- 1 GHz RF spectrum
- Transparent return path
- Return transmission threshold
- 1610 nm transmitter
- RF based AGC
- High RF output with up/tilt
- Diecast aluminum housing
- "F" port powering

Benefit

- Extended RF capacity
- Allows use of existing Customer Premises Equipment (CPE)
- Suppresses noise from the subscriber's residence
- Enables operation on G/GEAPON networks
- Constant RF output over optical input range
- Reduces need for in home amplifier
- Protects electronics and provides excellent shielding
- Allows in home powering over coax cabling



Downstream Performance

Optical Specifications	
Input Wavelength	1540 to 1565 nm
Optical Input Power	-6 to 0 dBm
Link Performance	
CNR*	≥48 dB
CSO**	≤60 dBc
CTB**	≤65 dBc
LED	Optical input power

*42 CW Analog Channels per EN 50083-3 Channel Plan, -4 dBm receive.
**42 CW Analog Channels per EN 50083-3 Channel Plan, 0 dBm receive.

RF Specifications

Frequency Bandwidth	85 to 1000 MHz
RF Output Level*	77 dBmV/Chnl (Typ)
Tilt	5 dB (Typ)
Flatness	±2.0 dB
Return Loss	>16 dB

* Measured @550 MHz.

Upstream Performance

Optical Specifications	
Output Wavelength	1610 nm (Nom)
Optical Output Power	3.0 dBm (Typ)
30 dB NPR Dynamic Range	≥15 dB
Laser Activation Time	≤1.5 μs
Laser Type	DFB Class 1
LED	Upstream RF activity

*25 dB optical link.

RF Specifications

Frequency Bandwidth	5 to 65 MHz
RF Input Activation Level	74 dBmV (Typ)
RF Input Range	80 to 105 dBmV
Flatness	±1.0 dB
Return Loss	≥16 dB

*Single channel RF level with 4 bonded channels.

General Specifications

Environmental

Operating Temperature	-40° to 149° F (-40° to +65° C)
Humidity	5 to 95% non-condensing

Power

Power Consumption	<2.5 W @12VDC
Powering	8.5-18 VDC (12V-400mA Nom) 230 VAC, AC/DC converter with "F" type power connector
Surge Protection	6KV (IEEE EC62.41, A3/B3 RF/Pwr)
LED	DC input power

Mechanical

Optical Interface	SC/APC Female Connector
RF Interface	Female "F" Connector (75 Ω)
Dimensions	4.15" L x 3.53" W x 0.97" H (10.54cm L x 8.96cm W x 2.46cm H)
Weight	0.40 lbs (0.18 kg)

Standards and Certifications

CE Mark

RoHS

Ordering Information

Model #	Description
BOS-MN-1603	1550 nm receiver, 1610 nm DFB transmitter, PON compatible MicroNode. Includes power inserter.
BOS-PS-12V0400-2	220 VAC/50 Hz input, 12 VDC/400 mA output w/ bayonet connector and F-connector to bayonet adapter



CLASS 1 LASER PRODUCT

Specifications subject to change without notice.



The 1612 MicroNode is the next generation of subscriber electronics for the BrightPath® Optical Solutions (BOS) product line. Its new mechanical and electrical design provides greater component durability, flexibility and upstream performance. In addition, with a 1610 nm upstream transmitter and an integrated Passive Optical Network (PON) wavelength filter, the MicroNode can operate on networks utilizing G/GEAPON compliant systems.

Installed at the customer's location, the MicroNode provides the transition from an optical network to a Radio Frequency (RF) network and supplies an interface to the customer's inside wiring. In the downstream direction, it contains an optical receiver to convert the signal back to its original RF format and an RF amplifier to provide the designated RF signal level into the home. In addition, the MicroNode utilizes an Automatic Gain Control (AGC) circuit to keep the RF output constant over the optical input range. The output RF connection is a standard female "F" connector, which can also be used for local powering from the home via a power inserter. A second "F" port is also available when a dedicated powering option is preferred. In the upstream direction, the MicroNode contains an optical transmitter to carry the RF signals, generated by cable modems and set top boxes inside the customer's location, back to the headend. With its

new transmitter drive circuitry, the MicroNode ensures faster laser activation, and higher upstream link performance.

To prevent unwanted RF signals from entering the network, the reverse transmitter utilizes a threshold circuit that stops it from being activated by signals that are below a preset level. If a signal coming from inside the residence is below that threshold, the transmitter will not be activated. To operate over a single fiber network, the MicroNode also contains a Wave Division Multiplexing (WDM) filter, which multiplexes the 1610nm upstream and 1550nm downstream wavelengths. The filter also directs G/GEAPON signals, operating at 1490/1310nm, to a second optical port that can be connected to PON Optical Network Units (ONU). The MicroNode circuitry is mounted in a cast metal housing that protects the electronics from the outside environment and provides a high level of RFI shielding.



Feature

- 1 GHz RF spectrum
- Transparent return path
- Return transmission threshold
- 1610 nm Transmitter
- Integrated PON filter
- RF based AGC
- High RF output with up-tilt
- Die cast aluminum housing
- "F" port powering

Benefit

- Extended RF capacity
- Allows use of existing Customer Premises Equipment (CPE)
- Suppresses noise from the subscriber's residence
- Enables operation on G/GEAPON networks
- Provides 1490/1310 nm port for ONU
- Constant RF output over optical input range
- Reduces need for in home amplifier
- Protects electronics and provides excellent shielding
- Allows in home powering over coax cabling



Downstream Performance

Optical Specifications

Input Wavelength	1540 to 1565 nm
Optical Input Power	-6 to 0 dBm
Link Performance	
CNR*	≥48 dB
CSO**	≤60 dBc
CTB**	≤65 dBc
Pass Through Port Loss	≤1.0 dB
LED	Optical input power

*50-552 MHz CW Analog, 552-1002 MHz Digital, -4 dBm receive.

**50-552 MHz CW Analog, 552-1002 MHz Digital, 0 dBm receive

RF Specifications

Frequency Bandwidth	54 to 1002 MHz
RF Output Level*	17 dBmV/Chnl (Typ)
Tilt	5 dB (Typ)
Flatness	±2.0 dB
Return Loss	≥16 dB

* Measured @550 MHz.

Upstream Performance

Optical Specifications

Output Wavelength	1610 nm (Nom)
Optical Output Power	3.0 dBm (Typ)
30 dB NPR Dynamic Range*	≥15 dB
Laser Activation Time	≤1.5 μs
Laser Type	DFB Class 1
LED	Upstream RF activity

*25 dB optical link.

RF Specifications

Frequency Bandwidth	5 to 42 MHz
RF Input Activation Level	14 dBmV (Typ)
RF Input Range	20 to 45 dBmV
Flatness	±1.0 dB
Return Loss	≥16 dB

*Single channel RF level with 4 bonded channels.

Specifications subject to change without notice.

General Specifications

Environmental

Operating Temperature	-40° to 149° F (-40° to +65° C)
Humidity	5 to 95% non-condensing

Power

Power Consumption	<2.5 W @12VDC
Powering	8.5-18 VDC (12V/400mA Nom) 230 VAC, AC/DC converter with "F" type power connector
Surge Protection	6KV (IEEE EC62.41, A3/B3 RF/Pwr)
LED	DC input power

Mechanical

Optical Interface	SC/APC Female Connector
RF Interface	Female "F" Connector (75 Ω)
Dimensions	4.15" L x 3.53" W x 0.97" H (10.54cm L x 8.96cm W x 2.46cm H)
Weight	0.40 lbs (0.18 kg)

Standards and Certifications

FCC	Part 15B
TÜV IEC-60825-1	

Ordering Information

Model #	Description
BOS-MN-1612	1550 nm receiver, 1610 nm DFB transmitter, w/ G/GEAPON pass through port. Includes power inserter.
BOS-PS-12V0400-1	110 VAC/60 Hz input, 12 VDC/400mA output w/ F connector .



CLASS 1 LASER PRODUCT

The 1613 MicroNode is the next generation of subscriber electronics for the BrightPath® Optical Solutions (BOS) product line. Its new mechanical and electrical design provides greater component durability, flexibility and upstream performance. With a 65/85 MHz diplex filter, the MicroNode can operate on networks carrying PAL B/G signals. In addition, with a 1610 nm upstream transmitter and an integrated Passive Optical Network (PON) wavelength filter, the MicroNode can function on networks utilizing G/GEAPON compliant systems.

Installed at the customer's location, the MicroNode allows a transition from an optical network to an Radio Frequency (RF) network and provides an interface to the customer's inside wiring. In the downstream direction, it contains an optical receiver to convert the signal back to its original RF format and an RF amplifier to provide the designated RF signal level into the home. In addition, the MicroNode utilizes an Automatic Gain Control (AGC) circuit to keep the RF output constant over the optical input range. The output RF connection is a standard female "F" connector, which can also be used for local powering from the home via a power inserter. A second "F" port is also available when a dedicated powering option is preferred. In the upstream direction, the MicroNode contains an optical transmitter to carry the RF signals, generated by cable modems and set top boxes inside the customer's location, back to the headend. With its

new transmitter drive circuitry, the MicroNode ensures faster laser activation, and higher upstream link performance.

To prevent unwanted RF signals from entering the network, the reverse transmitter utilizes a threshold circuit that stops it from being activated by signals that are below a preset level. If a signal coming from inside the residence is below that threshold, the transmitter will not be activated. To operate over a single fiber network, the MicroNode also contains a Wave Division Multiplexing (WDM) filter, which multiplexes the 1610 nm upstream and 1550 nm downstream wavelengths. The filter also directs G/GEAPON signals, operating at 1490/1310nm, to a second optical port that can be connected to PON Optical Network Units (ONU). The MicroNode circuitry is mounted in a cast metal housing that protects the electronics from the outside environment and provides a high level of RFI shielding.



Feature

- 1 GHz RF spectrum
- Transparent return path
- Return transmission threshold
- 1610 nm Transmitter
- Integrated PON filter
- RF based AGC
- High RF output with up-tilt
- Die cast aluminum housing
- "F" port powering

Benefit

- Extended RF capacity
- Allows use of existing Customer Premises Equipment (CPE)
- Suppresses noise from the subscriber's residence
- Enables operation on G/GEAPON networks
- Provides 1490/1310 nm port for ONUs
- Constant RF output over optical input range
- Reduces need for in home amplifier
- Protects electronics and provides excellent shielding
- Allows in home powering over coax cabling



Downstream Performance

Optical Specifications

Input Wavelength	1540 to 1565 nm
Optical Input Power	-6 to 0 dBm
Link Performance	
CNR*	≥48 dB
CSO**	≤60 dBc
CTB**	≤65 dBc
Pass Through Port Loss	≤1.0 dB
LED	Optical input power

*42 CW Analog Channels per EN 50083-3 Channel Plan, -4 dBm receive.

**42 CW Analog Channels per EN 50083-3 Channel Plan, 0 dBm receive.

RF Specifications

Frequency Bandwidth	85 to 1000 MHz
RF Output Level*	77 dBmV/Chnl (Typ)
Tilt	5 dB (Typ)
Flatness	±2.0 dB
Return Loss	≥16 dB

* Measured @550 MHz.

Upstream Performance

Optical Specifications

Output Wavelength	1610 nm (Nom)
Optical Output Power	3.0 dBm (Typ)
30 dB NPR Dynamic Range	≥15 dB
Laser Activation Time	≤1.5 μs
Laser Type	DFB Class 1
LED	Upstream RF activity

*25 dB optical link.

RF Specifications

Frequency Bandwidth	5 to 65 MHz
RF Input Activation Level	74 dBmV (Typ)
RF Input Range	80 to 105 dBmV
Flatness	±1.0 dB
Return Loss	≥16 dB

General Specifications

Environmental

Operating Temperature	-40° to 149° F (-40° to +65° C)
Humidity	95% non-condensing

Power

Power Consumption	<2.5 W @12VDC
Powering	8.5-18 VDC (12V-400mA Nom) 230 VAC, AC/DC converter with "F" type power connector
Surge Protection	6KV (IEEE EC62.41, A3/B3 RF/Pwr)
LED	DC input power

Mechanical

Optical Interface	SC/APC Female Connector
RF Interface	Female "F" Connector (75 Ω)
Dimensions	4.15" L x 3.53" W x 0.97" H (10.54cm L x 8.96cm W x 2.46cm H)
Weight	0.40 lbs (0.18 kg)

Standards and Certifications

CE Mark	
RoHS	

Ordering Information

Model #	Description
BOS-MN-1613	1550 nm receiver, 1610 nm DFB transmitter, w/ G/GEAPON pass through port. Includes power inserter
BOS-PS-12V0400-2	220 VAC/50 Hz input, 12 VDC/400mA output w/ bayonet connector and \ F-connector to bayonet adapter



CLASS 1 LASER PRODUCT

Specifications subject to change without notice.



BOS™ Network Interface Device



The BrightPath® Optical Solutions (BOS) Network Interface Device (NID) is specifically designed to house the different versions of the BOS MicroNode. This environmentally sealed and impact resistant enclosure offers excellent protection for the optical fiber drop and the MicroNode. The NID has an integrated fiber management tray that helps the technician store excess fiber and maintains the minimum bend radius of the fiber. The cable entry grommets are customized for CommScope's all dielectric flat drop fiber cable, the drop armored fiber cable, and the 6 series coaxial drop cable.

The NID also features an inner "Craft Access Only" cover that protects the fiber termination while allowing full view of the MicroNode's status LEDs. This low profile, indoor/outdoor NID is perfectly matched to safeguard the MicroNode and improve the reliability of the FTTH drop.



Feature

- Indoor/outdoor use
- Weather hardened/impact resistant
- Integrated fiber management
- Cable entry grommets
- "Craft Access Only" cover

Benefit

- Flexible deployment options
- Improves reliability of the drop
- Provides fiber storage
- Allows multiple cable types
- Protects fiber termination while troubleshooting MicroNode



General Specifications

Environmental

Operating Temperature	- 40° to 149° F (- 40° to 65° C)
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Mechanical

Dimensions	9.7" wide x 7.8" high x 2.6" deep (24.6 cm x 19.8 cm x 6.6 cm)
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Weight	1.4 lbs (0.6 kg)
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Sealing

Cabling	Grommets for flat drop and round cable up to 0.32" (8.1 mm) O.D.
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Environment	Door gasket
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Standards and Certifications

Material meets UL 746C

UL approved for indoor/outdoor use

Telcordia GR-487-CORE

Ordering Information

Model #	Description
BP-NID-2000	Enclosure for MicroNode
BP-NID-2000-AR-KIT	Armored fiber cable adapter kit

Note: Security screws may be purchased from a third party supplier to replace the NID cover screw (#8-32 x 0.375") or the "Craft Access Only" screw (#8-32 x 0.625").

The BrighPath® Optical Solutions (BOS) Battery Back Up (BBU) unit is part of CommScope's Fiberto-the-Home (FTTH) product line. It is a small form factor, user friendly back up unit optimized for Radio Frequency over Glass (RfOG) applications. The BBU resides indoors at the subscriber location and provides DC power and backup to a single BOS MicroNode. To simplify installation and reduce cost, it connects in line between the standard MicroNode power supply and the MicroNode itself, using standard female F connector interfaces. The BBU monitors the power being delivered to the MicroNode and, in the event of the loss of AC power, switches to the backup battery providing power for eight hours. When not in backup mode, the unit simply passes power from the power supply through its output port to the MicroNode.

To ensure ease of use and to eliminate the need for expensive custom battery packs, the BBU is designed to use standard, AA size alkaline batteries. By incorporating simple LED indicators and a user friendly battery compartment lid, a customer can easily maintain and replace the BBU batteries eliminating that operational cost for the operator.



Feature

- 8+ hour battery backup
- Standard "AA" batteries
- Subscriber accessible battery compartment
- "F" and DC barrel power connectors
- Audible low battery alarm
- LED status/ power indicator
- Integral protection circuitry
- Works with MicroNode 12 VDC P/S

Benefit

- Supports life line services
- Low cost, common batteries
- Customer can maintain batteries
- Standard connector interfaces
- User friendly low battery indicator
- Simple battery life indicators
- Rugged electrical design
- Simplifies Installation



Electrical Specifications

Input

Input Voltage	8 to 18 VDC
Input Current	750 mA (Max)

Output (Battery Mode)

Output voltage	14 VDC (Nom)
Output voltage ripple	50 mVpp
Output current	600 mA (Max)
Output power	8.4 W (Max)
Efficiency	>90%
Main/Backup Switch Time	4 ms (Typ)
Backup Duration*	8 Hrs (Typ)

*Based on alkaline batteries and standard BOS MicroNode

Battery

Form Factor	AA
Type	Alkaline
# Cells in BBU	8
Cell voltage	1.8 VDC

General Specifications

Environmental

Operating Temperature	32° to 122° F (0° to +50° C)
Humidity	5 to 95% non-condensing

Power

Surge protection	6KV (IEEE EC62.41, B3 Wave)
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LEDS

Green:	Full power
Yellow:	30-60% power
Red:	≤ 30% power
Blinking:	Battery mode

Mechanical

Power Interface	Female "F", 2.5 mm DC Barrel
Dimensions	6.40" L x 5.25" W x 1.35" H (16.26cm L x 13.34cm W x 3.43cm H)
Weight	0.5 lbs (0.2 kg)

Standards and Certifications

FCC	Part 15B
UL/CE	

Ordering Information

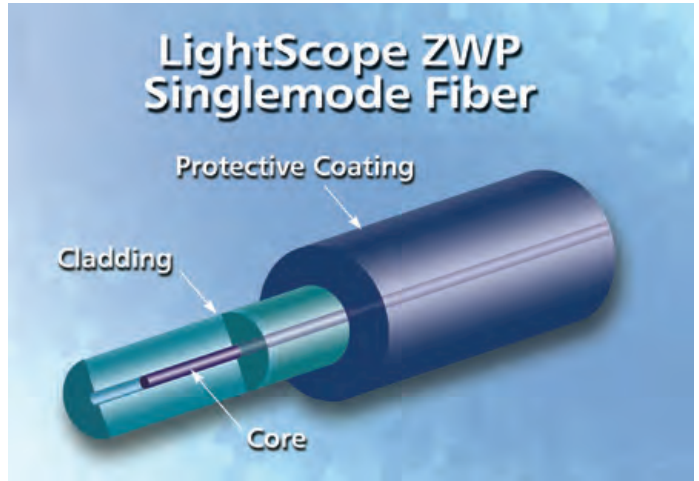
Model #	Description
BOS-BB-1000	Battery backup unit
BOS-PS-12V0400-1	110 VAC/60 Hz input, 12 VDC/400mA output w/ F connector
BOS-PS-12V0400-2	230 VAC/50 Hz input, 12 VDC/400mA output w/ bayonet connector

Specifications subject to change without notice.



Zero Water Peak Dispersion Unshifted Enhanced Singlemode Fiber

CommScope's LightScope ZWP® singlemode fiber removes the pronounced attenuation increase at 1383nm, known as the water peak, resulting in superior performance in the E-band over the lifetime of the product. The decrease in attenuation over the water peak region allows for increased transmission spectrum and the economic benefits of less expensive transmission options. Installing LightScope ZWP today ensures that you can take advantage of the technology tomorrow.

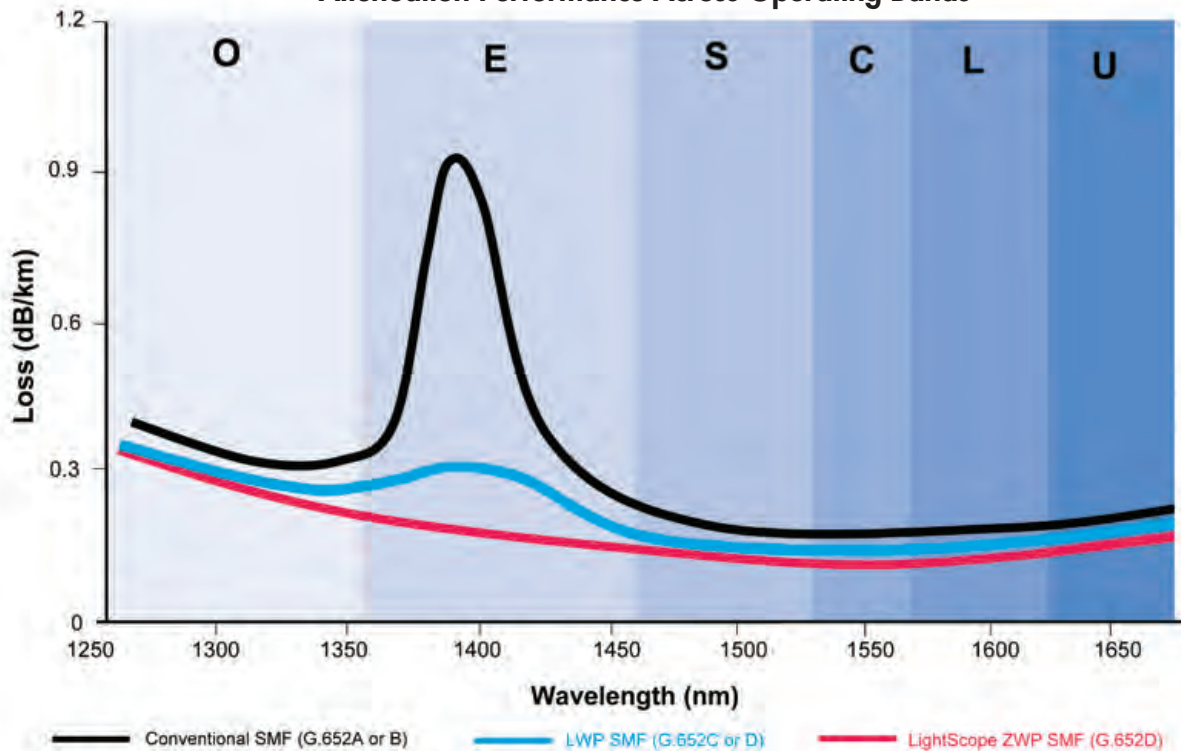


LightScope ZWP

Features

- Compliant to the latest ITUT G.652 A through D requirements
- Enables full-spectrum transmission from 1260 nm to 1625 nm, providing 30% additional bandwidth
- Provides future bandwidth flexibility and upgradeability
- Fully backward compatible with legacy standard singlemode fiber optic networks
- Synthetically produced glass - no risk of early failure caused by the use of natural quartz

Attenuation Performance Across Operating Bands



LightScope ZWP® Type 8W Singlemode Fiber Specifications

Zero Water Peak: Dispersion-Unshifted, Matched-Clad Singlemode Fiber

Standards Compliance: ITU-T G.652.D

Physical Characteristics

Cladding Diameter	125 ± 0.7 µm
Core/Clad Offset	≤ 0.5 µm
Coating Diameter (uncolored)	245 ± 10 µm
Coating Diameter (colored)	254 ± 7 µm
Coating/Cladding Concentricity Error, maximum	12 µm
Clad Non-Circularity	≤ 1%

Mechanical Characteristics

Proof Test	100 kpsi (.69 Gpa)
Coating Strip Force	0.3 - 2.0 lbf (1.3 - 8.9 N)
Fiber Curl	≥ 4 m
Dynamic Fatigue Parameter	≥ 20 nd
Macrobend 100 turns @ 50 mm mandrel 1310/1550 nm	0.05 dB maximum
Macrobend 100 turns @ 60 mm mandrel 1625nm	0.05 dB maximum
Macrobend 1 turn @ 32 mm mandrel 1550 nm	0.05 dB maximum

Optical Characteristics, Wavelength Specific

Attenuation, Loose Tube Cable	
1310 nm	0.34 dB/km
1385 nm	0.31 dB/km
1550 nm	0.22 dB/km
Attenuation, Tight Buffer Cable	
1310 nm	0.50 dB/km
1385 nm	0.50 dB/km
1550 nm	0.50 db/km
Mode Field Diameter	
1310 nm	9.2 ± 0.3 µm
1385 nm	9.6 ± 0.6 µm
1550 nm	10.4 ± 0.5 µm
Group Refractive Index	
1310 nm	1.467
1385 nm	1.468
1550 nm	1.468
Dispersion	
1310 nm	3.2 ps/(nm-km) from 1285 to 1330 nm
1550 nm	18 ps/(nm-km)

Optical Characteristics, General

Point Defects, maximum	0.10 dB
Cutoff Wavelength	≤ 1260 nm
Zero Dispersion Wavelength	1302 - 1322 nm
Zero Dispersion Slope	0.090 ps/(km-nm-nm)
Polarization Mode Dispersion Link Design Value	≤ 0.06 ps/sqrt(km)

Environmental Characteristics

Temperature Dependence -60°C to +85°C	≤ 0.05 dB
Temperature Humidity Cycling -10°C to +85°C up to 95% RH	≤ 0.05 dB
Water Immersion, 23 + 2°C	≤ 0.05 dB
Heat Aging, 85 + 2°C	≤ 0.05 dB

Specifications are subject to change without notice.



Armored Construction


CommScope's Drop Armored cable design is an ideal armored solution for the distribution and drop portions of the BrightPath architecture. It is a small, lightweight central tube cable construction, with no preferential bend radius, designed for ease of handling and installation. Its corrugated steel armor is strong yet flexible, providing extra protection for the fiber itself. This robust drop cable design supports direct buried, conduit, and aerial applications. The Drop Armored cable contains a standard 3mm buffer tube, and is compatible with industry-standard hardware. It is also qualified to the ANSI/ICEA S-1 10-717-2003 Standard for Optical Fiber Drop Cable.



Feature	Benefit
• Armored cable design	• Provides additional protection for the fiber and provides ease of locating
• Compact cable design	• Reduces cable weight
• Craft friendly design	• Ease of midspan entry
• Versatile cable design	• Suitable for direct buried, underground conduit and aerial self-supporting applications
• Arid-Core® moisture barrier	• Full water blocking protection for outside plant applications
• MDPE jacket	• Jacket is rugged, durable and easy to strip

Drop Armored Fiber Optic Cable Specifications

Physical Specifications

Product Type/ Fiber Count	Catalog Number	Subunits	Outer Diameter inch (mm)	Minimum Bend Radius		Maximum Tensile Load		Weight	
				Loaded inch (cm)	Unloaded inch (cm)	Short Term lbs (newtons)	Long Term lbs (newtons)	lbs/kft	(kg/km)
Armored 1-12 Fibers 	O-XXX-DA-8W-FZZNS/BP	1	0.31 (8.0)	4.7 (12.0)	3.1 (8.0)	300 (1334)	90 (400)	47	(70)

Variables in the Catalog Number:

XXX = Total Fiber Count (maximum of 12)

ZZ = Number of Fibers per Tube

Fiber identification colors: 1/Blue, 2/Orange, 3/Green, 4/Brown, 5/Slate, 6/White, 7/Red, 8/Black, 9/Yellow, 10/Violet, 11/Rose, 12/Aqua

Environmental Specifications

Installation Temperature	-22° to +158°F (-30° to +70°C)
Operating Temperature	-40° to +158°F (-40° to +70°C)
Storage Temperature	-40° to +167°F (-40° to +75°C)

Mechanical Test Specifications

Test	Requirement	Test Method
Compression	57 lbf/in (10 N/mm)	FOTP-41; IEC 60794-1-2; Sec. 7
Flex	35 Cycles	FOTP-24; IEC 60794-1-2; Sec. 10
Impact	Cable Diameter Dependant	FOTP-25; IEC 60794-1-2; Sec. 8
Strain	See long & short term tensile loads	FOTP-33; IEC 60794-1-2; Sec. 5
Twist	10 Cycles	FOTP-85; IEC 60794-1-2; Sec. 11
Water Penetration	24 Hours	FOTP-82; IEC 60794-1-2; Sec. 24

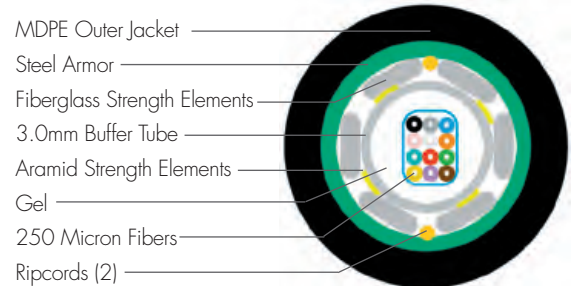
Environmental Test Specifications

Test	Requirement	Test Method
Cable Freeze	28° F (-2° C)	FOTP-98
Drip	140°F (+70° C)	FOTP-81; IEC 60794-1-2; Sec. 17
Heat Age	-40° to +185°F (-40° to +85°C)	N/A
Low High Bend	-22° to +140°F (-30° to +60°C)	FOTP-28; IEC 60794-1-2; Sec. 28
Temperature Cycle	-40° to +158°F (-40° to +70°C)	24 Hours

CommScope Optical Cables are qualified under the general guidelines to the following specifications:
ANSI/ICEA S-1 110-717-2003
RUS/RDUP 7 CFR 1.755.903 RD Telecommunications Program Listed

Drop Armored Cable

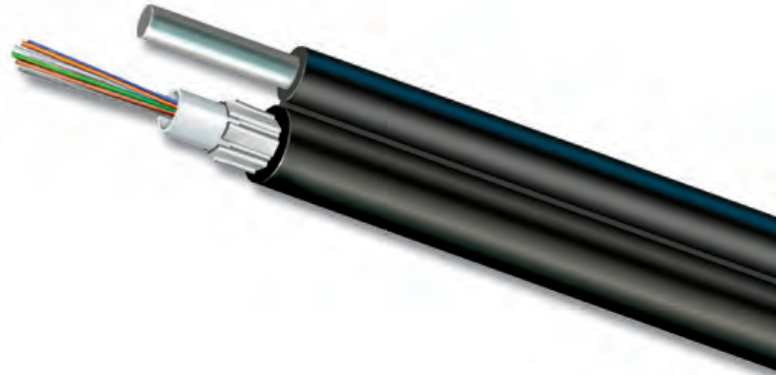
(12 fiber version shown)



Specifications subject to change without notice.
Drawings not to scale

Aerial Construction

CommScope's Figure 8 Drop cable design is an ideal solution for aerial portions of the BrightPath architecture. It is a small, robust cable construction designed for pole-to-pole installations that can support 350 foot spans in NESC heavy loading conditions. The cable can also be used for long pole-to-subscriber drops of up to 100 feet using traditional aerial plant installation techniques. This strong and light self-support cable is capable of long spans and drops, but care must be taken to consider attachment hardware, loading conditions and allowed clearances. CommScope recommends the use of SpanMaster® Sag and Tension software to qualify long installations prior to construction. The Figure 8 Drop cable is available with up to 6 fibers, contains a 2.5mm buffer tube, and is compatible with industry-standard hardware. This design is qualified to the ANSI/ICEA S-1 110-717-2003 Standard for Optical Fiber Drop Cable.




Feature	Benefit
• Strong 0.109" Solid Steel Messenger	• Cable exceeds application requirements in all loading conditions
• Arid-Core® moisture barrier	• Full water blocking protection
• Incorporates both rigid and flexible strength elements	• Provides optimal protection for the fiber
• Compact cable design	• Cost effective for OSP Drop applications



Self-Support Figure 8 Outdoor Drop Cable Specifications

Physical Specifications

Product Type/ Fiber Count	Catalog Number	Diameter Over Messenger inch (mm)	Cable Height inch (mm)	Diameter Over Fiber inch (mm)	Minimum Bend Radius		Max Tensile Load		Weight	
					Loaded inch (cm)	Unloaded inch (cm)	Short Term Lbs (N)	Long Term Lbs (N)	lbs/ kft	kg/ km
Figure 8 Drop 1 - 6 Fibers 	M-XXX+MN+8W+ZZNS/ 25G/109	0.17 (4.3)	0.42 (10.7)	0.20 (5.1)	3.0 (7.7)	2.0 (5.1)	300 (1334)	90 (400)	52	(77)

Variables in the Catalog Number:

XXX = Total Fiber Count (maximum of 12)

ZZ = Number of Fibers per Tube

Fiber identification colors: 1/Blue, 2/Orange, 3/Green, 4/Brown, 5/Slate, 6/White, 7/Red, 8/Black, 9/Yellow, 10/Violet, 11/Rose, 12/Aqua

Environmental Specifications

Installation Temperature	-22° to +158°F (-30° to +70°C)
Operating Temperature	-40° to +158°F (-40° to +70°C)
Storage Temperature	-40° to +167°F (-40° to +75°C)

Mechanical Test Specifications

Test	Requirement	Test Method
Compression	57 lbf/in (10 N/mm)	FOTP-41; IEC 60794-1-2; Sec. 7
Flex	35 Cycles	FOTP-24; IEC 60794-1-2; Sec. 10
Impact	Cable Diameter Dependant	FOTP-25; IEC 60794-1-2; Sec. 8
Strain	See long & short term tensile loads	FOTP-33; IEC 60794-1-2; Sec. 5
Twist	10 Cycles	FOTP-85; IEC 60794-1-2; Sec. 11
Water Penetration	24 Hours	FOTP-82; IEC 60794-1-2; Sec. 24

Environmental Test Specifications

Test	Requirement	Test Method
Cable Freeze	28° F (-2° C)	FOTP-98
Drip	140°F ; +70° C	FOTP-81; IEC 60794-1-2; Sec. 17
Heat Age	-40° to +185°F (-40° to +85°C)	N/A
Low High Bend	-22° to +140°F (-30° to +60°C)	FOTP-28; IEC 60794-1-2; Sec. 28
Temperature Cycle	-40° to +158°F (-40° to +70°C)	24 Hours

CommScope Optical Cables are qualified under the general guidelines to the following specifications:
ANSI/ICEA S-1 10-717-2003
RUS/RDUP 7 CFR 1755.903 RD Telecommunications Program Listed

Self Support Figure 8 Outdoor Drop Cable

(6 fiber version shown)

Linear Low Density Polyethylene
Outer Jacket

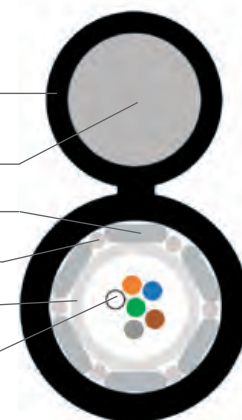
0.109" Solid Steel Messenger

Flexible Strength Elements

Rigid Strength Elements

2.5mm Gel Filled Buffer Tube

250 micron Fibers



All-Dielectric Construction

CommScope's Flat Drop cable design is an ideal all-dielectric solution for the distribution and drop portions of the BrightPath architecture. It is a small, lightweight cable construction designed for ease of handling and installation. The costs associated with bonding and grounding is eliminated with the all-dielectric design and the dual ripcords simplify cable access and installation. This robust drop cable design, supports direct buried, conduit and aerial self-support applications. The Flat Drop cable is also compatible with industry-standard attachment hardware, and is qualified to the ANSI/ICEA S-1 10-717-2003 Standard for Optical Fiber Drop Cable. The design is also RUS/RDUP: RD Telecommunications Program listed.



Toneable Construction

CommScope's Toneable Flat Drop cable design is suited for the burial distribution and drop portions of the BrightPath architecture. The design incorporates a 24 AWG copper conductor to simplify the location of the cable after it is buried in the field. This allows for an easy, one step installation in ducts or open trenches since there is no need for the addition of a separate metallic component for detection in underground applications. The metallic portion is easily separated so the wire can be routed to the grounding point and does not affect the performance of the main cable. The Toneable Flat Drop cable is qualified to the ANSI/ICEA S-1 10-717-2003 Standard for Optical Fiber Drop Cable as well as RUS/RDUP: RD Telecommunications Program listed.

Feature

- All-Dielectric and Toneable versions available
- Compact cable design
- Craft friendly design
- Versatile cable designs
- Arid-Core® moisture barrier
- Dual ripcords

Benefit

- Flexibility for your installation needs
- Reduces cable weight
- Ease of midspan entry
- Suitable for direct buried, underground conduit, aerial self-supporting applications
- Full water blocking protection for outside plant applications
- Simplifies cable access



Flat Drop Fiber Optic Cable Specifications

Physical Specifications

Product Type/ Fiber Count	Catalog Number	Cable Outer Diameter inch (mm)	Cable Height inch (mm)	Msg. Jacket Outer Dia. inch (cm)	Minimum Bend Radius Loaded inch (cm)	Unloaded inch (cm)	Max. Tensile Short Term lbs (N)	Long Term lbs (N)	Weight lbs/ kft	kg/ km
1 - 12 Fibers 	O-XXX-DF-8W-FZZNS	0.32 (8.2)	0.18 (4.5)	N/A	4.8 (12.3)	3.2 (8.1)	300 (1334)	90 (400)	28	(42)
Toneable 1 - 12 Fibers 	O-XXX-DF-HYFZZNS/ 8WXXX/1X24AWG	0.40 (10.2)	0.18 (4.5)	0.08 (2.0)	6.0 (15.3)	3.2 (8.1)	300 (1334)	90 (400)	38	(57)

Variables in the Catalog Number

XXX = Total Fiber Count (Maximum of 12)

ZZ= Number of Fibers per Tube

Fiber Identification Colors: 1/Blue, 2/Orange, 3/Green, 4/Brown, 5/Slate, 6/White, 7/Red, 8/Black, 9/Yellow, 10/Violet, 11/Rose, 12/Aqua

Custom sag and tension tables are available providing the recommended sag or tension. Please contact technical support.

Environmental Specifications

Installation Temperature	-22° to +158°F (-30° to +70°C)
Operating Temperature	-40° to +158°F (-40° to +70°C)
Storage Temperature	-40° to +167°F (-40° to +75°C)

Mechanical Test Specifications

Test	Requirement	Test Method
Compression	57 lbf/in (10 N/mm)	FOTP41; IEC 60794-1-2; Sec. 7
Flex	35 Cycles	FOTP24; IEC 60794-1-2; Sec. 10
Impact	Cable Diameter Dependant	FOTP25; IEC 60794-1-2; Sec. 8
Strain	See long & short term tensile loads	FOTP33; IEC 60794-1-2; Sec. 5
Twist	10 Cycles	FOTP85; IEC 60794-1-2; Sec. 11
Water Penetration	24 Hours	FOTP82; IEC 60794-1-2; Sec. 24

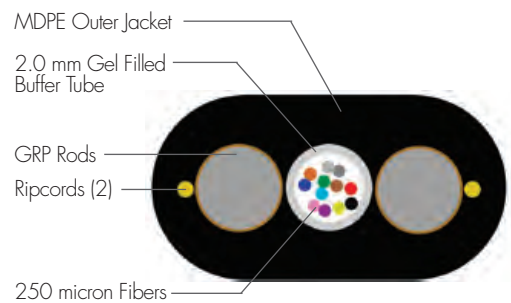
Environmental Test Specifications

Test	Requirement	Test Method
Cable Freeze	28° F (-2° C)	FOTP98
Drip	140°F ;+70° C	FOTP81; IEC 60794-1-2; Sec. 17
Heat Age	-40° to +185°F (-40° to +85°C)	N/A
Low High Bend	-22° to +140°F (-30° to +60°C)	FOTP28; IEC 60794-1-2; Sec. 28
Temperature Cycle	-40° to +158°F (-40° to +70°C)	24 Hours

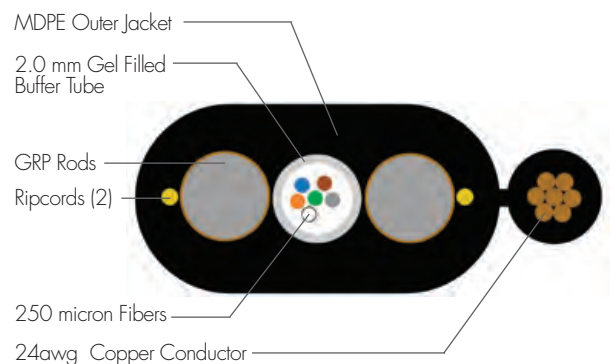
CommScope Optical Cables are qualified under the general guidelines to the following specifications:
ANSI/ICEA S-1 10-717-2003
RUS/RDUP 7 CFR 1755.903 RD Telecommunications Program Listed

Specifications subject to change without notice.
Drawings not to scale

All-Dielectric Flat Drop Cable



Toneable Flat Drop Cable



ConQuest® Conduit - Providing Damage Prevention & Access to Underground Facilities

- Additional Cable Protection
- Cable Replacement Capabilities
- Empty, Toneable and Fiber-in-Conduit options

Interest in underground damage prevention is surging. Federal legislation and an array of state laws have heightened concern on protecting vital underground networks. Network operators spend billions to ensure continuity of service. Cable protection is even more critical in high-end FTTH underground networks. CommScope ConQuest products provide an ideal solution.

CommScope manufactures High Density Polyethylene (HDPE) conduit with factory pre-installed fiber optic cable or pull lines. Cable-in-Conduit (CIC) will provide added protection and reduce the cost of field installing cable. CommScope also offers toneable conduit, an HDPE conduit with an embedded 18 gauge copper clad steel tonewire. Toneable conduit is the ideal product to use with all-dielectric fiber optic cables. Factory pre-installed cables or pull lines are available in toneable conduit.



If installing the cable in the field is the only option, CommScope offers HDPE conduit empty or with factory pre-installed pull lines.

Feature	Benefit
• HDPE	• Provides superior protection and long term stability for underground networks
• UV Protected	• Superior protection from cracking during storage or when used as a ground riser
• Continuous Lengths	• Installs faster than traditional PVC stick pipe and eliminates the need to inventory sweeps, bends & elbows. Installation by directional bore or plow methods
• Internal Lubricant	• Reduces down time by facilitating the replacement of damaged cable and allows cable operating systems to upgrade their services with minimal expense
• Locatable	• Toneable conduit allows the system owner to locate buried assets – detectable at extended distances and depths
• Pre-installed Cables	• Eliminates the risk of damaged cables due to improper field installations saves time and labor costs associated with field installing cables




ConQuest® Conduit Pre-Installed with CommScope Fiber Drop Cables


Fiber-In-Conduit

All of CommScope's fiber cables can be pre-installed in conduit, including the Fiber Drop cables. Available in 1/2" or 3/4" and two different wall thicknesses - SDR 11 or SDR 13.5. For more information or specifications on Fiber Optic cables, please visit our website at www.commscope.com.


All-Dielectric Flat Drop in Toneable Conduit

Cable Type/ Fiber Count	Catalog Number (Description)	Cable OD & Weight (kft)	Available Conduit OD	Available Wall Thickness	Weight (lb/kft)*	
					SDR 11	SDR 13.5
 Flat Drop 1 - 12 Fibers	O-XXX-DF-8W-FZZNS Specify Conduit OD, Wall Thickness and Color	0.18" x 0.32" 28 lbs.	3/4"	SDR 11 or 13.5	185	165

Armored Drop Cable In Conduit

Cable Type/ Fiber Count	Catalog Number (Description)	Cable OD & Weight (kft)	Available Conduit OD	Available Wall Thickness	Weight (lb/kft)*	
					SDR 11	SDR 13.5
 Armored Drop 1 - 12 Fibers	O-XXX-DA-8W-FZZNS/BP	0.32" 49 lbs.	1/2" 3/4"	SDR 11 or 13.5	135 180	120 160

Toneable Flat Drop Cable In Conduit

Cable Type/ Fiber Count	Catalog Number (Description)	Cable OD & Weight (kft)	Available Conduit OD	Available Wall Thickness	Weight (lb/kft)*	
					SDR 11	SDR 13.5
 Toneable Flat Drop 1 - 12 Fibers	O-XXX-DF-HY-FZZNS/ 8WXXX/1X12AWG Specify Conduit OD, Wall Thickness and Color	0.18" x 0.40" 38 lbs.	3/4" 1"	SDR 11 or 13.5 SDR 11 or 13.6	168 242	149 207

Variables in the Catalog Number:

XXX = Total Fiber Count (maximum of 12)

ZZ = Number of Fibers per Tube

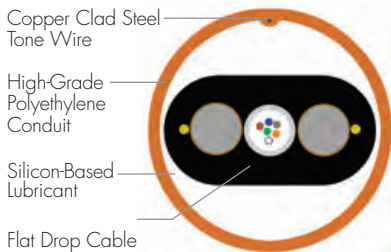
Fiber identification colors: 1/Blue, 2/Orange, 3/Green, 4/Brown, 5/Slate, 6/White, 7/Red, 8/Black, 9/Yellow, 10/Violet, 11/Rose, 12/Aqua

*Other size conduits may be available upon request.

* Weight does not include reel.

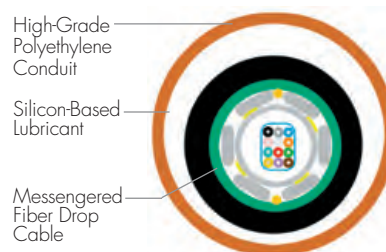
All-Dielectric Flat Drop Cable in ConQuest

Toneable Conduit
(6 Fiber Construction Shown)



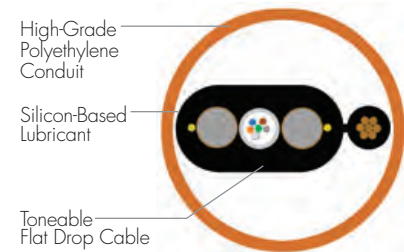
Armored Drop Cable in ConQuest Conduit

(6 Fiber Construction Shown)

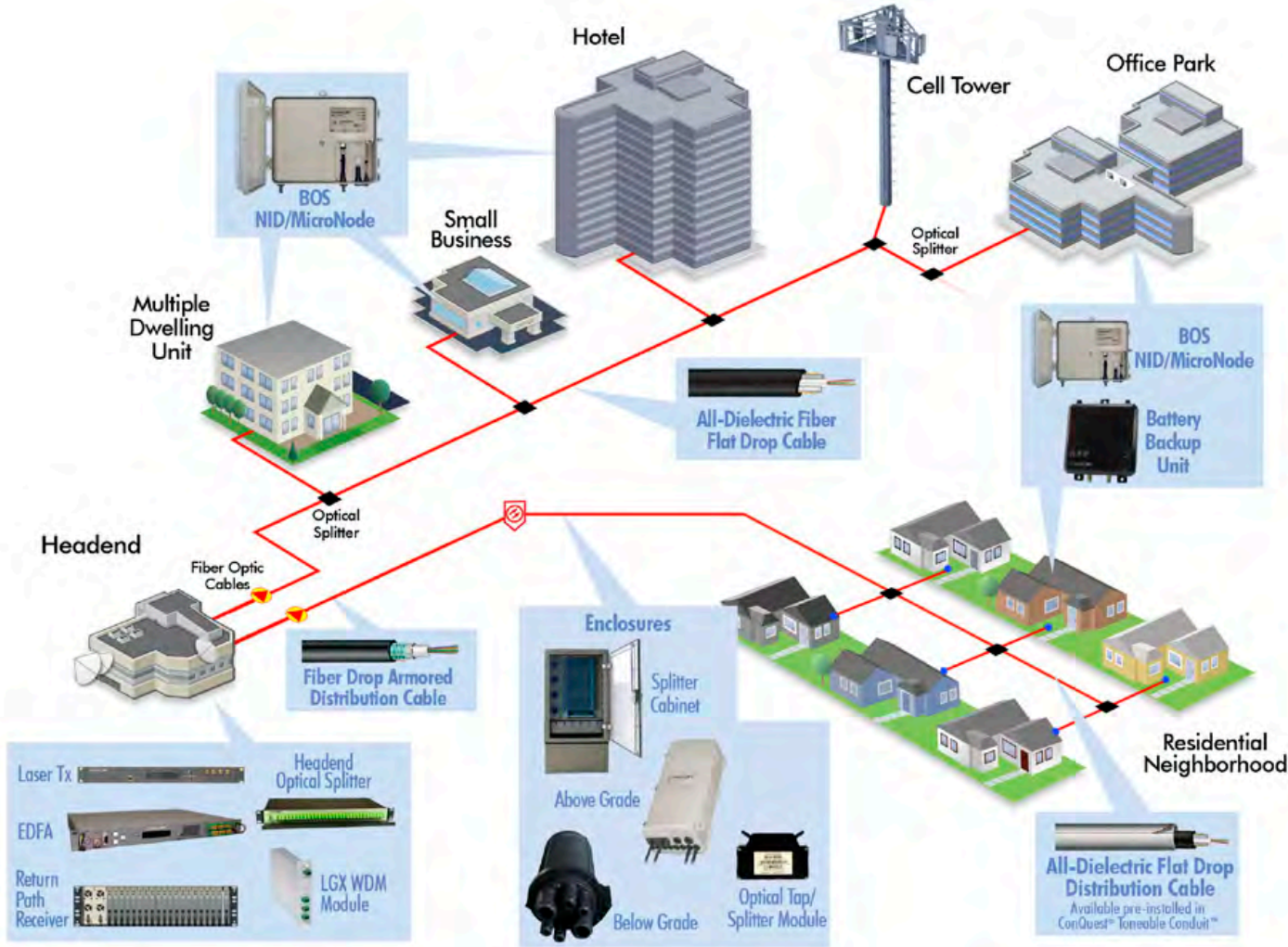


Toneable Flat Drop Cable in ConQuest Conduit

(6 Fiber Construction Shown)



Drawings are not to scale
Specifications are subject to change without notice







www.commscope.com

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