Introduction to Clearview®

Cassettes and xPAK

At the heart of everything we do is our patented Clearview Cassette. Clearview Cassette products offer a unique, single-architecture, modular fiber management platform designed to lower the cost of broadband deployment and maintenance. This is accomplished by consolidating, protecting and distributing incoming and outgoing fiber circuits, allowing our customers to scale their operations as their subscriber revenues increase.

Clearview Blue and Clearview Black, are the core building block of every product within the FieldSmart® fiber management system. At Clearfield®, we believe fiber management needs to be different. Rather than using a fixed approach, we take a modular approach. Utilizing the Clearview Cassette provides our customers a scalable and flexible architecture that can take you from the CO all the way to the demarc. To accomplish this objective, fiber management should be designed from "the inside out."

FieldSmart is the only fiber management platform designed around a single architecture - the Clearview Cassette family of products. FieldSmart supports a wide range of panel and cabinet configurations, densities, connectors and adapter options for the inside plant, outside plant and access network. Customers benefit from Clearfield's innovative, scalable and modular designs that allow you to "grow-as-you-go."

Clearfield's portfolio of cassette products can be configured for various applications. Patch only, patch and splice (Clearfield's in-cassette splicing solution), MPO, plug-and-play and passive optical components.

Delivering the most scalable fiber management platform in the industry, Clearfield ensures your investment in capital equipment grows alongside your take rates. With Clearfield, deployments are quicker, required inventories are reduced and technical training is virtually eliminated.

Introduction to Clearview®
Cassettes and xPAK

The Clearview Cassette building blocks are well suited for multiple applications in both inside plant, outside plant and access environments. For inside plant environments, high density solutions save floor space, which is always a goal in a central office, headend, data center and customer premise facility. In the outside plant environments, the Clearview Cassette can be deployed in OSP cabinets, pedestals, wall boxes and the FieldSmart® Makwa™.

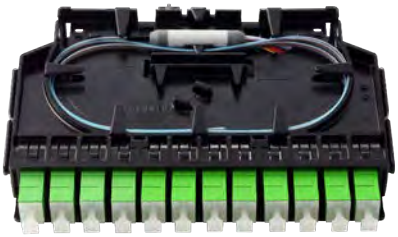
Configurations are available that support patch and splice (Clearfield's in-cassette splicing solution), patch only, MPO and optical component scenarios, allowing many different engineering configurations to be met using a single platform. A common platform used in multiple applications helps with technician training, making them ready to perform their work regardless of the installation environment. This saves time during initial installation, turn-up of new services or in critical repair situations.

Clearview Blue

The small footprint of the Clearview Blue design minimizes space requirements thereby reducing the cost of deployment. Integrated slack management and cable routing provides for superior performance with minimal risk of fiber damage. It incorporates flexibility and scalability with configuration options supporting tool-less installation, in-cassette buffer tube/ribbon slack storage and front access only designs. Reducing the overall footprint of the fiber management element reduces real estate costs and improves density without compromising critical design elements of access, bend-radius protection, physical fiber protection, and route-path diversity.

Clearview Black

The Clearview Black Cassette is Clearfield's most compact building-block technology and retains the same cost saving features of Clearfield's current generation of cassettes, including modularity and scalability in increments of 12 fibers using industry standard SC and LC singlemode connectors. In addition, critical design elements of fiber access, bend-radius protection and route-path diversity have been maintained while occupying nearly 50% less overall size. The smaller packaging allows Clearview Black to be integrated into other Clearfield solutions like the below grade, FieldSmart Makwa. Clearview Black uses a tool free, snap-in-place mounting feature. With more and more non-specialized technicians being employed in the workforce, the scalable platform that provides the ability to "grow-as-you-go" without any installation tools is increasingly valuable.



xPAK

Engineered to land small port count fiber assemblies and optical components as conveniently and inexpensively as possible, the Clearview xPAK simplifies fiber management to the level of a consumable good. Clearview xPAK is single-piece element in which all required components for fiber protection are integrated. It is shipped flat and simply folds to shape.

The Clearview xPAK is a small footprint two, four, six or 12* port cassette. The kit comes equipped with a flat cassette, adapters, 2, 4, 6 or 12* fiber 900 µm ½ meter assembly, splice sleeves, strain relief boot, grommet tape and zip ties.

** 12 port option only available as LC*

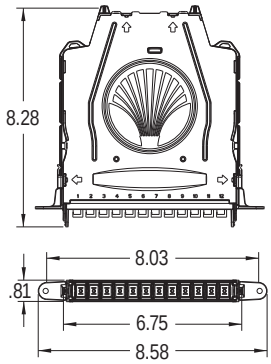
Clearview® Cassette
Clearview Blue

Application

The Clearview Blue provides 12-24 ports of connectivity, scaling one cassette at a time, for patch and splice (Clearfield's in-cassette splicing solution), patch only (stubbed) or plug-and-play (MPO/MTP) configurations in any network environment. A dual high 24 fiber Cassette offers additional splicing capacity for SC port count requirements greater than 12, utilizing the Clearview Expansion Ring to provide further flexibility and scalability within the same footprint. Dual MPO/MTP access is available on either side of the cassette. Additional optical components integrate into the cassette housing, supporting any input/output combination of splitting, mux, and demux strategies desired.

Description

Clearview Blue Cassettes are a core building block of nearly every product within the FieldSmart® fiber management system. Clearview Blue continues to incorporate flexibility and scalability, now with enhanced configuration options including tool-less installation, in-cassette buffer tube/ribbon slack storage, front access-only designs. Reducing the overall footprint of the fiber management element reduces real estate costs and improves density without compromising critical design elements of access, bend-radius protection, physical fiber protection and route-path diversity.



Clearview Blue is a six component tool-less system made up of a top cover, splice tray, buffer tube/ribbon slack storage, cable assembly tray and adapter plate. Parts snap together to support desired application requirements. All types of fiber cable construction can be integrated within the cassette to support all patch and splice, patch only, passive optical component hardware and plug-and-play scenarios.

Features and Benefits

Integrity

- Terminations are designed and tested to Telcordia GR-326
- Clearfield® FiberDeep® Guarantee: 0.2 dB insertion loss or less, exceeding industry standards
- Supports industry standard SC, LC, ST, FC and MPO/MTP singlemode and multimode connectors
- Supports all fiber construction types (distribution, tight-buffer, loose tube and ribbon)
- Modular and scalable

Protection

- Designed to handle the toughest operating environments, provides flexibility and reliable performance
- Slack stored, bend-radius protected and secured against accidental physical damage from handling
- Integrated buffer tube storage removes the need for traditional slack storage baskets, reels and troughs and aligns individual buffer tube to the cassette

Access

- Tool-less, snap together design makes turn-up time even faster
- Eight buffer tube/cable entry/exit paths allow the technician a high degree of flexibility in deployment
- Ability to store 10 feet of exposed buffer tube in the in-cassette buffer tube storage
- Translucent housing provides quick visual inspection, while removable adapter plate allows for easy front access for maintenance, cleaning and troubleshooting
- Front-access to pre-terminated assemblies with Clearview removable adapter plate
- Integrated in-cassette buffer tube slack storage aligns slack to individual cassettes maximizing density by reducing real estate requirements

Investment

- "Grow-as-you-go"
- Scalable (increments of 12) building block to align capital expenditures to customer take rates
- Modular design allows ports to be configured to user-defined application requirements
- 25% smaller footprint than Clearview Classic, coupled with integrated buffer tube storage, allows for more density within all application environments
- Patch and splice integrated splice tray removes need for a separate chassis space or splice enclosure reducing the required real estate

Clearview® Cassette
Clearview Blue

Technical Specifications

Clearview Blue Cassette	
Dimensions	Without Mounting Ears: 0.81" H x 6.03" W x 8.28" D With Mounting Ears: 0.81" H x 8.66" W x 8.28" D
Ratings	Terminations are designed and tested to Telcordia GR-326; Tested to GR-63 NEBS 3 and UL 94 V-0; Clearfield® FiberDeep® Guarantee: 0.2 dB insertion loss or less, exceeding industry standards.
Backwards Compatible	Optional mounting ears for backwards compatible to FieldSmart® Inside plant (FxDS), OSP and access product lines
Material	Polycarbonate
Connector Types	Supports industry standard SC, LC, ST, FC and MPO/MTP singlemode and multimode connectors
Meters/Feet of Slack Storage	Up to 10 feet of buffer tube storage in the bottom of the cassette; one meter of 250 µm used for internal splicing for patch and splice (Clearfield's in-cassette splicing solution)
Mounting Options	Clearview Building Block or Clearview Mounting Ears

Cassette Configuration Options

Patch and Splice

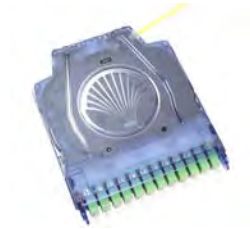
The Patch and Splice cassette has a splice tray that nests into the lower tray allowing integrated splicing directly in the cassette. The integrated splice tray eliminates the need for dedicated splice chassis space thus reducing real estate. The cassette provides 12 ports of connectivity with the ability to scale one cassette at a time. Utilizing the dual snap-in splice chip option you add an additional 12 splices for a total of 24 splices in one cassette (LC connectors). The 24 port expansion cassette doubles the height and allows 24 splices in a 2 high cassette (SC connectors). Cassettes are pre-loaded with a one meter, 250 µm fiber assembly, loose tube or ribbon, which is pre-terminated and slack stored inside the cassette. Additionally, in the bottom of the cassette, there is an area to house up to 10 feet of buffer tube storage with eight cable entry/exit locations for the maximum in flexibility.

Patch and Splice - 1 high

Patch and Splice - 2 high

Patch Only

Regardless of the industry standard adapters or cable construction, the Clearview Blue handles all patch only applications using the lower tray, top cover, built in radius limiter and removable adapter plate. A patch only cassette can be configured with most industry standard adapters and cable types.



Optical Components

Clearview Blue integrates optical components into the identical cassette, allowing service providers to mix and match fiber modules with optical components in the same chassis. The front faceplate is secured to reduce chance of accidental damage to the optical component.

MPO Plug and Play

MPO to industry standard connector allows for plug-and-play by mating MPO to MPO with pre-terminated multi-fiber OSP or IFC. Also available in dual MPO 24-fiber configuration.

Clearview® Cassette
Clearview Blue

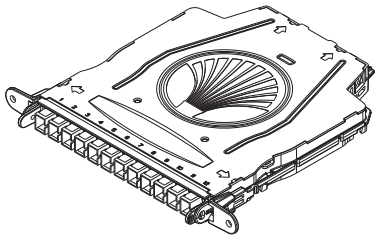
Pre-Configured Part Numbers

Patch and Splice - 12 Port With Mounting Ears

Part Number	Description
EPZ-012-A1F-SUB	FieldSmart® loose tube, patch and splice Clearview Blue Cassette, loaded with 12 SC/UPC adapters, singlemode, mounting ears included, black
EPZ-012-A2F-SUB	FieldSmart ribbon, patch and splice Clearview Blue Cassette, loaded with 12 SC/UPC adapters, singlemode, mounting ears included
EPZ-012-C1F-SUB	FieldSmart loose tube, patch and splice Clearview Blue Cassette, loaded with 12 SC/APC adapters, singlemode, mounting ears included
EPZ-012-C2F-SUB	FieldSmart ribbon, patch and splice Clearview Blue Cassette, loaded with 12 SC/APC adapters, singlemode, mounting ears included
EPZ-012-F1F-SUB	FieldSmart loose tube, patch and splice Clearview Blue Cassette, loaded with 12 LC/UPC adapters, singlemode, mounting ears included
EPZ-012-F2F-SUB	FieldSmart ribbon, patch and splice Clearview Blue Cassette, loaded with 12 LC/UPC adapters, singlemode, mounting ears included
EPZ-012-H1F-SUB	FieldSmart loose tube, patch and splice Clearview Blue Cassette, loaded with 12 LC/APC adapters, singlemode, mounting ears included
EPZ-012-H2F-SUB	FieldSmart ribbon, patch and splice Clearview Blue Cassette, loaded with 12 LC/APC adapters, singlemode, mounting ears included

Patch and Splice - 12 Port Without Mounting Ears

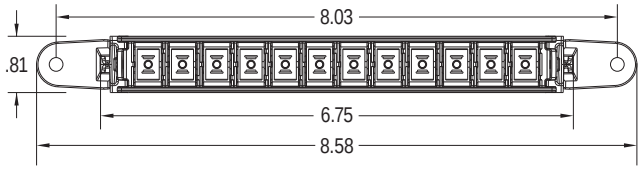
Part Number	Description
EMZ-012-A1F-SUB	FieldSmart loose tube, patch and splice Clearview Blue Cassette, FxHD frame system, loaded with 12 SC/UPC adapters, singlemode, no mounting ears included, used for HD frame
EMZ-012-A2F-SUB	FieldSmart ribbon, patch and splice Clearview Blue Cassette, FxHD frame system, loaded with 12 SC/UPC adapters, singlemode, no mounting ears included, used for HD frame
EMZ-012-C1F-SUB	FieldSmart loose tube, patch and splice Clearview Blue Cassette, FxHD frame system, loaded with 12 SC/APC adapters, singlemode, no mounting ears included, used for HD frame
EMZ-012-C2F-SUB	FieldSmart ribbon, patch and splice Clearview Blue Cassette, FxHD frame system, loaded with 12 SC/APC adapters, singlemode, no mounting ears included, used for HD frame
EMZ-012-F1F-SUB	FieldSmart loose tube, patch and splice Clearview Blue Cassette, FxHD frame system, loaded with 12 LC/UPC adapters, singlemode, no mounting ears included , used for HD frame
EMZ-012-F2F-SUB	FieldSmart ribbon, patch and splice Clearview Blue Cassette, FxHD frame system, loaded with 12 LC/UPC adapters, singlemode, no mounting ears included, used for HD frame
EMZ-012-H1F-SUB	FieldSmart loose tube, patch and splice Clearview Blue Cassette, FxHD frame system, loaded with 12 LC/APC adapters, singlemode, no mounting ears included, used for HD frame
EMZ-012-H2F-SUB	FieldSmart ribbon, patch and splice Clearview Blue Cassette, FxHD frame system, loaded with 12 LC/APC adapters, singlemode, no mounting ears included, used for HD frame



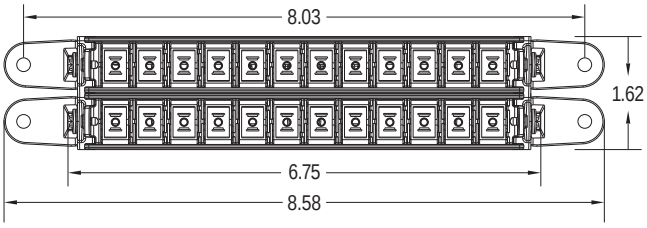
Clearview® Cassette
Clearview Blue

Patch and Splice - 24 Port With Mounting Ears

Part Number	Description
EPZ-024-A1F-SUB	FieldSmart® loose tube, patch and splice Clearview Blue Cassette, 2 high, loaded with 24 SC/UPC adapters, singlemode, mounting ears included
EPZ-024-A2F-SUB	FieldSmart ribbon, patch and splice Clearview Blue Cassette, 2 high, loaded with 24 SC/UPC adapters, singlemode, mounting ears included
EPZ-024-C1F-SUB	FieldSmart loose tube, patch and splice Clearview Blue Cassette, 2 high, loaded with 24 SC/APC adapters, singlemode, mounting ears included
EPZ-024-C2F-SUB	FieldSmart ribbon, patch and splice Clearview Blue Cassette, 2 high, loaded with 24 SC/APC adapters, singlemode, mounting ears included
EPZ-024-F1F-SUB	FieldSmart loose tube, patch and splice high density Clearview Blue Cassette, 1 high, loaded with 24 LC/UPC adapters, singlemode, mounting ears included
EPZ-024-F2F-SUB	FieldSmart ribbon patch and splice Clearview Blue Cassette, high density, 1 high, loaded with 24 LC/UPC adapters, singlemode, mounting ears included
EPZ-024-H1F-SUB	FieldSmart patch and splice high density Clearview Blue Cassette, 1 high, loaded with 24 LC/APC adapters, singlemode, mounting ears included
EPZ-024-H2F-SUB	FieldSmart ribbon, patch and splice high density Clearview Blue Cassette, 1 high, loaded with 24 LC/APC adapters, singlemode, mounting ears included



One Cassette High



Two Cassettes High

Clearview® Cassette
Clearview Blue

Configured Part Numbers

Patch Only

E ____ ____ - ____ ____ ____ - ____ ____ ____ XXXM or XXXF

1 2 3 4 5 6

1 Select Cassette Style

K = Patch only (without mounting ears)
R = Patch only (with mounting ears)

2 Cable Exit

R = Right
L = Left

3 Select Port Count

012 = 12
024 = 24
048 = 48
072 = 72
096 = 96
144 = 144

4 Select Connector Style

A = SC/UPC
C = SC/APC
F = LC/UPC
H = LC/APC
J = FC/UPC
K = FC/APC
M = ST/UPC

5 Select Mode / Type

1 = Singlemode – loose tube
2 = Singlemode – ribbon
3 = Multimode (62.5)

6 Select Cable Construction

A = Indoor riser rated
B = OSP riser rated
C = Indoor, plenum rated
E = OSP (non-rated)
M = OSP (armored)
T = FLATdrop, non-toneable
U = FLATdrop toneable
W = FieldShield

XXXM or XXXF

XXXM = Length in meters
XXXF = Length in feet

MPO Plug and Play

E ____ ____ - ____ ____ ____ - ____ ____ ____ XXXM or XXXF

1 2 3 4 5 6

1 Select Cassette Style

N = MPO breakout (without mounting ears)
U = MPO breakout (mounting ears)

2 Cable Exit

R = Right
L = Left

3 Select Port Count

012 = 12

Call Clearfield for ordering any port count above 12

4 Select Connector Style

A = SC/UPC
C = SC/APC
F = LC/UPC
H = LC/APC
J = FC/UPC
K = FC/APC
M = ST/UPC

5 Select Mode / Type

1 = Singlemode – loose tube
2 = Singlemode – ribbon
3 = Multimode (62.5)
5 = Multimode (50)
7 = Multimode (50) LO – OM3
9 = Multimode (50) LO – OM4

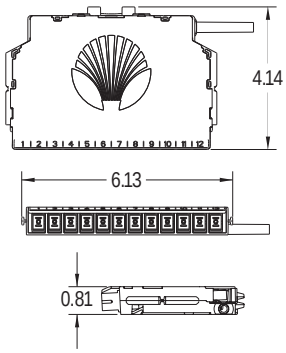
6 Select Cable Construction

F = MPO

Clearview® Cassette
Clearview Black

Application

Clearview Black provides 12 to 24 ports of connectivity for patch and splice (Clearfield's in-cassette splicing solution), patch only and plug-and-play (MPO/MTP) configurations in any network environment. It scales and multiplies to meet your specific port density and application needs. Additionally, optical components integrate into the cassette, supporting any input/output combination of splitting or mux and demux strategy desired. The Clearview Black Cassette is available in ribbon only.



Description

Clearview Black incorporates the same flexibility and scalability of both the Clearview Classic and Clearview Blue in a 50% smaller footprint than the Clearview Blue. Decreasing the overall footprint of the fiber management element reduces real estate costs and improves density without compromising critical design elements of access, bend-radius protection, physical fiber protection and route-path diversity.

Clearview Black is a three component tool-less system made up of a top cover, base/splice tray and splice tray cover. Parts snap together to support the desired application requirements. All types of fiber cable construction can be integrated within the cassette to support all patch and splice, patch only, plug-and-play, and passive optical component hardware scenarios.

Each patch and splice cassette comes prepared for mass fusion splicing, with one meter of ribbonized 250 µm fiber preloaded and prepped to splice. Each ribbonizing jig aligns and secures the loose tube fibers into correct color code order, allowing ribbonizing to be completed quickly and easily.

For patch only configurations, the pre-terminated length of OSP or IFC cable is pre-loaded within the Clearview Black Cassette. The cassettes are then preloaded into the FieldSmart® product when shipped.

Features and Benefits

Integrity

- Terminations are designed and tested to Telcordia GR-326
- Clearfield® FiberDeep® Guarantee: 0.2 dB insertion loss or less, exceeding industry standards
- Supports industry standard SC and LC singlemode and multimode connectors
- Supports all fiber construction types - patch and splice must be ribbonized
- Modular and scalable

Protection

- Designed to handle the toughest operating environments, provides flexibility and reliable performance
- Slack stored, bend-radius protected and secured against accidental physical damage from handling

Access

- Tool-less, snap together design makes turn-up time even faster
- Two buffer tube/cable entry/exit paths allow the technician a high degree of flexibility in deployment
- Front-access to pre-terminated assemblies with Clearview removable lid
- Ribbonizing allows quicker troubleshooting and restoration of affected fibers, as 12 fibers are ribbonized only where the splicing needs to occur, providing single-circuit access if necessary

Investment

- "Grow-as-you-go"
- Scalable (increments of 12 ports) building block to align capital expenditures to customer take rates
- Modular design allows ports to be configured to user-defined application requirements
- Patch and splice - integrated splice tray removes the need for a separate splice enclosure/cases
- 50% smaller footprint than Clearview Blue allows for more density within all application environments
- Patch and splice integrated splice tray removes need for a separate chassis space or splice enclosure reducing the required real estate
- Ribbonizing loose tube cable allows for mass-fusion of up to 12 fibers at a time, reducing installation time and costs
- Brackets for 19" and 23" frames

Clearview® Cassette
Clearview Black

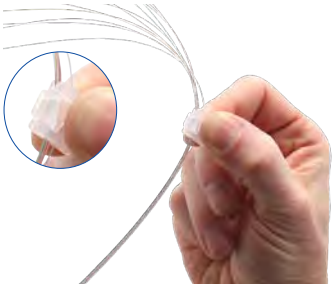
Cassette Configuration Options

Patch Only
Regardless of the industry standard adapters or cable construction, the Clearview Black handles all patch only applications using the lower tray, top cover and built in radius limiter.

Patch and Splice (Clearfield's In-Cassette Splicing Solution)
The splice tray that is molded into the lower tray is all that is needed to deliver integrated patch and splice applications. Pre-loaded with up to one meter of ribbon, 250 µm assemblies that are per-terminated with slack stored inside the cassette for splicing.

Optical Components
Clearview integrates optical components into the identical cassette, allowing service providers to mix and match fiber modules with optical components in the same chassis.

MPO Plug and Play
MPO to industry standard connectors allows for plug-and-play by mating MPO to MPO with pre-terminated multi-fiber OSP or IFC.



Clearview Ribbonizing Tool
Ribbonizing allows quicker troubleshooting and restoration of affected fibers, as 12-fibers are ribbonized only where the splicing needs to occur, providing single-circuit access as necessary. Each ribbonizing tool aligns and secures the loose-tube fibers in correct color code order, allowing ribbonizing to be completed quickly and easily. Clearfield's disposable ribbonizing tool efficiently organizes and prepares loose tube fibers to facilitate mass fusion splicing.

Clearview® Cassette
Clearview Black

Technical Specifications

Clearview Black Cassette	
Dimensions	0.81” H x 6.13” W x 4.14” D
Ratings	Terminations are designed and tested to Telcordia GR-326; Clearfield® FiberDeep® Guarantee: 0.2 dB insertion loss or less, exceeding industry standards
Backwards Compatible	N/A
Material	Polycarbonate
Connector Types	Supports industry standard SC and LC singlemode connectors
Meters/Feet of Slack Storage	1 meter of 250 µm used for internal ribbon splicing only
Mounting Options	Used with FieldSmart® BLG Pivot Bracket

Pre-Configured Part Numbers

Part Number	Description
E1Z-012-A2F-SUB	FieldSmart® ribbon, patch and splice Clearview Black Cassette, loaded with SC/UPC adapters, singlemode
E1Z-012-C2F-SUB	FieldSmart ribbon, patch and splice Clearview Black Cassette, loaded with SC/APC adapters, singlemode
E1Z-012-F2F-SUB	FieldSmart ribbon, patch and splice Clearview Black Cassette, loaded with LC/UPC adapters, singlemode
E1Z-012-H2F-SUB	FieldSmart ribbon, patch and splice Clearview Black Cassette, loaded with LC/APC adapters, singlemode
E1Z-024-F2F-BLACK-SUB	FieldSmart ribbon, patch and splice Clearview Black Cassette, high density, loaded with 24 LC/UPC adapters, singlemode
E1Z-024-H2F-BLACK-SUB	FieldSmart ribbon, patch and splice Clearview Black Cassette, high density, loaded with 24 LC/APC adapters, singlemode
FMA-RIBBONIZE-KIT-12	Kit, Clearview Ribbonizing Tool, pack of 12

Configured Part Numbers

E ___ ___ - ___ ___ ___ - ___ ___ ___ XXXM or XXXF

1 2 3 4 5 6

1 Select Cassette Style

1 = Patch and splice
2 = Patch only
3 = MPO breakout

2 Cable Exit

R = Right
L = Left
Z = None

3 Select Port Count

012 = 12
024 = 24

4 Select Connector Style

A = SC/UPC
C = SC/APC
F = LC/UPC
H = LC/APC

5 Select Mode / Type

1 = Singlemode – loose tube
2 = Singlemode – ribbon

6 Select Cable Construction

A = Indoor riser rated
B = OSP riser rated
C = Indoor, plenum rated
E = OSP (non-rated)
F = Patch and splice cassettes
M = OSP (armored)
W = FieldShield

XXXM or XXXF

XXXM = Length in meters
XXXF = Length in feet

Clearview® Cassette
xPAK

Application

Engineered to land small port count fiber assemblies and optical components as conveniently and inexpensively as possible, the xPAK simplifies fiber management to the level of a consumable good. Clearview xPAK can be deployed as a stand-alone device, or with FieldSmart® Fiber Deliver Point (FDP) products for a wide range of network environments.

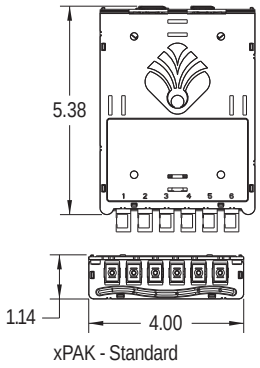
Description

At first glance, Clearview xPAK looks like any other LGX compatible package, but upon closer inspection, technicians will see a new generation of innovation in the delivery of terminated fiber assemblies. Clearview xPAK is single-piece element in which all required components for fiber protection are integrated. It is shipped flat and simply folds to shape.

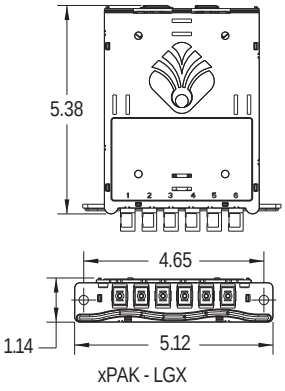
The Clearview xPAK supports two, four or six ports of patch and splice (Clearfield's in-cassette splicing solution) configurations. The compact 4" x 5" solution is perfect for landing small count terminations at the fiber delivery point. The kit comes with everything you'll need: flat cassette, adapters, 2, 4 or 6-fiber 900 µm ½ meter assembly, splice sleeves, strain relief boot, grommet tape, zip ties and universal mounting bracket.

Priced to allow field personnel to carry quantities of Clearview xPAK Cassettes in the field, xPAK is shipped flat and unassembled. At the deployment site, the technician will take the xPAK device, and following pictorial user instructions, will assemble the device to match his field requirements. Integrated into the footprint of the device, is an industry-compatible splicing tray, which is then surrounded with fiber protection elements that support either a two, four or six port fiber assembly as well as a range of optical component devices.

Clearview xPAK is the ideal fiber management device when up to six fibers (or us to 12 LC) are landed or an optical component device is deployed in a remote location. Application environments include cell backhaul, business class service delivery, node segmentation, fiber exhaust in a field pedestal, sub-station turn-up or fiber-to-the-desk deployment.



xPAK - Standard



xPAK - LGX

Features and Benefits

Integrity

- Terminations are designed and tested to Telcordia GR-326
- Clearfield® FiberDeep® Guarantee: 0.2 dB insertion loss or less, exceeding industry standards
- Supports industry standard SC, LC, ST, FC and MPO/MTP singlemode and multimode connectors
- 100% performance tested for insertion loss, return loss and final mechanical inspect

Protection

- Radius protected storage for up to ½ meter of 900 µm jacketed fibers
- Durable polypropylene construction (impact plastic)
- Integrated fiber management protects fiber from micro-bend and macro-bend damage

Access

- Small design facilitates ease of use in crowded environments
- Easy assembly - no tools required
- Front: 6 SC ports; Rear: 1 SC port or 1 MPO/MTP
- 9 SC port faceplate available

Investment

- Pre-configured/factory loaded, patch only factory terminated assemblies
- Patch and splice
- LGX compatible flange mount
- Wall mount capable
- One piece construction with "living hinge"
- Supports optional component integration
- Plug and play with MPO configurations

Clearview® Cassette
xPAK

Technical Specifications

Clearview xPAK	
Dimensions	1.14” H x 4” W x 5.38” D
Ratings	Terminations are designed and tested to Telcordia GR-326; Clearfield® FiberDeep® Guarantee: 0.2 dB insertion loss or less, exceeding industry standards
Backwards Compatible	N/A
Material	Durable polypropylene (impact plastic)
Connector Types	Supports industry standard SC, LC, ST, FC and MPO singlemode and multimode connectors
Meters/Feet of Slack Storage	½ meter of 900 µm tight buffer fiber used for internal splicing, 12-fiber xPAK requires ribbon splicing
Mounting Options	Standard faceplate and LGX faceplate

Cassette Configuration Options

Patch and Splice (Clearfield’s In-Cassette Splicing Solution)
The 6-fiber splice tray molded into the xPAK tray is all that is needed to deliver an integrated patch and splice application. 2, 4 or 6-fiber 900 µm ½ meter assemblies are pre-terminated, pre-loaded and slack stored inside the xPAK ready for splicing.

Patch Only
Regardless of the industry standard adapter or cable construction, the pre-terminated length of OSP or IFC cable is pre-loaded within Clearview xPAK for patch only configurations.

MPO Plug-and-Play
MPO to industry standard connectors allows for plug-and-play by mating MPO to MPO with pre-terminated multi-fiber OSP or IFC.

Optical Components
Optical components can be integrated into the Clearview xPAK.

Clearview® Cassette
xPAK

CLEARFIELD

Pre-Configured Part Numbers

Connector Type	2 Port	4 Port	6 Port	12 Port
SC/UPC	2PAK-SC	4PAK-SC	6PAK-SC	N/A
SC/APC	2PAK-SCA	4PAK-SCA	6PAK-SCA	N/A
LC/UPC	2PAK-LC	4PAK-LC	6PAK-LC	12PAK-LC-01 (Ribbon)
LC/APC	2PAK-LCA	4PAK-LCA	6PAK-LCA	12PAK-LCA-01 (Ribbon)

Configured Part Numbers

E ____ ____ - ____ ____ ____ - ____ 1 ____ XXXM or XXXF

[1] [2] [3] [4] [5]

[1] Select Mounting Option

H = LGX mounting
J = Standard mounting

[2] Cable Exit

A = Side right
B = Back right
C = Side left
D = Back left

[3] Select Port Count

002 = 2
004 = 4
006 = 6
012 = 12

[4] Select Connector Style

A = SC/UPC
C = SC/APC
F = LC/UPC
M = ST/UPC
H = LC/APC
J = FC/UPC
K = FC/APC

[5] Select Cable Construction

A = Indoor riser rated
B = OSP riser rated
C = Indoor, plenum rated
E = OSP (non-rated)
F = Patch and splice cassettes
M = OSP (armored)
W = FieldShield

XXXM or XXXF

XXXM = Length in meters
XXXF = Length in feet

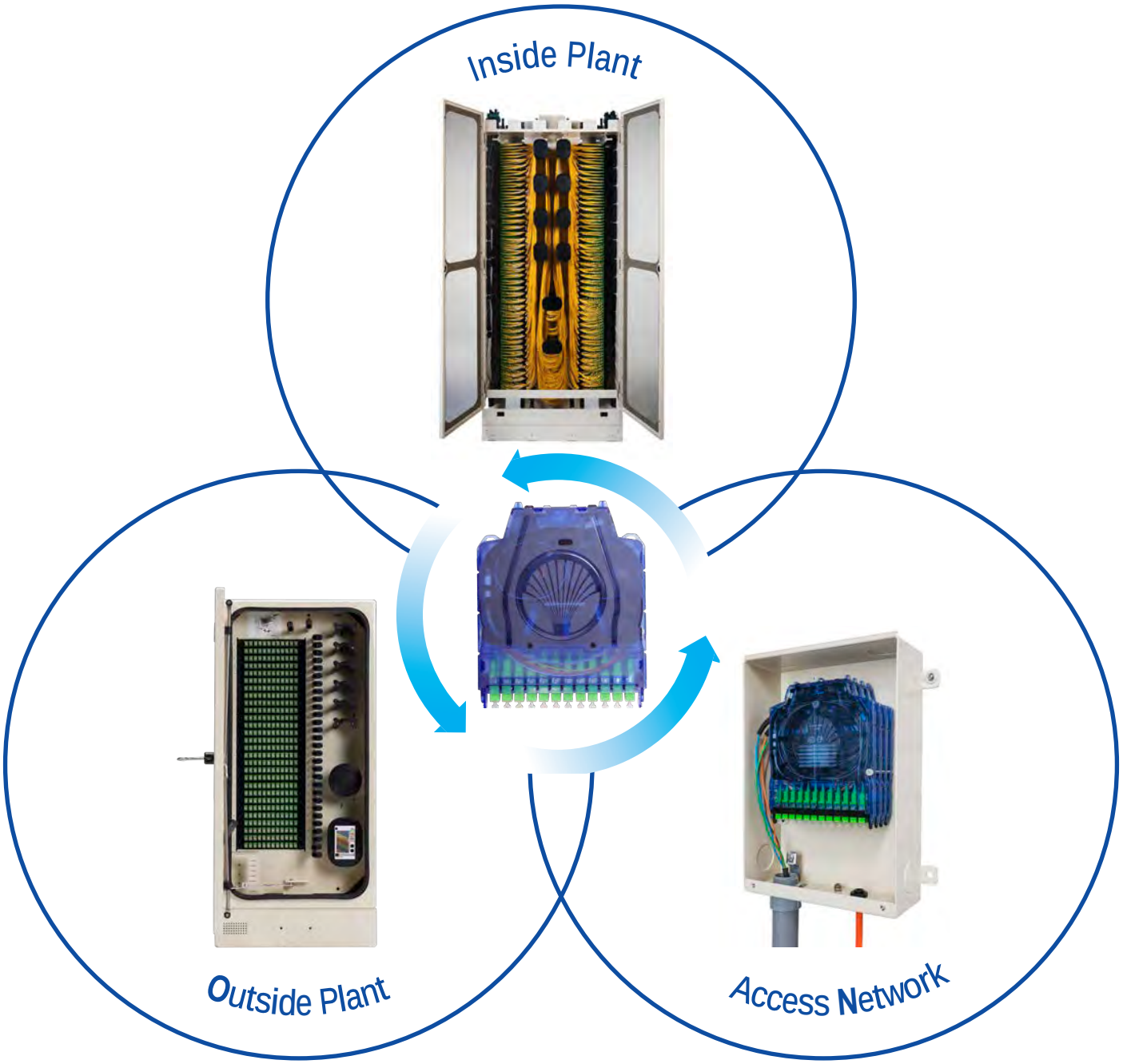
Clearview® Cassette

The Building Block Product

CLEARFIELD

The Clearview Cassette is at the heart of everything we do.

This single architecture, modular, fiber management platform is a building block for the entire FieldSmart® line of frames, panels cabinets and wall boxes. The scalability and flexibility of the cassette will provide its benefits from the Central Office or headend all the way to the final demarc.



Introduction to Inside Plant Solutions

FieldSmart® Products

FieldSmart is the only fiber management platform designed around a single architecture – the Clearview® Cassette and the small count Clearview xPAK – for inside plant networks. FieldSmart supports a wide range of panel configurations, densities, connector styles and adapter options.

Designed from the ground up with field-proven experience, the FieldSmart platform is a truly unique solution for today's rapid deployment demands. With FieldSmart, you control your capital cost, reduce operational costs and provide a consistent product platform throughout the network.

The flexibility in design and configuration of the Clearview Cassette is implemented into all of the FieldSmart products, which are well suited for multiple inside plant applications. The inside plant products provide a system of modular and scalable building blocks to configure a frame system that delivers industry-leading scalability and fiber protection without jeopardizing density or increasing cost.

The FieldSmart Fiber Crossover High Density (FxHD) System and the Fiber Crossover Distribution System (FxDS) Frame Kit are both flexible and scalable. Complete compatibility in footprint and route paths between the frames allow you to pick and choose the FxHD and FxDS for any application environment, with future migration built in. You can place an FxHD frame next to an FxDS frame and they will look the same in your lineup.

Introduction to Inside Plant Solutions
FieldSmart® Products

FieldSmart Fiber Crossover High Density (FxHD) Distribution System

Designed for the ultimate in frame density and footprint, the FxHD maximizes your real estate investment providing for a lower total cost of ownership in high density environments. Lower cost of ownership is not only realized in real estate savings but also in installation and service turn-up time, trouble shooting and restoration and MAC (moves, adds and changes) work in interconnect and cross-connect environments.

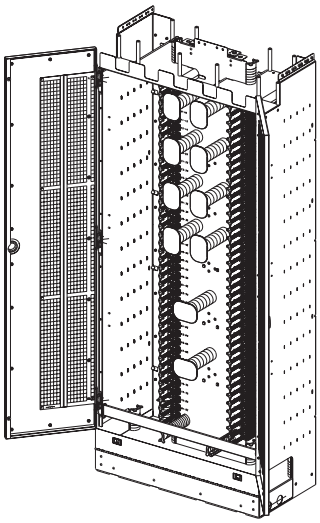
FieldSmart Fiber Crossover Distribution System (FxDS)

Designed for flexibility of configuration, the FxDS is a series of building blocks in which individual components of the system are configured to the environment in which they are placed. An industry standard 7' x 19" seismic frame is factory kitted and assembled with a set of interbay vertical slack management panels, crossover troughs and removable doors to provide for uninhibited access to routed jumpers and incoming multi-fiber cables. The FxDS requires only 4 SKU's to configure initial deployment.

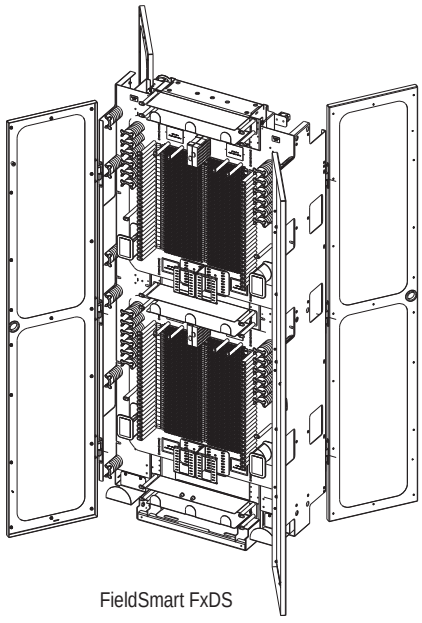
FxHD vs. FxDS Frame System Comparison

Clearfield® extends flexibility with your choice of FieldSmart frame systems. Complete compatibility in footprint and route paths between the frames allow you to pick and choose the FxHD and FxDS for the desired application environment with future migration built in.

	FxHD	FxDS
Dimensions	7' H x 36" W x 18" D	7' H x 36" W x 18" D
Recommended Applications	Large fiber count applications or any space constrained applications - highest fiber count solution available in the marketplace today	Medium to large fiber count applications
Description	Designed for density, the FxHD maximizes your real estate investment and is well suited for high density environments	Designed for flexibility of configuration, the FxDS system can be configured to multiple environments
Density Number of Terminations per Frame	2,016 SC; 4,032 LC (back-to-back mounting)	1,728 SC
All Front Access	Yes - can be deployed back to back	No - front and rear access
On-frame Splicing	Excellent - with no loss of density; splicing in Clearview® Blue Cassette	Excellent - with no loss of density; splicing in Clearview Blue Cassette
Off-frame Splicing	N/A	Excellent - using patch only Clearview Cassette
Slack Storage	Built into frame	Built into frame kit



FieldSmart FxHD

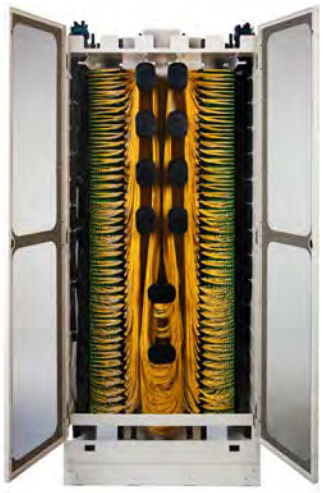


FieldSmart FxDS

FieldSmart® Fiber Crossover High Density (FxHD)
Frames

Application

With the FieldSmart FxHD front access design, Clearview® Cassettes are shifted to the outside of the frame and away from a fixed panel configuration. Instead of traditional panel configurations, the frame is configured with a series of Clearview Blue cassettes teamed with building brackets built into user-defined building blocks. The FxHD Frame provides the ultimate in modularity and flexibility to scale from 12 to 2,016 ports in any fiber count optimizing your ability to maximize fiber investment and assets. Clearview Blue's in-cassette buffer tube storage allows the FxHD to reclaim the space used for traditional panels and mass buffer storage and to redeploy it by using building blocks of Clearview Blue Cassettes.



Description

The FieldSmart High Density Fiber Crossover Distribution System (FxHD) is the highest density fiber management frame solution available in the industry today, providing 2,016 SC terminations in a 7' frame or when mounted back- to-back, FxHD supports a maximum density of 4,032 terminations in a space savings footprint of 9 square feet (36" x 36").

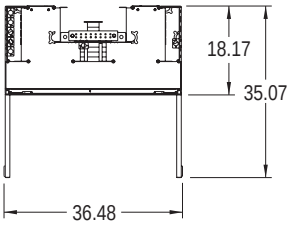
FieldSmart FxHD is an integrated fiber management solution utilizing the Clearview Blue Cassette. Designed around the same footprint as the FxDS fiber frame at 18" x 36" and utilizing the same full length doors for maximum physical fiber protection, the FxHD easily integrates alongside existing FieldSmart FxDS or other industry standard frame systems. Those deploying the FieldSmart FxHD can start with one Clearview Blue Cassette and add additional cassettes as additional capacity is needed, up to a total of 168 cassettes and 2016 ports of connectivity. This port count represents an additional 288 ports in a standard 7' frame – or a 17% increase in density over the FxDS frame solution. With instant access to all cassettes, adapters and jumpers, the frame is designed as a front access frame. This means that all of your installation, MAC (moves, adds and changes) work and routing of jumpers is done from one side of the frame providing you the option to reclaim the aisle space required for frame solutions that require rear access - and to use that space for other equipment or more frames. The FxHD can be placed against a wall, a cage in data center collocation environments or installed back to back. The FxHD frame solution provides a 40% reduction in floor space requirement while still meeting 30" aisle spacing requirements.

Designed in conjunction with Clearview Blue, the FxHD extends the Clearfield® commitment to modular and scalable solutions by introducing tech-friendly, tool-less deployment to standard building blocks. Individual components are configured to application requirements while providing bend-radius protection, physical fiber protection and route-path diversity for the consolidation and distribution of fiber.

User-defined Clearview building blocks configured to exact port count specifications can be deployed in seconds with Smart-Connect tool-less fasteners. Clearview Blue Cassettes simply slide into building block assemblies with a "hard-stop" feature ensuring perfect alignment every time. Additional buffer tube/ribbon slack is stored within each cassette eliminating buffer tube congestion, pile-up or identification miscues. The dedicated "w-shaped" intrabay route scheme ensures long term reliability of circuits by maximizing proper slack storage of any jumper length, greatly reducing the chance of jumper tie-in or weaving. Full length doors provide complete physical fiber protection when closed and instant visual and physical access to the entire frame when opened.

For scenarios where maximizing real estate is a premium, service providers may choose to deploy an FxHD front only access, allowing frames to be mounted back-to-back or against structures such as walls, existing frame equipment or building supports.

Features and Benefits



Integrity

- One frame size accommodates up to 2,016 ports or 4,032 ports when back-to-back
- Supports all industry standard singlemode and multimode connectors
- 100% performance tested for insertion loss, return loss and final mechanical inspection
- Supports distribution, tight-buffer and ribbon fiber types for inside and outside plant constructions

Protection

- Full length doors provide instant visual and physical access to the entire frame when opened and complete physical fiber protection when closed
- Complete bend-radius protection throughout all routing schemes
- Diverse route-paths minimize cable pile-up and ensure long term reliability of circuits
- Integrated "w-shaped" intrabay route scheme does not compete with adjacent frames and maximizes proper slack storage of any jumper length, greatly reducing the chance of jumper tie-in or weaving (4 meters suggested)
- Radius protected storage for up to 10 feet of buffer tube slack provided in Clearview Blue Cassette

FieldSmart® Fiber Crossover High Density (FxHD) *Frames*

Access

- FxHD is front access only to ensure maximum accessibility to achieve 2016 SC terminations or 4032 in a back-to-back frame system
- Top entry/exit through horizontal fiber trough and bottom entry through raised floors supported front and rear of frame
- Fold-down trough door allows complete access to interbay lay-in routing for 6,000 jumpers (3,000 left and 3,000 right) through the frame and adjacent frames
- A four meter jumper can get you from any port to any port
- Supports SmartRoute rear interbay troughing route-paths
- Uses Clearview® Blue Cassette front access with removable 12-pack adapter plate allowing quick and easy access to back of adapters for troubleshooting, maintenance and cleaning without disturbing live circuits in other cassettes

Investment

- Fully loaded or "grow-as-you-go" integration allows the user choices to provide for cost containment as subscriber take-rates dictate
- Compatible alongside FxDS frame line up as well as traditional 19" or 23" frame solutions
- Pre-configured/pre-loaded factory terminated assemblies
- Custom configured with standard building blocks supporting all application environments
- Patch and splice (Clearfield's in-cassette splicing solution), patch only and plug-and-play configurations supported

Technical Specifications

FieldSmart FxHD Frames	
Dimensions	7' H x 36" W x 18" D
Ratings	Compliant to Telcordia GR-449
Port Density	2,016 SC or 4,032 LC (front access only, back-to-back mounting)
Cassette Types Supported	Clearview Blue
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC, MPO (additional options available upon request)
Cable Types	Indoor Riser, Indoor Plenum, Indoor/Outdoor, Outdoor (Riser/Non-Rated), Outdoor Armored (Riser/Non-Rated), FieldShield®
Splice Capacity	12 splices in each Clearview Cassette
Storage Capacity	One meter of 900 µm fiber and up to three meters of jacketed fiber
Cable Entry Compatibility	Top and bottom (floor) entry
Cable Entry Clamp Location	16 (eight left, eight right) *Note: Center clamping compatible for left and right same sheath distribution of buffer tubes/sub units*
Recommended Jumper Length	Four meters, plus two meters for each additional frame
Material	Stainless steel with almond powder coating

Pre-Configured Part Numbers

Part Number	Description
014602-PATCH AND SPLICE	FxHD kit, patch and splice, front access only, maximum 2,016 ports (includes built in fiber management and cassette mounting brackets, doors, iso pad, floor mount kit)
014602-PATCH ONLY	FxHD kit, patch only, front access only, maximum 2,016 ports (includes built in fiber management, two doors, iso pad, floor mount kit)
014743	FxHD 576 port PON Insert (Select one of the following part numbers for feeder ports.)
FMA-XXX-68	FxHD Tie Panel Bulkhead - four 24 port - SC/UPC SM, two left and two right
FMA-XXX-69	FxHD Tie Panel Bulkhead - four 24 port - SC/APC SM, two left and two right
FMA-XXX-70	FxHD Tie Panel Bulkhead - four 24 port - LC/UPC SM, two left and two right

FieldSmart® Fiber Crossover High Density (FxHD)
Tie Panel

Application

Provides an in the field configured interconnect or cross-connect environment for 12 to 2,016 ports of high density fiber in the central office and headend environments.

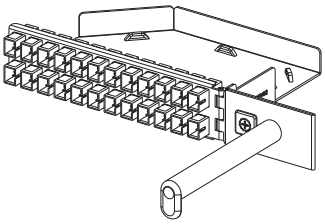
Description

The FieldSmart FxHD Tie Panel is a high density, low-maintenance fiber distribution system exclusively for the FxHD frame system. Tie panels are intelligently designed to provide the user with superior fiber access while using craft-friendly radius protected fiber management for routing and deploying fiber jumpers or multi-fiber cables, on both sides of the adapter plate for cross-connect environments.

Features and Benefits

Integrity
- Terminations are designed and tested to Telcordia GR-326
- Supports all industry standard singlemode and multimode connectors and cabling

Protection
- Ruggedized hinged bulkhead
- Cable clamp protects against twisting and pistoning at the assembly breakout point



Access
- Front access frame system
- Front and rear access via hinged bulkhead

Investment
- Panel sizes available in 24 ports
- "Grow-as-you-go" integration allows the user choices to provide for cost containment as subscriber take-rates dictate
- Industry-leading density, 2,016 ports in a 7' FxHD frame system

Technical Specifications

FieldSmart FxHD Tie Panel	
Dimensions	1.6" H x 6.96" W x 5.39" D
Port Density	24
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC, MPO (additional options available upon request)
Cable Types	Indoor Riser, Indoor Plenum, Indoor/Outdoor, Outdoor (Riser/Non-Rated), Outdoor Armored (Riser/Non-Rated), FieldShield®
Material	Aluminum with almond powder coating

Accessories

- Frame Clamp Kit: Includes clamps and grommets (008140)

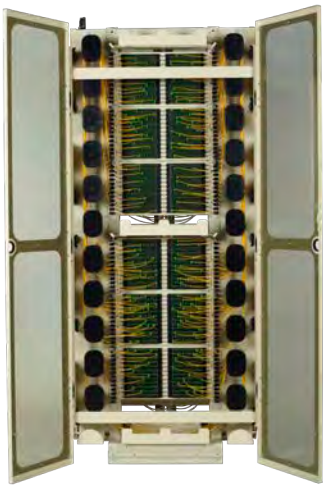
Pre-Configured Part Numbers

Part Number	Description	
FMA-XXX-74	Left tie plate - looking from the front.	24 x SC/UPC singlemode
FMA-XXX-77	Right tie plate - looking from the front.	24 x SC/UPC singlemode
FMA-XXX-75	Left tie plate - looking from the front.	24 x SC/APC singlemode
FMA-XXX-78	Right tie plate - looking from the front.	24 x SC/APC singlemode
FMA-XXX-73	Left tie plate - looking from the front.	24 x LC/UPC singlemode
FMA-XXX-76	Right tie plate - looking from the front.	24 x LC/UPC singlemode

FieldSmart® Fiber Crossover Distribution System (FxDS)
Frame Kit

Application

The FxDS Frame Kit is a fully contained fiber management system for the inside plant. The seven foot seismic frame is provided along with full length front and rear doors that provide protection for termination fields, incoming distribution cables and interbay routed jumpers. When used in conjunction with the FxDS panels, ultimate density and protection is offered at "grow-as-you-go" cost.



Description

The FieldSmart Fiber Crossover Distribution System (FxDS) provides a system of modular and scalable building blocks to configure a frame system that delivers industry-leading scalability and fiber protection without jeopardizing density or increasing cost.

The FxDS system easily configures for panel placement and scales simply from 12 ports to a full rack of 1,728 ports as needed. The FieldSmart FxDS requires only four unique building blocks (SKUs) to configure initial deployment. The user then adds into the frame whatever is needed as subscriber take rates dictate. The FxDS Frame Kit is an industry standard 7' x 19" seismic frame that is easily assembled with a set of vertical interbay slack management panels, two upper and lower crossover troughs and a set of removable doors.

With SmartRoute Trough

SmartRoute Troughing builds upon the cable management functionality with a sleek method of providing a continuous channel for bay-to-bay routing in a safe and efficient manner without increasing jumper lengths. SmartRoute Troughing allows the service provider to carry the distance and weight of thousands of jumpers on a horizontal plane. This spreads the pile up and eliminates the risk of micro and macro bends. When used across multiple frames, up to three continuous channels are created allowing bay-to-any-bay routing in a safe and efficient manner.

With PON Kit

Front route troughs are available when the frame is deployed with a PON Kit or for environments where interbay routes are not anticipated.

Features and Benefits

Integrity

- Compliant to Telcordia GR-449
- Zone 4 Seismic Rated
- Scales easily from 12 ports to 1,728 ports on a full frame
- Easily configured for initial placement

Protection

- Complete bend-radius protection of all fiber cable throughout the routing schemes
- Diverse route-paths minimize cable pile-up and ensure long term reliability of the circuits

Access

- Front and rear access
- Interbay for each frame is not shared with adjacent frames. Minimizes cable crossover and tie-ins, allowing for easy identification
- Removable full length doors allow for superior access to routed jumpers and incoming distribution cables

Investment

- One frame size (7' x 19") accommodates up to 1,728 ports or 1,152 ports in a PON environment, with full horizontal and vertical slack management support
- Compatible with Clearview® optical component packaging that integrates into crossover bulkheads, eliminating the need to dedicate a separate chassis
- Fully loaded or "grow-as-you-go" integrations allow the user choices to provide for cost containment as subscriber take-rates dictate
- Frame components are used throughout the network from inside plant to outside plant to access networks
- Custom configured with common building blocks, it supports any and all applications

FieldSmart® Fiber Crossover Distribution System (FxDS)
Frame Kit

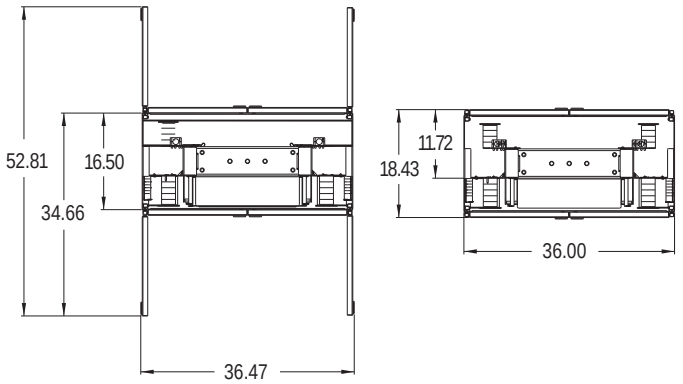
CLEARFIELD

Technical Specifications

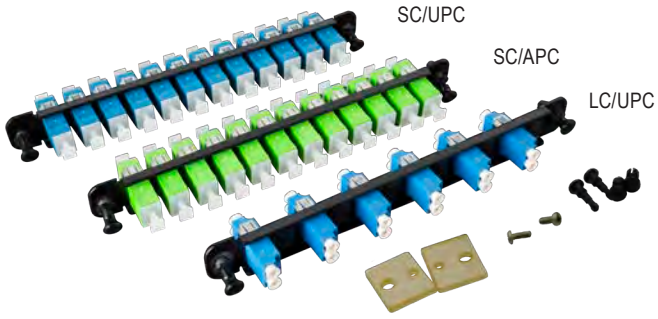
FieldSmart FxDS Frame Kit	
Dimensions	7’ H x 36” W x 18” D
Ratings	Compliant to Telcordia GR-449
Port Density	1,728 SC or 3,456 LC
Cassette Types Supported	Clearview® Blue
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC, MPO (additional options available upon request)
Cable Types	Indoor Riser, Indoor Plenum, Indoor/Outdoor, Outdoor (Riser/Non-Rated), Outdoor Armored (Riser/Non-Rated), FieldShield®
Splice Capacity	12 splices in each Clearview Cassette
Storage Capacity	One meter of 900 µm fiber
Cable Entry Compatibility	Top and bottom (floor) entry
Cable Entry Clamp Location	On-frame cable clamps *Note: On-frame cable clamps included with FxDS Patch Panels*
Recommended Jumper Length	Three meters, plus two meters for each additional frame
Material	Steel with almond powder coating

Pre-Configured Part Numbers

Part Number	Description
010802	FxDS Frame kit (Includes 7’ x 19” frame, two doors - dual, two interbays, three traditional troughs, iso pad, floor mount kit)
010802-SR	FxDS SmartRoute Frame Kit (includes 7’ x 19” frame, two door sets - dual, two interbays, three SmartRoute troughs, iso pad and floor mount kit)
010802-PON INSERT ONLY-SR	FxDS Frame kit (Includes 7’ x 19” frame, two doors - dual, two interbays with no spools, three SmartRoute troughs, iso pad, floor mount kit)
010802-PON INSERT ONLY	FxDS Frame kit (Includes 7’ x 19” frame, two doors - dual, two interbays with no spools, three traditional troughs, iso pad, floor mount kit
010263	FxDS 576 Port PON Insert (Select one of the following part numbers for feeder ports. You will be required to order a total of four of these per PON insert)
FMA-XXX-57	Tie kit, adapter plate, 12 SC/UPC singlemode, trimmed to cassette height
FMA-XXX-64	Tie kit, adapter plate, 12 SC/APC singlemode, trimmed to cassette height
FMA-XXX-81	Tie kit, adapter plate, 12 LC/UPC singlemode, trimmed to cassette height
011236	Frame mounting kit for use with raised floors



FxDS Frame Kit

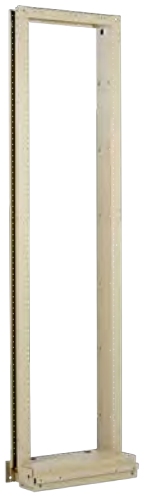


Tie Adapter Plate Kit

FieldSmart® Fiber Crossover Distribution System (FxDS)
Standard Frames

Application

Frames are used for mounting equipment in a central office or data center application.



Description

FieldSmart FxDS Standard Frames are available in 7', 8' or 9' heights and in 19" or 23" widths. Frames are seismic-rated and come with an unequal flange. When used with FieldSmart FxDS Panels, they provide the highest port density in the industry - up to 1,728 ports in a 7' frame.

Features and Benefits

Integrity

- Compliant to Telcordia GR-449; Seismic rated (Zone 4) GR-63-CORE, Issue 4
- Made from high-strength, low alloy steel that can accommodate up to up to 500 lbs
- WECO mounting (1") and EIA mounting (1.75")
- Front and rear of upright tapped for 12-24 screws

Protection

- Interbay cable management optional
- Frames can be ordered loaded with panels and cable management as a "rack and stack" solution
- Unequal flange
- Isolation pads are used to provide electrical isolation for FxDS standard seismic frames

Access

- One frame size accommodates up to 1,728 or 1,152 ports in a PON environment, with full horizontal and vertical slack management support

Investment

- Fully loaded or "grow-as-you-go" integrations allow the user choices to provide for cost containment as subscriber take-rates dictate
- Frame components are used throughout the network from inside plant to outside plant to access networks

Technical Specifications

FieldSmart FxDS Standard Frames	
Dimensions	Available in 7', 8' or 9' heights and in either 19" or 23" widths; depth is 10" (5" frame + 5" guard box)
Ratings	Compliant to Telcordia GR-449
Cable Entry Clamp Location	On-frame cable clamps (*Note: On-frame cable clamps included with FxDS Patch Panels)*
Material	Steel

Pre-Configured Part Numbers

WECO Spacing

Part Number	Description
FMA-A1A	19" seismic frame, 7' high with 1" WECO hole spacing, putty white
FMA-A2A	23" seismic frame, 7' high with 1" WECO hole spacing, putty white
FMA-A1C-SUB	19" seismic frame, 8' high with 1" WECO hole spacing, almond white

EIA Spacing

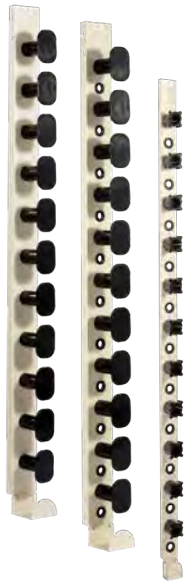
Part Number	Description
FMA-A1A-02	19" seismic frame, 7' high, CLSD, EIA UNIVERSAL (⅝" - ⅝" - ½") hole pattern, putty white
FMA-A2A-01	23" seismic frame, 7' high, CLSD, EIA UNIVERSAL (⅝" - ⅝" - ½") hole pattern, putty white
FMA-A2A-03	23" seismic frame, 7' high, CLSD, EIA UNIVERSAL (⅝" - ⅝" - 1½") hole pattern, almond white

FieldSmart® Fiber Crossover Distribution System (FxDS)
Accessories

Interbay Cable Management Panels

Description

Interbay cable management is part of an overall fiber management system that includes frames and troughs. In addition to incremental slack take-up, the interbay provides a route-path between frames. Interbay cable management panels are ordered to match the height of the frame and are available in 7', 8' and 9' versions. End guards are available for the end of a line up to minimize potential damage to jumpers. Interbay cable management is suggested for all fiber applications. Clearfield's recommendation is to mount one interbay on both sides of each frame and place an interbay with end guard on each end of the lineup.



Configured Part Numbers

F M A - ____ Z ____
1 2

1 Select Frame Width
- E = Interbay without endguard
- F = Interbay with endguard

2 Select Frame Height
- A = 7 feet
- C = 8 feet
- D = 9 feet

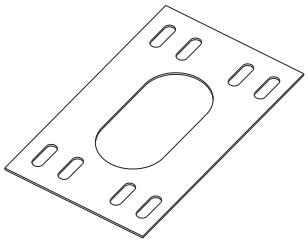
Pre-Configured Part Numbers

Part Number	Description
FMA-FZA-PT-3I	FxDS Interbay Cable Management Panel, 7' H x 3" W, with end guards, custom with 1" grommet cable pass through holes
FMA-FZA-PT	FxDS Interbay Cable Management Panel, 7' H x 5" W, with end guards, custom with 1" grommet cable pass through holes
FMA-EZA	FxDS Interbay Cable Management Panel, 7' H x 5" W, without end guards
FMA-XXX-119	Kit, mounting bracket for FxDS Interbay, non-seismic, front mount

Isolation Pad

Description

The Isolation Pad provides isolation between the floor and the equipment rack.



Pre-Configured Part Numbers

Part Number	Description
FMA-L1Z-SUB	Isolation Pad Kit, 19" frame, 9.5" D x 22" W
FMA-L2Z-SUB	Isolation Pad Kit, 23" frame, 9.5" D x 26" W

FieldSmart® Fiber Crossover Distribution System (FxDS)
Accessories

Crossover Troughs

Description

Troughs are in integral part of the FieldSmart fiber management platform. When used properly, troughs provide a protected route path when running jumpers between equipment. Crossover Troughs are used when radius spools are not required. They are simply used to cross from one side of the frame to another or to reach another frame. They come standard with a front door for additional protection and improved appearance. Crossover Troughs are 3" or 5" deep and available in 19" and 23" mounting.

Pre-Configured Part Numbers

Part Number	Description
FMA-B13-SUB	FxDS Crossover Trough, 3" x 19" (no spools)
FMA-B15	FxDS Crossover Trough, 5" x 19" (no spools)
FMA-B23	FxDS Crossover Trough, 3" x 23" (no spools)
FMA-B25	FxDS Crossover Trough, 5" x 23" (no spools)

Active Gear Troughs

Description

Troughs are an integral part of the FieldSmart fiber management platform. When used properly, troughs provide a protected route path when running jumpers between equipment. Active Gear Troughs are equipped with nine radius fingers (19") and 11 radius fingers (23") on the open bottom. It is designed to be placed directly above or below an active gear chassis to manage slack and access of active gear cards and associated fiber ports. The Active Gear Troughs are 5" deep and available in 19" and 23" mounting.

Pre-Configured Part Numbers

Part Number	Description
FMA-D15	FxDS Active Gear Trough, 5" x 19" (with management spools and fingers)
FMA-D25	FxDS Active Gear Trough, 5" x 23" (with management spools and fingers)

Slack Management Troughs

Description

Troughs are in integral part of the FieldSmart fiber management platform. When used properly, troughs provide a protected route path when running jumpers between equipment. Slack Management Troughs contain radius spools that add additional incremental slack take-up to the fiber management system. They come standard with a front door for additional protection and improved appearance. Slack Management Troughs are 5" deep and available in 5" and 7" heights and 19" and 23" mounting.

Pre-Configured Part Numbers

Part Number	Description
FMA-C15	FxDS Slack Management Trough, 5" x 19" (with spools)
FMA-C25	FxDS Slack Management Trough, 5" x 23" (with spools)
FMA-C27	FxDS Slack Management Trough, 7" x 23" (with spools)

FieldSmart® Fiber Crossover Distribution System (FxDS)
Accessories

Blank Filler Plates

Description

Clearfield's FieldSmart Blank Filler Plates are designed to mount in a rack and cover a space where no current panels are mounted.

They are available in various Rack Unit (RU) sizes and colors.

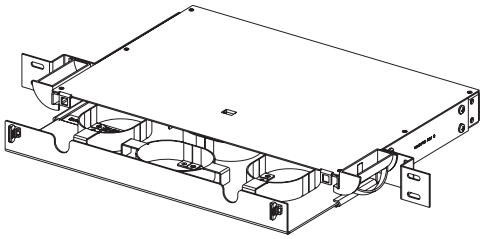
Pre-Configured Part Numbers

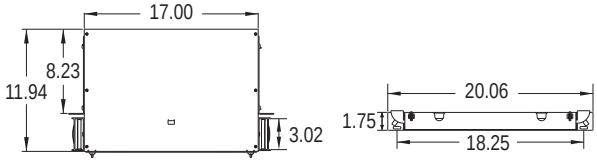
Part Number	Description
FMA-XXX-141	1RU Filler Plate, 19", almond, 1.75"H x 19"W
FMA-XXX-142	2RU Filler Plate, 19", almond, 3.5"H x 19"W
FMA-XXX-143	3RU Filler Plate, 19", almond, 5.25"H x 19"W
FMA-XXX-144	4RU Filler Plate, 19", almond, 7"H x 19"W
FMA-XXX-146	1RU Filler Plate, 23", almond, 1.75"H x 19"W
FMA-XXX-147	2RU Filler Plate, 23", almond, 3.5"H x 19"W
FMA-XXX-148	3RU Filler Plate, 23", almond, 5.25"H x 19"W
FMA-XXX-149	4RU Filler Plate, 23", almond, 7"H x 19"W

Slack Management Panel

Description

This panel mounts in either 19" or 23" frame and stores excess jumper length in a 1RU (1.75") drawer based panel. It contains bend-radius spools for incremental and horizontal slack take up. When closed, the drawer protects fiber from accidental damage. The panel accommodates varying lengths of horizontal slack take up for up to 48, 3 mm jumpers.





Pre-Configured Part Numbers

Part Number	Description
FMA-G11	Slack management panel for 19" frame
FMA-G21	Slack management panel for 23" frame

FieldSmart®
DIN Rail Cassette Mounting Kit

Application

The FieldSmart DIN Rail Cassette Mounting Kit easily mounts to any TS-35 (35 mm wide x 7.5 mm high or greater rail) industry standard DIN rail. The DIN rail clip "grips" the rail on both the top and bottom lips for tool-less installation. This is an ideal solution for applications requiring maximum system reliability and flexibility. It is perfectly suited for Transportation, Machine Building, Municipality, Oil and Gas Refinery, and Alternative Power Generation applications. It is also ideal for more general use in customer premise locations, enterprise networks and remote locations. Utilizing the Clearview® Blue Cassette, the new DIN Rail Mounting Kit allows you to bring fiber management to areas where it was not able to be installed before.

Each cassette will provide 12 ports of connectivity for patch and splice (Clearfield's in-cassette splicing solution), patch only (stubbed) or plug and play (MPO/MTP) configurations.

Description

The DIN Rail Cassette Mounting Kit includes the cassette mounting tray, bracket and rail mount clip. DIN rail tray and cassettes can be mounted vertically, horizontally or with adapters facing out with no specialty bulkheads needed. Up to two Clearview Cassettes can be mounted on one bracket. Brackets can be mounted next to each other for future growth.

Features and Benefits

Integrity
- Allows Clearview Cassettes to attach to DIN 35 mm slotted rail
- Modular and scalable

Protection
- Durable steel plate
- Radius bend protection of all fiber cable within the blue cassettes

Access
- Provides central location where external and internal wiring can be connected quickly and efficiently
- Associated devices can be mounted adjacent to each other, thus reducing the length of interconnect wiring
- 360° cassette mounting options

Investment
- Reduces installation time
- Saves space - no need to panel mount all components
- Versatile mounting options
- Easy snap on/snap off capability

Technical Specifications

FieldSmart DIN Rail Cassette Mounting Kit	
Dimensions	Cassette Tray: 1.72" H x 7.75" W x 6.96" D Rail Mount Clip: 2.68" H x 1.38" W x 0.32" D
Port Density	12 or 24 ports
Cassette Types Supported	Clearview® Blue
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC

Pre-Configured Part Number

Part Number	Description
FMA-DIN RAIL	FieldSmart DIN Rail Cassette Mounting Kit

FieldSmart® Fiber Crossover Distribution System (FxDS)

NEBS Level 3 Certified Patch Panels

Application

Provides an interconnect or cross-connect environment for up to 288 ports of high density fiber. Suitable for Central Office/Head End/Data center rack mounts, and use in constrained spaces such as outside plant cabinets, huts, controlled environmental vaults (CEVs), and other customer premise applications.

Independently tested and certified to NEBS Level 3 specifications.

Description

The FieldSmart FxDS NEBS Level 3 Certified Panel is a high density, low maintenance fiber distribution panel for use in a 19" or 23" frame. Utilizing the Clearview® Cassette, FieldSmart FxDS Panels are intelligently designed to provide the user with superior fiber access and craft-friendly, radius protected, fiber management for routing and deploying fiber jumpers.

Stand Alone Panel in 19" or 23" Frame

When you already have the frame and want to add just a panel or two of incremental fiber management, the FxDS is configured with front and rear protection blocks for complete slack storage and physical fiber protection.

Stand Alone in a Data Cabinet

When you already have a data cabinet and simply need to add fiber management, the FxDS can be configured without the front protection block, providing all the fiber protection you need without the added cost.

Stand Alone Panel in an OSP Cabinet

Make the crossover into the OSP with the identical product. Patch only environments are supported without additional components, while a rear protection block enables patch and splice configurations. The common architecture saves you time and money in reducing inventory costs and shorter training periods.

Features and Benefits

Integrity

- NEBS Level 3 GR-63 and GR-1089 certified
- Optical component configurations use Telcordia GR 1221/1209 compliant devices
- Terminations are designed and tested to Telcordia GR-326
- RUS listed
- Supports all industry standard singlemode and multimode connectors

Protection

- Removable front cover
- Individual radius fingers provide organized circuits by 12-fiber sub-units or buffer tubes
- Ruggedized cable clamp protects against twisting and pistoning at the assembly breakout point
- Pre-terminated OSP buffer tubes are protected by bend-limited tubing and have their slack stored inside the panel to protect against environmental and human damage

Access

- Front access to pre-terminated assemblies with removable adapter plates for testing, cleaning and maintenance
- The entire 12-fiber Clearview Cassette is removable for hot-swap changes
- Front and rear access to panel
- On- or off-frame splicing configurations support cable constructions up to 144-fiber

Investment

- Using the Clearview Cassette, all fibers are deployed in increments of 12, allowing users to scale from 12 ports to full configuration without additional equipment

FieldSmart® Fiber Crossover Distribution System (FxDS)

NEBS Level 3 Certified Patch Panels

CLEARFIELD

Technical Specifications

FieldSmart FxDS NEBS Level 3 Certified Patch Panels					
Port Density	24	72	96	144	288
Dimensions	1.75" H	3.5" H	4" H	6" H	11" H
Ratings	Compliant to Telcordia GR-63, GR-449, GR-20 and GR-409				
Cassette Types Supported	Clearview® Blue				
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC, FC/UPC, FC/APC, ST/UPC, MPO				
Cable Types	Indoor Riser, Indoor Plenum, Indoor/Outdoor, Outdoor (Riser/Non-Rated), Outdoor Armored (Riser/Non-Rated), FieldShield®				
Splice Capacity	12 splices in each Clearview Cassette				
Storage Capacity	One meter of 250 µm fiber				
Front Protection	3.25" radius fingers				
Material	Steel and aluminum with almond powder coating				

Configured Part Numbers

G ___ ___ G - ___ ___ ___ - ___ ___ ___ - ___ - ___ B XXXM or XXXF

1 2 3 4 5 6 7 8

1 Select Protection

M = Front protection only
N = Rear protection only
P = Front and rear protection
R = Bulkhead only

2 Select Chassis Size*

J = 1.75" (1 RU)	24 port maximum (SC/LC)
E = 3.50" (2 RU)	72 port maximum (SC/LC)
K = 4"	96 port maximum (SC/LC)
G = 6"	144 port maximum (SC/LC)
H = 11"	288 port maximum (SC/LC)

3 Select Port Count

X X X = port count in increments of 12

4 Select Connector Style

A = SC/UPC	H = LC/APC
C = SC/APC	J = FC/UPC
F = LC/UPC	M= ST/UPC

5 Select Mode / Type

1 = Singlemode - non-ribbon
2 = Singlemode - ribbon
3 = Multimode (62.5)
5 = Multimode (50)
7 = Multimode (50) Laser Om3

6 Select Cable Construction

A = Indoor riser rated (IFC)
B = OSP (riser rated)
C = Indoor, plenum (IFC)
E = OSP (non-rated)
F = Patch and splice
M = OSP (armored)

7 Select Panel Type

A = Patch only (1 multifiber cable)
F = Patch and splice (slack basket)

Note: To use the slack basket the panel must have rear protection.

Note: All FxDS panels are designed to fit in 19" and 23" frames and are front load only.

8 Select Cable Exit**

1 = Top right	5 = Top
2 = Top left	6 = Bottom
3 = Bottom right	7 = Right
4 = Bottom left	8 = Left

Z = N/A – Use for patch & splice

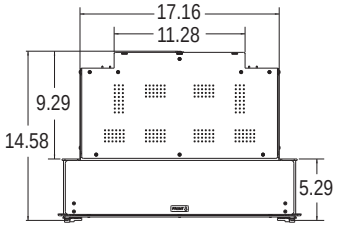
XXXM or XXXF

XXXM = Length in meters
XXXF = Length in feet

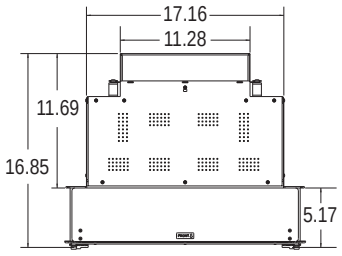
* Max port counts are for SC and LC adapters. For ST and FC adapters the max port counts are:

1RU = 24	4" = 48	11" = 192
2RU = 48	6" = 96	

** Cable exit is defined by which direction the cable exits the panel when viewing it from the back.



24, 72, 96, 144 and 288 Port
Crossover Bulkhead with Rear Protection
Top View



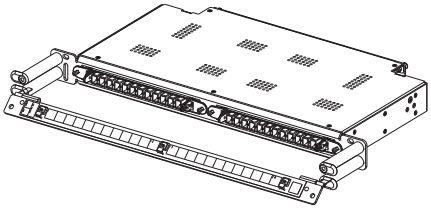
72, 96, 144 and 288 Port
Crossover Bulkhead with Rear Protection and Slack Basket
Top View

FieldSmart® Fiber Crossover Distribution System (FxDS)

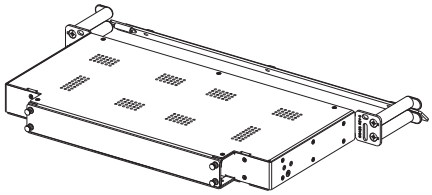
NEBS Level 3 Certified Patch Panels

Configurations

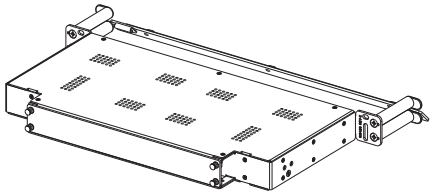
FieldSmart Fiber Crossover Distribution System (FxDS) 24 Port Fiber Panels



24 Port
Front View

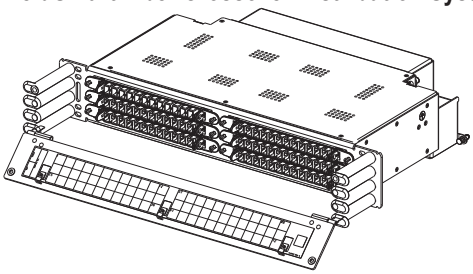


24 Port
Rear View - Patch Only
with rear protection

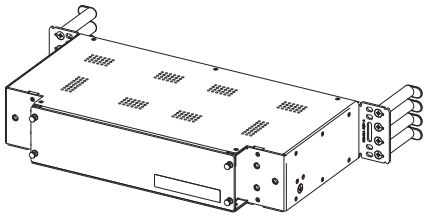


24 Port
Rear View - Patch and Splice
with slack basket

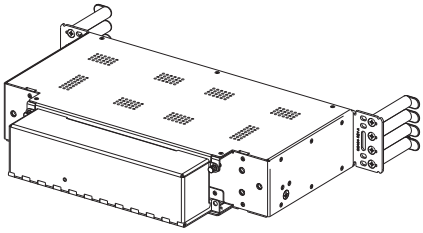
FieldSmart Fiber Crossover Distribution System (FxDS) 72 Port Fiber Panels



72 Port
Front View

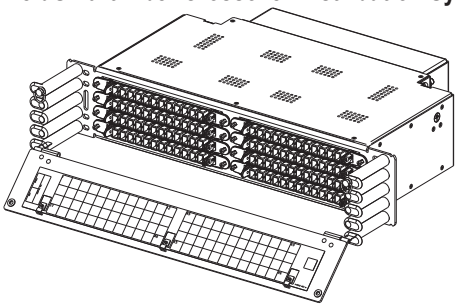


72 Port
Rear View - Patch Only
with rear protection

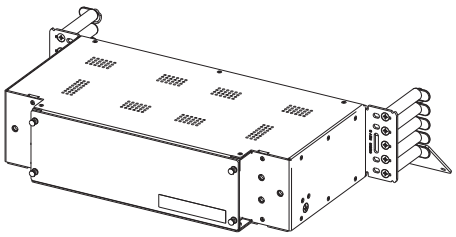


72 Port
Rear View - Patch and Splice
with slack basket

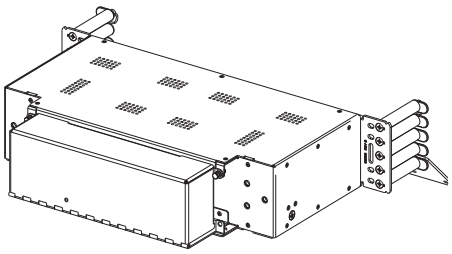
FieldSmart Fiber Crossover Distribution System (FxDS) 96 Port Fiber Panels



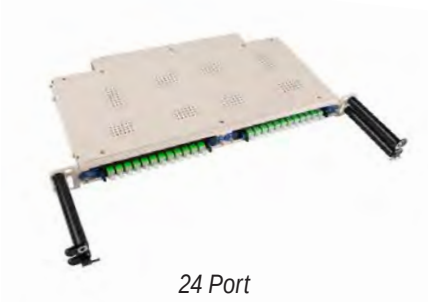
96 Port
Front View



96 Port
Rear View - Patch Only
with rear protection



96 Port
Rear View - Patch and Splice
with slack basket



24 Port

72 Port

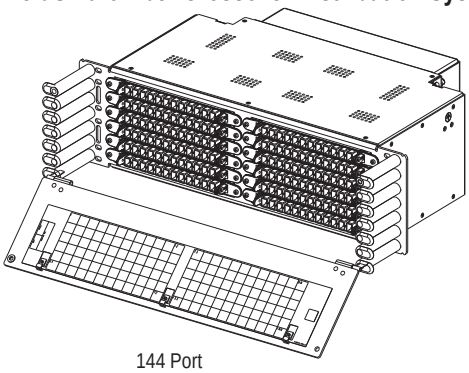
96 Port

FieldSmart® Fiber Crossover Distribution System (FxDS)

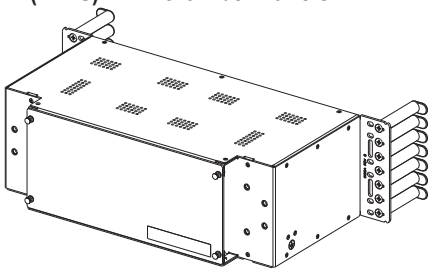
NEBS Level 3 Certified Patch Panels

Configurations

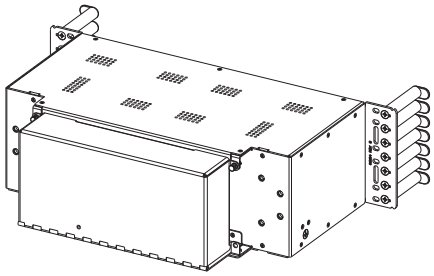
FieldSmart Fiber Crossover Distribution System (FxDS) 144 Port Fiber Panels



144 Port
Front View

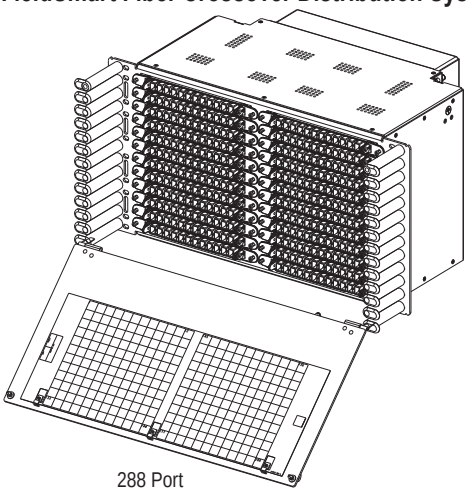


144 Port
Rear View - Patch Only
with rear protection

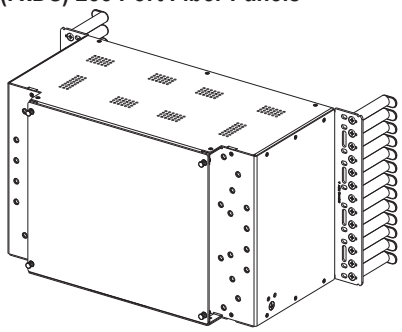


144 Port
Rear View - Patch and Splice
with slack basket

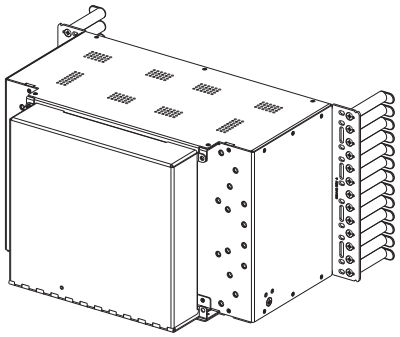
FieldSmart Fiber Crossover Distribution System (FxDS) 288 Port Fiber Panels



288 Port
Front View



288 Port
Rear View - Patch Only
with rear protection



288 Port
Rear View - Patch and Splice
with slack basket

144 Port

288 Port

FieldSmart® Fiber Crossover Distribution System (FxDS)
Patch Panels

Application

Provides an interconnect or cross-connect environment for up to 288 ports of high density fiber in central office and outside plant environments.

Description

The FieldSmart FxDS Panel is a high density, low maintenance fiber distribution panel for use in a 19" or 23" frame. Utilizing the Clearview® Cassette, FieldSmart FxDS Panels are intelligently designed to provide the user with superior fiber access and craft-friendly, radius protected, fiber management for routing and deploying fiber jumpers. The optional metal chassis allows panels to be deployed on an industry standard frame or for the ultimate in cost efficiencies, it can be ordered with only the bulkhead.

Stand Alone Panel in a 19" or 23" Frame

When you already have the frame and want to add just a panel or two of incremental fiber management, the FxDS is configured with front and rear protection blocks for complete slack storage and physical fiber protection.

Stand Alone Panel in a Data Cabinet

When you already have a data cabinet and simply need to add fiber management, the FxDS is configured without the front protection block, providing all the fiber protection you need without the added cost.

Stand Alone Panel in an OSP Active Cabinet

Make the crossover into the OSP with the identical product. Patch only environments are supported without additional components, while a rear protection block enables patch and splice (Clearfield's in-cassette splicing solution) configurations. The common architecture saves you time and money in reducing inventory costs and shorter training period.

Features and Benefits

Integrity

- RUS listed
- Compliant to Telcordia GR-63, GR-449, GR-20 and GR-409
- Optical component configurations use Telcordia GR 1221/1209 compliant devices
- Terminations are designed and tested to Telcordia GR-326
- Supports all industry standard singlemode and multimode connectors

Protection

- Removable front cover
- Individual radius fingers provide organized and intuitively managed fiber jumpers and minimize pile-up
- The Clearview Cassette houses critical circuits by 12-fiber sub-units or buffer tubes
- Ruggedized cable clamp protects against twisting and pistoning at the assembly breakout point
- Pre-terminated OSP buffer tubes are protected by bend-limited tubing and have their slack stored inside panel to protect against environmental and human damage

Access

- Front access to pre-terminated assemblies with removable adapter plates for testing, cleaning and maintenance
- The entire 12-fiber Clearview Cassette is removable for hot-swap changes
- Front and rear access to panel
- On-frame or off-frame splicing configurations support cable constructions up to 144-fiber

Investment

- Using the Clearview Cassette, all fibers are deployed in increments of 12, allowing users to scale from 12 ports to full configuration without additional equipment

FieldSmart® Fiber Crossover Distribution System (FxDS)
Patch Panels

Technical Specifications

FieldSmart FxDS Patch Panels					
Port Density	24	72	96	144	288
Dimensions	1.75" H	3.5" H	4" H	6" H	11" H
Ratings	Compliant to Telcordia GR-63, GR-449, GR-20 and GR-409				
Cassette Types Supported	Clearview® Blue				
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC, FC/UPC, FC/APC, ST/UPC, MPO				
Cable Types	Indoor Riser, Indoor Plenum, Indoor/Outdoor, Outdoor (Riser/Non-Rated), Outdoor Armored (Riser/Non-Rated), FieldShield®				
Splice Capacity	12 splices in each Clearview Cassette				
Storage Capacity	One meter of 250 µm fiber				
Front Protection	4.75" radius fingers				
Material	Steel and aluminum with almond powder coating				

Configured Part Numbers

G ___ ___ - ___ ___ ___ - ___ ___ ___ - ___ A ___ ___ XXXM or XXXF

[1] [2] [3] [4] [5] [6] [7] [8] [9]

[1] Select Protection

M = Front protection only
N = Rear protection only
P = Front and rear protection
R = Bulkhead only

[2] Select Chassis Size *

J = 1.75" (1 RU)	24 port maximum (SC/LC)
E = 3.50" (2 RU)	72 port maximum (SC/LC)
K = 4"	96 port maximum (SC/LC)
G = 6"	144 port maximum (SC/LC)
H = 11"	288 port maximum (SC/LC)

[3] Select Port Count

X X X = port count in increments of 12

[4] Select Connector Style

A = SC/UPC	H = LC/APC
C = SC/APC	J = FC/UPC
F = LC/UPC	M= ST/UPC

[5] Select Mode / Type

1 = Singlemode - non-ribbon
2 = Singlemode - ribbon
3 = Multimode (62.5)
5 = Multimode (50)
7 = Multimode (50) Laser Om3

[6] Select Cable Construction

A = Indoor riser rated (IFC)
B = OSP (riser rated)
C = Indoor, plenum (IFC)
E = OSP (non-rated)
F = Patch and splice
M = OSP (armored)

[7] Select Panel Type

A = Patch only (1 multifiber cable)
F = Patch and splice (slack basket)

Note: To use the slack basket the panel must have rear protection.

Note: All FxDS panels are designed to fit in 19" and 23" frames and are front load only.

[8] Select Cable Exit **

1 = Top right	5 = Top
2 = Top left	6 = Bottom
3 = Bottom right	7 = Right
4 = Bottom left	8 = Left
Z = N/A – Use for patch & splice	

[9] Clearview Blue Cassettes

B = Clearview Blue Cassettes

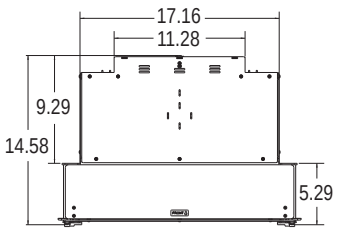
XXXM or XXXF

XXXM = Length in meters
XXXF = Length in feet

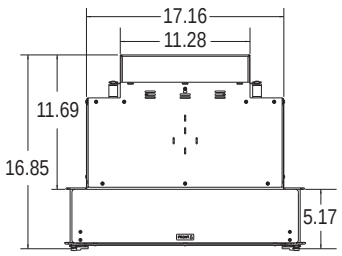
* Max port counts are for SC and LC adapters. For ST and FC adapters the max port counts are:

1RU = 24	4" = 48	11" = 192
2RU = 48	6" = 96	

** Cable exit is defined by which direction the cable exits the panel when viewing it from the back.



24, 72, 96, 144 and 288 Port
Crossover Bulkhead with Rear Protection
Top View

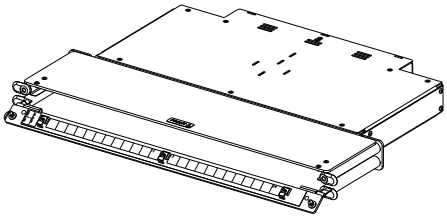


72, 96, 144 and 288 Port
Crossover Bulkhead with Rear Protection and Slack Basket
Top View

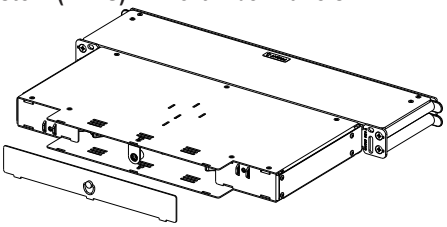
FieldSmart® Fiber Crossover Distribution System (FxDS)
Patch Panels

Configurations

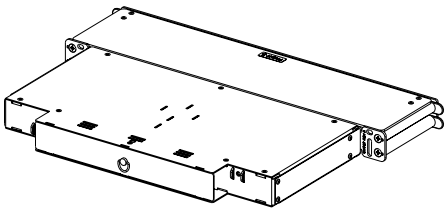
FieldSmart Fiber Crossover Distribution System (FxDS) 24 Port Fiber Panels



24 Port
Front View

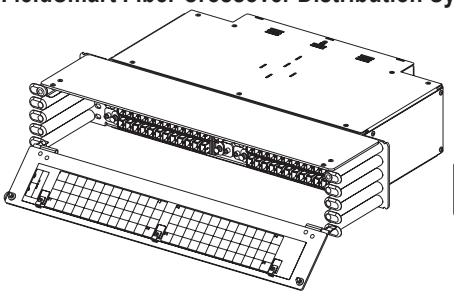


24 Port
Rear View - Patch Only
with rear protection

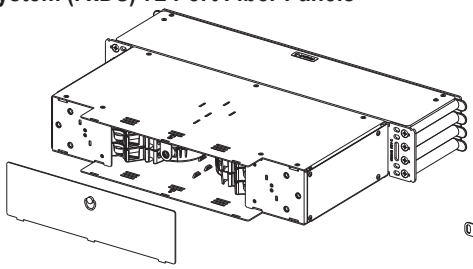


24 Port
Rear View - Patch and Splice
with slack basket

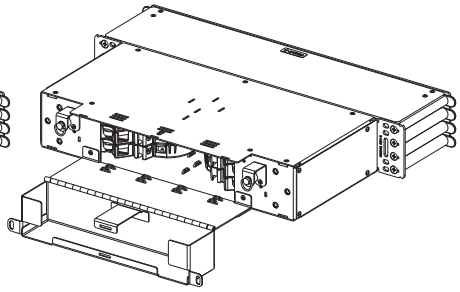
FieldSmart Fiber Crossover Distribution System (FxDS) 72 Port Fiber Panels



72 Port
Front View

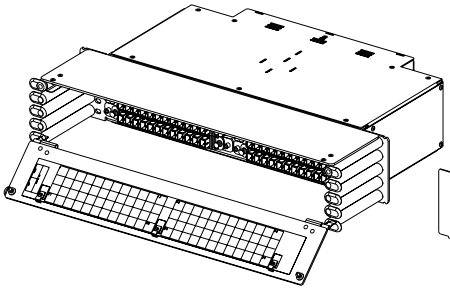


72 Port
Rear View - Patch Only
with rear protection

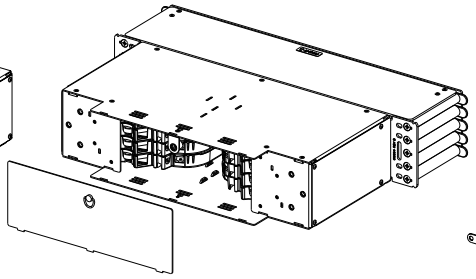


72 Port
Rear View - Patch and Splice
with slack basket

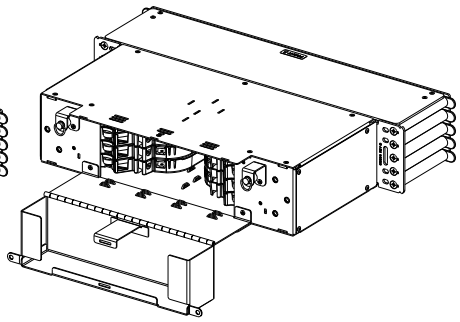
FieldSmart Fiber Crossover Distribution System (FxDS) 96 Port Fiber Panels



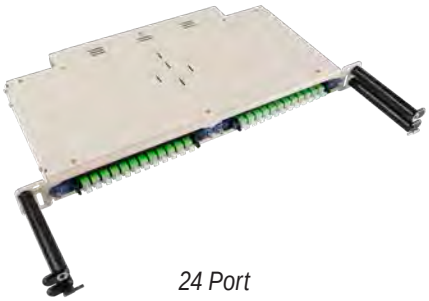
96 Port
Front View



96 Port
Rear View - Patch Only
with rear protection

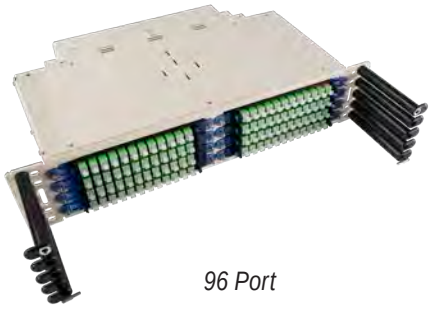


96 Port
Rear View - Patch and Splice
with slack basket



24 Port

72 Port

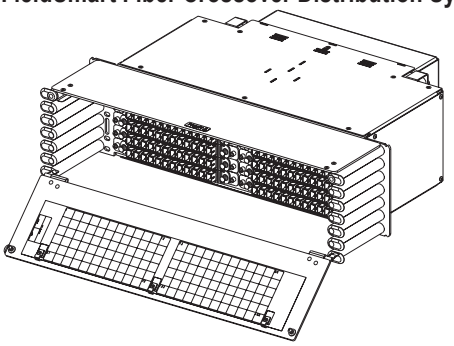


96 Port

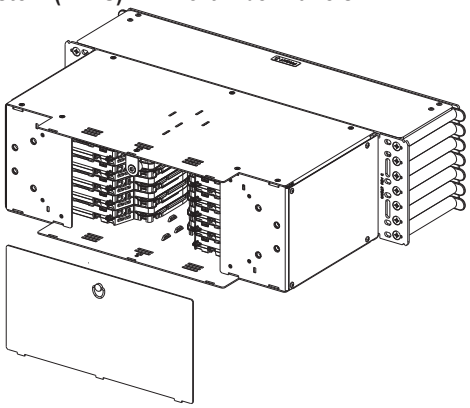
FieldSmart® Fiber Crossover Distribution System (FxDS)
Patch Panels

Configurations

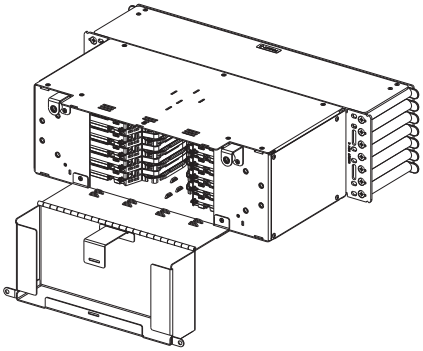
FieldSmart Fiber Crossover Distribution System (FxDS) 144 Port Fiber Panels



144 Port
Front View

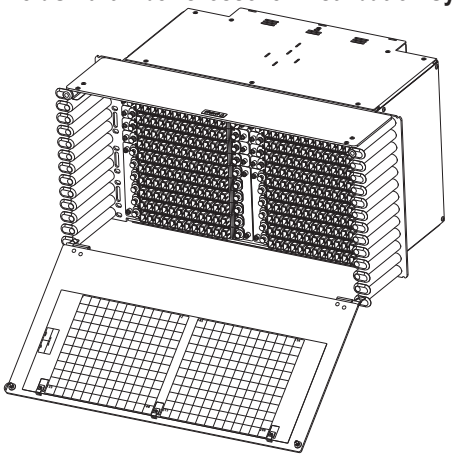


144 Port
Rear View - Patch Only
with rear protection

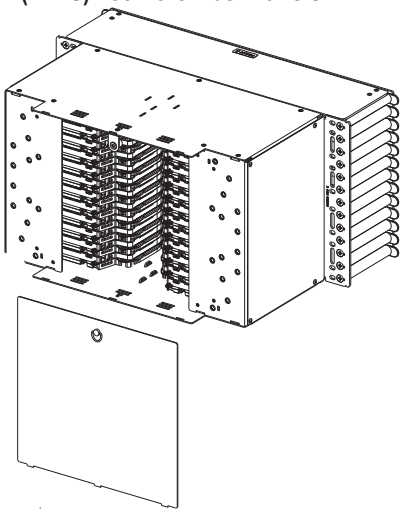


144 Port
Rear View - Patch and Splice
with slack basket

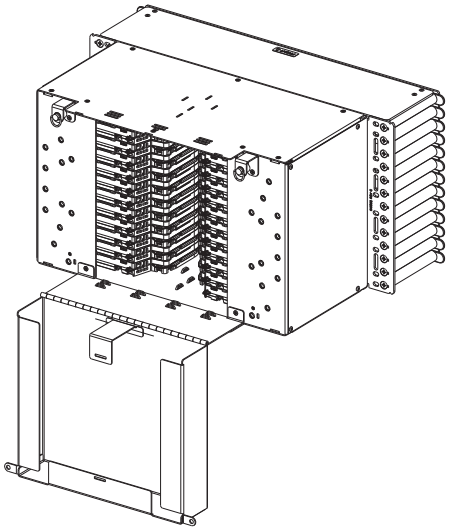
FieldSmart Fiber Crossover Distribution System (FxDS) 288 Port Fiber Panels



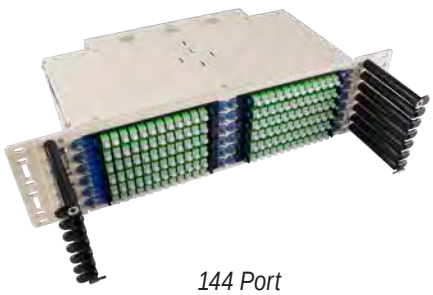
288 Port
Front View



288 Port
Rear View - Patch Only
with rear protection



288 Port
Rear View - Patch and Splice
with slack basket



144 Port

288 Port

FieldSmart® Fiber Crossover Distribution System (FxDS)
Tie Panels

Application

The FieldSmart FxDS Tie Panel provides an in the field configured interconnect or cross-connect environment for 12 to 288 ports of high density fiber in central office/headend environments.

Description

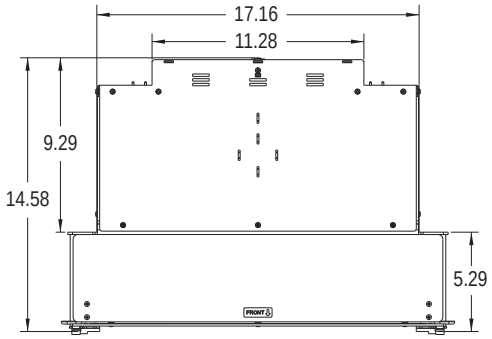
The FieldSmart FxDS Tie Panel is a high density, low-maintenance fiber distribution panel for use in a 23" or 19" frame. Tie panels are intelligently designed to provide the user with superior fiber access, utilizing craft-friendly radius protected fiber management for routing and deploying fiber jumpers or multi-fiber cables, on both sides of the adapter plate for cross-connect environments. They use a removable adapter plate from Clearview® Cassettes.

Features and Benefits

Integrity
- RUS listed
- Compliant to Telcordia GR-449, GR-20 and GR-409
- Optical component configurations use Telcordia GR 1221/1209 compliant devices
- Terminations are designed and tested to Telcordia GR-326
- Supports all industry standard singlemode and multimode connectors

Protection
- Ruggedized hinged and removable front cover
- Cable clamp protects against twisting and pistoning at the assembly breakout point

Access
- Front access with removable adapter plates for testing, cleaning and maintenance
- Front and rear access to panel



Top View with Rear Protection

Investment
- Panel sizes available in 1.75" 1RU (24 ports), 3.50" 2RU (72 ports), 4" (96 ports), 6" (144 ports) and 11" (288 ports)
- Industry-leading density, supporting 288 ports in 11"
- 19" and 23" mounting brackets for flexibility

FieldSmart® Fiber Crossover Distribution System (FxDS)
Tie Panels

Technical Specifications

FieldSmart FxDS Tie Panels					
Port Density	24	72	96	144	288
Dimensions	1.75" H x 17.5" W x 14.40" D	3.5" H x 17.5" W x 14.40" D	4" H x 17.5" W x 14.40" D	6" H x 17.5" W x 14.40" D	11" H x 17.5" W x 14.40" D
Ratings	Compliant to Telcordia GR-449				
Cassette Types Supported	N/A				
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC, FC/UPC, FC/APC, ST/UPC				
Splice Capacity	N/A				
Storage Capacity	N/A				
Front Protection	4.75" radius fingers				
Material	Steel and aluminum with almond powder coating				

Configured Part Numbers

G ___ ___ - ___ ___ ___ - ___ ___ Z - D A Z - ___ ___

1 2 3 4 5 6

1 Select Brackets

N = FxDS – rear protection only
M = FxDS – front protection only
P = FxDS – front and rear protection
R = bulk head only

2 Select Panel Size / Density

J = 1.75" (1 RU)	24 port maximum (SC / LC)
E = 3.50" (2 RU)	72 port maximum (SC / LC)
K = 4"	96 port maximum (SC / LC)
G = 6"	144 port maximum (SC / LC)
H = 11"	288 port maximum (SC / LC)

3 Select Port Count

X X X = port count in increments of 12
Z Z Z = 0 port count

4 Select Adapter

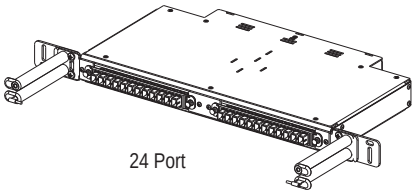
A = SC/UPC	J = FC/UPC
C = SC/APC	K = FC/APC
F = LC/UPC	M = ST/UPC
H = LC/APC	Z = no adapters

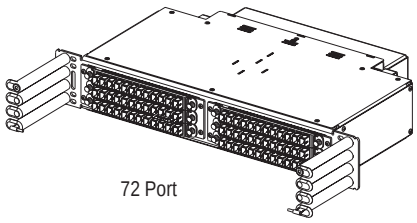
5 Select Mode

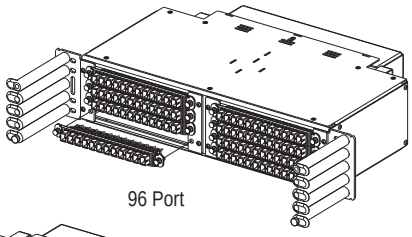
9 = Multimode adapters
0 = Singlemode adapters
Z = 0 adapters

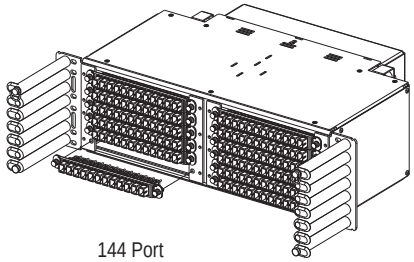
6 Select Density

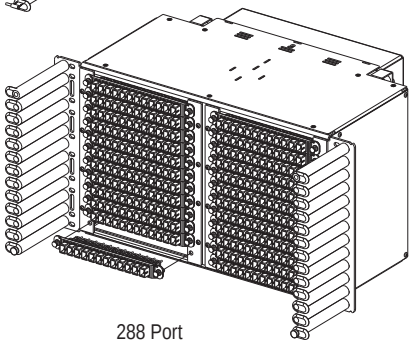
HD = High density


24 Port


72 Port


96 Port


144 Port


288 Port

FieldSmart® Fiber Crossover Distribution System (FxDS)

1RU Narrow Mount 24-Port Fiber Panel

Application

Provides an interconnect or cross-connect environment for up to 24-ports of high-density fiber in the central office/headend.

Description

The FieldSmart FxDS Narrow Mount Panel is a high density, low maintenance, data center style fiber panel for use in a 19" frame. Built around the Clearview® Blue Cassette, FieldSmart FxDS Narrow Mount Panels are intelligently designed to provide the user with superior fiber access while providing craft-friendly radius protected fiber management for routing and deploying fiber jumpers in high density applications.

Features and Benefits

Integrity

- RUS listed
- Compliant to Telcordia GR-449, GR-20 and GR-409
- Telcordia 326 compliant terminations
- Supports all industry standard Singlemode and Multimode connectors

Protection

- Removable single piece front protection
- Individual radius fingers provide organized and intuitively managed fiber jumpers and minimize pile-up
- Clearview Blue Cassettes house critical circuits by 12-fiber sub-units or buffer tubes
- Ruggedized cable clamp protects against twisting and pistoning at the assembly breakout point
- Pre-terminated OSP buffer tubes protected with bend-limited tubing and slack stored inside panel for protection against environmental and human damage

Access

- Front and rear access to panel
- Entire 12-fiber Clearview Blue Cassette removable for hot-swap changes
- Front access to pre-terminated assemblies with removable adapter plates for testing, cleaning and maintenance

Investment

- Using the Clearview Blue Cassette, all fibers deployed in increments of 12, allowing users to scale from 12 ports to full configuration without additional equipment

Technical Specifications

FieldSmart FxDS 1RU Narrow Mount 24-Port Fiber Panel	
Port Density	24 Port Max. Capacity (2 Cassettes Total)
Dimensions	Height: 1RU (1.75"); Depth: Patch Only: 9.19", Patch and Splice: 9.29"; Width:
Ratings	Compliant to Telcordia GR-63, GR-449, GR-20 and GR-409
Cassette Types Supported	Clearview Blue
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC, FC/UPC, FC/APC, ST/UPC, MPO
Cable Types	Indoor Riser, Indoor Plenum, Indoor/Outdoor, Outdoor (Riser/Non-Rated), Outdoor Armored (Riser/Non-rated), FieldShield®
Splice Capacity	12 Fibers Within Each Clearview Blue Cassette
Storage Capacity	1 Meter of 900 µm Fiber
Front Protection	1 Piece Design
Material	Steel and Aluminum with Almond Powder Coating

FieldSmart® Fiber Crossover Distribution System (FxDS)

1RU Narrow Mount 24-Port Fiber Panel

Pre-Configured Part Numbers

Part Number	Description
GTJ-000-Z0Z-FAZ-B-01	FxDS narrow mount panel, tight buffer patch and splice, 19” mounting, 1.75”, 2 cassette capacity chassis, no fiber, front load

Empty Chassis - Patch and Splice

Part Number	Description
GTJ-012-A1F-FAZ-B-01	FxDS narrow mount panel, tight buffer patch and splice, 19” mounting, 1.75”, 2 cassette capacity chassis, 12 singlemode SC/UPC ports, front load, loaded with singlemode pigtails in Clearview® Blue Cassettes
GTJ-024-A1F-FAZ-B-01	FxDS narrow mount panel, tight buffer patch and splice, 19“ mounting, 1.75”, 2 cassette capacity chassis, 24 singlemode SC/UPC ports, front load, loaded with singlemode pigtails in Clearview Blue Cassettes
GTJ-024-C1F-FAZ-B-01	FxDS narrow mount panel, tight buffer patch and splice, 19” mounting, 1.75”, 2 cassette capacity chassis, 24 singlemode SC/APC ports, front load, loaded with singlemode pigtails in Clearview Blue Cassettes
GTJ-012-F1F-FAZ-B-01	FxDS narrow mount panel, tight buffer patch and splice, 19” mounting, 1.75”, 2 cassette capacity chassis, 12 singlemode LC/UPC ports, front load, loaded with singlemode pigtails in Clearview Blue Cassettes
GTJ-024-F1F-FAZ-B-01	FxDS narrow mount panel, tight buffer patch and splice, 19” mounting, 1.75”, 2 cassette capacity, 24 singlemode LC/UPC ports, front load, loaded with singlemode pigtails in Clearview Blue Cassettes

Configured Part Numbers

G T J - ___ ___ ___ - ___ ___ ___ - ___ A ___ - B XXXM or XXXF

1 2 3 4 5 6

1 Select Port Count

000 = Empty
012 = 12 ports
024 = 24 ports

2 Select Connector Style

A = SC/UPC
C = SC/APC
F = LC/UPC
H = LC/APC
J = FC/UPC
K = FC/APC
M = ST/UPC

3 Select Mode / Type

1 = Singlemode - Non-ribbon
2 = Singlemode - Ribbon
3 = Multimode (62.5) – Non-ribbon
4 = Multimode (62.5) – Ribbon
5 = Multimode (50) – Non-ribbon
6 = Multimode (50) – Ribbon
7 = Multimode (50) LO – Non-ribbon
8 = Multimode (50) LO – Ribbon

4 Select Cable Construction

A = Indoor, Riser Rated
B = OSP, Riser Rated
C = Indoor, Plenum
E = OSP, Non-rated
F = Patch and Splice Cassettes
W = FieldShield

5 Select Panel Type

A = Patch Only
B = Patch and Splice

6 Select Cable Exit

7 = Right
8 = Left

XXXM or XXXF

XXXM = Length in meters
XXXF = Length in feet

FieldSmart® Fiber Crossover Distribution System (FxDS)
Optical Component Chassis (OCC)

Application

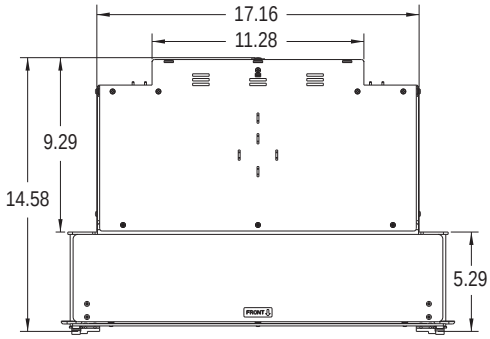
The FieldSmart FxDS Optical Component Chassis (OCC) is used for housing optical component modules. The FxDS Optical Component Chassis is available FOR horizontally mounted and LGX vertically mounted modules. These products are needed when optical components are required. They are typically used in CATV headends and telephone company central offices.

Horizontal Orientation

Description

An optical component chassis is mounted in a rack and holds optical components modules. Fiber jumper management is provided from the front of the optical component module to the interbay cable management panels. Optical components are splitters or WDM's that are cassette or metal LGX housing based. Optical components can be housed in the flexible Clearview® Cassette or in one of our four sizes of LGX style modules. The LGX and FieldSmart® modules require an Optical Component Chassis to house the modules in a frame. The 1RU splitter "pizza box" does not require a separate chassis and is available in 19" or 23" mounting versions.

Features and Benefits



Integrity

- RUS listed
- Compliant to Telcordia GR-449
- Supports all industry standard singlemode and multimode connectors
- May be ordered as a "bulkhead only" application without rear protection

Protection

- Optional ruggedized Lexan front cover
- Optional rear protection module available for additional protection
- Non-removable adapter plates

Access

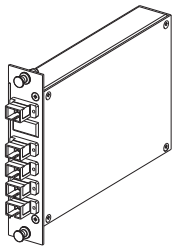
- Front and rear access to panel

Investment

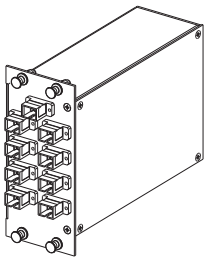
- Virtually any combination of split ratios and number of components can be achieved in one of the four FieldSmart cassette sizes
- An economical, dense and user-friendly solution for deploying splitters or WDM's in a central office design
- 1RU optical components available for smaller, limited deployments
- Clearfield supports legacy splitter deployments by offering optical components in an LGX footprint
- Horizontal mounting versions of the FieldSmart FxDS OCC are available in five sizes to accommodate any size project
- Available for both 19" or 23" mounting
- Chassis incorporates the superior fiber management system of the FieldSmart FxDS panel line
- Allows for a "grow-as-you-go" design to reserve rack space for future growth

Accessories

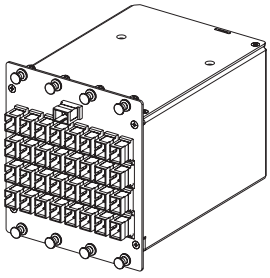
- xPAK
- LGX/MOC
- Blank plates



1 Wide LGX



2 Wide LGX



4 Wide LGX

FieldSmart® Fiber Crossover Distribution System (FxDS)

Optical Component Chassis (OCC)

Technical Specifications

FieldSmart FxDS Optical Component Chassis		
Dimensions	FieldSmart Cassette: 1 High	0.8" H x 8.75" W x 8" D
	FieldSmart Cassette: 2 High	1.6" H x 8.6" W x 7.06" D
	FieldSmart Cassette: 3 High	2.41" H x 8.6" W x 7.06" D
	FieldSmart Cassette: 6 High	4.84" H x 8.6" W x 7.06" D
	LGX ½ Wide Module	0.56" H x 5.12" W x 6.72" D
	LGX 1 Wide Module	1.15" H x 5.12" W x 6.25" D
	LGX 2 Wide Module	2.27" H x 5.12" W x 6.25" D
	LGX 4 Wide Module	4.55" H x 5.12" W x 6.25" D
	1RU (19")	1.75" H x 19" W x 15.02" D
	1RU (23")	1.75" H x 23" W x 15.02" D
Ratings	Compliant to Telcordia GR-449	
Cassette Types Supported	Clearview® Blue, Clearview xPAK	
Material	Steel and aluminum with almond powder coating	

FieldSmart and LGX Footprint Chassis Capacity - Number Of Components

Component Type	Horizontal 1.75'/ 1RU	Horizontal 3.5'/2RU	Horizontal 6"	Horizontal 11"	LGX 6"	1RU
FSAN WDM	8	24	48	96	28	11
1 x 2	8	24	48	96	28	11
1 x 3	6	18	36	72	14	8
1 x 4	4	12	24	48	14	6
1 x 8	2	6	12	24	14	3
1 x 16	0	2	6	12	3	1
1 x 32	0	2	4	8	3	1
1 x 64	0	0	2	4	0	0

Configured Part Numbers

T ___ ___ - ZZ ___ -ZZZ

1 2 3

1 Frame Size and Chassis Type

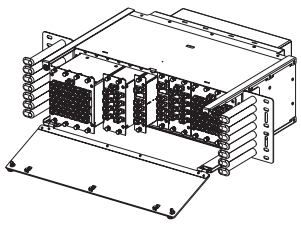
K = 19" and 23" FxDS horizontal (Clearview Cassettes)
M = 19" and 23" FxDS LGX vertical cassettes

2 Protection Modules

7 = No front load protection
8 = Front protection only
9 = Rear protection only
A = Both front and rear protection

3 Number of Slots

A = 2
B = 4
C = 6
D = 8
E = 12
F = 16
G = 24
H = 14



FieldSmart® Fiber Crossover Distribution System (FxDS)

Tower Access Chassis and Modules

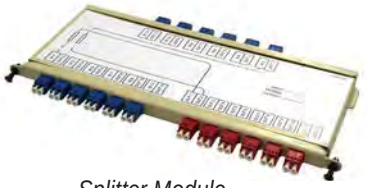
Application

The FieldSmart FxDS Tower Access Chassis can accommodate up to three tower access modules for a total of up to 36 fibers (18 duplex adapters) of cross-connect with non-intrusive test access ports for live service monitoring, troubleshooting and maintenance all in a small 3RU or 2RU footprint.

Chassis

Description

The FieldSmart FxDS Tower Access Chassis is a low maintenance fiber distribution panel for use in a 19" or 23" frame. Designed to provide the user with superior fiber access and craft-friendly, radius protected fiber management for routing and deploying fiber jumpers. The Tower Access Chassis provides a modular solution which can grow from 12 to 36 fibers (6-18 duplex adapters) of test, radius and physical fiber protection to connect the Base Band Unit (BBU) to the radio antennas, while providing up to 50 feet of slack storage.



Splitter Module

Features and Benefits

Integrity

- Compliant to Telcordia GR-449, GR-20 and GR-409
- Terminations are designed and tested to Telcordia GR-326
- Optical components use Telcordia GR 1221/1209 compliant devices

Protection

- Removable front protection
- Individual radius fingers provide ability to organize and intuitively manage fiber jumpers and minimize cable pile up
- Cable clamps and bridge lance tie downs protect against twisting and pistoning at the assembly breakout point

Access

- Tool-less removable rear plate provides access to store up to 50 feet of cable in the slack storage tray
- Easily identifiable splitters with red adapters provide non-intrusive test ports
- Three cable input mounting points on rear of panel
- Two 12 position staging plates–– on the inside of the panel
- Modular ability to remove blank plate and install one to three 12-port modules for up to 36 fibers

Investment

- Custom labeling for High and Low Band configurations
- Reversible 19" and 23" mounting brackets for flexibility

FieldSmart® Fiber Crossover Distribution System (FxDS)

Tower Access Chassis and Modules

CLEARFIELD

Technical Specifications

FieldSmart FxDS Tower Access Panel and Module	
Dimensions	2RU: 17.08” W x 3.42” H x 12” D 3RU: 17.08” W x 5.00” H x 12” D
Rack Unit Size	2RU (3.4”) and 3RU (5.00”)
Port Count	Up to 36 ports (18 duplex adapters of test and access)
Connector Type	LC/UPC
Splitter Type	1 x 2 (50/50 split ratio)
Slack Storage Capacity	Up to 50 feet
Material	Aluminum and steel with almond powder coating
Mounting Widths	19” and 23”

Pre-Configured Part Numbers

Part Number	Description
19216-55	FxDS Tower Access Chassis, 3RU (5.00”), 19” and 23” mounting, modular, up to 3 blank plates
19216-62	FxDS Tower Access Chassis, 2RU (3.42”), 19” and 23” mounting, modular, up to 3 blank plates
19216-58	Splitter Module: 6 blue duplex LC/UPC adapters (12 fibers) and 6 red duplex LC/UPC adapters (12 fibers) on front. Twelve 1 x 2 splitters (50/50) loaded for non-intrusive testing. 6 blue LC/UPC Duplex adapters (12 fibers) on rear of module. • Blue Duplex adapters on the front of the module attach to the BBU • Red Duplex adapters on the front of the module are for testing • Blue Duplex adapters on rear of module for incoming cable from the radio

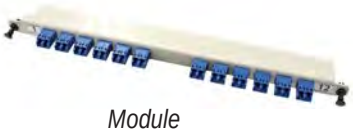
FieldSmart® Fiber Crossover Distribution System (FxDS)

Node Access Panel and Modules

Application

The FieldSmart FxDS Node Access Panel and Modules provides a 36 port interconnect or cross-connect in a small 2RU or 3RU footprint. The panel is utilized as a demarcation point for up to two radio antenna cables, while providing up to 100 feet of slack storage, 50 feet per cable. The FieldSmart Node Access Panel and Modules is used in conjunction with Clearview® Blue Tower Access Panel Cassettes at C-RAN locations, offering non-intrusive test access ports for live service monitoring.

Chassis



Module

Description

The FieldSmart FxDS Node Access Panel and Modules is a low maintenance fiber distribution panel for use in a 19" or 23" frame. Designed to provide the user with superior fiber access and craft-friendly, radius protected, fiber management for routing and deploying fiber jumpers, the Node Access Panel provides 36 ports of radius and physical fiber protection to connect the Base Band Unit (BBU) to the radio antennas, while providing up to 100 feet of slack storage.

Features and Benefits

Integrity

- Compliant to Telcordia GR-449, GR-20 and GR-409
- Terminations are designed and tested to Telcordia GR-326

Protection

- Removable front protection
- Individual radius fingers provide organized and intuitively managed fiber jumpers and minimize cable pile up
- Cable clamps and bridge lance tie downs protect against twisting and pistoning at the assembly breakout point
- Multiple clamp sizes to secure various cable types

Access

- Tool-less removable rear plate provides access to store up to 100 feet of cable in the slack storage tray

Investment

- Custom labeling for High and Low Band configurations
- Reversible 19" and 23" mounting brackets for flexibility

Technical Specifications

FieldSmart FxDS Node Access Panel and Module	
Dimensions	17.08" W x 5.00" H x 12" D
Rack Unit Size	2RU (3.4") and 3RU (5.00")
Mounting Widths	19" and 23"
Port Count	Up to 72 ports (24 duplex LC)
Connector Type	LC/UPC
Slack Storage Capacity	Up to 100 feet (50 feet per cable)
Cable Clamp Sizes	5/16" and 7/16"
Material	Aluminum and steel with almond powder coating

Pre-Configured Part Numbers

Part Number	Description
19216-55	FxDS Tower Access Chassis, 3RU (5"), 19" and 23" mounting, modular 3 blank plates
19216-62	FxDS Tower Access Chassis, 2RU (3.42"), 19" and 23" mounting, modular 3 blank plates
19216-59	Node Module, Loaded with 24 Singlemode LC/UPC Adapters

FieldSmart®
Small Count Delivery (SCD) Panel - Rack Mount

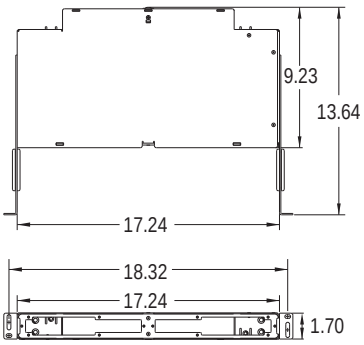
Application

The Small Count Delivery Panel for a rack is a cost-effective way to provide fiber management protection in interconnect or cross-connect environments when landing a small number of fibers. It provides interconnect or cross-connect connectivity for Clearview® Blue Cassettes and xPAKs in a 1RU footprint.

Rack Mount SCD Panel with xPAK and Clearview Blue Cassette

Description

The FieldSmart SCD Panel for a rack provides a cost-effective means to rack-mount up to two Clearview devices: the 12 port Clearview Cassette or the two port, four port or six port Clearview xPAK in a single rack unit. The product is available as either a 19" or 23" rack-mount unit. The FieldSmart SCD 1RU is intelligently designed to provide the user with superior fiber access while using craft-friendly radius protected fiber management for routing and deploying fiber jumpers.



Features and Benefits

Integrity

- RUS listed
- Terminations are designed and tested to Telcordia GR-326
- Clearfield® FiberDeep® Guarantee: 0.2 dB insertion loss or less, exceeding industry standards
- Compliant to Telcordia GR-449, GR-20, GR-409 and GR-1221/1209
- Clearview devices support all industry standard singlemode and multimode connectors

Protection

- Individual radius fingers provide organized and intuitively managed fiber jumpers, minimizing pile up

Access

- Clearview devices are removable for hot-swap changes
- Front and rear access to panel
- Splicing integrated within the cassette for optimal protection and space utilization

Investment

- Fiber protection is optimized within the Clearview device
- FieldSmart SCD extends this protection with minimal added cost or overhead

Technical Specifications

FieldSmart 1RU Small Count Delivery Panel - Rack	
Dimensions	1.70" H x 17.24" W x 9.23" D
Ratings	Compliant to Telcordia GR-449
Port Density	24 SC or 48 LC
Cassette Types Supported	Clearview Blue and Clearview xPAK
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC, FC/UPC, FC/APC, ST/UPC, MPO
Cable Types	Indoor Riser, Indoor Plenum, Indoor/Outdoor, Outdoor (Riser/Non-Rated), Outdoor Armored (Riser/Non-Rated), FieldShield®
Splice Capacity	12 splices in each Clearview Cassette
Storage Capacity	One meter of 900 µm fiber
Material	Steel and aluminum with almond powder coating

Pre-Configured Part Numbers

Part Number	Description
SCD-X1RU-RM	FieldSmart SCD 1RU Rack Mount

FieldSmart®
Small Count Delivery (SCD) Panel - Cabinet Mount

CLEARFIELD

Application

The Small Count Delivery Panel for a cabinet is a cost-effective way to provide fiber management protection in interconnect or cross-connect environments when landing a small number of fibers. It provides interconnect or cross-connect connectivity for Clearview® Blue and xPAKs in a 1RU footprint.

Cabinet Mount SCD Panel with xPAK and Clearview Blue Cassette

Description

The FieldSmart SCD Panel for a cabinet provides a cost-effective means to cabinet-mount up to two Clearview devices: the 12 port Clearview Cassette or the two port, four port or six port Clearview xPAK in a single rack unit. The product is available as either a 19" or 23" data cabinet-mount unit. The FieldSmart SCD 1RU is intelligently designed to provide the user with superior fiber access while using craft-friendly radius protected fiber management for routing and deploying fiber jumpers.

Features and Benefits

Integrity

- RUS listed
- Terminations are designed and tested to Telcordia GR-326
- Clearfield® FiberDeep® Guarantee: 0.2 dB insertion loss or less, exceeding industry standards
- Compliant to Telcordia GR-449, GR-20, GR-409 and GR-1221/1209
- Clearview devices support all industry standard singlemode and multimode connectors

Protection

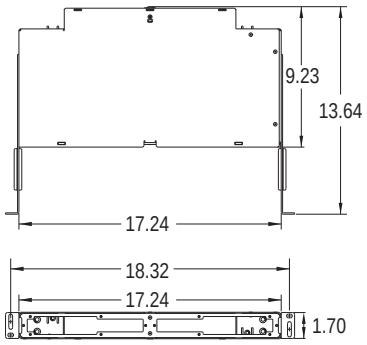
- Individual radius fingers or pass-through radius routing provides organized and intuitively managed fiber jumpers, minimizing pile up

Access

- Clearview devices are removable for hot-swap changes
- Front and rear access to panel
- Splicing integrated within the cassette for optimal protection and space utilization

Investment

- Fiber protection is optimized within the Clearview device
- FieldSmart SCD extends this protection with minimal added cost or overhead



Technical Specifications

FieldSmart 1RU Small Count Delivery Panel - Cabinet	
Dimensions	1.70" H x 17.24" W x 9.23" D
Ratings	Compliant to Telcordia GR-449
Port Density	24 SC or 48 LC
Cassette Types Supported	Clearview Blue and Clearview xPAK
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC, FC/UPC, FC/APC, ST/UPC, MPO
Cable Types	Indoor Riser, Indoor Plenum, Indoor/Outdoor, Outdoor (Riser/Non-Rated), Outdoor Armored (Riser/Non-Rated), FieldShield®
Splice Capacity	12 splices in each Clearview Cassette
Storage Capacity	One meter of 900 µm fiber
Material	Steel and aluminum with almond powder coating

Pre-Configured Part Numbers

Part Number	Description
SCD-X1RU-CM	FieldSmart SCD 1RU Cabinet Mount

FieldSmart® Fiber Crossover Distribution System (FxDS)

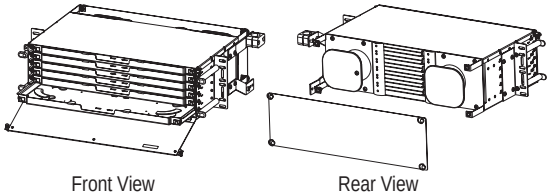
On-Frame 6 Drawer Splice Deck

Application

The FxDS On-Frame 6 Drawer Splice Deck is designed for customers who prefer on-frame splicing. It provides 144 loose tube splice capacity or 432 ribbon capacity in a 6" footprint for on-frame splicing applications where a dedicated splice only footprint is desired.

Description

Six slide out drawers providing either 24 loose tube heat shrink fusion (HSF) splices or 72 ribbon splices per drawer. OSP and IFC cables enter through the back of the module into a dynamic slack take-up device and route to splicing area of the drawer. On panel clamping kits come standard with the splice-deck. On-frame clamp kits are also available.



Front View Rear View

Features and Benefits

Integrity

- RUS listed
- Compliant to Telcordia GR-449
- Industry standard splice tray
- Alternative "low-profile" trays may be substituted for familiarity to splicing technicians

Protection

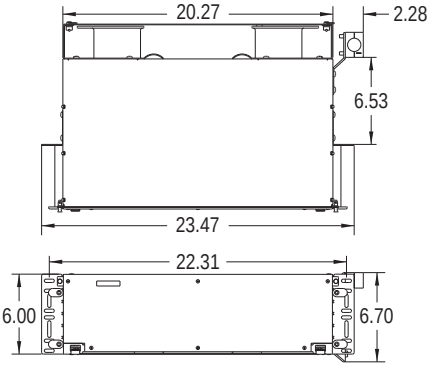
- Patented slack take-up system dynamic ensures that pinch point and slack is adequately stored when drawers are opened and closed
- Full bend-radius protection throughout panel
- Front and rear covers for physical fiber protection

Access

- Slide out drawers provide direct access to route-paths, slack and splice trays
- Rear entry and tie-points to secure incoming cables

Investment

- Supports both loose tube and ribbon constructions
- Segregation using drawer based solution provides ability to add and splice fiber without increased risk to fiber located in other drawers
- Low 6" vertical profile allows 432 on-frame splicing to be achieved using FieldSmart FxDS
- Ability to hold 144-loose tube splices or 432 mass fusion ribbon splices in a 6" footprint
- Available for 23" frames



Technical Specifications

FieldSmart FxDS On-Frame 6 Drawer Splice Deck	
Dimensions	6" H x 20.27" W x 13.88" D
Ratings	Compliant to Telcordia GR-449
Cable Types	Indoor Riser, Indoor Plenum, Indoor/Outdoor, Outdoor (Riser/Non-Rated), Outdoor Armored (Riser/Non-Rated), FieldShield®
Splice Capacity	144 loose tube or 432 mass fusion ribbon splices
Storage Capacity	One meter of 900 µm fiber and five meters of exposed buffer tube
Material	16 gauge cold rolled steel with almond powder coating

Pre-Configured Part Numbers

Part Number	Description
LDH-144-ZZZ	144-fiber loose tube splice capacity
LDM-432-ZZZ	432-ribbon mass fusion splice capacity

FieldSmart® Fiber Crossover Distribution System (FxDS)

Fiber Entrance Cabinet (FEC)

Application

The FieldSmart Fiber Entrance Cabinet (FEC) provides off-frame splicing for the central office, headend or remote hut. Fiber Entrance Cabinets are typically placed in the fiber entrance room and used to transition OSP fiber sheaths to IFC cabling.

Description

The FieldSmart FEC is built on a modular platform scaling 288 heat shrink fusion (HSF) or 864 mass fusion (ribbon) fiber splices at a time. Multiple entry/exit points allow for multiple distribution and OSP fiber sheaths to enter into the FEC from top, bottom or sidewalls and transition from conduit, overhead fiber tray or raised flooring. A removable splice block, holding twelve 24-fiber splice trays allows the user access and the ability to prep away from the cabinet. Intuitive buffer tube and sub-unit slack routing prevents cable tie-in with a clockwise routing scheme to allow quick and easy re-entry after initial deployment or to add additional capacity. If vertical real estate is available, the FEC can be ganged together, in modular fashion, allowing scalability up to 864-fiber splices and beyond.

Each cable entrance plate will support cable diameters up to one inch. Lockable cupboard style doors allow for easy access with minimal swing clearance needed for tight aisle clearances.

Features and Benefits

Integrity

- Industry standard splice tray
- Sturdy construction using 16 gauge steel

Protection

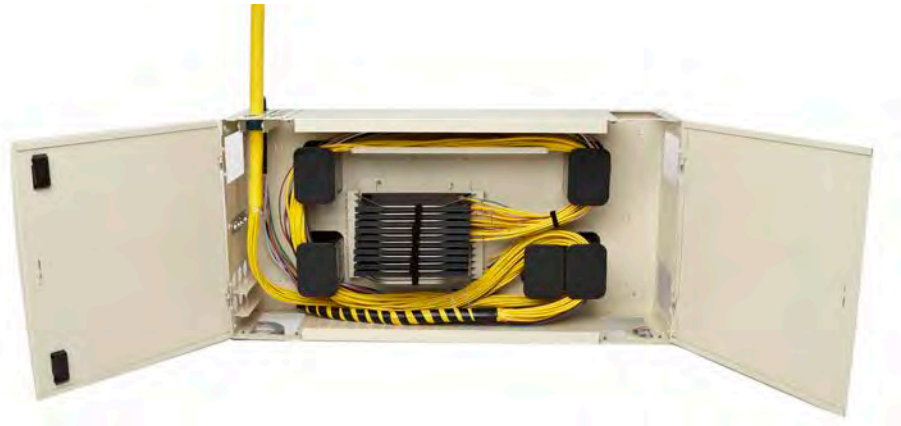
- Piano hinged doors, with removable hinge pin provides extra stability
- Ruggedized cable clamps protect against twisting and pistoning at the assembly breakout point
- Full bend-radius protection throughout cabinet

Access

- Multiple entry/exit points allow distribution and OSP fiber sheaths to enter from top, bottom or sidewalls
- Cable entrance plates support cable diameters up to one inch
- Removable splice trays provide technicians access to prep outside of the cabinet
- Intuitive, clockwise fiber management routing scheme prevents cable tie-in
- Ability to store five meters of exposed buffer tubes
- Removable hinge pin allows for easy door removal

Investment

- Splice trays supports both loose tube and ribbon constructions for single and mass fusion (ribbon) splicing
  - Maximum of 24 splice per tray LT (288)
  - Maximum of 72 splice per tray RB (864)
- FECs can be ganged together in a modular fashion when vertical real estate space permits



FieldSmart® Fiber Crossover Distribution System (FxDS)

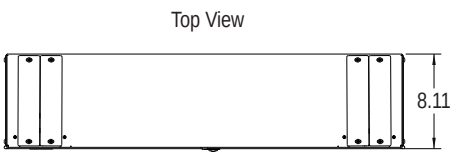
Fiber Entrance Cabinet (FEC)

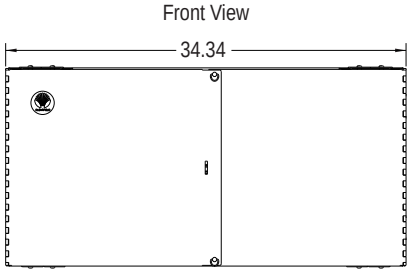
Technical Specifications

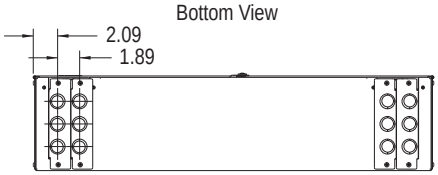
FieldSmart FxDS Fiber Entrance Cabinet	
Dimensions	17.5” H x 34.5” W x 8.25” D
Ratings	Compliant to Telcordia GR-449
Cable Types	Indoor Riser, Indoor Plenum, Indoor/Outdoor, Outdoor (Riser/Non-Rated), Outdoor Armored (Riser/Non-Rated), FieldShield®
Splice Capacity	288 heat shrink fusion (HSF) loose tube or 864 mass fusion (MF) ribbon splices
Storage Capacity	One meter of 900 µm fiber and five meters of exposed buffer tube
Material	16 gauge cold rolled steel with almond powder coating

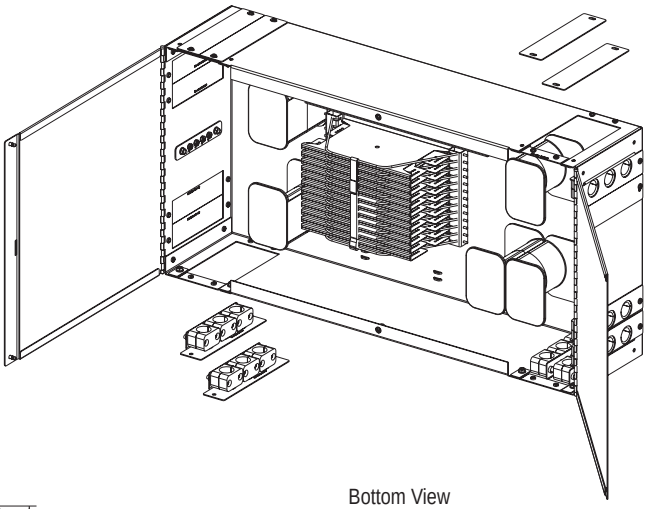
Pre-Configured Part Numbers

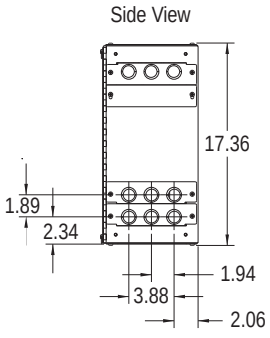
Part Number	Description
009894	Fiber Entrance Cabinet - 288 splice capacity (Includes one clamp kit. No splice trays.)
010504	Splice Tray for FEC - 24 heat shrink fusion (HSF) or 72 MF mass fusion (MF)
010505	Clamp Kit (includes four clamp plates, four ½” clamps, four 1” clamp plugs and appropriate hardware)
010503	Locking Kit

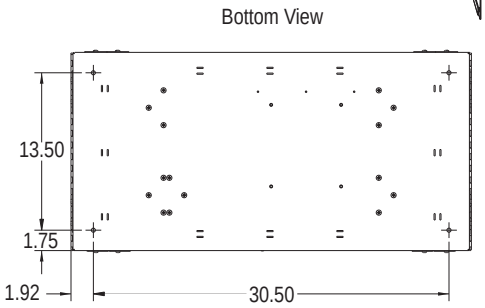












Introduction to Outside Plant Solution

FieldSmart® Products

The goal of today's outside plant deployment is to cost-effectively consolidate and distribute fiber deeper into the network.

At Clearfield®, Outside Plant FieldSmart products are designed from the ground up based on field-proven experience and offer truly unique solutions for today's FTTx rapid deployment demands. FieldSmart Fiber Scalability Center (FSC) Cabinets use the same modular components as FieldSmart FxDS Frame Kits deployed in the Inside Plant, allowing technicians the ease of working with a single fiber management platform regardless of Inside or Outside Plant deployment.

Clearfield's FieldSmart Fiber Scalability Center (FSC) line of OSP Cabinets and accessories ensures your network functions with the utmost fiber access, protection and density.

FieldSmart Fiber Scalability Center (FSC) Cabinets

The FieldSmart Fiber Scalability Center (FSC) line of products sets the bar for fiber access, protection and density among outside plant cabinets for PON, cross-connect or hub collapse environments. With the Clearview® Cassette as its foundation, the FieldSmart FSC line uses the same components as the FieldSmart FxDS deployed in the inside plant. This enables service providers to standardize on a single building block, allowing a single fiber management component to be deployed for both environments. This provides technicians the ease of working with a single fiber management platform regardless of inside or outside plant deployment - saving training and installation time.

- In a PON configuration, the FSC Cabinet is the complete solution for managing 288, 432, 576 or an astounding 1,152 fibers for outside plant FTTx applications.
- In a cross-connect configuration, 432, 864 or 1,728 feeder/distribution ports can be deployed and the cabinet supports a user defined feeder-to-distribution ratio without any real estate penalty.
- The FieldSmart Hub Collapse Cabinet (HCC) is designed for the cable operator looking to separate their passive infrastructure from the electronics without the need for standard hub architecture and it reduces operating costs associated with moves, adds and changes.

Splicing

FieldSmart changes the rules of fiber management as splicing can be done inside of the Clearview Cassette - allowing service providers to enjoy the cost savings of patch and splice (Clearfield's in-cassette splicing solution) without the hassles of traditional field splicing.

Splitter Density

Splitter density is maximized through the use of splitter modules that stack together in a top-loaded or side-by-side splitter cage that is easily accessed from the front of the cabinet. These ruggedized, outside plant-rated splitters ship with the individual legs "pre-staged" within a FieldSmart Staging Plate for easy and quick deployment.

FieldSmart Fiber Scalability Center (FSC) Makwa™ Fiber Distribution Hub (FDH)

The FieldSmart Makwa, incorporates all of the features found in our above ground cabinets and adds the ability to deploy the FieldSmart FSC Distribution Hub in a below grade application. Roughly 50% smaller than existing above grade cabinets, Makwa reduces real estate costs and improves density without compromising critical design elements of accessibility, bend-radius protection, physical fiber protection and route path diversity.

Providing 12 to 288 ports of connectivity for PON or 12 to 432 port of connectivity for cross-connect, the Makwa utilizes patch and splice or patch only technology in any network environment. The FieldSmart FSC Makwa is scalable to meet customer's specific requirements and has the ability to be mounted either above or below-ground, taking the potential above grade aesthetics issue out of the deployment equation.

FieldSmart® Makwa™ Fiber Distribution Hub (FDH)

288 PON Cabinet

Application

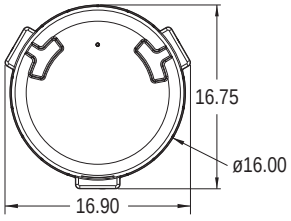
The FieldSmart Makwa FDH 288 PON Cabinet provides 12 to 288 ports of connectivity for PON and utilizes patch and splice (Clearfield's in-cassette splicing solution) or patch only technology in any network environment. The FieldSmart FSC Makwa is scalable to meet a customer's specific requirements and has the ability to be mounted either above or below ground. Below grade mounting eliminates the potential above grade aesthetics issues from the deployment equation.

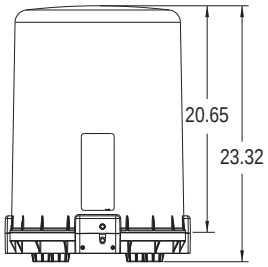
Description

The FieldSmart Makwa incorporates all of the features found in our above ground cabinets and adds the ability to deploy the FieldSmart FSC Distribution Hub in a below grade application. Roughly 50% smaller than existing above grade cabinets, Makwa reduces real estate costs and improves density without compromising critical design elements of accessibility, bend-radius protection, physical fiber protection and route path diversity.

The FieldSmart Makwa consists of four basic elements: a top cover (dome), a base plate, an internal backplane and the Clearview® Black Cassettes. All components are pre-assembled and loaded into the Makwa – making it field ready for deployment. The Makwa is scalable to meet customer requirements and can be configured to accept 12 to 48 feeder ports and 12 to 288 distribution ports in a PON application. It will accept up to nine 1 x 32 ruggedized splitters and provides staging plates for PON networks.

Patch and splice versions are shipped with the Clearview Black Cassette preloaded. Patch only configurations are shipped complete with pre-terminated lengths of OSP cables that are terminated into the Clearview Black Cassettes. They come fully installed into the Makwa, making it ready for deployment right out of the package.





Features and Benefits

Integrity

- Telcordia GR-3125-CORE Issue 2 Certified
- Terminations are designed and tested to Telcordia GR-326
- Clearfield® FiberDeep® Guarantee: 0.2 dB insertion loss or less, exceeding industry standards
- Compliant to Telcordia GR-20, GR-409,GR-487, GR-771, GR-1209 and GR-1221
- NEMA 4 compliant
- Constructed out of UV resistant plastic
- Stainless steel fasteners and hardware

Protection

- Provides protection from water intrusion if fully submerged
- Single molded cover with double o-ring sealing technology for additional protection
- Watertight cable entrance fittings
- Each 12-fiber Clearview Black houses a 12-fiber subunit of patch and splice or patch only, protecting fiber from both environmental and human factors

Access

- Pole mount or in vault
- Vault mount option allows unit to be hidden from site and accessed only when service needs to be performed
- Removable/resealable dome allows service technicians to access fiber without damaging fiber or disrupting existing service
- Cable management integrated into the Makwa unit – including slack storage and staging plates for splitters

Investment

- All fiber is deployed in increments of 12, providing the users the ability to scale from 12 ports to full capacity, aligning capital investment with network layout and subscriber revenue
- User defined feeder to distribution ratios for PON applications
- MFS patch and splice configurations provide maximum flexibility for customer designed networks

FieldSmart® Makwa™ Fiber Distribution Hub (FDH)

288 PON Cabinet

Technical Specifications

FieldSmart Makwa Fiber Distribution Hub - 288 PON Cabinet	
Dimensions	22⅜" H x 16" W x 16" D
Weight	35 lbs
Port Density	Up to 288
Feeder/Express Ports	Up to 48
Cassette Types Supported	Clearview® Black
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC,
Cable Types	Indoor/Outdoor, Outdoor (Riser/Non-Rated), Outdoor Armored (Riser/Non-Rated)
Splice Capacity	12 splices in each Clearview Black Cassette
Storage Capacity	Up to ten feet of jacketed fiber
Cables Entrances	4
Splitters Slots (1 x 32 Splitter)	9 (using HD Ruggedized Splitter)
Mounting Options	Above Grade: pole mount; Below Grade: in vault mount
Material	Proprietary Blended UV Resistant Plastic

Accessories

- HD Ruggedized Splitter – designed specifically for Makwa
- Below Grade: Swing Arm (VA-SWING-ARM) - can be ordered by itself or pre-installed in a 36 x 48 x 36" CraftSmart® Vault
- Below Grade: Need both Vault Bracket (016897) and In Vault Mount Kit (017202)
- Above Grade: Pole Mount Kit (016902)
- CraftSmart Vaults – minimum size required: 30" W x 48" T x 36" D

Configured Part Numbers

R - B Z ___ - ___ ___ ___ - ___ ___ ___ - ___ ___ ___ ___ XXXM or XXXF

1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9

1 Select Feeder

1 = 12 in a Cassette
2 = 24 in 2 Cassettes
3 = 36 in 3 Cassettes
4 = 48 in 4 Cassettes
Z = No feeder

2 Select Distribution Port Count

012 = 12
024 = 24
036 = 36
048 = 48
072 = 72
096 = 96
144 = 144
288 = 288

3 Select Connector

A = SC/UPC
C = SC/APC
F = LC/UPC DX
H = LC/APC DX

4 Select Mode and Type

1 = Singlemode (non-ribbon)
2 = Singlemode (ribbon)

5 Select Jacket Construction

B = OSP riser
E = OSP (non-rated)
F = Loose tube patch and splice
M = OSP armored (non-rated)
Z = None (ribbon patch and splice)

6 Select # of 288 Fiber Distribution OSP Cables

0 = 0
1 = 1

7 Select # of 144 Fiber Distribution OSP Cables

0 = 0
1 = 1
2 = 2

8 Select # of 96 Fiber Distribution OSP Cables

0 = 0
1 = 1
2 = 2
3 = 3

9 Select # of 72 Fiber Distribution OSP Cables

0 = 0
1 = 1
2 = 2
3 = 3

XXXM or XXXF

XXXM = Length in meters
XXXF = Length in feet

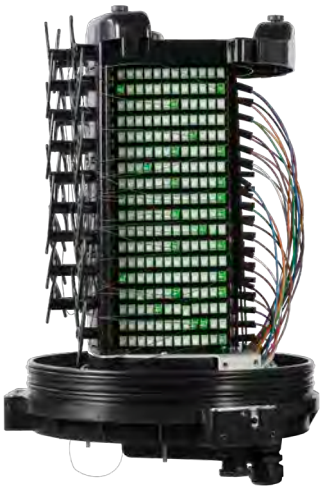
* Order mounting brackets separately

FieldSmart® Makwa™ Fiber Distribution Hub (FDH)

432 Cross-Connect Cabinet

Application

The FieldSmart Makwa FDH 432 Cross-Connect Cabinet provides 12 to 432 ports of connectivity for cross-connect applications and utilizes patch and splice (Clearfield's in-cassette splicing solution) or patch only technology in any network environment. The FieldSmart FSC Makwa is scalable to meet customer's specific requirements and has the ability to be mounted either above or below ground. Below grade mounting eliminates the potential above grade aesthetics issues from the deployment equation.

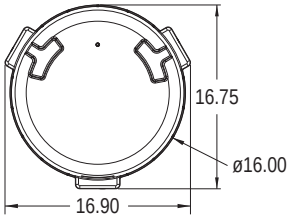


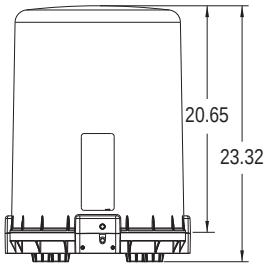
Description

The FieldSmart Makwa, incorporates all of the features found in our above ground cabinets and adds the ability to deploy the FieldSmart FSC Distribution Hub in a below grade application. Roughly 50% smaller than existing above grade cabinets, Makwa reduces real estate costs and improves density without compromising critical design elements of accessibility, bend-radius protection, physical fiber protection and route path diversity.

The FieldSmart Makwa consists of four basic elements: a top cover (dome), a base plate, an internal backplane and the Clearview® Black Cassettes. All components are pre-assembled and loaded into the Makwa – making it field ready for deployment. Scalable to meet customer requirements, Makwa can be configured to accommodate 12 to 432 ports for cross-connect applications as required.

Patch and splice versions are shipped with the Clearview Black Cassette preloaded. Patch only configurations are shipped complete with pre-terminated lengths of OSP cables, terminated into the Clearview Black Cassettes. They come fully installed into the Makwa, making it ready for deployment right out of the package.





Features and Benefits

Integrity

- Telcordia GR-3125-CORE Issue 2 Certified
- Terminations are designed and tested to Telcordia GR-326
- Clearfield® FiberDeep® Guarantee: 0.2 dB insertion loss or less, exceeding industry standards
- Compliant to Telcordia GR-20, GR-409,GR-487, GR-771, GR-1209 and GR-1221
- NEMA 4 compliant
- Constructed out of UV resistant plastic with stainless steel fasteners and hardware

Protection

- Provides protection from water intrusion if fully submerged
- Single molded cover with double o-ring sealing technology for additional protection
- Watertight cable entrance fittings
- Each 12-fiber Clearview Black houses a 12-fiber subunit of patch and splice or patch only, protecting fiber from both environmental and human factors

Access

- Pole mount or in vault
- In vault mount option allows unit to be hidden from site and accessed only when service needs to be performed
- Removable/resealable dome allows service technicians to access fiber without damaging fiber or disrupting existing service
- Cable management integrated into the Makwa unit – including slack storage and staging plates for splitters

Investment

- All fiber is deployed in increments of 12, providing the users the ability to scale from 12 ports to full capacity, aligning capital investment with network layout and subscriber revenue
- User defined feeder to distribution ratios for cross-connect options
- Patch and splice configurations provide maximum flexibility for customer designed networks

FieldSmart® Makwa™ Fiber Distribution Hub (FDH)

432 Cross-Connect Cabinet

Technical Specifications

FieldSmart Makwa Fiber Distribution Hub - 432 Cross-Connect Cabinet	
Dimensions	22⅜" H x 16" W x 16" D
Weight	35 lbs
Port Density	432
Cassette Types Supported	Clearview® Black
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC,
Cable Types	Indoor/Outdoor, Outdoor (Riser/Non-Rated), Outdoor Armored (Riser/Non-Rated)
Splice Capacity	12 splices in each Clearview Black Cassette
Storage Capacity	Up to ten feet of jacketed fiber
Cables Entrances	4
Recommended Jumper Length	1 to 1.2 meter (40" to 48") 900 µm bend-insensitive fiber jumper cables
Mounting Options	Above Grade: pole mount; Below Grade: in vault mount
Material	Property Blended UV Resistant Plastic

Accessories

- Below Grade: Swing Arm (VA-SWING-ARM) - can be ordered by itself or pre-installed in a 36 x 48 x 36" CraftSmart® Vault
- Below Grade: Need both Vault Bracket (016897) and In Vault Mount Kit (017202)
- Above Grade: Pole Mount Kit (016902)
- CraftSmart Vaults – minimum size required: 30" W x 48" T x 36" D

Configured Part Numbers

R - P Z - ___ ___ ___ - ___ ___ ___ - ___ ___ ___ - ___ ___ ___ - ___ ___ ___ XXXM or XXXF

1 2 3 4 5 6 7 8 9 10 11

1 Select Connector

A = SC/UPC
C = SC/APC
F = LC/UPC DX
H = LC/APC DX

2 Select Mode and Type

1 = Singlemode (non-ribbon)
2 = Singlemode (ribbon)

3 Select Jacket Construction

B = OSP riser
E = OSP (non-rated)
F = Loose tube patch and splice
M = OSP armored
Z = None (ribbon patch and splice)

4 Select Feeder Count (Available in Increments of 12) **

012 = 12
024 = 24
036 = 36
048 = 48
072 = 72
096 = 96
144 = 144

5 Select # of 288 Fiber Feeder OSP Cables

0 = 0
1 = 1

6 Select # of 144 Feeder OSP Cables

0 = 0
1 = 1
2 = 2

7 Select # of 96 Fiber Feeder OSP Cables

0 = 0
1 = 1
2 = 2
3 = 3

8 Select Distribution Count (Available in Increments of 12) **

012 = 12
024 = 24
036 = 36
048 = 48
144 = 144

9 Select # of 288 Fiber Distribution OSP Cables

0 = 0
1 = 1

10 Select # of 144 Fiber Distribution OSP Cables

0 = 0
1 = 1
2 = 2

11 Select # of 96 Fiber Distribution OSP Cables

0 = 0
1 = 1
2 = 2
3 = 3

XXXM or XXXF

XXXF = Length of pigtail in feet
XXXM = Length of pigtail in meters

* Order mounting brackets separately
** 216 ports maximum

FieldSmart® Makwa™ Fiber Distribution Hub (FDH)

Below Grade Application Scenarios

Below Grade in Vault

Description

With the ability to be housed in a 30” x 48” x 36” vault or hand-hole, FieldSmart Makwa can be placed in any below grade environment including the boulevard or area between the curb and sidewalk. As this space is typically owned by the municipality, only a single permit is required expediting the pre-construction engineering process.

Recommended Vaults

Empty - Need bracket 016897 and Mount Kit 017202 or Swing Arm VA-SWING-ARM

Part Number	Description
V7B-AZP	Vault, below grade Pencell, 30” W x 48” L x 36” D, solid HDPE lid, hex bolts, green, straight wall
V7B-BZP	Vault, below grade Pencell, 30” W x 48” L x 36” D, split HDPE lid, hex bolts, green, straight wall
V7B-EZP	Vault, below grade Pencell, 30” W x 48” L x 36” D, split polymer concrete lid, hex bolts, gray, straight wall
V8B-BZP-F	Vault, Pencell 36” x 60” x 36”, complete split lid, for use with below grade cabinet, no floor, flared wall
V8B-EZP-F	Vault, Pencell 36” x 60” x 36”, complete polymer concrete split lid, for use with below grade cabinet, no floor, flared wall

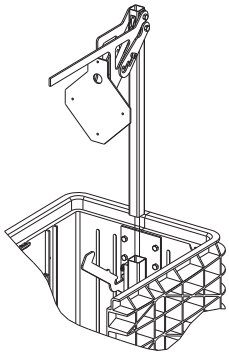
With Swing Arm Installed

Part Number	Description
V7B-AZP-SARM	Vault, below grade Pencell, 30 x 48 x 36”, solid HDPE lid, hex bolts, green, straight wall, with swing arm
V7B-BZP-SARM	Vault, below grade Pencell, 30 x 48 x 36”, split HDPE lid, hex bolts, green, straight wall, with swing arm
V7B-EZP-SARM	Vault, below grade Pencell, 30 x 48 x 36”, split polymer concrete lid, hex bolts, green, straight wall, with swing arm

Pre-Configured Part Numbers

Part Number	Description
016897	Bracket, In Vault Mounting Stand for Makwa *
017202	Kit, In Vault Mounting Kit for Makwa, includes two 24” step racks and two 18” cable hooks *
VA-SWING-ARM	Swing arm for Makwa

** Both items need to be ordered together*



FieldSmart® Makwa™ Fiber Distribution Hub (FDH)

Above Grade Application Scenarios

Above Grade Pole Mount

Description

The FieldSmart Makwa FDH is approximately half the size of a conventional Fiber Distribution Hub, allowing the broadband service provider the choice of where to deploy the cabinet without sacrificing performance or access. The Makwa FDH Pole Mount Kit allows both the 288 port PON and 432 port cross-connect versions to be pole mounted, while providing access to the FDH for moves, adds, and changes.

Pre-Configured Part Numbers

Part Number	Description
016902	Bracket, aerial, Makwa pole mount

FieldSmart® Fiber Scalability Center (FSC)

PON Cabinets: 288, 432, 576 and 1,152 Ports

Application

FieldSmart FSC PON Cabinets provide an interconnect environment from the feeder network through the optical passive splitter to the distribution network in an FTTH PON OSP cabinet. The four different cabinet sizes provide scalability from 12 ports to 1,152 ports. Designed for the outside plant environment, these cabinets provide a single distribution point to distribute FTTH in urban or dense neighborhood.

Description

The FieldSmart FSC PON is the complete solution for managing 12 to 1,152 port distribution fibers for an outside plant FTTx PON application. Through the incremental design of the Clearview® Cassette, user capacity can be scaled from as few as 12 ports to the maximum configuration of the cabinet, allowing the service provider to align the investment in capital equipment to the turn-up of revenue-generating circuits.

Features and Benefits

Integrity

- Terminations are designed and tested to Telcordia GR-326
- Clearfield® FiberDeep® Guarantee: 0.2 dB insertion loss or less, exceeding industry standards
- Compliant to Telcordia GR-20, GR-409, GR-487, GR-1221 and GR-1209
- Constructed with 0.125 aluminum
- Powder coated for additional protection
- 300 series stainless steel fasteners used on all cabinets

Protection

- 12-fiber Clearview Cassette protects fiber from environmental and human factors
- Rugged cable clamps protect the OSP cable breakouts from twisting and pistoning
- Patch only buffer tubes are fully protected with ruggedized bend-limiting tubing
- Snake skin sleeving provides additional buffer tube slack storage protection and manageability for patch and splice (Clearfield's in-cassette splicing solution) configurations
- Splitters are built with ruggedized jacketing and bend-insensitive fiber for all input and output legs

Access

- Clearview Cassette allows for quick visual troubleshooting without opening cassette
- Front access to pre-terminated assemblies with Clearview removable adapter plate
- Easy two captive fasteners for quick removal of individual cassettes for trouble shooting, splicing or replacing
- Front and rear access doors
- Top exit available in 288 and 432 PON Cabinets

Investment

- Fiber is deployed in increments of 12, providing the users the ability to scale from 12 ports to full capacity, aligning capital investment with network layout or subscriber revenue
- Express ports allow for extensions or parallel networks through the cabinet
- Patch and splice configurations eliminate costs associated with jacketed IFC cabling, hand-holes and splice cases

Accessories

- Risers: 4" and 12"
- Ruggedized Splitter
- Mid-Span/Feed-Through Plate Kit
- Pole Mount Kit
- Vault Mount Adapter Plate Kit
- Optional top exit available in 288 and 432 PON
- Optional LGX Adapter Bracket Kit (P/N 014380) available to accommodate 6 LGX style modules or 13, ½ wide LGX modules. Max port capacity decrease by 84 (7 cassettes) when used.

FieldSmart® Fiber Scalability Center (FSC)

PON Cabinets: 288, 432, 576 and 1,152 Ports

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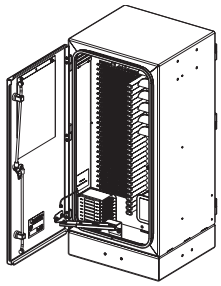
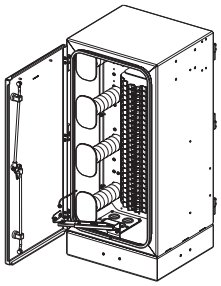
Technical Specifications

FieldSmart FSC PON Cabinets	288 Port	432 Port	576 Port	1,152 Port
Dimensions *(without riser)*	32" H x 16.78" W x 16.9" D	36.67" H x 21.17" W x 16.9" D	32" H x 33" W x 16.9" D	64" H x 33" W x 16.9" D
Weight	54 lbs	66 lbs	86 lbs	172 lbs
Port Density	288	432	576	1,152
Feeder/Express Ports	48	48	96	192
Cables Entrances	6	6	12	12
Mounting Options (Hoist kits included with each cabinet)	Vault mount; pole mount; pad mount	Vault mount; pole mount; pad mount	Vault mount; pad mount	Vault mount; pad mount
Standard Riser Base	4" (6 lbs)	4" (6 lbs)	4" (8 lbs)	4" (8 lbs)
Optional Riser Base	12" (12 lbs)	12" (16 lbs)	12" (20 lbs)	12" (20 lbs)
Splitters Slots	9	14	18	36
Cassette Types Supported	Clearview® Blue			
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC			
Cable Types	Indoor/Outdoor, Outdoor (Riser/Non-Rated), Outdoor Armored (Riser/Non-Rated)			
Splice Capacity	12 splices in each Clearview Cassette			
Material	0.125 aluminum with almond powder coating			

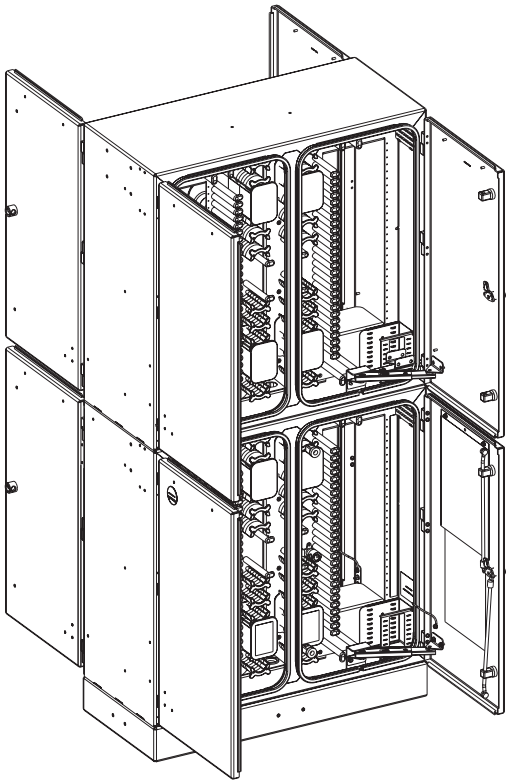
COMING SPRING 2018: 144 Port and 864 Port PON Cabinets (contact your Clearfield® representative for more information)



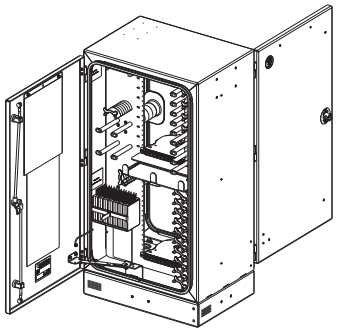
288 Port - Front



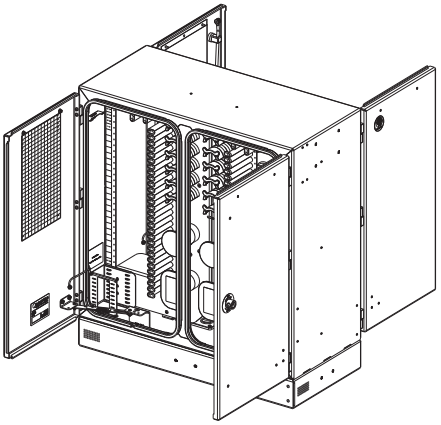
288 Port - Rear



1,152 Port - Rear



432 Port - Front



576 Port - Front

FieldSmart® Fiber Scalability Center (FSC)

PON Cabinets: 288, 432, 576 and 1,152 Ports

Configured Part Numbers

288 Port Cabinet

R ___ ___ - ___ ___ ___ - ___ ___ ___ - ___ ___ ___ - ___ XXXM or XXXF*

1 2 3 4 5 6 7 8 9 A

1 Select Cabinet Type

N = Patch only with 4" riser
P = Patch and splice with 4" riser
3 = Patch only with 12" riser
4 = Patch and splice with 12" riser

2 Select Feeder Port Count

1 = 12 ports in a cassette
2 = 24 ports – two cassettes
3 = 36 ports – three cassettes
4 = 48 ports – four cassettes

3 Select Distribution Port Count

X X X = port count in increments of 12

4 Select Connector Style

A = SC/UPC
C = SC/APC
F = LC/UPC
H = LC/APC

5 Select Mode / Type

1 = Singlemode - non-ribbon
2 = Singlemode - ribbon

6 Select Cable Construction

B = OSP riser
E = OSP, non-rated (loose tube)
F = Patch and splice
M = OSP armored
Z = None or patch and splice ribbon

7 Select Qty of 144 - Fiber OSP Cables

0 = 0
1 = 1
2 = 2

8 Select Qty of 96 - Fiber OSP Cables

0 = 0
1 = 1
2 = 2
3 = 3

9 Select Qty of 72 - Fiber OSP Cables

0 = 0
1 = 1
2 = 2
3 = 3
4 = 4

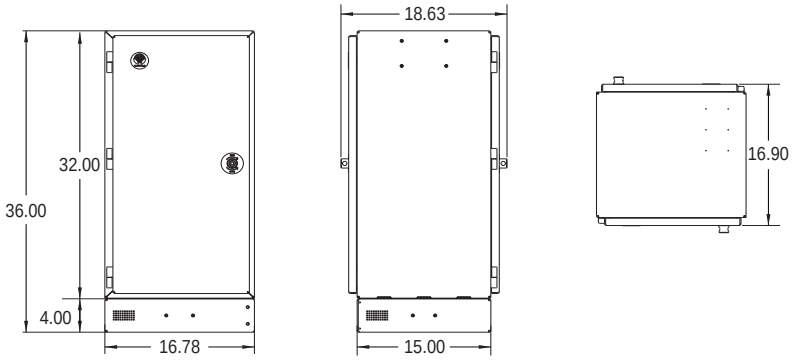
A Extras

B = Clearview Blue Cassettes
D = Top exit with Clearview Blue
F = Vented door with Clearview Blue
J = Vented door with top exit and Clearview Blue

XXXM or XXXF

XXXM = Length in meters
XXXF = Length in feet

* 200 feet maximum



Vault Options

288 Port Cabinet

Part Number	Description
V6A-CZP	Vault, below grade Pencell, 24” W x 36” L x 24” D, split HDPE lid, hex bolts, green, with cut out for FieldSmart cabinets, straight wall, with bolt kit
V7A-CZP	Vault, below grade Pencell, 30” W x 48” L x 24” D, split HDPE lid, hex bolts, green, with cut out for FieldSmart cabinets, straight wall, with bolt kit
V7B-CZP	Vault, below grade Pencell, 30” W x 48” L x 36” D, split HDPE lid, hex bolts, green, with cut out for FieldSmart cabinets, straight wall, with bolt kit
FMA-H3Z-SUB	Pole Mount Kit for FieldSmart cabinet

FieldSmart® Fiber Scalability Center (FSC)

PON Cabinets: 288, 432, 576 and 1,152 Ports

Configured Part Numbers

432 Port Cabinet

R ___ ___ - ___ ___ ___ - ___ ___ ___ - ___ ___ ___ - ___ XXXM or XXXF*

1 2 3 4 5 6 7 8 9 A

1 Select Cabinet Type

A = Patch only with a 12" riser
B = Patch only with 4" riser
C = Patch and splice with 12" riser
D = Patch and splice with 4" riser

2 Select Feeder Port Count

1 = 12 ports in one cassette
2 = 24 ports – two cassettes
3 = 36 ports – three cassettes
4 = 48 ports – four cassettes

3 Select Distribution Port Count

X X X = port count in increments of 12

4 Select Connector Style

A = SC/UPC
C = SC/APC
F = LC/UPC
H = LC APC

5 Select Mode / Type

1 = Singlemode - non-ribbon
2 = Singlemode - ribbon

6 Select Cable Construction

B = OSP riser
E = OSP, non-rated (loose tube)
F = Patch and splice
M = OSP armored

7 Select Qty of 144 - Fiber OSP Cables

0 = 0
1 = 1
2 = 2
3 = 3

8 Select Qty of 96 - Fiber OSP Cables

0 = 0
1 = 1
2 =2
3 = 3

9 Select Qty of 72 - Fiber OSP Cables

0 = 0
1 = 1
2 = 2
3 = 3
4 = 4
5 = 5
6 = 6

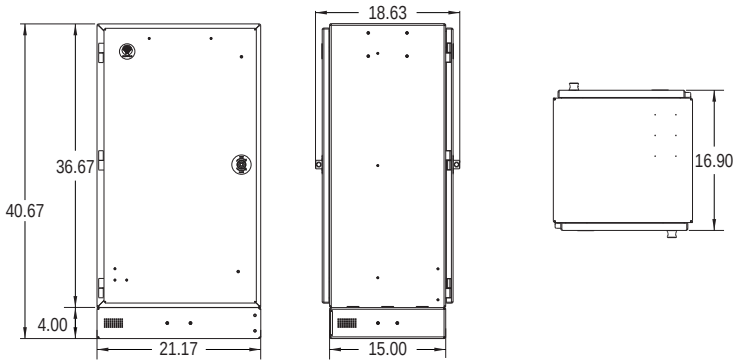
A Extras

B = Clearview Blue Cassettes
D = Top exit with Clearview Blue
F = Vented door with Clearview Blue
J = Vented door with top exit and Clearview Blue

XXXM or XXXF

XXXM = Length in meters
XXXF = Length in feet

* 200 feet maximum



Vault Options

432 Port Cabinet

Part Number	Description
V6A-CZP	Vault, below grade Pencell, 24” W x 36” L x 24” D, split HDPE lid, hex bolts, green, with cut out for FieldSmart cabinets, straight wall, with bolt kit
V7A-CZP	Vault, below grade Pencell, 30” W x 48” L x 24” D, split HDPE lid, hex bolts, green, with cut out for FieldSmart cabinets, straight wall, with bolt kit
V7B-CZP	Vault, below grade Pencell, 30” W x 48” L x 36” D, split HDPE lid, hex bolts, green, with cut out for FieldSmart cabinets, straight wall, with bolt kit
FMA-H3Z-SUB	Pole Mount Kit for FieldSmart cabinet

FieldSmart® Fiber Scalability Center (FSC)

PON Cabinets: 288, 432, 576 and 1,152 Ports

CLEARFIELD

Configured Part Numbers

576 Port Cabinet

R ___ ___ - ___ ___ ___ - ___ ___ ___ - ___ ___ ___ - ___ XXXM or XXXF*

1 2 3 4 5 6 7 8 9 A

1 Select Cabinet Type

K = Patch only with 4" riser
M = Patch and splice with 4" riser
1 = Patch only with 12" riser
2 = Patch and splice with 12" riser

2 Select Feeder Port Count

1 = 12 ports in a cassette
2 = 24 ports – two cassettes
3 = 36 ports – three cassettes
4 = 48 ports – four cassettes
5 = 60 ports – five cassettes
6 = 72 ports – six cassettes
7 = 84 ports – seven cassettes
8 = 96 ports – eight cassettes

3 Select Distribution Port Count

X X X = port count in increments of 12

4 Select Connector Style

A = SC/UPC
C = SC/APC
F = LC/UPC
H = LC/APC

5 Select Mode / Type

1 = Singlemode - non-ribbon
2 = Singlemode - ribbon

6 Select Cable Construction

B = OSP riser
E = OSP, non-rated (loose tube)
F = Patch and splice
M = OSP armored

7 Select Qty of 144 - Fiber OSP Cables

0 = 0
1 = 1
2 = 2
3 = 3
4 = 4

8 Select Qty of 96 - Fiber OSP Cables

0 = 0
1 = 1
2 = 2
3 = 3
4 = 4
5 = 5
6 = 6

9 Select Qty of 72 - Fiber OSP Cables

0 = 0
1 = 1
2 = 2
3 = 3
4 = 4
5 = 5
6 = 6
7 = 7
8 = 8

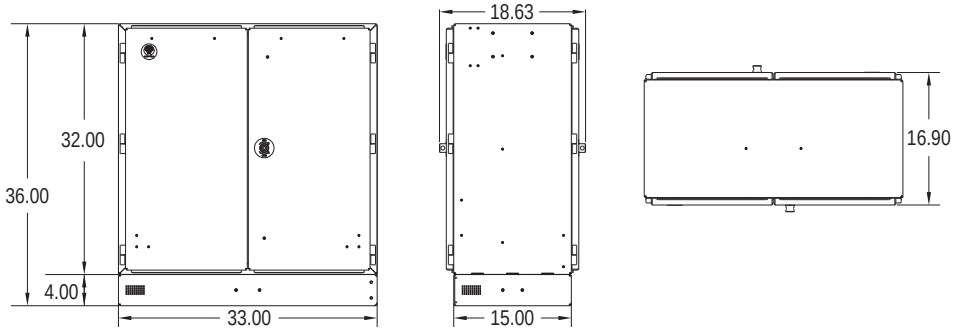
A Extras

B = Clearview Blue Cassettes
F = Vented door with Clearview Blue

XXXM or XXXF

XXXM = Length in meters
XXXF = Length in feet

* 200 feet maximum



Vault Options

576 Port Cabinet

Part Number	Description
V7A-CZP	Vault, below grade Pencell, 30” W x 48” L x 24” D, split HDPE lid, hex bolts, green, with cut out for FieldSmart cabinets, straight wall, with bolt kit
V7B-CZP	Vault, below grade Pencell, 30” W x 48” L x 36” D, split HDPE lid, hex bolts, green, with cut out for FieldSmart cabinets, straight wall, with bolt kit
V8A-CZP-F	Vault, Pencell 36” x 60” x 24”, complete split lid with ½ cut out for FieldSmart cabinets - with bolt kit, flared wall
V8B-CZP-F	Vault, Pencell 36 x 60 x 36”, complete split lid, with ½ cut out for FieldSmart cabinets - with bolt kit, flared wall

FieldSmart® Fiber Scalability Center (FSC)

PON Cabinets: 288, 432, 576 and 1,152 Ports

Configured Part Numbers

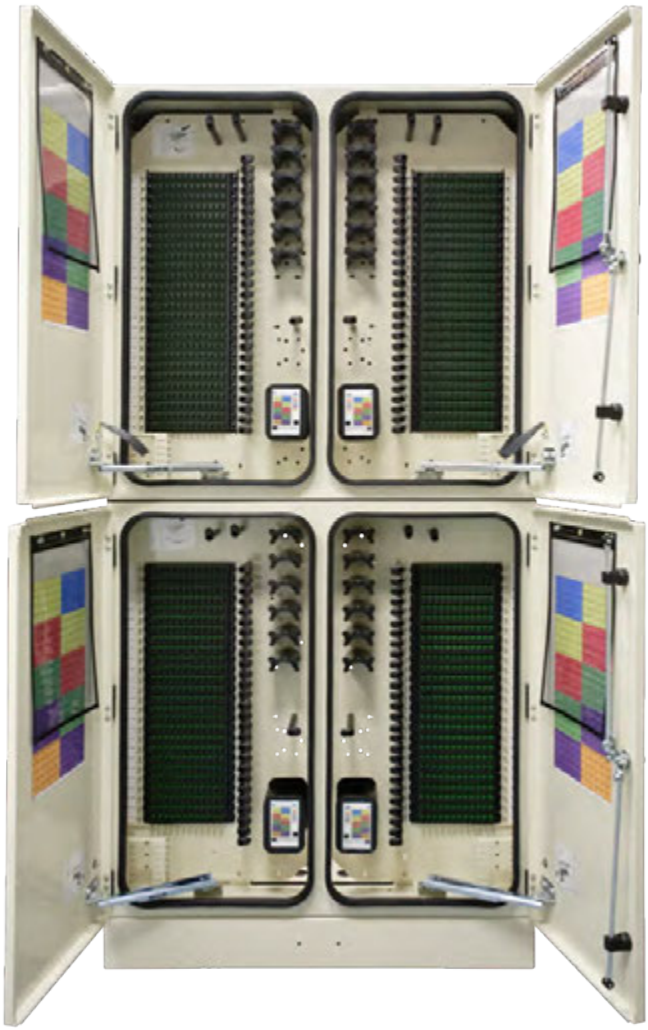
1,152 Port Cabinet

Please contact your Clearfield® representative for more information on ordering this option.

Vault Options

1,152 Port Cabinet

Part Number	Description
V7A-CZP	Vault, below grade Pencell, 30” W x 48” L x 24” D, split HDPE lid, hex bolts, green, with cut out for FieldSmart cabinets, straight wall, with bolt kit
V7B-CZP	Vault, below grade Pencell, 30” W x 48” L x 36” D, split HDPE lid, hex bolts, green, with cut out for FieldSmart cabinets, straight wall, with bolt kit
V8A-CZP-F	Vault, Pencell 36” x 60” x 24”, complete split lid with ½ cut out for FieldSmart cabinets - with bolt kit, flared wall
V8B-CZP-F	Vault, Pencell 36 x 60 x 36”, complete split lid, with ½ cut out for FieldSmart cabinets - with bolt kit, flared wall



FieldSmart® Fiber Scalability Center (FSC)

Cross-Connect Cabinets: 432, 864 and 1,728 Ports

Application

The FieldSmart FSC Cross-Connect Cabinet is the complete solution for managing up to 1,728 fibers in most any feeder/distribution ratio for an outside plant FTTx application. This solution provides an interconnect environment from the feeder network and the distribution field in a FTTH network.

Description

With the Clearview® Cassette as its foundation, the FieldSmart FSC Cross-Connect Cabinet uses the same components as the FieldSmart Fiber Crossover Distribution System (FxDS) deployed in the central office. This enables service providers to standardize on a single building block, allowing them to stock a single fiber management component for either environment. Technicians also have the ease of working with a single fiber architecture for central office or outside plant deployment - saving training and installation time. Using Clearview, FieldSmart changes the rules of fiber management. Optimal access is ensured to all ports and superior fiber protection is integrated within the Clearview Cassette. Through the incremental design of the Clearview Cassette, user capacity can be scaled from as few as 12 ports to the maximum configuration of the cabinet, allowing the service provider to align the investment in capital equipment to the turn-up of revenue-generating circuits. Further, labor and other field costs are minimized through this craft-friendly layout.

Features and Benefits

Integrity

- Terminations are designed and tested to Telcordia GR-326
- Clearfield® FiberDeep® Guarantee: 0.2 dB insertion loss or less, exceeding industry standards
- Compliant to Telcordia GR-20, GR-409, GR-487, GR-1221 and GR-1209
- Constructed with 0.125 aluminum
- Powder coated for additional protection
- 300 series stainless steel fasteners used on all cabinets

Protection

- 12-fiber Clearview Cassette protects fiber from environmental and human factors
- Rugged cable fittings protect the OSP cable breakouts from twisting and pistoning
- Patch only buffer tubes are fully protected with ruggedized bend-limiting tubing
- Snake skin sleeving provides additional buffer tube slack storage protection and manageability for patch and splice (Clearfield's in-cassette splicing solution) configurations

Access

- Clearview Cassette allows for quick visual troubleshooting without opening cassette
- Front access to pre-terminated assemblies with Clearview removable adapter plate
- Easy two captive fasteners for quick removal of individual cassettes for trouble shooting, splicing or replacing
- Front and rear access doors
- Top exit available in 432 Cross-Connect Cabinets

Investment

- Fiber is deployed in increments of 12, providing the users the ability to scale from 12 ports to full capacity, aligning capital investment with network layout or subscriber revenue
- Express ports allow for extensions or parallel networks through the cabinet
- Patch and splice configurations eliminate costs associated with jacketed IFC cabling, hand-holes and splice cases

FieldSmart® Fiber Scalability Center (FSC)

Cross-Connect Cabinets: 432, 864 and 1,728 Ports

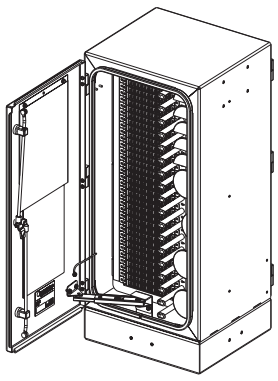
CLEARFIELD

Technical Specifications

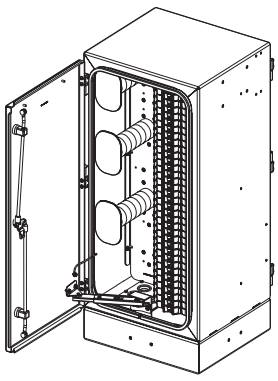
FieldSmart FSC Cross-Connect **Cabinets**	432 Port	**864 Port**	**1,728 Port**
Dimensions *(without riser)*	32” H x 16.78” W x 16.9” D	32” H x 33” W x 16.9” D	64” H x 33” W x 16.9” D
Weight	54 lbs	86 lbs	172 lbs
Port Density	432	864	1,728
Cables Entrances	6	12	12
Mounting Options (Hoist kits included with each cabinet)	Vault mount; pole mount; pad mount	Vault mount; pad mount	Vault mount; pad mount
Standard Riser Base	4” (6 lbs)	4” (8 lbs)	4” (8 lbs)
Optional Riser Base	12” (12 lbs)	12” (12 lbs)	12” (20 lbs)
Cassette Types Supported	Clearview® Blue		
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC		
Cable Types	Indoor/Outdoor, Outdoor (Riser/Non-Rated), Outdoor Armored (Riser/Non-Rated)		
Splice Capacity	12 splices in each Clearview Cassette		
Material	0.125 aluminum with almond powder coating		
Recommended Jumper Length	2 meters	2 meters	4 meters

Accessories

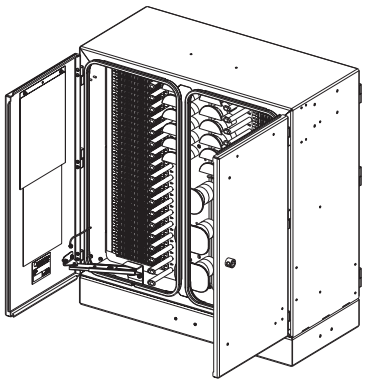
- Risers: 4” and 12”
- FieldSmart Mid-Span/Feed-Through Plate Kit
- FSC Ground Box
- Pole Mount Kit
- Vault Mount Adapter Plate Kit
- Optional top exit available on 432 cross-connect



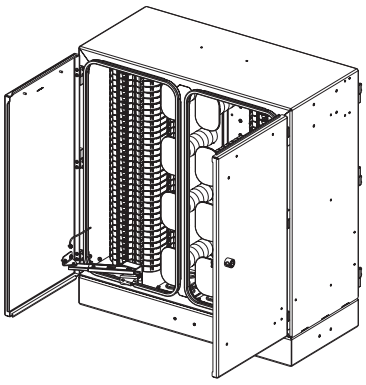
432 Port - Front



432 Port - Rear



864 Port - Front



864 Port - Rear

FieldSmart® Fiber Scalability Center (FSC)

Cross-Connect-Cabinets: 432, 864 and 1,728 Ports

Configured Part Numbers

432 Port Cabinet

R ___ Z - ___ ___ ___ - ___ ___ ___ - ___ ___ ___ - ___ ___ ___ - ___ ___ ___ - ___ XXXM or XXXF*

1		2	3	4	5	6	7	8	9	A	B	C	D

1 Select Cabinet Type

S = Patch only with 4" riser
T = Patch & splice with 4" riser
7 = Patch only with 12" riser
8 = Patch & splice with 12" riser

2 Select Connector Style

A = SC/UPC
C = SC/APC
F = LC/UPC
H = LC/APC

3 Select Mode / Type

1 = Singlemode - non-ribbon
2 = Singlemode - ribbon

4 Select Cable Construction

B = OSP riser
E = OSP, non-rated
F = Patch and splice (loose tube)
M = OSP armored
Z = None or patch and splice ribbon

5 Select Feeder Port Count

X X X = port count in increments of 12

6 Select # of 144 - Fiber Feeder Cables

0 = 0
1 = 1

7 Select # of 96 - Fiber Feeder Cables

0 = 0
1 = 1
2 = 2

8 Select # of 72 - Fiber Feeder Cables

0 = 0
1 = 1
2 = 2
3 = 3
4 = 4

9 Select Distribution Port Count

X X X = port count in increments of 12

A Select # of 144 – Fiber Distribution Cables

0 = 0
1 = 1
2 = 2

B Select # of 96 – Fiber Distribution Cables

0 = 0
1 = 1
2 = 2
3 = 3

C Select # of 72 – Fiber Distribution Cables

0 = 0
1 = 1
2 = 2
3 = 3
4 = 4

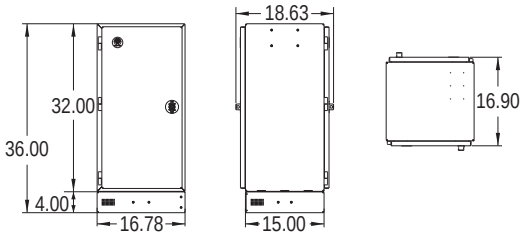
D Extras

B = Clearview Blue Cassettes
D = Top exit with Clearview Blue
F = Vented door with Clearview Blue
J = Vented door with top exit and Clearview Blue

XXXM or XXXF

XXXM = Length of pigtails in meters
XXXF = Length of pigtails in feet

*200 feet maximum



Vault Options

432 Port Cabinet

Part Number	Description
V6A-CZP	Vault, below grade Pencell, 24” W x 36” L x 24” D, split HDPE lid, hex bolts, green, with cut out for FieldSmart Cabinets, straight wall, with bolt kit
V7A-CZP	Vault, below grade Pencell, 30” W x 48” L x 24” D, split HDPE lid, hex bolts, green, with cut out for FieldSmart cabinets, straight wall, with bolt kit
V7B-CZP	Vault, below grade Pencell, 30” W x 48” L x 36” D, split HDPE lid, hex bolts, green, with cut out for FieldSmart cabinets, straight wall, with bolt kit
FMA-H3Z-SUB	Pole Mount Kit for FieldSmart cabinet

FieldSmart® Fiber Scalability Center (FSC)

Cross-Connect-Cabinets: 432, 864 and 1,728 Ports

Configured Part Numbers

864 Port Cabinet

R ___ Z - ___ ___ ___ - ___ ___ ___ - ___ ___ ___ - ___ ___ ___ - ___ ___ ___ - ___ XXXM or XXXF*

1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D

1 Select Cabinet Type

Q = Patch only with 4" riser
R = Patch and splice with 4" riser
5 = Patch only with 12" riser
6 = Patch and splice with 12" riser

2 Select Connector Style

A = SC/UPC
C = SC/APC
F = LC/UPC
H = LC/APC

3 Select Mode / Type

1 = Singlemode - non-ribbon
2 = Singlemode - ribbon

4 Select Cable Construction

B = OSP riser
E = OSP, non-rated
F = Patch and splice (loose tube)
M = OSP armored
Z = None or patch and splice ribbon

5 Select Feeder Port Count

X X X = port count in increments of 12

6 Select # of 144 - Fiber Feeder Cables

0 = 0, 1 = 1, 2 = 2, 3 = 3, 4 = 4

7 Select # of 96 - Fiber Feeder Cables

0 = 0, 1 = 1, 2 = 2, 3 = 3, 4 = 4

8 Select # of 72 - Fiber Feeder Cables

0 = 0, 1 = 1, 2 = 2, 3 = 3, 4 = 4, 5 = 5, 6 = 6

9 Select Distribution Port Count

X X X = port count in increments of 12

A Select # of 144 – Fiber Distribution Cables

0 = 0, 1 = 1, 2 = 2, 3 = 3, 4 = 4

B Select # of 96 – Fiber Distribution Cables

0 = 0, 1 = 1, 2 = 2, 3 = 3, 4 = 4

C Select # of 72 – Fiber Distribution Cables

0 = 0, 1 = 1, 2 = 2, 3 = 3, 4 = 4, 5 = 5, 6 = 6

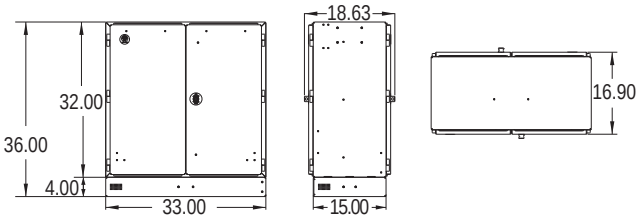
D Extras

B = Clearview Blue Cassettes
F = Vented door with Clearview Blue

XXXM or XXXF

XXXM = Length of pigtails in meters
XXXF = Length of pigtails in feet

*200 feet maximum



Vault Options

864 and 1,728 Port Cabinets

Part Number	Description
V7A-CZP	Vault, below grade Pencell, 30" W x 48" L x 24" D, split HDPE lid, hex bolts, green, with cut out for FieldSmart cabinets, straight wall, with bolt kit
V7B-CZP	Vault, below grade Pencell, 30" W x 48" L x 36" D, split HDPE lid, hex bolts, green, with cut out for FieldSmart cabinets, straight wall, with bolt kit
V8A-CZP-F	Vault, Pencell 36" x 60" x 24", complete split lid with ½ cut out for FieldSmart cabinets - with bolt kit, flared wall
V8B-CZP-F	Vault, Pencell 36 x 60 x 36", complete split lid, with ½ cut out for FieldSmart cabinets - with bolt kit, flared wall

Configured Part Numbers

1,1728 Port Cabinet

Please contact your Clearfield® representative for more information on ordering this option.

FieldSmart® Fiber Scalability Center (FSC)

Hub Collapse Cabinet

Application

The FieldSmart Hub Collapse Cabinet (HCC) provides a centralized location within a service provider's network that houses both fiber terminations and optical components. This eliminates the need for a physical "hub" location, thereby saving land, maintenance and permitting expenses. Service providers increase revenue by collapsing multiple locations into one centralized service point.

Description

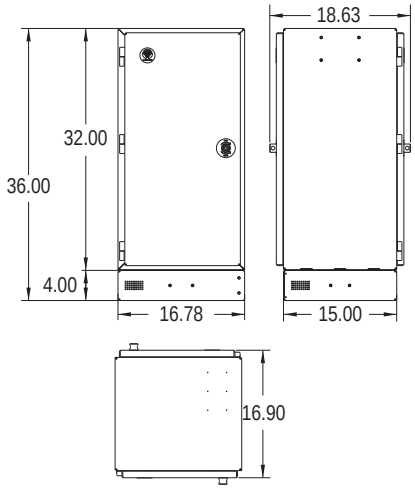
The FieldSmart Hub Collapse Cabinet (HCC) is designed for the cable operator looking to separate their passive infrastructure from the electronics without the need for a traditional, and expensive, standard hub architecture. Hub collapse environments allow passive architecture to be placed in the most craft-friendly place for circuit and wavelength allocation and associated MAC (moves, adds, and changes) work - on the ground. Providing up to 120-fiber terminations using the Clearview® Cassette and up to 32 LGX compatible CWDM/DWDM modules, the FieldSmart Hub Collapse Cabinet (HCC) separates critical active components typically protected in the node, such as Cisco's O-Hub platform or Aurora V-Hub, and allows existing optical components to be reused throughout the network.

Clearfield's Hub Collapse Cabinet (HCC) provides a centralized location that will accommodate both optical components and fiber terminations, making it an ideal solution for service providers looking to maximize existing fibers within their network. With a small footprint (32" H x 17" W x 16 ¾" D), real estate costs can be minimized with a variety of mounting options (pole, pad or vault mount).

Features and Benefits

Integrity

- Terminations are designed and tested to Telcordia GR-326
- Clearfield® FiberDeep® Guarantee: 0.2 dB insertion loss or less, exceeding industry standards
- Compliant to Telcordia GR-20, GR-409, GR-487, GR-1221 and GR-1209
- Constructed with 0.125 aluminum
- Powder coated for additional protection
- 300 series stainless steel fasteners used on all cabinets



Protection

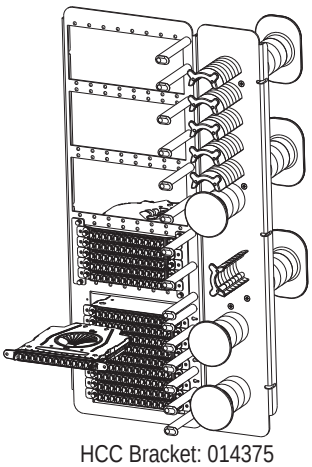
- 12-fiber Clearview Cassette protects fiber from environmental and human factors
- Rugged cable clamps protect the OSP cable breakouts from twisting and pistoning
- Patch only buffer tubes are fully protected with ruggedized bend-limiting tubing
- Snake skin sleeving provides additional buffer tube slack storage protection and manageability for patch and splice (Clearfield's in-cassette splicing solution) configurations

Access

- Clearview Cassette allows for quick visual troubleshooting without opening cassette
- Front access to pre-terminated assemblies with Clearview removable adapter plate
- Easy two captive fasteners for quick removal of individual cassettes for trouble shooting, splicing or replacing
- Front and rear access doors
- Top exit available on HCC Cabinet
- Optional ground/locate box available

Investment

- Fiber is deployed in increments of 12, providing the users the ability to scale from 12 ports to full capacity, aligning capital investment with network layout or subscriber revenue
- Express ports allow for extensions or parallel networks through the cabinet
- Patch and splice configurations eliminate costs associated with jacketed IFC cabling, hand-holes and splice cases
- Eliminates building costs and permits for physical hub location structures



HCC Bracket: 014375

FieldSmart® Fiber Scalability Center (FSC)

Hub Collapse Cabinet

CLEARFIELD

Technical Specifications

FieldSmart FSC Hub Collapse Cabinet	
Dimensions *(without riser)*	32" H x 17" W x 16¾" D
Weight	54 lbs
Port Density	120 *can add five additional cassettes - 60 ports per LGX slot using adapter plates*
LGX Compatible Bulkhead Slots	32
Cassette Types Supported	Clearview® Blue
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC
Cable Types	Indoor/Outdoor, Outdoor (Riser/Non-Rated), Outdoor Armored (Riser/Non-Rated)
Splice Capacity	12 splices in each Clearview Cassette
Cables Entrances	6
Recommended Jumper Length	Two meters
Mounting Options (Hoist kit included with each cabinet)	Vault mount; pole mount; pad mount
Standard Riser Base	4" (6 lbs)
Optional Riser Base	12" (12 lbs)
Material	0.125 aluminum with almond powder coating

Accessories

- Risers: 4" and 12"
- FieldSmart Mid-Span/Feed-Through Plate Kit
- Pole Mount Kit
- Adapter Brackets (014375) - For adding cassettes into LGX slots (one set comes standard with each HCC Cabinet, additional sets can be ordered)
- Optional top exit available on HCC Cabinet

Configured Part Numbers

R - A ___ ___ - ___ ___ ___ - ___ ___ ___ - ___ XXXM or XXXF*

1 2 3 4 5 6 7

1 Select Riser Size

A = 4"
B = 12"

2 Select Tie Plate Option

A = Tie plate option (3 slots)
Z = None

3 Select Distribution Port Count

012 = 12
024 = 24
036 = 36
048 = 48
060 = 60
072 = 72
084 = 84
096 = 96
108 = 108
120 = 120

4 Select Connector

A = SC/UPC
C = SC/APC
F = LC/UPC
H = LC/APC

5 Select Mode and Type

1 = Singlemode (non-ribbon)
2 = Singlemode ribbon

6 Select Jacket Construction

B = OSP riser
E = OSP (non-rated)
F = Patch and splice
M = OSP armored (non-rated)
Z = None or ribbon patch and splice

7 Extras

B = Clearview Blue Cassettes
D = Top exit with Clearview Blue
F = Vented door with Clearview Blue
J = Vented door with top exit and Clearview Blue

XXXM or XXXF

XXXM = Length of pigtails in meters
XXXF = Length of pigtails in feet

*200 feet maximum

FieldSmart® Fiber Scalability Center (FSC)
Accessories

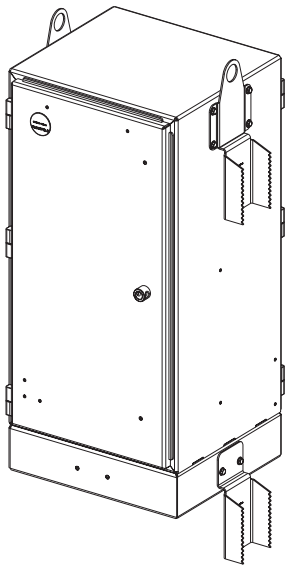
Pole Mount Kit

Description

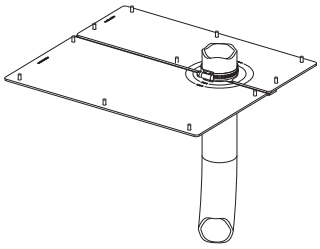
The FieldSmart Fiber Scalability Center (FSC) Pole Mount Kit provides the ability to pole mount the 288 port and 432 port PON, 432 port cross-connect, and Hub Collapse cabinets. Also available are the Pole Mount Under Plate Kits. It has an easy to install hook and tab design with a rugged thru-pole lag bolt for security.

Pre-Configured Part Numbers

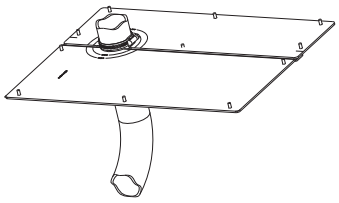
Part Number	Description	Application/Where Used
FMA-H3Z-KIT-SUB	Kit, includes Pole Mount Kit and under plate kit	288 PON, 432 cross-connect, hub collapse
FMA-H3Z-PLT-STRG-SUB	Pole Mount Under Plate Kit, with security clamp	288 PON, 432 cross-connect, hub collapse
FMA-H3Z-PLT-SUB	Pole Mount Under Plate Kit	288 PON, 432 cross-connect, hub collapse
FMA-H3Z-SUB	Pole Mount Kit	288 PON, 432 PON, 432 cross-connect, hub collapse
015292	432-Port PON Pole Mount Under Plate Kit	432 PON Only



FMA-H3Z-SUB
FSC Pole Mount Kit
(288 and 432 PON, 432 Cross-Connect and HCC only)



015292
432 Port PON Pole Mount Under Plate Kit



FMA-H3Z-PLT-SUB
FSC Box Pole Mount Underplate Kit
(288 and 432 PON, 432 Cross-Connect and HCC only)

Cabinet Entrance Expansion Kit

Description

The FieldSmart Cable Expansion Kit includes all the material to add up to 3 additional cables to any of our FieldSmart Cabinets. It includes sealcons, nuts, o-rings, grommets and strength member tie off clamps.

Pre-Configured Part Numbers

Part Number	Description
FMA-XXX-14	Cabinet Entrance Expansion Kit, contains extra sealcon and grommets

FieldSmart® Fiber Scalability Center (FSC)
Accessories

Deep Socket Wrenches

Description

The handy, light weight Deep Socket Wrench is manufactured from alloy steel. In a patch and splice (Clearfield's in-cassette splicing solution) cabinet where the customer installs the incoming cable, the cable must go through the watertight fittings that are provided with each cabinet. Watertight fittings must then be installed into the FieldSmart Cabinet. These wrenches are designed to make tightening of the dome, thread and lock nuts more manageable. The wrench encloses the dome nut on five sides, giving the nut additional rigidity during tightening. This is especially important if a stiff cable is used.

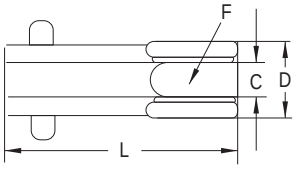
Note: Does not work with all Flex Fittings. One of each style wrench (40 mm and 42 mm) is needed to tighten the 1" watertight fitting used on all FieldSmart Cabinets.

Torque Recommendations for Strain Relief Fittings

Torque in Inch Pounds - in lb. (Newton Meters - Nm)

	Metal Strain Relief Fittings	Plastic Strain Relief Fittings
Dome Nuts	59.0 (6.67)	44.2 (5.00)
Thread and Lock Nuts	88.5 (10.0)	66.4 (7.50)

Pre-Configured Part Numbers

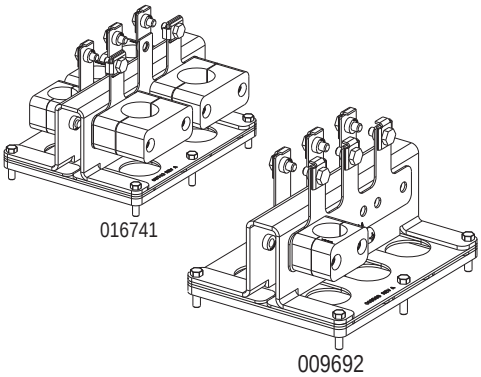


Part Number	Wrenching Flats (F)	Length (L)	Inner Diameter (C)	Outer Diameter (D)
013190	1.57" (40 mm)	3.94" (100 mm)	0.98" (25 mm)	2.07" (52.5 mm)
013191	1.65" (42 mm)	3.94" (100 mm)	1.06" (24.7 mm)	2.15" (54.5 mm)

Mid-Span Opening Feed-Through Plate Kit

Description

The FSC Mid-Span Opening Feed-Through Plate Kit is specifically designed for Clearfield® FieldSmart Fiber Scalability Centers (FSC). It provides the hardware components to confidently secure the ring cut/mid-span fiber optic cable in an OSP cabinet. This kit utilizes the existing cable entry/exit ports in the Clearfield OSP cabinets. It saves the customer time and money by allowing them to only splice the required fiber counts needed into the cabinet.



Pre-Configured Part Numbers

Part Number	Description
009692	FieldSmart Mid-Span Opening Feed-Through Plate Kit for cables up to 1" O.D.; includes strength member tie off clamp
016741	FFieldSmart Mid-Span Opening Feed-Through Plate Kit for cables up to 1.25" O.D.; includes strength member tie off clamp
016757	Strength member tie off kit - for retro fit or older version of 009692

FieldSmart® Fiber Delivery Point (FDP)

96 Port PON in Pedestal Insert Kit or Direct Bury

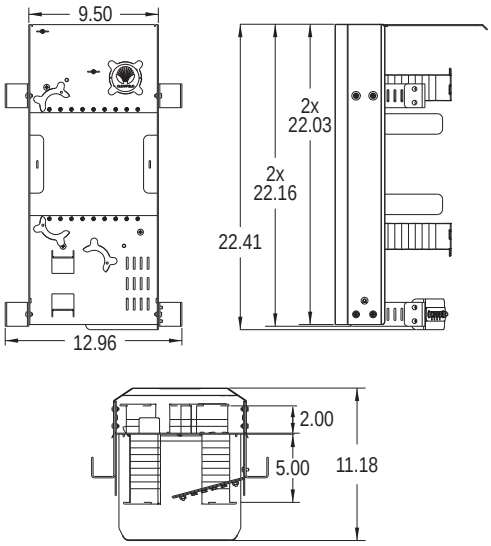
Application

The FieldSmart Fiber Delivery Point (FDP) 96 Port PON in Pedestal Insert Kit or Direct Bury provides splice or interconnect functionality in industry standard pedestals for drops to the home in the last mile of the access network. Additionally, it provides up to 96-homes served in PON environments.

Description

The FieldSmart FDP 96 Port PON Pedestal Insert Kit or Direct Bury provides a cost-effective solution to service up to 96-homes within a Clearview® optimized design for PON applications. Accepting up to nine Clearview Cassettes and three WaveSmart® Ruggedized Splitters or WDMs, the PON Insert Kit scales to meet the network requirements when placing a larger PON cabinet is not desired or cost-effective. Providing the ultimate future-proof flexibility, the FDP Pedestal Insert can be deployed as a drop only pedestal, then easily converted to a distributed PON solution when required.

The FieldSmart Fiber Delivery Point (FDP) Pedestal Insert incorporates field-tested designs to provide a solution that is easily installed and modified. Whether your environment calls for splice only drops or demands the sophistication of a Clearview Cassette solution, a FieldSmart (FDP) Pedestal Insert can be configured to support any access point configuration. Compatible with a variety of RUS listed pedestals, the insert provides splicing and/or interconnect connectivity with slack-storage for drop cable scenarios or mid-span and ring-cut functionality for up to a 288 OSP fiber sheath.



Features and Benefits

Integrity

- RUS listed
- Terminations are designed and tested to Telcordia GR-326
- Clearfield® FiberDeep® Guarantee: 0.2 dB insertion loss or less, exceeding industry standards
- Inserted into RUS pedestals
- Compliant to Telcordia GR-20

Protection

- RUS listed industry standard pedestals
- Clearview Cassette for physical fiber protection, bend-radius protection, access
- Buffer tube slack storage fully bend-radius protected
- Both metallic and non-metallic pedestals
- Can wrench accessible designs

Access

- Lift off dome covers are non-metallic
- Clearview Cassette for quick access to terminations
- Cupboard style front and rear access-Metallic
- Fits into select Channell, Pencell, Emerson metallic BD7 and ProFORM 12

Investment

- Low cost entry with RUS listed pedestals
- Scalable with Clearview Multiplied design for cost alignment to subscriber revenue
- Future proof with drop only to PON distributed migration
- Patch only or patch and splice configurations supported
- Flexible integration into a variety of RUS listed pedestals with simple bracket kits

Accessories

- Ruggedized Splitter

FieldSmart® Fiber Delivery Point (FDP)

96 Port PON in Pedestal Insert Kit or Direct Bury

CLEARFIELD

Technical Specifications

FieldSmart Fiber Delivery Point 96 Port PON in Pedestal Insert Kit or Direct Bury	
Dimensions *(for insert only)*	22.41" H x 12.96" W x 11.18" D
Port Density	96
Feeder/Express Ports	12
Cassette Types Support	Clearview® Blue
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC
Cable Types	Indoor/Outdoor, Outdoor (Riser/Non-Rated), Outdoor Armored (Riser/Non-Rated)
Splice Capacity	12 splices in each Clearview Cassette
Splitter Slots	3
Material	14 gauge cold rolled steel with almond powder coating

Configured Part Numbers

J ___ ___ - ___ ___ ___ - ___ ___ ___ - Z Z Z - B XXXM or XXXF

1 2 3 4 5 6 7

1 Select Pedestal Type

Insert With Pedestals
- 3 = PON, Patch and Splice insert with non-metallic direct bury Pencell Pedestal
- 4 = PON, Patch only insert with non-metallic direct bury Pencell Pedestal
- 6 = PON, Patch and Splice insert with non-metallic direct bury Channell Pedestal
- J = PON, Patch only insert with non-metallic direct bury Channell Pedestal
- 7 = PON, Patch and Splice insert with non-metallic direct bury Proform 12 Pedestal
- K = PON, Patch only insert with non-metallic direct bury Proform 12 Pedestal
- A = PON, Patch and Splice insert with metallic BD7 Pedestal
- M = PON, Patch only insert with metallic BD7 Pedestal

Inserts Only
- V = PON, Patch and Splice insert only for Pencell Pedestal – no pedestal included
- Y = PON, Patch Only INSERT only for Pencell Pedestal – no pedestal included
- B = PON, Patch and Splice insert only for Channell Pedestal – no pedestal included
- N = PON, Patch Only insert only for Channell Pedestal – no pedestal included
- C = PON, Patch and Splice 96 port insert only for Proform 12 Pedestal – no pedestal included
- P = PON, Patch Only 96 port insert only for Proform 12 Pedestal – no pedestal included
- D = PON, Patch and Splice 96 port insert only for BD7 Pedestal – no pedestal included
- Q = PON, Patch Only 96 port insert only for BD7 Pedestal – no pedestal Included

2 Select Feeder Port Count

- A = No feeders
- B = 12 ports (1 cassette)
- Z = N/A

3 Select Distribution Port Count

- X X X = port count in increments of 12
- Z Z Z = N/A

4 Select Connector Style

- A = SC/UPC
- C = SC/APC
- F = LC/UPC
- H = LC/APC
- Z = N/A

5 Select Mode / Type

- 1 = Singlemode - non-ribbon
- 2 = Singlemode - ribbon

6 Select Cable Construction

- B = OSP Riser Loose Tube
- E = OSP Non-Rated Loose Tube
- F = Patch and splice
- Z = N/A

XXXM or XXXF

- XXXM = Length of pigtails in meters
- XXXF = Length of pigtails in feet

*200 feet maximum

FieldSmart® Fiber Delivery Point (FDP)

96 Port PON in Pedestal Insert Kit/Vault Mount

Application

The FieldSmart Fiber Delivery Point (FDP) 96 Port PON Pedestal Insert Kit/Vault Mount provides splice or interconnect functionality, in industry standard Channell or Pencell pedestals and vaults, for drops to the home in the last mile of the access network. Additionally, it provides for a maximum capacity of 96-homes served, and is configured for PON environments.

Description

The FieldSmart FDP 96 Port PON Pedestal Insert Kit/Vault Mount provides for a drop cable scenarios in the access network with splicing and/or interconnect connectivity with a Clearview® optimized design. Accepting up to nine Clearview Cassettes and three WaveSmart® Ruggedized Splitters or WDMs used throughout the Clearfield® FieldSmart product line, the insert will scale up to 96-homes served for PON applications.

Features and Benefits

Integrity

- RUS listed
- Terminations are designed and tested to Telcordia GR-326
- Clearfield® FiberDeep® Guarantee: 0.2 dB insertion loss or less, exceeding industry standards
- Inserted into RUS pedestals
- Compliant to Telcordia GR-20

Protection

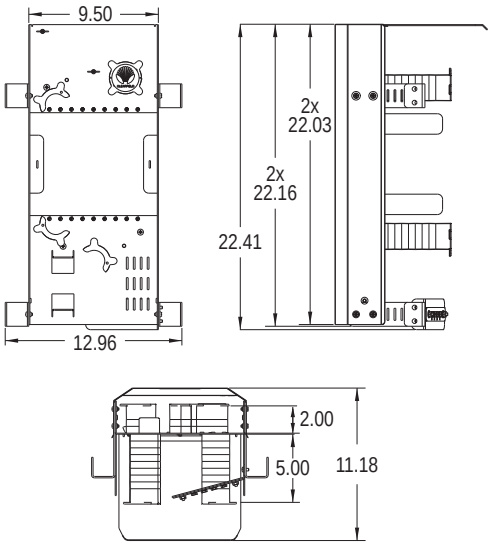
- Clearview Cassette for physical fiber protection, bend-radius protection, access
- Buffer tube slack storage fully bend-radius protected
- Flood-proof non-metallic pedestals
- Can wrench accessible designs

Access

- Lift off flood-proof dome covers are non-metallic
- Clearview Cassette for quick access to terminations
- Cupboard style front and rear access-Metallic
- Split lid Channell or Pencell vault

Investment

- Low cost entry with RUS listed pedestals
- Scalable with Clearview Multiplied design for cost alignment to subscriber revenue
- Future proof with drop only to PON distributed migration
- Patch only or patch and splice configurations supported
- Flexible integration into a variety of RUS listed pedestals with simple bracket kits



Accessories

- Ruggedized Splitter

Vault and Pedestal

V6A-ZZZ-03-P - 24 X 36 X 24 with 12” cut out for Pencell 12” pedestal (includes pedestal)

VXZ-ZZZ-02-P - Vault Only

FPP-121230-LG - Pedestal for vault

FieldSmart® Fiber Delivery Point (FDP)

96 Port PON in Pedestal Insert Kit/Vault Mount

CLEARFIELD

Technical Specifications

FieldSmart Fiber Delivery Point 96 Port PON in Pedestal Insert Kit/Vault Mount	
Dimensions *(for insert only)*	22.41" H x 12.96" W x 11.18" D
Port Density	96
Feeder/Express Ports	12
Cassette Types Support	Clearview® Blue
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC
Cable Types	Indoor/Outdoor, Outdoor (Riser/Non-Rated), Outdoor Armored (Riser/Non-Rated)
Splice Capacity	12 splices in each Clearview Cassette
Splitter Slots	3
Material	14 gauge cold rolled steel with almond powder coating

Configured Part Numbers

J ___ ___ - ___ ___ ___ - ___ ___ ___ - Z Z Z - B XXXM or XXXF

1 2 3 4 5 6

1 96 Port Insert

8 = PON, Patch and Splice insert with non-metallic direct bury Pencell Pedestal, vault included
9 = PON, Patch only insert with non-metallic direct bury Pencell Pedestal, vault included
F = PON, Patch and Splice insert with Channell Pedestal, vault included
S = PON, Patch only insert with Channell Pencell Pedestal, vault included
E = PON, Patch and Splice insert with Channell Pedestal (to fit Channel Vault), vault not included
R = PON, Patch only insert with Channell Pedestal (to fit Channel Vault), vault not included

2 Select Feeder Port Count

A = No feeders
B = 12 ports (1 cassette)
Z = N/A

3 Select Distribution Port Count

X X X = port count in increments of 12
Z Z Z = N/A

4 Select Connector Style

A = SC/UPC
C = SC/APC
F = LC/UPC
H = LC/APC
Z = N/A

5 Select Mode / Type

1 = Singlemode - non-ribbon
2 = Singlemode - ribbon

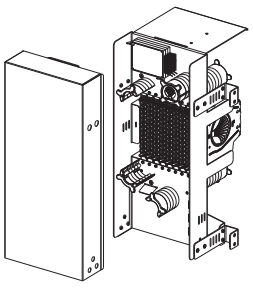
6 Select Cable Construction

B = OSP Riser Loose Tube
E = OSP Non-Rated Loose Tube
F = Patch and splice
M = Armored OSP Loose Tube Non-Rated
Z = N/A

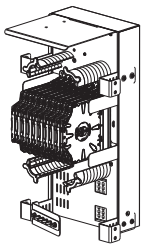
XXXM or XXXF

XXXM = Length of pigtails in meters
XXXF = Length of pigtails in feet

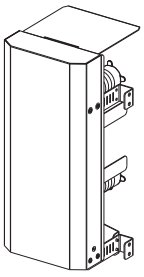
*200 feet maximum



Cover for Emerson, Proform and Channell Pedestals



Back of PON PED Insert



Cover for Pencell Pedestals

FieldSmart® Fiber Delivery Point (FDP)

144 Port PON in Pedestal Insert Kit or Direct Bury

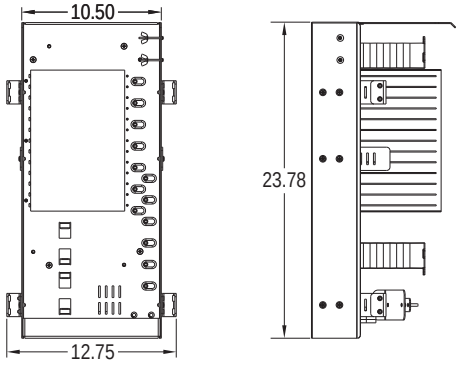
Application

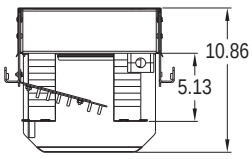
The FieldSmart Fiber Delivery Point (FDP) 144 Port in PON Pedestal Insert Kit or Direct Bury provides splice or interconnect functionality in industry standard pedestals for drops to the home in the last mile of the access network. Additionally, it provides up to 144 homes served in PON environments.

Description

The FieldSmart FDP 144 Port PON Pedestal Insert Kit or Direct Bury provides a cost-effective solution to service up to 144 homes within a Clearview® optimized design for PON applications. Accepting up to 13 Clearview Cassettes and five WaveSmart® High Density Splitters or WDMs, the PON Insert Kit scales to meet the network requirements when placing a larger PON cabinet is not desired or cost-effective. Providing the ultimate future-proof flexibility, the FDP Pedestal Insert can be deployed as a drop only pedestal, then easily converted to a distributed PON solution when required.

The FieldSmart Fiber Delivery Point (FDP) Pedestal Insert incorporates field-tested designs to provide a solution that is easily installed and modified. Whether your environment calls for splice only drops or demands the sophistication of a Clearview Cassette solution, a FieldSmart (FDP) Pedestal Insert can be configured to support any access point configuration. Compatible with a variety of RUS listed pedestals, the insert provides splicing and/or interconnect connectivity with slack-storage for drop cable scenarios or mid-span and ring-cut functionality for up to a 288 OSP fiber sheath.





Features and Benefits

Integrity

- RUS listed
- Terminations are designed and tested to Telcordia GR-326
- Clearfield® FiberDeep® Guarantee: 0.2 dB insertion loss or less, exceeding industry standards
- Inserted into RUS pedestals
- Compliant to Telcordia GR-20

Protection

- RUS listed industry standard pedestals
- Clearview Cassette for physical fiber protection, bend-radius protection, access
- Buffer tube slack storage fully bend-radius protected
- Both metallic and non-metallic pedestals
- Can wrench accessible designs

Access

- Lift off dome covers are non-metallic
- Clearview Cassette for quick access to terminations
- Cupboard style front and rear access-Metallic
- Fits into select Channell or Pencell pedestals

Investment

- Low cost entry with RUS listed pedestals
- Scalable with Clearview Multiplied design for cost alignment to subscriber revenue
- Future proof with drop only to PON distributed migration
- Patch only or patch and splice configurations supported
- Flexible integration into a variety of RUS listed pedestals with simple bracket kits

Accessories

- WaveSmart High Density Splitter

FieldSmart® Fiber Delivery Point (FDP)

144 Port PON in Pedestal Insert Kit or Direct Bury

CLEARFIELD

Technical Specifications

FieldSmart Fiber Deliver Point 144 Port PON in Pedestal Insert Kit or Direct Bury	
Dimensions *(for insert only)*	23.78" H x 12.75" W x 10.86 D
Port Density	144
Feeder/Express Ports	12
Cassette Types Supported	Clearview® Blue
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC
Cable Types	Indoor/Outdoor, Outdoor (Riser/Non-Rated), Outdoor Armored (Riser/Non-Rated)
Splice Capacity	12 splices in each Clearview Cassette
Storage Capacity	Up to 5 - with High Density Splitter (KE series)
Material	14 gauge cold rolled steel with almond powder coating

Configured Part Numbers

J ___ ___ - ___ ___ ___ - ___ ___ ___ - A Z Z - B XXXXM or XXXXF

1 2 3 4 5 6

1 Select Pedestal Type

Insert with Pedestal
3 = PON, Patch and Splice insert with non-metallic direct bury Pencell Pedestal
4 = PON, Patch only insert with non-metallic direct bury Pencell Pedestal
6 = PON, Patch and Splice insert with non-metallic direct bury Channell Pedestal
J = PON, Patch only insert with non-metallic direct bury Channell Pedestal
Inserts Only
V = PON, Patch and Splice insert only for Pencell Pedestal – no pedestal included
Y = PON, Patch Only insert only for Pencell Pedestal – no pedestal included
B = PON, Patch and Splice insert only for Channell Pedestal – no pedestal included
N = PON, Patch Only insert only for Channell Pedestal – no pedestal included

2 Select Feeder Port Count

A = No feeders
B = 12 ports (1 cassette)
Z = N/A

3 Select Distribution Port Count

X X X = port count in increments of 12
Z Z Z = N/A

4 Select Connector Style

A = SC/UPC
C = SC/APC
Z = N/A
F = LC/UPC
H = LC/APC

5 Select Mode / Type

1 = Singlemode - non-ribbon
2 = Singlemode - ribbon

6 Select Cable Construction

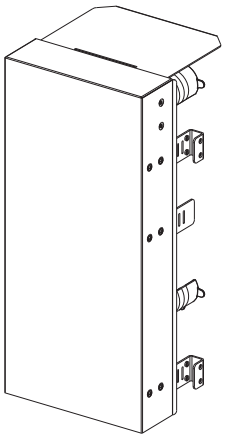
B = OSP Riser Loose Tube
E = OSP Non-Rated Loose Tube
F = Patch and splice
M = Armored OSP Loose Tube Non-Rated
Z = N/A

XXXXM or XXXXF

XXXXM = Length of Pigtail in Meter
XXXXF = Length of Pigtail in Feet

144 PON Insert - Front

144 PON Insert - Back



144 PON Insert with Cover

FieldSmart® Fiber Delivery Point (FDP)

144 Port PON in Pedestal Insert Kit/Vault Mount

Application

The FieldSmart Fiber Delivery Point (FDP) 144 Port PON Pedestal Insert Kit/Vault Mount provides splice or interconnect functionality, in industry standard Channell or Pencell pedestals and vaults, for drops to the home in the last mile of the access network. Additionally, it provides for a maximum capacity of 144 homes served, and is configured for PON environments.

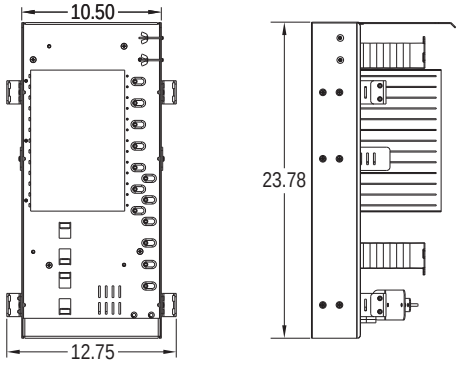
Description

The FieldSmart FDP 144 Port PON Pedestal Insert Kit/Vault Mount provides for a drop cable scenarios in the access network with splicing and/or interconnect connectivity with a Clearview® optimized design. Accepting up to 13 Clearview Cassettes and five WaveSmart® High Density Splitters or WDMs, the insert will scale up to 144 homes served for PON applications.

Features and Benefits

Integrity

- RUS listed
- Terminations are designed and tested to Telcordia GR-326
- Clearfield® FiberDeep® Guarantee: 0.2 dB insertion loss or less, exceeding industry standards
- Inserted into RUS pedestals
- Compliant to Telcordia GR-20

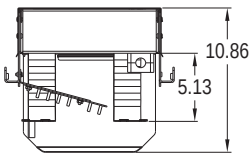


Protection

- Clearview Cassette for physical fiber protection, bend-radius protection, access
- Buffer tube slack storage fully bend-radius protected
- Flood-proof non-metallic pedestals
- Can wrench accessible designs

Access

- Lift off flood-proof dome covers are non-metallic
- Clearview Cassette for quick access to terminations
- Cupboard style front and rear access-Metallic
- Split lid Channell or Pencell vault



Investment

- Low cost entry with RUS listed pedestals
- Scalable with Clearview Multiplied design for cost alignment to subscriber revenue
- Future proof with drop only to PON distributed migration
- Patch only or patch and splice configurations supported
- Flexible integration into a variety of RUS listed pedestals with simple bracket kits

Accessories

- WaveSmart High Density Splitter

Vault and Pedestal

V6A-ZZZ-03-P - 24 X 36 X 24 with 12” cut out for Pencell 12” pedestal (includes pedestal)

VXZ-ZZZ-02-P - Vault Only

FPP-121230-LG - Pedestal for vault

FieldSmart® Fiber Delivery Point (FDP)

144 Port PON in Pedestal Insert Kit/Vault Mount

CLEARFIELD

Technical Specifications

FieldSmart Fiber Delivery Point 144 Port PON in Pedestal Insert Kit/Vault Mount	
Dimensions *(for insert only)*	23.78" H x 12.75" W x 10.86" D with brackets
Port Density	144
Feeder/Express Ports	12
Cassette Types Support	Clearview® Blue
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC
Cable Types	Indoor/Outdoor, Outdoor (Riser/Non-Rated), Outdoor Armored (Riser/Non-Rated)
Splice Capacity	12 splices in each Clearview Cassette
Splitter Capacity	5 with High Density Splitter (KE series)
Material	14 gauge cold rolled steel with almond powder coating

Configured Part Numbers

J ___ ___ - ___ ___ ___ - ___ ___ ___ - A Z Z - B XXXXM or XXXXF

1 2 3 4 5 6

1 144 Port Insert

8 = PON, Patch and Splice insert with non-metallic direct bury Pencell Pedestal, vault included
9 = PON, Patch only insert with non-metallic direct bury Pencell Pedestal, vault included
F = PON, Patch and Splice insert with Channell Pedestal, vault included
S - PON, Patch only insert with Channell Pencell Pedestal, vault included
E = PON, Patch and Splice insert with Channell Pedestal (to fit Channel Vault), vault not included
R = PON, Patch only insert with Channell Pedestal (to fit Channel Vault), vault not included

2 Select Feeder Port Count

A = No feeders
B = 12 ports (1 cassette)
Z = N/A

3 Select Distribution Port Count

X X X = port count in increments of 12
Z Z Z = N/A

4 Select Connector Style

A = SC/UPC
C = SC/APC
Z = N/A
F = LC/UPC
H = LC/APC

5 Select Mode / Type

1 = Singlemode - non-ribbon
2 = Singlemode - ribbon

6 Select Cable Construction

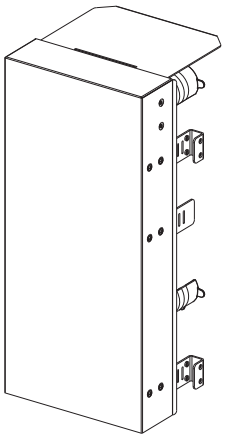
B = OSP Riser Loose Tube
E = OSP Non-Rated Loose Tube
F = Patch and splice
M = Armored OSP Loose Tube Non-Rated
Z = N/A

XXXXM or XXXXF

XXXXM = Length of Pigtail in Meter
XXXXF = Length of Pigtail in Feet

144 PON Insert - Front

144 PON Insert - Back



144 PON Insert with Cover

FieldSmart® Fiber Delivery Point (FDP)

Splice Only Pedestal

Application

The FieldSmart FDP Splice Only Pedestal provides splice or interconnect connectivity at the access point for the last mile drop.

Description

The FieldSmart FDP Splice Only Pedestal incorporates field-tested slack management and fiber splice trays to provide a craft-friendly splice only access solution. The splice only pedestal can be configured to support the specific drop cable, multi-fiber and ring cut requirements. The Clearfield® designed back plane makes it possible for the bulkheads to integrate into industry standard pedestals.

Features and Benefits

Integrity

- RUS listed
- Compliant to Telcordia GR-13

Protection

- Open architecture
- Strength, rigidity and security all in a high-performance thermo-plastic or metallic material designed to Telcordia GR-13 and RUS PE-91 specifications
- Single point self-locking cover provides secure pedestal locking and eased craft access
- Available in metallic and non-metallic pedestals

Access

- Removable front covers on metallic versions
- Can wrench fasteners
- Easy lift-off dome on thermo-plastic models - allows for 360° access permits complete access to all wire work and equipment

Investment

- Low cost entry with RUS listed pedestal
- Utilizes cost effective
- Up to 16 splice trays with Clearfield regular drop cable assembly or industry standard HFOC
- Integrates distribution splices, splitters and slack cable for a cost-effective flexible option for any FTTP deployment

Accessories

- Splice Tray - Each splice-slot holds up to 2 fibers. 12 splice-slots in each tray hold up to 24 fibers. 10 mm H x 163 mm W x 126 mm D

FieldSmart® Fiber Delivery Point (FDP)

Splice Only Pedestal

Technical Specifications

FieldSmart Splice Only Ped	Metallic BD5	Non-metallic ProFORM 12
Dimensions	43.25” H x 10.5” W x 10.5” D	45” H x 10.5” W x 14.5” D
Cover Height	31.25”	30”
Base Height (Buried)	12”	15”
Material	Galvanized steel	High performance thermo-plastic
Density	Up to 384 splices	
Number of Splice Trays	Up to 16	
Splice Capacity	24 splices in each splice tray	
Splice Tray Dimensions	10 mm H x 163 mm W x 126 mm D	

Configured Part Numbers

J ____ Z - ____ ____ ____ - Z Z Z - Z Z Z

1 2

1 Select Pedestal Type

2 = Emerson BD5
3 = Pencell 10 x 10
W = Proform non-metallic

2 Select Distribution Port Count

X X X = port count in increments of 12 up to 144 ports
Z Z Z = N/A

Metallic BD5

ProFORM 12 Non-Metallic

CraftSmart®
Fiber Protection Vaults (FPV)

Application

CraftSmart Fiber Protection Vaults (FPV) can be used to securely mount a FieldSmart® Fiber Scalability Center (FSC) 288, 432, 576 or 1,152 port PON cabinet, a 432 or 864 port cross-connect cabinet or FieldSmart Fiber Delivery Point (FDP) pedestal for above grade deployment with below grade slack cable storage. It can also be used in conjunction with a mounting bracket to deploy the FieldSmart SCD Case as a below grade drop cable solution with integrated slack storage. FPVs are equally suited for drop cable, splicing, interconnect and mid-span scenarios, which allows for maximum flexibility and customization in the customers' network.

Description

The Clearfield® CraftSmart product line provides physical fiber protection for products. It completes and delivers a turn-key passive solution from the central office/headend to the customer premise. CraftSmart Fiber Protection Vaults (FPV) provide the most cost-effective thermoplastic enclosures in the industry - meeting and exceeding the industry standards for strength, reliability and environmental concerns.

Formed from a High Density Polyethylene (HDPE) Thermoplastic, these vaults provide a solid base and light-weight material alternative to traditional polymer concrete enclosures. Multiple industry standard sizes can be ordered with solid covers or pre-cut covers to accommodate various FieldSmart cabinet solutions.

Features and Benefits

Integrity

- RUS accepted
- Compliant to Telcordia GR-902
- Compliant to ANSI/SCTE 77 2010 as specified by N.E.C. ANSI C57 Enclosure Integrity
- Compliant to Western Underground Guide 3.6
- Stainless steel hardware

Protection

- Hex head security bolts
- All boxes incorporate a unique "T" style overlapping cover design to reduce soil mitigation into box

Access

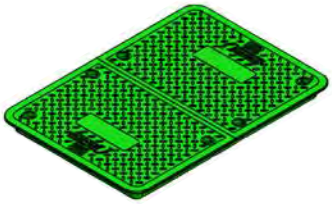
- Multiple cover options, including single piece solid thermoplastic, split thermoplastic, solid or split polymer concrete, provide ease of access and the ability to be used in multiple applications for the products
- Universal mounting bracket (VA-STUB) is available for SCD Case applications
- Mounting bolts and templates are available for HDPE split lids for FieldSmart cabinet mounting
- Custom split lids with cut outs for FieldSmart cabinets

Investment

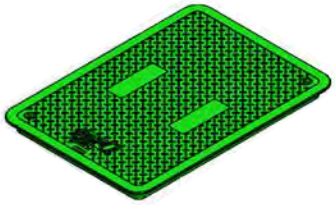
- High strength rigid construction ensures long term reliability in the harshest environments
- Lighter and easier to handle than concrete, which increases the overall safety factor

Cover Options

Polymer Concrete Ring and Cover
Application: Sidewalk
Static Load: 20,000 lbs



Split Thermoplastic Cover
Application: Greenbelt
Static Load: 5,000 lbs

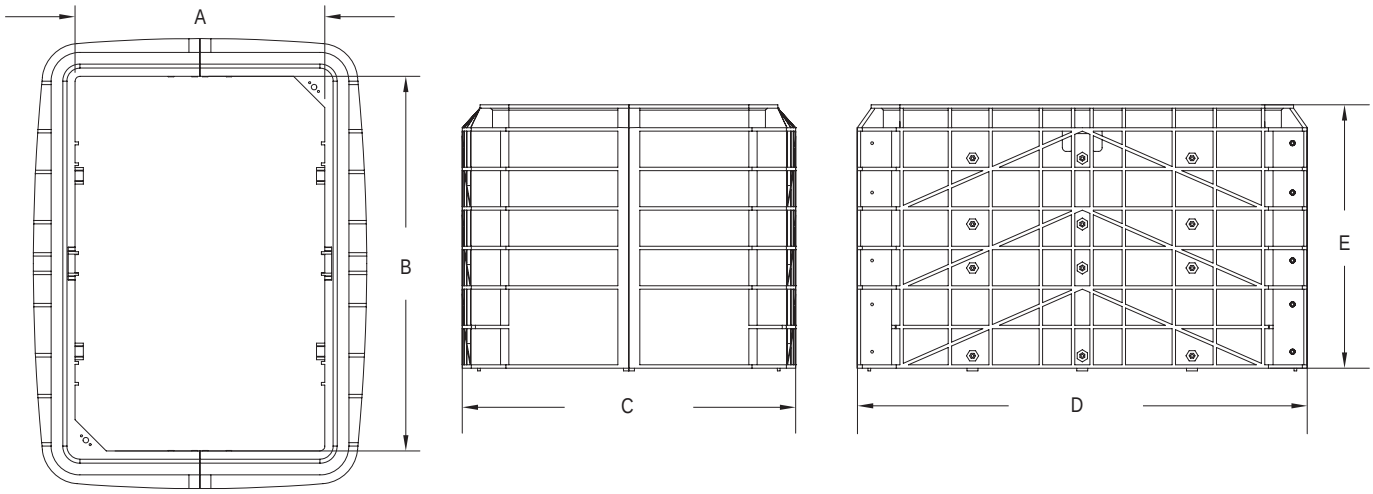


StandardThermoplastic Cover
Application: Greenbelt
Static Load: 5,000 lbs

CraftSmart®
Fiber Protection Vaults (FPV)

CLEARFIELD

Technical Specifications



Straight Wall	A Inside Dim. Width	B Inside Dim. Width	C **Outside** Dim. Width	D **Outside** Dim. Width	E **Height**	Approx. Weight with **HDPE Cover**	**Recommended Clearfield®** Product
17 x 30	16 1/16"	29 1/16"	22 1/16"	35 1/16"	24 1/2"	40 lbs	FieldSmart® SCD Case 6
24 x 36	22 3/4"	34 1/8"	30 3/8"	41"	24"	83 lbs	FieldSmart SCD Case 6, FieldSmart 288 and 432 PON or 432 Cross-Connect Cabinet, Hub Collapse Cabinet
30 x 48	28 3/4"	46 1/8"	37 1/8"	53 1/2"	24 5/8"	195 lbs	FieldSmart SCD Case 6, FieldSmart 576 or 1,152 PON or 864 or 1,727 Cross-Connect Cabinet, Makwa™

Flared Wall	A Inside Dim. Width	B Inside Dim. Width	C **Outside** Dim. Width	D **Outside** Dim. Width	E **Height**	Approx. Weight with **HDPE Cover**	**Recommended Clearfield** Product
36 x 36	36 1/8"	36 1/8"	40 7/8" - 46 3/4"	40 7/8" - 46 3/4"	24"	135 lbs	FieldSmart SCD Case 6, FieldSmart 576 or 1,152 PON or 864 or 1,727 Cross-Connect Cabinet
30 x 60	30 1/8"	60 1/8"	34 7/8" - 40 3/4"	64 7/8" - 70 3/4"	24"	165 lbs	FieldSmart SCD Case 6, FieldSmart 576 or 1,152 PON or 864 or 1,727 Cross-Connect Cabinet
36 x 48	36 1/8"	40 1/8"	40 7/8" - 46 3/4"	52 7/8" - 58 3/4"	24"	155 lbs	FieldSmart SCD Case 6, FieldSmart 576 or 1,152 PON or 864 or 1,727 Cross-Connect Cabinet
36 x 60	36 1/8"	60 1/8"	40 7/8" - 46 3/4"	64 7/8" - 70 3/4"	24" 36"	170 lbs 235 lbs	FieldSmart SCD Case 6, FieldSmart 576 or 1,152 PON or 864 or 1,727 Cross-Connect Cabinet, Makwa

CraftSmart®
Fiber Protection Vaults (FPV)

CLEARFIELD

Pre-Configured Part Numbers

FieldSmart® **Cabinets**

Part Number	Description	Application/Where Used				
		Slack Storage	FSC 288 PON, 432 CC or HCC	FSC 432 PON	FSC 576 or 1,152 PON or 864 or 1,728 CC	Makwa™: Below Grade In Vault
Vault Size – 13" x 24"						
VAE-FZP	Vault, below grade Pencell, 13" W x 24" L x 13" D, polymer concrete lid, straight wall	✓				
VAD-FZP	Vault, below grade Pencell, 13" W x 24" L x 18" D, polymer concrete lid, straight wall	✓				
Vault Size – 17" x 30"						
V5A-AZP	Vault, below grade Pencell,17" W x 30" L x 24" D, solid HDPE lid, hex bolts, green, straight wall	✓				
V5A-BZP	Vault, below grade Pencell,17" W x 30" L x 24" D, split HDPE Lid, hex bolts, green, straight wall	✓				
V5A-DZP	Vault, below grade Pencell,17" W x 30" L x 24" D, Solid polymer concrete lid, hex bolts, gray, straight wall	✓				
VA-1730-3	Spacer for below grade Pencell vault, 17" W x 30" L x 3" High	Optional 3" Spacer				
Vault Size – 24" x 36"						
V6A-AZP	Vault, below grade Pencell, 24" W x 36" L x 24" D, solid HDPE lid, hex bolts, green, straight wall	✓				
V6D-AZP	Vault, below grade Pencell, 24" W x 36" L x 18" D, solid HDPE lid, hex bolts, green, straight wall	✓				
V6A-BZP	Vault, below grade Pencell, 24" W x 36" L x 24" D, split HDPE lid, hex bolts, green, straight wall	✓				
V6A-CZP	Vault, below grade Pencell, 24" W x 36" L x 24" D, split HDPE Lid, hex bolts, green, with cut out for FieldSmart cabinets, straight wall, w/bolt kit		✓ Bolt Kit Included	✓ Bolt Kit Included		
V6A-DZP	Vault, below grade Pencell, 24" W x 36" L x 24" D, solid polymer concrete lid, hex bolts, gray, straight wall	✓				
V6A-DZP-F	Vault, below grade Pencell, 24" W x 36" L x 24" D, solid polymer concrete lid, hex bolts, gray, flared wall	✓				
V6B-AZP	Vault, below grade Pencell, 24" W x 36" L x 36" D, solid HDPE lid, hex bolts, green, straight wall	✓				
V6B-BZP	Vault, below grade Pencell, 24" W x 36" L x 36" D, split HDPE lid, hex bolts, green, straight wall	✓				
V6B-CZP	Vault, below grade Pencell, 24" W x 36" L x 36" D, split HDPE Lid, hex bolts, green, w/cut out for FieldSmart cabinets, straight wall, w/ bolt kit		✓ Bolt Kit Included	✓ Bolt Kit Included		
V6B-DZP	Vault, below grade Pencell, 24" W x 36" L x 36" D, solid polymer concrete lid, hex bolts, gray, straight wall	✓				
VA-2436-6	Spacer for below grade Pencell vault, 24" W x 36" L x 6" H	Optional 6" Spacer				

CraftSmart®
Fiber Protection Vaults (FPV)

CLEARFIELD

Pre-Configured Part Numbers

FieldSmart® **Cabinets**

Part Number	Description	Application/Where Used				
		Slack Storage	FSC 288 PON, 432 CC or HCC	FSC 432 PON	FSC 576, 1,152 PON, 864 or 1,728 CC	Makwa™: Below Grade In Vault
Vault Size – 30” x 48”						
V7A-AZP	Vault, below grade Pencell, 30" W x 48" L x 24" D , solid HDPE lid, hex bolts, green, straight wall	✓				
V7A-AZP-F	Vault, below grade Pencell, 30" W x 48" L x 24" D, solid HDPE lid, hex bolts, green, Flared Wall	✓				
V7A-BZP	Vault, below grade Pencell, 30" W x 48" L x 24" D , Split HDPE Lid, hex bolts, green, straight wall	✓				
V7A-CZP	Vault, below grade Pencell, 30" W x 48" L x 24" D, Split HDPE Lid, hex bolts, green, w/cut out for FieldSmart cabinets, straight wall, w/bolt kit		✓ Bolt Kit Included	✓ Bolt Kit Included	✓ Bolt Kit Included	
V7A-EZP	Vault, below grade Pencell, 30" W x 48" L x 24" D, split polymer concrete lid, hex bolts, gray, straight wall	✓				
V7B-AZP	Vault, below grade Pencell, 30" W x 48" L x 36" D, solid HDPE lid, hex bolts, green, straight wall	✓				✓
V7B-BZP	Vault, below grade Pencell, 30" W x 48" L x 36" D, split HDPE lid, hex bolts, green, straight wall	✓				✓
V7B-CZP	Vault, below grade Pencell, 30" W x 48" L x 36" D, split HDPE lid, hex bolts, green, w/cut out for FieldSmart cabinets, straight wall, w/bolt kit		✓ Bolt Kit Included	✓ Bolt Kit Included	✓ Bolt Kit Included	
V7B-EZP	Vault, below grade Pencell, 30" W x 48" L x 36" D, split polymer concrete lid, hex bolts, gray, straight wall	✓				✓
V7B-AZP-SARM	Vault, below grade Pencell, 30” W x 48” L x 36” D, solid HDPE lid, hex bolts, green, straight wall, w/swing arm					✓
V7B-BZP-SARM	Vault, below grade Pencell, 30” W x 48” L x 36” D, split HDPE lid, hex bolts, green, straight wall, w/swing arm					✓
V7B-EZP-SARM	Vault, below grade Pencell, 30” W x 48” L x 36” D, split polymer concrete lid, hex bolts, green, straight wall, w/swing arm					✓
VA-3048-6	Spacer for below grade Pencell vault, 30” W x 48” L x 6” H	Optional 6” Spacer				
Vault Size: 36” x 36”						
VBA-AZP-F	Vault, below grade Pencell, 36" W x 36" L x 24" D, solid HDPE lid, hex bolts, green, flared wall	✓				
VBA-BZP-F	Vault, below grade Pencell, 36" W x 36" L x 24" D, split HDPE lid, hex bolts, green, flared wall	✓				
VBA-CZP-F	Vault, below grade Pencell, 36" W x 36" L x 24" D, split HDPE lid, hex bolts, green, w/cut out for FieldSmart cabinets, flared wall, w/bolt kit		✓ Bolt Kit Included	✓ Bolt Kit Included	✓ Bolt Kit Included	
VBA-EZP-F	Vault, below grade Pencell, 36" W x 36" L x 24" D, split polymer concrete lid, hex bolts, gray, flared wall	✓				
VA-3636-6-GREEN	Spacer for below grade Pencell vault, 36” W x 36” L, 6” High, for HDPE lids	Optional 6” spacer for green HDPE lids				
VA-3636-6-GRAY	Spacer for below grade Pencell vault, 36” W x 36” L, 6” High, for PC lids	Optional 6” spacer for gray polymer concrete lids				

CraftSmart®
Fiber Protection Vaults (FPV)

CLEARFIELD

Pre-Configured Part Numbers

FieldSmart® **Cabinets**

Part Number	Description	Application/Where Used				
		Slack Storage	FSC 288 PON, 432 CC or HCC	FSC 432 PON	FSC 576 or 1,152 PON or 864 or 1,728 CC	Makwa™: Below Grade In Vault
Vault Size: 36” x 48”						
V3A-AZP-F	Vault, below grade Pencell, 36” W x 48” L x 24” D, solid HDPE lid, hex bolts, green, flared wall	✓				
V3A-BZP-F	Vault, below grade Pencell, 36” W x 48” L x 24” D, split HDPE lid, hex bolts, green, flared wall	✓				
V3A-CZP-F	Vault, below grade Pencell, 36" W x 48" L x 24" D, split HDPE lid, hex bolts, green, w/cut out for FieldSmart cabinets, flared wall, w/bolt kit		✓ Bolt Kit Included	✓ Bolt Kit Included	✓ Bolt Kit Included	
V3G-CZP-F	Vault, below grade Pencell, 36" W x 48" L x 30" D, split HDPE lid, hex bolts, green, w/cut out for FieldSmart cabinets, flared wall, w/bolt kit		✓ Bolt Kit Included	✓ Bolt Kit Included	✓ Bolt Kit Included	
V3B-CFP-F	Vault, below grade Pencell, 36" W x 48" L x 36" D, split HDPE lid, hex bolts, green, w/cut out for FieldSmart cabinets, flared wall, w/bolt kit		✓ Bolt Kit Included	✓ Bolt Kit Included	✓ Bolt Kit Included	
VA-3648-6	Spacer for below grade Pencell vault, 36” W x 48” L, 6” High	Optional 6” Spacer				
Vault Size: 36” x 60”						
V8A-BZP-F	Vault, below grade Pencell, 36” W x 60” L x 24” D, split HDPE lid, hex bolts, green, flared wall	✓				
V8A-CZP-F	Vault, below grade Pencell, 36" W x 60" L x 24" D, split HDPE lid, hex bolts, green, w/cut out for FieldSmart cabinets, flared wall, w/bolt kit		✓ Bolt Kit Included	✓ Bolt Kit Included	✓ Bolt Kit Included	
V8A-EZP-F	Vault, below grade Pencell, 36" W x 60" L x 24" D, split polymer concrete lid, hex bolts, gray, flared wall	✓				
V8B-BZP-F	Vault, below grade Pencell, 36” W x 60” L x 36” D, split HDPE lid, hex bolts, green, flared wall, no floor	✓				✓
V8B-CZP-F	Vault, below grade Pencell, 36" W x 60" L x 36" D, split HDPE lid, hex bolts, green, w/cut out for FieldSmart cabinets, flared wall, w/bolt kit		✓ Bolt Kit Included	✓ Bolt Kit Included	✓ Bolt Kit Included	
V8B-EZP-F	Vault, below grade Pencell, 36" W x 60" L x 36" D, split polymer concrete lid, hex bolts, gray, flared wall	✓				✓
V8C-AZP-F	Vault, below grade Pencell, 36” W x 60” L x 48” D, Solid HDPE Lid, hex bolts, green, flared wall	✓				✓
V8C-BZP-F	Vault, below grade Pencell, 36” W x 60” L x 48” D, split HDPE lid, hex bolts, green, flared wall	✓				✓

CraftSmart®
Fiber Protection Vaults (FPV)

CLEARFIELD

Pre-Configured Part Numbers

FieldSmart® **Cabinets**

Part Number	Description	Application/Where Used				
		Slack Storage	FSC 288 PON, 432 CC or HCC	FSC 432 PON	FSC 576 or 1,152 PON or 864 or 1,728 CC	Makwa™: Below Grade In Vault
Vault Size: 36” x 48” Continued						
V8F-CZP-F	Vault, below grade Pencell, 36" W x 60" L x 42" D, split HDPE lid, hex bolts, green, w/cut out for FieldSmart cabinets, flared wall, w/bolt kit		✓ Bolt Kit Included	✓ Bolt Kit Included	✓ Bolt Kit Included	
V8C-EZP-F	Vault, below grade Pencell, 36" W x 60" L x 48" D, split polymer concrete lid, hex bolts, gray, flared wall	✓				✓
V8G-CZP-F	Vault, below grade Pencell, 36” W x 60” L x 30” D, split HDPE lid, hex bolts, green, with cut out for FieldSmart cabinets, flared wall, with bolt kit		✓ Bolt Kit Included	✓ Bolt Kit Included	✓ Bolt Kit Included	
VA-3660-6	Spacer, for below grade Pencell vault, 36” W x 60” L, 6” High	Optional 6” Spacer				

FieldSmart Electronics Cabinets

Part Number	Description	Application/Where Used
		Electronics Cabinet
Vault Size: 48” x 48”		
V9A-GZP-F	Vault, below grade Pencell, 48” W x 48” L x 24” D, solid polymer concrete lid, hex bolts, gray, flared wall	✓
VA-4848-6	Spacer for below grade Pencell vault, 48” W x 48” L x 6” H	Optional 6” Spacer

PON in Pedestal

Part Number	Description	Application/Where Used
		144 PON in Pedestal
Pedestal on Lid - Vault Size: 24” x 36”		
VXZ-ZZZ-02-P	Below grade vault only -24 “W x 36“L x 24“D split lid, I-bolt, green, telecommunications, 12 x 12 hole for pedestal mount, straight wall	✓
FPP-121230-DG-PED	12 x 12 x 30 pedestal cover/bracket for vault above	✓
V6A-ZZZ-03-P	Below grade vault and pedestal cover w/bracket - 24" W x 36" L x 24" D split lid, I-bolt, green, telecom, 12 x 12 pedestal cover w/bracket, straight wall	✓
Pedestal on Lid - Vault Size: 30” x 48”		
V7A-ZZZ-01-P	Below grade vault and pedestal cover w/bracket - 30" W x 48" L x 24" D split lid, I-bolt, green, telecom, 12 x 12 pedestal cover w/bracket, straight wall	✓
V7B-ZZZ-02-P	Below grade vault and pedestal cover w/bracket - 30" W x 48" L x 36" D split lid, I-bolt, green, telecom, 12 x 12 pedestal cover w/bracket, straight wall	✓

CraftSmart®
Fiber Protection Boxes (FPB)

Application

The CraftSmart Fiber Protection Boxes (FPB) provide a place for below grade cable slack storage and access in greenbelt and light pedestrian traffic applications.

Description

The CraftSmart Fiber Protection Boxes are part of a full line of above and below grade field enclosures. They provide full optimization of a fiber deployment when used alongside a Clearfield® FieldSmart® platform of inside plant panels, outside plant cabinets and wall boxes.

Boxes are designed to meet a broad range of fiber, coax and copper needs of the broadband, telecommunications and utilities industries. The FPBs provide a place for below grade cable slack storage and are a good fit for access in greenbelt areas, places that are undeveloped, wild or agricultural areas and similar locations where there is light pedestrian traffic, such as a sidewalk.

The CraftSmart Fiber Protection Box is available in five different sizes. Functioning as a stand-alone, the FPB provides below grade slack storage for fiber or other media. The body is formed with a High Density Polyethylene (HDPE) Thermoplastic and a solid Thermoplastic lid that ensures strength and stability of the product.

Features and Benefits

Integrity

- High-quality HDPE designed body distributes load evenly across sidewalls
- Solid Thermoplastic lid ensures strength and stability

Protection

- Universal bolt security system
- All boxes incorporate a unique “T” style overlapping cover design to reduce soil mitigation into box

Access

- Single piece solid thermoplastic cover provides ease of access into boxes
- All the plastic lids on these boxes are rated at light duty or greenbelt as listed with the SCTE77 specification: 5,000 lbs

Investment

- High strength rigid construction ensures long term reliability in the harshest environments
- Lighter and easier to handle than concrete, which increases the overall safety factor

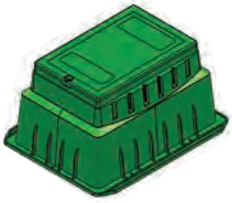
Accessories

- Grounding option
  - FST-GND-BAR-KIT: Kit, ground bar and mounting hardware for use in flowerpots and vaults. Includes ground bar, ground lug and mounting bolts.

FPB609
Bolt on Cover
Top Diameter: 7 ⅜”
Bottom Diameter: 10”
Depth: 9”

FPB910
Bolt on Cover
Top Diameter: 9 ⅞”
Bottom Diameter: 12 ½”
Depth: 9”

FPB1019
Bolt on Cover
Top Inside Diameter: 10 ⅛”
Depth: 18”



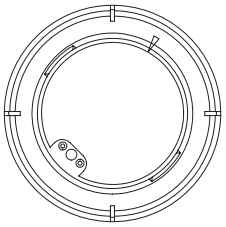
FPB1014
Bolt on Cover
Top Inside Dimensions: 10” W x 14“ L
Bottom Outside Dimensions: 19” W x 23 ½“ L
Depth: 12”

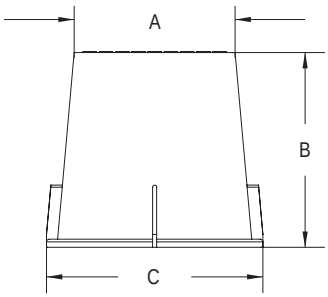
FPB1220
Bolt on Cover
Top Inside Dimensions: 16” W x 20“ L
Bottom Outside Dimensions: 24” W x 30“ L
Depth: 15 ¾”

CraftSmart®
Fiber Protection Boxes (FPB)

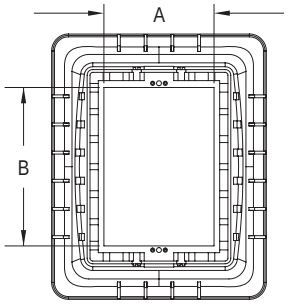
CLEARFIELD

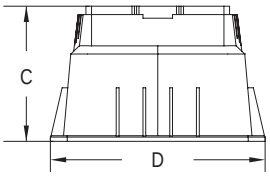
Technical Specifications

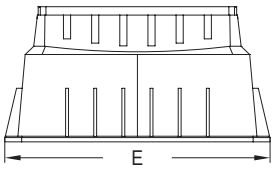




Part Number	A	B	C	Application
FPB609	7⅜"	9"	10"	Slack cable storage
FPB910	9⅞"	9"	12½"	Slack cable storage
FPB1019	10⅛"	18"	12 13/16"	Slack cable storage







Part Number	A	B	C	D	E	Application
FPB1014	9 13/16"	14 1/16"	12"	19 1/16"	23 9/16"	YOURx-Terminal, SCD Case
FPB1220	12 1/16"	20 1/8"	15 3/4"	24"	30"	YOURx-Terminal, SCD Case

Pre-Configured Part Numbers

Part Number	Description
FPB609	7¾" round top x 9" deep, green, bolt on cover
FPB910	9⅞" round top x 9" deep, green, bolt on cover
FPB1019	10" W x 18" L round top, green, bolt on cover
FPB1014	10" W x 14" L rectangular top x 12" deep, green, bolt on cover
FPB1220	12" W x 20" L rectangular top x 15¾" deep, green, bolt on cover
FST-GND-BAR-KIT	Kit, ground bar and mounting hardware for use in flowerpots and vaults. Includes ground bar, ground lug and mounting bolts.

CraftSmart®
Fiber Protection Pedestals (FPP)

Application

The CraftSmart Fiber Protection Pedestals (FPP) provide a secure, above ground access point for drop cable and/or splitter deployment. They are optimized to be used with a Clearfield® PON in a PED, SCD Case and YOURx™ products.

Description

Clearfield's CraftSmart product line provides physical fiber protection for Clearview® Cassette-based products, completing and delivering a turn-key passive solution from the central office/headend to the customer premise. The CraftSmart Fiber Protection Pedestals (FPP) provide the most cost-effective thermoplastic enclosures in the industry - meeting and exceeding the industry standards for strength, reliability and environmental concerns.

FPPs are a two part system - base and cover, with an internal U-channel for mounting various products inside of the pedestal. Designed and tested to withstand the harshest of environmental conditions, including UV, chemical and impact resistance. It is available with stainless steel hex-bolt locking hardware and is formed from a High Density Polyethylene (HDPE) Thermoplastic. The five different size boxes are designed to meet the broad range of fiber, coax and copper needs of the broadband, telecommunications and utilities industries.

These round pedestals are available in light or dark green. They feature direct-bury bases with a removable self-locating and locking cover.

Features and Benefits

Integrity

- Constructed of durable, UV resistant material for maximum security and service life
- Two part system - HDPE base and molded impact resistant cover
- Dark green and light green available

Protection

- Self-locating 7⁄16" hex head lock on cover ensures pedestals lock without special alignment
- Direct bury base provides a uniform and secure installation, while reducing the chances of leaning or tilting

Access

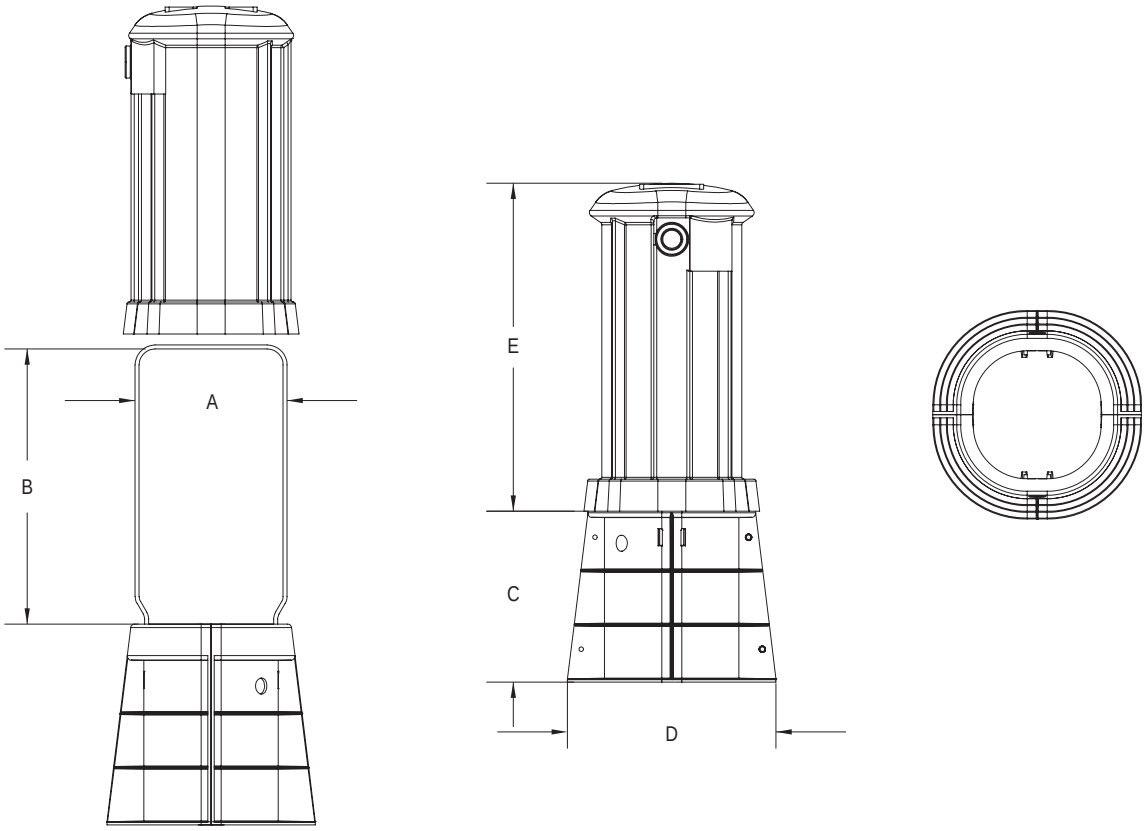
- Three different sizes for maximum flexibility
- Internal U-bracket provides multiple mounting options for equipment
- Cover lifts completely off for 360 degree access to equipment inside

Investment

- High strength rigid construction ensures long term reliability in the harshest environments

CraftSmart®
Fiber Protection Pedestals (FPP)

Technical Specifications



Part Number	A	B	C	D	E	Application
FPP-8820	9”	17 3/16”	10 11/16”	13 1/16”	20”	YOURx-Terminal
FPP-101020	10 5/8”	17 1/16”	11 3/8”	14 3/8”	20”	YOURx-Terminal, SCD Case
FPP-121230	12 3/4”	29”	12 9/16”	17 1/8”	30”	YOURx-Terminal, SCD Case, PON in PED Insert

Pre-Configured Part Numbers

Part Number	Description	Application
FPP-8820	Pedestal, 8” x 8” x 20”, medium green vented, direct bury, hex head lock	YOURx-Terminal
FPP-101020-DG	Pedestal, 10” x 10” x 20”, dark green vented, direct bury, hex head lock	YOURx-Terminal, SCD Case
FPP-101020-LG	Pedestal, 10” x 10” x 20”, light green vented, direct bury, hex head lock	YOURx-Terminal, SCD Case
FPP-121230-DG	Pedestal, 12” x 12” x 30”, dark green vented, direct bury, hex head lock	YOURx-Terminal, SCD Case, PON in PED Insert
FPP-121230-LG	Pedestal, 12” x 12” x 30”, light green vented, direct bury, hex head lock	YOURx-Terminal, SCD Case, PON in PED Insert

Introduction to Access Products

Wall Boxes, Access Points and Terminals

Whether it's a pedestal, a vault or a wall box, we have the fiber management products to round out the last mile or access point of your network. FieldSmart® Fiber Delivery Point (FDP) products can be placed aerially in pole or strand-mount closures, in pedestals on the ground or below grade in small hand holes with closures that provide superior splicing or interconnect functionality.

With the xPAK at its heart, the FieldSmart Small Count Delivery (SCD) Case is the industry's only universal drop cable enclosure - supporting any cable construction. While providing configuration flexibility in any deployment, the SCD Case is the only enclosure optimized for pushable fiber.

The FieldSmart FDP Wall Box line has been optimized for both indoor and outdoor deployments. They are ideal for both business-class and residential environments. The OSP platform is designed for the harshest environment, supporting NEMA 4 performance requirements, while still allowing for conduit entry through field-deployed knock-outs on both the rear and bottom of the unit. Designed from conception to provide fast, easy fiber jumper routing and ease of access to all circuits, the FieldSmart FDP Wall Box system is craft-friendly, keeping the installer's needs for quick deployment, intuitive use and ease of maintenance as our top priority.

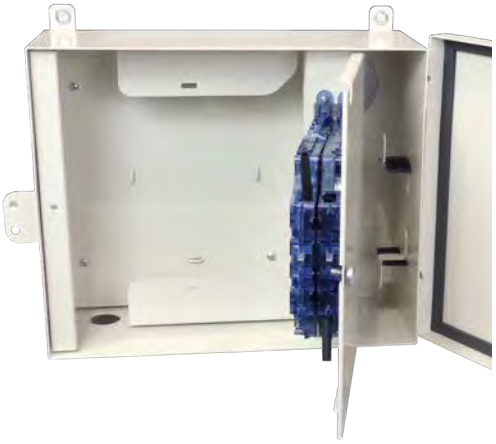
With the Clearview® Cassette at its heart, the FieldSmart FDP Wall Box gives service providers plug-and-play integration based upon the configuration requirements of the application. With a choice of up to 48 ports for the outdoor model or up to 144 ports for the indoor model, users can easily scale their networks using the same consistent Clearview Cassette deployment strategy.

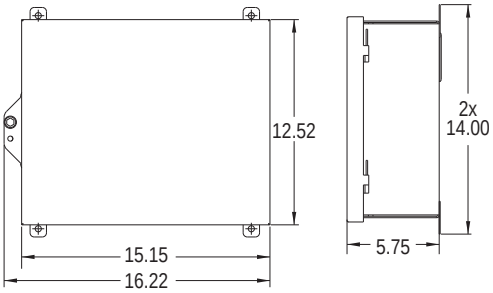
FieldSmart® Fiber Delivery Point (FDP)

Outdoor 24 Port Wall Box

Application

The FieldSmart FDP 24 Port Outdoor Wall Box is ideal for both residential MDUs and business-class environments. Configurable for either patch only, patch and splice (Clearfield's in-cassette splicing solution) or MPO plug-and-play, Outdoor Wall Boxes supports all cable scenarios for the outside plant. The OSP platform is designed for the harshest environments, supporting NEMA 4 performance requirements, while providing conduit entry through field-deployed knock-outs on both the rear and bottom of the unit. Additional applications include, fiber demarcations, entrance facilities and security systems (CCTV).





Description

Designed from conception to provide fast and easy fiber jumper routing with ease of access to all circuits, the FieldSmart FDP Outdoor 24 Port Wall Box is craft-friendly, keeping the installer's needs for quick deployment, intuitive use and ease of maintenance as the top priorities. Utilizing the Clearview® Cassette, the boxes easily scale from 12 to 24 ports with the industry standard adapter of choice. Ring cut or mid-span capabilities allow distribution cables to be daisy-chained and for fiber hand-off through the riser, while a swinging bulkhead provides rear-access to cassettes and protects sub-unit slack storage. With lockable doors for added protection and a solid enclosure design to protect fiber terminations from damage, the FieldSmart Fiber Delivery Point (FDP) Wall Box product line provides superior fiber management for outdoor environments.

Features and Benefits

Integrity

- Terminations are designed and tested to Telcordia GR-326
- Clearfield® FiberDeep® Guarantee: 0.2 dB insertion loss or less, exceeding industry standards
- Compliant to Telcordia GR-20 and GR-409
- Supports all industry standard singlemode and multimode connectors
- 100% performance tested for insertion loss, return loss and final mechanical inspect

Protection

- Designed to NEMA 4 requirements
- Zinc-plated for harsh environment reliability
- Radius protected storage for up to three meters of jacketed fiber or patch cord slack is provided (patch side)
- Internal radius protected storage of up to one meter of 900 µm fiber and three meters of jacketed fiber (splice side)
- Rugged steel construction with locking access doors provides security from tampering or inadvertent damage
- Integrated fiber management protects fiber from micro-bend and macro-bend damage
- Ability to padlock the outside door for increased security

Access

- Ships ready to install with cable clamp kit, locks and miscellaneous accessories
- Multiple entry/exit points for feeder/customer premise cables
- Larger design facilitates ease of access in the environments the product is deployed
- Rear wall knockout for conduit entry
- Accessible using a standard can wrench

Investment

- Scalable to 24 ports of fiber using Clearview® Cassettes loaded with the interface of your choice
- Pre-configured and pre-loaded factory terminated assemblies
- Patch only or patch and splice configurations supported
- Boxes can be configured as a tie box and later converted to patch only or patch and splice, utilizing the Clearview Cassette

FieldSmart® Fiber Delivery Point (FDP)

Outdoor 24 Port Wall Box

Technical Specifications

FieldSmart Outdoor 24 Port Wall Box	
Dimensions	12.52” H x 16.22” W x 5.75” D
Port Density	Up to 24 ports
Cassette Types Supported	Clearview® Blue
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC, FC/UPC, FC/APC, ST/UPC, MPO
Cable Types	Indoor/Outdoor, Outdoor (Riser/Non-Rated), Outdoor Armored (Riser/Non-Rated)
Splice Capacity	12 or 24 splice configurations in each Clearview Cassette
Storage Capacity	One meter of 900 µm fiber and up to 20 feet buffer tube
Material	16 gauge cold rolled steel (zinc chromate with almond powder coating)

Configured Part Numbers

W ___ ___ - ___ ___ ___ - ___ ___ ___ - Z Z ___ XXXM or XXXF

1 2 3 4 5 6 7

1 Select Wall Mount Style

C = Patch only
D = Patch and splice
H = Tie panel

2 Select Clearview Cassette

B = Clearview Blue

3 Select Port Count

012 = 12 port
024 = 24 port
000 = Empty Panel

4 Select Connector Style

A = SC/UPC
C = SC/APC
F = LC/UPC
H = LC/APC
J = FC/UPC
K = FC/APC
M = ST/UPC

5 Select Mode / Type

1 = Singlemode, non ribbon
2 = Singlemode, ribbon
3 = Multimode (62.5)
9 = No fiber – multimode
0 = No fiber - singlemode

6 Select Cable Construction

B = OSP riser rated
E = OSP (non-rated)
F = Patch and splice (loose tube)
M = OSP (armored, non-rated)
Z = Patch and splice ribbon

7 Select Cable Exit *

4 = Bottom left
Z = None or patch and splice (ribbon)

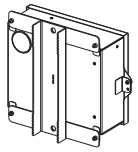
XXXM or XXXF

XXXM = Length in meters
XXXF = Length in feet

* Cable exit is defined by which direction the cable exits the panel when viewing it from the front.

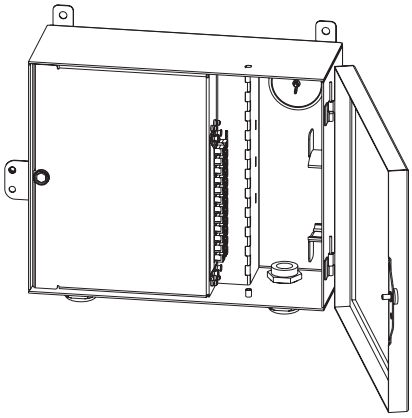
Accessories

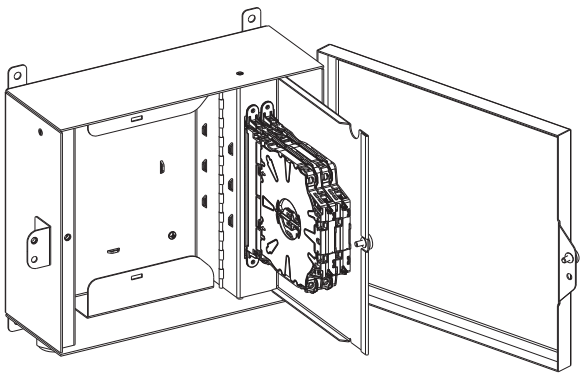
- Pole Mount Kit (FMA-H4Z-SUB)
- FieldSmart Outdoor Wall Box Accessory Kit (FMA-XXX-36)



FMA-H4Z-SUB

FMA-XXX-36





FieldSmart® Fiber Delivery Point (FDP)

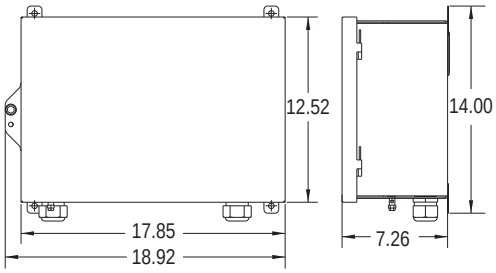
Outdoor 48 Port Wall Box

Application

The FieldSmart FDP 48 Port Outdoor Wall Box is ideal for both residential MDUs and business-class environments. Configurable for either patch only, patch and splice (Clearfield's in-cassette splicing solution) or MPO plug-and-play, Outdoor Wall Boxes supports all cable scenarios for the outside plant. The OSP platform is designed for the harshest environments, supporting NEMA 4 performance requirements, while providing conduit entry through field-deployed knock-outs on both the rear and bottom of the unit. Additional applications include, fiber demarcations, entrance facilities and security systems (CCTV).

Description

Designed from conception to provide fast and easy fiber jumper routing with ease of access to all circuits, the FieldSmart FDP Outdoor 48 Port Wall Box is craft-friendly, keeping the installer's needs for quick deployment, intuitive use and ease of maintenance as the top priorities. Utilizing the Clearview® Cassette, the box easily scale from 12 to 48 ports with the industry standard adapter of choice. Ring cut or mid-span capabilities allow distribution cables to be daisy-chained and for fiber hand-off through the riser, while a swinging bulkhead provides rear-access to cassettes and protects sub-unit slack storage. With lockable doors for added protection and a solid enclosure design to protect fiber terminations from damage, the FieldSmart Fiber Delivery Point (FDP) Wall Box product line provides superior fiber management for outdoor environments.



Features and Benefits

Integrity

- Terminations are designed and tested to Telcordia GR-326
- Clearfield® FiberDeep® Guarantee: 0.2 dB insertion loss or less, exceeding industry standards
- Compliant to Telcordia GR-20 and GR-409
- Supports all industry standard singlemode and multimode connectors
- 100% performance tested for insertion loss, return loss and final mechanical inspect

Protection

- Outdoor unit designed to NEMA 4 requirements
- Zinc-plated for harsh environment reliability
- Radius protected storage for up to three meters of jacketed fiber or patch cord slack is provided (patch side)
- Internal radius protected storage of up to one meter of 900 µm fiber and three meters of jacketed fiber (splice side)
- Rugged steel construction with locking access doors provides security from tampering or inadvertent damage
- Integrated fiber management protects fiber from micro-bend and macro-bend damage
- Ability to padlock the outside door for increased security

Access

- Removable doors and non-angled connectors enable fast, easy fiber jumper routing
- Ships ready to install with cable clamp kit, locks and miscellaneous accessories
- Multiple entry/exit points for feeder/customer premise cables
- Larger design facilitates ease of access in the environments the product is deployed
- Rear wall knockout for conduit entry
- Accessible using a standard can wrench

Investment

- Scalable to 48 ports of fiber using Clearview Cassettes loaded with the interface of your choice
- Pre-configured/pre-loaded factory terminated assemblies
- Patch only or patch and splice configurations supported
- Box can be configured as a tie box and later converted to patch only or patch and splice, utilizing the Clearview Cassette

FieldSmart® Fiber Delivery Point (FDP)

Outdoor 48 Port Wall Box

CLEARFIELD

Technical Specifications

FieldSmart Outdoor 48 Port Wall Box	
Dimensions	12.52” H x 18.92” W x 7.26” D
Port Density	Up to 48 ports
Cassette Types Supported	Clearview® Blue
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC, FC/UPC, FC/APC, ST/UPC, MPO
Cable Types	Indoor/Outdoor, Outdoor (Riser/Non-Rated), Outdoor Armored (Riser/Non-Rated)
Splice Capacity	12 or 24 splice configurations in each Clearview Cassette
Storage Capacity	One meter of 900 µm fiber and up to 3 meters of jacketed fiber
Material	16 gauge cold rolled steel (zinc chromate with almond powder coating)

Configured Part Numbers

W ___ ___ - ___ ___ ___ - ___ ___ ___ - Z Z ___ XXXM or XXXF

1 2 3 4 5 6 7

1 Select Wall Mount Style

T = Patch only
U = Patch and splice
V = Tie panel

2 Select Clearview Cassette

B = Clearview Blue

3 Select Port Count

000 = Empty Panel
012 = 12 port
024 = 24 port
036 = 36 port
048 = 48 port

4 Select Connector Style

A = SC/UPC
C = SC/APC
F = LC/UPC
H = LC/APC
J = FC/UPC
K = FC/APC
M = ST/UPC

5 Select Mode / Type

1 = Singlemode, non ribbon
2 = Singlemode, ribbon
3 = Multimode (62.5)
9 = No fiber – multimode
0 = No fiber - singlemode

6 Select Cable Construction

B = OSP riser rated
E = OSP (non-rated)
F = Patch and splice (loose tube)
M = OSP (armored, non-rated)
Z = Patch and splice ribbon

7 Select Cable Exit *

4 = Bottom left
Z = None or patch and splice (ribbon)

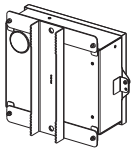
XXXM or XXXF

XXXM = Length in meters
XXXF = Length in feet

* Cable exit is defined by which direction the cable exits the panel when viewing it from the front.

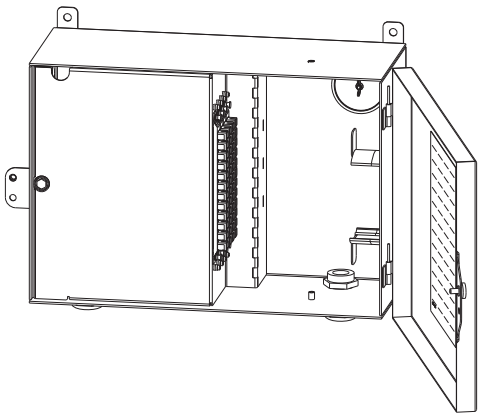
Accessories

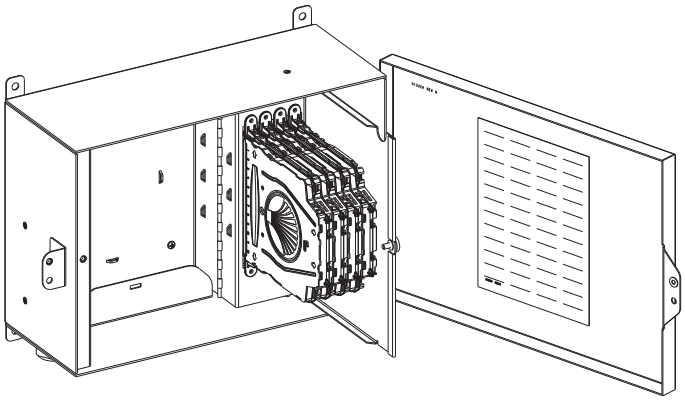
- Pole Mount Kit (FMA-H4Z-SUB)
- FieldSmart Outdoor Wall Box Accessory Kit (FMA-XXX-36)



FMA-H4Z-SUB

FMA-XXX-36



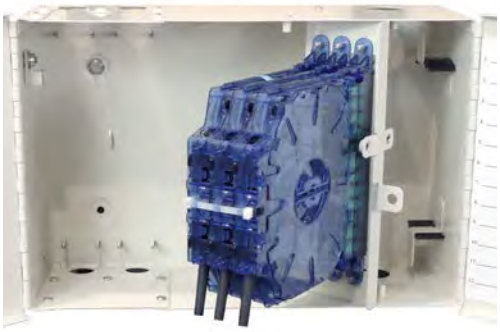


FieldSmart® Fiber Delivery Point (FDP)

Indoor 36 Port Wall Box

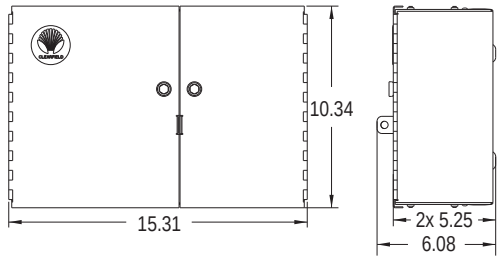
Application

The FieldSmart Fiber Delivery Point (FDP) 36 Port Indoor Wall Box has been optimized for MDU (Multi Dwelling Unit) applications. With the Clearview® Cassette at its heart, the FieldSmart FDP Wall Box gives service providers plug-and-play integration based upon the configuration requirements of the application. With the ability to house a single 1 x 32 splitter, indoor wall boxes are perfect for the deployment of PON-based FTTH networks in an MDU environment. Additional applications include, fiber demarcations, entrance facilities and security systems (CCTV).



Description

The FieldSmart Fiber Delivery Point (FDP) 36 Port Indoor Wall Box easily allows the user to scale from 12 to 36 ports. Utilizing Clearview Cassettes, the product is shipped loaded with the industry standard adapter of choice and can be configured for patch only, patch and splice (Clearfield's in-cassette splicing solution) and MPO plug-and-play applications, while supporting all cable constructions for the inside plant. It is ring cut or mid-span capable, allowing for the distribution cables to be daisy-chained and for fiber hand-off through the riser. The box has a swinging bulkhead for rear-access to the cassettes and protects sub-unit slack storage, security enabled doors for extra protection and a solid enclosure to protect fiber terminations from damage. Designed from conception to provide fast, easy fiber jumper routing and ease of access to all circuits, the Wall Box system is craft-friendly, keeping the installer's needs for quick deployment, intuitive use and ease of maintenance as the top priority.



Features and Benefits

Integrity

- Terminations are designed and tested to Telcordia GR-326
- Clearfield® FiberDeep® Guarantee: 0.2 dB insertion loss or less, exceeding industry standards
- Compliant to Telcordia GR-20 and GR-409
- Supports all industry standard singlemode and multimode connectors
- 100% performance tested for insertion loss, return loss and final mechanical inspect

Protection

- Radius protected storage for up to five meters of jacketed fiber or patch cord slack is provided (patch side)
- Rugged steel construction with security enabled doors provide protection from tampering or inadvertent damage with industry standard can wrench fasteners
- Integrated fiber management protects fiber from micro-bend and macro-bend damage
- A grounding lug is included

Access

- Removable doors and non-angled connectors enable fast, easy fiber jumper routing, reducing the risk of fiber damage when cleaning or patching fibers
- Ships ready to install with cable clamp kit and miscellaneous accessories
- Upper and lower entry/exit points for feeder/customer premise cables
- Larger design facilitates ease of access in the environments product is deployed
- Accessible using a standard can wrench
- Pre-loaded for patch and splice or patch only applications

Investment

- Scalable to 36 ports of fiber using Clearview Cassettes loaded with the interface of your choice
- Pre-configured/pre-loaded factory terminated assemblies
- Box can be configured as a tie box and later converted to patch only or patch and splice, utilizing the Clearview Cassette

FieldSmart® Fiber Delivery Point (FDP)

Indoor 36 Port Wall Box

CLEARFIELD

Technical Specifications

FieldSmart Indoor 36 Port Wall Box	
Dimensions	10.34” H x 15.31” W x 5.25” D
Port Density	Up to 36 ports
Cassette Types Supported	Clearview® Blue
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC, FC/UPC, FC/APC, ST/UPC, MPO
Cable Types	Indoor Riser, Indoor Plenum, Indoor/Outdoor
Splice Capacity	12 or 24 splice configurations in each Clearview Cassette
Storage Capacity	One meter of 900 µm fiber and up to 5 meters of jacketed fiber
Material	18 gauge cold rolled steel (almond powder coating)

Configured Part Numbers

W ___ ___ - ___ ___ ___ - ___ ___ ___ - Z Z ___ XXXM or XXXF

1 2 3 4 5 6 7

1 Select Wallmount Style

E = Patch only
F = Patch and splice
G = Tie panel

2 Select Clearview Cassette

B = Clearview Blue

3 Select Port Count

012 = 12 port
024 = 24 port
036 = 36 port

4 Select Connector Style

A = SC/UPC
C = SC/APC
F = LC/UPC
H = LC/APC
J = FC/UPC
K = FC/APC
M = ST/UPC

5 Select Mode / Type

1 = Singlemode, non ribbon
2 = Singlemode, ribbon
3 = Multimode (62.5)
9 = No fiber – multimode
0 = No fiber - singlemode

6 Select Cable Construction

A = Indoor riser rated (IFC)
B = OSP riser rated
C = Indoor, plenum rated (IFC)
E = OSP (non-rated)
M = OSP (armored, non-rated)
F = Patch and splice (loose tube)
Z = Patch and splice (ribbon)

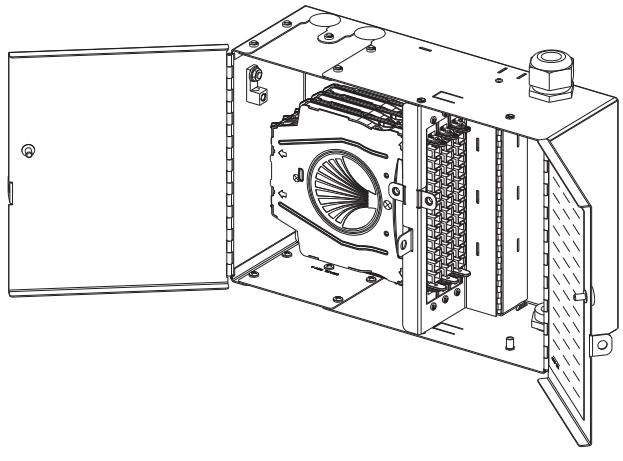
7 Select Cable Exit *

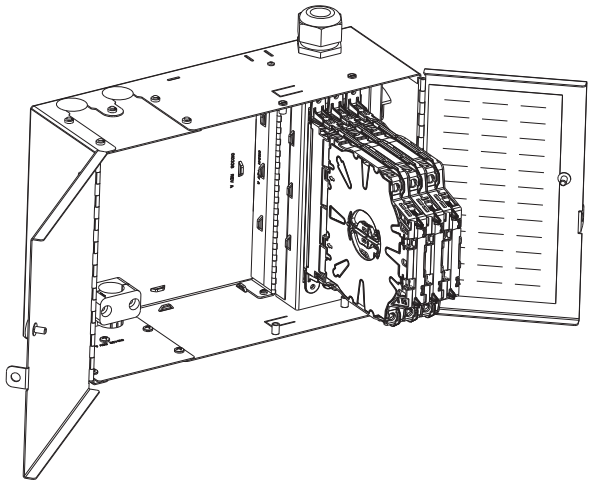
2 = Top left
4 = Bottom left
Z = None or patch and splice (ribbon)

XXXM or XXXF

XXXM = Length in meters
XXXF = Length in feet

* Cable exit is defined by which direction the cable exits the panel when viewing it from the front.





FieldSmart® Fiber Delivery Point (FDP)

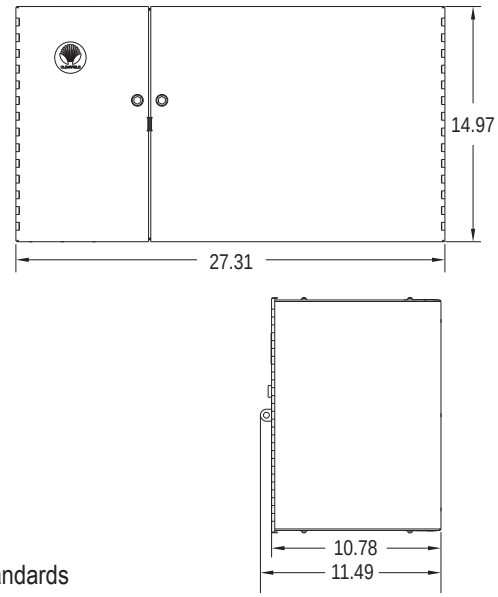
Indoor 96 Port Wall Box

Application

The FieldSmart Fiber Delivery Point (FDP) 96 Port Indoor Wall Box has been optimized for MDU applications. Configurable with up to 96 distributed ports and 12 feeder ports, users can easily scale their networks using the same consistent Clearview® Cassette deployment strategy. With the ability to house up to three 1 x 32 splitters, the Indoor Wall Box supports PON applications, as well as fiber demarcations, entrance facilities and security systems (CCTV).

Description

In the middle of the FieldSmart Fiber Delivery Point (FDP) Indoor Wall Box line is the 96 Port, which allows the user to easily scale 12 to 96 distributed ports. Designed from conception to provide fast and easy fiber jumper routing with ease of access to all circuits, the FieldSmart FDP Wall Box system is craft-friendly, keeping the installer's needs for quick deployment, intuitive use and ease of maintenance as the top priorities. Utilizing Clearview Cassettes, the product is shipped loaded with the industry standard adapter of choice and can be configured for patch only, patch and splice (Clearfield's in-cassette splicing solution) and MPO plug-and-play applications, while supporting all cable constructions for the inside plant. It is ring cut or mid-span capable, allowing for the distribution cables to be daisy-chained and for fiber hand-off through the riser. The box has a swinging bulkhead for rear-access to the cassettes and protects sub-unit slack storage, security enabled doors for extra protection and a solid enclosure to protect fiber terminations from damage. Designed from conception to provide fast, easy fiber jumper routing and ease of access to all circuits, the wall box system is craft-friendly, keeping the installer's needs for quick deployment, intuitive use and ease of maintenance as the top priority.



Features and Benefits

Integrity

- Terminations are designed and tested to Telcordia GR-326
- Clearfield® FiberDeep® Guarantee: 0.2 dB insertion loss or less, exceeding industry standards
- Compliant to Telcordia GR-20 and GR-409
- Supports all industry standard singlemode and multimode connectors
- 100% performance tested for insertion loss, return loss and final mechanical inspect

Protection

- Radius protected storage for up to five meters of jacketed fiber or patch cord slack is provided (patch side)
- Rugged steel construction with security enabled doors provide protection from tampering or inadvertent damage with industry standard can wrench fasteners
- Integrated fiber management protects fiber from micro-bend and macro-bend damage
- A grounding lug is included

Access

- Removable doors and non-angled connectors enable fast, easy fiber jumper routing, reducing the risk of fiber damage when cleaning or patching fibers
- Ships ready to install with cable clamp kit and miscellaneous accessories
- Upper and lower entry/exit points for feeder/customer premise cables
- Larger design facilitates ease of access in the environments product is deployed and is accessible using a standard can wrench
- Pre-loaded for patch and splice or patch only applications

Investment

- Scalable to 96 distributed ports and 12 feeder ports of fiber using Clearview Cassettes loaded with the interface of your choice
- Pre-configured/pre-loaded factory terminated assemblies
- Box can be configured as a tie box and later converted to patch only or patch and splice, utilizing the Clearview Cassette

FieldSmart® Fiber Delivery Point (FDP)

Indoor 96 Port Wall Box

CLEARFIELD

Technical Specifications

FieldSmart Indoor 96 Port Wall Box	
Dimensions	14.97" H x 27.31" W x 10.78" D
Port Density	Up to 96 distributed ports and 12 feeder ports
Cassette Types Supported	Clearview® Blue
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC, FC/UPC, FC/APC, ST/UPC, MPO
Cable Types	Indoor Riser, Indoor Plenum, Indoor/Outdoor
Splice Capacity	12 or 24 splice configurations in each Clearview Cassette
Storage Capacity	One meter of 900 µm fiber and up to 5 meters of jacketed fiber
Material	18 gauge cold rolled steel (almond powder coating)

Configured Part Numbers

W ___ ___ - ___ ___ ___ - ___ ___ ___ - Z Z ___ XXXM or XXXF

1 2 3 4 5 6 7

1 Select Wall Panel Style
- M = Patch only
- N = Patch and Splice
- P = Tie panel

2 Select Clearview Cassette
- B = Clearview Blue

3 Select Port Count
- X X X = port count in increments of 12

4 Select Connector Style
- A = SC/UPC
- C = SC/APC
- F = LC/UPC
- H = LC/APC
- J = FC/UPC
- K = FC/APC
- M = ST/UPC

5 Select Mode / Type
- 1 = Singlemode, non ribbon
- 2 = Singlemode, ribbon
- 3 = Multimode (62.5)
- 9 = No fiber – multimode
- 0 = No fiber - singlemode

6 Select Cable Construction
- A = Indoor riser rated (IFC)
- B = OSP riser rated
- C = Indoor, plenum rated (IFC)
- E = OSP (non-rated)
- F = Patch and splice (loose tube)
- M = OSP (non-rated armored)
- Z = None or patch and splice (ribbon)

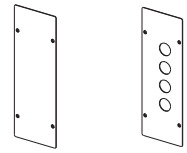
7 Select Cable Exit *
- 2 = Top left
- 4 = Bottom left
- Z = N/A – use for patch and splice

XXXM or XXXF
- XXXM = Length in meters
- XXXF = Length in feet

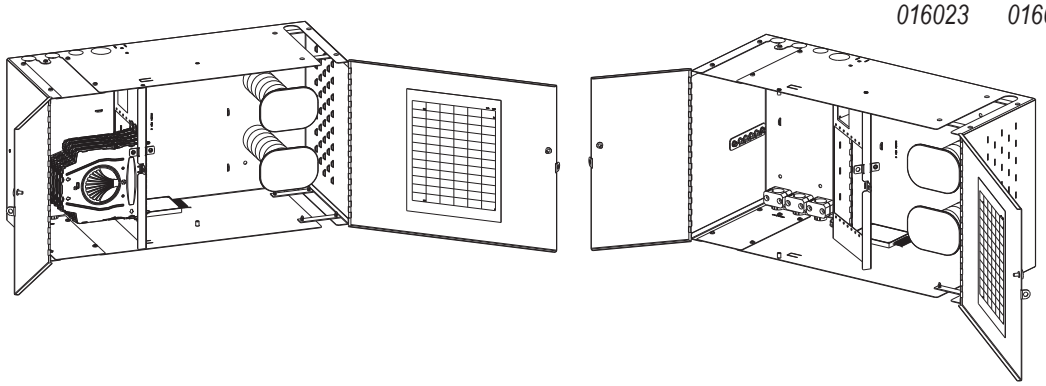
** Cable exit is defined by which direction the cable exits the panel when viewing it from the front.*

Accessories

- Ruggedized Splitter
- Dust Cover Plates (016023) - plate kit includes two plates and eight screws
- Plate Kit (016023-01) - plate kit includes two plates, eight screws and eight rubber hole plugs



016023 *016023-01*



FieldSmart® Fiber Delivery Point (FDP)

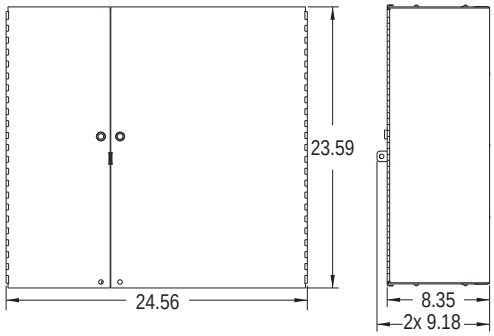
Indoor 144 Port Wall Box

Application

The 144 Port Indoor Wall Box has been optimized for MDU applications. With the Clearview® Cassette at its heart, the FieldSmart FDP 144 Port Wall Box gives service providers plug-and-play integration based upon the configuration requirements of their application. Starting from 12 ports, users can easily scale their networks using the same consistent Clearview Cassette deployment strategy. With a compact 24" x 26" x 8" footprint, this wall boxis perfect for the deployment of FTTH networks in an MDU environment. With the ability to house up to six ruggedized splitters, the wall box supports PON applications, as well as fiber demarcations.

Description

The FieldSmart Fiber Delivery Point (FDP) 144 Port Indoor Wall Box is Clearview optimized, allowing the user to easily scale from 12 to 144 distributed ports and 24 feeder ports. Utilizing Clearview Cassettes, the product is shipped and loaded with the industry standard adapters. It is preloaded for patch only, patch and splice (Clearfield's in-cassette splicing solution) and MPO plug-and-play applications and supports all cable constructions for the inside or outside plant. It is ring-cut or mid-span capable, allowing for the distribution cables to be daisy-chained and for fiber hand-off through the riser. The box has a swinging bulkhead for rear-access to the cassettes, security enabled doors for extra protection and a solid enclosure to protect fiber terminations from damage. Designed from conception to provide fast, easy fiber jumper routing and ease of access to all circuits, the wall box system is craft-friendly, keeping the installer's needs for quick deployment, intuitive use and ease of maintenance as the top priority.



Features and Benefits

Integrity

- Terminations are designed and tested to Telcordia GR-326
- Clearfield® FiberDeep® Guarantee: 0.2 dB insertion loss or less, exceeding industry standards
- Compliant to Telcordia GR-20 and GR-409
- Supports all industry standard singlemode and multimode connectors
- 100% performance tested for insertion loss, return loss and final mechanical inspect

Protection

- Radius protected storage for up to five meters of jacketed fiber or patch cord slack is provided (patch side)
- Rugged steel construction with security enabled doors provide protection from tampering or inadvertent damage with industry standard can wrench fasteners
- Integrated fiber management protects fiber from micro-bend and macro-bend damage
- A grounding lug is included
- Secondary locking fasteners for optional padlock

Access

- Removable doors and non-angled connectors enable easy fiber jumper routing, reducing the risk of fiber damage
- Upper and lower entry/exit points for feeder/customer premise cables
- Larger design facilitates ease of access in the environments product is deployed and is accessible using a standard can wrench
- Pre-loaded for patch and splice or patch only applications

Investment

- Scalable to 144 distributed ports and 24 feeder ports of fiber using Clearview Cassettes loaded with the interface of your choice: user-defined feeder/distribution port counts
- Pre-configured/pre-loaded factory terminated assemblies
- Box can be configured as a tie box and later converted to patch only or patch and splice, utilizing the Clearview Cassette

FieldSmart® Fiber Delivery Point (FDP)

Indoor 144 Port Wall Box

Technical Specifications

FieldSmart Indoor 144 Port Wall Box	
Dimensions	23.59" H x 24.56" W x 8.35" D
Port Density	Up to 144 distributed ports and 24 feeder ports
Cassette Types Supported	Clearview® Blue
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC, FC/UPC, FC/APC, ST/UPC, MPO
Cable Types	Indoor Riser, Indoor Plenum, Indoor/Outdoor
Splice Capacity	12 or 24 splice configurations in each Clearview Cassette
Storage Capacity	One meter of 900 µm fiber and up to 5 meters of jacketed fiber
Material	18 gauge cold rolled steel (almond powder coating)

Configured Part Numbers

W ___ ___ - ___ ___ ___ - ___ ___ ___ - Z Z ___ XXXM or XXXF

1 2 3 4 5 6 7

1 Select Wall Mount Style

J = Patch only
K = Patch and splice
L = Tie panel

2 Select Clearview Cassette

B = Clearview Blue

3 Select Port Count

X X X = Port count in increments of 12

4 Select Connector Style

A = SC/UPC
C = SC/APC
F = LC/UPC
H = LC/APC
J = FC/UPC
K = FC/APC
M = ST/UPC

5 Select Mode / Type

1 = Singlemode, non-ribbon
2 = Singlemode, ribbon
3 = Multimode (62.5)
9 = No fiber – multimode
0 = No fiber – singlemode

6 Select Cable Construction

A = Indoor riser rated (IFC)
B = OSP riser rated
C = Indoor, plenum rated (IFC)
E = OSP (non-rated)
M = OSP (armored, non-rated)
F = Patch and splice (loose tube)
Z = None or patch and splice (ribbon)

7 Select Cable Exit *

2 = Top left
4 = Bottom left
Z = None or patch and splice (ribbon)

XXXM or XXXF

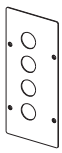
XXXM = Length in meters
XXXF = Length in feet

* Cable exit is defined by which direction the cable exits the panel when viewing it from the front.

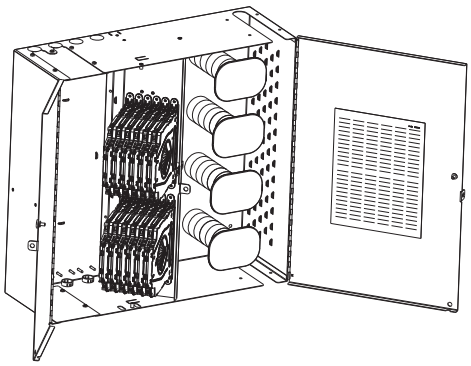
Accessories

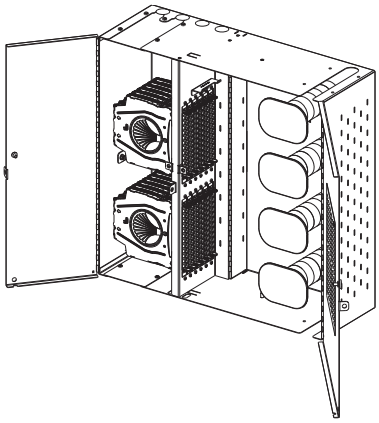
- Ruggedized Splitter
- Dust Cover Plates (016024) - plate kit includes two plates and eight screws
- Plate Kit (016024-01) - plate kit includes two plates, eight screws and eight rubber hole plugs

016024



016024-01





YOURx™
Flex Box

Application

Carriers are faced with many challenges when cabling MDUs in both existing (brownfield) and new construction (greenfield). One such challenge is how to manage incoming duct, while supporting varying number of subscribers in different configurations with slack management while also reducing installation time. Clearfield's patent-pending YOURx Flex Box addresses these challenges with a flexible and scalable solution all within a single wall box.

Flex Box with Clearview Blue

Description

The YOURx Flex Box is a secure, modular wall box with slide-in aggregator plate that supports multiple cable entries like, individual fiber cables, conduit and microduct in an organized matter. Installers simply push the microduct into the aggregator plate and they are ready to pull fiber. Slack storage is provided for both incoming and outgoing fiber in separate areas to reduce service interruptions when turning up additional subscribers. The drop wheel feature accommodates up to 16 individual drop wheel assemblies with each drop wheel supporting up to a 200' of FieldShield® StrongFiber storage. The SmartRoute Plate can also be mounted in the Flex Box, providing spool technology and MPO connectorization. Using the Clearview® Cassette, Drop Wheel assembly or SmartRoute Plate allows for a plug-and-play concept which reduces installation time.

Flex Box with Drop Wheel

Features and Benefits

Integrity

- Utilizes the Clearview Blue Cassette, Clearview xPAK and FieldShield Drop Wheel
- 1" inside mounting hole pattern for multiple applications
- Dual snap ensures lid secures to box

Protection

- Security screw with ability to secure with padlock
- Gasket seal
- Grounding lug included

Access

- Internal mounting holes for easy installation
- Top and bottom entry/exit points
- Reversible door allows for dual direction mounting

Investment

- Scalable
- Slide-in aggregator plates eliminate the need for additional duct organizer
- Clearview Cassette, Clearview xPAK, Drop Wheel or SmartRoute Plate

YOURx™
Flex Box

CLEARFIELD

Technical Specifications

YOURx Flex Box	
Dimensions	16.00" H x 12.00" W x 5.38" D
Material	UV rated, flame retardant, V0 rated
Port Density	Two cassettes (24 ports), up to 16 in drop wheel, SmartRoute Plate 24 port
Connectivity Types	Clearview® Blue, Clearview xPAK, Drop Wheel, SmartRoute Plate
Aggregator Plate	Duct Plate supports (24) 10/6 mm and (2) 14/10 mm Microduct Combo Plate supports (24) 10/6 mm Microduct
Drop Wheel	Fiber type - FieldShield® StrongFiber
Drop Wheel Connector	Pullable SC/APC and SC/UPC to standard SC/APC and SC/UPC
Drop Wheel Cable Length	200 feet FieldShield StrongFiber
Drop Wheel Material	Black Thermoplastic

Pre-Configured Part Numbers

Fully Loaded Flex Box

Part Number	Description
FDP-xWBF-CPLATE-24	Flex Box loaded with (24) 10/6 mm FlexPort fittings in combo plate with cable management
FDP-xWBF-DPLATE-24	Flex Box loaded with (24) 10/6 mm FlexPort fittings in duct plate and (1) 14/10 mm shipped along with cable management

Empty Flex Box

Part Number	Description
FDP-xWBF-CPLATE	Empty Flex Box with combo plate and cable management. No FlexPort fittings
FDP-xWBF-DPLATE	Empty Flex Box with duct plate and cable management. No FlexPort fittings

Configured Part Numbers

W S ___ - ___ ___ ___ - ___ ___ ___ - ___ Z Z ___ ___ ___ ___

1 | 2 | 3 | 4 | 5 | 6 | 7

1 Select Module Type

B = Cassette
N = Cassette with Male MPO
M = Drop Wheel with Male MPO (Includes Drop Wheel)
S = Drop Wheel with Splitter (Includes Drop Wheel)
C = Cradle Assembly with MPO (Male) (No Drop Wheels)
E = Cradle Assembly with Splitter (No Drop Wheels)

2 Select Port Count

If Cassette:
012 = 12 ports
024 = 24 ports
If Drop Wheel:
004 = 4 ports
008 = 8 ports
012 = 12 ports
016 = 16 ports

3 Select Connector Type

If Cassette:
A = SC/UPC
C = SC/APC
F = LC/UPC
H = LC/APC
If Drop Wheel:
A = SC/UPC
C = SC/APC

4 Select Mode and Type (Inside Cassette or Drop Wheel)

0 = Cradle Assembly (No Drop Wheels)
1 = Singlemode Non-ribbon (For Drop Wheel, Cassette or MPO)
2 = Singlemode Ribbon (Patch and Splice Only)

5 Select Jacket Construction (Inside Cassette or Drop Wheel)

F = Loose Tube Patch and Splice (For Cassette Only)
S = StrongFiber (For Drop Wheel Only)
Z = None (Ribbon Patch and Splice) (For Cassette Only)

6 Select Aggregator Plate Type

C = Combo Plate *Includes 10/6 mm FlexPort fitting and One Sealcon Connector
D = Duct Plate *Includes 10/6 mm and (1) 14/10 mm FlexPort fitting

** 10/6 mm FlexPorts will match the port count selected in #2.*

7 Select Length of Fiber

If Cassette or Drop Wheel Cradle = Leave Blank
200F = Drop Wheel Assembly

YOURx™
Flex Box

Configured Part Numbers

Empty Flex Box with FlexPort Fittings

S R P - ___ ___ ___ ___ - ___ ___ ___ ___

1 2 3 4 5 6 7 8

1 Select Front Connector Type

A = SC/UPC
C = SC/APC
F = LC/UPC
H = LC/APC

2 Select Cable Type

1 = SM stranded non-ribbon, plenum rated
3 = MM stranded non-ribbon, plenum rated

3 Select Cable Construction

Y = IFC Plenum
W = FieldShield

4 Select Number of Fibers

1 = 12 Fibers
3 = 6 Fibers

5 Select Rear Connector Type

A = SC/UPC
C = SC/APC
F = LC/UPC
H = LC/APC
N = MPO Male Pushable
P = MPO Female Pushable
Z = None

6 Select Rear Breakout

B = 1 meter
C = ½ meter
Z = None

7 Select Rear Upjacketing

A = 900 µm
B = 2mm
Z = None

8 Select Length

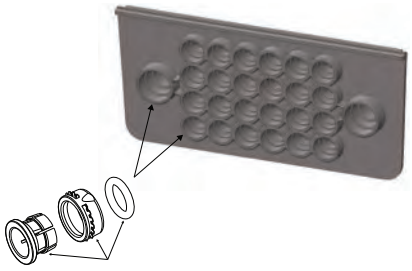
1 = 25 feet
2 = 50 feet
3 = 75 feet
4 = 100 feet
5 = 125 feet
6 = 150 feet
7 = 175 feet
8 = 200 feet

Combo Plate

Duct Plate

Cradle Assembly with Drop Wheels Installed

Cradle Assembly



FlexPort Fitting

SmartRoute Plate

FieldShield®
StrongFiber Drop Wheel

Application

Carriers are faced with key challenges when cabling for both brownfield and greenfield MDU deployments. The challenges are varied and include how to install multiple drops from a single connection point when distances are unknown, accommodating slack storage and ensuring alignment of capital investment with customer take rates in a plug-and-play design.

Description

FieldShield StrongFiber Drop Wheel assemblies address these key challenges with a compact, scalable and felxible quick-deploy platform. The end to end plug-and-play solution utilizes a spool concept with 200 feet of StrongFiber that is preterminated with a pullable SC/APC or SC/UPC connector. The drop wheel is easily deployed by extending the wheel from the cradle and pulling the fiber through the microduct or conduit. Once the pullable connector reaches its destination, the connector is mated to an adapter or directly into an ONT, providing a complete plug-and-play solution. Any remaining slack is stored and managed on the drop wheel. The Drop Wheel reduces turn-up time by offering a faster, simplified and splice-free installation which can be performed by a general technician.

Cradle assemblies can be configured to ship unpopulated, allowing for individual drop wheels to be purchased separately to scale and align capital investment with subscriber revenue. Cradle assemblies have the option to be configured with splitters or MPO connector for speedy installations.

Features and Benefits

Integrity

- Terminations are designed and tested to Telcordia GR-326
- Clearfield FiberDeep® Guarantee: 0.2 dB insertion loss or less, exceeding industry standards
- Supports singlemode SC connectors

Protection

- Craft friendly spool technology allows installers to pull the exact amount of cable required
- FieldShield StrongFiber bend-insensitive (G.657.A2) fiber protects optical signal with minimal to zero attenuation
- Lightweight with low coefficient of friction to maximize pull distances

Access

- Black in color
- Spooled with small form factor 900 µm
- Indoor implementations

Investment

- Pre-terminated cable spools reduce upfront deployment costs by simplifying site survey inspections
- Scaleable, quick and easy deployment allows capital investment to align with customer take rates

Technical Specifications

FieldShield StrongFiber Drop Wheel	
Drop Wheel Fiber Type	FieldShield StrongFiber
Connectors	Pullable SC/APC or SC/UPC to Standard SC/APC or SC/UPC
Cable Length	200 feet per wheel
Drop Wheel Material	Black Theromoplastic
Drop Wheel Radius	4.55 inches
Drop Wheel Cradle Dimensions	4 Position: 5.3” H x 3.3” W 8 Position: 5.3” H x 5.6” W 12 Position: 5.3” H x 7.8” W 16 Position: 5.3” H x 10.1” W

FieldShield®
StrongFiber Drop Wheel

CLEARFIELD

Pre-Configured Part Numbers

Empty Drop Wheel Cradle with Installed Splitter

Part Number	Description
DWC-SCU4-Splitter	Empty 4 position Drop Wheel Cradle with 1 x 4 splitter installed with SC/UPC adapters
DWC-SCA4-Splitter	Empty 4 position Drop Wheel Cradle with 1 x 4 splitter installed with SC/APC adapters
DWC-SCU8-Splitter	Empty 8 position Drop Wheel Cradle with 1 x 8 splitter installed with SC/UPC adapters
DWC-SCA8-Splitter	Empty 8 position Drop Wheel Cradle with 1 x 8 splitter installed with SC/APC adapters
DWC-SCU12-Splitter	Empty 12 position Drop Wheel Cradle with 1 x 12 splitter installed with SC/UPC adapters
DWC-SCA12-Splitter	Empty 12 position Drop Wheel Cradle with 1 x 12 splitter installed with SC/APC adapters
DWC-SCU16-Splitter	Empty 16 position Drop Wheel Cradle with 1 x 16 splitter installed with SC/UPC adapters
DWC-SCA16-Splitter	Empty 16 position Drop Wheel Cradle with 1 x 16 splitter installed with SC/APC adapters

Empty Drop Wheel Cradle with MPO Installed

Part Number	Description
DWC-SCU4-MPO	Empty 4 position Drop Wheel Cradle with MPO installed with SC/UPC adapters
DWC-SCA4-MPO	Empty 4 position Drop Wheel Cradle with MPO installed with SC/APC adapters
DWC-SCU8-MPO	Empty 8 position Drop Wheel Cradle with MPO installed with SC/UPC adapters
DWC-SCA8-MPO	Empty 8 position Drop Wheel Cradle with MPO installed with SC/APC adapters
DWC-SCU12-MPO	Empty 12 position Drop Wheel Cradle with MPO installed with SC/UPC adapters
DWC-SCA12-MPO	Empty 12 position Drop Wheel Cradle with MPO installed with SC/APC adapters
DWC-SCU16-MPO	Empty 16 position Drop Wheel Cradle with MPO installed with SC/UPC adapters
DWC-SCA16-MPO	Empty 16 position Drop Wheel Cradle with MPO installed with SC/APC adapters

Individual Drop Wheel

Part Number	Description
DW-001-SCU-SCU 200F	Drop Wheel loaded with 200' FieldShield Strong Fiber SC/UPC
DW-001-SCA-SCA 200F	Drop Wheel loaded with 200' FieldShield Strong Fiber SC/APC

Loaded Drop Wheel Cradle with Installed Splitter

Part Number	Description
DW-SCX4U-Splitter	Loaded 4 position Drop Wheel Cradle with 1 x 4 splitter installed with SC/UPC adapters
DW-SCX4-Splitter	Loaded 4 position Drop Wheel Cradle with 1 x 4 splitter installed with SC/APC adapters
DW-SCX8U-Splitter	Loaded 8 position Drop Wheel Cradle with 1 x 8 splitter installed with SC/UPC adapters
DW-SCX8-Splitter	Loaded 8 position Drop Wheel Cradle with 1 x 8 splitter installed with SC/APC adapters
DW-SCX12U-Splitter	Loaded 12 position Drop Wheel Cradle with 1 x 12 splitter installed with SC/UPC adapters
DW-SCX12-Splitter	Loaded 12 position Drop Wheel Cradle with 1 x 12 splitter installed with SC/APC adapters
DW-SCX16U-Splitter	Loaded 16 position Drop Wheel Cradle with 1 x 16 splitter installed with SC/UPC adapters
DW-SCX16-Splitter	Loaded 16 position Drop Wheel Cradle with 1 x 16 splitter installed with SC/APC adapters

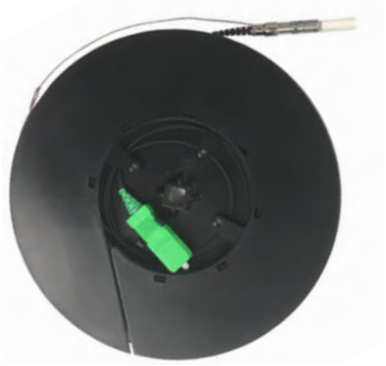
FieldShield®
StrongFiber Drop Wheel

Loaded Drop Wheel Cradle with MPO Installed

Part Number	Description
DW-SCU4-MPO	Loaded 4 position Drop Wheel Cradle with MPO installed with SC/UPC adapters
DW-SCA4-MPO	Loaded 4 position Drop Wheel Cradle with MPO installed with SC/APC adapters
DW-SCU8-MPO	Loaded 8 position Drop Wheel Cradle with MPO installed with SC/UPC adapters
DW-SCA8-MPO	Loaded 8 position Drop Wheel Cradle with MPO installed with SC/APC adapters
DW-SCU12-MPO	Loaded 12 position Drop Wheel Cradle with MPO installed with SC/UPC adapters
DW-SCA12-MPO	Loaded 12 position Drop Wheel Cradle with MPO installed with SC/APC adapters
DW-SCU16-MPO	Loaded 16 position Drop Wheel Cradle with MPO installed with SC/UPC adapters
DW-SCA16-MPO	Loaded 16 position Drop Wheel Cradle with MPO installed with SC/APC adapters

Empty Drop Wheel Cradle

+



Individual Drop Wheel

=

FieldShield Loaded Drop Wheel Assembly

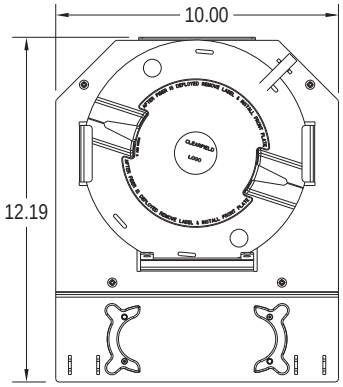
SmartRoute
Plate

Application

The SmartRoute Plate is designed to fast-track and simplify fiber installations when landing up to 12 fibers in any environment. Clearfield's SmartRoute Plate combines cable, spooling technology and MPO connectorization in a stand-alone wall plate design. This allows for maximum flexibility and efficient use of available space. The compact design can be pre-configured to terminate up to 12 fibers. This SmartRoute is an ideal solution for use in MDUs, SFUs, cell towers and business class services.

Description

The SmartRoute Plate contains one internal spool that can hold up to 200 feet of 3 mm, 12-fiber plenum micro-cable or 12-fiber FieldShield® Cable. The plate can provide up to 12 connections on the front of the spool with an MPO or pigtail breakouts on the back side of the spool.



Features and Benefits

Integrity

- Terminations are designed and tested to Telcordia GR-326
- Clearfield FiberDeep® Guarantee: 0.2 dB insertion loss or less, exceeding industry standards
- Supports all industry standard singlemode and multimode connectors
- 100% performance tested for insertion loss, return loss and final mechanical inspect

Protection

- Craft-friendly SmartRoute spool technology allows the installer to pullout the exact amount of cable required, and leaving the remaining slack safely stored on the spool

Access

- Wall mount
- Slack storage for drop cables

Investment

- Pre-connectorized options eliminate labor and speed network construction
- Scalable to 12 ports of fiber

SmartRoute
Plate

Technical Specifications

SmartRoute Plate	
Dimensions	Plate: 12.1” H x 10” W x 2.8” D
Port Density	6 and 12 ports = SC, 6 ports = LC Duplex
Connector Types	SC/UPC, SC/APC, MPO, LC/UPC, LC/APC
Cable Types	Indoor Plenum Rated IFC/FieldShield®
Maximum Internal Spool Cable Length	200 feet
Mounting Options	Wall Mount

Configured Part Numbers

S R ___ - ___ ___ ___ ___ ___ - ___ ___ ___ ___

1 2 3 4 5 6 7 8 9

1 Select Plate

P = Plate Only

2 Select Front Connector Type

A = SC/UPC
C = SC/APC
F = LC/UPC
H = LC/APC

3 Select Cable Type

1 = SM stranded non-ribbon, plenum rated
3 = MM stranded non-ribbon, plenum rated

4 Select Cable Construction

Y = IFC Plenum
W = FieldShield

5 Select Number of Fibers

1 = 12 Fibers
3 = 6 Fibers

6 Select Rear Connector Type

A = SC/UPC
C = SC/APC
F = LC/UPC
H = LC/APC
N = MPO Male Pushable
P = MPO Female Pushable
Z = None

7 Select Rear Breakout

B = 1 meter
C = ½ meter
Z = None

8 Select Rear Upjacketing

A = 900 µm
B = 2mm
Z = None

9 Select Length

1 = 25 feet
2 = 50 feet
3 = 75 feet
4 = 100 feet
5 = 125 feet
6 = 150 feet
7 = 175 feet
8 = 200 feet

FieldSmart® Fiber Delivery Point (FDP)

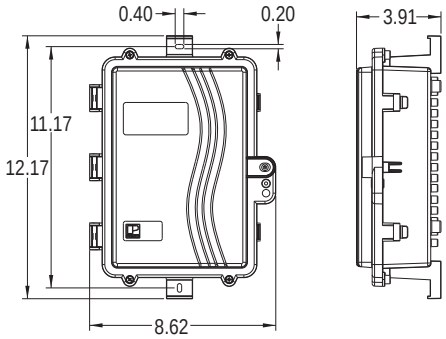
SCD Wall Box for xPAK

Application

Engineered to land small port count fiber terminations and optical components as conveniently as possible, the FieldSmart FDP SCD Wall Box for xPAK is optimized for delivery of a single Clearview® xPAK with up to six fibers. The lockable, NEMA 4 rated enclosure is compact, making it ideal for a variety of applications, including harsh environment locations surrounding fiber demarcation, entrance facilities, FTTP drop boxes and cell backhaul. Additional applications include MDU, business class services, power and wind farms and DOT/Traffic monitoring.

Description

Optimized for use with the Clearview xPAK, the FieldSmart Small Count Delivery Wall Box for xPAK is ideal for any small count fiber scenarios where 2, 4 or 6 fibers are required in a discrete footprint without sacrificing fiber management. With the Small Count Delivery (SCD) platform, the Clearview xPAK and FieldSmart FDP SCD Wall Box for xPAK enclosure are packaged together to make landing small count fiber more cost-effective and efficient than previously thought possible. Standardizing on a craft-friendly, building block architecture reduces the operating costs of fiber deployment by reducing installation times and inventory carrying requirements.



Features and Benefits

Integrity

- RUS listed
- Utilizing the Clearview xPAK, it supports industry standard SC and LC singlemode connectors
- Dual snap locks to ensure lid seals to base
- Mounting hole pattern for multiple applications

Protection

- Radius protected storage for up to 15 feet of buffer tube
- NEMA 4 rated
- Security screw with ability to secure with padlock
- Gasket seal
- Ground lug included

Access

- Small design facilitates ease of use in crowded environments
- Easy to install with both internal and external mounting holes
- Two bottom entry/exit points

Investment

- Patch and splice (Clearfield's in-cassette splicing solution) or patch only
- Surface or pole mount capable
- Flame retardant PVC for durability

FieldSmart® Fiber Delivery Point (FDP)

SCD Wall Box for xPAK

Technical Specifications

FieldSmart SCD Wall Box for xPAK	
Dimensions	External: 12.17” H x 8.62” W x 3.91” D; Internal: 9” H x 6” W x 2.25” D
Port Density	Up to six ports
Cassette Types Supported	Clearview® xPAK
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC, FC/UPC, FC/APC, ST/UPC, MPO
Cable Types	Indoor Riser, Indoor Plenum, Indoor/Outdoor, Outdoor (Riser/Non-Rated), Outdoor Armored (Riser/Non-Rated), FieldShield®
Splice Capacity	Six splices in each Clearview xPAK
Storage Capacity	One meter of 900 µm fiber and up to 5 meters of jacketed fiber
Material	UV stabilized, flame retardant polymer (PVC)

Pre-Configured Part Numbers

Part Number	Description
FDP-xWB1	Wall box with one fitting
FDP-xAK1	Optional accessory kit (includes one fitting and two strength member clamps)

Configured Part Numbers

W R Z - ___ ___ ___ - ___ ___ ___ - Z Z ___ XXXM or XXXF

1 2 3 4 5

1 Select Port Count

002 = 2 port
004 = 4 port
006 = 6 port
012 = 12 port (LC only)

2 Select Connector Style

A = SC/UPC
C = SC/APC
F = LC/UPC
H = LC/APC
J = FC/UPC
M = ST/UPC

3 Select Mode / Type

1 = Singlemode, non ribbon
2 = Singlemode, ribbon

4 Select Cable Construction

A = IFC riser
B = OSP riser rated
C = IFC plenum
E = OSP (non-rated)
M = OSP (armored, non-rated)
T = Flat drop (non-toneable)
W = FieldShield

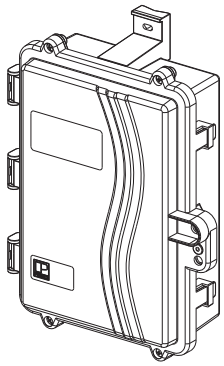
5 Select Cable Exit *

4 = Bottom left
7 = Bottom right

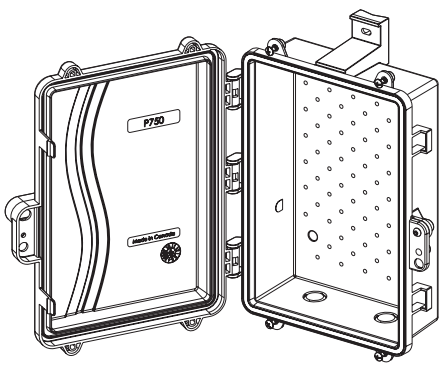
XXXM or XXXF

XXXM = Length in meters
XXXF = Length in feet

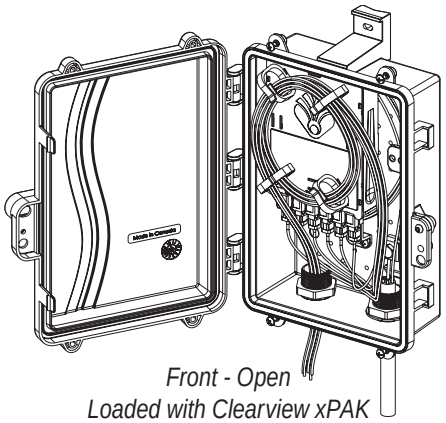
* Cable exit is defined by which direction the cable exits the panel when viewing it from the front.



Front - Closed



Front - Open



Front - Open
Loaded with Clearview xPAK

FieldSmart® Fiber Delivery Point (FDP)

Small Cell Wall Box

Application

Engineered to land small to medium fiber terminations in a convenient wall box design, the FieldSmart FDP Small Cell Wall Box is ideal for a variety of applications, including harsh environment locations surrounding fiber demarcation, entrance facilities, FTTP drop boxes and cell backhaul.

Description

The FieldSmart FDP Small Cell Wall Box comes with a factory-installed cable assembly, supporting up to 24 fibers. Factory-installed cable reduces the operating costs of fiber deployment by reducing installation times.

Features and Benefits

Integrity

- RUS listed
- Supports industry standard SC and LC singlemode connectors
- Dual snap locks to ensure lid seals to base
- NEMA 4 rated

Protection

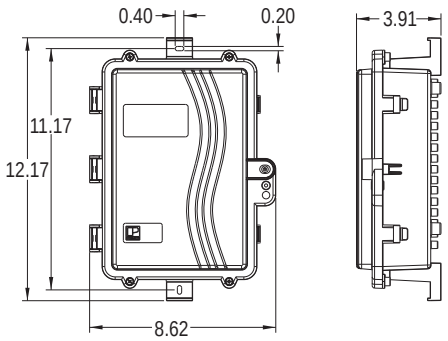
- Slack storage clips for both incoming and outgoing fibers
- Security screw with ability to secure with padlock
- Gasket seal
- Grounding lug included

Access

- Wall and pole mount
- Easy to install with both internal and external mounting holes
- Two bottom ¾" entry/exit ports are supported with ship-along Sealcon connectors

Investment

- Pre-connectorized cable assemblies eliminate labor and speed network construction
- Patch only
- One box for a variety of application uses



FieldSmart® Fiber Delivery Point (FDP)

Small Cell Wall Box

Technical Specifications

FieldSmart FDP Small Cell Wall Box	
Dimensions	External: 12.17” H x 8.62” W x 3.91” D; Internal: 9” H x 6” W x 2.25” D
Port Density	Up to 24 LC ports
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC
Cable Types	Indoor Riser, Indoor Plenum, Outdoor (Riser/Non-Rated), FieldShield®
Material	UV stabilized, flame retardant polymer (PVC)
Mounting Options	Wall and Pole Mount

Configured Part Numbers

W R A - ___ ___ ___ - ___ ___ ___ - Z Z 3 XXXM or XXXF

1 2 3 4

1 Select Port Count

006 = 6 ports
012 = 12 ports
024 = 24 ports (LC Only)

2 Select Connector Style

A = SC/UPC
C = SC/APC
F = LC/UPC
H = LC/APC

3 Select Mode/Type

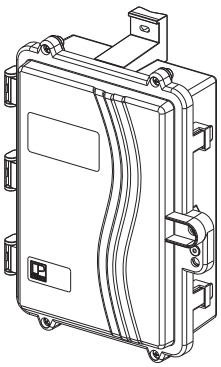
1 = Singlemode, non-ribbon
2 = Singlemode, ribbon

4 Select Cable Construction

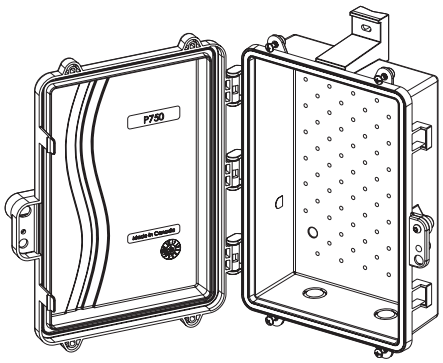
A = IFC Riser
B = OSP Riser Rated
C = IFC Plenum
E = OSP (non-rated)
M = OSP (armored, non-rated)

XXXM or XXXF

XXXM = Length in meters
XXXF = Length in feet



Front - Closed



Front - Open

FieldSmart® Fiber Delivery Point (FDP)

SCD Wall Box for Cassette

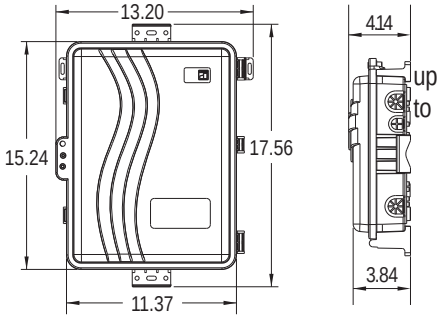
Application

Ideal for any small count fiber scenario, the FieldSmart Small Count Delivery (SCD) Wall Box for Cassettes accepts up to two Clearview® Cassettes, providing up to 24 fibers in a discrete footprint without sacrificing fiber management. Designed to land small port count fiber terminations and optical components as conveniently and inexpensively as possible, this flexible solution is perfectly suited for in-building needs, such as business class demarcations, MDU distribution points and IDF locations in enterprise networks as well as pole-mount applications in outside plant environments. When paired with a Clearview MPO Breakout Cassettes and a StrongFiber Deploy Reels, the FieldSmart SCD Wall Box provides a complete plug-and-play solution for the MDU environment.

Description

The FieldSmart SCD Wall Box for Cassettes complements the FieldSmart Fiber Delivery Point (FDP) Wall Box line, which provides three unique wall box designs that deliver 36 to 144 ports of fiber management in a traditional sheet-metal configuration. As a lower cost alternative to sheet-metal designs, this lockable, NEMA 4 rated enclosure is consistent with Clearfield's long-standing reputation of delivering simple solutions for complex problems.

Designed around the Clearview Cassette, the FieldSmart SCD Wall Box for Cassettes uses the same components as the other elements of the FieldSmart product platform. Slack storage is an integrated component of the solution with the Clearview U-Mount bracket accepting up to two Clearview Cassettes and providing to 15 feet of buffer tube slack storage. Unique to Clearfield® design is the ability bring multiple fiber sheaths into the FieldSmart SCD Wall Box. Each sheath will be protected within their own Clearview Cassette, providing service providers the ability to isolate one fiber sheath from another within the same enclosure.



Features and Benefits

Integrity

- Utilizing the Clearview Cassettes, it supports industry standard SC and LC singlemode connectors
- Dual snap locks to ensure lid seals to base
- Mounting hole pattern for multiple applications

Protection

- Radius protected storage for up to 15 feet of buffer tube
- NEMA 4 rated
- Security screw with ability to secure with padlock
- Gasket seal
- Ground lug included

Access

- Small design facilitates ease of use in crowded environments
- Easy to install with both internal and external mounting holes
- Two bottom entry/exit points

Investment

- Patch and splice (Clearfield's in-cassette splicing solution) or patch only
- Surface or pole mount capable
- Flame retardant PVC for durability

FieldSmart® Fiber Delivery Point (FDP)

SCD Wall Box for Cassette

CLEARFIELD

Technical Specifications

FieldSmart SCD Wall Box for Cassette	
Dimensions	External: 17.56” H x 13.17” W x 3.84” D; Internal: 14.1” H x 10” W x 3.25” D
Port Density	Up to 24 ports
Cassette Types Supported	Clearview® Classic and Clearview Blue
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC, FC/UPC, FC/APC, ST/UPC, MPO
Cable Types	Indoor Riser, Indoor Plenum, Indoor/Outdoor, Outdoor (Riser/Non-Rated), Outdoor Armored (Riser/Non-Rated), FieldShield®
Splice Capacity	12 or 24 splice configurations in each Clearview Cassette
Storage Capacity	One meter of 900 µm fiber and up to 5 meters of jacketed fiber
Material	UV stabilized, flame retardant polymer (PVC)

Pre-Configured Part Numbers

Part Number	Description
FDP-xWB2-12-SCA	Wall Box with (12) SC/APC ports in one Clearview® Cassette
FDP-xWB2-12-SC	Wall Box with (12) SC/UPC ports in one Clearview Cassette
FDP-xWB2-12-LC	Wall Box with (12) LC/UPC ports in one Clearview Cassette
FDP-xWB2-12-LC-TIE	Wall Box with (12) LC/UPC tie ports in one Clearview Cassette
FDP-xWB2-12-LCA	Wall Box with (12) LC/APC ports in one Clearview Cassette
FDP-xWB-24-SCA	Wall Box with (24) SC/APC ports in two Clearview Cassette
FDP-xWB2-24-SC	Wall Box with (24) SC/UPC ports in two Clearview Cassette
FDP-xWB2-24-LC	Wall Box with (24) LC/UPC ports in two Clearview Cassette
FDP-xWB2-24-LCA	Wall Box with (24) LC/APC ports in two Clearview Cassette

Configured Part Numbers

W S ___ - ___ ___ ___ - ___ ___ ___ - Z Z ___ XXXM or XXXF

1 2 3 4 5 6

1 Select Clearview Cassette

B = Clearview Blue

2 Select Port Count

012 = 12 port
024 = 24 port

3 Select Connector Style

A = SC/UPC
C = SC/APC
F = LC/UPC
H = LC/APC
J = FC/UPC
M = ST/UPC

4 Select Mode / Type

1 = Singlemode, non ribbon
2 = Singlemode, ribbon

5 Select Cable Construction

A = IFC riser
B = OSP riser rated
C = IFC plenum
E = OSP (non-rated)
M = OSP (armored, non-rated)
T = Flat drop (non-toneable)
W = FieldShield

6 Select Cable Exit *

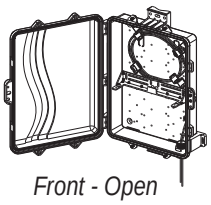
4 = Bottom left
7 = Bottom right
Z = None

XXXM or XXXF

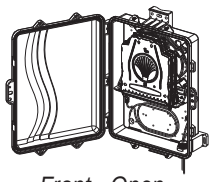
XXXM = Length in meters
XXXF = Length in feet

* Cable exit is defined by which direction the cable exits the panel when viewing it from the front.

Front - Closed



Front - Open



Front - Open
with Clearview Blue Cassette

FieldSmart®
Mini FEC Wall Box

Application

When an application requires splicing IFC (intra-facility) cable to an OSP (outside plant) cable and space is a concern, the FieldSmart Mini FEC Wall Box is your product of choice. The Mini FEC is a scalable wall box that has a maximum capacity of 96 loose tube splices with cable management and slack storage. Each splice tray comes equipped with a 24-fiber heat shrink fusion splice chip. The Mini FEC is an ideal solution for use in MDUs, SFUs, cell towers and business class services.

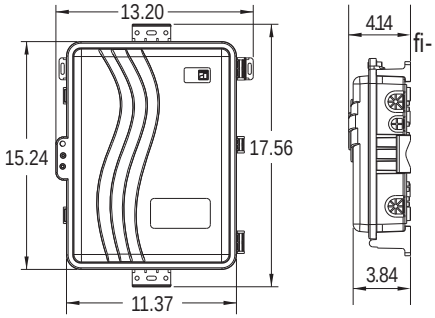
Description

The Mini FEC Wall Box can support both indoor and outdoor environments. Each Mini FEC comes equipped with industry standard splice trays, cable management clips, a ground lug and two ship-along cable clamps. Each splice tray can support 24 splices with a maximum capacity of four splice trays per wall box or 96 splices. Slack storage is available for up to 5' per buffer tube and up to 5' per IFC micro-distribution cable.

Features and Benefits

Integrity

- Industry standard splice tray
- NEMA 4 rated
- Material is high impact flame retardant PVC3 with high column strength and low-coefficient PBT



Protection

- Ruggedized storage clips
- Security screw with ability to secure with padlock
- Gasket seal

Access

- Wall mount capable
- Two bottom ¾" entry/exit ports
- Removable splice trays

Investment

- Splice trays support both loose tube and ribbon constructions for single and mass fusion (ribbon) splicing
- Scalable with 24 splices per tray loose tube or 72 splices per tray ribbon
- Complete cable management solution installed from the factory
- Two Sealcon connectors are included

FieldSmart®
Mini FEC Wall Box

CLEARFIELD

Technical Specifications

FieldSmart Mini FEC Wall Box	
Dimensions	Inside: 15.24” H x 11.37” W x 4.14” D
Splice Density	96 loose tube heat shrink
Storage Capacity Per Cable	5’ of 3 mm loose tube buffer OSP; 5’ of 3 mm micro-distribution IFC
Mounting Options	Wall mount
Material	High impact and flame retardant PVC3/ high column strength and low-coefficient PBT

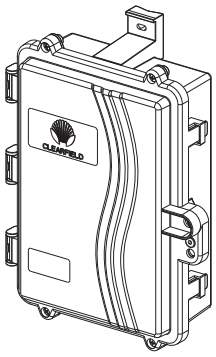
Pre-Configured Part Numbers

Part Number	Splice Trays* Shipped	Splice Capacity
FDP-XWB2-24-FEC	1	24
FDP-XWB2-48-FEC	2	48
FDP-XWB2-72-FEC	3	72
FDP-XWB2-96-FEC	4	96

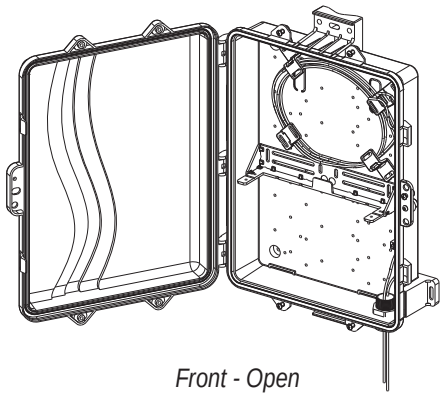
Individual Splice Trays

Part Number	Maximum Loose Tube Splice Capacity	Maximum Ribbon Splice Capacity
010504	24	72

**Each splice tray supports 24 splices*



Front - Closed



Front - Open

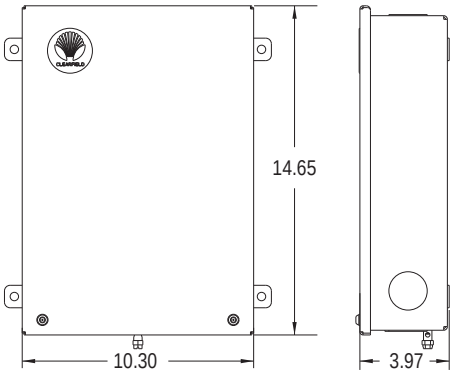
FieldSmart® Fiber Delivery Point (FDP)
KIS Outdoor Enclosure

Application

The FieldSmart Fiber Delivery Point (FDP) KIS Outdoor Enclosure is the first outdoor wall box optimized for Clearfield's FieldShield® Fiber delivery system and can be deployed in a variety of applications. Primarily designed for cell backhaul, the KIS box can be deployed as a stand-alone demarcation point or interconnect point either on or in-building for the carrier's presence at the cell site. It also provides ganging capabilities allowing one box to be dedicated to the provider and their long-haul cables, while accepting the carrier's cell traffic from a separate, secure and dedicated KIS box. With the ability to support any media in any splice or pre-terminated configuration, as well as, optical component integration within the Clearview® Blue Cassette, the KIS box is a flexible fiber solution for everything from the MDU to the antenna.

Description

The FieldSmart Fiber Delivery Point (FDP) KIS Outdoor Enclosure is a universal housing that can deliver fiber from a communications closet all the way to an antenna and everything in between. The FDP-KIS is optimized for pushable fiber and 10 mm microduct and will accommodate up to 48 ports of fiber terminations within a single, small package footprint. With a wide variety of mounting options (wall, pole, H-Frame) and multiple cable entrance/exit ports on all four sides of the unit, the FDP-KIS provides maximum flexibility in your installation and deployment into the network.



With overall dimensions of 14.65" H x 11" W x 4" D, the FDP-KIS can be mounted in space constrained areas and has the ability to be "ganged together" to provide an excellent demarcation point for service providers to subscribers. Incorporating Clearfield's Clearview® Blue Cassette, with its integrated slack storage, the FDP-KIS provides the highest standard of fiber access and bend-radius protection. Used in conjunction with standard outside plant cable or optimized with FieldShield Pushable Fiber, Clearfield's FDP-KIS will reduce deployment/installation time allowing the provider to increase revenue providing services.

Features and Benefits

Integrity

- Terminations are designed and tested to Telcordia GR-326
- Clearfield® FiberDeep® Guarantee: 0.2 dB insertion loss or less, exceeding industry standards
- Supports all industry standard singlemode and multimode connectors
- 100% performance tested for insertion loss, return loss and final mechanical inspect

Protection

- 0.080 aluminum construction
- Almond powder polyester coating
- Designed to NEMA 4 requirements
- Sealed gasket on the cover makes the unit water/dust resistant
- Special pin in Hex Lock for security on the unit

Access

- Accommodates up to 4 Clearview Blue Cassettes
- Multiple cable entrance/exit ports (up to 6 different ports) – using "knockouts" on the box
  - Accepts up to 6 - 1¼" couplers for conduit entrance into box
  - Accepts up to 6 - 10 mm FieldShield Microducts
- Mounting tabs located outside of box
- Grounding lug on bottom of box for external grounding

Investment

- Gangable mounting tabs allow multiple FDP-KIS units to mount together
- Scalable to 48 ports of fiber using Clearview Cassettes loaded with your choice of interface
- Pre-configured/pre-loaded factory terminated assemblies
- Patch only, patch and splice (Clearfield's in-cassette splicing solution), MPO plug-and-play and optical component configurations supported

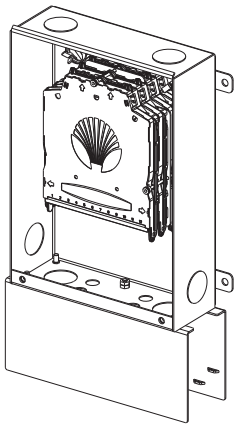
FieldSmart® Fiber Delivery Point (FDP)
KIS Outdoor Enclosure

Technical Specifications

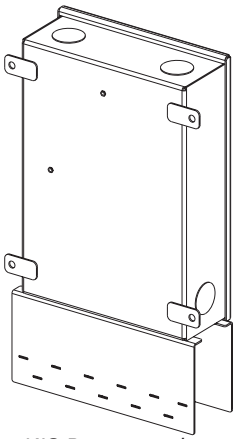
FieldSmart KIS Outdoor Enclosure	
Dimensions	14.65" H x 10.30" W x 3.97" D *Security Bracket (mounted on bottom of box for ganging applications) 14.78" H x 11.12" W x 3.97" D*
Port Density	Up to 48 ports
Cassette Types Supported	Clearview® Blue
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC, FC/UPC, FC/APC, ST/UPC, MPO
Cable Types	Indoor Riser, Indoor Plenum, Indoor/Outdoor, Outdoor (Riser/Non-Rated), Outdoor Armored (Riser/Non-Rated), FieldShield®
Splice Capacity	12 splices in each Clearview Cassette
Storage Capacity	One meter of 900 µm fiber and up to 3 meters of jacketed fiber
Material	Aluminum with almond powder coating

Pre-Configured Part Numbers

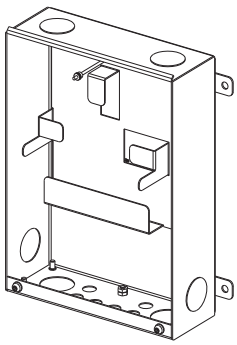
Part Number	Description
W4B-000-Z0Z-ZZZ-SUB	Empty KIS Box holds up to four Clearview Blue Cassettes
W4B-000-Z0Z-ZZZ-01-SUB	KIS Box with Cable Management Bracket holds up to two Clearview Blue Cassettes
KIS-TROUGH-KIT	Optional security covers for bottom of KIS Box - can be mounted in ganging applications
KIS-ADAPT-KIT	Includes two 1¼" conduit fittings, nuts, two cable clamps and six 10 mm fittings for FieldShield Microduct
FMA-H4K- SUB	24/48 port pole mount kit
KIS-10MMCONN-NUT-KIT	10 mm bulkhead connector and nut
KIS-1-1/4COND-NUT-KIT	1¼" conduit fitting and nut



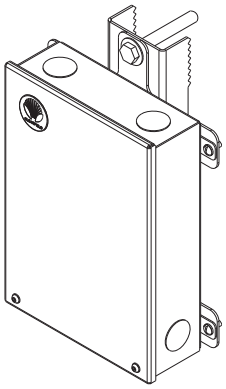
KIS Box - open
with Clearview Blue Cassette



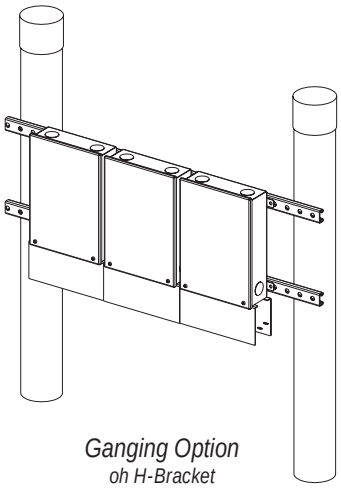
KIS Box - rear view
with optional bottom bracket



KIS Box
with Cable Management Bracket



KIS Box
with Pole Mount Kit



Ganging Option
oh H-Bracket

FieldSmart® Fiber Delivery Point (FDP)
Wall Box Accessories

Sealcon Adapter ½”

Description
Connector to strain relief and seal incoming or outgoing cable assemblies or microduct. Requires 3/4” drilled hole.

Pre-Configured Part Numbers

Part Number	Description
004412	½” strain releif with grommet; works for securing 14 mm microduct
003446	½” nut for strain relief

½” Grommet

Description
Grommet used to secure cables instead strain relief.

Pre-Configured Part Numbers

Part Number	Description
016153	½” grommet for securing two 3 mm FieldShield assemblies

Sealcon adapter ¾”

Description
Kit for securing for cables . Kit includes strain relief,nut,O-ring, and two grommets. Requires 1” drilled hole.

Pre-Configured Part Numbers

Part Number	Description
FST-SEALCON-KIT	Strain relief grommet inserts for .24” to .63” cable diameter; includes an additional grommet for up to three flat drop cables

Sealcon adapter 1”

Description
Kit for securing for cables . Kit includes strain relief,nut,O-ring, and three grommets. Requires 1 1/4” drilled hole.

Pre-Configured Part Numbers

Part Number	Description
FST-SEALCON-KIT-1 INCH	Strain relief grommet inserts for .30” to .79” cable diameter; includes an additional grommet for up to four flat drop cables

FieldSmart® Fiber Delivery Point (FDP)
Wall Box Accessories

1” Grommet

Description
Grommet used to secure cables 10 mm microduct.

Pre-Configured Part Numbers

Part Number	Description
017360	1” grommet for securing four 10mm microduct

Hole Plug

Description
Rubber hole plug. Requires 1” drilled hole.

Pre-Configured Part Numbers

Part Number	Description
018834	Rubber hole plug with rubber membrane

Velcro

Description
Velcro square for attaching misc items into wall box.

Pre-Configured Part Numbers

Part Number	Description
011223	Velcro 2” x 2” square with hook and loop with adhesive

Security Bit

Description
Bit for securing the pin-in-hex screw on wall boxes.

Pre-Configured Part Numbers

Part Number	Description
015075	Single pin-in-hex bit insert

Tape

Description
Grommet tape to help secure cable assemblies into sealcon adapter.

Pre-Configured Part Numbers

Part Number	Description
003042	Grommet tape, 1” x 30” strip with adhesive backing

YOURx™
YOURx-TAP

Application

The YOURx-TAP provides a secure demarcation point between the service provider network and multiple customer environments – SFU, MDU or business. YOURx-TAP gives the network service provider both the ability to store slack fiber as well as provide a test access point (TAP) for ease of deployment and network maintenance without needing to have access to the interior of the customer premise. With the ability to accept a variety of drop cables, YOURx-TAP can be wall or pole mounted, and can be integrated into any network architecture and deployment.

Description

Slack storage of excess fiber has always been an issue within network design and deployment. The YOURx-TAP, with the smallest demarcation footprint in the industry, provides the ability to store up to 600 feet of slack fiber storage (300 feet per reel) using the FieldShield® Deploy Reel with 900 µm FieldShield StrongFiber®. This eliminates the need for having a large, bulky and unsightly box on the side of an SFU, MDU or business location, to store excess or unused fiber.

With its hinged removable cover design, YOURx-TAP is easily accessible for craft personnel to access the box during both initial service installation and ongoing maintenance. FieldShield Deploy Reels are easily installed into YOURx-TAP by simply snapping them onto the post bracket that is mounted inside the box. Each post bracket has a built-in feature that locks the deploy reel in place once the fiber has been pulled to the specified location.

Once mounted inside the box, the StrongFiber Deploy Reels are deployed by using a pull string to pull fiber from the bottom reel back through the 10 mm FieldShield Duct and connect it to the distribution/access point. Bringing fiber to the inside of the customer location is accomplished by using the top reel and pulling it to the desired location. Either 900 µm StrongFiber (with a ducted pathway) or 3 mm FLEXdrop™ fiber can be used for this internal application.

Drop Cable Options

Clearfield® recognizes the fact that flat drop connectivity in the last mile is a widely-used product and is a good solution for both direct buried and aerial drop applications. Listening to our customers' requests, **FieldShield FLATdrop** was developed and designed to fit into YOURx-TAP. FieldShield FLATdrop cable assemblies come pre-terminated from the factory and are available in multiple lengths. Cable assemblies are placed and brought to YOURx-TAP, where the connector is snapped into place on the bottom of the box, providing an air/water tight connection.

FieldShield D-ROP is the cable-in-conduit solution and the name stands for "restorable one pass" drop. It is a fiber pre-placed in a 7 mm O.D. microduct that reduces the traditional FieldShield solution from a two-step process to a one-step process. Rather than establish the route path of the duct and then push the FieldShield pre-terminated drop to the customer as a second step, D-ROP combines these two functions into one. Distance limitations are no concern when using D-ROP as the pre-terminated fiber is already installed.

FieldShield FLEXdrop provides all the same characteristics as current 3 mm pushable/pullable FieldShield Fiber, with increased flexibility and reduced jacket memory, providing better slack storage and routing while decreasing the risk of kinking. UL listed cable can be routed, without protection of duct, into the inside premise through walls, stapled and/or applied using local contractor accepted practices. FLEXdrop can be used with YOURx-TAP and deploy reels for connectivity to the terminal as well as for final connectivity inside the premise at the ONT or fiber jack/demarcation.

FieldShield StrongFiber is a durable high tensile strength fiber when compared to other fibers of its size. It is suitable for both indoor and outdoor environments. Manufactured with premium bend-insensitive fiber, FieldShield StrongFiber offers high tensile strength to resist damage to the fiber during installation in the FieldShield Microducts. When terminated with a FieldShield Pullable Connector, the FieldShield StrongFiber can be quickly deployed, and in turn, reduces installation time drastically.

FieldShield Pushable Optical Cable is a durable and crush-resistant product that is suitable for most indoor or outdoor environments. Manufactured using PBT jacketing, FieldShield offers maximum push/pull distance as well as resistance to chemicals.

Clearfield highly recommends a ducted solution when deploying FieldShield FLEXdrop, StrongFiber and FieldShield Pushable Fiber.

YOURx™
YOURx-TAP

YOURx-TAP has been designed with maximum customer flexibility in mind. YOURx-TAP is available:

- Empty (for future fiber deployment)
- With L-Bracket that holds single fiber adapter
- With one or two FieldShield® Deploy Reels – each holding up to 300 feet of 900 µm StrongFiber
- With Multiple Drop Options
  - FieldShield StrongFiber
  - FieldShield FLATdrop
  - FieldShield FLEXdrop™
  - FieldShield Pushable/Pullable Fiber
- Two insertable/interchangeable cable entrance plates are incorporated into the bottom of the box
  - Plate with couplers for bringing in one or two 10 mm FieldShield Microduct or FieldShield FLATdrop assemblies
  - Blank plate - providing multiple cable, duct and connector feed options into the YOURx-TAP
- Access port on rear of box, allows for direct fiber deployment into the customer location
- Available with optional private labeling on the front cover to easily identify service provider's identification

Designed for all environments, the YOURx-TAP has a gasketed cover, watertight duct fittings and is made from impact and UV resistant PBT and PC material. Clearfield® optical fiber terminations have been tested compliant to GR-326 requirements with certification currently pending through Telcordia.

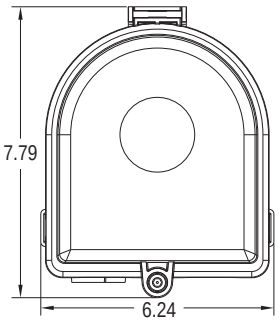
Features and Benefits

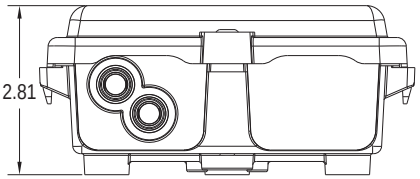
Integrity
- Terminations are designed and tested to Telcordia GR-326
- Supports singlemode SC connectors
- 100% performance tested for insertion loss, return loss and final mechanical inspections
- Small footprint

Protection
- Designed to meet NEMA 4 criteria
- Gasketed cover for protection from elements
- Watertight connectors for sealing of duct
- Pin in hex screw for reduced tampering
- Enclosure made of high-impact UV resistant thermal plastic material - to resist and withstand corrosive environments

Access
- Accepts multiple drop options for maximum flexibility
- Removable hinged cover allows for easy access to closure
- Available with up to two deploy reels
- Lockable Pins hold deploy reels in place once fiber is deployed
- Available in SC/APC, SC/UPC
- Wall and pole mount applications available

Investment
- Available with pre-terminated deploy reels, which minimizes splicing and connectorization field costs
- Can add reels after box has been installed
- Available all hours of the day, without customer needing to be there to identify potential problems





YOURx™
YOURx-TAP

CLEARFIELD

Technical Specifications

YOURx-TAP	
Dimensions	7.8" H x 6.25" W x 2.81" D
Box Options/Connector Availability/Capacity	Empty, no deploy reels With L-Bracket that holds single fiber adapter One or two StrongFiber Deploy Reels: SC/APC or SC/UPC with up to 300 feet of 900 µm StrongFiber Empty Reel available for slack storage of FLATdrop or FLEXdrop™
Drop Options/Connector Types	StrongFiber Deploy Reels: SC/APC or SC/UPC FieldShield® FLATdrop: with hardened connector FieldShield D-ROP: Cable-in-conduit FieldShield FLEXdrop FieldShield Pushable Fiber
Cable Entrance/Exit	One or two 10 mm YOURx FlexPort Empty plate, allows for other industry connectors to be installed
Private Labeling	Standard: comes with Clearfield® logo No logo Private labeling available (500 piece minimum). Contact Clearfield sales representative for details.
Mounting Options	Wall or pole mount

Configured Part Numbers

Bottom Reel (Typically Feeder) — Top Reel (Typically Distribution)

TAPX - ____ ____ ____ - ____ ____ ____ ____ - ____ ____ ____ ____

1 2 3 4 5 6 7 8 9 10 11

1 Select Box Type

A = 1 StrongFiber Deploy Reel
B = 2 StrongFiber Deploy Reels
C = 2 reels (1 StrongFiber Deploy and 1 TAP Slack Storage Reel)
D = 2 reels (1 SRD Reel with adapter; 1 StrongFiber Deploy)
E = 2 reels (1 SRD Reel with adapter; 1 TAP Slack Storage Reel)
M = Box with L Bracket and SCA Adapter (No Reels)
Z = Empty

2 Select Logo Type

A = CLFD logo
B = No logo
C = Private label - Custom logo (500 piece min.)

3 Select Cable Entrance Plates

A = Default – includes 1 blank and 1 dual entrance plate
B = Includes 2 dual entrance plates
C = Includes 2 blank plates

4 Select Connector 1 (inside plugged into adapter)

A = SC/UPC - Standard
C = SC/APC - Standard
Z = No connector – empty reel. Choose this when Flat-SC or D-ROP is used for feeder.

5 Select Connector 2 (take off end)

B = SC/UPC – Pullable
D = SC/APC – Pullable
Z = No connector

6 Select Fiber Type

S = StrongFiber
Z = No fiber

7 Select Reel 1 Length - Feet

2 = 50
3 = 75
4 = 100
5 = 125
6 = 150
7 = 175
8 = 200
9 = 225
A = 250
B = 275
C = 300
Z = No Fiber

8 Select Connector 1 (inside plugged into adapter)

A = SC/UPC – Standard
C = SC/APC – Standard
Z = No connector – empty reel

9 Select Connector 2 (take off end)

B = SC/UPC - Pullable
D = SC/APC - Pullable
Z = No Connector

10 Select Fiber Type

S = StrongFiber
Z = No Fiber

11 Select Reel 1 Length - Feet

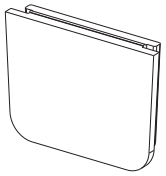
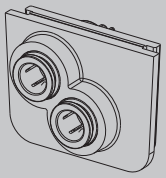
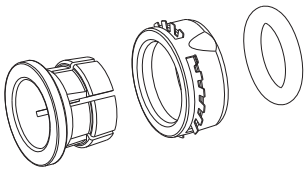
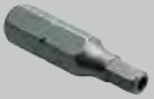
2 = 50
3 = 75
4 = 100
5 = 125
6 = 150
7 = 175
8 = 200
9 = 225
A = 250
B = 275
C = 300
Z = No Fiber

NOTE: Pin-in-hex screw bit (015075) is not included and needs to be ordered seperately as a special item

YOURx™
YOURx-TAP Accessories

CLEARFIELD

Pre-Configured Part Numbers

Part Number	Description	Image
018458	Kit - L Bracket and SC/APC Adapter	
SRD-CZZZ-ZZZ	Empty StrongFiber Deploy Reel with SC/APC Adapter	
SRD-AZZZ-ZZZ	Empty StrongFiber Deploy Reel with SC/UPC Adapter	
TAP-REEL-EMPTY	Empty slack storage reel for YOURx-TAP, includes mounting pin, holds up to 50 feet of FLEXdrop™	
018041	Blank plate	
018250	Plate with two 10 mm YOURx FlexPorts	
016280	10 mm YOURx FlexPort	
015075	Single hex bit insert for securing the pin-in-hex screw on YOURx-TAP.	

CraftSmart®
Test Access Point (TAP) Box

Application

The CraftSmart Test Access Point (TAP) Box gives the service provider an accessible exterior access point to test fiber integrity before it enters the customer premise. This solution allows the service provider the ability to identify potential issues in conductivity from outside of the customer premise location.

Description

The CraftSmart TAP Box is a two part closure that will accommodate up to four fibers for test and access purposes. The base of the unit will allow up to four splices from the feeder cable to individual drops into the customer premise. Duplex SC adapters allow for installation of pre-terminated or field terminated fiber to be connectorized for test and access of the fiber - to determine feeder and drop issues.

Two grommeted in/out ports on the bottom of the unit provide easy installation of both feeder and drop cables. The unit is lockable to minimize customer tampering. There are grounding options available inside the TAP Box that will allow grounding of the feeder and drop cables. It also has built in access to exterior grounding built into the unit. Multiple mounting options are available to meet all applications. The TAP box is available with private labeling on the front cover to easily identify service provider's identification.

Features and Benefits

Integrity

- Fiber terminations are Telcordia and RUS compliant
- Supports industry standard SC singlemode connectors
- 100% performance tested for insertion loss, return loss and final mechanical inspections

Protection

- Overlapping cover seals unit from environmental elements
- Two rubber grommets provide sealing of feeder and drop cables
- Lock hole provided for reduced tampering
- Enclosure made of high-impact UV resistant thermal plastic material - to resist and withstand corrosive environments
- Designed to meet NEMA 3 criteria
- Integrated fiber management protects fiber from micro and macro damage
- Special coupler available for use with FieldShield® Microduct

Access

- Slide on cover allows for easy access to closure
- Rubber grommets allow for easy installation of feeder and drop cables
- Grounding bar inside of unit allows for grounding of feeder and drop cables, as well as built in accessibility to exterior grounding
- Dual SC adapters (one or two) allows for easy access for testing and troubleshooting
- Available in SC/APC, SC/UPC, LC/APC or LC/UPC
- Wall and pole mount applications available
- Built in splice tray allows for maximum flexibility

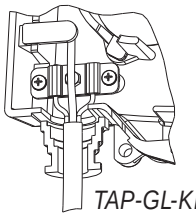
Investment

- Available with pre-terminated feeder and drop cables, which minimizes splicing and connectorization field costs
- Patch and splice (Clearfield's in-cassette splicing solution) compatible
- Available all hours of the day, without customer needing to be there to identify potential problems

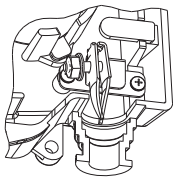
CraftSmart®
Test Access Point (TAP) Box

Technical Specifications

CraftSmart Test Access Point (TAP) Boxes	
Dimensions	7.3" H x 8.57" W x 1.67" D
Connector Availability/ Capacity	Empty: No connector One dual SC/APC or SC/UPC; two dual SC/APC or SC/UPC; quad LC/UPC or LC/APC; two quad LC/ UPC or LC/APC
Cable Support and Tie Off Options	Not included with TAP Box - MUST BE ORDERED SEPARATELY. TAP-GL-KIT (one clamp per kit) Strength member tie off kit for flat drop and dielectric cable TAP-ARM-GL-KIT (one clamp per kit) Ground lug bracket for armored cable - no strength member tie off
Splice Capacity	Four
Cable Entrance/Exit	One on each port (two total). If using FieldShield® Microduct, order one FS-CPLR-10MM-10MM-TAP per exit
Private Labeling	Standard: comes with Clearfield® logo. Private labeling available (500 piece minimum). Contact Clearfield sales representative for details
Pre-terminated Feeder and Drop Cable	Available: Please contact your Clearfield sales representative
Mounting Options	Wall Mount: Standard Vinyl Siding Mount: TAP-VS-KIT Pole Mount: TAP-PM-KIT



TAP-GL-KIT



TAP-ARM-GL-KIT

FS-CPLR-10MM-10MM-TAP

Configured Part Numbers

TAP - ____ ____ ____ - ____ Z - _____

1 2 3 4 Serial #

1 Select Box Type
- A = Splice only (1)
- B = Patch and splice

2 Select Logo Type
- A = CLFD logo (2)
- B = No logo
- C = Private label (3)

3 Select Connector Type
- B = Duplex SC/UPC
- D = Duplex SC/APC
- 1 = Quad LC/APC
- 2 = Quad LC/UPC
- Z = No connector

4 Select # of Adapters
- 1 = 2 ports
- 2 = 4 ports
- 3 = 4 ports (LC)
- 4 = 8 ports (LC)
- Z = 0 adapters

Serial # (5)
- 000 = Clearfield logo
- ZZZ = No logo
- 001, 002, etc. = custom logo

Ordering Notes

1. Splice only - empty box
2. Standard product unless noted - last three digits will be 000
3. 500 piece minimum in effect for custom logo - customer must provide artwork to Clearfield®

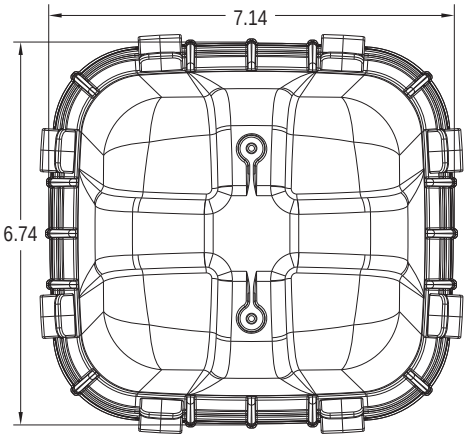
For pre-terminated feeder and drop cable assemblies, please refer to Clearfield's application guide for ordering information. For custom configurations, please contact your Clearfield sales representative.

YOURx™
YOURx-Terminal

Overview

The YOURx-Terminal improves the customer application and craft-experience by providing an access terminal capable of 16 drops, two feeder ports for mid-span and daisy-chaining scenarios, along with a fully protected and restorable pathway from the YOURx-Terminal to the YOURx-TAP using the Clearfield® design methodology of a modular and flexible approach that scales across the application environment.

Utilizing the technology that couple ducts in a restoration or transitional scenario, the YOURx-Terminal provides up to 16 drops ports along with two feeder ports using the YOURx FlexPort that provides and air/water tight connection, which reduces overall costs by eliminating the need for expensive proprietary connectors. Ducts are simply brought to the YOURx-Terminal, trimmed to length and pushed into the YOURx FlexPort of the YOURx-Terminal completing the protected pathway. Fiber is now pulled or pushed from the customer premise to the "inside" of the YOURx-Terminal, where connector assembly is completed and mated to a removable FieldShield® FlexCartridge™ that has been configured to the customer's application. Fiber is not exposed as it enters the flower pot, vault, or pedestal where the terminal is stored but rather is delivered directly to the terminal reducing risk of accidental damage to fiber. The craft-sensitive nature of properly assembling a hardened connector is eliminated. Re-entering the terminal simply involves removing the cover. The sealed ports entering the terminal are never compromised.



The increased port count to 16 allows for more distributed split options including 4, 8 and 16 way splitters (SC) housed and terminated into the FlexCartridge. Hot-swappability of the FlexCartridge allows for future reconfiguration or restoration of the FlexCartridge without having to replace entire terminal. Plug-and-play scenarios using FieldShield Pushable MPO Connectors allow for single connector connectivity up to 16 ports when configured with an MPO to 16 SC FlexCartridge. YOURx-Terminal is optimized for customer specified daisy-chaining applications utilizing optical components and/or MTP/MPO.

The YOURx-Terminal provides up to sixteen pre-connectorized drop ports with a FieldShield pushable feeder cable or flat drop cable built to customer specified lengths. The YOURx-Terminal can be configured with a factory-terminated FieldShield Optical Cable, from two to sixteen ports, for the feeder configuration that can be pushed or pulled through FieldShield Microduct to a consolidated splice point in the serving area. Distribution ports are sealed with airtight, water tight caps on the inside of the base, until service turn-up is required.

YOURx-Terminal Mounting Options

Below Grade

The YOURx-Terminal can be placed in a flower pot, pull box, small or large vault and is treated the same way you would treat a splice case. Because ducts are terminated directly into the YOURx-Terminal providing a water-tight, gas-tight seal, along with 100 lbs. of pullout force, the terminal, fully or partially loaded, can be placed directly into the housing of your choice providing the number of ducts and associated slack will fit. As all ducts are terminated into the terminal, it is recommended that duct slack that allows for removal of YOURx-Terminal into sufficient access and working position be applied. Whether that be directly over the access point or pulled into a conditioned environment like a splice trailer, the YOURx-Terminal adjusts to the customer's craft practices. If a secured placement into this environment is desired (off the bottom of the closure and off of cables/ducts), the mounting options for the above grade pedestal mounted options can be applied. Access to the terminal is no different than a splice case in that the technician will pull the terminal out of the vault/flower pot and access the terminal per company practices. The cover of the terminal is held on with eight spring clips that can be disengaged with your fingers but provide the necessary compression force to fully seat the cover against the silicon seal on the base of the terminal when all eight clips are engaged.

Pedestal Mount / Pole Mount / Vault Mount

Two different mounting brackets provide the flexibility to mount the terminal into any pedestal, pole or vault, while providing quick and easy access to the FlexCartridge for adding/removing/troubleshooting service or adding additional ducts.

Strand Mount

The YOURx-Terminal can be strand mounted for aerial applications for plug-and-play applications utilizing a straight F1/F2 hub and spoke approach or for daisy-chaining applications with the use of splitters and MTP/MPO connectivity.

Drop Cable Options

FieldShield® FLATdrop - Clearfield® recognizes the fact that flat drop connectivity in the last mile is widely-used product, and is a good solution for both direct buried and aerial drop applications. Listening to our customers' requests, the FieldShield FLATdrop connector was developed and designed to fit into YOURx-TAP. FieldShield FLATdrop cable assemblies come pre-terminated from the factory and are available in multiple lengths. Cable assemblies are placed and brought to YOURx-TAP, where the connector is snapped into place on the bottom of the box, providing an air/water tight connection.

FieldShield D-ROP is the cable-in-conduit (CIC) solution and the name stands for "restorable one pass" drop. D-ROP is a fiber pre-placed in a 7 mm O.D. microduct that reduces the traditional FieldShield solution from a two-step process to a one-step process. Rather than establish the route path of the duct and then push the FieldShield pre-terminated drop to the customer as a second step, D-ROP combines these two functions. Distance limitations are no concern when using D-ROP as the pre-terminated fiber is already installed.

FieldShield FLEXdrop™ provides all the same characteristics as current 3 mm pushable/pullable FieldShield fiber, with increased flexibility and reduced jacket memory, providing better slack storage and routing while decreasing the risk of kinking. Cable can be routed, without protection of duct, into the inside premise through walls, stapled, and/or applied using local contractor accepted practices. FLEXdrop can be used with YOURx-TAP and deploy reels for connectivity to the terminal as well as for final connectivity inside the premise at the ONT or fiber jack/demarcation.

FieldShield Pushable Optical Cable is a durable and crush-resistant product that is suitable for most indoor or outdoor environments. Manufactured using PBT jacketing, pushable optical fiber offers flexibility as well as resistance to chemicals. While FieldShield Pushable Optical Fiber is typically used in conjunction with FieldShield Microduct solutions, it is strong enough to be stapled directly to walls and its bend-insensitive fiber is flexible enough to go around 90 degree corners.

Clearfield highly recommends a ducted solution when deploying FieldShield FLEXdrop, FieldShield StrongFiber and FieldShield Pushable Fiber.

YOURx™

YOURx-Terminal - MPO Breakout

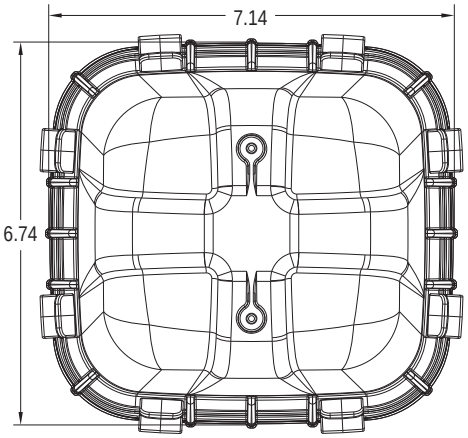
Application

For service providers looking to remove splicing from small count fiber deployments, the YOURx-Terminal MPO Breakout provides a hardened MPO OSP plug-and-play solution. Once deployed in an industry standard OSP enclosure, a MPO to MPO patch cord or MPO to SC or LC connector breakout feeder assembly is pulled back to the fiber distribution point and plugged into an available network port. FieldShield® Microducts are routed from the YOURx-Terminal to the customer premise and either FieldShield FLATdrop, FieldShield FLEXdrop™, FieldShield StrongFiber or FieldShield Pushable Fiber is installed once service turn-up is required.

Description

The YOURx-Terminal MPO Breakout supports configurations deploying up to sixteen SC pre-connectorized distribution ports terminated to an MPO breakout feeder input port. By simplifying the patch and splice (Clearfield's in-cassette splicing solution) configuration to a plug-and-play solution, deployment is built around a single YOURx-Terminal part number and matching MPO feeder cables built to specific application or standardized lengths.

Features and Benefits



Integrity

- Compliant to Telcordia GR-487 and 3125
- Supports FieldShield Pushable SC Connectors for drop applications
- Supports pre-terminated FieldShield FLATdrop, FieldShield FLEXdrop, FieldShield StrongFiber or FieldShield Pushable Fiber assemblies for individual drop applications
- 100% performance tested for insertion loss, return loss and final mechanical inspection

Protection

- Optimized for use with FieldShield Microduct and Pushable Fiber solutions
- Black UV resistant thermoplastic designed to resist corrosion
- Environmentally sealed terminal providing maximum reliability and durability in the harshest OSP environments
- FieldShield FLATdrop provides bend-limiting, strain-relief protection and water-tight seal for flat drop, OSP and FieldShield Cable

Access

- Accepts up to sixteen 10 mm distribution ports (for 10 mm FieldShield Microduct or FieldShield FLATdrop)
- Accepts up to two 14 mm feeder ports (for 14 mm FieldShield Microduct)
- Accepts up to two 10 mm feeder ports(for 10 mm FieldShield Microduct or FieldShield FLATdrop)
- Compact sealed design allows placement above or below grade
- Plug-and-play configurations accept both flat drop and OSP cable types
- Optical component solutions maximize existing architectures and eliminate fiber exhaust scenarios

Investment

- Flexibility in configuration provides maximum scalability across multiple services classes
- Compatible with all of FieldShield drop cable options, which reduces installation time and labor costs by removing expensive splicing labor from the YOURx-Terminal to customer premise
- Pre-terminated factory polished drop cables improve network operability across multiple network access points

YOURx™

YOURx-Terminal - MPO Breakout

Technical Specifications

YOURx-Terminal - MPO Breakout	
Dimensions	7.14"W x 6.74" D x 7.31" H
Material	Black UV resistant Thermoplastic
Mounting Options *(Brackets ordered separately. See accessories for options)*	Below Grade: flower pot or vault Above Grade: cabinet, pedestal, pole mount or aerial/strand
Internal Slack Storage	None - inside terminal. Slack fiber storage is done at customer location
External Slack Storage	Virtually unlimited - depends on vault size or mounting application
Feeder Ports	Two 14 mm FlexPorts and two 10 mm FlexPorts
Distribution Ports	16, 10 mm FlexPorts
Connector Types	SC/APC, SC/UPC, LC/APC, LC/UPC
Accessories	Refer to YOURx-Terminal accessory/spare parts page

Configured Part Numbers

FSTX - ____ ____ ____ - ____ 1 Z - Z Z Z

1 2 3

1 Select Distribution Port Count

04 = 4 ports
08 = 8 ports
12 = 12 ports
16 = 16 ports

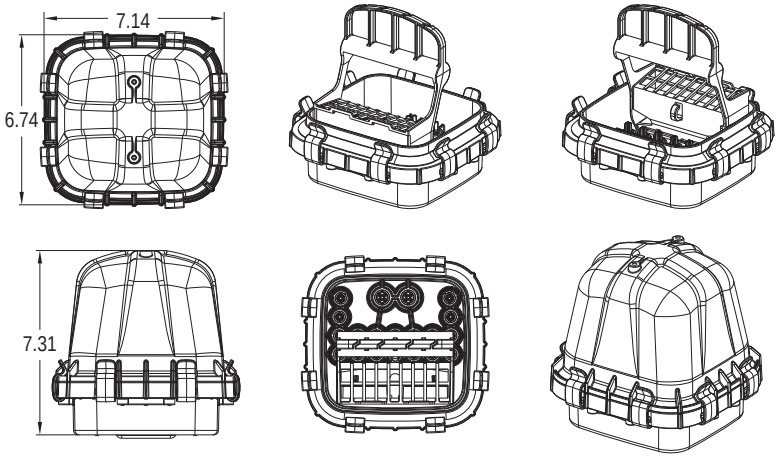
2 Select Distribution Connector

A = SC/UPC
C = SC/APC
F = LC/UPC
H = LC/APC

3 Select Feeder Connector

5 = MPO Male
6 = MPO Female

For individual drops using Flat Drop with the Flat-SC connector, you'll need to order them separately and make reference to that product.



YOURx™

YOURx-Terminal - Optical Components

Application

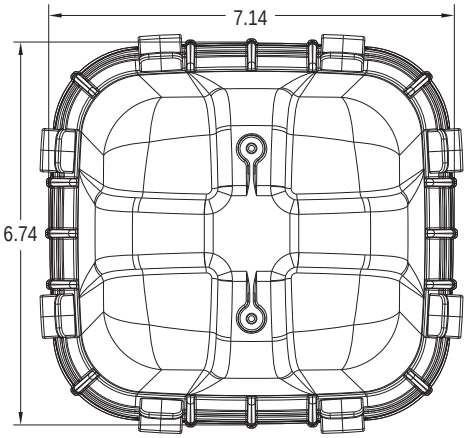
When fiber is already deployed at the network access point, the YOURx-Terminal can be configured as patch and splice (Clearfield's in-cassette splicing solution) with an unterminated input leg. Simply splice the incoming fiber to the input leg of the splitter to provide service for up to eight customers.

For customers who are experiencing fiber constraints, optical splitters with pre-terminated drop ports can be deployed to split the signal and maximize network performance. The physical architecture and placement of pathways remain largely the same when using the YOURx-Terminal to service active and distributed split business class services. Flexibility in configuration provides maximum scalability across multiple service classes.

Description

YOURx-Terminal is available with 1x2, (2) 1x2, 1x4, (2) 1x4, 1x8, (2) 1x8 and 1x16 splitters pre-terminated to both the input and output adapter ports. As a result, YOURx-Terminal can be fed from the distribution point with a single SC pushable assembly and distribute up to sixteen SC pushable drops without any additional splicing.

Features and Benefits



Integrity

- Compliant to Telcordia GR-487 and 3125
- Supports FieldShield® pushable SC connectors for drop applications
- Supports pre-terminated FieldShield FLATdrop, FieldShield StrongFiber and FieldShield drop assemblies for individual drop applications
- 100% performance tested for insertion loss, return loss and final mechanical inspection

Protection

- Optimized for use with FieldShield Microduct and Pushable Fiber solutions
- Black UV resistant thermoplastic designed to resist corrosion
- Environmentally sealed terminal providing maximum reliability and durability in the harshest OSP environments
- FieldShield FLATdrop connectors provide bend-limiting, strain relief protection and watertight seal for flat drop, OSP and FieldShield Cable

Access

- Accepts up to sixteen 10 mm distribution ports (for 10 mm FieldShield Microduct or FieldShield FLATdrop)
- Accepts up to two 14 mm feeder ports (for 14 mm FieldShield Microduct)
- Accepts up to two 10 mm feeder ports(for 10 mm FieldShield Microduct or FieldShield FLATdrop)
- Compact sealed design allows placement above or below grade
- Plug-and-play configurations accept both flat drop and OSP cable types
- Optical component solutions maximize existing architectures and eliminate fiber exhaust scenarios

Investment

- Flexibility in configuration provides maximum scalability across multiple services classes
- Compatible with all Clearfield's FieldShield drop cable options, which reduces installation time and labor costs by removing expensive splicing labor from the YOURx-Terminal to customer premise
- Pre-terminated factory polished drop cables improve network operability across multiple network access points

YOURx™

YOURx-Terminal - Optical Components

Technical Specifications

YOURx-Terminal - Optical Components	
Dimensions	7.14”W x 6.74” D x 7.31” H
Material	Black UV resistant Thermoplastic
Mounting Options *(Brackets ordered separately. See accessories for options)*	Below Grade: flower pot or vault Above Grade: cabinet, pedestal, pole mount or aerial/strand
Internal Slack Storage	None - inside terminal. Slack fiber storage is done at customer location
External Slack Storage	Virtually unlimited - depends on vault size or mounting application
Feeder Ports	Two 14 mm FlexPorts and two 10 mm FlexPorts
Distribution Ports	16, 10 mm FlexPorts
Connector Types	SC/APC, SC/UPC, LC/APC, LC/UPC
Accessories	Refer to YOURx-Terminal accessory/spare parts page

Configured Part Numbers

FSTX - ____ ____ ____ - ____ Z Z - ____ Z Z Z

1 2 3 4

1 Select Distribution Port Count

04 = 4 ports
08 = 8 ports
12 = 12 ports
16 = 16 ports

2 Select Distribution Connector

A = SC/UPC
C = SC/APC
F = LC/UPC
H = LC/APC

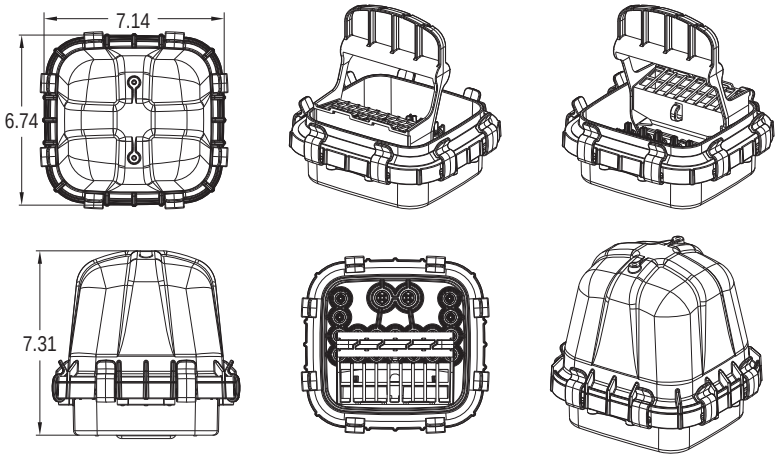
3 Select Feeder Connector

A = SC/UPC
C = SC/APC
F = LC/UPC
H = LC/APC

4 Select Split Ratio

3 = Dual 1 x 8
4 = 1 x 16
5 = 1 x 8
8 = 1 x 4
9 = Dual 1 x 4
E = 1 x 2
F = Dual 1 x 2
Z = No Splitter

For individual drops using Flat Drop with the Flat-SC connector, you'll need to order them separately and make reference to that product.



YOURx™

YOURx-Terminal - Patch Only

CLEARFIELD

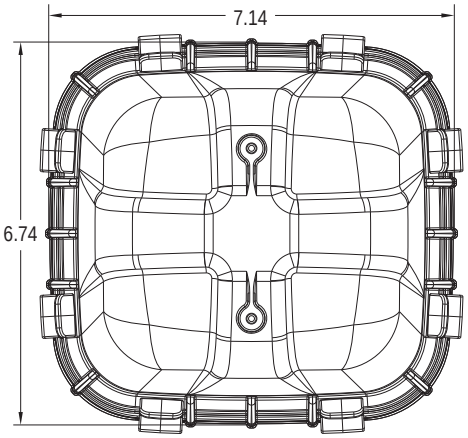
Application

From the splitter in an active cabinet or fiber distribution hub, distribution cables can be transported into a consolidated splice point that serves multiple YOURx-Terminals. The pathway from the splice point to the terminal access point is established with either FieldShield® Microduct and FieldShield Pushable Fiber or Fieldshield FLATdrop cable, which has been pre-terminated at the factory with customer specified lengths to meet their deployment application.

Once established, a patch only YOURx-Terminal is placed in the housing of choice (pedestal or vault), providing a distribution point for providing service to multiple customer types (MDU, SFH or Business Class Service).

Description

The YOURx-Terminal provides up to sixteen pre-connectorized drop ports with a FieldShield pushable feeder cable or flat drop cable built to customer specified lengths. The YOURx-Terminal can be configured with a factory-terminated FieldShield Optical Cable, from two to sixteen ports, for the feeder configuration that can be pushed or pulled through FieldShield Microduct to a consolidated splice point in the serving area. Distribution ports are sealed with airtight, water tight caps on the inside of the base, until service turn-up is required.



Features and Benefits

Integrity

- Compliant to Telcordia GR-487 and 3125
- Supports FieldShield pushable SC connectors for drop applications
- Supports pre-terminated FieldShield FLATdrop or FieldShield Pushable Fiber drop cable assemblies for individual drop applications
- 100% performance tested for insertion loss, return loss and final mechanical inspection

Protection

- Optimized for use with FieldShield Microduct and Pushable Fiber solutions
- Black UV resistant thermoplastic designed to resist corrosion
- Environmentally sealed terminal providing maximum reliability and durability in the harshest OSP environments
- FlexPort Connectors provide an air-tight and water-tight connection for incoming/outgoing cables
- FieldShield FLATdrop connectors provide bend-limiting, strain relief protection and watertight seal for flat drop and FieldShield Cable

Access

- Accepts up to sixteen 10 mm distribution ports (for 10 mm FieldShield Microduct or FieldShield FLATdrop)
- Accepts up to two 14 mm feeder ports (for 14 mm FieldShield Microduct)
- Accepts up to two 10 mm feeder ports (for 10 mm FieldShield Microduct or FieldShield FLATdrop)
- Compact sealed design allows placement above or below grade

Investment

- Flexibility in configuration provides maximum scalability across multiple services classes
- Field assembled FieldShield pushable drop cables reduce installation time and labor costs by removing expensive splicing labor from the YOURx-Terminal to customer premise
- Compatible with all Clearfield's FieldShield drop cable options, which reduces installation time and labor costs by removing expensive splicing labor from the YOURx-Terminal to customer premise
- Pre-terminated factory polished feeder and drop cables improve network operability across multiple network access points

YOURx™

YOURx-Terminal - Patch Only

CLEARFIELD

Technical Specifications

YOURx-Terminal - Patch Only	
Dimensions	7.14"W x 6.74" D x 7.31" H
Spool Dimensions and Cable Capacity	22" Diameter x 17" Tall; will hold up to 2,000 feet of FieldShield Pushable Cable, Flat Drop Toneable or Non-Toneable Cable
Material	Black UV resistant Thermoplastic
Mounting Options *(Brackets ordered separately. See accessories for options)*	Below Grade: flower pot or vault Above Grade: cabinet, pedestal, pole mount or aerial/strand
Internal Slack Storage	None - inside terminal. Slack fiber storage is done at customer location
External Slack Storage	Virtually unlimited - depends on vault size or mounting application
Feeder Ports	Two 14 mm FlexPorts and two 10 mm FlexPorts
Distribution Ports	16, 10 mm FlexPorts
Connector Types	SC/APC, SC/UPC, LC/APC, LC/UPC

Configured Part Numbers

FSTX - ____ ____ ____ - Z ____ ____ - Z Z Z ____ ____ ____ ____ ____

1 2 3 4 5

1 Select Distribution Port Count

04 = 4 ports
06 = 6 ports
08 = 8 ports
12 = 12 ports
16 = 16 ports

2 Select Distribution Connector

A = SC/UPC
C = SC/APC
F = LC/UPC
H = LC/APC

3 Select Feeder Mode and Type

1 = SM (Non-ribbon)
2 = SM (Ribbon)

4 Select Feeder Jacket Construction

T = Flat Drop (Non-toneable)
U = Flat Drop (Toneable)
W = FieldShield

5 Select Feeder Cable Length

XXXXF = Length in Feet
XXXXM = Length in Meters

For individual drops using Flat Drop with the FLATdrop connector, you'll need to order them separately and make reference to that product.

YOURx™

YOURx-Aerial Terminal - Patch and Splice

Application

When the network deployment plan calls out for an aerial application, Clearfield's YOURx-Aerial Terminal application allows for the flexibility to terminate a feeder fiber, directly into revenue generating drops and has the capability to accommodate a fiber cable mid-span, allowing cables to be fully utilized while feeding multiple terminals and access points.

Description

Designed with many of the same features as the YOURx-Terminal, the YOURx-Aerial Terminal allows for aerial or strand mount fiber deployment within the network architecture.

The YOURx-Aerial Terminal can accept the "hand-off" of fiber and distribute up to 24 individual service drops and has the capability to mid-span a larger count fiber cable, allowing the service provider to deploy multiple terminal/access points along the same cable run, maximizing the investment in fiber deployment.

Designed for easy, craft accessibility, the YOURx-Aerial Terminal application has an upward hinging, kickstand supported cover with four side entrance cable access ports. Two individual compartments separate the incoming splices from the drop ports for network security. The backplane of the unit has the capacity to hold up to three 12-fiber splice trays, incorporating fiber management and bend-radius protection into the design. With up to 24 individual drops terminated to SC connectors, the YOURx-Aerial Terminal can accept all of the FieldShield® drop options, as well as other cable drop options.

Features and Benefits

Integrity

- Compliant to Telcordia GR-487 and 3125
- Supports FieldShield Pushable Duct and pushable/pullable fiber solution with SC connectors for drop applications
- Supports pre-terminated FieldShield FLATdrop cable assemblies for individual drop applications
- 100% performance tested for insertion loss, return loss and final mechanical inspection

Protection

- Optimized for use with FieldShield Microduct and Pushable Fiber, as well as FieldShield FLATdrop cable assemblies
- Black UV resistant thermoplastic designed to resist corrosion
- Free breathing terminal provides durability and protection in the OSP environments
- 10 mm YOURx FlexPort provide duct/fiber protection as well as strain relief for drop cables

Access

- Four side entrance holes accept all multiple cable types - up to 144 fiber count - ¾" O.D.
- Mid-span capabilities
- Two secure compartments, separate splices from the drop ports, providing network security
- Up to 24 drops
- Up to 36 individual fiber splices (two trays, 12 fibers per tray)
- Hinged cover allows easy access for installation and network maintenance
- Patch and splice (Clearfield's in-cassette splicing solution) configurations accept both flat drop and OSP cable types
- Optical component solutions maximize existing architectures and eliminate fiber exhaust scenarios

Investment

- Customer defined configurations - provides maximum scalability across multiple services classes
- "Grow-as-you-go" capabilities
- Pre-terminated factory polished pigtail assembly - insures improved network operability when spliced onto the feeder cable

YOURx™

YOURx-Aerial Terminal - Patch and Splice

CLEARFIELD

Technical Specifications

YOURx-Aerial Terminal - Patch and Splice	
Dimensions	14.80” W x 11.61” H x 8.15” D (height includes strand bracket)
Material	Black UV resistant Thermoplastic
Mounting Options	Aerial or Strand Mount
Internal Slack Storage	Up to 12 feet of ribbon; up to 8 feet of loose tube
External Slack Storage	Virtually unlimited - depends on vault size or mounting application
Feeder Ports	Four silicone sealed ports on ends of unit; two on each end
Distribution Ports	Up to 24 - 10 mm YOURx FlexPorts that accept FieldShield® Microduct or FLATdrop connectors
Connector Types	SC/APC, SC/UPC, LC/APC, LC/UPC
Splicing Capabilities	Hold up to three 12-fiber splice trays or 36 splices

Configured Part Numbers

A F T - ____ ____ ____ - Z ____ F - Z ____ Z

1 2 3 4

1 Select Distribution Port Count
(FlexPorts will match distribution ports)
06 = 6 ports
12 = 12 ports
24 = 24 ports

2 Select Distribution Connector
A = SC/UPC
C = SC/APC
F = LC/UPC
H = LC/APC

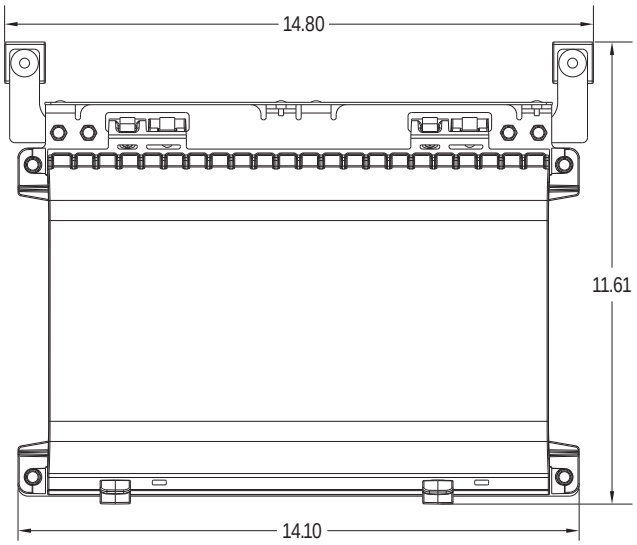
3 Select Fiber Type
1 = Loose Tube (6, 12 or 24 port)
2 = Ribbon (12 and 24 port)

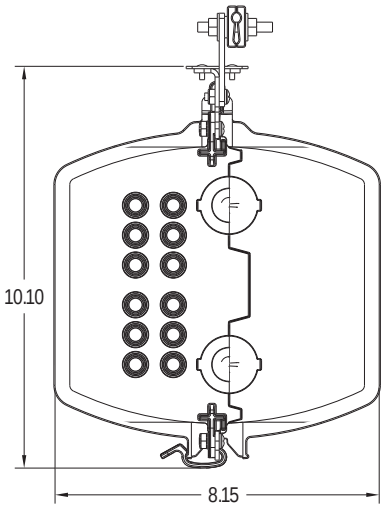
4 Select Number of Splice Trays
1 = 1 tray (standard)
2 = 2 trays
3 = 3 trays

Accessories

- Arial Hanger Bracket (019448) - adjustable aerial hanger brakcket for YOURx-Aerial Termianl

019448





YOURx™

YOURx-Terminal Accessories

Top Mount Bracket Kit for YOURx-Terminal

Description

Bracket mounts to cover, allowing the YOURx-Terminal to be removed by loosening a wing nut. Includes the top bracket, plate, wing nut and screws. Applications: Pole mount, wall mount, pedestal mount (minimum 10" pedestal) or vault mount.

Pre-Configured Part Numbers

Part Number	Description
018123	Kit, Top Mount Bracket, YOURx-Terminal

Bottom Mount Bracket Kit for YOURx-Terminal

Description

Terminal is bolted to bracket from the bottom. Terminal is accessed by removing the cover. Includes the bracket and screws. Applications: Pole mount, wall mount, pedestal mount (minimum 10" pedestal) or vault mount.

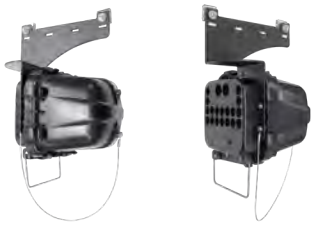
Pre-Configured Part Numbers

Part Number	Description
018249	Kit, Pole/Wall Mount Bracket, YOURx-Terminal

Aerial/Strand Mounting Kit for YOURx-Terminal

Description

Bracket mounts to strand with two clamps. Terminal is accessed by removing the cover. Includes the top bracket, bottom bracket with wire cable support, lanyard and screws. Applications: Aerial/strand mount.



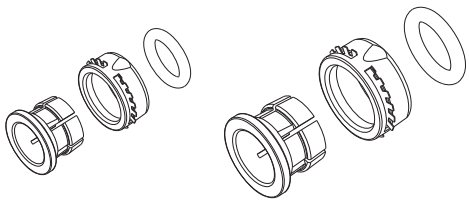
Pre-Configured Part Numbers

Part Number	Description
018456	Kit, Aerial/Strand Bracket for YOURx-Terminal, includes clamps, screws and lanyard

YOURx FlexPort

Description

Individual YOURx FlexPort for securing 10 mm or 14 mm microduct into the YOURx-Terminal or YOURx-TAP. Includes the outer coupler, inner housing and O-ring.



Pre-Configured Part Numbers

Part Number	Description
016280	YOURx FlexPort, push to connect, 10 mm
018107	YOURx FlexPort, push to connect, 14 mm
FSX-10MM EXPANSION KIT	Bag of four 10 mm YOURx FlexPorts and 10 mm FlexPort Plugs

YOURx™
YOURx-Terminal Accessories

Slack Storage Reel for YOURx-Terminal

Description

Reel is stored on the inside of the YOURx-Terminal, between the base and the FlexCartridge™. The reel will hold up to 10 feet of FieldShield® fiber slack.

Pre-Configured Part Numbers

Part Number	Description
FSTX-SLACK-REEL	Real, slack storage for YOURx-Terminal, holds 10 feed of FieldShield

YOURx FlexPort Filler Plug

Description

YOURx FlexPort Filler Plug for 10 mm or 14 mm ports into the YOURx-Terminal or YOURx-TAP. Application: Used for sealing YOURx FlexPort holes if plug on the inside is removed.

Pre-Configured Part Numbers

Part Number	Description
018664	YOURx FlexPort Plug, filler for 10 mm cartridges
018665	YOURx FlexPort Plug, filler for 14 mm cartridges

YOURx Expansion Repair Kit

Description

Used to expand or add-drop feeder ports for YOURx-Terminal or YOURx-TAP.

Pre-Configured Part Numbers

Part Number	Description
FSX-EXPANSION REPAIR KIT	Expansion, Repair Kit for YOURx-Terminal and YOURx-TAP, Includes four 10 mm YOURx FlexPorts, four 10 mm YOURx FlexPort Plugs, one 14 mm YOURx FlexPort and one 14 mm YOURx FlexPort Plug

FieldShield GBLOCK-10MM-04 and GBLOCK-14MM-04

Description

Fits around fiber onto duct, providing gas-tight protection. FS-GBLOCK-10MM-04 includes four 10 mm gas blockers and four 3" of 10 mm FieldShield Microduct. FS-GBLOCK-14MM-04 includes four 14 mm gas blockers and four 3" of 14 mm FieldShield Microduct.

Pre-Configured Part Numbers

Part Number	Description
FS-GBLOCK-10MM-04	Kit, connector, gas block, 10 mm, with duct; fits cable diameter 3-6 mm; 4 pack
FS-GBLOCK-14MM-04	Kit, connector, gas block, 14 mm, with duct; fits cable diameter 3-6 mm; 4 pack

Introduction to FieldShield®

FieldShield® Fiber, Drops and Mircoduct

Installing fiber where you want it, when you want it and cost-effectively is the promise of the FieldShield Optical Fiber Protection System. FieldShield is a turn-key system to take fiber through the fields and streets to the home or business, up the tower to the antenna or throughout the riser to the data center or desk. Used in conjunction with Clearfield® FieldSmart® fiber management solutions for the CO, Outside Plant and access network, FieldShield delivers and protects fiber through every distribution point of the network.

Components of the FieldShield System include:

- FieldShield Microduct
- FieldShield Pushable Optical Fiber and Connectors
- FieldShield Drop Cables
- FieldShield Assist Module and Accessories

FieldShield Microduct

FieldShield starts with a ruggedized microduct in a 10 mm or 14 mm outer diameter space-saving footprint across all deployment environments to support your aerial, direct-bury and inside plant last mile needs. FieldShield Microducts can be placed using traditional placement methods allowing you to leverage your existing conduit placement equipment of boring or plowing methods. FieldShield Microducts can also be placed using newer, less disruptive technologies such as saw cutting or micro-trenching. Due to the column strength of the FieldShield Microduct, occupied duct that was thought to be exhausted, can almost always accommodate FieldShield duct as the product can be deployed as a rod directly within the larger duct. Optional pulling carrots make installation of microduct inside a larger occupied duct a simple operation.

Available for aerial and buried environments in the outside plant as well as in a plenum configuration or riser environment, FieldShield Microduct provides the pathway to quickly deliver a crush-resistant FieldShield pushable fiber assembly.

FieldShield Pushable Optical Fiber and Connectors

Manufactured with bend-insensitive fiber, FieldShield Pushable Optical Fiber is strong enough to be stapled to walls and offers a built-in, bend-limiting function to prevent damage to fiber during installation. Available in bulk reels, FieldShield offers total installation flexibility. Terminated with a FieldShield Pushable Fiber Connector, the polymer properties unique to FieldShield Pushable Optical Fiber allow the assembly to be pushed or pulled through the FieldShield Microduct.

Terminating a FieldShield Pushable Fiber Connector onto FieldShield Fiber Cable allows it to be pulled or pushed through the FieldShield Microduct. Various connector styles are available including singlemode simplex SC/APC or SC/UPC, simplex or duplex LC/APC or LC/UPC and singlemode MPO. FieldShield Fiber Connectors are factory polished to achieve consistent high performance optical parameters. With a small profile, they can easily be pushed through FieldShield Microduct. The rear and outer housings are easily snapped in place by the technician in the field after the connector is pulled through the microduct. This factory pre-connectorized approach lowers installation costs by reducing costly labor in the field. Additionally, it presents a more reliable and consistent performance level compared to field installed connectors or field splices. Whether you choose to push or pull the fiber into the FieldShield Microduct, the PBT jacketing of the Clearfield FieldShield Pushable Fiber easily slips through the microduct's smooth inner wall.

Introduction to FieldShield®

FieldShield Fiber, Drops and Microduct

FieldShield Drop Cables

Recognizing that no two networks are alike, Clearfield has developed the industry's widest choice of drop cable solutions – giving you the flexibility of configuration that best suits your network environment, network design and drop cable needs.

- FieldShield FLATdrop – lowest initial capital expenditure
- FieldShield D-ROP – flat drop functionality plus one-pass installation and easy restorability
- FieldShield FLEXdrop – increased flexibility for turns and bends. UL Listed for Plenum applications and UV stabilized for outdoor use as building wrap
- FieldShield Pushable Optical Fiber – increased rigidity for pushing/pulling extended distances through a ducted pathway
- FieldShield StrongFiber –innovative, spool-based technology offers craft-friendly deployment and simplified, small footprint slack storage

Utilizing factory terminated connectors, all FieldShield Drop Cables provide plug-and-play connectivity. When the assembly is equipped with a FieldShield FlexConnector, gone are the days of proprietary connections. The FlexConnector allows multiple size and type of last mile drop cables to interconnect the YOURx-Terminal and the YOURx-TAP.

FieldShield Assist Module and Other Accessories

Clearfield offers a number of FieldShield Microduct and Fiber Cable accessories to help install and complete a project. The FieldShield Assist Module can be used to enhance the pull/push experience by providing a continuous force on the FieldShield Fiber Cable being pushed into the FieldShield Microduct. Compared to hand push installation, the Assist Module can extend installations to 500 feet or more. The Assist Module also has an integrated clutch mechanism that releases the installation force should there be an unexpected resistance caused by too many corners passed or an excessively sharp bend of the microduct. Other accessories range from couplers and end caps to pulling eyes/carrots and socks for FieldShield Microduct and Fiber Cable.

FieldShield®
Pushable Optical Fiber

Application

Designed to simplify the placement of fiber, FieldShield Pushable Optical Fiber reduces the cost of any fiber deployment, while providing industry leading protection when mated with FieldShield Microducts. Pushable Optical Fiber is either pulled or pushed through microduct at turn-up, maximizing installation efficiency. In the event of a later fiber cut, the fiber can be easily pulled from the microduct. The duct is then repaired and a new FieldShield Pushable Assembly is pushed or pulled through the microduct for a fast and cost-effective restoration.

Available in 1, 2, 6, 12, 24 and 48 fiber counts

Description

FieldShield Pushable Optical Fiber is a durable and crush resistant product that is suitable for most indoor or outdoor environments. Manufactured using PBT jacketing, pushable optical fiber offers flexibility as well as resistance to chemicals. FieldShield Pushable Optical Fiber is typically recommended to be used in conjunction with FieldShield Microduct.

Features and Benefits

Integrity

- Available in singlemode
- Supports all industry standard connectors

Protection

- Bend-insensitive (G.657.A2) fiber protects optical signal with minimal to zero attenuation down to a 10 mm radius
- Tough PBT jacketing provides high column strength and low coefficient of friction to maximize push and pull distances
- Lightweight and high crush resistance
- One and two fiber drops protected by water blocking Kevlar strength member
- 6 to 48-fiber utilize water blocking gel

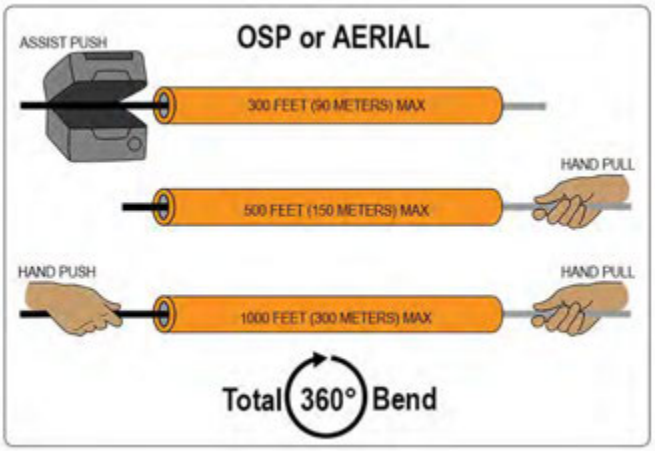
Access

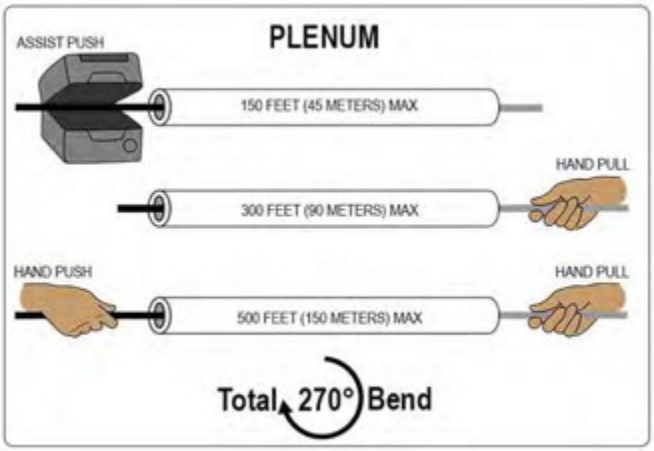
- Standard color is black
- Tech-friendly 250 µm fiber inside the outer jacket reduces splicing steps and installation costs
- Suitable for all types of indoor and outdoor implementations within a microduct

Investment

- Pushes directly into a Clearview® Cassette, FieldShield is optimized for placement alongside Clearfield® FieldSmart® fiber management platforms
- Quick and easy deployment allows capital investment to be aligned to customer take rates
- Available in multiple fiber counts up to 48 fibers

Recommended Push/Pull





FieldShield®
Pushable Optical Fiber

CLEARFIELD

Technical Specifications

FieldShield Pushable Optical Fiber	
Fiber	Corning ClearCurve Optical Fiber or equivalent
Water Peak	ZWP (Zero Water Peak)
Bend-Insensitive	Bend-Insensitive Fiber G.657.A2
Color Code	TIA/EIA 598 (US Standard)
Fiber Count	Any fiber count up to 48 fibers
Pushable Connectors	FieldShield SC/UPC, SC/APC, Simplex and Duplex LC/UPC, Simplex and Duplex LC/APC, MPO
Standard Connectors	SC/UPC, SC/APC, LC/UPC, LC/APC, FC/UPC, FC/APC, ST/UPC, HFOC SC/APC, MPO
Internal Fiber Size	250 µm
Outside Diameter	1 to 12-fiber : 0.118" (3 mm); 24-fiber: 0.156" (4 mm); 48-fiber :0.217" (5.5 mm)
Color	Black
Material	PBT
Bend-Radius	10 mm minimum
High Temperature Aging	(-40°C + 85°C) ≤ 0.05 dB/km
Temperature & Humidity Cycling	≤ 0.05 dB/km *(at -10°C to 85°C and 95% RH)*
Water Immersion (23 ± 2°C)	≤ 0.05 dB/km
Operating Temperature	-40°F to 176°F (-40°C to 80°C)
Installation Temperature	-14°F to 158°F (-26°C to 70°C)
Installation Tension	20 lbf for 3 mm; 20 lbf for 4 mm
Markings	Part number, lot number and footage markers every two feet

Pre-Configured Part Numbers

Part Number	Description
FS-CA1-001-8ZD-B 01000F	FieldShield boxed Pushable Optical Fiber, 1-fiber (250 µm), singlemode, 3 mm jacket, 1000 feet (305 m)
FS-CA1-001-8ZD-B 02000F	FieldShield boxed Pushable Optical Fiber, 1-fiber (250 µm), singlemode, 3 mm jacket, 2000 feet (610 m)
FS-CA1-001-8ZD-B 03000F	FieldShield boxed Pushable Optical Fiber, 1-fiber (250 µm), singlemode, 3 mm jacket, 3000 feet (914 m)
FS-CA1-001-8ZD-B 05000F	FieldShield boxed Pushable Optical Fiber, 1-fiber (250 µm), singlemode, 3 mm jacket, 5000 feet (1,524 m)
FS-CA1-002-8ZD-B 01000F	FieldShield boxed Pushable Optical Fiber, 2-fiber (250 µm), singlemode, 3 mm jacket, 1000 feet (305 m)
FS-CA1-002-8ZD-B 02000F	FieldShield boxed Pushable Optical Fiber, 2-fiber (250 µm), singlemode, 3 mm jacket, 2000 feet (610 m)
FS-CA1-002-8ZD-B 03000F	FieldShield boxed Pushable Optical Fiber, 2-fiber (250 µm), singlemode, 3 mm jacket, 3000 feet (914 m)
FS-CA1-006-8ZD-B 01000F	FieldShield boxed Pushable Optical Fiber, 6-fiber (250 µm), singlemode, 3 mm jacket, 1000 feet (305 m)
FS-CA1-006-8ZD-B 03000F	FieldShield boxed Pushable Optical Fiber, 6-fiber (250 µm), singlemode, 3 mm jacket, 3000 feet (914 m)
FS-CA1-012-8ZD-B 01000F	FieldShield boxed Pushable Optical Fiber, 12-fiber (250 µm), singlemode, 3 mm jacket, 1000 feet (305 m)
FS-CA1-012-8ZD-B 03000F	FieldShield boxed Pushable Optical Fiber, 12-fiber (250 µm), singlemode, 3 mm jacket, 3000 feet (914 m)
FS-CA1-024-8ZE-B 01000F	FieldShield boxed Pushable Optical Fiber, 24-fiber (250 µm), singlemode, 4 mm jacket, 1000 feet (305 m)
FS-CA1-024-8ZE-B 02000F	FieldShield boxed Pushable Optical Fiber, 24-fiber (250 µm), singlemode, 4 mm jacket, 2000 feet (610 m)
FS-CA1-024-8ZE-B 05000F	FieldShield boxed Pushable Optical Fiber, 24-fiber (250 µm), singlemode, 4 mm jacket, 5000 feet (1,524 m)
FS-CA1-048-8ZF-B 01500F	FieldShield boxed Pushable Optical Fiber, 48-fiber (250 µm), singlemode, 5.5 mm jacket, 1500 feet (457 m)
FS-CA1-048-8ZF-B 02500F	FieldShield boxed Pushable Optical Fiber, 48-fiber (250 µm), singlemode, 5.5 mm jacket, 2500 feet (762 m)

FieldShield®
SC and LC Pushable Connectors

CLEARFIELD

Application

Designed to simplify the deployment of fiber where one or two fibers are required, FieldShield SC and LC Pushable Connectors provide a tech-friendly field assembled connector that snaps together in seconds without jeopardizing fiber protection or optical reliability. FieldShield Pushable Connectors greatly reduce installation costs for Fiber to the Home (FTTH) installations, business class services, cell backhaul or any other small count delivery application.

Description

FieldShield Pushable Connectors are factory terminated and polished SC and LC connectors designed to be terminated on simplex and duplex FieldShield Pushable Optical Fiber Assemblies. After being pushed or pulled through FieldShield Microduct, the smooth wall protective sleeve is easily removed and an outer housing is snapped into place. This creates an industry standard connector without mechanical or fusion splicing. All SC and LC FieldShield Pushable Connector styles can be pushed/pulled in all FieldShield Microducts.

Features and Benefits

Integrity

- Terminations are designed and tested to Telcordia GR-326
- Available in singlemode SC/UPC, SC/APC, Simplex and Duplex LC/UPC, Simplex and Duplex LC/APC

Protection

- Smooth wall protective sleeve is easily removed and an outer housing is snapped into place

Access

- Zirconia ceramic ferrule measuring 1.25 mm O.D.
- Tool-less installation

Investment

- Tech-friendly pre-terminated pushable connectors rapidly decrease deployment times and reduce installation costs by eliminating in-field splicing
- Pushed directly into a Clearview® Cassette, FieldShield is optimized for placement alongside Clearfield's FieldSmart® fiber management platforms

Packaging

Lengths up to 32'

Lengths from 32' to 350'

Lengths greater than 350'

FieldShield®
SC and LC Pushable Connectors

CLEARFIELD

Technical Specifications

Minimum Performance Specifications for Terminated Singlemode Connectors

Connector Type	Ferrule Material	Polish Type	Ins. Loss, Typical	Max. Ins. Loss	Min. Ret. Loss
SC or LC	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
SC or LC	Ceramic	APC	0.20 dB	0.30 dB	65.00 dB

Pre-Configured Part Numbers

Part Number	Connector Type	Description
FS-AA1-001-AZZ-BZZ XXXXF	SC	FieldShield pushable patch cord, singlemode, 1-fiber (250 µm), 3 mm jacket standard SC/UPC to pushable SC/UPC , XXXX feet
FS-AA1-001-CZZ-DZZ XXXXF	SC	FieldShield pushable patch cord, singlemode, 1-fiber (250 µm), 3 mm jacket standard SC/APC to pushable SC/APC , XXXX feet
FS-AA1-002-1ZZ-3ZZ XXXXF	LC	FieldShield pushable patch cord, singlemode, 2-fiber (250 µm), 3 mm jacket duplex LC/UPC to pushable duplex LC/UPC , XXXX feet
FS-AA1-002-2ZZ-4ZZ XXXXF	LC	FieldShield pushable patch cord, singlemode, 2-fiber (250 µm), 3 mm jacket duplex LC/APC to pushable duplex LC/APC , XXXX feet

Configured Part Numbers

F S - A A ____ - ____ ____ ____ - ____ ____ ____ - ____ ____ ____ XXXXM or XXXXF

[1] [2] [3] [4] [5] [6] [7] [8]

[1] Select Mode/Type

1 = Singlemode (250 µm)
2 = Singlemode (900 µm)

[2] Select Fiber Count

001 = Simplex
002 = Duplex
006 = 6
012 = 12
024 = 24
048 = 48

[3] Select Connector #1

1 = Pushable LC/UPC
2 = Pushable LC/APC
3 = Dual LC/UPC unibody
4 = Dual LC/APC unibody
5 = MPO (male)
6 = MPO (female)
B = Pushable SC/UPC
D = Pushable SC/APC
A = SC/UPC
C = SC/APC
E = LC/UPC
G = LC/APC
J = FC/UPC
K = FC/APC
M = ST/UPC
N = Pushable MPO male
P = Pushable MPO female
W = HFOC SC/APC

[4] Select Breakout #1

B = 1 meter
C = Half meter
U = Hardened connector
Z = N/A

[5] Select Upjacketing #1

A = 900 µm
B = 2 mm (OSP)
Z = N/A

[6] Select Connector #2

1 = Pushable LC/UPC
2 = Pushable LC/APC
3 = Dual LC/UPC unibody
4 = Dual LC/APC unibody
5 = MPO (Male)
6 = MPO (Female)
B = Pushable SC/UPC
D = Pushable SC/APC
A = SC/UPC
C = SC/APC
E = LC/UPC
G = LC/APC
J = FC/UPC
K = FC/APC
M = ST/UPC
N = Pushable MPO male
P = Pushable MPO female
W = HFOC SC/APC
Z = None

[7] Select Breakout #2

B = 1 meter
C = Half meter
P = Pulling eye
U = Hardened connector
Z = N/A

[8] Select Upjacketing #2

A = 900 µm
B = 2 mm (OSP)
Z = N/A

XXXM or XXXF

XXXXM = Length in meters
XXXXF = Length in feet

FieldShield®
MPO Pushable Connectors

Application

Designed to simplify the deployment of fiber where multiple fibers are required, FieldShield MPO Pushable Connectors provide a tech-friendly, field-assembled connector that snaps together in seconds without jeopardizing fiber protection or optical reliability. FieldShield Pushable Connectors greatly reduce installation costs for Fiber to the Home installations, business class services, cell backhaul or any other small count delivery application.

MPO Pushable Fiber in duct

Description

FieldShield Pushable Connectors are factory terminated and polished. MPO Connectors are designed to be terminated on 6 or 12-fiber FieldShield Pushable Optical Fiber Assemblies. After being pushed or pulled through FieldShield Microduct, the black protective sleeve is easily removed and the green MPO outer housing is snapped into place creating an industry standard connector without mechanical or fusion splicing. FieldShield Pushable MPO Connectors can be pulled/pushed in 14/10 mm FieldShield Microduct.

Features and Benefits

Integrity

- Terminations are designed and tested to Telcordia GR-326
- Available in singlemode 4, 6, 8 and 12-fiber terminations
- FieldShield MPO Pushable Connectors use high-quality components that keep the connector insertion loss to a maximum of 0.35 dB

Protection

- Smooth wall protective sleeve is easily removed and an outer housing is snapped into place

Access

- Thermoplastic high-precision ferrules
- Tool-less installation

Investment

- Tech-friendly, pre-terminated pushable connectors decrease deployment times and reduce installation costs by eliminating in-field splicing
- Pushed directly up to a Clearview® Cassette, FieldShield is optimized for placement alongside FieldSmart® fiber management platforms

Technical Specifications

FieldShield MPO Pushable Connectors	
Connector Type	MPO
Ferrule Material	Thermoplastic
Polish Type	APC
Insertion Loss Typical	0.25 dB
Maximum Insertion Loss	0.35 dB
Minimum Return Loss	55.00 dB

FieldShield®
MPO Pushable Connectors

CLEARFIELD

Pre-Configured Part Numbers

Part Number	Description
FS-AA1-004-PZZ-6ZZ XXXXF	FieldShield pushable patch cord , singlemode, 4-fiber (250 µm), 3 mm jacket 1 x 4 pushable MPO female to standard 1 x 4 MPO female, XXXX feet
FS-AA1-004-PUZ-ZZZ XXXXF	FieldShield pushable pigtail, singlemode, 4-fiber (250 µm), 3 mm jacket 1 x 4 pushable MPO female with hardened connector housing to pigtail, XXXX feet
FS-AA1-006-PUZ-6UZ XXXXF	FieldShield pushable patch cord, singlemode, 6-fiber (250 µm), 3 mm jacket 1 x 6 pushable MPO female with hardened connector housing to standard 1 x 6 MPO female with hardened connector housing, XXXX feet
FS-AA1-006-PZZ-ZZZ XXXXF	FieldShield pushable pigtail, singlemode, 6-fiber (250 µm) 3 mm jacket 1 x 6 pushable MPO female to pigtail, XXXX feet
FS-AA1-008-PZZ-6ZZ XXXXF	FieldShield pushable patch cord, singlemode, 8-fiber (250 µm), 3 mm jacket 1 x 8 pushable MPO female to standard 1 x 8 MPO female, XXXX feet
FS-AA1-008-PUZ-ZZZ XXXXF	FieldShield pushable pigtail, singlemode, 8-fiber (250 µm), 3 mm jacket 1 x 8 pushable MPO female with hardened connector housing to pigtail, XXXX feet
FS-AA1-012-PUZ-6UZ XXXXF	FieldShield pushable patch cord, singlemode, 12-fiber (250 µm), 3 mm jacket 1 x 12 pushable MPO female with hardened connector housing to standard 1 x 12 MPO female with hardened connector housing, XXXX feet
FS-AA1-012-PZZ-ZZZ XXXXF	FieldShield pushable pigtail, singlemode, 12-fiber (250 µm), 3 mm jacket 1 x 12 pushable MPO female to pigtail, XXXX feet

Configured Part Numbers

FS – A A 1 - ___ ___ ___ - ___ ___ ___ - ___ ___ ___ XXXXM or XXXXF

1 | 2 | 3 | 4 | 5 | 6 | 7

1 Select Fiber Count

006 = 6
012 = 12
024 = 24
048 = 48

2 Select Connector #1

1 = Pushable LC/UPC
2 = Pushable LC/APC
3 = Dual LC/UPC unibody
4 = Dual LC/APC unibody
5 = MPO (male)
6 = MPO (female)
B = Pushable SC/UPC
D = Pushable SC/APC
A = SC/UPC
C = SC/APC
E = LC/UPC
G = LC/APC
J = FC/UPC
K = FC/APC
M = ST/UPC
N = Pushable MPO male
P = Pushable MPO female
W = HFOC SC/APC

3 Select Breakout #1

B = 1 meter
C = Half meter
U = Hardened connector
Z = N/A

4 Select Upjacketing #1

B = 2 mm (OSP)
Z = N/A

5 Select Connector #2

1 = Pushable LC/UPC
2 = Pushable LC/APC
3 = Dual LC/UPC unibody
4 = Dual LC/APC unibody
5 = MPO (Male)
6 = MPO (Female)
B = Pushable SC/UPC
D = Pushable SC/APC
A = SC/UPC
C = SC/APC
E = LC/UPC
G = LC/APC
J = FC/UPC
K = FC/APC
M = ST/UPC
N = Pushable MPO male
P = Pushable MPO female
W = HFOC SC/APC
Z = None

6 Select Breakout #2

B = 1 meter
C = Half meter
P = Pulling eye
U = Hardened connector
Z = N/A

7 Select Upjacketing #2

B = 2 mm (OSP)
Z = N/A

XXXM or XXXF

XXXXM = Length in meters
XXXXF = Length in feet

FieldShield®

Pushable 3 mm Optical Fiber with 900 µm Tight Buffer Fiber

Application

Designed to simplify the placement of fiber, FieldShield Pushable Optical Cable with 900 µm Tight Buffer Fiber reduces the cost of any fiber deployment while providing industry leading protection when mated with FieldShield Microducts. Pushable Fiber is either pushed or pulled through the microduct at turn-up, maximizing installation efficiency. Once deployed, the cable is cut to the specific application length and terminated with a CraftSmart® 900 µm Splice-On Connector.

Description

FieldShield Pushable Optical Cable is a durable and crush resistant product that is suitable for most indoor or outdoor environments. Manufactured using PBT jacketing, pushable optical fiber offers flexibility as well as resistance to chemicals. FieldShield Pushable Optical Fiber is typically recommended to be used in conjunction with FieldShield Microduct.

Features and Benefits

Integrity

- Available in singlemode
- Supports all industry standard connectors
- Only solution approved for use with FieldShield Pre-terminated Pushable Connectors

Protection

- Bend-insensitive (G.657.A2) fiber protects optical signal with minimal to zero attenuation down to a 10 mm radius
- Tough PBT jacketing provides high column strength and low coefficient of friction to maximize push and pull distances
- Lightweight and high crush resistance makes Pushable Optical Fiber strong enough to be stapled directly to walls studs, joists and around corners

Access

- Standard color is black
- Tech-friendly 900 µm fiber inside the outer jacket for applications where CraftSmart® Splice-On Connectors are used
- Suitable for all types of indoor and outdoor implementations

Investment

- Pushes directly into a Clearview® Cassette, FieldShield is optimized for placement alongside Clearfield® FieldSmart® fiber management platforms
- Quick and easy deployment allows capital investment to be aligned to customer take rates

FieldShield®

Pushable 3 mm Optical Fiber with 900 µm Tight Buffer Fiber

Technical Specifications

FieldShield Pushable 3 mm Optical Fiber with 900 µm Tight Buffer Fiber	
Fiber	OFS All Wave Flex Fiber or equivalent
Water Peak	ZWP (Zero Water Peak)
Bend-Insensitive	Bend-Insensitive Fiber G.657.A2
Color Code	TIA/EIA 598 (US Standard)
Fiber Count	1 fiber
Pushable Connectors	FieldShield SC/UPC, SC/APC, LC/UPC, LC/APC
Standard Connectors	SC/UPC, SC/APC, LC/UPC, LC/APC, FC/UPC, FC/APC, ST/UPC, HFOC SC/APC
Mode	Singlemode
Internal Fiber Size	900 µm Tight Buffer
Color	Black
Outside Diameter	0.118" (3 mm)
Material	PBT
Bend-Radius	10 mm minimum
Operating Temperature	-40°F to 176°F (-40°C to 80°C)
Installation Temperature	-14°F to 158°F (-26°C to 70°C)
Markings	Part number, lot number and footage markers every two feet

Physical Characteristics

FieldShield Pushable 3 mm Optical Fiber with 900 µm Tight Buffer Fiber	
Clad Diameter	125.0 ± 0.7 µm
Clad Non-circularity	≤ 1 %
Core/Clad Concentricity Error (Offset)	≤ 0.5 µm maximum, < 0.2 µm typically
Coating Diameter (Uncolored)	900 µm Tight Buffer
Coating-Clad Concentricity Error	(Offset) ≤ 12 µm
Tensile Proof Test	100 kpsi (0.69 GPa)
Coating Strip Force Range	≥ 0.3 lbf < 2.0 lbf (≥ 1.3 N < 8.9 N)

Pre-Configured Part Numbers

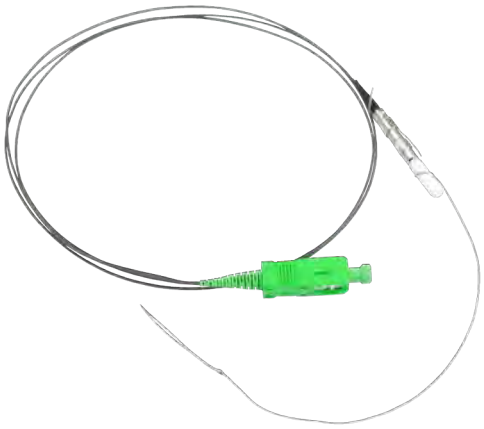
Part Number	Description
FS-CC1-001-8ZD-B 01000F	FieldShield pushable optical fiber, one fiber (900 µm), singlemode, 3 mm jacket, 1000 feet
FS-CC1-001-8ZD-B 02000F	FieldShield pushable optical fiber, one fiber (900 µm), singlemode, 3 mm jacket, 2000 feet

FieldShield®
StrongFiber

CLEARFIELD

Application

Designed to simplify the placement of fiber, FieldShield StrongFiber reduces the cost of any fiber deployment while providing industry leading protection when combined with FieldShield Microducts. StrongFiber is pulled through microduct at turn-up maximizing installation efficiency. In the event of a duct or fiber being damaged or for future upgrades, the fiber can be easily pulled from the microduct. The duct is then repaired and a new FieldShield StrongFiber assembly is pushed or pulled through the microduct for a fast and cost-effective restoration or upgrade.



StrongFiber may be used in place of a traditional patch cord for reduced cable pileup within the route-path of new or traditionally oversubscribed frames within a central office, headend, data center or remote hut. StrongFiber is 85% smaller than traditional 3 mm patch cords and 69% smaller than 1.2 mm patch cords. The reduced size and weight makes the fiber less susceptible to micro-bends and makes it much easier to store using any fiber management element.

Description

FieldShield StrongFiber is a durable high tensile strength fiber when compared to other fibers of its size. It is suitable for both indoor and outdoor environments when used in FieldShield Microduct. Manufactured with premium bend-insensitive fiber, FieldShield StrongFiber offers high tensile strength to resist damage to the fiber during installation in the FieldShield Microducts. When terminated with a FieldShield Pullable Connector, the FieldShield StrongFiber can be quickly deployed in FieldShield Microduct, reducing installation time drastically.

Features and Benefits

Integrity

- Available in singlemode
- Supports all SC and LC connectors

Protection

- Bend-insensitive (G.657.A2) fiber protects optical signal with minimal to zero attenuation
- Lightweight with low coefficient of friction to maximize pull distances

Access

- Standard color is black
- Tech-friendly 900 µm fiber
- Suitable for all types of indoor implementations

Investment

- Quick and easy deployment allows capital investment to be aligned to customer take rates

Technical Specifications

Physical Glass Characteristics

FieldShield StrongFiber	
Fiber Size	250 µm
Clad Diameter	125.0 ± 0.7 µm
Clad Non-circularity	≤ 1 %
Core/Clad Concentricity Error (Offset)	≤ 0.5 µm maximum, < 0.2 µm typically
Coating Diameter (Uncolored)	235 - 245 µm
Coating-Clad Concentricity Error	(Offset) ≤ 12 µm
Tensile Proof Test	100 kpsi (0.69 GPa)
Coating Strip Force Range	≥ 0.3 lbf < 2.0 lbf (≥ 1.3 N < 8.9 N)

FieldShield®
StrongFiber

CLEARFIELD

FieldShield StrongFiber	
Fiber	OFS All Wave Flex + Fiber or equivalent
Water Peak	ZWP (Zero Water Peak)
Bend-Insensitive	Meets G.657 A2
Color	Black
Length	Up to 300 feet
Fiber Count	Single Fiber
Pullable Connectors	FieldShield SC/UPC, SC/APC
Standard Connectors	SC/UPC, SC/APC, LC/UPC, LC/APC
Mode	Singlemode
Outside Diameter	900 µm
Material	Thermoplastic Blend, Low Smoke/Fume, Non-Halogen Flame Retardant
Rating	OSP Temperature Rated
Bend-Radius	10 mm minimum
Operating Temperature	-40°F to 176°F (-40°C to 80°C)
Installation Temperature	-14°F to 158°F (-26°C to 70°C)
Installation Tension	18 lbs

Performance Specifications

Connector Type	Ferrule Material	Polish Type	Ins. Loss Typical	Max. Ins. Loss	Min. Ret. Loss
SC	Ceramic	UPC	0.15 dB	0.20 dB	55.00 dB
LC	Ceramic	UPC	0.15 dB	0.20 dB	55.00 dB
SC	Ceramic	APC	0.18 dB	0.20 dB	65.00 dB
LC	Ceramic	APC	0.18 dB	0.20 dB	65.00 dB

Configured Part Numbers

F S - A S 1 - 0 0 1 - ___ Z Z - ___ Z Z XXXM or XXXF

1 2

1 Select Connector #1

B = Pullable SC/UPC
D = Pullable SC/APC
A = SC/UPC
C = SC/APC
E = LC/UPC
G = LC/APC

2 Select Connector #2

B = Pullable SC/UPC
D = Pullable SC/APC
A = SC/UPC
C = SC/APC
E = LC/UPC
G = LC/APC
Z = Pigtail

XXXM or XXXF

XXXM = Length in meters
XXXF = Length in feet

FieldShield®
StrongFiber Deploy Reel

Application

Due to the high variability of MDU architectures, extensive engineering has been required to ensure proper cable lengths for Fiber to the Premises deployments. The 4.5" FieldShield StrongFiber Deploy Reel minimizes pre-engineering because is allows StrongFiber to be pulled from the reel directly to the access point. Once the pullable connector has reached its destination, the connector assembly is completed with the supplied connector housings and the connector is mated to the adapter. The remaining slack on the reel is pre-stored with no further slack management required. The terminated end on the reel is pre-tested, cleaned and mated in a Clearfield® factory environment, leaving the technician to simply mate the patch cord to the adapter on the reel. The small form factor of the cable assembly and Deploy Reel allows the StrongFiber to be pulled and slack stored from the customer demarcation point. As an ISP Cable, StrongFiber reduces pre-engineering and on-site installation time for MDU and riser deployments.

Description

The FieldShield StrongFiber Deploy Reel is a 4.5" x 1" spool designed to hold up to 300 feet of FieldShield StrongFiber. It has an integrated bulkhead and pre-mated adapter that can easily be mounted into a small form factor fiber management element. The small form factor of the 900 µm fiber makes slack storage minimal and easy to accommodate, while the exceptional pull strength of StrongFiber makes it craft-friendly and easy for the technician to handle without fear of fiber damage. Less cable weight means reduced co-efficient of friction (COF). This results in quicker installations because there is minimal friction as the cable is pulled through bends and turns throughout the microduct route-path. Reducing the size requirements of the access point (above or below grade) provides a more aesthetically pleasing solution.

Features and Benefits

Integrity

- Terminations are designed and tested to Telcordia GR-326
- Supports singlemode SC connectors

Protection

- Deploying StrongFiber with a FieldShield StrongFiber Deploy Reel allows the installer to payout the exact amount of cable required and leave the remaining slack safely stored on the reel
- Exceptional pull strength makes it easier for the technician to handle without fear of fiber damage

Access

- Small form factor 900 µm fiber makes slack storage minimal and easy to accommodate
- Straight forward, simple design means installation crews spend less time figuring out how to deploy
- Low co-efficient of friction (COF) allows StrongFiber to be pulled through bends and turns throughout the microduct route path with minimal friction, reducing deployment times

Investment

- Pre-terminated cable spools reduce upfront deployment costs by simplifying site survey inspections, reducing labor hours and streamlining cable deployment for MDU and Riser deployments

FieldShield®
StrongFiber Deploy Reel

CLEARFIELD

Technical Specifications

FieldShield StrongFiber Deploy Reel	
Dimensions	4.55” W x 1” H
Material	Black Thermoplastic
Storage Temperature	-40°F to 150°F (-40°C to 65°C)
Pullable Connectors	FieldShield® SC/APC and SC/UPC
Standard Connectors	SC/APC, SC/UPC
Fiber	FieldShield Strong Fiber 900 µm
Cable Length	Up to 300 feet

Configured Part Numbers

SRD - ___ 1SA - ___ ZZ ___
1 2 3

1 Select Bulkhead Connector

A = SC/UPC
C = SC/APC

2 Select Pullable Connector

B = Pullable SC/UPC
D = Pullable SC/APC
Z = Pigtail

3 Select Cable Length

2 = 50 feet
3 = 75 feet
4 = 100 feet
5 = 125 feet
6 = 150 feet
7 = 175 feet
8 = 200 feet
9 = 225 feet
A = 250 feet
B = 275 feet
C = 300 feet

FieldShield StrongFiber Deploy Reel Wall Box

Description

The FieldSmart® FDP-xWB1 Wall Box provides a NEMA 4 rated enclosure to distribute StrongFiber Deploy Reel drops cables to the indoor NID in a compact 9 × 12 inch design. Two 10 mm microduct couplers on the bottom of the unit provide easy installation for both the feeder and drop cables. When used as a demarcation point, the wall box offers the service provider an accessible exterior access point to test the fiber integrity before it enters the customer premise. This solution allows the service provider to identify potential issues in conductivity without having to have access to the interior of the customer premise.

Pre-Configured Part Numbers

Part Number	Description
FDP-XWB1-DEPLOY-01	Wall box, plastic, NEMA 4 rated, for FieldShield StrongFiber Deploy Reel, includes two 10 mm couplers and nuts, no Deploy Reel

Pull Sock

Description

The FieldShield Pull Sock provides a pulling eye to install pre-terminated SC pushable assemblies and blunt drops using the integrated pull string that comes standard in all FieldShield Microducts. The pull sock grips the outer jacket of FieldShield Optical Cables by compressing while under tension.

Pre-Configured Part Numbers

Part Number	Description
FS-PUL-3-4MM	FieldShield Pull Sock, for 3 to 5.5 mm FieldShield Pushable Fiber

Rotary Fiber Tube Cutter

Description

Rotary Fiber Tube Cutter are designed to strip away the outer jacket from FieldShield Optical Fiber without damaging the fibers inside.

Pre-Configured Part Numbers

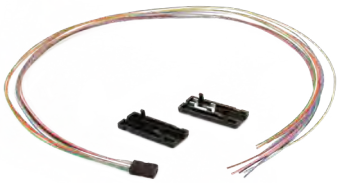
Part Number	Description
FS-TCUT-3-4MM	FieldShield Rotary Fiber Tube Cutter, for 3 mm to 5.5 mm jacket

FieldShield®
Fiber Accessories

Furcation Kits

Description

Available in 1, 2, 6 and 12-fiber kits, the FieldShield Furcation Kit provides all the components to up-jacket and terminate 250 µm FieldShield Pushable Fiber using a 900 µm Splice-On Connectors.



Pre-Configured Part Numbers

Part Number	Description
FS-900UM-01-03F	FieldShield Furcation Kit for 3 mm jacketing, 1-fiber 900 µm, yellow tubing, 3 feet
FS-900UM-02-02F	FieldShield Furcation Kit for 3 mm jacketing, 2-fiber 900 µm, colored tubing, 2 feet
FS-900UM-06-02F	FieldShield Furcation Kit for 3 mm jacketing, 6-fiber 900 µm, colored tubing, 2 feet
FS-900UM-12-02F	FieldShield Furcation Kit for 3 mm jacketing, 12-fiber 900 µm, colored tubing, 2 feet
FS-900UM-24-02F	FieldShield Furcation Kit for 4 mm tube, 12-fiber 900 µm, colored tubing, 36 inches

Fiber End Face Cleaning Kits

Description

The Fiber End Face cleaning kit is the ideal solution to clean fiber end faces effectively every time.

Pre-Configured Part Numbers

Part Number	Description
Cleankit-SC-01	Ferrule and V groove swabs, SFF flat swab, 2.5 mm foam swabs, portable platform, fiber wash MX cleaner pen
Cleankit-LC-01	Ferrule and V groove swabs, SFF flat swab, 1.25 mm ferrule swab portable platform, fiber wash MX cleaner pen
Clean MPO-01	MPO chamois swabs, 25 per tube

FieldShield®

Accessories - Assist Module

Application

The FieldShield Assist Module is specifically designed to speed up installation time and ease deployment of pushable fiber within FieldShield microducts. Powered by any cordless drill, the FieldShield Assist Module enables FieldShield pre-connectorized and blunt end assemblies to be pushed quickly, at a constant and controlled speed, from the network access point to the end subscriber. Both lightweight and portable the FieldShield Assist Module is ideal for both internal and external use and can be mounted on a tripod, set on a flat work surface or hand-held when space is a premium.

Description

The FieldShield Assist Module is a hand-held, cordless drill-powered tool used to push FieldShield Fiber into unoccupied FieldShield Microduct. The Assist Module incorporates an integrated clutch that engages when resistance reaches a threshold that could damage the cable. This helps to eliminate potential catastrophic damage due to buckling or folding of the fiber. Cable can be pushed 500 feet within OSP rated duct through four 90 degree turns or 300 feet when pushing in plenum duct for an inside plant environment. When used in conjunction with the integrated pull string that comes standard in all FieldShield ducts, push/pull methods can provide longer distances.

Features and Benefits

Integrity

- Easy and intuitive use: open, clamp duct, insert FieldShield Optical cable, close latch and apply a drill driven ¼" hex socket

Protection

- Torque-limited clutch helps prevent folding, buckling and kinking of fiber
- Assist module prevents high compression loads on fiber during installation
- Glare resistant LCD display cover improves visibility in direct sunlight
- High-impact resistant polyurethane designed to be weather resistant for OSP environments

Access

- Tripod mount threading
- Integrated LCD counter gives installer instant feedback on distances pushed in feet or meters
- Works with 10 mm O.D. microducts and FieldShield Pushable Optical Fiber with diameter of 3 mm and 4 mm

Investment

- Assists in delivering pre-terminated fiber in a small footprint, eliminating time and higher skilled splicing labor
- Most economical, tech-friendly pushing machine on the market
- Individual serialization and labeling of each unit to track factory repairs and service

Pre-Configured Part Numbers

Part Number	Description
FS-ASSIST-T	FieldShield, Assist Module, with mounting tripod
FS-ASSIST-KIT-BELT	FieldShield Assist Module, replacement belt kit (includes two belts)
FS-ASSIST-KIT-PLATE	FieldShield Assist Module, replacement wear plate kit (includes two wear plates)

FieldShield®
Accessories - Turn Table

Application

The FieldShield Turn Table assists in the deployment of the patch only models of the FieldShield SmarTerminal.

Description

Patch Only SmarTerminals are mounted on a spool (the size of spool is dependent on the fiber length). Carefully remove the spool from packaging and place the cable spool over the center post of the Deploy Reel. Once installed, the fiber can easily be pulled without damaging or tangling the fiber. The FieldShield Turntable for deploying FieldShield products provides a sturdy base and turn table to safely deploy the feeder fiber while protecting the SmarTerminal during installation.

Features and Benefits

Integrity
- Wide/sturdy base allows for fibers to be deployed with use of Turntable

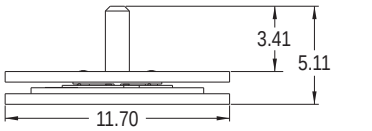
Protection
- Plastic construction allows for use in all environments

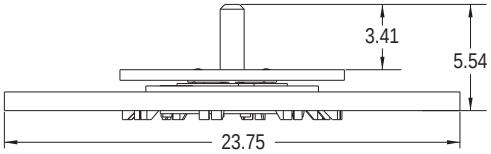
Access
- Two different sizes for multiple spool sizes

Investment
- Units can be used multiple times for additional projects

Pre-Configured Part Numbers

Part Number	Description
FMA-XXX-100	Turn Table, Small, for deploying FieldShield products, 12” base
FMA-XXX-101	Turn Table, Large, for deploying FieldShield products, 24” base





CraftSmart®
Splice-On Connector (SOC)

Application

Fiber assemblies are used in a variety of carrier networks and private network environments. In some applications, the fiber assembly cannot be deployed with factory terminated connectors. In other instances, there may be a need for quick fiber restoration in the field. CraftSmart Splice-On Connectors are designed for these applications.

Description

In situations where a factory terminated fiber assembly isn't possible, the CraftSmart Spice-On Connector provides the solution for consistent performance. Common applications include field restoration of a broken fiber or when the customer is using media that is expensive and/or difficult to store. In these cases, the customer prefers to cut the media to exact length for his purposes and then use the CraftSmart Splice-On Connector. The Clearfield® advantage is that the protection splice sleeve is directly under the boot, making the routing of the terminated end easier.

The CraftSmart Spice-On Connector is available in all industry standard connectors, including SC/UPC, SC/APC and LC/UPC. The Spice-On Connector meets, and even exceeds industry standard insertion and return loss. Pre-polished and pre-cleaved, the CraftSmart Spice-On Connector is packaged with all required connector components needed to splice a connector onto a 900 µm fiber in the field. CraftSmart Splice-on Connectors require the use of a fusion splicer with removable splice holders.

Features and Benefits

Integrity

- CraftSmart Splice-On Connector is available in all industry standard connectors
- Utilizes a fusion splice for minimal loss and long lasting dependability in any environment
- Meets or exceeds industry standard insertion loss and return loss

Protection

- Individually packaged to protect pre-stripped and cleaved fiber during storage
- Fusion splice is protected by a fusion splice sleeve under a color coded boot
- Ferrules are made of durable Zirconia

Access

- Compact 900 µm fusion splice design that reduces the overall footprint
- Pre-polished fiber end face and pre-stripped, pre-cleaved fiber ready to splice

Investment

- Singlemode, multimode (62.5 µm and 50 µm) and laser optimized available
- Universal holder works with common industry fusion splice machines

CraftSmart®
Splice-On Connector (SOC)

CLEARFIELD

Technical Specifications

CraftSmart Splice-On Connector (SOC)					
Mode Type	Singlemode/APC	Singlemode/UPC	Multimode/62.5 µm	Multimode/50 µm	Multimode/LO
Insertion Loss (maximum)	0.3 dB	0.3 dB	0.4 dB	0.4 dB	0.4 dB
Optical Return Loss	> 65 dB	> 55 dB	35 dB (typical)	35 dB (typical)	35 dB (typical)
Ferrule Type	Zirconica Pre-Polished Ferrules				
Color Code	Green	Blue	Beige	Black	Aqua
Operating Temperature	-40°C to 80°C	-40°C to 80°C	-40°C to 80°C	-40°C to 80°C	-40°C to 80°C
Industry Standards	RoHS Compliant, Compliant to Telcordia GR-326				

Compatible Splice Machines

Manufacturer	Splicer Model	Metal Holder Compatibility	Metal Holder Part Number	Universal Holder Compatibility
FIS	Super Cougar	All Versions	CSM-SOC-FIBER HOLDER-01	All Versions
AFL/Fujikura	FSM-11(S/M)	All Versions	SM-SOC-FIBER HOLDER-02	All Versions
	FSM-12S FSM-19S FSM-70S	All Versions	CSM-SOC-FIBER HOLDER-03	All Versions
	FSM-17S/R	SC and LC Only		N/A
	FSM-18S FSM-60 (S/R)	SC, LC and ST Only		
Furukawa/Fitel	S122 (A/C/M) S121 (A/M) S123 (C/M) S153 S178A	All Versions	CSM-SOC-FIBER HOLDER-04	All Versions
Sumitomo	Type-25e (U/S/M)	All Versions	CSM-SOC-FIBER HOLDER-05	All Versions
	Type-39FH Type-46 Type-65 Type-66 Quantum (Q101-CA)			N/A
INNO	IFS 10 IFS 15	All Versions	SM-SOC-FIBER HOLDER-06	N/A
Greenlee	910FS	All Versions	CSM-SOC-FIBER HOLDER-07	N/A

Pre-Configured Part Numbers

Part Number	Description
CSM-FCU-SM-6PAK	CraftSmart® Splice-On Connectors, FC/UPC, singlemode, 6 pack
CSM-LCU-SM-6PAK	CraftSmart Splice-On Connectors, LC/UPC, singlemode, 6 pack
CSM-SCA-SM-6PAK	CraftSmart Splice-On Connectors, SC/APC, singlemode, 6 pack
CSM-SCU-SM-6PAK	CraftSmart Splice-On Connectors, SC/UPC, singlemode, 6 pack
CSM-STU-SM-6PAK	CraftSmart Splice-On Connectors, ST/UPC, singlemode, 6 pack

FieldShield®
Pushable Optical Fiber

Application

Designed to simplify the placement of fiber, FieldShield Pushable Optical Fiber reduces the cost of any fiber deployment, while providing industry leading protection when mated with FieldShield Microducts. Pushable Optical Fiber is either pulled or pushed through microduct at turn-up, maximizing installation efficiency. In the event of a later fiber cut, the fiber can be easily pulled from the microduct. The duct is then repaired and a new FieldShield Pushable Assembly is pushed or pulled through the microduct for a fast and cost-effective restoration.

Available in 1, 2, 6, 12, 24 and 48 fiber counts

Description

FieldShield Pushable Optical Fiber is a durable and crush resistant product that is suitable for most indoor or outdoor environments. Manufactured using PBT jacketing, pushable optical fiber offers flexibility as well as resistance to chemicals. FieldShield Pushable Optical Fiber is typically recommended to be used in conjunction with FieldShield Microduct.

Features and Benefits

Integrity

- Available in singlemode
- Supports all industry standard connectors

Protection

- Bend-insensitive (G.657.A2) fiber protects optical signal with minimal to zero attenuation down to a 10 mm radius
- Tough PBT jacketing provides high column strength and low coefficient of friction to maximize push and pull distances
- Lightweight and high crush resistance
- One and two fiber drops protected by water blocking Kevlar strength member
- 6 to 48-fiber utilize water blocking gel

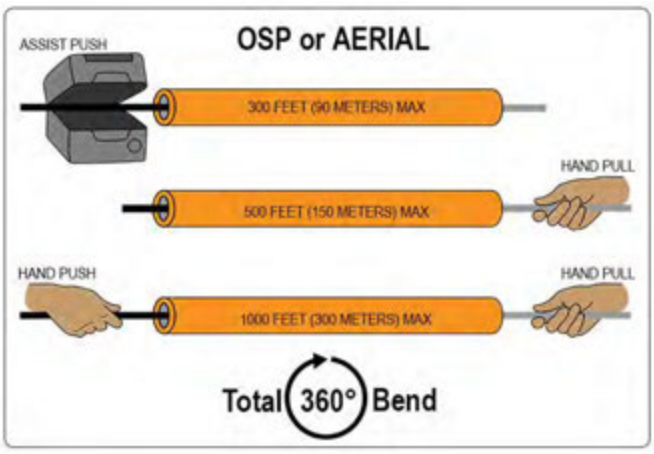
Access

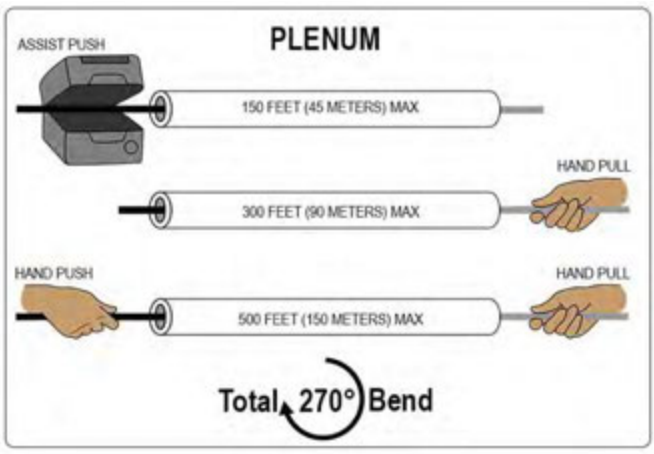
- Standard color is black
- Tech-friendly 250 µm fiber inside the outer jacket reduces splicing steps and installation costs
- Suitable for all types of indoor and outdoor implementations within a microduct

Investment

- Pushes directly into a Clearview® Cassette, FieldShield is optimized for placement alongside Clearfield® FieldSmart® fiber management platforms
- Quick and easy deployment allows capital investment to be aligned to customer take rates
- Available in multiple fiber counts up to 48 fibers

Recommended Push/Pull





FieldShield®
Pushable Optical Fiber

CLEARFIELD

Technical Specifications

FieldShield Pushable Optical Fiber	
Fiber	Corning ClearCurve Optical Fiber or equivalent
Water Peak	ZWP (Zero Water Peak)
Bend-Insensitive	Bend-Insensitive Fiber G.657.A2
Color Code	TIA/EIA 598 (US Standard)
Fiber Count	Any fiber count up to 48 fibers
Pushable Connectors	FieldShield SC/UPC, SC/APC, Simplex and Duplex LC/UPC, Simplex and Duplex LC/APC, MPO
Standard Connectors	SC/UPC, SC/APC, LC/UPC, LC/APC, FC/UPC, FC/APC, ST/UPC, HFOC SC/APC, MPO
Internal Fiber Size	250 µm
Outside Diameter	1 to 12-fiber : 0.118" (3 mm); 24-fiber: 0.156" (4 mm); 48-fiber :0.217" (5.5 mm)
Color	Black
Material	PBT
Bend-Radius	10 mm minimum
High Temperature Aging	(-40°C + 85°C) ≤ 0.05 dB/km
Temperature & Humidity Cycling	≤ 0.05 dB/km *(at -10°C to 85°C and 95% RH)*
Water Immersion (23 ± 2°C)	≤ 0.05 dB/km
Operating Temperature	-40°F to 176°F (-40°C to 80°C)
Installation Temperature	-14°F to 158°F (-26°C to 70°C)
Installation Tension	20 lbf for 3 mm; 20 lbf for 4 mm
Markings	Part number, lot number and footage markers every two feet

Pre-Configured Part Numbers

Part Number	Description
FS-CA1-001-8ZD-B XXXX	FieldShield pushable optical fiber, 1-fiber (250 µm), singlemode, 3 mm jacket
FS-CA1-002-8ZD-B XXXX	FieldShield pushable optical fiber, 2-fiber (250 µm), singlemode, 3 mm jacket
FS-CA1-006-8ZD-B XXXX	FieldShield pushable optical fiber, 6-fiber (250 µm), singlemode, 3 mm jacket
FS-CA1-012-8ZD-B XXXX	FieldShield pushable optical fiber, 12-fiber (250 µm), singlemode, 3 mm jacket
FS-CA1-024-8ZE-B XXXX	FieldShield pushable optical fiber, 24-fiber (250 µm), singlemode, 4 mm jacket
FS-CA1-048-8ZF-B XXXX	FieldShield pushable optical fiber, 48-fiber (250 µm), singlemode, 5.5 mm jacket

FieldShield®
FLEXdrop (UL Listed Plenum)

Application

Clearfield's FieldShield FLEXdrop cable provides the most flexible option of our FieldShield product line. The OSP-rated PVDF jacketing allows for transition of FLEXdrop from the OSP environment directly into the inside plant, with the added benefit of being UL listed for plenum applications. FLEXdrop is either pulled or pushed through microduct at turn-up, maximizing installation efficiency. In the event of a later fiber cut, the fiber can be easily pulled from microduct. The duct is then repaired and a new FieldShield Pushable Assembly is pushed or pulled through the microduct for a fast and cost-effective restoration.

Available in single fiber count

Description

FieldShield FLEXdrop has more flexibility than standard FieldShield Optical Cable making it ideal for shorter drops where more handling and slack storage may be required. Whether it's used indoor or outdoor, the flexibility of the jacket allows for deployment with reduced jacket memory and decreases the risk of kinking. While FLEXdrop is typically used in conjunction with FieldShield Microduct solutions, in some applications, it can be stapled directly to walls and ceilings or used on building wrap applications securing with crown T18 staples.

Features and Benefits

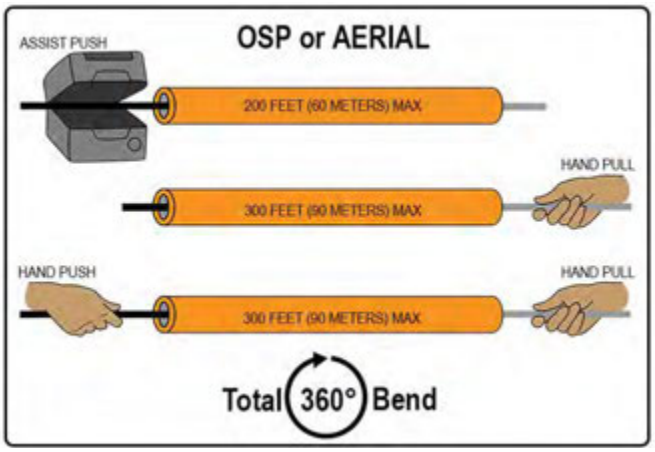
Integrity
- Available in singlemode
- Supports all industry standard connectors

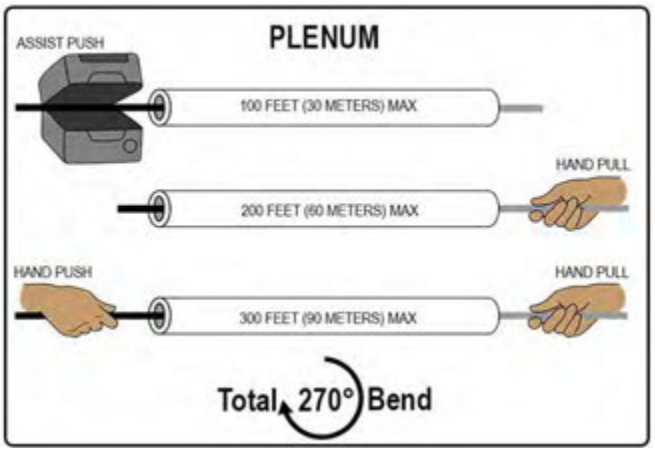
Protection
- UL listed for plenum applications
- Passed UV testing and measurement standards per ASTM G155 for UL 1581
- Bend-insensitive (G.657.A2) fiber protects optical signal with minimal to zero attenuation down to a 10 mm radius
- OSP rated PVDF jacketing provides ruggedized protection for the patchcord or pigtail
- Staple-ready for walls, joists and around corners, with Crown T-18 staples
- Swellable yarns for water blocking capabilities

Access
- Standard color is black with an option for off-white
- Suitable for all types of indoor and outdoor implementations

Investment
- Quick and easy deployment allows capital investment to be aligned to customer take rates

Recommended Push/Pull





FieldShield®
FLEXdrop (UL Listed Plenum)

CLEARFIELD

Technical Specifications

FieldShield FLEXdrop	
Fiber	Corning ClearVurve Optical Fiber or equivalent
Clad Diameter	125.0 ± 0.7 µm
Coating Diameter (Uncolored)	235 - 245 µm
Bend-Insensitive	Bend-Insensitive Fiber G.657.A2
Color Code	TIA/EIA 598 (US Standard)
Fiber Count	Single fiber
Pushable Connectors	FieldShield SC/UPC, SC/APC, Simplex LC/UPC, Simplex LC/APC
Standard Connectors	SC/UPC, SC/APC, LC/UPC, LC/APC, FC/UPC, FC/APC, ST/UPC, HFOC SC/APC
Mode	Singlemode
Internal Fiber Size	900 µm
Outside Diameter	0.118" (3 mm)
Color	Black or white
Material	PVDF
Bend-Radius	Standard to G.657.A2 specifications
Installation Temperature	-22°F to 131°F (-30°C to 55°C)
Operating Temperature	-40°F to 176°F (-40°C to 80°C)
Installation Tension	20 lbf
Markings	Part number, lot number and footage markers every two feet
Cable Attenuation Spec	0.35 dB/km @ 1310 nm/0.25 dB/km @ 1550 nm
Recommended Drop Length	150 feet or less for normal installation conditions

Configured Part Numbers

F S - A ___ ___ - ___ ___ ___ - ___ ___ ___ - ___ ___ ___ XXXXM or XXXXF

1 2 3 4 5 6 7 8 9

1 Select Cable Type
P = FLEXdrop Black
W = FLEXdrop White

2 Select Mode/Type
2 = Singlemode (900 µm)

3 Select Fiber Count
001 = Simplex
002 = Duplex

4 Select Connector #1
1 = Pushable LC/UPC
2 = Pushable LC/APC
B = Pushable SC/UPC
D = Pushable SC/APC
A = SC/UPC
C = SC/APC
E = LC/UPC
G = LC/APC
J = FC/UPC
K = FC/APC
M = ST/UPC
W = HFOC SC/APC

5 Select Breakout #1
U = Hardened connector
Z = N/A

6 Select Upjacketing #1
Z = N/A

7 Select Connector #2
1 = Pushable LC/UPC
2 = Pushable LC/APC
B = Pushable SC/UPC
D = Pushable SC/APC
A = SC/UPC
C = SC/APC
E = LC/UPC
G = LC/APC
J = FC/UPC
K = FC/APC
M = ST/UPC
W = HFOC SC/APC
Z = None

8 Select Breakout #2
U = Hardened connector
Z = N/A

9 Select Upjacketing #2
Z = N/A

XXXM or XXXF
XXXXM = Length in meters
XXXXF = Length in feet

FieldShield®
FLEXdrop SC and LC Pushable Connectors

Application

Designed to simplify the deployment of fiber, FieldShield FLEXdrop SC and LC Pushable Connectors provide a tech-friendly field assembled connector that snaps together in seconds without jeopardizing fiber protection or optical reliability. FieldShield Pushable Connectors greatly reduce installation costs for Fiber to the Home (FTTH) installations, business class services, cell backhaul or any other small count delivery application.

Description

FieldShield FLEXdrop SC and LC Pushable Connectors are factory terminated and polished SC and LC connectors designed to be terminated on simplex FieldShield Pushable Optical Fiber Assemblies. After being pushed or pulled through FieldShield Microduct, the smooth wall protective sleeve is easily removed and an outer housing is snapped into place. This creates an industry standard connector without mechanical or fusion splicing. All SC and LC FieldShield Pushable Connector styles can be pushed/pulled in all FieldShield Microducts.

Features and Benefits

Integrity

- Terminations are designed and tested to Telcordia GR-326
- Available in singlemode SC/UPC, SC/APC, Simplex LC/UPC and Simplex LC/APC

Protection

- Smooth wall protective sleeve is easily removed and an outer housing is snapped into place

Access

- Zirconia ceramic ferrule measuring 1.25 mm O.D.
- Tool-less installation

Investment

- Tech-friendly pre-terminated pushable connectors rapidly decrease deployment times and reduce installation costs by eliminating in-field splicing
- Pushed directly into a Clearview Cassette, FieldShield is optimized for placement alongside Clearfield's FieldSmart® fiber management platforms

Packaging

Lengths up to 32'

Lengths from 32' to 350'

Lengths greater than 350'

FieldShield®

FLEXdrop SC and LC Pushable Connectors

Technical Specifications

Minimum Performance Specifications for Terminated Singlemode Connectors

Connector Type	Ferrule Material	Polish Type	Ins. Loss, Typical	Max. Ins. Loss	Min. Ret. Loss
SC or LC	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
SC or LC	Ceramic	APC	0.20 dB	0.30 dB	65.00 dB

Configured Part Numbers

F S - A ___ ___ - ___ ___ ___ - ___ ___ ___ - ___ ___ ___ XXXXM or XXXXF

[1] [2] [3] [4] [5] [6] [7] [8] [9]

[1] Select Cable Type
P = FLEXdrop Black
W = FLEXdrop White

[2] Select Mode/Type
2 = Singlemode (900 µm)

[3] Select Fiber Count
001 = Simplex
002 = Duplex

[4] Select Connector #1
1 = Pushable LC/UPC
2 = Pushable LC/APC
B = Pushable SC/UPC
D = Pushable SC/APC
A = SC/UPC
C = SC/APC
E = LC/UPC
G = LC/APC
J = FC/UPC
K = FC/APC
M = ST/UPC
W = HFOC SC/APC

[5] Select Breakout #1
U = Hardened connector
Z = N/A

[6] Select Upjacketing #1
Z = N/A

[7] Select Connector #2
1 = Pushable LC/UPC
2 = Pushable LC/APC
B = Pushable SC/UPC
D = Pushable SC/APC
A = SC/UPC
C = SC/APC
E = LC/UPC
G = LC/APC
J = FC/UPC
K = FC/APC
M = ST/UPC
W = HFOC SC/APC
Z = None

[8] Select Breakout #2
U = Hardened connector
Z = N/A

[9] Select Upjacketing #2
Z = N/A

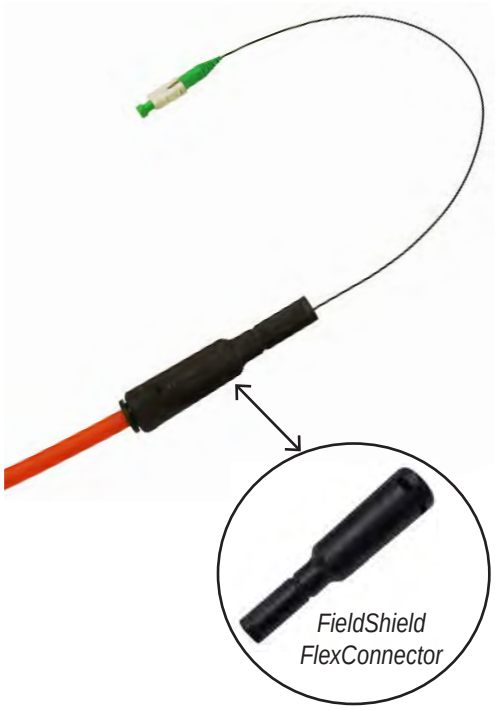
XXXM or XXXF
XXXXM = Length in meters
XXXXF = Length in feet

FieldShield®
D-ROP

Application

Building upon the restoration promise of FieldShield Pushable Fiber, FieldShield D-ROP is a pre-connectorized drop cable delivered to market pre-placed in a 7 mm microduct. The FieldShield FlexConnector snaps into the FieldShield FlexPort, providing an air-tight, water-tight connection between the YOURx-TAP and the YOURx-Terminal.

Installed as a single-pass deployment, FieldShield D-ROP provides ease of restoration. In the event of a future fiber cut, a field technician easily identifies the cut area, and utilizes a simple coupler and a FieldShield Fiber Assembly to restore service.



Description

D-ROP cable presents the same footprint as a flat drop cable with the added advantage of being restorable. As with all FieldShield ducted solutions, fiber cuts are located and microduct is repaired with repair kit. Blunt fiber is then pulled and terminated with a splice-on connector, minimizing costs and time to restore the service outage. The pre-installed FlexConnector is plugged directly into the FlexPort opening of the YOURx-Terminal or YOURx-TAP, providing a completely protected pathway from the access point directly to the premise, business or antenna with the option for restoration after accidental fiber cut.

D-ROP does not have the slack storage challenges that a flat drop presents because the duct slack can be peeled or removed leaving only the fiber assembly.

FlexConnector Options

- Factory Installed: the connector is shipped permanently installed on the pre-connectorized cable.
- Field Installable: the connector is shipped separately to be installed in the field. This is an ideal solution for eliminating excess slack storage when standard cable lengths are used for custom drop distances. The FlexConnector can be field installed on the pre-connectorized cable (full plug-and-play) or blunt cable followed by a splice-on connector.

Features and Benefits

Integrity

- Duct is compliant to Telcordia GR-3155
- Available with singlemode fiber

Protection

- FieldShield FlexConnector provides an air-tight, water-tight connection
- FieldShield Direct Bury Microduct has high tensile strength and crush resistance that withstands all types of implementations including open trenching, vibratory plowing and directional boring
- Duct is constructed from HDPE to prevent degradation

Access

- Available pre-terminated with SC or bulk for field installation
- Option for splice-on connector (utilizing fiber matrix 850 µm)
- Includes bend-insensitive fiber
- The FlexConnector installed onto microduct pushes directly into a YOURx-Terminal or YOURx-TAP
- Integrated tone wire simplifies ground locating in direct bury applications
- Industry standard orange provides high visibility for direct bury applications
- Available for aerial applications

Investment

- Available in bulk or pre-connectorized for a labor-lite, plug-and-play installation
- FieldShield FlexConnector available in 4 packs for field installations

Field Installable FlexConnector

D-ROP Opener

Bluk D-ROP Spool

FieldShield®
D-ROP

CLEARFIELD

Technical Specifications

FieldShield D-ROP	
Outside Diameter	0.276” (7 mm)
Inside Diameter	0.146” (3.7 mm)
Material	HDPE
Connector Style	SC
Operating Temperature	-40°F to 176°F (-40°C to 80°C)
Stringing Tension	To local regulations. Recommended not to exceed 0.2 KN
Min. Bend Radius	4.72” (120 mm)
Rated Cable Load	270 lbf (1.2 KN)
Duct Color	Orange (Direct Bury with tone) or Black (Aerial)
Tone Wire	Copper coated steel wire (Direct Bury only)
Markings	Part number, lot number, footage markers every foot
Breakout Length	12 inches

Accessories

- Field Installable FlexConnector (FSD-FIFC-4PAK)
  - Installer cuts duct to desired length in the field using a rotary cutter, then snaps on the FlexConnector. After fusing on the standard connector and passing through the FlexPort, the outer housing is attached and connected to the adapter.
- D-ROP Opener: splitter tool with 7 mm OD (FS-DUCT-OPENER)

Configured Part Numbers

Factory Installed Connectors

F S D - [1] [2] [3] - [4] - [5] [6] [7] - [8] [9] [10] XXXXF

1 Select Duct Construction
A = 7 mm Aerial
C = 7 mm Toneable

2 Select Duct Color
2 = Orange
8 = Black

3 Select Fiber Type
1 = Singlemode, 800 µm

4 Select Fiber Count
001 = 1

5 Select Connector #1
A = SC/UPC
C = SC/APC

6 Select Breakout
Q = xTAP

7 Select Upjacketing
Z = N/A

8 Select Connector #2
A = SC/UPC
C = SC/APC

9 Select Breakout
Q = xTAP
Z = N/A - Pigtail

10 Select Upjacketing
Z = N/A

Select Length (XXXXF)

0050 = 50 ft.
0075 = 75 ft.
0100 = 100 ft.
0125 = 125 ft.
0150 = 150 ft.
0175 = 175 ft.
0200 = 200 ft.
0225 = 225 ft.
0250 = 250 ft.
0275 = 275 ft.
0300 = 300 ft.

Pre-Configured Part Numbers

Field-Installed Connectors

Part Number	Description
FS-MED-001-T-207-3280F	Bulk D-ROP, direct bury, orange, 7 mm O.D., 3280 foot spool
FS-MEA-001-NT-807-3280F	Bulk D-ROP, aerial, black, 7 mm O.D., 3280 foot spool
FSD-FIFC-4PAK	Field installable FlexConnector in 4 pack
FSD-FIFC-SCA-4PAK	Field installable FlexConnector with splice-on SC/APC connectors, 4 pack

FieldShield®
FLATdrop

Application

FieldShield FLATdrop is a drop cable solution for the access network such as FTTH and FTTB. FLATdrop takes industry standard flat drop cable that is factory pre-connectorized and incorporates a 10 mm FieldShield FlexConnector, providing simple plug-and-play connectivity between the YOURx-Terminal and YOURx-TAP.

Description

FieldShield FLATdrop is the first pre-connectorized flat drop style cable to provide hardened environmental performance on a flat drop style cable without the added cost or dependency on the market's existing bulky connector. Connectivity to access terminals is achieved through the innovative FlexConnector, which snaps into the YOURx-Terminal and YOURx-TAP, providing an air-tight and water-tight connection.

FlexConnector Options

- Factory Installed: the connector is shipped permanently installed on the pre-connectorized cable.
- Field Installable: the connector is shipped separately to be installed in the field. This is an ideal solution for eliminating excess slack storage when standard cable lengths are used for custom drop distances. The FlexConnector can be field installed on the pre-connectorized cable (full plug-and-play) or blunt cable followed by a splice-on connector.

Features and Benefits

Integrity

- Available in singlemode
- Supports most industry standard flat drop cable
- FlexConnector is designed and tested to GR-3120 using FieldShield FLATdrop

Protection

- FlexConnector provides an air-tight, water-tight connection

Access

- Flat drop cable construction allows for installation in direct bury and aerial applications
- Pre-terminated with an SC, LC or MPO connector or with pigtail for customer choice application
- Toneable cables allow for traceability

Investment

- Leveraging the low cost of a traditional optical flat drop cable with option for plug-and-play field terminations
- Quick and easy deployment allows capital investment to be aligned to customer take rates
- FieldShield FlexConnector available in 4 packs for field installations

Technical Specifications

FieldShield FLATdrop	
Core Size and Type	Singlemode
Inner Cable Jacket OD	3.0 mm Ruggedized
Cable Types	Flat Drop Cable (Dielectric/Toneable)
Connector Type	SC, LC, MPO
Breakout Length	12 inches
Operating Temperature	-40°F to 176°F (-40°C to 80°C)
Color	Black
Markings	Part number, lot number, footage markers every two feet

FieldShield®
FLATdrop

Accessories

- Field Installable FlexConnector (FSH-FIFC-4PAK)
  - Once the cable has been prepped, the flat cable is sandwiched between the two retainer clips, pinched into place and then the FlexConnector is pushed and snapped together with the retaining clips

Field Installable FlexConnector

Configured Part Numbers

SC and LC Factory Installed Connector

F S H - ___ 1 - 0 0 1 - ___ ___ ___ - ___ ___ ___ XXXXF

1 2 3 4 5 6 7

1 Select Jacket Construction
T = OSP Non-toneable (Non-rated)
U = OSP Toneable (Non-rated)

2 Select Connector #1
A = SC/UPC
B = SC/UPC Pushable
C = SC/APC
D = SC/APC Pushable

3 Select Breakout
Q = YOURx (Factory Installed)
1 = YOURx (Ship-along)

4 Select Upjacketing
D = 3mm Ruggedized

5 Select Connector #2
A = SC/UPC
C = SC/APC
E = LC/UPC
G = LC/APC

6 Select Breakout
Q = YOURx
C = ½ Meter
B = 1 Meter
P = Pulling Eye
Z = N/A for HFOC or Pigtail

7 Select Upjacketing
B = 2mm Ruggedized
D = 3mm Ruggedized (YOURx only)
Z = N/A

XXXM or XXXF
XXXM = Length in meters
XXXF = Length in feet

MPO Factory Installed Connector

H ___ 1 - ___ ___ ___ - ___ Q D - ___ ___ ___ XXXXF or XXXXF

1 2 3 4 5 6

1 Select Jacket Construction
E = OSP Non-Toneable
M = OSP Toneable

2 Select Fiber Count
006 = 6
012 = 12

3 Select Connector #1
N = Pushable MPO Male
P = Pushable MPO Female

4 Select Connector #2
N = Pushable MPO Male
P = Pushable MPO Female
Z = Pigtail

5 Select Breakout #2
Q = YOURx
Z = N/A

6 Select Upjacketing
D = YOURx
Z = N/A

XXXM or XXXF
XXXM = Length in meters
XXXF = Length in feet

Pre-Configured Part Numbers

SC Field Installed Connector

Part Number	Description
FSH-FIFC-4PAK	Field installable FlexConnector with pieces for 4 terminations
FSH-FIFC-SCA-4PAK	Field installable FlexConnector with splice-on SCA connectors and pieces for 4 terminations
015575-2000F	Bulk FLATdrop, toneable, 2000 foot spool
014042-2000F	Bulk FLATdrop, non-toneable, 2000 foot spool

FieldShield®
Direct Bury 10/6 mm Microduct

Application

Simplifying the placement of fiber, while providing protection from harsh environmental elements, FieldShield Direct Bury 10/6 mm Microduct is specifically designed for applications requiring a small heavy duty drop feed. Rugged crush resistance protects FieldShield Direct Bury Microduct from the rigors of all industry standard ground deployment methods, while rigid column strength allows microducts to be deployed through occupied duct previously thought exhausted. Direct Bury 10/6 mm Microduct has an outer diameter of 10 mm and an inner diameter of 6 mm.

Description

FieldShield Direct Bury 10/6 mm Microduct is a durable and crush resistant micro-conduit designed to increase the protection of fiber while decreasing installation and maintenance expenses. Manufactured using high density polyethylene (HDPE), FieldShield Direct Bury Microduct offers superior durability and protection.

Features and Benefits

Integrity

- Compliant to Telcordia GR-3155

Protection

- Quick and easy to install
- Direct Bury Microduct has high tensile strength and crush resistance that withstands all types of ground implementations including open trenching, vibratory plowing, micro-trenching and directional boring
- Made from HDPE to prevent degradation

Access

- Optional external tone wire simplifies ground locating
- Industry standard orange provides high visibility for direct bury applications
- Standard nylon pull string simplifies deployment of fiber
- Smooth core slip lining reduces drag co-efficient enabling fiber to be pushed or pulled with minimal resistance
- Optional black color available to couple direct bury orange to a more aesthetically pleasing black color as it transitions above ground on the side of a living unit

Investment

- Maximizes capacity of existing conduit previously considered exhausted
- Provides industry leading protection for “last mile” feeds

FieldShield®
Direct Bury 10/6 mm Microduct

CLEARFIELD

Technical Specifications

FieldShield Direct Bury 10/6 mm Microduct	
Length	2,000 feet per spool (-0 / +5%)
Outside Diameter	0.394" (10 mm); Oversheathed Toneable 0.500 (12.7 mm)
Inside Diameter	0.246" (6.2 mm)
Wall Thickness	0.074" (1.88 mm)
Slip Layer	Minimum 0.004" (0.102 mm)
Ovality	≤ 5%
Installation Tension	340 lbf
Bend-Radius	Non-toneable: 6" radius minimum; Toneable: 7” radius minimum
Material	High Density Polyethylene (HDPE)
Operating Temperature	-40°F to 176°F (-40°C to 80°C)
Installation Temperature	-14°F to 158°F (-26°C to 70°C)
Color	Orange and Black
Tone Wire	Insulated Copper
Tone Wire Diameter	0.032” (0.813 mm) / 20 AWG
Markings	Part number, lot number, footage markers every two feet
Spool Size	12” ID x 24” OD x 20” W
Weight	Non-toneable: 71 lbs; Toneable: 78 lbs

Pre-Configured Part Numbers

Part Number	Description
FS-DED-NT-210-PS-2000F	FieldShield microduct, 10 mm, direct bury, non-toneable, orange, 2000 feet
FS-MEO-T-210-2000F	FieldShield microduct, 10 mm, direct bury, oversheathed toneable, orange, 2000 feet
FS-MED-NT-810-2000F	FieldShield microduct, 10 mm, direct bury, non-toneable, black, 2000 feet

FieldShield®
Direct Bury 14/10 mm Microduct

Application

Simplifying the placement of fiber, while providing protection from harsh environmental elements, FieldShield Direct Bury 14/10 mm Microduct is specifically designed for applications requiring a small heavy duty drop feed. Rugged crush resistance protects FieldShield Direct Bury Microduct from the rigors of all industry standard ground deployment methods, while rigid column strength allows microducts to be deployed through occupied duct previously thought exhausted. Direct Bury 14/10 mm Microduct has an outer diameter of 14 mm and an inner diameter of 10 mm.

Description

FieldShield Direct Bury 14/10 mm Microduct is a durable and crush resistant micro-conduit designed to increase the protection of fiber while decreasing installation and maintenance expenses. Manufactured using high density polyethylene (HDPE), FieldShield Direct Bury 14/10 mm Microduct offers superior durability and protection.

Features and Benefits

Integrity

- Compliant to Telcordia GR-3155

Protection

- Quick and easy to install
- Direct Bury Microduct has high tensile strength and crush resistance that withstands all types of ground implementations including open trenching, vibratory plowing, micro-trenching and directional boring
- Made from HDPE to prevent degradation

Access

- Optional external tone wire simplifies ground locating
- Industry standard orange provides high visibility for direct bury applications
- Standard nylon pull string simplifies deployment of fiber
- Smooth core slip lining reduces drag co-efficient enabling fiber to be pushed or pulled with minimal resistance

Investment

- Maximizes capacity of existing conduit previously considered exhausted
- Provides industry leading protection for “last mile” feeds

FieldShield®
Direct Bury 14/10 mm Microduct

CLEARFIELD

Technical Specifications

FieldShield Direct Bury 14/10 mm Microduct	
Length	Non-toneable: 1,500 feet per spool; Toneable: 1,250 feet per spool
Outside Diameter	Non-toneable: 0.551” (14 mm); Toneable: 0.66” (16.7 mm)
Inside Diameter	0.390" (9.8 mm)
Wall Thickness	0.079" (2 mm)
Slip Layer	Minimum 0.004" (0.102 mm)
Ovality	≤ 5%
Installation Tension	Non-toneable: 264 lbf; Toneable: 346 lbf
Bend-Radius	Non-toneable: 8” radius minimum; Toneable: 10” radius minimum
Material	High Density Polyethylene (HDPE)
Operating Temperature	-40°F to 176°F (-40°C to 80°C)
Installation Temperature	-14°F to 158°F (-26°C to 70°C)
Color	Orange
Tone Wire	Insulated Stranded Copper
Tone Wire Diameter	0.032” (0.813 mm) / 20 AWG
Markings	Part number, lot number, footage markers every two feet
Spool Size	12” ID x 24” OD x 20” W
Weight	Non-toneable: 72 lbs; Toneable: 95 lbs

Pre-Configured Part Numbers

Part Number	Description
FS-DED-NT-214-PS-1500F	FieldShield microduct, 14 mm, direct bury, non-toneable, orange, 1500 feet
FS-DEO-T-214-PS-1250F	FieldShield microduct, 14 mm, direct bury, oversheathed toneable, orange, 1250 feet

FieldShield®
Direct Bury 14/10 mm Black Microduct

Application

Simplifying the placement of fiber, while providing protection from harsh environmental elements, FieldShield Direct Bury 14/10 mm Black Microduct is specifically designed for applications requiring a small heavy duty drop feed. Rugged crush resistance protects FieldShield Direct Bury Microduct from the rigors of all industry standard ground deployment methods, while rigid column strength allows microducts to be deployed through occupied duct previously thought exhausted. Direct Bury 14/10 mm Black Microduct has an outer diameter of 14 mm and an inner diameter of 10 mm.

Description

FieldShield Direct Bury 14/10 mm Black Microduct is a durable and crush resistant micro-conduit designed to increase the protection of fiber while decreasing installation and maintenance expenses. Manufactured using high density polyethylene (HDPE), FieldShield Direct Bury 14/10 mm Microduct offers superior durability and protection.

Features and Benefits

Integrity

- Compliant to Telcordia GR-3155

Protection

- Quick and easy to install
- Direct Bury Microduct has high tensile strength and crush resistance that withstands all types of ground implementations including open trenching, vibratory plowing, micro-trenching and directional boring
- Made from HDPE to prevent degradation

Access

- Standard nylon pull string simplifies deployment of fiber
- Ribbed core slip lining reduces drag co-efficient enabling fiber to be pushed or pulled with minimal resistance

Investment

- Maximizes capacity of existing conduit previously considered exhausted
- Provides industry leading protection for “last mile” feeds

FieldShield®

Direct Bury 14/10 mm Black Microduct

CLEARFIELD

Technical Specifications

FieldShield Direct Bury 14/10 mm Black Microduct	
Length	4,922 feet per spool
Outside Diameter	0.551” (14 mm +/- 0.2 mm)
Inside Diameter	0.390" (9.8 mm)
Wall Thickness	0.079” (2 mm +/- 0.2 mm)
Installation Tension	Non-toneable: 264 lbf; Toneable: 346 lbf
Bend-Radius	8” radius minimum
Material	High Density Polyethylene (HDPE)
Operating Temperature	-40°F to 176°F (-40°C to 80°C)
Installation Temperature	-14°F to 158°F (-26°C to 70°C)
Color	Black
Markings	Part number, lot number, footage markers every two feet
Spool Size	40” OD x 24” W
Weight	375 lbs

Configured Part Numbers

Part Number	Description
FS-MED-NT-814-PS-4922F	FieldShield microduct, 14 mm, Direct Bury, non-toneable, black, 4,922 feet

FieldShield®
Plenum 10/6 mm Microduct

Application

Plenum rated microducts provide a self extinguishing raceway to protect and deploy optical fiber in airspaces, raised floors and other indoor applications designated as plenum air spaces. Plenum 10/6 mm Microduct has an outer diameter of 10 mm and an inner diameter of 6.9 mm.

Description

FieldShield Plenum 10/6 mm Microduct is a durable, polyvinylidene difluoride (PVDF) crush resistant microduct suitable for protecting fiber in any indoor application. Easily mated with an airtight and waterproof coupler, FieldShield Plenum Microducts integrate with direct bury and aerial microducts creating a single and continuous pathway from outside plant to inside plant environments.

Features and Benefits

Integrity

- Compliant to Telcordia GR-3155
- Conforms to UL-2024. ETL listed.

Protection

- Plenum rated material self-extinguishes flame and does not reignite
- High tension and crush resistance allows microduct to be pushed through existing conduit and around tight corners without degrading microduct

Access

- Quick and easy to install
- Small 10 mm footprint makes FieldShield ideal for all types of indoor implementations maximizing space in ladder racks, raised floors and air handling elevator shafts
- Smooth core enables fiber to be pushed or pulled with minimal resistance
- White color for easy identification

Investment

- Extends the capacity of existing conduit previously considered exhausted

FieldShield®
Plenum 10/6 mm Microduct

CLEARFIELD

Technical Specifications

FieldShield Plenum 10/6 mm Microducts	
Length	2,000 feet per spool (-0 / +5%)
Outside Diameter	0.394" (10 mm)
Inside Diameter	0.272" (6.9 mm)
Wall Thickness	0.059" (1.5 mm)
Slip Layer	Minimum 0.004" (0.102 mm)
Ovality	≤ 5%
Minimum Bend-Radius	6" radius, supported 4”, unsupported 8”
Material	Polyvinylidene Difluoride (PVDF)
Rating	Plenum rated
Operating Temperature	-40°F to 176°F (-40°C to 80°C)
Installation Temperature	-14°F to 158°F (-26°C to 70°C)
Color	White
Tone Wire	N/A
Tone Wire Diameter	N/A
Markings	Part number, lot number, footage markers every two feet
Spool Size	12" ID x 24" OD x 15" W
Weight	104 lbs

Pre-Configured Part Numbers

Part Number	Description
FS-MCP-NT-610-2000F	FieldShield microduct, 10 mm, Indoor Plenum, non-toneable, white, 2000 feet

FieldShield®
Plenum 12.7/10 mm Microduct

Application

Plenum rated microducts provide a self extinguishing raceway to protect and deploy optical fiber in airspaces, raised floors and other indoor applications designated as plenum air spaces. Plenum 12.7/10 mm Microduct has an outer diameter of 12.7 mm and an inner diameter of 10 mm.

Description

FieldShield Plenum 12.7/10 mm Microduct is a durable, polyvinylidene difluoride (PVDF) crush resistant microduct suitable for protecting fiber in any indoor application. Easily mated with an airtight and waterproof coupler, FieldShield Plenum Microducts integrate with direct bury and aerial microducts creating a single and continuous pathway from outside plant to inside plant environments.

Features and Benefits

Integrity

- Compliant to Telcordia GR-3155
- Conforms to UL-2024. ETL listed.

Protection

- Plenum rated material self-extinguishes flame and does not reignite
- High tension and crush resistance allows microduct to be pushed through existing conduit and around tight corners without degrading microduct

Access

- Quick and easy to install
- Small 10 mm footprint makes FieldShield ideal for all types of indoor implementations maximizing space in ladder racks, raised floors and air handling elevator shafts
- Straight ribs with silicone lining enables fiber to be pushed or pulled with minimal resistance
- White color for easy identification

Investment

- Extends the capacity of existing conduit previously considered exhausted

FieldShield®
Plenum 12.7/10 mm Microduct

CLEARFIELD

Technical Specifications

FieldShield Plenum 12.7/10 mm Microducts	
Length	1,500 feet per spool (-0 / +5%)
Outside Diameter	0.500" (12.7 mm)
Inside Diameter	0.408" (10.3 mm)
Wall Thickness	0.042" (1.07 mm)
Slip Layer	Minimum 0.004" (0.102 mm)
Ovality	≤ 5%
Minimum Bend-Radius	8” radius
Material	Polyvinylidene Difluoride (PVDF)
Rating	Plenum rated
Operating Temperature	-40°F to 176°F (-40°C to 80°C)
Installation Temperature	-14°F to 158°F (-26°C to 70°C)
Color	White
Tone Wire	N/A
Tone Wire Diameter	N/A
Markings	Part number, date code, footage markers every two feet
Spool Size	12” ID x 24” OD x 20” W
Weight	125 lbs

Pre-Configured Part Numbers

Part Number	Description
FS-DCP-NT-612.7-PS-1500F	FieldShield microduct, 12.7 mm, Indoor Plenum, non-toneable, white, 1500 feet

FieldShield®
Riser Rated 10/6 mm Microduct

Application

Simplifying the placement of fiber, while providing protection for all indoor elements, FieldShield Riser Rated 10/6 mm Microduct is specifically designed for applications requiring small pathways in confined spaces. Rugged crush resistance protects FieldShield Riser Rated 10/6 mm Microduct from the rigors of all industry standard deployment methods, while the rigid column strength allows microducts to be deployed through occupied duct previously thought to be exhausted. Riser Rated 10/6 mm Microduct has an outer diameter of 10 mm and an inner diameter of 6 mm.

Description

FieldShield Riser Rated 10/6 mm Microduct is a durable, crush resistant micro-conduit designed to increase the protection of fiber while decreasing installation and maintenance expenses. Manufactured using high density thermoplastic, FieldShield Riser Rated Microduct offers superior durability and protection.

Features and Benefits

Integrity

- Compliant to Telcordia GR-3155
- UL-2024 listed

Protection

- Quick and easy to install
- Riser Rated 10/6 mm Microduct has high tensile strength and crush resistance
- Designed for applications designated as riser air space

Access

- Industry standard beige provides high visibility for indoor installation applications in existing conduit and by itself
- Standard nylon pull string simplifies deployment of fiber
- Smooth core slip lining reduces drag co-efficient enabling fiber to be pushed or pulled with minimal resistance

Investment

- Maximizes capacity of existing conduit previously considered exhausted
- Provides industry leading protection for any indoor riser rated application

FieldShield®
Riser Rated 10/6 mm Microduct

CLEARFIELD

Technical Specifications

FieldShield Riser Rated 10/6 mm Microducts	
Length	2,000 feet per spool (-0 / +5%)
Outside Diameter	0.394" (10 mm)
Inside Diameter	0.246" (6.24 mm)
Wall Thickness	0.074" (1.88 mm)
Slip Layer	Minimum 0.004" (0.102 mm)
Ovality	≤ 5%
Installation Tension	340 lbf
Minimum Bend-Radius	130 mm/5.2” radius
Material	Thermoplastic
Operating Temperature	-40°F to 176°F (-40°C to 80°C)
Installation Temperature	-14°F to 158°F (-26°C to 70°C)
Color	White
Markings	Part number, lot number, footage markers every two feet
Spool Size	12" ID x 24" OD x 14" W
Weight	84 lbs

Pre-Configured Part Numbers

Part Number	Description
FS-DCR-NT-610-PS-2000F	FieldShield microduct, 10 mm, riser, non-toneable, white, 2,000 foot spool

FieldShield®
Riser Rated 14/10 mm Microduct

Application

Simplifying the placement of fiber, while providing protection for all indoor elements, FieldShield Riser Rated 14/10 mm Microduct is specifically designed for applications requiring small pathways in confined spaces. Rugged crush resistance protects FieldShield Riser Rated 14/10 mm Microduct from the rigors of all industry standard deployment methods, while the rigid column strength allows microducts to be deployed through occupied duct previously thought to be exhausted. Riser Rated 14/10 mm Microduct has an outer diameter of 14 mm and an inner diameter of 10 mm.

Description

FieldShield Riser Rated 14/10 mm Microduct is a durable, crush resistant micro-conduit designed to increase the protection of fiber while decreasing installation and maintenance expenses. Manufactured using high density thermoplastic, FieldShield Riser Rated Microduct offers superior durability and protection.

Features and Benefits

Integrity

- Compliant to Telcordia GR-3155
- UL-2024 listed

Protection

- Quick and easy to install
- Riser Rated 10/6 mm Microduct has high tensile strength and crush resistance
- Designed for applications designated as riser air space

Access

- Industry standard beige provides high visibility for indoor installation applications in existing conduit and by itself
- Standard nylon pull string simplifies deployment of fiber
- Smooth core slip lining reduces drag co-efficient enabling fiber to be pushed or pulled with minimal resistance

Investment

- Maximizes capacity of existing conduit previously considered exhausted
- Provides industry leading protection for any indoor riser rated application

FieldShield®
Riser Rated 14/10 mm Microduct

CLEARFIELD

Technical Specifications

FieldShield Riser Rated 14/10 mm Microducts	
Length	1,500 feet per spool (-0 / +5%)
Outside Diameter	0.551" (14 mm)
Inside Diameter	0.390" (9.9 mm)
Wall Thickness	0.079" (2 mm)
Slip Layer	Minimum 0.004" (0.102 mm)
Ovality	≤ 5%
Installation Tension	340 lbf
Minimum Bend-Radius	8” radius
Material	Thermoplastic
Operating Temperature	-40°F to 176°F (-40°C to 80°C)
Installation Temperature	-14°F to 158°F (-26°C to 70°C)
Color	White
Markings	Part number, lot number, footage markers every two feet
Spool Size	12" ID x 24" OD x 20" W
Weight	96 lbs

Pre-Configured Part Numbers

Part Number	Description
FS-DCR-NT-614-PS-1500F	FieldShield microduct, 14 mm, riser, non-toneable, white, 1,500 foot spool

FieldShield®
Aerial 10/8 mm Microduct

Application

Designed to simplify the placement of fiber, FieldShield Aerial 10/8 mm Microduct is a durable 10/8 solution, protecting fiber from exposed outdoor environments. FieldShield Aerial Microduct easily integrates into pole mounted distribution terminals providing an aerial pole to pole distribution and “last mile” drop to the customer premise.

7 strands of 1.6 mm galvanized steel (twisted)

Description

FieldShield Aerial 10/8 mm Microduct is a 10 mm diameter, self-supporting (figure-8 style) microduct intended to deploy fiber the same way an aerial drop is installed. Designed to comply with North American storm and ice loading standards, the strength member makes FieldShield Aerial 10/8 mm Microduct the solution for spanning 200+ feet. The FieldShield Aerial 10/8 mm Microduct supports FieldShield Pushable Optical Fiber up to 3 mm in diameter.

Features and Benefits

Integrity

- Compliant to Telcordia GR-3155

Protection

- High crush and tension resistance protects duct from harshest environmental conditions
- Made with MDPE to prevent degradation from sun and elements

Access

- Industry standard black for high visibility in aerial applications
- External aerial strength support requires Clearfield FS-DEADEND-AD10 for dead end application
- Quick and easy to install in self-supporting aerial applications
- Smooth core with additional slip lining enables fiber to be pushed or pulled with minimal resistance
- Standard nylon pull string simplifies deployment of fiber when pulling or using a push/pull combo

Investment

- Tech-friendly deployment methods reduce installation expenses

FieldShield®
Aerial 10/8 mm Microduct

CLEARFIELD

Technical Specifications

FieldShield Aerial 10/8 mm Microduct	
Outside Diameter	0.528” (13.4 mm +/- 0.2 mm)
Inside Diameter	0.315” (8 mm)
Minimum Bend Radius	8” radius
Maximum Tensile Load	2,900 lbs
Rating Length	500 foot span in North America heavy zone
Material	MDPE
Color	Black
Figure 8 Strength Wire Material	7 x 1.6 mm stranded galvanized
Markings	Part number, lot number, footage markers every foot
Spool Size	32” OD x 24” W

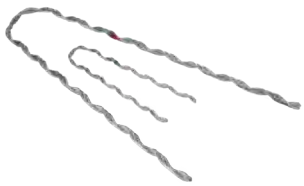
Pre-Configured Part Numbers

Part Number	Description
FS-MEA-T-810-PS-1300F	FieldShield microduct, Aerial 10/8, figure 8, black, 1,300 foot spool

Large Aerial Microduct Attachment

Description

FieldShield Large Aerial Microduct Attachment provides the quickest and easiest way to attach FieldShield Large 14/10 and 10/8 Figure-8 Microducts. Simply strip away the jacket from the support strand on the microduct to accommodate the dead end and place the attachment over the strand.



Pre-Configured Part Numbers

Part Number	Description
FS-DEADEND-AD10	Microduct, Aerial 14/10 and 10/8 Dead End, Large Cable

FieldShield®
Aerial 14/10 mm Microduct

Application

Designed to simplify the placement of fiber, FieldShield Aerial 14/10 mm Microduct is a durable 14/10 solution, protecting fiber from exposed outdoor environments. FieldShield Aerial Microduct easily integrates into pole mounted distribution terminals providing an aerial pole to pole distribution and “last mile” drop to the customer premise.

7 strands of 1.6 mm galvanized steel (twisted)

Description

FieldShield Aerial 14/10 mm Microduct is a 14 mm diameter, self-supporting (figure-8 style) microduct intended to deploy fiber the same way an aerial drop is installed. Designed to comply with North American storm and ice loading standards, the strength member makes FieldShield Aerial 14/10 mm Microduct the solution for spanning 200 feet. The FieldShield Aerial 14/10 mm Microduct supports FieldShield Pushable Optical Fiber up to 5.5 mm in diameter.

Features and Benefits

Integrity

- Compliant to Telcordia GR-3155

Protection

- High crush and tension resistance protects duct from harshest environmental conditions
- Made with HDPE to prevent degradation from sun and elements

Access

- Industry standard black for high visibility in aerial applications
- External aerial strength support requires Clearfield FS-DEADEND-AD10 for dead end application
- Quick and easy to install in self-supporting aerial applications
- Smooth core with additional slip lining enables fiber to be pushed or pulled with minimal resistance
- Standard nylon pull string simplifies deployment of fiber when pulling or using a push/pull combo

Investment

- Tech-friendly deployment methods reduce installation expenses

FieldShield®
Aerial 14/10 mm Microduct

CLEARFIELD

Technical Specifications

FieldShield Aerial 14/10 mm Microduct	
Length	3,281 feet per spool (-0 / +5%)
Outside Diameter	0.551" (14 mm +/- 0.2 mm)
Inside Diameter	0.390" (9.8 mm)
Wall Thickness	0.079" (2 mm +/- 0.2 mm)
Slip Layer	Minimum 0.004" (0.102 mm)
Span	210 feet maximum pole to pole
Ovality	≤5%
Crush Resistance	900 psi
Installation Tension	1,200 lbf
Minimum Bend-Radius	12" radius
Material	HDPE
Operating Temperature	-40°F to 176°F (-40°C to 80°C)
Installation Temperature	-14°F to 158°F (-26°C to 70°C)
Color	Black
Figure 8 Strength Wire Material	7 x 1.6 mm stranded galvanized
Markings	Part number, lot number, footage markers every foot
Spool Size	55" OD x 44" W
Weight (3,281 feet on spool)	1,036 lbs.

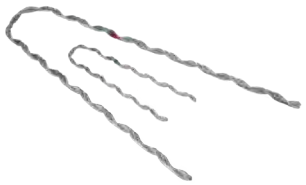
Configured Part Numbers

Part Number	Description
FS-MEA-T-814-PS-3281F	FieldShield microduct, aerial 14/10, figure-8, black, 3,281 feet
FS-MEA-T-814-PS-0625F	FieldShield microduct, aerial 14/10, figure-8, black, 625 feet
FS-MEA-T-814-PS-1250F	FieldShield microduct, aerial 14/10, figure-8, black, 1,250 feet
FS-MEA-T-814-PS-2000F	FieldShield microduct, aerial 14/10, figure-8, black, 2,000 feet

Large Aerial Microduct Attachment

Description

FieldShield Large Aerial Microduct Attachment provides the quickest and easiest way to attach FieldShield Large 14/10 and 10/8 Figure-8 Microducts. Simply strip away the jacket from the support strand on the microduct to accommodate the dead end and place the attachment over the strand.



Pre-Configured Part Numbers

Part Number	Description
FS-DEADEND-AD10	Microduct, Aerial 14/10 and 10/8 Dead End, Large Cable

FieldShield®
Duct Accessories

Rotary Duct Cutter

Description

Rotary Duct Cutters are designed to make cutting all standard microducts as simple as possible without cutting the pull string inside.

Pre-Configured Part Numbers

Part Number	Description
FS-TCUT-8-10MM	FieldShield Rotary Duct Cutter, 8 to 14 mm microducts

Duct Cutter

Description

The Duct Cutter is used to make a clean, flat cut on any Clearfield® microduct products. It resembles a cigar cutter in that it has a fixed blade that is attached to a hinged mechanism to “cleave” the duct. This provides a clean cut that is suitable for insertion into a coupler. Care should be taken when handling the cutter as the blade is very sharp.

Pre-Configured Part Numbers

Part Number	Description
FS-DCUT-8-10MM	FieldShield Duct Cutter, 8 mm to 14 mm microducts

De-Burring Tool

Description

Microduct De-Burring Tools are designed to make chamfering the inside of microducts simple, helping to ensure pushing and pulling are smooth operations. It is used after a cut has been made to the microduct and prior to inserting a cut microduct into a coupler. The purpose of the de-burring tool is to form a conical shape on the inside surface of the microduct that, after insertion into a coupler, allows the fiber to glide between microducts with ease.

Pre-Configured Part Numbers

Part Number	Description
FS-MD-DBR-TOOL	FieldShield Microduct De-Burring Tool, 8 mm to 10 mm, blue

FieldShield®
Duct Accessories

CLEARFIELD

Airtight Coupler

Description

Airtight Couplers are designed to provide simple, 2-click plug-and-play joining of microducts, enabling longer runs and safe pushing and pulling performance.

Pre-Configured Part Numbers

Part Number	Description
FS-CPLR-7MM-7MM-10	FieldShield Microduct Airtight Coupler, 7 mm to 7 mm, 10 pack
FS-CPLR-8MM-8MM-10	FieldShield Microduct Airtight Coupler, 8 mm to 8 mm, 10 pack
FS-CPLR-10MM-10MM-10	FieldShield Microduct Airtight Coupler, 10 mm to 10 mm, 10 pack
FS-CPLR-12.7MM-12.7MM-10	FieldShield Microduct Airtight Coupler, 12.7 mm to 12.7 mm, 10 pack
FS-CPLR-14MM-14MM-10	FieldShield Microduct Airtight Coupler, 14 mm to 14 mm, 10 pack

Airtight Transition Coupler

Description

Airtight Transition Couplers are used to join two different sizes of microduct.

Pre-Configured Part Numbers

Part Number	Description
FS-CPLR-8MM-10MM-10	FieldShield Microduct Airtight Transition Coupler, 8 mm to 10 mm, 10 pack
FS-CPLR-10MM-12.7MM-10	FieldShield Microduct Airtight Transition Coupler, 10 mm to 12.7 mm, 10 pack
FS-CPLR-12.7MM-14MM-10	FieldShield Microduct Airtight Transition Coupler,12.7 mm to 14 mm, 10 pack

End Cap

Description

End caps are airtight caps used to keep debris out of the end of the microduct when pulling duct through existing conduit and plowed holes, sealing the end of the conduit temporarily. The end cap is a clear cap that installs much like the couplers providing an airtight seal.

Pre-Configured Part Numbers

Part Number	Description
FS-END-STP-10MM-10	FieldShield Microduct End Caps, 10 mm, 10 pack
FS-END-STP-12.7MM-10	FieldShield Microduct End Caps, 12.7 mm, 10 pack
FS-END-STP-14MM-10	FieldShield Microduct End Caps, 14 mm, 10 pack

FieldShield®
Duct Accessories

Microduct Field Repair Kit

Description

There are many situations where two microducts need to be coupled together to continue the conduit pathway. Regardless of whether the microduct was cut after initial installation or if the duct pathway simply needs to be continued, the FieldShield Microduct Repair Kit provides all the components to properly couple two microducts. For toneable duct, the kit includes components to ensure tone wire circuit integrity for ground locating.

Pre-Configured Part Numbers

Part Number	Description
FS-MD-FLD-RPR-KIT-7MM	FieldShield Microduct Field Repair Kit, 7 mm
FS-MD-FLD-RPR-KIT	FieldShield Microduct Field Repair Kit, 10 mm
FS-MD-FLD-RPR-KIT-14MM	FieldShield Microduct Field Repair Kit, 14 mm

Microduct Pulling Carrots

Description

The FieldShield Microduct Pulling Carrot screws into the inner bore of the duct and provides an attachment point to direct bury FieldShield Microducts to pull them through existing conduit systems.

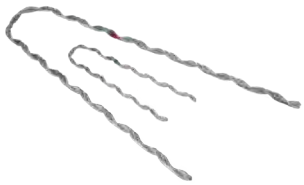
Pre-Configured Part Numbers

Part Number	Description
FS-PUL-CRT-6MM-M	FieldShield Microduct Pulling Carrot, 6 mm ID, metal, with string tie on
FS-PUL-CRT-10MM-M	FieldShield Microduct Pulling Carrot, 10 mm ID, metal, with string tie on

Aerial Microduct Attachment

Description

The Aerial Microduct Attachments provide a quick and easy way to attach FieldShield Aerial figure-8 style microducts. Strip away the jacket from the support strand on the microduct to accommodate the dead end or aerial splice and wrap the attachment onto the strand for a secure and permanent installation.



Pre-Configured Part Numbers

Part Number	Description
FS-DEADEND	FieldShield Aerial Microduct Attachment, dead end
FS-DEADEND-AD10	FieldShield Aerial Microduct Attachment, large cable
FS-AERIAL-SPLICE	FieldShield Aerial Microduct Attachment, open wire splice, galvanized, BWG-10 0.134” x 14”

Introduction to Fiber Cable Assemblies

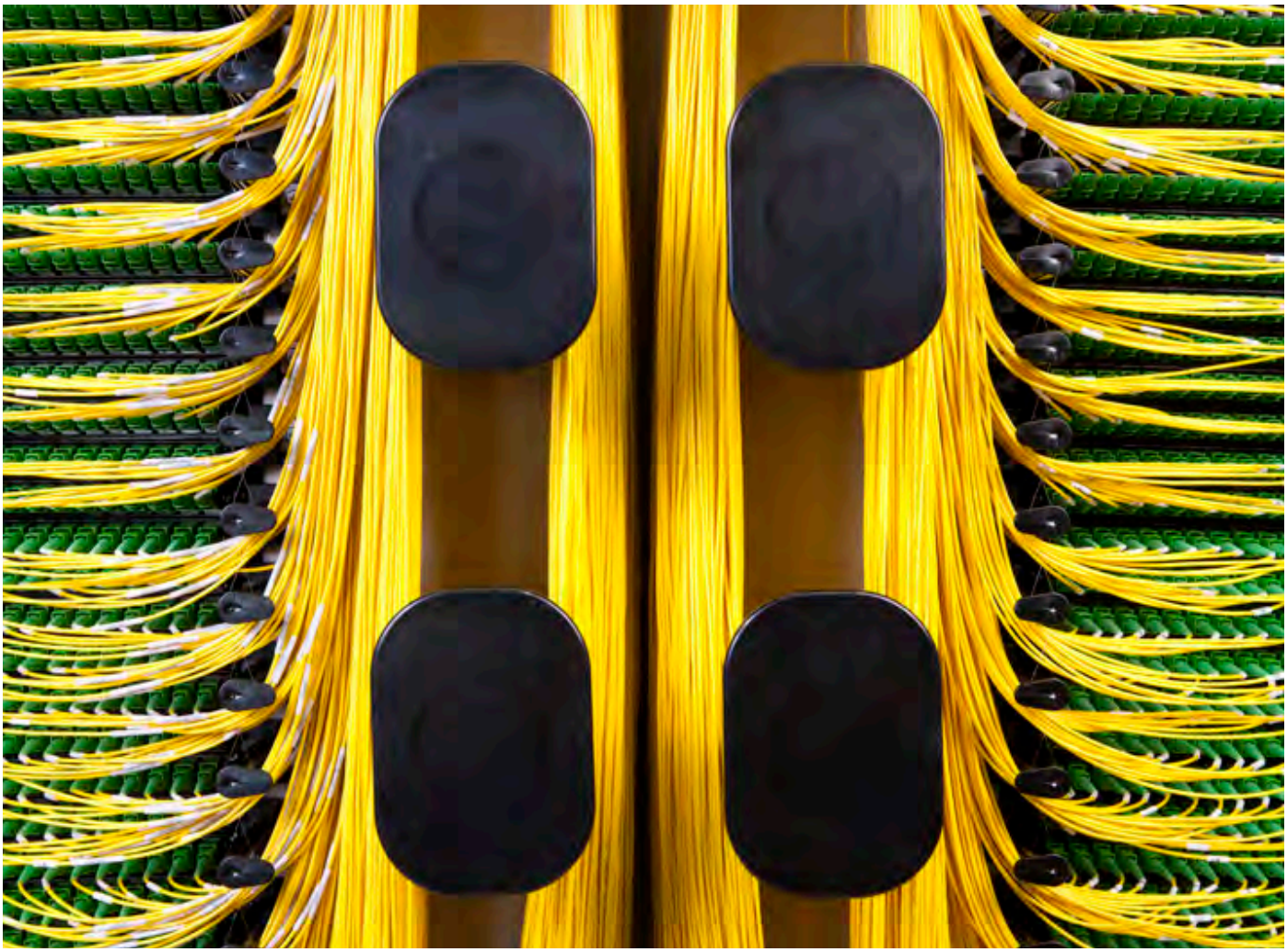
FiberDeep® and Cable Assemblies

Combining 40+ years of experience from its founding members, Clearfield® designs and manufactures fiber optic cable assemblies for virtually any application. Our connectivity expertise, coupled with a personalized approach, gives our customers a level of service and quality that out performs all other manufactures.

FiberDeep®, a guaranteed 0.2 dB loss, half that of the industry standard, is available on every singlemode simplex and duplex fiber optic patch cord and ribbon fan-outs deployed within the Clearview® Cassette. Our FiberDeep cable assemblies improve your fiber network's performance while reducing the cost of deployment. No matter what kind of traffic your network carries, the success of your business comes down to the quality of your cable plant.

Simply the best patch cords around, Clearfield offers cable assemblies in custom and standard lengths, ranging from simple multimode and singlemode patch cords, to some of the most complex assemblies for inside and outside plant environments, including distribution cable, OSP breakout-style, drop cable and drop node assemblies. Automated polishing processes ensure precise control of polish radius, apex offset and fiber undercut. Our process engineers have perfected termination techniques for all types of specialty cable designs, including ribbon fiber, high-fiber counts and ruggedized cables. We support all industry standard connector types, including the industry's latest hardened fiber optic connectors (HFOC).

Clearfield cable assemblies are used in the most demanding environments, from global manufacturing to emerging communications. Clearfield fiber optic cable assemblies exceed industry standards for insertion loss and return loss performance. Our controlled design processes pay strict attention to cable prep, termination and epoxy curing along with tight end-face geometries. Our cleanliness is second to none. We can design and manufacture fiber optic cable assemblies for almost any application, meeting your requirements for cost, performance, reliability and rapid delivery.



Fiber Cable Assemblies

Indoor Fiber Jumper Cables

Application

A fiber jumper, sometimes called a fiber patch cord, is a length of fiber cabling fitted with connectors at each end. They are used to connect end devices or network hardware.

Description

Clearfield® offers singlemode and multimode, simplex and duplex Indoor Fiber Jumper Cables manufactured to tight internal specifications that exceed industry-accepted standards. Fiber assemblies are used in a variety of carrier networks and private network environments. The key to manufacturing high-performance fiber assemblies is controlling polish radius, apex offset and fiber undercut. Clearfield monitors its automated polishing process to exceed industry specifications for insertion and return loss, ensuring a top-quality product.

Features and Benefits

Integrity

- Terminations are designed and tested to Telcordia GR-326
- Clearfield® FiberDeep® Guarantee: 0.2 dB insertion loss or less, exceeding industry standards
- Supports industry standard singlemode and multimode connectors
- Singlemode and multimode and hybrid cables available

Protection

- Each fiber is individually covered with an outer jacket for added protection
- Wide variety of jacket sizes for all applications, 3 mm, 2 mm, 1.6 mm, 1.2 mm, 900 µm
- Riser and Plenum rated jacket options available
- Available in simplex, dual-round and dual zip-cord configurations

Access

- Compact jacket design minimizes cable pile up
- Industry standard terminations include ST, SC, FC, LC (ask a Clearfield representative for other connector availability)

Investment

- Indoor Jumper Assemblies offer an economical solution for deploying fiber in any optical network
- Environmentally stable, low-insertion loss, minimal back reflection
- All assemblies are 100% tested

Technical Specifications

Indoor Fiber Jumper Cables	
Core Size and Type	Singlemode and multimode
Fiber Count	Simplex (1-fiber) and duplex (2-fiber)
Jacket O.D.	900 µm, 1.6 mm, 2.0 mm, 3.0 mm
Cable Types	Indoor Riser, Indoor Plenum
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC, FC/UPC, FC/APC, ST/UPC
Operating Temperature	-40°C to 85°C (-40°F to 185°F)

Fiber Cable Assemblies

Indoor Fiber Jumper Cables

CLEARFIELD

Minimum Performance Specifications for Terminated Singlemode Connectors

Connector Type	Ferrule Material	Polish Type	Ins. Loss, Typical	Max. Ins. Loss	Min. Ret. Loss
ST	Ceramic	UPC	0.15 dB	0.20 dB	55.00 dB
SC	Ceramic	UPC	0.15 dB	0.20 dB	55.00 dB
FC	Ceramic	UPC	0.15 dB	0.20 dB	55.00 dB
LC	Ceramic	UPC	0.15 dB	0.20 dB	55.00 dB
SC	Ceramic	APC	0.15 dB	0.20 dB	65.00 dB
FC	Ceramic	APC	0.15 dB	0.20 dB	65.00 dB
LC	Ceramic	APC	0.15 dB	0.20 dB	65.00 dB

Minimum Performance Specifications for Terminated Multimode Connectors

Connector Type	Ferrule Material	Polish Type	Ins. Loss, Typical	Max. Ins. Loss
ST	Ceramic	PC	0.25 dB	≤ 0.50 dB
SC	Ceramic	PC	0.25 dB	≤ 0.50 dB
FC	Ceramic	PC	0.25 dB	≤ 0.50 dB
LC	Ceramic	PC	0.25 dB	≤ 0.50 dB

Configured Part Numbers

P ____ ____ - ____ ____ ____ - ____ ____ ____ - ____ ____ ____ XXXM or XXXF

1 2 3 4 5 6 7 8 9

1 Select Cable Construction

A = Indoor, riser rated
C = Indoor, plenum
F = 900 µm tight buffer

2 Select Mode / Type

1 = Singlemode
3 = Multimode (62.5)
5 = Multimode (50) – non-ribbon
7 = Multimode (50) laser opt– non-ribbon OM
9 = Multimode (50) OM4

3 Select Fiber Count

001 = Simplex
002 = Duplex

4 Select Connector # 2

A = SC/UPC
B = SC/UPC DX
C = SC/APC
D = SC/APC DX
E = LC/UPC
F = LC/UPC DX
G = LC/APC
H = LC/APC DX
J = FC/UPC
K = FC/APC
M = ST/UPC

5 Select Boot

Y = Short
Z = Standard

6 Select Jacket Size

A = 900 µm
B = 2 mm
D = 3 mm
E = 1.6 mm

7 Select Connector # 1

A = SC/UPC
B = SC/UPC DX
C = SC/APC
D = SC/APC DX
E = LC /UPC
F = LC/UPC DX
H = LC/APC DX
G = LC/APC
J = FC/UPC
K = FC/APC
M = ST/UPC
Z = Pigtail

8 Select Boot

Y = Short
Z = Standard

9 Select Jacket Size

A = 900 µm
B = 2 mm
(must match the # 6 option)
D = 3 mm
E = 1.6 mm

XXXM or XXXF

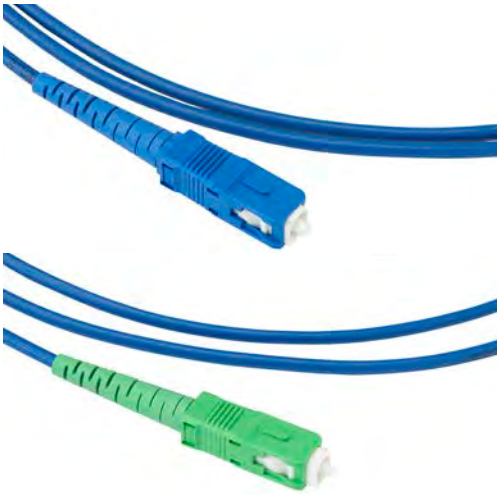
XXXM = Length in meters
XXXF = Length in feet

Fiber Cable Assemblies

Indoor Bend-Insensitive Fiber Jumper Cables

Application

A fiber jumper, sometimes called a fiber patch cord, is a length of fiber cabling fitted with connectors at each end. They are used to connect end devices or network hardware.



Description

Indoor Bend-Insensitive Fiber Jumper Cables are used in a variety of carrier networks and private network environments. The key to manufacturing high-performance fiber assemblies is controlling polish radius, apex offset and fiber undercut. Clearfield® monitors its automated polishing process to exceed industry specifications for insertion and return loss, ensuring a top-quality product.

Features and Benefits

Integrity

- Terminations are designed and tested to Telcordia GR-326
- Clearfield® FiberDeep® Guarantee: 0.2 dB insertion loss or less, exceeding industry standards
- Supports industry standard singlemode connectors
- Singlemode G.657.A1 and A2 bend-insensitive glass fiber

Protection

- Riser and Plenum rated bend-insensitive jacket options available
- Available in simplex, dual-round and dual zip-cord configurations

Access

- Compact jacket design minimizes cable pile up
- Industry standard terminations include ST, SC, FC, LC (ask a Clearfield representative for other connector availability)

Investment

- Indoor Bend-Insensitive Fiber Jumper Cables offer an economical solution for deploying fiber in any optical network
- Environmentally stable, low-insertion loss, minimal back reflection
- All assemblies are 100% tested

Fiber Cable Assemblies

Indoor Bend-Insensitive Fiber Jumper Cables

CLEARFIELD

Technical Specifications

Indoor Bend-Insensitive Fiber Jumper Cables	
Core Size and Type	Singlemode (G.657.A1 and G.657.A2)
Fiber Count	Simplex (1-fiber) and duplex (2-fiber)
Jacket O.D.	2.0 mm
Cable Types	Indoor Riser
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC, FC/UPC, FC/APC, ST/UPC
Operating Temperature	-40°C to 85°C (-40°F to 185°F)

Minimum Performance Specifications for Terminated Singlemode Connectors

Connector Type	Ferrule Material	Polish Type	Ins. Loss, Typical	Max. Ins. Loss	Min. Ret. Loss
ST	Ceramic	UPC	0.15 dB	0.20 dB	55.00 dB
SC	Ceramic	UPC	0.15 dB	0.20 dB	55.00 dB
FC	Ceramic	UPC	0.15 dB	0.20 dB	55.00 dB
LC	Ceramic	UPC	0.15 dB	0.20 dB	55.00 dB
SC	Ceramic	APC	0.15 dB	0.20 dB	65.00 dB
FC	Ceramic	APC	0.15 dB	0.20 dB	65.00 dB
LC	Ceramic	APC	0.15 dB	0.20 dB	65.00 dB

Configured Part Numbers

P A A - ___ - ___ ___ ___ - ___ ___ ___ XXXM or XXXF

1 2 3 4 5 6 7

1 Select Fiber Count

001 = Simplex
002 = Duplex

2 Select Connector # 1

A = SC/UPC
C = SC/APC
E = LC/UPC
G = LC/APC
J = FC/UPC
K = FC/APC
M = ST/UPC

3 Select Boot Length

Y = Short boot
Z = Standard boot

4 Select Jacket Size

B = 2 mm

5 Select Connector # 2

A = SC/UPC
C = SC/APC
E = LC/UPC
G = LC/APC
J = FC/UPC
K = FC/APC
M = ST/UPC
Z = Pigtail

6 Select Boot Length

Y = Short boot
Z = Standard boot or pigtail

7 Select Jacket Size*

B = 2 mm

XXXM or XXXF

XXXM = Length in meters
XXXF = Length in feet

* must match the # 4 option

Fiber Deep

Fiber Cable Assemblies

Indoor Traceable Fiber Jumper Cables

Application

The Indoor Traceable Fiber Jumper Cable is an effective solution for eliminating interconnect errors in dense interconnect environments. The traceable light identification will eliminate accidentally unplugging or moving the wrong jumper. Whether it is coming from the back of the equipment rack to the front or from one cross-connect panel to another, the Traceable Jumper Cable uses a positive light indication to quickly identify the opposite end of the assembly. The added value of eliminating the outages, due to incorrectly identifying jumpers and the time saved being able to quickly find the correct jumper, is important in today's demanding market.

Description

The traceability of the jumper gives a value-add functionality for simple fiber patch cord jumpers. Having the ability to trace the other end of the assembly with an easy to find highly visible red LED eliminates the chance of accidentally unplugging or moving the wrong jumper. This is a must in high density environments like central offices, CATV head ends, and cellular sites, anywhere cable congestion can create a challenge when identifying and tracing patch cords.

Features and Benefits

Integrity

- Terminations are designed to Telcordia GR-326
- Insertion loss and back reflection meets or exceeds industry standards
- Supports industry standard Singlemode and Multimode connectors
- Available for Singlemode and Multimode Simplex and Duplex Cables

Protection

- Each fiber is individually covered with an outer jacket for added protection
- Wide variety of jacket sizes for all applications: 3 mm, 2 mm
- Riser and plenum rated jacket options available
- Individually packaged and labeled

Access

- Compact jacket design minimizes cable pile up
- Industry standard terminations include SC/UPC, SC/APC, LC/UPC, LC/APC
- High intensity red LED light source used for identification

Investment

- Offers a sound solution for reducing unexpected outages due to human error and reduces labor costs by quickly identifying the correct assembly right away the first time
- Environmentally stable, low-insertion loss, minimal back reflection
- All assemblies are tested 100%

Fiber Cable Assemblies

Indoor Traceable Fiber Jumper Cables

Technical Specifications

Indoor Traceable Fiber Jumper Cables	
Core Size	Singlemode, Multimode
Fiber Count	Simplex (1-fiber) and Duplex (2-fiber)
Jacket Outer Diameter	2.0 mm, 3.0 mm
Cable Types	Indoor Riser, Indoor Plenum
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC
Operating Temperature	-20°C to 70°C (-4°F to 158°F)

Minimum Performance Specifications for Terminated Singlemode Traceable Connectors

Connector Type	Ferrule Material	Polish Type	Ins. Loss, Typical	Max. Ins. Loss	Min. Ret. Loss
SC	Ceramic	UPC	0.20 dB	0.30 dB	55.00 dB
LC	Ceramic	UPC	0.20 dB	0.30 dB	55.00 dB
SC	Ceramic	APC	0.20 dB	0.30 dB	65.00 dB
LC	Ceramic	APC	0.20 dB	0.30 dB	65.00 dB

Minimum Performance Specifications for Terminated Multimode Traceable Connectors

Connector Type	Ferrule Material	Polish Type	Ins. Loss, Typical	Max. Ins. Loss
SC	Ceramic	UPC	0.25 dB	0.50 dB
LC	Ceramic	UPC	0.25 dB	0.50 dB

Configured Part Numbers

P 2 ___ - ___ ___ ___ - ___ Z ___ - ___ Z ___ XXXM, XXXF or XXXI

[1] [2] [3] [4] [5] [6]

[1] Select Mode and Type

1 = Singlemode
A = BI Singlemode
3 = 62.5 µm OM1
5 = 50 µm LO OM2
7 = 50 µm LO OM3
9 = 50 µm OM4

[2] Select Fiber Count

001 = 1
002 = 2

[3] Select Connector #1

A = SC/UPC
B = SC/UPC DX
C = SC/APC
D = SC/APC DX
E = LC/UPC
F = LC/UPC DX
G = LC/APC
H = LC/APC DX

[4] Select Upjacketing

B = 2 mm
D = 3 mm

[5] Select Connector #2

A = SC/UPC
B = SC/UPC DX
C = SC/APC
D = SC/APC DX
E = LC/UPC
F = LC/UPC DX
G = LC/APC
H = LC/APC DX

[6] Select Upjacketing

B = 2 mm
D = 3 mm

XXXM, XXXF or XXXI

XXXM = Length in meters
XXXF = Length in feet
XXXI = Length in inches

Fiber Cable Assemblies

Outdoor Ruggedized Fiber Jumper Cables

Application

These jumpers are ideal when splicing FTTH drops in the ONT/NID. Indoor cordage stiffens and retains cable memory in cold weather. These jumpers remain flexible even in extreme conditions. These assemblies use bend-insensitive fiber to help eliminate bend-radius issues inside the NID. These patch cords also work well in outside plant cross-connect cabinets.

Description

Clearfield® Outdoor Ruggedized Fiber Jumper Cables can be ordered in any industry standard connector type. Any length in feet or meters is available.

Features and Benefits

Integrity

- Terminations are designed and tested to Telcordia GR-326
- Clearfield® FiberDeep® Guarantee: 0.2 dB insertion loss or less, exceeding industry standards
- Supports industry standard singlemode connectors
- Singlemode bend-insensitive ITU standard G.657.A glass fiber

Protection

- Uses Ruggedized OSP rated 2 mm black jacketed cable
- Patch cords remain flexible and durable in extreme temperatures of -55°C to 85°C (-67°F to 185°F)

Access

- Compact jacket design minimizes cable pile up
- Industry standard terminations include ST, SC, FC, LC (ask a Clearfield representative for other available connectors)

Investment

- Outdoor Ruggedized Fiber Jumper Cables offer an economical solution for deploying fiber in any OSP optical network
- Environmentally stable, low-insertion loss, minimal back reflection
- All assemblies are 100% tested

Recommendation

Clearfield recommends the use of Ruggedized Outside Plant Jumpers when splicing in the NID or ONT. We also suggest two meter jumpers for use in FieldSmart® cabinet applications. Clearfield stocks common length SC/APC Ruggedized Jumpers for customer convenience. For non-standard lengths, lead times will apply.

Fiber Cable Assemblies

Outdoor Ruggedized Fiber Jumper Cables

CLEARFIELD

Technical Specifications

Outdoor Ruggedized Fiber Jumper Cables	
Core Size and Type	Singlemode (G.657.A1)
Fiber Count	Simplex (1-fiber)
Jacket O.D.	2.0 mm
Cable Types	Outdoor - Ruggedized Polyurethane
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC, FC/UPC, FC/APC, ST/UPC
Operating Temperature	-40°C to 85°C (-40°F to 185°F)

Minimum Performance Specifications for Terminated Singlemode Connectors

Connector Type	Ferrule Material	Polish Type	Ins. Loss, Typical	Max. Ins. Loss	Min. Ret. Loss
ST	Ceramic	UPC	0.15 dB	0.20 dB	55.00 dB
SC	Ceramic	UPC	0.15 dB	0.20 dB	55.00 dB
FC	Ceramic	UPC	0.15 dB	0.20 dB	55.00 dB
LC	Ceramic	UPC	0.15 dB	0.20 dB	55.00 dB
SC	Ceramic	APC	0.15 dB	0.20 dB	65.00 dB
FC	Ceramic	APC	0.15 dB	0.20 dB	65.00 dB
LC	Ceramic	APC	0.15 dB	0.20 dB	65.00 dB

Configured Part Numbers

P E A - 0 0 1 - ___ Z ___ - ___ Z ___ XXXM or XXXF

1 2 3 4

1 Select Connector # 1

A = SC/UPC
C = SC/APC
E = LC/UPC
G = LC/APC
J = FC/UPC
K = FC/APC
M = ST/UPC

2 Select Jacket Size *

B = 2 mm

3 Select Connector # 2

A = SC/UPC
C = SC/APC
E = LC/UPC
G = LC/APC
J = FC/UPC
K = FC/APC
M = ST/UPC
Z = Pigtail

4 Select Jacket Size *

B = 2 mm
Z = Pigtail

XXXM or XXXF

XXXM = Length in meters
XXXF = Length in feet

* Options 2 and 4 must be the same unless the assembly is a pigtail.
NOTE: OSP, ruggedized patchcords and pigtails come standard with bend insensitive fiber.

Fiber Deep

Fiber Cable Assemblies

MPO Assemblies

Application

MPO Assemblies are multi-fiber cables terminated into multi-fiber connectors. These cables can be used in indoor or outdoor applications. MPO terminations offer great plug-and-play solutions. Using MPO multi-fiber assemblies can eliminate termination and splicing in the field, which in turn reduces the expense of deployment. MPO assemblies offer a very high density solution that reduces your network's overall footprint, which is especially beneficial in central office, headend and data center locations.

Description

Clearfield® offers singlemode and multimode MPO fiber assemblies that are manufactured to tight specifications that exceed industry standards. MPO Assemblies are used in a variety of carrier networks, private networks and data center environments. Clearfield's manufacturing process and quality control ensures a top-quality product for insertion loss and return loss.

Features and Benefits

Integrity

- Terminations are designed and tested to meet TIA/EIA and IEC intermateability standards
- Supports Singlemode and Multimode cables and connectors
- 4, 8, 12 and 24 fiber terminations available (custom configurations available)
- Assemblies terminated MPO to MPO, MPO to non-terminated stub and MPO to multi-fiber breakout terminated with industry standard SC, LC, FC and ST
- RoHS compliant

Protection

- Using outdoor and indoor plenum and riser rated fiber cables MPO assemblies can be installed just about anywhere
- MPO connectors can be terminated directly to bare fiber ribbon, loose-tube and up-jacketed cable
- Pulling-eye kits available to protect the terminated ends and will reduce deployment time and cost

Access

- Compact multi-fiber connectors reduce cabinet and panel size
- Factory terminated MPO assemblies eliminate the need for termination and splicing in the field
- Custom fiber pin-out configurations available upon request

Investment

- MPO Assemblies offer an economical solution for deploying fiber in any optical network
- Environmentally stable, low-insertion loss, minimal back reflection
- All assemblies are 100% tested

Fiber Cable Assemblies

MPO Assemblies

Technical Specifications

MPO Assemblies	
Core Size and Type	Singlemode and multimode
Fiber Count	4, 6, 8, 12 and 24-fiber MPO terminations on multi-fiber cables
Jacket O.D.	Bare ribbon, flat and round jacketed ribbon or loose tube
Cable Types	Indoor (Riser/Plenum), Outdoor (Riser/Non-Rated)
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC, FC/UPC, FC/APC, ST/UPC, MPO (male and female)
Operating Temperature	-40°C to 85°C (-40°F to 185°F)
Breakout Length	Half meter, one meter, pulling eye, custom

Minimum Performance Specifications for Terminated MPO Connectors

Fiber	Connector Type	Polish Type	Ins. Loss, Typical	Max. Ins. Loss	Min. Ret. Loss
Singlemode	MPO 12 Fiber	Angled	0.25 dB	0.35 dB	55.00 dB
Singlemode	MPO 24 Fiber	Angled	0.75 dB	1.00 dB	55.00 dB
Multimode	MPO 12 Fiber	Flat	0.40 dB	0.50 dB	25.00 dB
Multimode	MPO 24 Fiber	Flat	0.75 dB	1.00 dB	25.00 dB

Configured Part Numbers

D ___ ___ - ___ ___ ___ - ___ ___ Z - ___ ___ ___ XXXM or XXXF

1 2 3 4 5 6 7 8

1 Select Jacket Construction

A = Indoor, riser rated (IFC)
C = Indoor, plenum (IFC)

2 Select Mode / Type

1 = Singlemode
A = Singlemode – bend insensitive
3 = Multimode (62.5 µm)
5 = Multimode (50 µm)
7 = Multimode (50 µm) laser opt.
9 = Multimode (50 µm) OM4

3 Select Fiber Count

004 = 4
008 = 8
024 = 24
006 = 6
012 = 12

4 Select Connector #1

5 = MPO male
6 = MPO female
N = Pushable MPO male
P = Pushable MPO female

5 Select Breakout #1

C = 0.5 meters
Z = None

6 Select Connector #2

5 = MPO male
A = SC/UPC
E = LC/UPC
J = FC/UPC
M = ST/UPC
P = Pushable MPO female
6 = MPO female
C = SC/APC
G = LC/APC
K = FC/APC
N = Pushable MPO male
Z = Pigtail

7 Select Breakout #2

B = 1 meter
C = 0.5 meter
Z = None

8 Select Upjacketing #2

A = 900 µm
B = 2 mm
Z = Pigtail

XXXM or XXXF

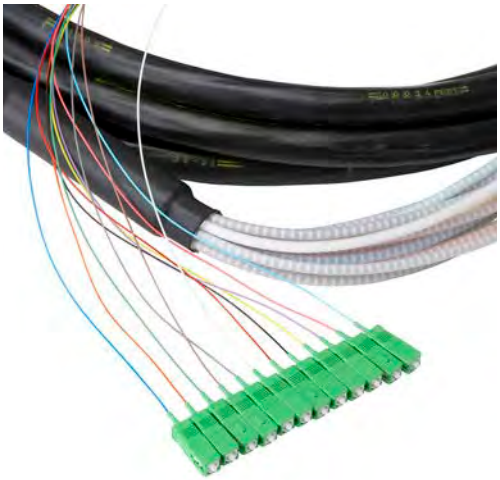
XXXM = Length in meters
XXXF = Length in feet

Fiber Cable Assemblies

Outside Plant Fiber Assemblies

Application

Clearfield® Outside Plant Fiber Assemblies are used in a variety of applications including DLC cabinets, PON cabinets, cross-connect cabinets and fiber termination panels. Standard OSP cable is used and the terminated end of the assembly is up-jacketed with either 900 µm or 2 mm tubing. The assembly is then terminated with the required connectors. Fiber counts can be from 2 to 288 fibers.



Description

Clearfield OSP Fiber Assemblies are designed to perform flawlessly in even the most harsh environments. Our process and design directly addresses failure prone areas such as the transition (where the fiber is broken out into individual units) and at the termination. We use a patented process in the fiber transition that not only protects the fiber but also ensures that no lateral movement occurs due to temperature variations. Standard breakouts are half meter and one meter. Clearfield can also do custom breakouts to meet your unique panel needs.

Features and Benefits

Integrity

- Terminations are designed and tested to Telcordia GR-326
- Specialty cable designs available including ribbon fiber, loose-tube and ADSS (All-Dielectric Self-Supporting)
- Supports industry standard singlemode and multimode fiber

Protection

- Rugged cable design protects against harsh outdoor environment
- Wide variety of up-jacket sizes for all applications, ruggedized 3 mm, 2 mm, 1.6 mm and 900 µm
- Loose tube available in a gel-filled design for full water-block or gel-free
- All dielectric design (except armored cable)
- Pulling-eye available to ease installation and for added protection

Access

- Industry standard terminations include ST, SC, FC, LC (ask a Clearfield representative for other connector availability)
- Versatile cable designs well suited for in-conduit, lashed aerial and direct buried applications
- Fiber counts from two to 288 in loose tube or ribbon cables (higher fiber counts available)

Investment

- Outside Plant Fiber Assemblies offer a rugged solution for deploying fiber in any OSP optical network
- Environmentally stable, low-insertion loss, minimal back reflection
- All assemblies are 100% tested

Recommendation

When designing a patch cord (double-ended assembly) that will be pulled through conduit a pulling eye may be a good solution. Any assembly with 24 fibers or less can be fitted with a pulling eye.

Technical Specifications

Outside Plant Fiber Assemblies	
Core Size and Type	Singlemode and multimode
Fiber Count	2-fiber to 288-fiber
Jacket O.D.	900 µm, 2.0 mm (48-fiber max)
Cable Types	Outdoor (Riser/Non-Rated), Outdoor Armored (Riser/Non-Rated)
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC, FC/UPC, FC/APC, ST/UPC, MPO
Operating Temperature	-40°C to 85°C (-40°F to 185°F)
Breakout Length	Half meter, one meter, pulling eye, custom

Fiber Cable Assemblies

Outside Plant Fiber Assemblies

CLEARFIELD

Minimum Performance Specifications for Terminated Singlemode Connectors

Connector Type	Ferrule Material	Polish Type	Ins. Loss, Typical	Max. Ins. Loss	Min. Ret. Loss
ST	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
SC	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
FC	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
LC	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
SC	Ceramic	APC	0.20 dB	0.30 dB	65.00 dB
FC	Ceramic	APC	0.20 dB	0.30 dB	65.00 dB
LC	Ceramic	APC	0.20 dB	0.30 dB	65.00 dB

Minimum Performance Specifications for Terminated Multimode Connectors

Connector Type	Ferrule Material	Polish Type	Ins. Loss, Typical	Max. Ins. Loss
ST	Ceramic	PC	0.25 dB	≤ 0.50 dB
SC	Ceramic	PC	0.25 dB	≤ 0.50 dB
FC	Ceramic	PC	0.25 dB	≤ 0.50 dB
LC	Ceramic	PC	0.25 dB	≤ 0.50 dB

Configured Part Numbers

O ___ ___ - ___ ___ ___ - ___ ___ ___ - ___ ___ ___ XXXM or XXXF

[1] [2] [3] [4] [5] [6] [7] [8] [9]

[1] Select Cable Construction

B = OSP, riser rated
E = OSP, non-rated
M = OSP, armored, non-rated

[2] Select Mode / Type

1 = Singlemode, loose tube
2 = Singlemode, ribbon
3 = Multimode (62.5) loose tube
4 = Multimode (62.5) ribbon
5 = Multimode (50 µm) loose tube
6 = Multimode (50 µm) ribbon
7 = Multimode (50 µm LO) loose tube
8 = Multimode (50 µm LO) ribbon

[3] Select Fiber Count *

X X X = port count in increments of 12

* Some fiber counts including fiber quantities not divisible by 12 may be built with the next highest fiber count cable (i.e. – A 60-fiber assembly may be built using a 72-count fiber where the 1st 60 fiber will be terminated and the final 12 fibers will be cut off at the breakout point.

[4] Select Connector # 1

A = SC/UPC
C = SC/APC
E = LC/UPC
G = LC/APC
J = FC/UPC
K = FC/APC
M = ST/UPC
5 = MPO male
6 = MPO female

[5] Select Breakout # 1

B = 1 meter
C = 0.5 meter

[6] Select Upjacketing # 1

A = 900 µm
B = 2 mm (only up to 48 fiber)

[7] Select Connector # 2

A = SC/UPC
C = SC/APC
E = LC/UPC
G = LC/APC
J = FC/UPC
K = FC/APC
M = ST/UPC
5 = MPO male
6 = MPO female

[8] Select Breakout # 2

B = 1 meter
C = 0.5 meter
Z = Pigtail

[9] Select Upjacketing # 2

A = 900 µm
B = 2 mm (only up to 48 fiber)
Z = Pigtail

XXXM or XXXF

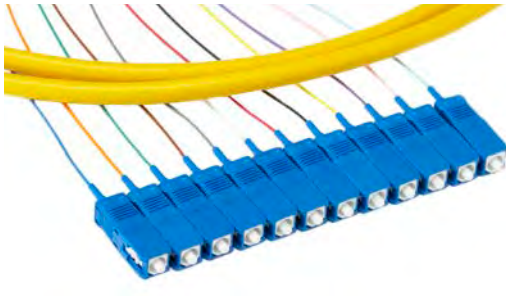
XXXM = Length in meters
XXXF = Length in feet

Fiber Cable Assemblies

Distribution Assemblies

Application

Distribution assemblies are used for applications inside buildings and central offices. These cables utilize a 900 µm tight buffer jacket and are available in plenum and riser versions.



Description

Clearfield® Distribution Assemblies are used where multi-fiber tight buffered constructions are required for density. These assemblies combine the bandwidth capacity of individual cable assemblies in one easy-to-use assembly, and can be used in OSP patch and splice (Clearfield's in-cassette splicing solution) applications.

Features and Benefits

Integrity

- Terminations are designed and tested to Telcordia GR-326
- Supports Industry standard singlemode and multimode connectors
- Singlemode and multimode and hybrid cables available

Protection

- Each fiber is individually jacketed then covered with an outer jacket for added protection
- All fibers are color coded using industry fiber color code
- Pulling-eye kits available to speed installation

Access

- Compact jacket design keeps cable pile up minimal
- Industry standard terminations include ST, SC, FC, LC (Ask a Clearfield representative for other connector availability)

Investment

- Distribution Assemblies offer an economical solution for deploying fiber in any optical network
- Environmentally stable, low-insertion loss, minimal back reflection
- All assemblies are 100% tested

Technical Specifications

Distribution Assemblies	
Core Size and Type	Singlemode and multimode
Fiber Count	2-fiber to 144-fiber
Jacket O.D.	900 µm
Cable Types	Indoor Riser, Indoor Plenum
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC, FC/UPC, FC/APC, ST/UPC, MPO
Operating Temperature	-40°C to 85°C (-40°F to 185°F)
Breakout Length	Half meter, one meter, pulling eye, custom

Fiber Cable Assemblies

Distribution Assemblies

CLEARFIELD

Minimum Performance Specifications for Terminated Singlemode Connectors

Connector Type	Ferrule Material	Polish Type	Ins. Loss, Typical	Max. Ins. Loss	Min. Ret. Loss
ST	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
SC	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
FC	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
LC	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
SC	Ceramic	APC	0.20 dB	0.30 dB	65.00 dB
FC	Ceramic	APC	0.20 dB	0.30 dB	65.00 dB
LC	Ceramic	APC	0.20 dB	0.30 dB	65.00 dB

Minimum Performance Specifications for Terminated Multimode Connectors

Connector Type	Ferrule Material	Polish Type	Ins. Loss, Typical	Max. Ins. Loss
ST	Ceramic	PC	0.25 dB	≤ 0.50 dB
SC	Ceramic	PC	0.25 dB	≤ 0.50 dB
FC	Ceramic	PC	0.25 dB	≤ 0.50 dB
LC	Ceramic	PC	0.25 dB	≤ 0.50 dB

Configured Part Numbers

D ___ ___ - ___ ___ ___ - ___ ___ A - ___ ___ A XXXM or XXXF

1 2 3 4 5 6 7

1 Select Cable Constuction

A = Indoor, riser rated
C = Indoor, plenum rated

2 Select Mode/Type

1 = Singlemode, tight buffer
2 = Singlemode, ribbon
3 = Multimode (62.5), tight buffer
5 = Multimode (50), tight buffer
7 = Multimode (50) laser opt – tight buffer OM3

3 Select Fiber Count *

XXX = Fiber count

4 Select Connector #1

A = SC/UPC
C = SC/APC
E = LC/UPC
G = LC/APC
J = FC/UPC
K = FC/APC
M = ST/UPC
5 = MPO male
6 = MPO female

5 Select Breakout #1

B = 1 meter
C = 0.5 meter

6 Select Connector #2

A = SC/UPC
C = SC/APC
E = LC/UPC
G = LC/APC
J = FC/UPC
K = FC/APC
M = ST/UPC
5 = MPO male
6 = MPO female
Z = None

7 Select Breakout # 2

B = 1 meter
C = 0.5 meter
P = Pulling eye **
Z = Pigtail

XXXM or XXXF

XXXM = Length in Meters
XXXF = Length in Feet

* Some fiber counts including fiber quantities not divisible by 12 may be built with the next highest fiber count cable. (i.e. – a 60-fiber assembly may be built using a 72-count fiber where the 1st 60 fibers will be terminated and the final 12 fibers will cut off at the breakout point).

** Pulling eyes can be installed on fiber assemblies up to a 24-fiber count.

Fiber Cable Assemblies

Breakout Assemblies

Application

Breakout Assemblies are appropriate for low to mid-fiber count applications in demanding indoor and outdoor environments. Common uses include manufacturing areas, unprotected communication closets and small central offices.

Description

Breakout style assemblies are easy to install and simple to terminate without the need for fan-out kits. The indoor/outdoor version of this cable is durable and OFNR rated. While it can be used indoors, it also has a -40°C to 85°C operating temperature range and the benefits of fungus, water and UV protection making it perfect for outdoor applications. The indoor/outdoor versions come standard with 2.5 mm sub units. The indoor only cable is standard with 2 mm sub units.

Features and Benefits

Integrity

- Terminations are designed and tested to Telcordia GR-326
- Specialty rugged cable designs
- Supports industry standard singlemode and multimode fiber

Protection

- Rugged cable design protects against harsh indoor and outdoor environments
- Wide variety of jacket sizes for all applications, ruggedized 3 mm, 2.5 mm and 2 mm
- Riser and Plenum and fire retardant rated cable jackets available
- Pulling-eye available to ease installation and for added protection

Access

- Industry standard terminations include ST, SC, FC, LC (Ask a Clearfield® representative for other available connectors)
- Versatile cable designs well suited for in-conduit, lashed aerial and direct buried applications
- Fiber counts from 2 to 48

Investment

- Breakout Fiber Assemblies offer a rugged solution for deploying fiber in any indoor/outdoor optical network
- Environmentally stable, low-insertion loss, minimal back reflection
- All assemblies are 100% tested

Recommendation

Consider using indoor/outdoor versions for use in DLC cabinets or outside plant electronic cabinets as a “tip” cable. The blunt end will be spliced in a splice vault and the other end will be plugged into the electronics inside the cabinet.

The 2 mm indoor version is ideal for use in cross-connect solutions. One end is loaded into the rear of a patch panel and the other end can be staggered to match any active gear blade.

Technical Specifications

Breakout Assemblies	
Core Size and Type	Singlemode and multimode
Fiber Count	2-fiber to 48-fiber
Jacket O.D.	2.0 mm (indoor), 2.5 mm (indoor/outdoor)
Cable Types	Indoor Riser, Indoor/Outdoor (Riser)
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC, FC/UPC, FC/APC, ST/UPC
Operating Temperature	-40°C to 85°C (-40°F to 185°F)
Breakout Length	Half meter, one meter, pulling eye, custom

Fiber Cable Assemblies

Breakout Assemblies

CLEARFIELD

Minimum Performance Specifications for Terminated Singlemode Connectors

Connector Type	Ferrule Material	Polish Type	Ins. Loss, Typical	Max. Ins. Loss	Min. Ret. Loss
ST	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
SC	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
FC	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
LC	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
SC	Ceramic	APC	0.20 dB	0.30 dB	65.00 dB
FC	Ceramic	APC	0.20 dB	0.30 dB	65.00 dB
LC	Ceramic	APC	0.20 dB	0.30 dB	65.00 dB

Minimum Performance Specifications for Terminated Multimode Connectors

Connector Type	Ferrule Material	Polish Type	Ins. Loss, Typical	Max. Ins. Loss
ST	Ceramic	PC	0.25 dB	≤ 0.50 dB
SC	Ceramic	PC	0.25 dB	≤ 0.50 dB
FC	Ceramic	PC	0.25 dB	≤ 0.50 dB
LC	Ceramic	PC	0.25 dB	≤ 0.50 dB

Configured Part Numbers

B ___ ___ - ___ ___ ___ - ___ ___ ___ - ___ ___ ___ XXXM or XXXF

1 2 3 4 5 6 7 8 9

1 Select Cable Construction

A = Indoor, riser rated
B = Outdoor, riser rated

2 Select Mode / Type

1 = Singlemode
3 = Multimode (62.5)
5 = Multimode (50 µm)

3 Select Fiber Count *

X X X = port count in increments of 12
Max = 48

4 Select Connector # 1

A = SC/UPC
C = SC/APC
E = LC/UPC
G = LC/APC
J = FC/UPC
K = FC/APC
M = ST/UPC

5 Select Breakout # 1

B = 1 meter
C = 0.5 meter

6 Select Upjacketing # 1

B = 2 mm
C = 2.5 mm

7 Select Connector # 2

A = SC/UPC
C = SC/APC
E = LC/UPC
G = LC/APC
J = FC/UPC
K = FC/APC
M = ST/UPC
Z = Pigtail

8 Select Breakout # 2

B = 1 meter
C = 0.5 meter
P = Pulling eye
Z = Pigtail

9 Select Upjacketing # 2

B = 2 mm
C = 2.5 mm
Z = Pigtail

XXXM or XXXF

XXXM = Length in meters
XXXF = Length in feet

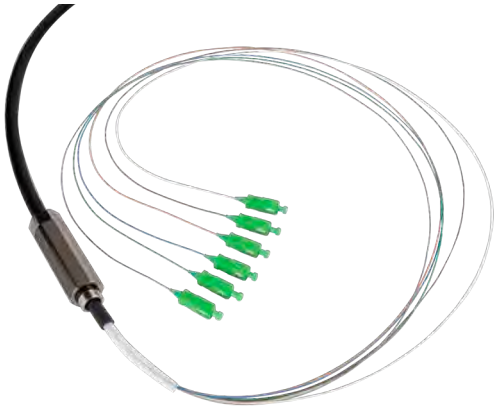
* Some fiber counts including fiber quantities not divisible by 12 may be built with the next highest fiber count cable (i.e. – A 60-fiber assembly may be built using a 72-count fiber where the 1st 60 fiber will be terminated and the final 12 fibers will be cut off at the breakout point).

Fiber Cable Assemblies

Drop Node Assemblies

Application

Drop Node Assemblies are designed to connect the optical distribution node to the optical drop cable in a CATV network.



Description

Clearfield® ensures the quality of its Drop Node Assemblies by utilizing factory terminated connectors, a fully water-blocked entry connector, loose tube, gel-filled cable (on most assemblies) and a GR-326 compliant 900 µm fiber termination process. This provides exceptional performance and stability over a full range of outdoor temperatures and environmental conditions. The end-user gains complete control over drop access and reconfiguration.

Features and Benefits

Integrity

- Terminations are designed and tested to Telcordia GR-326
- Drop Node Assemblies make ease of installation into Optical Distribution Node (ODN)
- Supports industry standard singlemode fiber

Protection

- Rugged cable design protects against harsh outdoor environments
- Fibers up-jacketed using materials which can endure temperatures from -40°C to 200°C
- Cables using loose tube gel-filled OSP cable are sealed to eliminate water penetration
- Feed Through Fitting (FTF) strain relief guarantees that movement does not occur at the transition into the ODN
- Strain relief matches cable load rating

Access

- Industry standard terminations include ST, SC, FC, LC (ask a Clearfield representative for other available connectors)
- Provides maximum cable management inside ODN using 900 µm or 2 mm up-jacket

Investment

- Drop Node Assemblies offer a rugged solution for deploying fiber in any outdoor optical network
- Environmentally stable, low-insertion loss, minimal back reflection
- All assemblies are 100% tested

Fiber Cable Assemblies

Drop Node Assemblies

Technical Specifications

Drop Node Assemblies	
Core Size and Type	Singlemode
Fiber Count	2-fiber, 4-fiber, 6-fiber (Riser) 4-fiber, 6-fiber, 8-fiber (Armored)
Jacket O.D.	900 µm, 2.0 mm
Cable Types	Outdoor (Riser), Outdoor Armored (Non-Rated)
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC, FC/UPC, FC/APC, ST/UPC
Operating Temperature	-40°C to 85°C (-40°F to 185°F)
Breakout Length	Half meter, one meter, pulling eye, custom

Minimum Performance Specifications for Terminated Singlemode Connectors

Connector Type	Ferrule Material	Polish Type	Ins. Loss, Typical	Max. Ins. Loss	Min. Ret. Loss
ST	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
SC	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
FC	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
LC	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
SC	Ceramic	APC	0.20 dB	0.30 dB	65.00 dB
FC	Ceramic	APC	0.20 dB	0.30 dB	65.00 dB
LC	Ceramic	APC	0.20 dB	0.30 dB	65.00 dB

Configured Part Numbers

N ___ 1 - ___ ___ ___ - ___ ___ ___ - ___ ___ ___ XXXM or XXXF

[1] [2] [3] [4] [5] [6] [7] [8]

[1] Select Cable Construction

B = OSP, riser rated
M = OSP, armored, (non-rated) gel filled

[2] Select Fiber Count *

002 = 2 fiber
004 = 4 fiber
006 = 6 fiber
008 = 8 fiber

[3] Select Connector # 1

A = SC/UPC
C = SC/APC
E = LC/UPC
G = LC/APC
J = FC/UPC
K = FC/APC
M = ST/UPC

[4] Select Breakout # 1

B = 1 meter
C = 0.5 meter

[5] Select Upjacketing # 1

A = 900 µm
B = 2 mm

[6] Select Connector # 2

A = SC/UPC
C = SC/APC
E = LC/UPC
G = LC/APC
J = FC/UPC
K = FC/APC
M = ST/UPC
Z = Pigtail

[7] Select Breakout # 2

B = 1 meter
C = 0.5 meter
Z = Pigtail

[8] Select Upjacketing # 2

A = 900 µm
B = 2 mm
Z = Pigtail

XXXM or XXXF

XXXM = Length in meters
XXXF = Length in feet

Fiber Cable Assemblies

90 Degree Drop Node Assemblies

Application

The 90 Degree Drop Node Assembly provides a 90 degree pathway and fiber optical connection from a distribution node to the optical drop cable in a Cable TV network. It is ideal for space limited environments such as pedestals and below grade fiber node installations.

Description

Clearfield® ensures the quality of its 90 Degree Drop Node Assemblies by utilizing factory-terminated connectors, a fully water-blocked entry connector, loose tube, gel-filled cable (on most assemblies) and a GR-326 complaint 900 µm fiber termination process. This provides exceptional performance and stability over a full range of outdoor temperatures and environmental conditions. The end-user gains complete control over drop access and reconfiguration.

Features and Benefits

Integrity

- Terminations are designed and tested to Telcordia GR-326
- 90 Degree Drop Node Assemblies make ease of installation into Optical Distribution Node (ODN)
- Supports industry standard singlemode fiber

Protection

- Rugged cable design protects against harsh outdoor environments
- Fibers up-jacketed using materials which can endure temperatures from -40°C to 200°C
- Cables using loose tube gel-filled OSP cable are sealed to eliminate water penetration
- Feed Through Fitting (FTF) strain relief guarantees that movement does not occur at the transition into the ODN
- Strain relief matches cable load rating

Access

- Industry standard terminations include SC or LC (ask a Clearfield representative for other available connectors)
- Provides maximum cable management inside ODN using 900 µm or 2 mm up-jacket
- The 90 degree water-tight fitting allows for a better fit in close quarters

Investment

- 90 Degree Drop Node Assemblies offer a rugged solution for deploying fiber in any outdoor optical network
- Environmentally stable, low-insertion loss, minimal back reflection
- All assemblies are 100% tested

Fiber Cable Assemblies

90 Degree Drop Node Assemblies

CLEARFIELD

Technical Specifications

90 Degree Drop Node Assemblies	
Core Size and Type	Singlemode ITU-T G.652 D
Fiber Count	6-fiber, 8-fiber, 12-fiber
Jacket OD	900 µm up-jacketed
Cable Types	Outdoor (Riser), Outdoor Armored (Non-Rated)
Connector Types	SC/APC, LC/UPC
Operating Temperature	-40°C to 85°C (-40°F to 185°F)

Minimum Performance Specifications for Terminated Singlemode Connectors

Connector Type	Ferrule Material	Polish Type	Ins. Loss, Typical	Max. Ins. Loss	Min. Ret. Loss
ST	Ceramic	UPC	0.15 dB	0.30 dB	65.00 dB
SC	Ceramic	UPC	0.15 dB	0.30 dB	65.00 dB
FC	Ceramic	UPC	0.15 dB	0.30 dB	65.00 dB
LC	Ceramic	UPC	0.15 dB	0.30 dB	65.00 dB
SC	Ceramic	APC	0.15 dB	0.30 dB	65.00 dB
FC	Ceramic	APC	0.15 dB	0.30 dB	65.00 dB
LC	Ceramic	APC	0.15 dB	0.30 dB	65.00 dB

Configured Part Numbers

N ___ 1 - ___ ___ ___ - ___ ___ ___ - ___ ___ ___ XXXM or XXXF

1 | 2 | 3 | 4 | 5 | 6 | 7 | 8

1 Select Cable Construction

B = OSP, riser rated
M = OSP, armored, (non-rated) gel filled

2 Select Fiber Count

002 = 2 fiber
004 = 4 fiber
006 = 6 fiber
008 = 8 fiber

3 Select Connector # 1

A = SC/UPC
C = SC/APC
E = LC/UPC
G = LC/APC
J = FC/UPC
K = FC/APC
M = ST/UPC

4 Select Breakout # 1

B = 1 meter
C = 0.5 meter
D = 90 degree 1 meter
E = 90 degree 0.5 meter
F = 90 degree 47 inch

5 Select Upjacketing # 1

A = 900 µm
B = 2 mm

6 Select Connector # 2

A = SC/UPC
C = SC/APC
E = LC/UPC
G = LC/APC
J = FC/UPC
K = FC/APC
M = ST/UPC
Z = Pigtail

7 Select Breakout # 2

B = 1 meter
C = 0.5 meter
D = 90 degree 1 meter
E = 90 degree 0.5 meter
F = 90 degree 47 inch
Z = Pigtail

8 Select Upjacketing # 2

A = 900 µm
B = 2 mm
Z = Pigtail

XXXM or XXXF

XXXM = Length in meters
XXXF = Length in feet

Fiber Cable Assemblies

FTTH Drop Cable Assemblies

Application

Our FTTH Drop Cable Assemblies are designed to connect the fiber access point (hand hole, pedestal or aerial) to the ONT on the home in a FTTH network.

Description

Clearfield's proven ruggedized drop cable solutions include HFOC, ruggedized flat drop and ruggedized pigtail for splicing.

Features and Benefits

Integrity

- Terminations are designed and tested to Telcordia GR-326
- Supports industry standard singlemode connectors
- Singlemode and multimode cable available

Protection

- Uses ruggedized OSP rated flat drop cable
- Single loose-tube gel-filled resists water from penetration
- Rugged black UV resistant jacket with two fiberglass strength members gives it the strength needed for all harsh environments
- All-dielectric option allows deployment near power lines and utilities

Access

- Flat drop cable construction allows for installation in buried or aerial applications
- Industry standard terminations include ST, SC, FC, LC (ask a Clearfield® representative for other available connectors)
- Toneable cables allow for traceability throughout the network

Investment

- Ruggedized flat drop assemblies offer an economical solution for deploying fiber in any OSP optical network
- Environmentally stable, low-insertion loss, minimal back reflection
- All assemblies are 100% tested

Fiber Cable Assemblies

FTTH Drop Cable Assemblies

Technical Specifications

FTTH Drop Cable Assemblies	
Core Size and Type	Singlemode
Fiber Count	1-fiber and 2-fiber
Jacket O.D.	2.0 mm, 3.0 mm ruggedized
Cable Types	Flat Drop Cable (Dielectric/Toneable)
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC, HFOC/APC
Operating Temperature	-40°C to 85°C (-40°F to 185°F)
Breakout Length	Half meter, custom

Minimum Performance Specifications for Terminated Singlemode Connectors

Connector Type	Ferrule Material	Polish Type	Ins. Loss, Typical	Max. Ins. Loss	Min. Ret. Loss
ST	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
SC	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
FC	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
LC	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
SC	Ceramic	APC	0.20 dB	0.30 dB	65.00 dB
FC	Ceramic	APC	0.20 dB	0.30 dB	65.00 dB
LC	Ceramic	APC	0.20 dB	0.30 dB	65.00 dB

Configured Part Numbers

H ___ 1 - 0 0 1 - ___ ___ ___ - ___ ___ ___ XXXM or XXXF

[1] [2] [3] [4] [5] [6] [7]

[1] Select Cable

E = OSP, non-toneable, non-rated
M = OSP, toneable, non-rated

[2] Select Connector # 1

A = SC/UPC
C = SC/APC
E = LC/UPC
G = LC/APC
W = HFOC SC/APC

[3] Select Breakout # 1

C = 0.5 meter
Z = Use if a HFOC

[4] Select Upjacketing # 1

B = 2 mm ruggedized
Z = Use if a HFOC

[5] Select Connector # 2

A = SC /UPC
C = SC/APC
E = LC/UPC
G = LC/APC
W = HFOC SC/APC
Z = Pigtail

[6] Select Breakout # 2

C = 0.5 meter
Z = Use if a HFOC or pigtail

[7] Select Upjacketing # 2

B = 2 mm ruggedized
Z = Use if a HFOC or pigtail

XXXM or XXXF

XXXM = Length in meters
XXXF = Length in feet

Fiber Cable Assemblies

High Fiber Ribbon Breakout Kit

Application

A High Fiber Ribbon Breakout Kit is used for fiber management and routing for fusion and mechanical splicing field termination of multi-fiber ribbon cable applications in both inside and outside plant environments.

010475

Description

Clearfield® FieldSmart® Ribbon Fan Out Kits are designed to breakout and manage high fiber count ribbon cables. Each 12-fiber ribbon in cable is routed into individual color-coded tubes for protection and transport into Clearview® optimized products. The kit includes the cable body, breakout body and adhesive shrink tubing.

When ribbon fiber in excess of 144 is required, the High Fiber Ribbon Breakout Box is used in conjunction with the Ribbon Fan Out Kit for up to 864 fibers.

FMA-MZZ

Features and Benefits

Integrity
- Fits any manufacturer's cable

Protection
- Furcation tubing protects and manages bare ribbon fiber

Access
- No special tools required
- Simple and easy breakout installs in minutes
- Easily identified individual color-coded tubing

Investment
- Fan Out Kit provides protected transport path for ribbon cable to Clearview Cassettes

Technical Specifications

High Fiber Ribbon Breakout Kit	
Fan Out Kit Diameter	144-Fiber Fan Out Kit: 19.10 mm (0.75")
Fan Out Kit Length	Cable Body: 76.32 mm (3") Breakout Body: 31.80 mm (1.25") Combined: 108.12 mm (4.25")
Fan Out Tubing Length	2 meters (78.60"); Custom Lengths Available
Maximum Tube Diameter	144-Fiber Fan Out Kit: 2.59 mm (0.495")
Breakout Box Dimensions	6.25" H x 4.75" W x 2.25" D

Pre-Configured Part Numbers

Part Number	Description	Quantity Needed of Each Part Number Per Fiber Count					
		144	288	432	576	720	864
FMA-MZZ	Ribbon Fan Out Kit, for up to 144 fibers	1	2	3	4	5	6
FMA-MZZ-SB	Ribbon Fan Out Kit, for up to 144 fibers, for use with slack basket applications	1	2	3	4	5	6
010475	High Density Ribbon Breakout Box	0	1	1	1	1	1

Introduction to WaveSmart®

Optical Components

Clearfield® delivers unparalleled fiber performance with its WaveSmart optical components - custom built for the unique light requirements and interoperability needs of passive optical network splitting, fiber exhaust scenarios and coarse and dense division multiplexing. Key to the success of a fiber deployment is the performance and precision of the optical components deployed in the inside and outside plant environment. These products are custom built to your unique split ratios, wavelength requirements and interoperability needs. Clearfield leads the way with WaveSmart optical component technologies for PON splitting, wavelength division multiplexing and optical circulators. These products are custom built to your unique split ratios, wavelength requirements and interoperability needs.

Clearfield's expertise in the termination of fiber ensures these components are connectorized to optimize their performance potential. Teamed with Clearfield's experience in bend radius protection, the optimal packaging for these components is found within all Clearview® Cassettes. In addition, Clearfield provides modular optical components packaging within an LGX footprint as well as other space saving chassis enclosures and custom discrete packages.

Specializing in the manufacturing, termination and packaging of optical components for custom-built configurations, our rapid turn-around time consistently beats the lead time quoted by our competitors for standard and custom configuration. Clearfield's design experts can consult with you on your optical component needs and specify a product line to solve your application requirements.

By utilizing fiber optic splitters and wave division multiplexing, Clearfield's WaveSmart optical components will save money while increasing your network's capacity and bandwidth by creating virtual fiber without the expense of design, construction and deployment of more fiber optic cables. Splitting the light signal or separating multiple wavelengths over a single fiber allows you to increase the number of pathways within your existing fiber cable network reducing upgrade or new deployment costs. Combining Clearfield's WaveSmart products with the FieldSmart®, CraftSmart® and FieldShield® product lines, we can provide you a solution for all your applications.

WaveSmart®
HD Splitter

Application

High density splitter for the FieldSmart® Makwa Fiber Distribution Hub (FDH) and FieldSmart Fiber Deliver Point (FDP) 144 Port PON in Pedestal.

Description

The WaveSmart High Density (HD) Splitter is designed to work with the FieldSmart Makwa platform. Consistent with a simple yet innovative design methodology, the WaveSmart High Density (HD) Splitter utilizes a 75% smaller package over earlier designed splitter packages.

The WaveSmart High Density Splitter uses 900 µm jacketed legs and offers superb fiber management. Clearfield® utilizes a special outdoor rated material that not only helps control thermal expansion and contraction, but goes one step further and remains flexible at extreme temperatures down to -40°F. By making it easier to handle, there is less chance that the fiber will be routed incorrectly or that damage will occur during this process.

Features and Benefits

Integrity

- RUS listed
- Terminations are designed and tested to Telcordia GR-326
- 100% performance tested for insertion loss/return loss and final mechanical inspection
- Optical component configuration use devices that are compliant to Telcordia GR-1221/1209

Protection

- WaveSmart's High Density Splitter package protects the Planar Lightwave Circuit in all environments
- Inputs and outputs protected using high quality 900 µm up-jacket

Access

- Individual splitters come preloaded in staging plate for easy access and turn-up
- Each leg is 27" to reach anywhere in the Makwa
- Each leg labeled for easy identification
- Red jacket on input leg

Investment

- Splitter package supports one 1 x 32, two 1 x 16 or four 1 x 8 configurations without penalty in real estate or port counts
- "Grow-as-you-go" - only buy splitters as customer take rates increase
- SC/UPC or SC/APC connectors

WaveSmart®
HD Splitter

CLEARFIELD

Technical Specifications

WaveSmart HD Splitters	
Dimensions	85 mm L x 35 mm W x 6 mm H
Core Size and Type	Singlemode (G.657.A)
Leg Length	27”
Jacket O.D.	900um
Connector Types	SC/UPC, SC/APC
Splitter Types	1 x 32, 1 x 16, 1 x 8, 1 x 4
Operating / Storage Temp	-40°C to 85 (-40°F to 185°F)

Performance Specifications

Splitter Type	1 x 32	1 x 16	**1 x 8**	1 x 4
Insertion Loss	< 16.8 dB	< 13.8 dB	< 10.8 dB	< 7.5 dB
Return Loss	> 50 dB	> 50 dB	> 50 dB	> 50 dB
PDL	< 0.3 dB	< 0.3 dB	< 0.3 dB	< 0.3 dB
Uniformity	< 1.7 dB	< 1.2 dB	< 0.8 dB	< 0.3 dB
Directivity	> 55 dB	> 55 dB	> 55 dB	> 55 dB
Wavelength Range (nm)	1260 – 1650	1260 - 1650	1260 - 1650	1260 - 1650

Configured Part Numbers

K E ____ - ____ A A

1 2

1 Select (qty)/Split Ratio

1 = (1) 1x32
2 = (2) 1x16
3 = (2) 1x8
4 = (1) 1x16
5 = (1) 1x8
6 = (3) 1x8
7 = (4) 1x8
8 = (1) 1x4
9 = (2) 1x4
A = (4) 1x4
G = (8) 1x4

2 Select Connector Style

A = SC/UPC
C = SC/APC

WaveSmart®
Ruggedized Splitter

Application

High density splitter for outside plant cabinet environments.

Description

The Clearfield® WaveSmart Ruggedized Splitter is the standard splitter component in its line of FieldSmart® FSC OSP Cabinets. The splitter addresses environmental and human handling issues that other standard splitters in the industry cannot combat. It provides improved fiber protection, management and maintenance in OSP FTTx deployments.

Features and Benefits

Integrity

- RUS listed
- Terminations are designed and tested to Telcordia GR-326
- 100% performance tested for insertion loss, return loss and final mechanical inspection
- Optical component configuration uses devices that are compliant to Telcordia GR 1221/1209

Protection

- Ruggedized jacket material of input and output legs provide superior flexibility in temperatures ranging from -55°C to 85°C (-67°F to 185°F)
- Legs will not sag or wilt at extreme temperatures or during extreme temperature cycles

Access

- Splitters legs come preloaded in staging plate for easy access and turn-up
- Fiber separators every 17” to easily recognize and prevent twisting of fiber legs
- Each leg is 51” long and able to reach any port
- Each leg labeled for easy identification
- Red boot on input leg

Investment

- Splitter package supports one 1 x 32, two 1 x 16 or four 1 x 8 configurations without penalty in real estate or port counts
- Splitters can be used in:
  - FieldSmart 288, 432, 576 and 1,152 PON Cabinets
  - FieldSmart Wall Boxes
  - FieldSmart 96 port Pon-in-Ped
  - FieldSmart Inside Plant PON Insert
- “Grow-as-you-go” - only buy splitters as customer take rates increase
- SC/UPC, SC/APC, LC/UPC or LC/APC connectors

WaveSmart®
Ruggedized Splitter

CLEARFIELD

Technical Specifications

WaveSmart Ruggedized Splitters	
Dimensions	100 mm L x 80 mm W x 10 mm H
Core Size and Type	Singlemode (G.657.A)
Leg Length	51”
Jacket O.D.	2.0mm
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC
Splitter Types	1 x 32, 1 x 16, 1 x 8, 1 x 4
Operating / Storage Temp	-40°C to 85 (-40°F to 185°F)

Performance Specifications

Splitter Type	1 x 32	1 x 16	**1 x 8**	1 x 4
Insertion Loss	< 16.8 dB	< 13.8 dB	< 10.8 dB	< 7.5 dB
Return Loss	> 50 dB	> 50 dB	> 50 dB	> 50 dB
PDL	< 0.3 dB	< 0.3 dB	< 0.3 dB	< 0.3 dB
Uniformity	< 1.7 dB	< 1.2 dB	< 0.8 dB	< 0.3 dB
Directivity	> 55 dB	> 55 dB	> 55 dB	> 55 dB
Wavelength Range (nm)	1260 – 1650	1260 - 1650	1260 - 1650	1260 - 1650

Configured Part Numbers

K C ____ - ____ A A

1 2

1 Select (Qty) / Split Ratio

1 = (1) 1 x 32
2 = (2) 1 x 16
3 = (2) 1 x 8
4 = (1) 1 x 16
5 = (1) 1 x 8
6 = (3) 1 x 8
7 = (4) 1 x 8
8 = (1) 1 x 4
9 = (2) 1 x 4
A = (4) 1 x 4

2 Select Connector Style

A = SC/UPC
C = SC/APC
E = LC/UPC
G = LC/APC

WaveSmart®
Splitters

CLEARFIELD

Application

These products are needed when an optical splitter or combiner is required in a central office environment. They are used in CATV headends and telephone company central offices.

Description

Clearfield® provides Planar Lightwave Circuit (PLC) and Fused Biconic Taper (FBT) Splitters in a variety of optical component packages for the network and application need allowing carriers the ability to provide uniform fully passive signal splitting to multiple premises.

Planar Lightwave Circuit (PLC or Planar)

A light circuit on an 'optical chip' is mounted on a carrier and fibers, usually in ribbon form, are bonded to the edges of the chip. The assembly is encapsulated in a protective enclosure. PLC devices support direct split counts up to 32. In planar fabrication technology, devices are made using ion-exchange or photo-lithography techniques that replicate solid-state circuit methods. Ultimately, the per-unit cost for the expected high volumes will become advantageous for planar technology, especially for higher port devices. A difficult manufacturing problem involves a low-loss method for attaching the optical fibers to the chip and then passing the market's qualification and reliability requirements.

Fused Biconic Taper (FBT)

Two or more fibers are twisted together, heated and drawn to bring the optical cores into near contact. The combined fibers are mounted on a low-expansion carrier and encapsulated in a low expansion tube. FBT devices allow direct splitting up to 4 ways. Higher split counts are achieved by splicing multiple devices to form multi-stage, concatenated splitters. Concatenated splitters are also called tree splitters. The fused biconic tapered technology directly bonds or melts the fibers together so that the final splitter can be mounted in small diameter (approximately 3-millimeter) stainless-steel tubes. This technology produces small, low-cost, high-performance devices. A tough fabrication obstacle involves the small and delicate final coupling region. However, when properly mounted and packaged, these devices meet long-term stability and reliability requirements.

Packaging Options

- Clearview® Cassette
- Clearview xPAK
- Discrete (unpackaged solution)
- Pizza Box
- LGX

Features and Benefits

Integrity

- RUS listed
- Terminations are designed and tested to Telcordia GR-326
- Supports industry standard SC and LC singlemode and multimode connectors
- 100% performance tested for insertion loss, return loss and final mechanical inspect

Protection

- Ruggedized, secure packaging
- Non-removable adapter plates

Access

- Front and rear access to panel

Investment

- FieldSmart® Optical Components offer an economical, dense and user-friendly solution for deploying splitters or WDMs in a central office design
- Virtually any combination of split ratios and number of components can be achieved in one of the four Clearview cassette sizes
- Clearfield supports legacy splitter deployments by offering optical components in LGX footprint
- 1 RU optical components available for smaller, limited deployments
- Environmentally stable, high isolation, low insertion loss
- Compliant to Telcordia GR-1221 and GR-1209

WaveSmart®
Splitters

CLEARFIELD

Technical Specifications

Planar Lightwave Circuit Splitters

Type	Insertion Loss	Return Loss	PDL	Uniformity	Directivity	Operating/ Storage Temperature	Wavelength Range
1 x 32	< 16.8 dB	> 50 dB	< 0.3 dB	< 1.7 dB	> 55 dB	-40°C to 85°C	1260 to 1650nm
1 x 16	< 13.8 dB	> 50 dB	< 0.3 dB	< 1.2 dB	> 55 dB	-40°C to 85°C	1260 to 1650nm
1 x 8	< 10.8 dB	> 50 dB	< 0.3 dB	< 0.8 dB	> 55 dB	-40°C to 85°C	1260 to 1650nm
1 x 4	< 7.5 dB	> 50 dB	< 0.3 dB	< 0.6 dB	> 55 dB	-40°C to 85°C	1260 to 1650nm

Fused Biconic Taper Splitters

Dual Window - Wavelength Flattened (Terminated **Specs)**	1 x 2	1 x 4	**1 x 8**	1 x 16	1 x 32
Maximum Insertion Loss	3.6 dB	7.2 dB	10.7 dB	14 dB	17.6 dB
Maximum Uniformity	0.8 dB	1 dB	1.3 dB	1.6 dB	1.9 dB
Maximum PDL	0.2 dB	0.3 dB	0.4 dB	0.5 dB	0.6 dB

Packaging Dimensions

Optical Component Type	Dimensions
One High Clearview Blue Cassette	0.8” H x 8.6” W x 7.06” D
Two High Clearview Blue Cassette	1.6” H x 8.6” W x 7.06” D
Three High Clearview Blue Cassette	2.41” H x 8.6” W x 7.06” D
Six High Clearview Blue Cassette	4.84” H x 8.6” W x 7.06” D
LGX One Wide Box	1.15” H x 5.12” W x 6.25” D
LGX Two Wide Box	2.27” H x 5.12” W x 6.25” D
LGX Four Wide Box	4.55” H x 5.12” W x 6.25” D
One Rack Unit (19”)	1.75” H x 19” W x 15.02” D
One Rack Unit (23”)	1.75” H x 23” W x 15.02” D

Configured Part Numbers

M ___ ___ - ___ E S - ___ ___ Z – Z Z Z

1 2 3 4 5

1 Select Packaging

A = LGX – vertical - 1 wide
B = LGX – vertical - 2 wide
D = LGX – vertical - 4 wide
G = 1.75" (1 RU) - 19" brackets
H = 3.50" (2 RU) - 23" brackets
S = Clearview Blue – 1 high
T = Clearview Blue – 2 high
U = Clearview Blue – 3 high
Y = Clearview Blue – 6 high

2 Select Input / Output

A = 1 x 2
B = 1 x 3
C = 1 x 4
D = 1 x 5
E = 1 x 6
F = 1 x 8
G = 1 x 12
H = 1 x 16
J = 1 x 24
K = 1 x 32
L = 2 x 2
M = 2 x 16
N = 2 X 32
P = 1 X 64

3 Select Optical Type

P = Planar splitter
F = FBT splitter

4 Select Connector

A = SC/UPC
B = SC/UPC DX
C = SC/APC
D = SC/APC DX
E = LC/UPC
G = LC/APC
J = FC/UPC
K = FC/APC
M = ST/UPC

5 # of Components Per Package

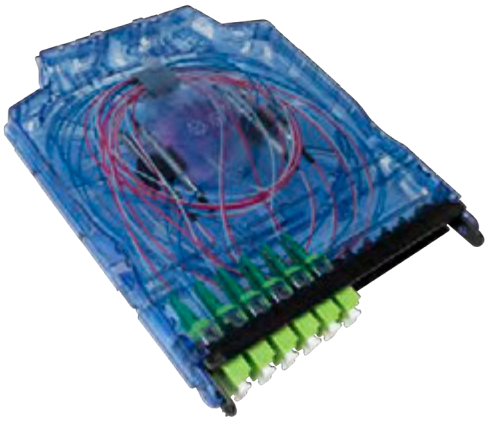
A = 1
B = 2
C = 3
D = 4
E = 5
F = 6
G = 7
H = 8
J = 9
K = 10
M = 11

WaveSmart®
Circulators

CLEARFIELD

Application

Provides fiber relief for applications that currently utilize a unidirectional dual fiber transmit/receive configuration, using either 1310nm or 1550nm wide band optics or Sonet/Ethernet optics (discrete, SFP, XFP). Note: SFP or XFP systems may be better served using a WDM solution.



Description

The WaveSmart Circulator allows the user to reroute the traffic that traditionally required two fibers (one for each direction of travel) onto a single fiber with bidirectional traffic. This in turn allows the user to reduce the number of required fibers from two to one (four to two for working/protect systems).

Features and Benefits

Integrity

- RUS Listed
- Compliant to Telcordia GR-1221 and GR-1209
- Supports Industry standard SC/APC and LC/APC connectors and adapters in standard and custom platforms

Protection

- Offered in the wide variety of Clearview® Cassettes and discrete packages
- Ruggedized fiber up-jacket and packages available
- Angled Polished connectors recommended throughout the network to minimize errors due to back reflection
- Not recommended for Multi-longitudinal Mode (MLM) Laser based systems

Access

- Compact tube style discrete component offered for direct splice in options
- Available in either wideband 1310nm or 1550nm
- Clearview Cassettes hold four Circulators when using SC/APC and eight when using LC/APC

Investment

- WaveSmart Optical Components offer an economical, dense and user-friendly solution for deploying Circulators in a fiber network
- Environmentally stable, high-isolation, low-insertion loss
- “Grow-as-you-go” – only buy circulators as customer take rates increase

Technical Specifications

WaveSmart Circulators	
Insertion Loss	< 1.0 dB (2.0 for matched pair)
Return Loss	> 50 dB
Maximum Power	500 mW
Minimum Isolation	> 40 dB
Channel Peak Isolation	> 50 dB
Fiber Type	SMF - 28e
Operating/Storage Temperature	-40°C ~ 85°C
PDL	< 0.15 dB
PMD	< 0.05 ps
Industry Standards	ROHS Compliant

WaveSmart®
Circulators

CLEARFIELD

Packaging Options

- Clearview® Cassette
- Clearview xPAK
- Discrete (unpackaged solution)
- LGX

Pre-Configured Part Numbers

Clearview Blue Cassettes - Terminated with SC/APC Connectors

Part Number	Description
LYG-CA01-ZZZ-31	Circulator, loaded into Clearview Blue Cassette, one high cassette, contains 1 x 1310nm optical circulators, component is terminated with SC/APC connectors
LYG-CA01-ZZZ-55	Circulator, loaded into Clearview Blue Cassette, one high cassette, contains 1 x 1550nm optical circulators, component is terminated with SC/APC connectors
LYG-CB01-ZZZ-31	Circulator, loaded into Clearview Blue Cassette, one high cassette, contains 2 x 1310nm optical circulators, component is terminated with SC/APC connectors
LYG-CB01-ZZZ-55	Circulator, loaded into Clearview Blue Cassette, one high cassette, contains 2 x 1550nm optical circulators, component is terminated with SC/APC connectors
LYG-CD01-ZZZ-31	Circulator, loaded into Clearview Blue Cassette, one high cassette, contains 4 x 1310nm optical circulators, component is terminated with SC/APC connectors
LYG-CD01-ZZZ-55	Circulator, loaded into Clearview Blue Cassette, one high cassette, contains 4 x 1550nm optical circulators, component is terminated with SC/APC connectors
LYG-CD01-ZZZ-31-55	Circulator, loaded into Clearview Blue Cassette, one high cassette, contains 2 x 1310nm and 2 x 1550nm optical circulators, component is terminated with SC/APC connectors

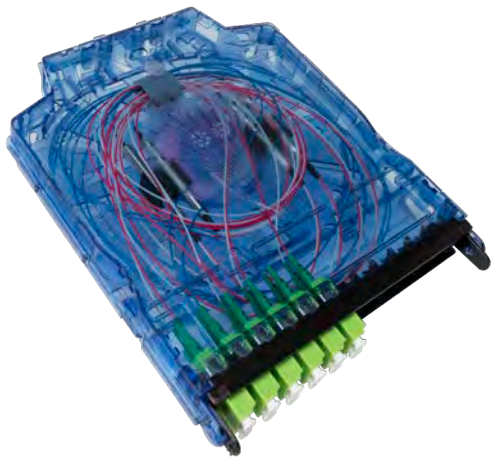
Clearview Blue Cassettes - Terminated with LC/APC Connectors

Part Number	Description
LYG-GA01-ZZZ-31	Circulator, loaded into Clearview Blue Cassette, one high cassette, contains 1 x 1310nm optical circulators, component is terminated with LC/APC connectors
LYG-GA01-ZZZ-55	Circulator, loaded into Clearview Blue Cassette, one high cassette, contains 1 x 1550nm optical circulators, component is terminated with LC/APC connectors
LYG-GB01-ZZZ-31	Circulator, loaded into Clearview Blue Cassette, one high cassette, contains 2 x 1310nm optical circulators, component is terminated with LC/APC connectors
LYG-GB01-ZZZ-55	Circulator, loaded into Clearview Blue Cassette, one high cassette, contains 2 x 1550nm optical circulators, component is terminated with LC/APC connectors
LYG-GD01-ZZZ-31	Circulator, loaded into Clearview Blue Cassette, one high cassette, contains 4 x 1310nm optical circulators, component is terminated with LC/APC connectors
LYG-GD01-ZZZ-55	Circulator, loaded into Clearview Blue Cassette, one high cassette, contains 4 x 1550nm optical circulators, component is terminated with LC/APC connectors
LYG-GD01-ZZZ-31-55	Circulator, loaded into Clearview Blue Cassette, one high cassette, contains 2 x 1310nm and 2 x 1550nm optical circulators, component is terminated with LC/APC connectors

WaveSmart®
Wave Division Multiplexing (WDM)

Application

These products are needed when a passive multiplexing or demultiplexing unit is required in a central office environment. They are used in CATV headends and telephone company central offices.



Description

Wavelength Division Multiplexing increases fiber capacity by combining (mux) and separating (demux) multiple input channels over a single fiber output. Wavelength division multiplexers let you expand the bandwidth of optical communication networks and can be used at several locations within each network. Clearfield® provides WDMs for singlemode fiber applications.

Coarse Wavelength Division Multiplexing

CWDMs combine or multiplex more than one wavelength over one fiber. This is done by using fiber pigtail collimators and wavelength/light filters that are aligned and mounted in a glass tube and typically packaged in a stainless steel tube for more protection. The wavelength/light filters used only allow specific wavelengths of light to pass through the filter and the remainder of the wavelengths to be reflected back. CWDMs can also be used to separate or demultiplex more than one signal using the same device and transmitting the signal in the opposite direction. CWDMs have channel spacing of 20nm with a working channel passband of +/-6.5nm from the wavelengths center. This allows you to add multiple wavelengths on to one fiber while keeping within the operating wavelengths of 1260nm to 1620nm. The wavelengths used are defined by the International Telecommunications Union; reference ITU G.694.2 for the ITU CWDM Wavelength Grid. Note: as of June 2002, 18 center wavelengths, from 1270nm to 1610nm, were listed.

Dense Wavelength Division Multiplexing

Dense Wavelength Division Multiplexing or DWDM is a technology which multiplexes or demultiplexes a number of optical carrier signals onto a single optical fiber by using different wavelengths (i.e. colors) of laser light. This technique enables bidirectional communications over one strand of fiber, as well as multiplication of capacity. DWDM signals within the 1550nm band which are wavelengths between approximately 1530–1565nm (C band) and/or 1570–1625nm (L band) adhering to the DWDM ITU-T G.694.1 frequency grid. DWDMs allow you to increase your wavelength capacity. DWDM products can offer multiplexing of multiple channels using 200 GHz and 100 GHz spacing with the option to have an added Expansion port and/or Monitor port. All of the Clearfield Passive Products are Telcordia GR-1209 and GR-1221 certified.

Packaging Options

- Clearview® Cassette
- Clearview xPAK
- Discrete (unpackaged solution)
- Pizza Box
- LGX

Features and Benefits

Integrity

- Compliant to Telcordia GR-1221
- Consistent performance

Protection

- Wide operating temperature range
- Low polarization sensitivity
- No epoxy in optical path

Access

- Transport protocol independent
- Low insertion loss
- Minimal optical loss

Investment

- Wide bandwidth (CWDM/DWDM)
- Mux, demux and universal options available
- PDL = < 0.2 dB
- Return Loss = > 45 dB

WaveSmart®
Wave Division Multiplexing (WDM)

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Technical Specifications

WaveSmart Wave Division Multiplexing	Channel Spacing	Wavelength Range	ITU Starting Wavelength	Start Channel
CWDM	20nm	1260 – 1650	1471nm 1491nm 1611nm	N/A
DWDM	100 GHz	1520 to 1560	N/A	ITU – T GRID
DWDM	200 GHz	1520 to 1560	N/A	ITU – T GRID

FSAN WDM Specifications

Parameter	Ports	Specifications
Pass Channel Wavelength	P1 to P3	1260nm to 1360nm
		1480nm to 1500nm
Reflect Channel Wavelength	P1 to P2	1540 dB to 1565 dB
Insertion Loss	P1 to P3	< 0.8 dB
	P1 to P2	< 0.5 dB
Isolation	N/A	> 25 dB
		> 18 dB/ °C
PDL	N/A	< 0.1 dB
Ripple	N/A	< 0.3 dB
Return Loss	N/A	> 45 dB
Operating Temperature Range	N/A	-40°C to 85°C
Storage Temperature Range	N/A	-40°C to 85°C
Maximum Input Power	N/A	500 mW
Mechanical Dimension	N/A	5 mm x 34 mm

WaveSmart®
Wave Division Multiplexing (WDM)

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200 GHz DWDM

Parameter	Value				
	Add/Drop	**4 CH**	**8 CH**	**16 CH**	**20 CH**
Wavelength Range	1520 to 1560nm	1520 to 1560nm	1520 to 1560nm	1520 to 1560nm	1520 to 1560nm
Central Wavelength	ITU-T G.694.1	ITU-T G.694.1	ITU-T G.694.1	ITU-T G.694.1	ITU-T G.694.1
Bandwidth	C ± 0.25nm	C ± 0.25nm	C ± 0.25nm	C ± 0.25nm	C ± 0.25nm
Insertion Loss	< 0.8 dB	< 2.4 dB	< 3.4 dB	< 5.8 dB	< 6.5 dB
Insertion Loss - Reflection	< 0.4 dB	N/A	N/A	N/A	N/A
Isolation	> 30 dB	> 30 dB	> 30 dB	> 30 dB	> 30 dB
Isolation - Reflection	> 12 dB	N/A	N/A	N/A	N/A
PDL	< 0.2 dB	< 0.2 dB	< 0.2 dB	< 0.2 dB	< 0.2 dB
Return Loss	> 45 dB	> 45 dB	> 45 dB	> 45 dB	> 45 dB
Operation Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Storage Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Maximum Input Power	500 mW	500 mW	500 mW	500 mW	500 mW
Mechanical Dimensions	5 mm x 34 mm	100 mm x 80 mm x 10 mm	100 mm x 80 mm x 10 mm	100 mm x 80 mm x 10 mm	100 mm x 80 mm x 10 mm

100 GHz DWDM

Parameter	Value				
	Add/Drop	**4 CH**	**8 CH**	**16 CH**	**40 CH**
Wavelength Range	1520 to 1560nm	1520 to 1560nm	1520 to 1560nm	1520 to 1560nm	1520 to 1560nm
Central Wavelength	ITU-T G.694.1	ITU-T G.694.1	ITU-T G.694.1	ITU-T G.694.1	ITU-T G.694.1
Bandwidth	C ± 0.11nm	C ± 0.11nm	C ± 0.11nm	C ± 0.11nm	C ± 0.11nm
Insertion Loss	< 0.8 dB	< 2.4 dB	< 3.4 dB	< 5.8 dB	< 6.5 dB
Insertion Loss - Reflection	< 0.4 dB	N/A	N/A	N/A	N/A
Isolation	> 30 dB	> 30 dB	> 30 dB	> 30 dB	> 30 dB
Isolation - Reflection	> 12 dB	N/A	N/A	N/A	N/A
PDL	< 0.2 dB	< 0.2 dB	< 0.2 dB	< 0.2 dB	< 0.2 dB
Return Loss	> 45 dB	> 45 dB	> 45 dB	> 45 dB	> 45 dB
Operation Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Storage Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Maximum Input Power	500 mW	500 mW	500 mW	500 mW	500 mW
Mechanical Dimensions	5 mm x 34 mm	100 mm x 80 mm x 10 mm	100 mm x 80 mm x 10 mm	100 mm x 80 mm x 10 mm	120 mm x 75 mm x 13.5 mm

WaveSmart®
Wave Division Multiplexing (WDM)

CLEARFIELD

CWDM

Parameter	Value		
	Add/Drop	**4 CH**	**8 CH**
Wavelength Range	1260 to 1650nm	1260 to 1650nm	1260 to 1650nm
Central Wavelength	ITU-T G.694.2	ITU-T G.694.2	ITU-T G.694.2
Bandwidth	C ± 6.5nm	C ± 6.5nm	C ± 6.5nm
Insertion Loss	< 0.8 dB	< 2.0 dB	< 3.0 dB
Insertion Loss - Reflection	< 0.4 dB	N/A	N/A
Isolation	> 30 dB	> 30 dB	> 30 dB
Isolation - Reflection	> 12 dB	N/A	N/A
PDL	< 0.2 dB	< 0.2 dB	< 0.2 dB
Return Loss	> 45 dB	> 45 dB	> 45 dB
Operation Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Storage Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Maximum Input Power	500 mW	500 mW	500 mW
Mechanical Dimensions	5 mm x 34 mm	100 mm x 80 mm x 10 mm	100 mm x 80 mm x 10 mm

Coarse Wavelength Division Multiplexing (CWDM)
ITU Channel/Wavelength Chart

ITU Channel (xx or yy)	Wavelength
27	1270nm
29	1290nm
31	1310nm
33	1330nm
35	1350nm
37	1370nm
39	1390nm

ITU Channel (xx or yy)	Wavelength
41	1410nm
43	1430nm
45	1450nm
47	1470nm
49	1490nm
51	1510nm
53	1530nm

ITU Channel (xx or yy)	Wavelength
55	1550nm
57	1570nm
59	1590nm
61	1610nm
63	1630nm
65	1650nm

WaveSmart®
Wave Division Multiplexing (WDM)

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Dense Wavelength Division Multiplexing (DWDM)
ITU Grid: C-Band, 100 GHz Spacing

Channel (#)	Frequency (GHz)	Wavelength (NM)
1	190100	1577.03
2	190200	1576.20
3	190300	1575.37
4	190400	1574.54
5	190500	1573.71
6	190600	1572.89
7	190700	1572.06
8	190800	1571.24
9	190900	1570.42
10	191000	1569.59
11	191100	1568.11
12	191200	1567.95
13	191300	1567.13
14	191400	1566.31
15	191500	1565.50
16	191600	1564.68
17	191700	1563.86
18	191800	1563.05
19	191900	1562.23
20	192000	1561.42
21	192100	1560.61
22	192200	1559.79
23	192300	1558.98
24	192400	1558.17
25	192500	1557.36
26	192600	1556.56
27	192700	1555.75
28	192800	1554.94
29	192900	1554.13
30	193000	1553.33
31	193100	1552.52
32	193200	1551.72
33	193300	1550.92
34	193400	1550.12
35	193500	1549.32
36	193600	1548.52

Channel (#)	Frequency (GHz)	Wavelength (NM)
37	193700	1547.72
38	193800	1546.92
39	193900	1546.12
40	194000	1545.32
41	194100	1544.53
42	194200	1543.73
43	194300	1542.94
44	194400	1542.14
45	194500	1541.35
46	194600	1540.56
47	194700	1539.77
48	194800	1538.98
49	194900	1538.19
50	195000	1537.40
51	195100	1536.61
52	195200	1535.82
53	195300	1535.04
54	195400	1534.25
55	195500	1533.47
56	195600	1532.68
57	195700	1531.90
58	195800	1531.12
59	195900	1530.33
60	196000	1529.55
61	196100	1528.77
62	196200	1527.99
63	196300	1527.22
64	196400	1526.44
65	196500	1525.66
66	196600	1524.89
67	196700	1524.11
68	196800	1523.34
69	196900	1522.56
70	197000	1521.79
71	197100	1521.02
72	197200	1520.25

WaveSmart®
Wave Division Multiplexing (WDM)

CLEARFIELD

Configured Part Numbers

L ___ ___ - ___ ___ ___ - ___ ___ ___ - ____ - ____

1 2 3 4 5 6 7 8 9 10

1 Component Package

A = Discrete – 250 µm (0.5 meter legs)
B = Discrete – 250 µm (1 meter legs)
C = Discrete – 900 µm (0.5 meter legs)
D = Discrete – 900 µm (1 meter legs)
E = Discrete – 2 mm rugged (0.5 meter legs)
F = Discrete – 2 mm rugged (1 meter legs)
G = xPAK (no longer used, see N or O)
H = LGX
M = Pizza box/1 rack unit
N = xPAK LGX front panel
O = xPAK standard panel
P = LGX Blade
Q = Module 100x80x10 mm – 900 µm (0.5 meter legs)
R = Module 100x80x10 mm – 900µm (1 meter legs)
S = Module 100x80x10 mm – 2 mm (0.5 meter legs)
T = Module 100x80x10 mm – 2 mm (1 meter legs)
U = Module 100x80x10 mm – 2 mm (51 inch legs)
V = Module 100x80x13 mm – 2 mm (51 inch legs)
W = Clearview Blue 1 high – no mounting ears
Y = Clearview Blue 1 high – mounting ears
1 = 80x60x7 mm – 900 µm – 0.5 meter legs
2 = 80x60x7 mm – 900 µm – 1 meter legs

2 Device Type

A = Add / drop CWDM
B = CWDM
C = DWDM (50 or 100 Ghz)
D = DWDM (200 Ghz)
E = 1310 / 1550 WDM
F = 1310 / 1490 / 1550 FSAN WDM
G = Circulator
H = Drop only CWDM

3 Select Connector Style

A = SC/UPC
C = SC/APC
E = LC/UPC
G = LC/APC
Z = N/A

4 Number of Components

A = 1
B = 2 (Quad)
C = 3
D = 4 (Quad)
E = 5
F = 6
G = 7
H = 8

5 Number of Channels

XX = # of channels

6 1310 Port

A = Included
Z = N/A

7 Expansion Port

A = Included
Z = N/A

8 Test Port

A = 1% incoming
B = 2% incoming
C = 3% incoming
D = 5% incoming
E = 7% incoming
F = 10% incoming
G = 1% out going
H = 2% out going
J = 3% out going
K = 5% out going
L = 7% out going
M = 10% out going
Z = N/A

9 Start Channel

XX = Channel
Z = N/A

10 Application

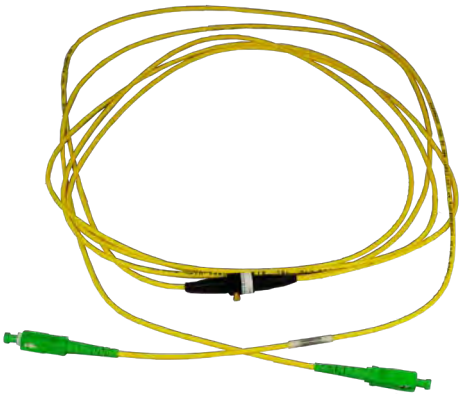
M = Channel
D = N/A
M/D = Mux & demux
M/M = Mux & mux
D/D = Demux & demux
U = Universal

WaveSmart®
VOA and Patch Cord Splitter

Application

A variable optical attenuator (VOA) is a device designed to attenuate an intensity or power level of an input optical beam in a controlled manner to produce an output optical beam with different attenuated intensities. Variable optical attenuators play an important role in the implementation of modern information networks having optical interconnects. In fiber optic communication systems, variable optical attenuators are broadly employed to regulate the optical power levels to prevent damages to the optical receivers caused by irregular optical power variations.

Fiber optic patch cord splitters are optical devices that connect three or more fiber ends, dividing one input between two or more outputs or combining two or more inputs into one output.



Description

Clearfield® VOA and Patch Cord Splitters are optical components that are up-jacketed to 3 mm and terminated with any industry standard connectors.

Features and Benefits

Integrity
- RUS Listed
- Compliant to Telcordia GR-1221 and GR-1209
- Supports Industry standard Singlemode and Multimode fibers and connectors
- Outside plant hardened components

Protection
- Ruggedized fiber up-jacket and packages available for superior protection
- Multi-component custom packages available

Access
- Compact tube style and discrete components offered for direct splice in options
- VOA input available with up to one meter and output leg up to 30 meters
- Up to 80 dB attenuation on VOA
- Patch Cord Splitters available with up to one meter for input and nine meters on the outputs

Investment
- WaveSmart VOA and Patch Cord Splitters offer an economical, dense and user-friendly solution for deploying fiber in any optical network
- Environmentally stable, high-isolation, low-insertion loss
- All components tested 100% and include test documentation

Technical Specifications

WaveSmart VOA and Patch Cord Splitter	
VOA	12 mm round x 15 mm L
Patch Cord Splitter	90 mm L x 20 mm D x 10 mm H

Environmental Reliability Tests
- Complies with Telcordia requirement TR-NWT-0012 21 and TR-NW T-00 1209
  - Optical characteristics
  - Thermal Cycling
  - Vibration Test
  - Salt Spray Erosion
  - Thermal Aging
  - Humidity Resistance

WaveSmart®
VOA and Patch Cord Splitter

CLEARFIELD

VOA and Patch Cord Splitter - Environmental Reliability Tests	
High Temperature Storage Test	85°C for 2,500 hours
Low Temperature Storage Test	-40°C for 2,500 hours
Thermal Cycling Test	-40°C/ 75°C for 500 cycles
Fiber Pulling Test	0.25 Kg for 250 µm fiber and 900 µm loose tube
Water Immersion Test	43°C, PH=5.5, for 340 hours
Vibration Test	10~2,000 Hz Random, 20 g, three axes
Impact Test	8 Drops, 1.8 meters high
Thermal Shock Test	100°C

Variable Optical Attenuator Specifications

These attenuators are designed to meet Telcordia standards. These attenuators can be used for 1300nm and 1550nm, as well as for C (1520-1570nm), L (1570-1620nm) and S (1470-1520nm) bands, with minimal changes in the insertion loss. Mounting holes provide easy attachment to PC boards and patch panels.

The attenuators consist of two base plates. Each base plate contains a fiber followed by a collimating lens. The attenuator is pre-aligned for optimum coupling efficiency using a patented tilt alignment technique. A threaded radial screw is used to block the collimated beam between the two lenses. Because the attenuator works by directly blocking the beam, it is polarization insensitive. A seal cap is used to seal the junction against temperature and humidity effects. The attenuator can even withstand immersion in water for extended periods of time. Attenuators are offered with singlemode, multimode or polarization maintaining fibers.

Configured Part Numbers

U ___ Z - ___ ___ ___ - ___ ___ ___ ___ - ___ ___ ___ ___ - ___ ___ ___ ___

[1] [2] [3] [4] [5] [6] [7] [8] [9] [10]

[1] Select Attenuator Type

A = Splitter (50/50 split)
B = Variable optical attenuator

[2] Select Input Connector

A = SC/UPC
C = SC/APC
E = LC/UPC
G = LC/APC
J = FC/UPC
K = FC/APC
M = ST/UPC

[3] Select Output Connector # 1

A = SC/UPC
C = SC/APC
E = LC/UPC
G = LC/APC
J = FC/UPC
K = FC/APC
M = ST/UPC

[4] Select Output Connector # 2

A = SC/UPC
C = SC/APC
E = LC/UPC
G = LC/APC
J = FC/UPC
K = FC/APC
M = ST/UPC
Z = N/A

[5] Select Length of Input Leg *

XXX = Length required from end of input connector to the attenuator / splitter

[6] [8] [10] Select Unit of Measure for Length Specified in Options # 5, # 7 and # 9

I = Inches
F = Feet
M = Meters

[7] Select Length of Output Leg # 1 **

XXX = Length required from end of output connector # 1 to the attenuator / splitter

[9] Select Length of Output Leg # 2 **

XXX = Length required from end of output connector # 2 to the attenuator / splitter

VOA
* The maximum length from the input connector to the VOA cannot exceed 1 meter.
** The maximum length from the output connectors to the VOA cannot exceed 29 meters. Overall length of a VOA patchcord cannot exceed 30 meters.

Splitter
* The maximum length from the input connector to the splitter cannot exceed 1 meter.
** The maximum length from the output connectors to the splitter cannot exceed 9 meters. Overall length of a splitter patchcord cannot exceed 10 meters.

WaveSmart®
½ Wide LGX Modular Optical Components

Application

This product is needed when an optical splitter or WDM is required in a central office environment. They are used in CATV headends and telephone company central offices.

Description

Modular optical components are splitters or WDMs that are packaged inside this metal housing with three duplex SC adapters or three quad LC female adapters for a total of 12 ports. The LGX modules utilizes a 6" high Optical Component Chassis to house the modules in a frame and can hold up to 29, ½ wide LGX.

Features and Benefits

Integrity

- RUS listed
- Compliant to Telcordia GR-449
- Supports industry standard LC adapters

Protection

- Ruggedized, secure packaging

Access

- Front inputs and outputs

Investment

- FieldSmart® Optical Components offer an economical, dense and user-friendly solution for deploying splitters or WDMs in a central office design
- Any combination of split ratios and number of components up to 12 ports
- Clearfield® supports legacy splitter deployments by offering optical components in LGX footprint
- Environmentally stable, high-isolation, low-insertion loss
- Compliant to Telcordia GR-1221 and GR-1209

Technical Specifications

WaveSmart 1/2 Wide LGX Modular Optical Components	
Dimensions	0.56" H x 5.12" W x 6.72" D
Port Density	SC: 6 (3 dual SC adapters); LC: 12 (3 quad LC adapters)
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC
Optical Component Types	WDMs, FSAN-WDMs, CWDMs, Splitters
Splitter Types	1 x 8, 1 x 4
Panel Type	6" LGX Optical Component Chassis
Material	16 gauge cold rolled steel with almond powder coating

WaveSmart®
Build-Out Attenuators

Application

Fiber optic attenuators are designed to introduce a specific amount of signal loss into an optical circuit. These products provide attenuation at a mated pair connection and are used for signal budgeting and power equalization.

Description

Clearfield® provides both build-out and in-line attenuators in all industry standard interface and attenuation values.

Features and Benefits

Integrity

- Compliant to Telcordia GR-910 and GR-1221
- Supports Industry standard Singlemode connectors
- Outside Plant hardened components

Protection

- Male and female ends all have protective dust cap
- Individually packaged for protection and to eliminate product mix up

Access

- Compact style fits in most cabinets and panels
- Connector interface includes ST, SC, SC/APC, FC, FC/APC, LC, LC/APC
- 1 dB through 20 dB, 25 dB and 30 dB attenuation
- Dual Bandwidth 1310/1550nm Supported
- Attenuation levels clearly marked for easy identification

Investment

- WaveSmart Attenuators offer an economical, dense and user-friendly solution for deploying fiber in any optical network
- Environmentally stable, high-isolation, low-insertion loss
- All components are tested 100%

Technical Specifications

WaveSmart Build-Out-Attenuators	
Return Loss	UPC: 55 dB; APC: 65 dB
Attenuation Tolerance	1 to 10 db: ± 0.5 dB 11 to 30 dB: ± 5%
Operational Wavelength	1260nm to 1650nm
Operating Temperature	-40°C to 85°C (-40°F to 185°F)
Max Power	500mW

Configured Part Numbers

A ____ ____ - ____ ____ ____

1 2 3

1 Select Attenuator Style

B = Buildout (male / female)

2 Select Connector Style

A = SC/UPC
C = SC/APC
E = LC/UPC
G = LC/APC
J = FC/UPC
K = FC/APC
M = ST/UPC

3 Select Attenuation Value

XXX = Attenuation value up to 30 dB

Introduction to Copper Products

Copper Cable Assemblies

A copper cable assembly is only as good as its parts and at Clearfield®, we only use the best parts available.

Whether it's a custom cabling solution that integrates with technologies for the world's most demanding semi-conductor manufacturer or the data center for one of the Internet's top search engine companies, Clearfield takes your copper cabling requirements seriously. Combining 40+ years of experience, we can design and manufacture DS1, DS3, Telco, CAT5e and CAT6 patch cords and cable assemblies for just about any application.

We've earned a reputation for product quality and customer service by producing value-priced, high-quality product delivered to your schedule. From concept, to production floor, to your doorstep, our in-house engineering and design staff will work with you to tailor-engineer a solution that matches both your performance and cost requirements. Clearfield's connectivity expertise, combined with a personalized approach, gives our customers the highest level of service and quality.

Copper Termination Manufacturing Capabilities

All manufacturing is carried out under controlled conditions based on documented workmanship standards, product specifications, work instructions and QA inspection criteria. At Clearfield, we use the latest manufacturing processes combined with hands-on expertise and craftsmanship for each assembly we build.

Soldering, crimping and IDC termination can be performed on all types of cables, wire harnesses and electromechanical assemblies for a variety of high technology industries, such as telecommunication, computer, medical, military, automotive and industrial electronics. Electromechanical assembly capabilities include electronic sub-assemblies and complete product assemblies and test, using available in house or customer supplied fixtures and test equipment. We invite short run projects, as well as, high volume production runs.

Copper
DS1 Copper Cables

CLEARFIELD

Application

Copper DS1 assemblies connect a variety of equipment.

Description

DS1 assemblies are typically constructed using 28 or 32 pair cable and 64 position connectors.

Features and Benefits

Integrity

- Meets or exceeds EIA/TIA standards for data transmission
- Meets UL, CSA, and NEC standards
- RoHS and WEEE compliant
- 100% visually and mechanically inspected
- 100% electrically tested

Protection

- Custom lengths MP 10/15/15 to minimize cable pile up
- Optional PVC and Plenum jackets available

Access

- 90°, 120°, and 180° male and female interfaces available

Investment

- CAT 5e available through special order
- Stock and custom serialization and labeling
- Stock and custom lengths available
- Custom pin outs available

Copper
DS1 Copper Cables

CLEARFIELD

Configured Part Numbers

D 1 ___ R ___ - ___ ___ ___ ___ ___ - XXXM or XXXF

1 2 3 4 5 6 7

1 Select Cable Type

1 = 28 pr, 24 ga, shielded, solid
3 = 32 pr, 24 ga, shielded, solid
4 = 28 pr, 22 ga, shielded, solid
5 = 28 pr, 26 ga, shielded, solid
6 = 32 pr, 26 ga, shielded, solid
7 = 32 pr, 22 ga, shielded, solid
9 = 32 pr, 26 ga, shielded, solid, cat5, VDSL

2 Select Wiring Configuration

6 = Straight through
X = Custom

3 Select Connector # 1

A = 64 pos, male, 24-26 ga, 180 deg
B = 64 pos, female, 24-26 ga, 180 deg
C = 64 pos, male, 24-26 ga, 180 deg, bail lock
E = 64 pos, male, 24-26 ga, 90/270 deg
F = 64 pos, female, 24-26 ga, 90/270 deg
G = 64 pos, male, 24-26 ga, 90/270 deg, bail lock
I = 64 pos, male, 22 ga, 90/270 deg
J = 64 pos, male, 22 ga, 180 deg
K = 64 pos, female, 22 ga, 90/270 deg
L = 64 pos, female, 22 ga, 180 deg

4 Select Cable Exit Connector # 1

1 = Pins 1 – 33
2 = Pins 32 – 64
Z = Exit not required (180 degree connector)

5 Select Connector # 2

A = 64 pos, male, 24-26 ga, 180 deg
B = 64 pos, female, 24-26 ga, 180 deg
C = 64 pos, male, 24-26 ga, 180 deg, bail lock
E = 64 pos, male, 24-26 ga, 90/270 deg
F = 64 pos, female, 24-26 ga, 90/270 deg
G = 64 pos, male, 24-26 ga, 90/270 deg, bail lock
I = 64 pos, male, 22 ga, 90/270 deg
J = 64 pos, male, 22 ga, 180 deg
K = 64 pos, female, 22 ga, 90/270 deg
L = 64 pos, female, 22 ga, 180 deg
Z = Pigtail/Blunt

6 Select Cable Exit Connector # 2

1 = Pins 1 – 33
2 = Pins 32 – 64
Z = Exit not required (180 degree connector)

7 Select 24" Drain Wire

1 = Connector 1 drain wire
2 = Connector 2 drain wire
3 = Drain wire both connectors
0 = No drain wires

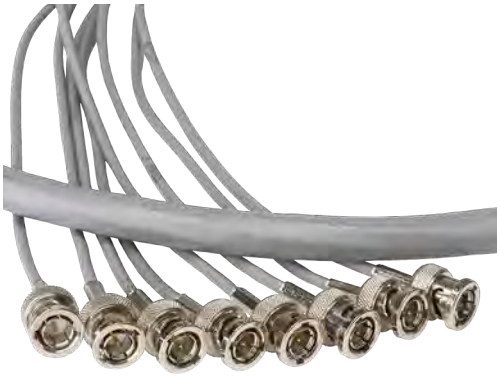
XXXM or XXXF

XXXM = Length in meters
XXXF = Length in feet

Copper
DS3 Copper Cables

Application

Copper DS3 coaxial assemblies connect a variety of equipment. Ideal for transmission of analog and digital signals in DSX environments where the use of small diameter coaxial cable helps reduce congestion.



Description

DS3 assemblies are typically constructed of 735, 734 and RG-type grades of cable using one or more packs, with or without tracers. Connector styles include: BNC, mini-BNC, SMB miniature, SMB, SMA, SMZ, Bantam, WECO, mini-WECO, LLC, right angle and straight connectors.

Features and Benefits

Integrity

- Meets or exceeds EIA/TIA standards for data transmission
- Meets UL, CSA, and NEC standards
- RoHS and WEEE compliant
- 100% visually and mechanically inspected
- 100% electrically tested

Protection

- Custom lengths and breakouts to minimize cable pile up
- Optional PVC and Plenum jackets available
- Available with or without tracer (dual 735 only)
- UL/CSA certified connectors and cable

Access

- Multiple pack MP 10/15/15 configurations available
- 90°, 120°, and 180° male and female interfaces available

Investment

- Stock and custom serialization and labeling
- Stock and custom lengths available

Copper
DS3 Copper Cables

CLEARFIELD

Configured Part Numbers

K ____ - ____ ____ ____ ____ ____ ____ ____ ____ - XXXM or XXXF

1 2 3 4 5 6 7 8 9

1 Select Cable Type

1 = 735A, single
3 = 735A, dual
4 = 735A, dual with tracer
6 = 735A, 3 pack
7 = 735A, 6 pack
9 = 735A, 8 pack
0 = 735A, 9 pack
A = 735A, 12 pack
D = 734D, single
E = 734D, single with tracer
F = 734D, dual
G = 734D, 8 pack
I = RG-179

2 & 6 Select Connectors *

A = BNC, 735A
C = BNC, ITT, 735A, 90 degree
E = BNC, trompeter, 735A, 90 degree
D = Mini BNC, trompeter, 735A, 90 degree
U = Mini BNC, trompeter, 735A
F = Mini WECO, trompeter, 735A
G = WECO, trompeter, 735A
H = BNC, trompeter, 735A, female
K = SMB, RG-179, 90 degree
S = SMB, RG-179
M = Mini SMB, 735A
N = Mini SMB, 735A, 90 degree
P = Mini SMB, RG-179
R = Mini BNC, RG-179
T = Mini SMB, RG-179, 90 degree
L = BNC, 734D
O = BNC, 734D, 90 degree
W = BNC, RG-179, 90 degree
V = BNC, RG-179, female
R = BNC, RG-179
6 = LCC, 734D
7 = Mini WECO, trompeter, 734D
8 = 1.0/2.3, RG-179
Z = Pigtail/Blunt

3 & 7 Select Breakout Lengths *

F = 6 inches
A = 12 inches
B = 18 inches
C = 24 inches
D = 30 inches
E = 36 inches
Z = Not applicable

4 & 8 Select Longest Leg *

N = Not required
A = Leg 1
B = Leg 2
C = Leg 3
F = Leg 6
H = Leg 8
J = Leg 9
M = Leg 12

5 & 9 Select Stagger Lengths *

N = O inches
D = 3/4 inches
A = 1 inch
B = 1.5 inches
C = 2 inches
Z = Not applicable

XXXM or XXXF

XXXM = Length in meters
XXXF = Length in feet

* Option #2-5 should refer to the end #1. #6-9 should refer to end #2. When ordering an assembly and there is a required stagger, please state which leg of the assembly (on each end) should be the longest.

Copper
Telco Copper Cables

Application

Copper telco assemblies connect a variety of equipment interfaces in carrier networks, private networks and customer premise environments. They are used to transmit analog or digital data for a variety of communication applications. Our high-quality cables ensure the integrity of your data path.

Description

Clearfield® 25/32-pair cables, terminated to 50/64-position RJ connectors, are manufactured to EIA/TIA standards. Our 25-pair Category 5e assemblies meet standards for data transmission up to 100 mbps.

25 pair 50 pin assemblies plug into many types of gear. Please specify when ordering what gear, if known, the connectorized ends will be plugging into to ensure the proper screws are included with the assembly.

Clearfield maintains a copper connectivity library for various manufacturing of active equipment and can provide assembly information specific to your connectivity needs.

Features and Benefits

Integrity

- Meets or exceeds EIA/TIA standards for data transmission
- Meets UL, CSA, and NEC standards
- RoHS and WEEE compliant
- 100% visually and mechanically inspected
- 100% electrically tested

Protection

- Custom lengths MP 10/15/15 to minimize cable pile up
- Optional PVC and Plenum jackets available

Access

- 90°, 120°, and 180° male and female interfaces available
- Octopus/Hydra assemblies available

Investment

- MP 10/15/15
- Stock and custom serialization and labeling
- Custom pin outs available

Copper
Telco Copper Cables

CLEARFIELD

Configured Part Numbers

___ ___ - ___ ___ ___ ___ ___ ___ ___ ___ - XXXXM or XXXXF

1 2 3 4 5 6 7 8 9 A

1 Select Cable Type

1 = Cat 5, 25 pr, 24 ga, PVC
2 = Cat 3, 25 pr, 24 ga, PVC, BC
3 = Cat 1, 25 pr, 24 ga, PVC, TC
5 = Cat 3, 25 pr, 24 ga, plenum, shielded
6 = Cat 3, 25 pr, 24 ga, plenum
7 = Cat 1, 25pr, 24 ga, PVC, shielded
8 = Cat 5, 25 pr, 24 ga, PVC, shielded
9 = Cat 5e, 25 pr, 24 ga, PVC
A = Cat 5e, 25 pr, 24 ga, plenum
B = Cat 5e, 25 pr, 24 ga, plenum, shielded
D = Cat 5, 25 pr, 24 ga, PVC, blue

2 Select Wiring Configuration

4 = 10 / 100 Base T
6 = Straight through
9 = Custom

3 7 Select Connectors *

A = Cat 5, male, 180 deg
B = Cat 5, male, 90 deg
C = Cat 3, female, 180 deg
D = Cat 5, female, 90 deg
E = Cat 5, male, 110 deg
F = Cat 3, male, 90 / 270 deg
G = Cat 3, male, 180 degree
H = Cat 3, female, 90 / 270
I = Cat 3, male, 90 deg, shielded
J = Cat 3, female, 90 deg, shielded
K = Cat 5, Champ Sys 5, male, 90 / 270 deg
Z = Blunt

4 8 Select Cable Exits **

1 = 1 - 26 exit
2 = 25 – 50 exit
Z = Not required

6 A Select Screw Length ****

1 = Standard screw
2 = 1.00' screw
3 = 1.25" screw
4 = 1.50" screw
5 = 0.75" screw
6 = 0.425" screw
7 = 1.75" screw
8 = 0.875" screw
B = Bail locks
Z = Not required

5 9 Select Drain Wire ***

1 = Yes – need drain wire
0 = No – do not need drain wire
Z = N / A

XXXM or XXXF

XXXM = Length in meters
XXXF = Length in feet

* Cat 3 and Cat 5 connector notes:
Cat 5 female connectors only come in 90 degree. The cable exit for must be 25-50.
Cat 5 male connectors come in 90, 110 and 180 degree. The cable exit for the 90 degree must be 1-26. The 110 degree must be specified, 1-26 or 25-50.
Cat 3 male and female connectors mainly come in 90 and 180 degrees. Standard cable exit for male 90 degree is 1-26. For a male 270 degree cable the exit needs to be 25-50. Standard cable exit for female 90 degree is 25-50. For a female 270 degree cable the exit needs to be 1-26.

** Use option Z for 180 degree connectors. For additional cable exit details see above.

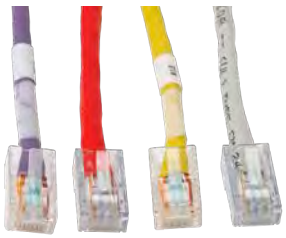
*** Drain are only required for shielded connectors. For non-shielded connectors use option Z

**** 25 pr / 50 pin assemblies plug into many types of gear. Please specify when order what gear, if known, the connectorized ends will be plugging into to ensure the proper screws are included with the assembly.

Copper
CAT5e and CAT6 Patch Cords

Application

Category 5e and 6 copper patch cords connect a variety of equipment interfaces in both carrier and private networks, as well as customer premise environments.



Description

These patch cords provide physical mated connections between components in 10BASE-T, 100BASE-T and 155 Mbps ATM networks. Clearfield® offers Category 5e and 6 copper patch cords with UTP cable and 8-conductor connectors manufactured to EIA/TIA standards.

Features and Benefits

Integrity

- Meets or exceeds EIA/TIA 568 B.2 MP 10/15/15
- RoHS and WEEE compliant
- ETL verified
- UL Listed
- 100% tested for continuity and performance

Protection

- Strain relief boots

Access

- Latch guards with easy thumb depression
- Nine stocked colors with custom configurations available

Investment

- Stock and custom serialization and labeling
- Stock and custom lengths available

Copper
CAT5e and CAT6 Patch Cords

CLEARFIELD

Configured Part Numbers

CAT5e Patch Cords

C T 5 - ___ ___ ___ - N T ___ - XXXM or XXXF *

1 **2** **3** **4**

1 Select Cable Color

0 = Black (PVC)
1 = White (PVC)
2 = Purple (PVC)
4 = Red (PVC)
5 = Green (PVC)
6 = Blue (PVC)
7 = Gray (PVC)
8 = Orange (PVC)
9 = Yellow (PVC)
A = Light gray (plenum)
B = Dark gray (plenum)
C = Black (plenum)
D = White (plenum)
E = Red (plenum)
F = Yellow (plenum)
G = Green (plenum)
H = Blue (plenum)

2 3 Select Boot Colors

0 = Black
1 = White
2 = Purple
3 = Pink
4 = Red
5 = Green
6 = Blue
7 = Gray
8 = Orange
9 = Yellow
N = No boot

4 Select Wiring Configuration

1 = 568A
3 = Crossover

XXXM or XXXF

XXXM = Length in meters
XXXF = Length in feet

* Standard patchcords use stranded, non-shielded cable.

CAT6 Patch Cords

C T 6 - ___ ___ ___ - N T ___ - XXXM or XXXF *

1 **2** **3** **4**

1 Select Cable Color

0 = Black (PVC)
1 = White (PVC)
2 = Purple (PVC)
4 = Red (PVC)
5 = Green (PVC)
6 = Blue (PVC)
7 = Gray (PVC)
8 = Orange (PVC)
9 = Yellow (PVC)
A = Black (plenum)
B = White (plenum)
E = Red (plenum)
F = Green (plenum)
G = Blue (plenum)
H = Light gray (plenum)
K = Yellow (plenum)

2 3 Select Boot Colors

0 = Black
1 = White
2 = Purple
3 = Pink
4 = Red
5 = Green
6 = Blue
7 = Gray
8 = Orange
9 = Yellow
N = No boot

4 Select Wiring Configuration

1 = 568A
3 = 568A crossover
B = 568A – certified cat 6
D = 568A crossover – certified cat 6

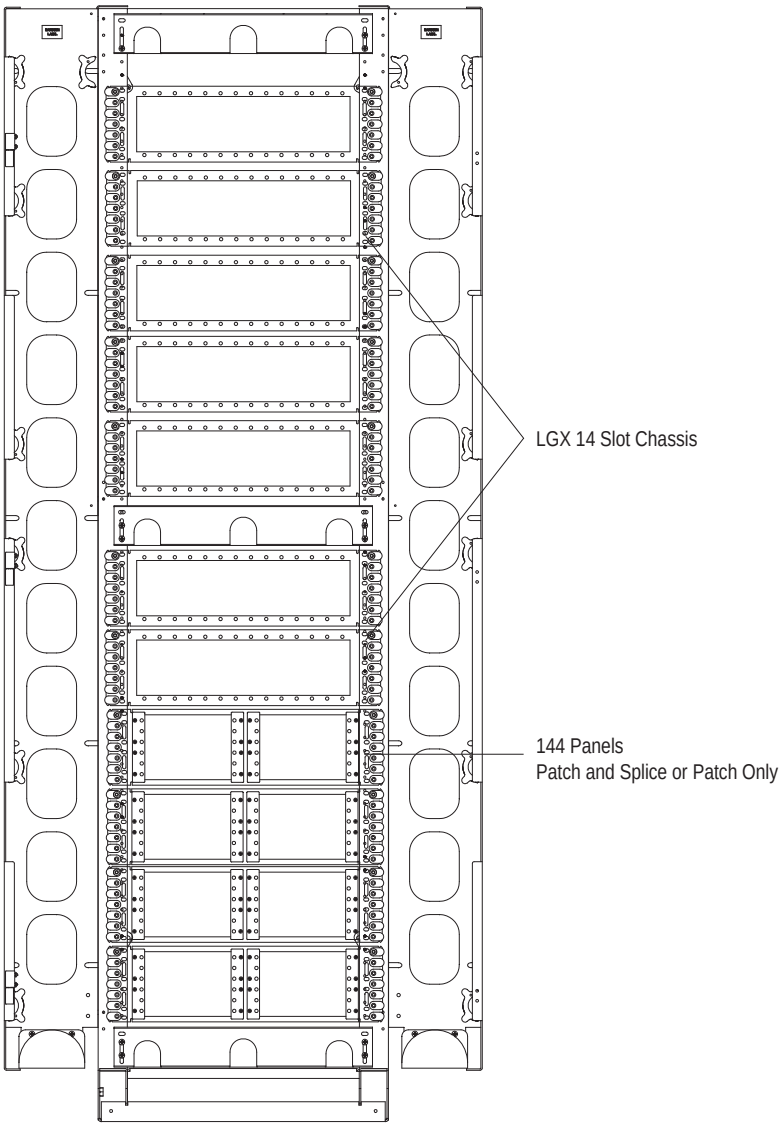
XXXM or XXXF

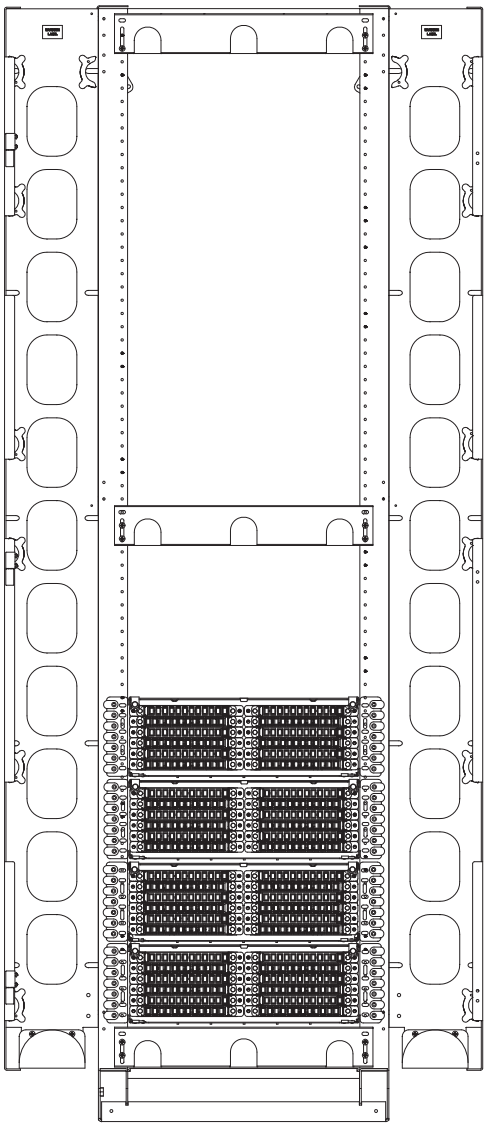
XXXM = Length in meters
XXXF = Length in feet

* Standard patchcords use stranded, non-shielded cable.

Engineering Standards and Technology

MSO Applications - Panels and Splitter Scenarios





Engineering Standards and Technology
Grounding Recommendations

CLEARFIELD

Panels

Patch only panels with an IFC cable, containing no metallic materials, does not need the cable grounded at the panel.

If the panel itself needs to be grounded, scrape some paint from the panel and the frame at the point of contact where a ground wire running from the frame to the panel makes contact. If an isolation kit was used when the frame was mounted to the floor, the frame will need a ground wire from the frame to a common ground.

Patch and splice panels with an OSP armored cable, where the metallic armoring (shield) is entering from the exterior of the building to the panel, will need to be grounded at the panel.

After the shielding has been removed back to the green cable clamp used for mounting the cable to the panel, install a shield bonding clamp to the metallic shield. Then, connect a ground wire from the bonding clamp to the appropriate building ground.

No metallic material should make contact with the panel when not grounding to the frame.

Cabinets

Patch only cabinets, with a non-armored cable being spliced outside the cabinet, the cabinet will need to be the only thing grounded.

Using the ground bar mounted in the cabinet, install a ground wire from the ground bar to a ground rod. The ground rod will also be used to ground any metallic armored (shielded) cable that will be spliced to the terminated cable coming from the cabinet.

Patch and splice cabinet, with an OSP armored cable where the metallic armoring (shield) is continuous entering into the cabinet will need to be grounded to the cabinet ground bar.

After the shielding has been removed from the cable entering the cabinet back to the liquid tight strain relief fitting, attach a shield bond to the metallic shield and install a ground wire from the bond to the cabinet ground bar. The ground bar will need to be installed with a ground wire connecting the ground bar to the ground rod.

Patch and splice cabinet with ground box will be grounded the same as the path and splice cabinet, with an additional ground wire being installed from the cabinet ground bar to the ground box ground bar.

Wall Boxes

Exterior and interior wall boxes can be grounded using the wall box ground lug.

A ground wire will need to be installed from the lug to the appropriate ground; this could be a ground rod, building steel, water pipe or the buildings common ground. If armored cable enters the panel, it will need to be grounded using the same steps as OSP cabinets.

Clearfield's ground bonding kit part number is FMA-JZZ.

Engineering Standards and Technology
Optical Splitter Product Notes

CLEARFIELD

Optical Splitters are used in PON (Passive Optical Network) architectures.

PON (Passive Optical Networks)

There are two common types of systems that make up fiber networks: Active Optical Networks and Passive Optical Networks. Each offer ways to separate data and route it to multiple locations, and each have advantages and disadvantages as compared to the other. An active optical system uses electrically powered switching equipment, such as routers or switch aggregators, to manage signal distribution and direct signals to specific locations. A passive optical network, on the other hand, does not include electrically powered switching equipment and instead uses optical splitters to separate and collect optical signals as they move through the network. A passive optical network shares fiber optic strands for portions of the network and are then split to feed the signal to multiple locations. Powered equipment is required only at the source and receiving ends of the signal.

A Passive Optical Network (PON) is a point-to-multi-point fiber to the premise network architecture. This type of network uses unpowered Optical Splitters along with WDM/CWDM/DWDM to enable a single optical fiber to be split into many separate fibers to serve multiple locations. A PON consists of an optical line terminal (OLT) at the service provider's central office and optical network units (ONUs) near or at the end users location. A PON reduces the amount of fibers and central office equipment required in the network, especially when compared to typical point-to-point architecture. A passive optical network is one form of a fiber-optic access network.

Passive optical networks or PONs have some distinct advantages. They are efficient in that each fiber optic strand can be split many times and can serve many users. The majority of the existing networks are splitting the signal 32 times, while newer systems have gone even further by splitting 64 times. There are even some networks pushing the envelope even further by splitting a signal 128 times. PONs have a low building cost relative to active optical networks along with lower maintenance costs. Because there are few moving or electrical parts, there's simply less that can go wrong in a PON.

Splitters play an important role in Fiber to the Home (FTTH) networks by allowing a single PON network interface to be shared among many subscribers. They are the network element that put the passive in Passive Optical Network. In some cases, FTTH systems may combine elements of both passive and active architectures to form a hybrid system.

Technologies used to fabricate splitters and couplers.

Planar Lightwave Circuit (PLC or Planar)

PLC splitters are used to separate or combine optical signals. A PLC is a micro-optical component based on planar lightwave circuit technology and provides a low cost light distribution solution with small form factor and high reliability. PLCs are manufactured using silica glass waveguide circuits that are aligned with a V-groove fiber array chip that uses ribbon fiber. Once everything is aligned and bonded, it is then packaged inside a miniature housing. PLC Splitters have high quality performance, such as low insertion loss, low PDL, high return loss and excellent uniformity over a wide wavelength range from 1,260 nm to 1,620 nm and have an operating temperature -40ºC to 85ºC. Clearfield® products meet or exceed Telcordia GR-1209 and GR-1221 certifications.

FBT Splitter Specifications

FBT is the traditional technology in which two fibers are placed closely together, typically twisted around each other and fused together by applying heat while the assembly is being elongated and tapered. A signal source controls the desired coupling ratio. The fused fibers are protected by a glass substrate and then protected by a stainless steel tube, typically 3 mm diameter by 54 mm long. As this technology has developed over time, the quality of FBT splitters has improved and they can be deployed in a cost-effective manner. FBT splitters are widely accepted and used in passive optical networks, especially for instances where the split configuration is not more than 1x4. The slight drawback of this technology is when larger split configurations such as 1x16, 1x32 and 1x64 are needed. FBT technology is limited to the number of splits that can be achieved with one coupling. If more than four splits are required, multiple FBT splitters can be spliced together in concatenation to multiply the amount of splits available. This is also known as a tree splitter or coupler. When using this design, the package size increases due to multiple FBT splitters and splices needed to concatenate. The insertion loss also increases with the additional splitters and splices used. When high split counts are needed and small package size and low insertion loss is critical, a PLC splitter is more ideal.

Engineering Standards and Technology
Optical Splitter Product Notes

CLEARFIELD

Planar Lightwave Circuit (PLC) Optical Splitter Specifications

Type	IL	RL	PDL	Uniformity	Directivity	Operating-Temp	Storage-Temp
1 x 32	< 16.8 dB	> 50 dB	< 0.3 dB	< 1.7 dB	> 55 dB	-40°C to 85°C	-40°C to 85°C
2 x 32	< 17.8 dB	> 50 dB	< 0.3 dB	< 1.8 dB	> 55 dB	-40°C to 85°C	-40°C to 85°C
1 x 16	< 13.8 dB	> 50 dB	< 0.3 dB	< 1.2 dB	> 55 dB	-40°C to 85°C	-40°C to 85°C
1 x 8	< 10.8 dB	> 50 dB	< 0.3 dB	< 0.8 dB	> 55 dB	-40°C to 85°C	-40°C to 85°C
1 x 4	< 7.5 dB	> 50 dB	< 0.3 dB	< 0.6 dB	> 55 dB	-40°C to 85°C	-40°C to 85°C

Fused Biconic Taper (FBT) Dual Window - Wavelength Flattened (Terminated Specifications)

	1 x 2	1 x 4	**1 x 8**	1 x 16	1 x 32
Maximum Insertion Loss (dB)	3.6	7.2	10.7	14.0	17.6
Maximum Uniformity (dB)	0.8	1.0	1.3	1.6	1.9
Maximum PDL (dB)	0.2	0.3	0.4	0.5	0.6
Center Wavelengths (nm)	1,310 and 1,550	1,310 and 1,550	1,310 and 1,550	1,310 and 1,550	1,310 and 1,550

Engineering Standards and Technology
WDM Product Notes

In the field of fiber-optics, WDM stands for Wavelength Division Multiplexing. This is a technology which combines many optical signals onto one fiber by using different light wavelengths (i.e. colors) of laser light. This technique also enables bi-directional communications over one strand of fiber, as well as multiplying the capacity of fibers used in fiber optic networks. The concept was first published in 1970. By 1978, WDM systems were being tested in the laboratory. Most WDM systems operate on single mode fiber optic cables. Some forms of WDMs are made to work with multimode fiber cables.

WDMs combine or multiplex (Mux) more than one wavelength onto one fiber. This is done by a discrete device, using fiber pigtail collimators and wavelength/light filters that are aligned and mounted in a glass sub-straight and typically packaged in a stainless steel tube for increased protection. The optical filtering devices used are typically solid-state, single-frequency Fabry–Pérot interferometers in the form of thin-film-coated optical glass filters. The wavelength/light filters only allow specific wavelengths of light to pass through the filter and the remainder of the wavelengths to be reflected back. WDMs can also be used to separate or demultiplex (demux) more than one signal using the same device and transmitting the signal in the opposite direction. Wideband WDMs typically are 1,310 nm and 1,550 nm devices with an operating window of ± 50 nm of each specific wavelength. The 1,310 nm port will have an actual operating wavelength window of 1,270 nm to 1,360 nm. The 1,550 nm port will have an operating wavelength window of 1,500 nm to 1,600 nm.

Fiber Optic WDMs are used to increase the amount of information that can be transmitted over a single fiber. A typical two channel WDM will be used to multiplex (Mux) two different wavelengths onto one fiber. This allows you to simultaneously transmit two different networks/systems over the same fiber. If you are using a WDM multiplexer at the beginning of your network, you will most likely need to use a WDM Demultiplexer (Demux) at the opposite end to separate (or demultiplex) the wavelengths to allow them to be directed to the correct receivers. Using a simple two wavelength WDM can increase the service capacity by two times for the same number of fibers. If you are currently using four fibers, you will be able to double your capacity and free up fibers for other use.

Today's WDM systems can handle as many as 160 signals and can transmit a basic 10 Gbit/s system on a single fiber, to over 1.6 Tbit/s on a single fiber. This is achieved by using Course Wave Division Multiplexing (CWDM) and Dense Wave Division Multiplexing (DWDM) - other forms of WDMs. Course Wave Division Multiplexing (CWDM) works very similarly to the WDMs mentioned earlier, however CWDMs offer more channels using wavelength/channel spacing of 20 nm with a working passband of ± 6.5 nm from the wavelength's center. This allows you to add multiple wavelengths onto one fiber and gives us the ability to use 2, 4 or 8 channels and even up to 16 or 18 channels, depending on the actual classification of the glass fiber being used. In 2002, the ITU standardized a channel spacing grid for use with CWDM (ITU-T G.694.2), using the wavelengths from 1,270 nm through 1,610 nm with a channel spacing of 20 nm. (G.694.2 was revised in 2003 to shift the actual channel centers by 1, so that strictly speaking, the center wavelengths are 1,271 to 1,611 nm, but are still typically referred to by 1,270 nm to 1,610 nm). Depending on the optical glass fiber used, many CWDM wavelengths below 1,470 nm are considered "unusable" on older G.652 specification fibers, due to the increased attenuation in the high water peak band of 1,360 nm to 1,460 nm. Improved fibers which conform to the G.652.C and G.652.D standards nearly eliminate the "water peak" attenuation and allow for full operation of all 18 ITU CWDM channels. CWDM is popular with the Cable TV networks, where different wavelengths are used for the downstream and upstream signals. In these networks, the wavelengths used are often widely separated. For example, the downstream signal might be in the 1,470 nm to 1,610 nm range, while the upstream signal is typically the 1,310 nm wavelength.

Dense Wavelength Division Multiplexing (DWDM) takes the WDM and CWDM one step further by narrowing the channel spacing in the C and L Band range. DWDM signals within the ITU C Band, are wavelengths between 1,530 nm and 1,565 nm (C band) and 1,570 nm to 1,625 nm (L band) adhering to the DWDM ITU-T G.694.1 frequency grid. DWDMs allow you to increase your wavelength capacity even further by offering more channels in these bands. DWDM offers multiplexing of multiple channels using 200 GHz, 100 GHz and 50 GHz spacing with the option to have an added Expansion port and/or Monitor port. Some technologies are capable of 12.5 GHz spacing (sometimes called ultra dense WDM). Such spacing is only achieved by free-space optics technology. New amplification options enable the extension of the usable wavelengths to the L-band, more or less doubling the number of channels. Early DWDM systems contained 4 or 8 wavelength converting transponders in the mid 1990s. By the year 2000, commercial systems capable of carrying 128 signals were introduced. There have been even more advancements in DWDM technology where they are starting to test over 1,000 channels, but this is in its early developmental stages and is not yet ready for commercial use.

WDM systems are popular with Telecommunication, Cable TV and Internet providers because they allow them to expand the capacity of the network without laying more fiber. By using WDM technology and optical amplifiers, they can accommodate several generations of technology in their optical infrastructure without having to overhaul the fiber optic backbone network. Capacity of any fiber network can be multiplied simply by upgrading to WDM, CWDM or DWDM technology.

WDM, CWDM and DWDM are all based on the same concept of adding multiple wavelengths of light onto a single fiber, but differ in their spacing of wavelengths, number of channels and the ability to amplify the multiplexed signals. EDFAs provide an efficient means of amplification for the DWDM wavelengths. However, CWDM optical amplification is not available, limiting the CWDM optical spans to several tens of kilometer.

Engineering Standards and Technology
Fiber Optic Assemblies

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Scope

This Engineering Specification is written to provide a summary of the performance criteria for terminated optical fiber connectors on optical fiber cable. This document will summarize product performance requirements based on the following established criteria: EIA/TIA-455, Fiber Optic Test Procedures (FOTP), and parts of Telcordia GR-326. This document may be revised, without notice, in accordance with standard Clearfield® document change procedures.

General Product Descriptions

Optical Fiber:

- Singlemode full Spectrum fiber meets ITU-T G.652.D (06/05) specification. Reduced Water Peak (RWP) fibers are considered. Full Spectrum because the reduction of loss in the water absorption spectral region (the E band)
- Singlemode Bending Loss Insensitive optical fiber meets ITU-T G.657 Class A (12/06). Fully compliant with the G.652 singlemode fibers specification
- Multimode 50/125 µm Graded Index Optical Fiber meets ITU-T G.651 (02/98). Multimode 50/125 µm Graded Index Optical Fiber for the optical access network meets ITU-T G.651.1 (07/07)
- Optical fiber cable for the optical access network recommends a quartz multimode fiber to be used for the access network in specific environments
- Color Coding of Fiber Optic Cable must be in accordance with TIA/EIA 598-A

Fiber Optic Jacketing:

- All riser and plenum cables will meet requirements described in TR-NWT-000409. Fiber optic cable for plenum environments shall be NEC type OFNP and listed as UL 910. Fiber optic cable for riser environments shall be listed as NEC type OFNR and listed as UL 1666. Fiber optic cable for outside plant environments shall meet Telcordia GR-20 requirements

Connectors Optical Fiber:

- GR-326: Generic Requirements for Singlemode Optical Connectors and Jumper Assemblies

Performance Requirements

The following specifications refer to terminated optical fiber connectors on optical fiber cable. All measurements performed using standard procedures with a non-contacting interferometer. Insertion Loss and Return Loss figures are measured using a launch cable meeting the criteria specified in WIO 900.

Applicable Documents

The following documents form a part of this specification to the extent defined herein. In the event of a conflict, this document shall govern:

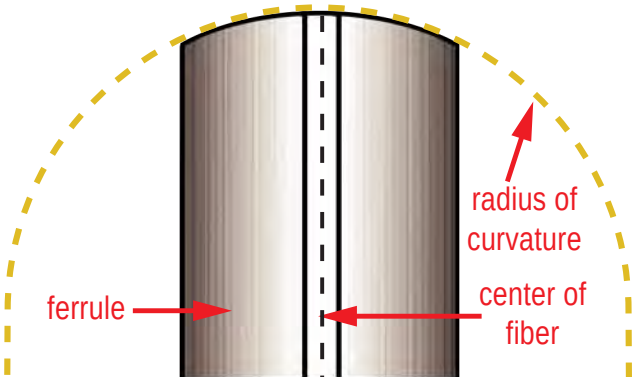
Applicable Documents	
GR-326-CORE	Generic requirements for singlemode optical connectors and jumper assemblies, Issue 4
EIA/TIA-455	Fiber optic test procedures (FOTP), EIA/TIA
Clearfield® Drawing #17012	Connector end-face polish geometry, Clearfield®
Clearfield Drawing #17010	Specification for multimode connector end-face visual inspection criteria
Clearfield Drawing #17011	Specification for multimode connector end-face visual inspection criteria
ITU-T G.652.D (06/05)	Characteristics of singlemode optical fiber and cable
ITU-T G.657 Class A (12/2006)	Characteristics of a bending loss insensitive singlemode optical fiber and cable for the access network

Minimum Performance Specifications for Terminated Singlemode Connectors

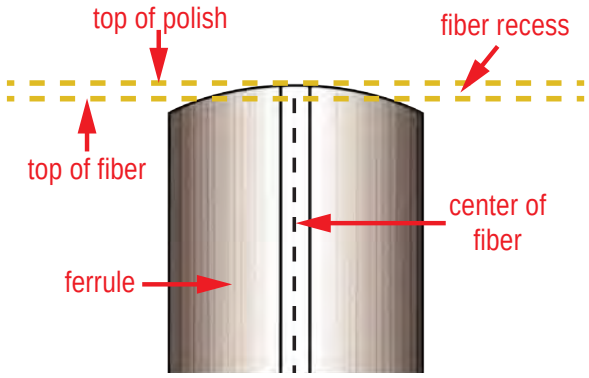
Connector Type	Ferrule Material	Polish Type	**Ins. Loss** Typical	Max. Ins. **Loss**	Min. Ret. **Loss**	Polish Radius **(mm)**	**Fiber Height,** Max.	**Fiber Height** Typical	Apex **Offset**	Polish Angle
ST	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB	7 - 25	±100 nm	±50 nm	< 50 µm	N/A
SC	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB	7 - 25	±100 nm	±50 nm	< 50 µm	N/A
FC	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB	7 - 25	±100 nm	±50 nm	< 50 µm	N/A
LC	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB	7 - 25	±100 nm	±50 nm	< 50 µm	N/A
D4	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB	7 - 25	±100 nm	±50 nm	< 50 µm	N/A
SC	Ceramic	APC	0.20 dB	0.30 dB	65.00 dB	5 - 12	±100 nm	±100 nm	< 50 µm	8.0° ± 0.3°
FC	Ceramic	APC	0.20 dB	0.30 dB	65.00 dB	5 - 12	±100 nm	±100 nm	< 50 µm	8.0° ± 0.3°
LC	Ceramic	APC	0.20 dB	0.30 dB	65.00 dB	5 - 12	±100 nm	±100 nm	< 50 µm	8.0° ± 0.3°
MPO/MTP*	Thermoplastic	APC	0.20 dB	0.35 dB	60.00 dB	N/A	N/A	N/M	N/A	N/A

**MPO/MTP Connector Specifications are for 12 fiber cable assembly connectors*
Note: All Clearfield® fiber optic patch cords are designed and tested to operate between -40°C and 85°C.

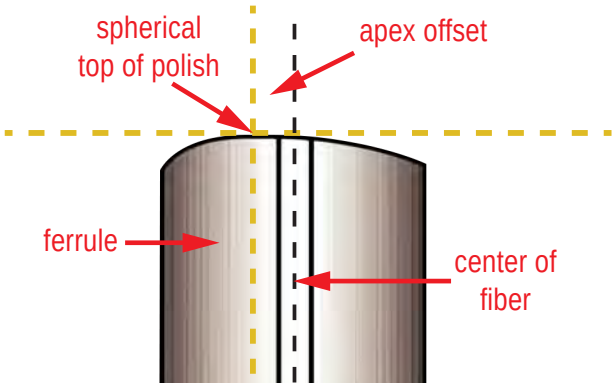
Specifications



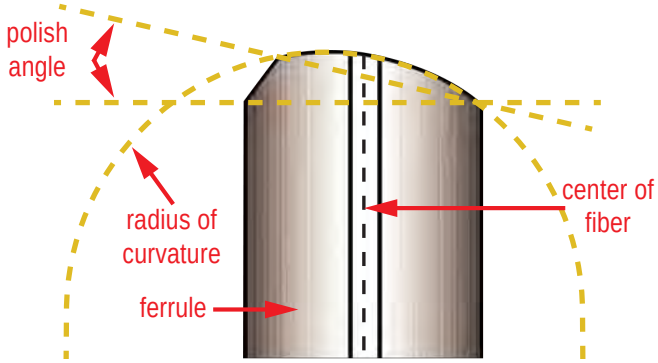
1.0 POLISH RADIUS
The radius of curvature is defined as the radius of the end-face surface as measured from the ferrule axis.



2.0 FIBER UNDERCUT / PROTRUSION
Fiber undercut or protrusion is defined as the distance between the top of the glass fiber as measured against the surrounding material in a spherical plane.
Undercut = -.02R3 + 1.3R2 - 31R + 325.



3.0 APEX OFFSET
Apex offset is measured as the distance between the spherical center of the polished end-face and the center of the fiber.



4.0 ANGLED POLISH
The end face is polished at an angle relative to the axis perpendicular to the ferrule axis.

Engineering Standards and Technology
End-Face

CLEARFIELD

What is IL?

Insertion loss (IL) is the loss of signal power resulting from the insertion of a device in a transmission line or optical fiber. Usually expressed as a ratio in dB relative to the transmitted signal power, it can also be referred to as attenuation.

What is RL?

Return loss or reflection loss (RL) is the reflection of signal power resulting from the insertion of a device in a transmission line or optical fiber. It is usually expressed as a ratio in dB relative to the transmitted signal power.

Test and Measurement

Your minimum requirements should include data that meets insertion loss and return loss (reflectance). Insertion loss should meet the 326-Core minimum of 0.4 dB, with reflectance meeting 55 dB for UPC connectors and 65 dB for APC. Asking the typical performance measures of a manufacturer's process can save you on link loss budgets over a long fiber run through a FTTH network.

Apex offset, the measurement for how well the center core of the fiber is centered in relationship to the spherical apex of the polished tip, minimizes lateral offset between two fibers and maintains a better physical contact. Apex offset describes a physical condition of the polished fiber, rather than a performance parameter. It is also an acceptance criteria for Telcordia. An excessive apex offset contributes to high insertion loss and high back reflection readings.

Fiber undercut or protrusion affects the physical contact zone. This metric measures, in nanometers, the height of the fiber under or below the ceramic end-face. Too much undercut minimizes the chance of a good physical contact, while too much protrusion causes excessive fiber deformation when mating occurs resulting in degradation of signal. When two connectors are mated, the ceramic compresses around the fiber core which allows the fibers to squeeze up and make good contact with each other. When they do not touch (because of too much undercut), an air gap is created and loss happens. If the fiber is protruding too far (beyond 50nm), chipping and cracking can occur during the mate.

Radius of curvature is the measurement of the connector end-face spherical condition. The radius generated affects the performance because the radius, when mated with another connector, should be compressing most of the material surrounding the core (ceramic ferrule). A proper radius, 5 to 12 micron, allows for the right compression and max performance. Too tight of a radius will put too much compression on the glass and too loose will put too much on the surrounding ferrule with not enough glass compression. Too much or too little radius can cause light scatter or inadequate physical contact for optimal signal transfer.

Apex offset, fiber undercut/protrusion, and radius of curvature are the main ingredients that work in concert to deliver good IL and RL performance. Processes that drift out of this geometry range can still yield acceptable IL/RL, but sensitive traffic will be affected (such as video) and long term performance of the connector will be compromised.

Your vendor should be able to provide these geometry test reports with on-hand interferometer testing. While you may not require this data for each and every connector, you should require that random testing is being performed to ensure the process is capable and not drifting out of spec. "Garage shops" will not be able to deliver this test data on demand.

Your test reports should account for each connector independently and not a total report that summarizes both ends.

End-face Quality & Cleanliness

Currently, there is not an industry standard for this topic. To be sure, end-face and cleanliness has a direct impact on the performance of the connector.

Several organizations (most notably, NEMI) have studied the impact of end-face defects and cleanliness. The influence of the contamination/scratches becomes more evident if they are located in the core/cladding areas. Particle contamination can cause a significant increase in IL (up to 10 times) and decrease in RL (up to three times). Scratches applied to the fiber contact zones 1a and 1b, which is an area from the core out to the cladding (125 µm), decreased RL by up to 25%. On the other hand, scratches located in the cladding layer showed little effect on IL and RL. Multiple heavy scratches passing through the core caused severe performance degradation in IL/RL and can be catastrophic.

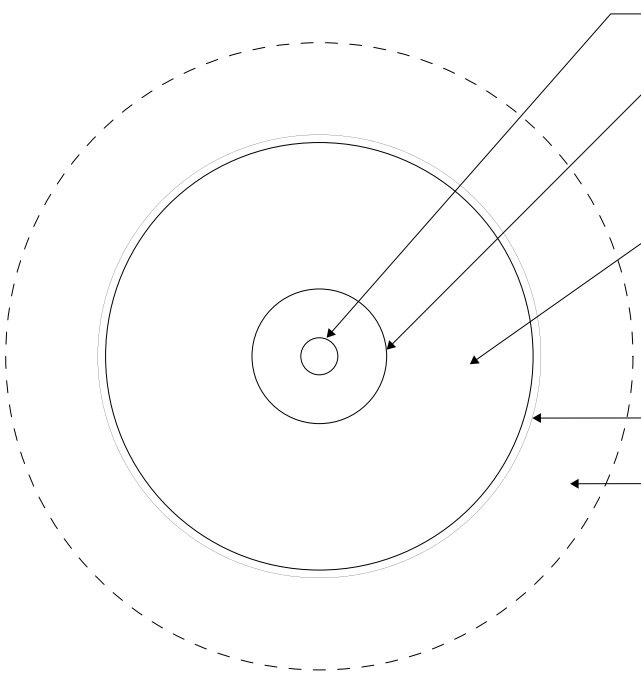
Connectors with particle contamination will pass on contamination to mated connectors. Contaminant can prevent direct physical contact, creating an air gap. Multiply this by the number of re-mates over time and the problem spreads. Pits and scratches, in the critical contact zone 1a, will collect particulates over time and the same contamination-spread occurs. Long term reliability in dynamic circuits is severely reduced as opposed to those that are static. Scratches and polishing marks outside of critical contact areas are acceptable and do not have any impact on signal performance.

The quality fiber assembly manufacturers and OEMs will have their own inspection criteria. However, these specifications differ from company to company and the differences can cause materials to be "non-conforming" at user/customer sites.

Engineering Standards and Technology
End-Face

Singlemode

Acceptable Fiber End Face



CORE (9 µm shown)

NO DEFECT ZONE (0-25 µm)
Scratches: Fails if there are any scratches at all
Defects: Fails if there are any defects at all

CLADDING (25-115 µm)
Scratches: Fails if any width is more than 3 µm
Defects: Fails if any diameter is more than 5 µm
Fails if there are more than five defects
Exclude if the diameter is less than 2 µm

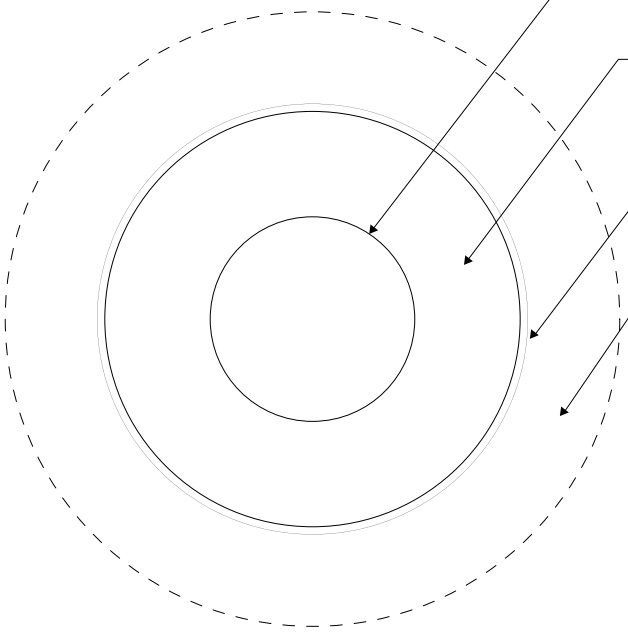
EPOXY RING (115-135 µm)

CONTACT ZONE (135-250 µm)
Defects: Fails if any diameter is more than 10 µm

Notes:
1. Fiber Core: 9 µm diameter
2. End face viewed at a minimum of 400x magnification
3. No visible contamination

Multimode

Acceptable Fiber End Face



CORE (0-65 µm shown)
Scratches: Fails if any width is more than 3 µm
Defects: Fails if any diameter is more than 5 µm
Fails if there are more than four defects

CLADDING **(65-115 µm)**
Scratches: No limit ≤ 5 µm
None > 5 µm
Defects: No limit < 5 µm
5 from 5 µm to 10 µm
None > 10 µm

EPOXY RING **(115-135 µm)**

CONTACT ZONE **(135-250 µm)**
Scratches: No limit
Defects: No limit < 20 µm
5 from 20 µm to 30 µm
None > 30 µm

Notes:
1. Fiber Core: 50 µm or 62.5 µm
2. End face viewed at a minimum of 400x magnification
3. No visible contamination