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COMMUNICATOR



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FTTx - Parts and Pieces

FTTx Installations

As we see the need for a dramatic increase in the amount of bandwidth that is delivered to customers, due to 4K high definition TV, services such as YouTube and other video sharing services, and peer to peer sharing services, we are seeing a rise in FTTx installations or more Fiber To The "x". We all like lightning fast internet and crystal clear pictures on our 70 inch TV's and Fiber To The Home - FTTH is responsible for these little luxuries.

So what is "x"? "x" can stand for the multiple locations that cable TV or broadband services are delivered to, such as a Home, Multi Tenant Dwelling, or Office. These types of deployments deliver service directly to the customer premises and this allows for much faster connection speeds and more reliability for the consumers. Depending on the location of your deployment, this can change a variety of factors that will ultimately affect the items you need for your project.

Factors that can affect a Fiber To The "x" deployment can be environmental, weather related, or already existing infrastructure that needs to be taken into account when designing the network. In the sections below, we will go over some of the most common equipment that is utilized within a Fiber To The "x" deployment. There will be variations, different styles, and different manufacturers, but for the most part, all the equipment is pretty standard in a deployment.

Fiber Distribution Hub

This enclosure is designed to be the interconnect or meeting place for fiber optic cables. Cables enter the enclosure from the OLT - Optical Line Terminal and then this signal is split using optical fiber splitters or splitter modules and then sent through drop cables out to the homes or multi tenant buildings. This unit allows for fast access to the cables so they can be serviced or repaired. You can also test within this unit to ensure that all



Zeus Large Fiber Management Center

the connections are in working order. Cabinets come in a variety of sizes and shapes depending on the installation you are doing and the number of customers you are planning on serving from a single unit.

Splice Enclosures

Outdoor splice enclosures are placed after the fiber distribution hub. These outdoor splice enclosures allow for the unused outdoor cable to have a passive place where these fibers can be accessed via midspan and then joined to the drop cable. The OSP Distribution Enclosure 8 Port, and the Drop Termination Enclosure 16 Port are used to house and protect splices and manage fibers. Both offer a plug and play style option decreasing the technician install time and increasing efficiency. Deploying the right enclosure and confirming the correct amount of ports is key.



FIS OSP Distribution Enclosure
Z1-ODE08SCA

Splitters

Splitters are one of the most important players in any FTTx project. They are used to split the incoming signal so that more customers can be serviced with a single fiber. They can be placed within the fiber distribution hubs, or in the outdoor splice enclosures. Splitters are usually connectorized with SC/APC connectors for optimal performance. The splitters can have splits such as 1x4, 1x8, 1x16, 1x32, and 1x64, as FTTx deployments are becoming more common and more telecom companies are adopting the technology. The larger splits are becoming more common such as 1x32 or 1x64. These splits really



FIS Splitter Modules (LGX)
Z1PLM1321L162SACA

Article continued on the inside

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symbolize the number of homes that can be reached by this single fiber that is running to the optical splitter.

Network Interface Devices (NIDs)

Network Interface Devices or NID boxes are usually located on the outside of a single home; they are not usually used in MDU deployments. NID's are environmentally sealed boxes that are placed on the side of a home to allow the optical cable to enter. This cable is usually an outdoor-rated drop cable terminated with an SC/APC connector. NID's normally come with outlet grommets that allow for multiple cable sizes. There is space within the box for adapter panels and splice sleeves. NID's are fairly inexpensive, and usually smaller in size when compared to an MDU box.



FIS Splitter Modules
Z132LGXSCA2

Multi Tenant Distribution Box

A multi tenant distribution box or MDU box is a wall mountable enclosure that is designed to withstand harsh conditions and allows for multiple incoming fibers, usually in the form of an indoor/outdoor distribution cable. They can also house optical splitters that are terminated with SC/APC connectors and splice sleeves. These boxes are located on every floor of the building and they are split off into single fibers or drop cables that run to each unit on the floor.



FIS Orion Series 32 Port Enclosure
Z1-ORI48

Flat Drop Cable Assemblies

To fulfill the cabling requirements of different areas, a variety of OSP fiber optic cables were developed. Drop cable is the main focal point of the network that shapes the final external link between the Provider and the Subscriber. Flat drop cable consists of a polyethylene jacket with 1 or many fibers, paired with 2 dielectric strength members, giving a high crush resistance for direct bury applications. Let us supply your drop cable with a variety of connectors such as the Corning Optitap or SC/APC for easy install in either the Zeus MST enclosures or one of the many FIS OSP Drop Termination Enclosures.



FIS Flat Drop Cable Assemblies

At the Brightside, You Will Receive Top Fiber Optic Training Plus More.

Once upon a time, there was a man who ran a corporation that purchased a beautiful hotel on a peninsula in a lake in the Adirondacks and converted it into a world-class training center. The intelligent and curious came from far and wide to learn about fiber optics at the center, only to discover an education of the paranormal kind, as the hotel is overstuffed with ghosts, entities, and haunts. Fiber Instrument Sales purchased the Brightside Hotel on Raquette Lake in 2001 and spent a lot of time, money, and love updating the grand structure.

The Brightside was built in the latter half of the nineteenth century, when Joe and Mary Bryere were married and built the structure, around 1884. It was opened as a hotel in 1891 and received rave reviews on its grandeur and beauty from world travelers. Joe operated the Brightside with fun and a love for all travelers until 1941. The Brightside operated on and off for many decades until it was sold to the industrious Frank Giotto, who developed the location into a well-known Fiber Optic Training Center.

The Brightside has had haunted stories surrounding it for a long time. They began when Billy Gestrich, one of the owners of the 1970s, shared the tale of the young married daughter of the Bryere's who was staying in the room above the kitchen. Her husband went across the frozen lake in winter to run an errand, and she watched him walk into a hazy blue fog. He disappeared, never to be seen or heard from again. She was overcome with sadness and would sit in the upstairs room, staring out the window at the water, waiting for her love to return. The daughter died of a broken heart, and her spirit has been seen looking out the window, waiting for her husband to come back to her.

On Aug. 30, 2002, The Mohawk Valley Ghost Hunters paid a visit to The Brightside to investigate the location's well known paranormal activity. They concluded that the original building was "very busy" with paranormal activity, and they saw many signs of it. Their report has been published, and we keep a copy of it at The Brightside. It has become a very popular topic of conversation with our guests.

Our trainers have reported many unexplained observations. Orbs, vibrating beds, and shadow-like images are most commonly reported.

Brightside is one of the most beautiful and haunted places in the Adirondack Mountains. We invite you to experience the beauty, haunts and earn our fiber optic diploma now in the possession of over 25,000 graduates.

Visit Us Online
To Learn More About the
Hauntings and History Of
The Brightside



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To Move Forward!



Featured Products

Precision Optical Cleavers

FIS stocks fiber optic cleavers for immediate shipment. When fusion or mechanical splicing two fibers, a precision cleaver delivers the maximum performance. Fusion splicers inspect cleave angles prior to discharging an arc to achieve lowest attenuation results. Mechanical splicing which does not provide use of cameras and angle inspection is very dependent on precision cleaves to minimize return loss (back reflection) when butt splicing the two fibers inside a connector or cylinder clamp. New cleavers offered today have incredible blade life allowing up to 60,000 single fiber cleaves prior to changing the blade. New blades range in price from \$95 to \$130 each and using OEM blades from the manufacture is always recommended. Options for cleavers include removable fiber guide plates, automated scrap collectors, bluetooth, and capability for ribbon cleaving. FIS is authorized distributor for AFL, Sumitomo and OFS/Fitel precision fiber cleavers.



Steve Casaletta

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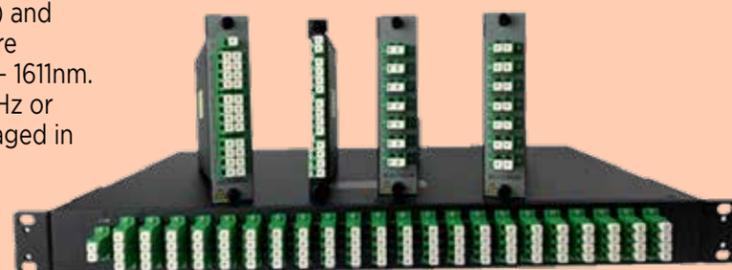
CWDM and DWDM Modules

FIS is a leader in the supply of Coarse Wavelength Division Multiplexing (CWDM) and Dense Wavelength Division Multiplexing (DWDM) Modules. CWDM Modules are available in 2,4,8, and 16 channels utilizing 20nm channel spacing from 1271 - 1611nm. DWDM Modules are available in 2,4,8,16,20, and 40 channels utilizing 100GHz or 200GHz channel spacing with ITU channels 20 - 60. All modules are packaged in either OSP Cassettes, LGX Modules, or in 1RU Rackmount configurations with any connector style you choose.



Anthony Russo

FIS Product Line Manager, Zeus FTTx Solutions
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DWDM OSP and LGX Passive Modules

The NEW FIS Benchtop Microscope

I am pleased to introduce our new and improved American-made benchtop microscope for inspecting connector end faces. The new sleek design uses a powder-coated aluminum housing that will sit firmly on any surface for your benchtop/laboratory setup. This microscope is available in 200x or 400x power. It includes interchangeable 2.5mm and 1.25mm universal adapters, which allow for the inspection of all standard connector end faces: SC, ST, FC, LC, and MU connectors. This new microscope allows the user to manually center the image by turning the easily accessible centering adjustment knobs, so you'll never have to worry about an off-centered image. The unit comes with video cables to connect to an HDMI port or a USB port to your own monitor. As an additional purchase, we offer a high-resolution, high-definition monitor to view the end faces.



Robert Licari

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FIS Compact Wall Mount Enclosure

The FIS Compact Wall Mount Enclosure is offered in (1) or (2) panel versions. Each accepts LGX style adapter plates or MPO/MTP cassettes. The compact form factor along with an included Din Rail mount allows the enclosure to be mounted virtually anywhere. The fully removable door makes either splicing pigtails or patching pre-terminated cables simple. 40mm splice sleeves (F1100240C-50) are recommended for use in these enclosures.



Steve Ermacor

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MDC Cable Assemblies

FIS now offers cables assembled with the new US Conec MDC connector. The MDC connector is a Very Small Form Factor (VSFF) duplex connector with two 1.25mm ferrules in one housing. This connector can be assembled on both jumper cables with an OD of up to 2.0mm and on trunk cables. It is currently available in both MM and SM UPC. This connector allows for 3x fiber cabling density over the LC connector. Easy insertion and extraction with the use of the push-pull boot and simple polarity reversal with no exposed fibers are the advantages of this connector style.



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Product Spotlight Attenuators

In Stock: Male to Female, Male to Male and In-line Configurations



F1-8761AXX
LC/UPC Male to Female Attenuator



F1-8741AXX
SC/APC Male to Female Attenuator



F1-9621AXX
SC/UPC Male to Female Attenuator

Several configurations of attenuators are in stock and available from FIS starting at \$10.25 each. Popular Male to Female or Bulkhead style (male to male) can be purchased in several attenuation levels. Most attenuators are utilized in singlemode applications to lessen signal strength at the receiver, however FIS does have multimode options available for enterprise networks. All attenuators have a tolerance, and as levels get higher tolerance gets wider. Typically 1 to 10dB is +/- 0.5dB, and 11 to 30dB is +/- 5%. Variable inline attenuators can assist in finding particular levels required in the network and connectors of choice can be installed on the end of cables. Check out the complete line of attenuators at the FIS website.

For more information call to speak with a sales representative

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Ask Bruno

Vice President of
Technical Services



I need to pull a pre-terminated fiber (SC/APC connector) cable for an FTTH application. Microduct was installed with a very tight diameter. Any ideas?

FIS has a product that we have branded as "Pathfinder". The Pathfinder product is actually a miniature pulling eye kit installed on pre-terminated cable designed to fit inside of microduct with as small as a 10mm inner diameter. The fiber used is Corning's LBL (Low Bend Loss) bend optimized Singlemode which allows you to pull through tight spaces and corners without added attenuation.

These cables can be installed with SC/UPC, SC/APC, LC/UPC and LC/APC on the pull side and any optical connector on the inside leg. When using SC connectors simply remove the pulling eye and snap on the outer housing before installing the connector in the adapter or modem.

Connector Types (PullSide)	SC/APC, SC/UPC, LC/APC, LC/UPC
Inside Leg Connector Type	SC, ST, FC, LC and Hardened Connectors OptiTap Compatible, Full Axis or OVDA IP Type
Connector Insertion Loss	0.3dB typical
Connector Return Loss	=< -60dB
Cable Type	Indoor/Outdoor, Armored, Riser or Plenum Rated
Cable Part Numbers	S091001C7NRW30 - FIS Simplex SM ClearCurve LBL Indoor Outdoor Riser White 3mm
	S091001C7NRBL30 - FIS Simplex SM ClearCurve LBL Indoor Outdoor Riser Black 3mm
	GJFKZUB1 - Simplex SM Armored Cable with TPU Black Jacket 3mm
Fiber Type	9/125µm Bend Insensitive ClearCurve LBL or Singlemode G.657.A1
Fiber Count	1
Outer Jacket Color	Black or White
Strength Member	Aramid Yarn or Armored
Tight Buffer Material	PVC/Riser/Plenum
Nominal Outer Diameter	3.0mm
Minimum Bend Radius, Installation (cm)	6.6
Minimum Bend Radius, Operation (cm)	4.4
Pulling Eye Pull Force	25lbs (max)
Pulling Eye Interface	Ball Bearing Swivel with Interlocking clip
Protective Cable Netting	Tech Flex Expandable Cable Netting



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