

Charles
An Amphenol Company

OSP FTTP Selection Guide


About Charles Industries

Founded in 1968, Charles Industries, LLC is a diversified manufacturing and technology company. Its corporate headquarters are in Schaumburg, Illinois and has five U.S. based manufacturing centers. In April 2019, Charles was acquired by Amphenol Corporation and now operates as an Amphenol Company.

For more than 50 years, Charles Industries has consistently introduced new innovations that have reshaped network deployments of outside plant and wireless infrastructure. Today, our solutions play an integral role for major North American wireline and wireless service providers' networks as well as the majority of CLEC, ILEC, IOC and MSO networks.

Charles' reputation for quality products and unparalleled support results from working with customers to create solutions that solve problems and save money. Our goal remains to enable our customers to better serve their customers. Service providers can count on Charles to improve network reliability, lower installation and support costs, speed project timelines and provide years of dependable performance

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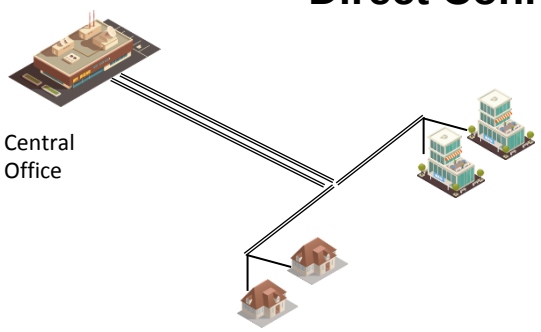
FTTP Network Architectures

Direct Connect (Home Run)

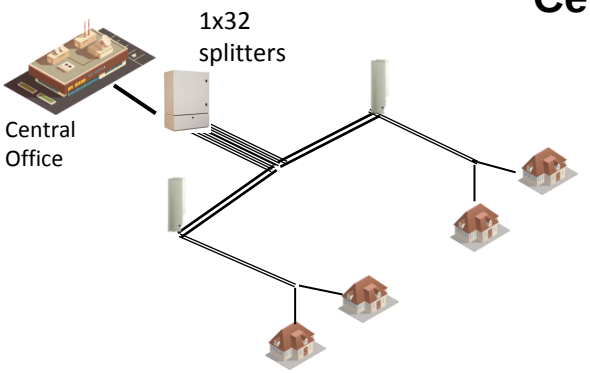


Pros
- Simplest network
- No splitters in field

Cons
- Very high investment

Best used for business and high demand users

Centralized Split

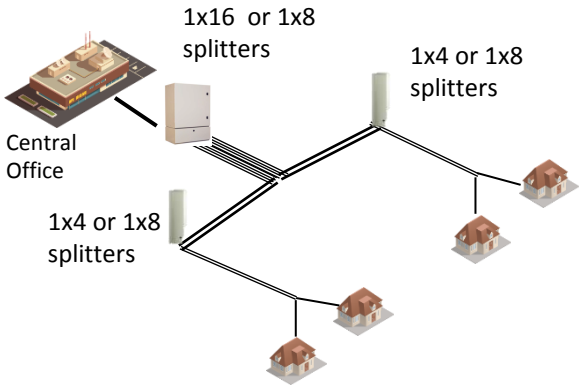


Pros
- OLT efficient & pay as you grow
- Future proof
- Simpler maintenance

Cons
- Higher fiber investment

Best used for urban and dense areas

Distributed Split

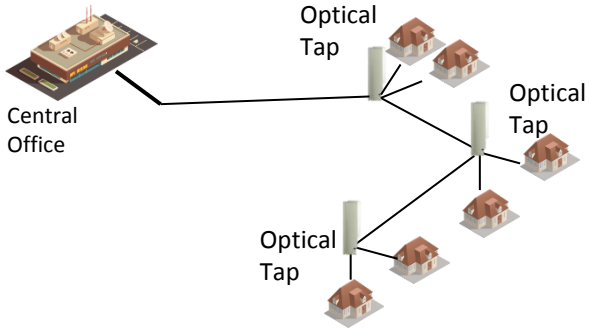


Pros
- Leaner fiber
- Lower capex per customer
- Faster turn up

Cons
- Less flexible & adaptable
- Harder to maintain, 2 splits

Best used for dense areas, increasingly used

Distributed Tap

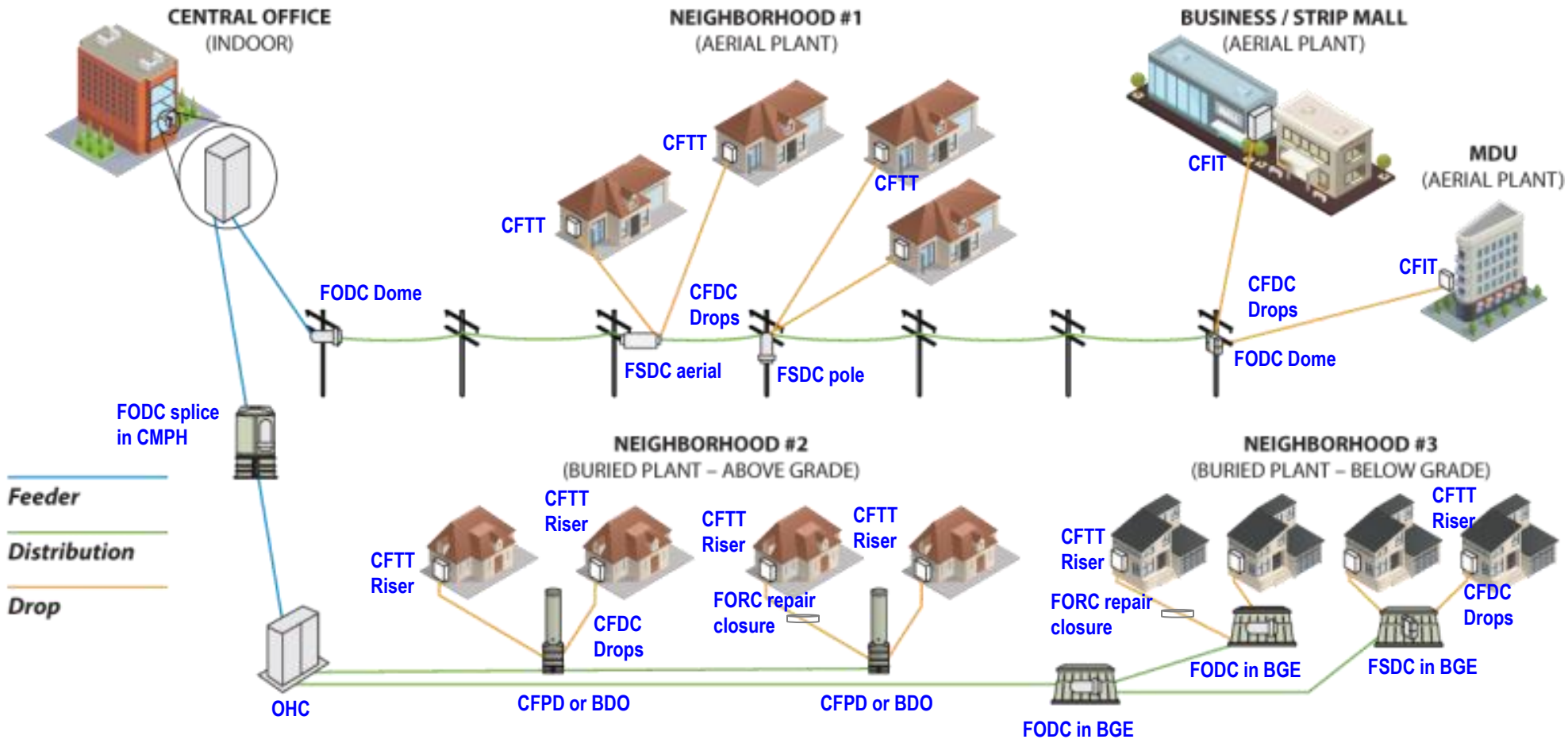


Pros
- Very lean fiber
- Lowest capex per customer
- Good for long distances

Cons
- Least flexible
- More complex network design

Best used for rural and low density areas

Deployment Topologies



Aerial Fiber Plant
- Lowest cost deployment for existing power lines
- Strand and pole mount both used
- Common for brownfield expansion

Above Grade Fiber Plant
- Facilitates maintenance, repair, and adds
- Lower cost than buried splice cases
- Pedestals in-sight, can be hidden in landscape
- Flexible for any architecture deployment

Below Grade Fiber Plant
- Fiber apparatus out of sight
- Difficult for maintenance, repair, and adds
- More secure than pedestals

Fiber Distribution Hubs

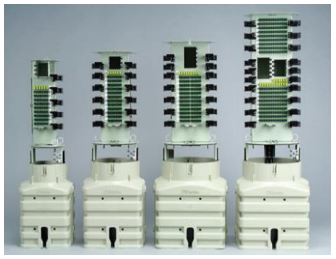
Outdoor Hub Cabinets (OHC)

Outdoor Hub Cabinets (OHC) provide fiber distribution to subscribers from a compact, environmentally protected outdoor terminal. OHC have been designed with flexibility in mind and support fusion, pre-terminated and field terminated feed and drop fibers. These PON terminals have space for multiple splitters for incremental growth. They may be pad, pole or wall mounted for placement flexibility and are well suited for multi-dwelling unit (MDU) distribution in centralized or distributed Optical Network Terminals (ONT). OHCs are constructed from powder-coated aluminum that is both durable and lightweight. The unit can be quickly installed by a single technician. Front and rear access doors are secured with low-profile, 216-tool quarter turn locks and padlock hasps for additional access control. A grounding bus bar with multiple grounding studs is provided.

Charles Fiber Flexibility Pedestals (CFFP)

CFFP offer a scalable, low cost alternative to placing traditional cabinet-type centralized split points (also known as fiber distribution hubs—FDH) in the outside plant. Unlike metallic cabinets, CFFP are flood proof and can be installed in almost any location. Their compact size compared to large cabinets makes them easier to install and ideally suited to small communities and neighborhoods. Right-of-ways are no longer a concern and the units can be economically placed directly in the ground without the need for an expensive pad. CFFP are available in four sizes with up to 72, 96, 144 and 288 fiber counts, and in both stake-mount and vault-mount configurations. A CFFP Patch & Splice option is available for small hub applications, eliminating the need for a splice closure and grade level box..

Fiber Distribution Hub Selection Guide

Type	Outdoor Hub Cabinets				Fiber Flexibility Pedestals			
View								
Overview	288 Fiber capacity Hub Cabinet	432 Fiber capacity Hub Cabinet	576 Fiber capacity Hub Cabinet	864 Fiber capacity Hub Cabinet	8” Dome Pedestal	10” Dome Pedestal	12” Dome Pedestal Short	12” Dome Pedestal Tall
Size W”xD”xH” H” w/plinth* H” above grade^	22x16x28 38*	26.8x16.5x28.2 38.5*	27.5x18.5x33 43*	40.2x18.7x46	10.8x11.8x42.8 34.3^	12.8x13.9x45 36^	15.1x16.1x46.5 38^	15.1x16.1x52.5 44”*
Fiber Distribution Capacity	288	432	576	864	72	96	144	288
Fiber Feed Capacity	48	48	72	144	6	12	24	24
Splitter Capacity	10	15	20	56	3	3	5	9
Fiber feed cable	Standard with 100 ft. feed cables (other length available)				Available with 100 ft. feed cables			
Installation	Ground mount (with plinth), pole, or wall mountable				Buried base or vault mount			

Fiber Pedestals

Charles Fiber Distribution Point Pedestals (CFDP)

Charles Fiber Distribution Point Pedestals (CFDP) offer two-stage environmental protection of fiber optic loop distribution cable and customer service drops in FTTP deployments. CFDP-EPS pedestals feature an inner and outer dome, while CFDP-ELS pedestals offer an “enhanced security” outer dome and two inner compartments with locking doors. These “enclosure within an enclosure” combinations provide an unbeatable line of defense against the elements, flooding, fire, dirt, debris, insects, and corrosion.

Buried Distribution Outside Plant Pedestals (BDO)

BDO series fiber pedestals are designed as an affordable above-grade alternative to housing and protecting sealed fiber terminal blocks. These pedestals feature a non-metallic construction that offers superior OSP protection against the environment. Specially designed terminal mounting plates accept the AMT terminal block as well as terminals from most manufacturers. There is also an optional integrated splice tray holder.

Fiber Pedestal Selection Guide

Series	CFPD-EPS	CFDP-ELS	BDO-EG	BDO-EG-SC	BDO-ET	BDO-ETS
View						
Overview	Spliced drop pedestal with inner dome	Spliced drop pedestal with dual inner doors	Economical “open” fiber pedestal	SC Connectorized drop pedestal	Fiber Terminal Block Pedestal	Fiber Terminal Block Pedestal with splice capability
Sizes	4”, 6”, 8”, or 10”	6”, 8”, 10” 12”	6”, 8”, 10”, 12”	6”, 8”, 10	6”, 8”, 10”	6”, 8”, 10”
Feed cable ports	1, 3, 4, 6	3, 4, 6, 4	3, 4, 6, 6	3, 4, 6	Compatible with Most Vendors’ Fiber Terminal Blocks	
Drop cable ports	6, 8,12,14	8, 12, 14, 24	8, 12, 14, 24	8, 12, 14		
Splice trays	1, 4, 4, 7	Drop side: 4, 4, 5 ,4 Feed side: 2, 2, 2, 8	4, 4, 4, 8	2	N/A	1, 1, 3
Splice capacity (single fusion)	24, 96, 96, 168	Drop: 96, 96.120,96 Feed: 48,48,96,192	96, 96, 96, 192	48	N/A	24, 24, 72
Loose tube storage	N/A, 8, 12, 24	6, 9, 24, 24	6, 12, 12, 24	6, 12, 12	N/A	6, 12, 12
12 fiber ribbon	N/A, 12, 24, 72	12, 24, 72, 72	24. 24. 72, 72	24. 24. 72	N/A	24, 24, 72
Installation	Buried or vault mount	Buried or vault mount	Buried or vault mount	Buried or vault mount	Buried or vault mount	Buried or vault mount

* Pedestal configurations available for Charles FSDC, CFIT-SL and 3rd party terminal housings.

Below Grade Enclosures

Charles Below Grade Enclosures (CBGE) are lightweight, molded polyethylene hand-holes available in seven tapered rectangular and two round sizes. Designed for light duty placements (parkway/greenbelt applications), these sturdy below grade enclosures serve a variety of purposes in telecommunications, wireless, utility, CATV and municipality networks. Constructed from high-density polyethylene (HDPE), Charles Below Grade Enclosures are built to provide years of maintenance-free service and superior shelter for buried network components. CBGE allow technicians easy hand-hole access to splice cases, control valves, slack cable, and other equipment at network junctions. Molded-in or applied nameplates offer convenient identification, and several security bolt patterns are available.

The Charles" BGEs are designed to meet and exceed ANSI/SCTE ratings for light duty, pedestrian-only (greenbelt) applications, including: fiber optic and copper slack cable coiling and storage. They can also be used to provide easy access to sealed cases splice cases, repeaters, and load coils, meter boxes, irrigation systems, traffic signal controls, and ground rods

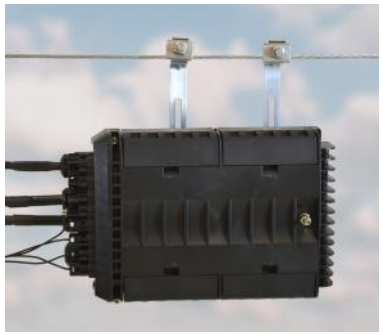
Below Grade Enclosure Selection Guide

Series	Round Below Grade Enclosures	Rectangular Below Grade Enclosures
View		
Sizes available	10” diameter x 10” deep	14”W x 19”L x 12”D 17”W x 30”L x 18”D
Cover colors	Green, Gray	Green, Gray
Base colors	Black	Black
Bolt options	Edison penta head, hex head, REA penta head, or no bolt	Edison penta head, hex head, REA penta head, or no bolt
Optional EMS detection	Telephone or power	Telephone or power
Name plate options	Service name plates options include: CA: CATV CO: Communications EL: Electric FO: Fiber Optic GA: Gas GD: Ground LT: Lightning PW: Power TE: Telephone Optional customer name plates available	Service name plates options include: CA: CATV CO: Communications EL: Electric FO: Fiber Optic GA: Gas GD: Ground LT: Lightning PW: Power TE: Telephone Optional customer name plates available

Fiber Splice Closures

Fiber Sealed Drop Closures (FSDC)

Charles fiber optic sealed drop closures provide a versatile and functional cost-effective solution for FTTH network connections to the subscriber. Although a compact size, there is ample room to store 144 fiber cable. The FSDC series closures are fully sealed units which can be mounted on a strand, a pole, or in a pedestal, as well as below ground to meet any installation topology. The closures have build-in adapters to support up to 16 drop cables. There is variant available with an OptiTap compatible H-adapter I/O to allow use with plug & play hardened connectorized drop assemblies.



Fiber Optic Dome Closures (FODC)

Charles Fiber Optic Dome Closures (FODC) provide a versatile solution for splicing and protecting outdoor fiber connections in a familiar dome form factor. FODC units can be deployed to support a variety of topologies including strand or pole mountings, as well as below grade vault placements. These closures use mechanical compression technology to provide a robust and easy to use economical sealing solution. Charles offers two sizes of FODC that accommodate up to 144 (FODC-A) or 288 (FODC-B) fiber splices.

Fiber Optic Round Closures (FORC)

Charles fiber optic round closures (FORC) provide a versatile and functional cost-effective solution for FTTH network connections. These compact closures are a space saving solution. The units make an ideal solution to be used as a repair closure. In addition the branch ports can be fitted with multi-cable grommets to splice in drops and can be used as a drop closure. These closures are fully sealed units which can be installed to meet any deployment requirement

Charles Fiber Aerial Splice (CFAS)

Charles fiber aerial splice provide a simple, and easy to use solution for mid-span splice and/or fiber drop requirements. Efficient strand-mount designs provide user-friendly access. The closure has the ability to accommodate loop-through, branch and butt splicing. CFAS are ideally suited for outside plant, cell sites, MTSO or other environments where providers use aerial optical distribution.

Fiber Splice Closure Selection Guide

Series	FSDC	FSDC-H	FODC-A	FODC-B	FORC	CFAS
View						
Overview	Horizontal Drop closure	Hardened drop splice closure	144 splice Dome closure	288 splice Dome closure	Small round splice closure	Aerial closure
Installation	Aerial, pole, wall, pedestal, below grade	Aerial, pole, wall, pedestal, below grade	Aerial, pole, below grade	Aerial, pole, below grade	Below grade, wall, pole	Aerial
Style	Butt	Butt	Dome Butt	Dome Butt	Butt or In-line	In-line
Environmental rating	IP68	IP68	IP68	IP68	IP68	Free-breathing
Use case	Drop	Drop	Splice	Splice	Repair Drop	Drop or splice
Splice capacity (single)	48	48	144	288	36	48
Adapters	Internal 16 SC/APC	8 OptiTap compatible	N/A	N/A	N/A	Internal 12 SC/APC
Cable ports	Dual feed & 2 branch Up to 16 drop	Dual feed & 8 hardened adapters	Dual feed and 4 branch	Feed and 6 branch	Feed and 2 branch	Feed & up to 12 drop
Size (L x W x H)	15”x 9.6” x 5.1” 380 x 245 x 130mm	15”x 9.6” x 5.1” 380 x 245 x 130mm	20.5”x 7.5” 520 x 190 mm	23.6” x 9” 600 x 225mm	11.6” x 8.7” x 3.5” 295 x 220 x 90 mm	25.3” x 5.4” x 8.5” 642 x 137 x 216
Notes	24 port drop version available	Plug and play hardened drops	Optional version with internal SC adapter panel	Accommodates ribbon fiber up to 1,152 mass fusion	Option with EMS disk marker	Separate splice and drop compartment doors

Multiport Subscriber Terminals

Access Multiport Terminals (AMT)

Amphenol Access Multiport Terminals (AMT) provide a versatile plug-and-play architecture that maximizes speed of deployment through using pre-terminated hardened cable assemblies to reduce field splicing, and thus eliminating specialized in-field labor costs. The units utilize OptiTap™ compatible Amphenol H-connector outputs. They are available with Four to twelve output ports in a single form factor to provide flexibility depending on an operator's network deployment requirements. The units are made of a robust polycarbonate that is factory sealed and provides an IP68 rated solution to allow below grade installation as well as aerial or pole mount deployment. The AMTs can also be configured with a 1x4 or 1x8 PLC splitters to be used in distributed split architectures. An optional removable ice shield is available for added protection.

Mini Access Multiport Terminals (Mini AMT))

Amphenol Mini Access Multiport Terminals (Mini AMT) are ideally suited for applications where minimal space impact is needed. Various port options and connector styles allow for flexibility and customization depending on the number of outputs needed. They are made of a robust polycarbonate design that is factory sealed and an IP68 rate to allow below grade installation as well as aerial and pole mount deployment. They can also be mounted in a number of Charles pedestals. The units are optionally available 1x4 and 1x8 splitters.

Multiport Subscriber Terminal Selection Guide

Series	AMT	Mini AMT
View		
Overview	Hardened pre-terminated multiport subscriber terminals	Miniature hardened multiport subscriber terminals with output tethers
Installation	Aerial, pole, wall, pedestal, below grade	Aerial, pole, wall, pedestal, below grade
Environmental rating	IP68	IP68
Output options	4, 6, 8, 12 ports all in same footprint (OptiTap compatible H-connector)	4, 6, 8, 12 connectorized tethers (OptiTap compatible H connector)
Input options	M-connector adapter, Fiber cable stub, or tether (1m connectorized cable)	Fiber cable stub, or tether
Cable stub	50 to 1000 ft. available	50 to 1000 ft. available
Splitter	Optional 1x4 and 1x8 splitters available	Optional 1x4 and 1x8 splitters available
Size (L x W x H)	12.4” x 5.5” x 3.5” 316 x 139 x 90 mm	4.7” x 3.8” x 3.1” 120 x 96 x 78 mm

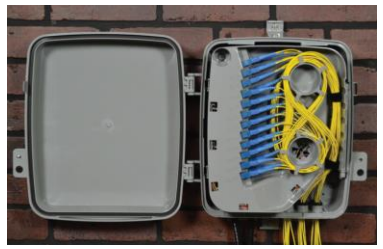
Outdoor & Indoor Network Terminal and Hub Enclosures

Fiber Interconnect Terminals (CFIT)

Charles Fiber Interconnect Terminals (CFIT) provide flexible, compact outdoor enclosure solutions for fiber aggregation or demarcation of up to 96 fiber connectors and/or 432 fiber splices with easily field upgradeable options. CFIT cabinets are ideally suited for, multi-dwelling units (MDU), campuses, strip malls, and business parks Their convenient form factor saves space and allows for one-person placement on walls, poles or H -frame mounts.

Flexible Fiber Terminals (CFIT-Flex)

Charles Industries CFIT-Flex Series of universal enclosures were designed around the principal of “flexibility.” These versatile enclosures may be wall, pole, or pedestal mounted and configured to meet a variety of fiber, copper or coaxial distribution applications. With a universal backplane and interchangeable feed and drop cable port plates, CFIT-Flex are especially efficient at meeting FTTX deployment challenges regardless of splicing technique, fiber type or the use of pre-connectorized cable.



Fiber Transition Terminals (CFTT)

Charles Fiber Transition Terminals (CFTT) are ideal for low density fiber circuits. 4 and 8 port models serve as a customer demarcation point for fiber entering the customer premises. They protect fiber drops from the elements, and provide organized fiber slack storage. Fiber bend controls ensure proper bend radius requirements are met. 12 and 24 port CFTTE models are available for Small Cells and MSO.

Fiber Building Terminals (CFBT)

Charles Fiber Building Terminals (CFBT) provide flexible, compact indoor enclosure solutions for fiber aggregation or demarcation of up to 96 SC fiber connectors and/or 432 fiber splices with easily field upgradeable options. The flexible splicing area and bulkhead design allows for splicing or terminating all different fiber types and connectors. CFBT are constructed out of powder-coated aluminum and offer safe and secure protection of interior adapters, splice trays and other equipment. Their light weight allows for one-person installation on interior building walls.

Outdoor Fiber Distribution Hub Terminal Selection Guide

Series	CFIT-FCH32	CFIT-FS64	CFIT-HC	CFIT-HS	CFIT-HZ
View					
Material	Polymeric	Polymeric	Metal (Al)	Metal (Al)	Metal (Al)
Subscribers	32	64	48	96	96
Splice trays	3	14	5	9	N/A
Splitters	One 1 x 32	Two 1 x 32	Two 1 x 32	Three 1 x 32	Four 1 x 32
Fiber options	Fiber Fan-out or Pigtail Accessories w/ SC, LC & MPO	Fiber Fan-out or Pigtail Accessories w/ SC, LC & MPO	Fiber Fan-out or Pigtail Accessories w/ SC, LC & MPO	Fiber Fan-out or Pigtail Accessories w/ SC, LC & MPO	Fiber Fan-out or Pigtail Accessories w/ SC, LC & MPO
Cable entries	2 port plates, each can hold one: 1x 1.25”, 1 x 1.0”, 2x 0.75”, 12x 5mm, 18 x 5mm, 6 x dual 5mm, 6 x quad 3mm	4 port plates, each can hold one: 1x 1.25”, 1 x 1.0”, 2x 0.75”, 12x 5mm, 18 x 5mm, 6 x dual 5mm, 6 x quad 3mm	2 feed 10 distribution	2 feed, 10 distribution	Note option to ship with integrated feed fiber stub
Size: W x H x D	12” x 15” x 5.5”D	22” x 16” x 8”	18” x 15” x 8”	20” x20” x 9.5”	16” x 22” x 9”
Mounting	Wall or Pole	Wall or Pole	Wall or Pole	Wall or Pole	Wall or Pole
Rating	NEMA 3R Also for indoor use	NEMA 3R Also for indoor use	NEMA 4X	NEMA 4X	NEMA 4X

Outdoor Fiber Interconnect Terminal Selection Guide

Series	CFIT-C	CFIT-S	CFIT-D3	CFIT-Flex Standard	CFIT-Flex Compact
View					
Construction	Metal (Al)	Metal (Al)	Metal (Al)	Polymer (PC)	Polymer (PC)
Use case	Demarcation, Aggregation	Demarcation, Aggregation	Multiple customers 3 compartments	Demarcation, Aggregation	Demarcation, Aggregation
Color	Off white	Off-white	Off-white	Gray	Gray
Bulkhead adapters	48	96	48	48	96
Splice trays	5	9	4	5	9
Splitters	2	3	N/A	2	3
Fiber options	Fiber Fan-out or Pigtail Accessories w/ SC, LC & MPO	Fiber Fan-out or Pigtail Accessories w/ SC, LC & MPO	Fiber Fan-out or Pigtail Accessories w/ SC, LC & MPO	Fiber Fan-out or Pigtail Accessories w/ SC, LC & MPO	Fiber Fan-out or Pigtail Accessories w/ SC, LC & MPO
Size: W x H x D	18” x 18” x 6”	21” x 21” x 8.5”	26” X 21” X 7”	22” x 16” x 8”	12” x 16” x 5.5”D
Rating	NEMA 4X	NEMA 4X	NEMA 4X	NEMA 3R	NEMA 3R

Outdoor Fiber Transition Terminals (NID Boxes) Selection Guide

Series	CFTT8	CFTT4
View		
Material	Polymer (PC)	Polymer (PC)
Color	Gray	Gray
Max number of ports	8	4
Adapters	SC/APC, SC/UPC, LC/APC, LC/UPC OptiTap	SC/APC, SC/UPC, LC/APC, LC/UPC OptiTap
Splice trays	1	1
I/O options	Flexible grommets	Flexible grommets
Color	Gray	Gray
Operating Temperature	-30° C to +65°C	-30° C to +65°C
Size	10.25"H x 8.5"W x 3"D	10.25"H x 8.5"W x 3"D
Security	216 Hex bolt Opening for padlock or zip tie	216 Hex bolt Opening for padlock or zip tie
Rating	NEMA 3R	NEMA 3R
Notes	12 and 24 port versions available for small cell wireless	

Indoor Building Hub Enclosure Selection Guide

Series	CFBT-HC	CFBT-HS	CFBT-HX	CFBT-HU
View				
Construction	Metal (Al)	Metal (Al)	Metal (Al)	Metal (Al)
Use case	Hub	Hub	Hub	Hub
Bulkhead adapters	48	96	144	384
Splice trays	5	9	13	26
Splitters	2	3	5	12
Fiber options	Fiber Fan-out or Pigtail Accessories w/ SC, LC & MPO	Fiber Fan-out or Pigtail Accessories w/ SC, LC & MPO	Fiber Fan-out or Pigtail Accessories w/ SC, LC & MPO	Fiber Fan-out or Pigtail Accessories w/ SC, LC & MPO
Size: W x H x D	18” x 15” x 8”	20” x 20” x 9.5”	22” x 22” x 9.5”	41” x 26” x 10”
Rating	NEMA 12	NEMA 12	NEMA 12	NEMA 12

Indoor Building Interconnect Terminal Selection Guide

Series	CFBT-C	CFBT-D3	CFBT-S
View			
Construction	Metal (Al)	Metal (Al)	Metal (Al)
Use case	Demarcation, Aggregation	Demarcation, Aggregation	Multiple customers 3 compartments
Bulkhead adapters	48	96	48
Splice trays	5	9	4
Splitters	2	3	N/A
Fiber options	Fiber Fan-out or Pigtail Accessories w/ SC, LC & MPO	Fiber Fan-out or Pigtail Accessories w/ SC, LC & MPO	Fiber Fan-out or Pigtail Accessories w/ SC, LC & MPO
Size: W x H x D	18” x 18” x 6”	21” x 21” x 8.5”	26” X 21” X 7”
Rating	NEMA 12	NEMA 12	NEMA 12

Drop Cable Assemblies

Charles Drop Cable Assemblies (CFDC)

Charles Fiber Drop Cable Assemblies (CFDC) provide network operators with drop cables that complement the Charles drop closures, distribution pedestals, entrance terminals and enclosures for FTTH applications. The pre-assembled cables reduce service provider's costs by improving craft productivity when connecting new customers to the FTTH network. The use of a pre-terminated drop cable reduces the need for fusion splicing in the drop plant, allowing lower cost installation technicians to be able to perform the drop install. Service turn-up speed is improved by eliminating the typical bottleneck resulting from availability of fusion splicing equipment and personnel – every installation technician can install a drop versus only qualified splicing technicians with fusion splicing training. Assemblies are available in flat or round drop cable connectoried with OptiTap compatible H connector, SC, or LC ends.

Drop Cable Assembly Selection Guide

Series	CF1HF	CF1H5	CF1H3	CF1SF	CF1S5	CF1S3
View						
Cable type	Flat drop 8mm x 4mm	Round drop (5mm)	Round drop (3mm)	Flat drop 8mm x 4mm	Round drop (5mm)	Round drop (3mm)
Fiber type	1F SMF 28e	1F SMF 28e	1F SMF 28e	1F SMF28e	1F SMF28e	1F SMF28e
Cable option	Dielectric, toneable	Dielectric, toneable	Dielectric, toneable	Dielectric, toneable	Dielectric, toneable	Dielectric, toneable
Connector End 1	Hardened H (OptiTap compatible)	Hardened H (OptiTap compatible)	Hardened H (OptiTap compatible)	SC/APC	SC/APC	SC/APC
Connector end two options	SC/APC or stub	SC/APC or stub	SC/APC or stub	SC/APC or stub	SC/APC or stub	SC/APC or stub
Fiber subunit	900 µm	900 µm	900 µm	900 µm	900 µm	900 µm
Outdoor/indoor	Outdoor	Outdoor	Outdoor/indoor	Outdoor	Outdoor	Outdoor/indoor
Pulling eye	Optional	Optional	Optional	Optional	Optional	Optional
Lengths	10 – 1000 ft.	10 – 1000 ft.	10 – 1000 ft.	10 – 1000 ft.	10 – 1000 ft.	10 – 1000 ft.

Riser Pipe and Wire Guard

Charles" non-metallic riser pipes and wire guard keep fiber drops organized, protected and safe against accidental cable damage. These rugged parts are made of lightweight UV stabilized PVC that will not dent or corrode. A smooth inside finish prevents cable snags. They can be easily handled and cut to length on the job site. Charles" riser provides an inexpensive protection against wind, snagging, and vandalism. To meet any deployment scenario, product is available in straight, offset, and elbowed configurations. Split Risers have been designed for use with pre-connectorized drops. The cables can be easily inserted through the split design. The split edge is then mounted towards the premises wall, providing total coverage. Wire Guards are specifically designed for use on telephone and power poles, protecting the service/ground wire well beyond the reach of vandals. is a selection of couplers, end caps, and clamps to finish the job properly.

Series	Riser Pipe	Split Riser	Wire Guard
Cross-section Shape			
Outer Diameter Sizes Available	7/8 " 1 1/4"	7/8 " (3/16" split opening	7/8 " 1 1/4"
Lengths	60"	60"	60" 96"
Configuration Options	Straight Offset & notch L-bend elbow	Straight Offset & notch	Straight
Color	Gray	Gray	Gray

Optical Components and Accessories

Optical Components

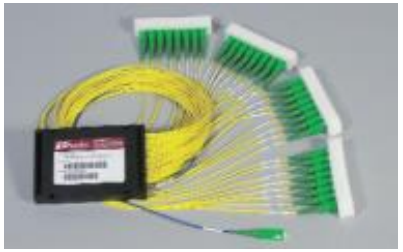
Charles Industries offers a full compliment of high-quality fiber optic accessory products for integration with its fiber enclosures, splice closures, terminals and buried distribution pedestals. This includes optical splitters, and optical taps modules and trays. Charles also offers a complete line of fiber fan-outs, pigtail assemblies, jumpers, adapters, and attenuators.

Optical Splitters

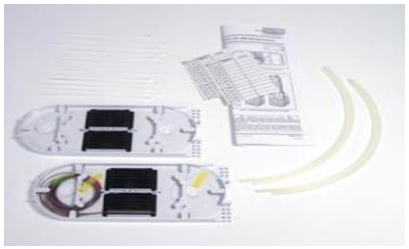
Charles Fiber Splitter Modules (CFSM) and Charles Fiber Splitter Trays (CFST) can be used in pedestals, splice closures, hubs, and cabinets to split the optic signal in passive optical networks. They feature an operating wavelength of 1260-1650 nm, and are GR-1221-CORE and GR-1209 CORE compliant. CFSM modules are plug and play devices to facilitate rapid installation. CFST splitter trays are available in both connectorized and bare fiber versions. In additional to PLC optical splitters, Charles offers optical taps in similar modular and tray formats These taps are used is distributed trunk networks to conserve fiber cable

WDM Solutions

Wavelength Division Multiplexing products are ideal for areas with limited deployment of fiber cable. Charles CWDM products are available in 2, 4, 8 and 16 channel configurations with Dense Wavelength Division Multiplexing available in 50 GHz, 100 GHz or 200 GHz channel spacing. Charles WDM products are available in LGX module and splice tray form factors

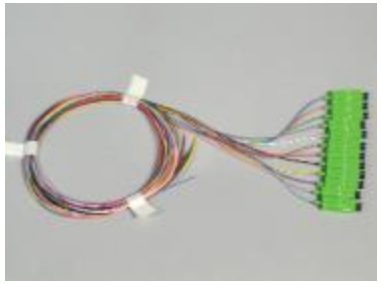


Optical Splitter modules

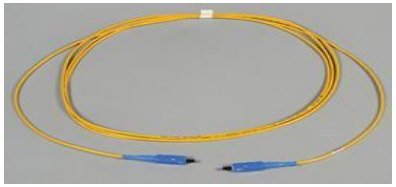


Optical splitter, optical tap trays

Fiber fan-out assemblies



Fiber pigtail kits

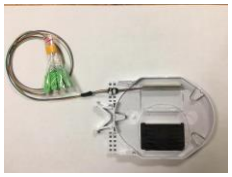


Fiber jumpers and pigtails

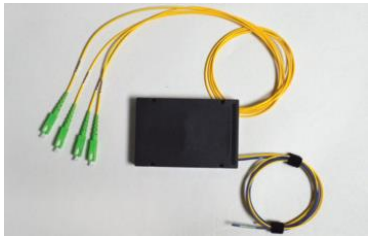
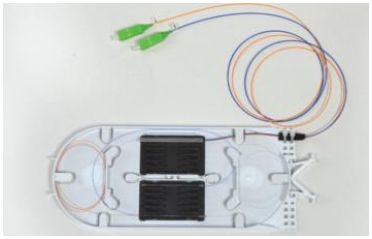
Fiber adapters

WDM LGX modules

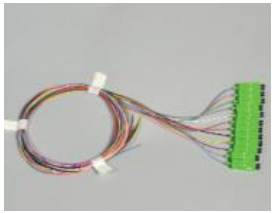
Optical Splitter Selection Guide

Series	CFSM-FP	CFSM-FM	CFST-A	CFST-S
View				
Description	Splitter in FP module form factor	Splitter in FM module form factor	Splitter in 4” x 9” splice tray	Splitter in 4” x 6” splice tray
Platform compatibility	CFPP	CFIT, CFBT, FCH, OHC	CFDP, BDO, CFIT, CFBT, FSDC	FCH, CFIT-FC, CFIT-FS, FSDC
Split ratios available	1x16, 1x32	1x4, 1x8, 1x16, 1x32, 2x32, 1x64	1x2, 1x4, 1x8, 1x16, 1x32* * not compatible with FSDC	1x2, 1x4, 1x8, 1x16, 1x32* * not compatible with FSDC
Operating wavelength	1260 – 1650 nm	1260 – 1650 nm	1260 – 1650 nm	1260 – 1650 nm
Fiber type	ITU-T G657 A.1	ITU-T G657 A.1	ITU-T G657 A.1	ITU-T G657 A.1
Input	2mm SC/APC pigtail	2mm SC/APC pigtail	250 µm fiber stub	250 µm fiber stub
Output	2mm SC/APC pigtail	2mm SC/APC pigtail	250 µm bare fiber or 900 µm SC/APC pigtails	250 µm bare fiber or 900 µm SC/APC pigtails
Size (L x W x D)	2.8” x 0.5” x 4.9”	4.7” x 0.7” x 3.2”	9.5” x 4” x 0.5”	6” x 4” x 0.5”
Compliance	GR-1209-CORE GR-1221-CORE	GR-1209-CORE GR-1221-CORE	GR-1209-CORE GR-1221-CORE	GR-1209-CORE GR-1221-CORE

Optical Tap Selection Guide

Series	CFSM-Tap	CFST-A Tap	CFST-L Tap
View			
Description	Optical tap in FM Module	Optical tap in 9”x 4” splice tray	Optical tap in L splice tray
Platform compatibility	CFDP , BDO, CFIT, CFBT	CFDP, BDO, CFIT, CFBT, CFAS, FSDC	FSDC
Split outputs available	2, 4, or 8	2, 4, or 8	2, 4, or 8
Tap values available	30 options available	30 options available	30 options available
Fiber type	ITU-T G657 A.1	ITU-T G657 A.1	ITU-T G657 A.1
Input	2mm fiber stub	250 µm fiber stub	250 µm fiber stub
Output pass through leg	2mm fiber stub	250 µm fiber stub	250 µm fiber stub
Drop legs (splitter output legs)	2mm SC/APC	900 µm SC/APC	900 µm SC/APC
Size	4.7” x 0.7” x 3.2”	9.5” x 4” x 0.5”	5.2” x 4” x 0.3”
Compliance	GR-1209-CORE GR-1221-CORE	GR-1209-CORE GR-1221-CORE	GR-1209-CORE GR-1221-CORE

Optical Components

Series	Fan-out Assemblies	Jumpers and Pigtails	Adapters	WDM Modules	Splice Trays	
View						
Description	Fiber fan-out assemblies	Fiber jumpers, pigtails, and color coded pigtail kits	Fiber bulkhead adapters	WDM Solutions	Empty splice tray kits	
Fiber Options	Loose tube, ribbon	2mm simplex jumper 2mm simplex pigtail 900 µm color coded pigtail kit	Single mode	2, 4, 8 or 16 channels DWM with 50, 100, 200 GHz channel spacing	12/24 splice	
Connector Options	SC/APC, SC/UPC, LC/APC, LC/UPC	SC/APC, SC/UPC, LC/APC, LC/UPC	SC/APC, SC/UPC, LC/UPC duplex	Duplex SC, Duplex LC	N/A	
Fiber type	ITU-T G657 A.1	ITU-T G657 A.1	ITU-T G657 A.1	ITU-T G657 A.1	N/A	
Assembly type	12 fiber, 8 fiber, or 6 fiber	Color coded pigtail kit: 12 fiber, 8 fiber, or 6 fiber	250 µm bare fiber or 900 µm SC/APC pigtails	LGX modules 4” x 9” splice trays	N/A	
Length	3m	Jumpers 1m Pigtails 3m	N/A	N/A	A tray: 9.5” x 4” x 0.5” S tray: 6” x 4” x 0.5”	
Compliance	GR-20-CORE GR-326-CORE	GR-20-CORE GR-326-CORE	GR-326-CORE		Compatibility	
Notes					A Tray CFDP, BDO, CFIT, CFBT	S Tray FCH, CFIT-FC, CFIT-FS, FSDC

For more information and consultation on your specific FTTP projects, contact Charles' Fiber Enclosure Experts today!

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An Amphenol Company

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- Field-proven and unequaled 24-hour technical support
- Individualized application consultation
- Superior quality (ISO 9001/TL 9000 registered)

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