Originally founded in 1968, Charles Industries has established itself as a trusted manufacturer and supplier of distribution pedestals, enclosure solutions, and other outside plant solutions to the telecommunications industry. In 1975, after years of testing, the U.S. Department of Agriculture’s Rural Electrification Administration approved the Pedlock®, the telecom industry’s first non-metallic, above grade, buried distribution pedestal. Charles added a new chapter to its history of Innovative Enclosed Solutions™ in 2001 with the introduction of its first series of fiber optic buried distribution pedestals. Charles became the first equipment manufacturer to have its fiber pedestals listed on the Rural Development · Utilities Program (RDUP, formerly RUS) list of accepted materials and its fiber pedestal offerings quickly grew to include both open and closed architecture designs suitable to both brownfield and greenfield installations.

In 2008, Charles expanded its enclosure offering to include both metal and polycarbonate cabinets and terminals to support 3G to 4G network deployments. As service providers now embrace and deploy 5G technologies, Charles has responded to its customers’ needs for reliable environmentally protected enclosures with the flexibility to support the many different ways in which fiber is deployed. In-house engineers design innovative cabinet and terminal solutions that are compact for space savings, easy to deploy to reduce labor and increase time savings, flexible in their support of multiple fiber types for further cost savings, and dependably reliable to reduce total cost of ownership.

Charles is proud to manufacture all of its fiber enclosure solutions in the United States of America. With five US-based manufacturing facilities, Charles has earned the reputation of being a responsive partner to its customers’ requests for finding solutions to their ever-changing fiber deployment challenges. Charles prides itself on listening to the voice of the customer and its adherence to the company’s core principles: to develop and supply cost-effective, readily deployable enclosure solutions offering superior environmental protection; to support a broad range of transport technologies; to improve network reliability and quality of service; to address customer deployment challenges; and to provide maximum value with unparalleled customer support. Through demonstrated experience with fiber, copper and wireless networks and the convergence of these technologies in the field, Charles has a unique understanding of the challenges faced by service providers, engineering firms and contractors in their daily endeavors and strives to better serve their customers.

There are many options when it comes to fiber enclosures and protecting the infrastructure and equipment housed within them. You can trust Charles to safeguard your valuable network assets with the most innovative and reliable enclosure solutions in the industry. At homes and businesses, cell sites and small cells: Charles enclosures have been doing just that for more than 50 years. It is a best-in-class legacy of customer service and product performance we are committed to maintaining and on which we are proud to put our name.

Joseph T. Charles
President and CEO
FIBER HUB PEDESTALS

Charles Fiber Flexibility Pedestals (CFFP)
CFFP offer a scalable, low cost alternative to placing centralized split point cabinets (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 72, 96, 144 and 288 fiber counts. Advanced fiber management includes specially designed 3-way fiber bend controls and pre-stubbed feed and distribution cables that are tested in factory. CFFP host preconnectorized splitter modules for quick subscriber turn-up and management. A protective locking cover for the back of connectors gives protection while allowing easy access for cleaning.

Compatibility Checklist
Cable Deployment Methods: Stub-Fed
Cable Types: Central Core Tube and Loose Tube
Fiber Types: Stranded Fiber and Ribbon Fiber
Termination Types: Pre-Connectorized
Available Pedestal Sizes: 8” (72 Fibers), 10” (96 Fibers), 12” (144 Fibers), 12” (288 Fibers)

72, 96, 144 and 288 fiber count sizes are configurable with smaller fiber counts for grow-as-you-go scalability
FIBER HUB TERMINALS — METALLIC

Charles Fiber Interconnect Terminal Hubs (CFIT-H) — Outdoor Applications
CFIT Hubs (CFIT-H) provide fiber distribution for up to 96 subscribers from a compact, outdoor terminal. CFIT-H 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 up to three 1x32 splitters for incremental growth. They are constructed from powder-coated aluminum and are commonly mounted to an exterior wall of a multi-dwelling unit (MDU) for distribution Optical Network Terminals (ONT). A compact hub (CFIT-HC) option is available for applications of up to 48 subscribers, ideal for small sized MDU.

Charles Fiber Building Terminal Hubs (CFBT-H) — Indoor Applications
CFBT Hubs (CFBT-H) provide fiber distribution to multi-subscriber locations from a compact, indoor terminal. CFBT-H have been designed with flexibility in mind and support fusion, pre-terminated and field terminated feed and drop fibers. They are commonly mounted to an interior wall of a multi-dwelling unit (MDU) for distribution to Optical Network Terminals (ONT). Four sizes include the standard hub (CFBT-HS) for up to 96 subscribers and a compact hub (CFBT-HC) for applications of up to 48 subscribers, ideal for small sized MDU. For larger buildings, expanded size (CFBT-HX, 144 subscribers) and ultra size (CFBT-HU, 384 subscribers) hubs are available.
Charles Fiber Outdoor Hub Cabinet (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).

Everything about the interior of the OHC is designed with the technician in mind. Multiple cable entry locations are positioned at the bottom of the enclosure, allowing flexible placement of feed and distribution cables. Fiber bend radius controls and routing guides ensure cable management and proper slack storage. A splice tray basket secures hinged splice trays that are individually accessible without disturbing previously spliced trays. The splice tray basket is itself removable for pre-terminated and field terminated applications. Charles Passive Splitter Modules (CFSM) are available with optimized pigtail lengths.

OHC are constructed from powder-coated aluminum that is both durable and lightweight. The unit can be quickly installed by a single technician. The main entrance door is secured with a low-profile, 216-tool quarter turn lock and padlock hasp for additional access control. A grounding bus bar with multiple grounding studs is provided.
OPEN ARCHITECTURE FIBER PEDESTALS

Open architecture fiber optic pedestals provide a low cost fiber distribution solution while maintaining a high level of environmental protection. Open architecture pedestals do not contain a sealed inner splicing chamber. Technicians have open access to the splicing backboard. While open architecture pedestals do not meet Telcordia GR-771-CORE standards, they are RDUP listed and provide a high degree of environmental protection, including flood, fire, dirt, and rodent resistance. A two-piece split base makes it easy for technicians to place the pedestal in almost any soil type or location.

In both greenfield and brownfield fiber deployments, BDO Pedestals provide easy access to branch and drop splice while protecting and storing loose buffer tube or ribbon fiber optic cables. The exclusive BDO bracket allows technicians to mount splice trays and splitters securely with ample access to perform in-field splicing.

**BDO-EG Pedestals**
The EG bracket is designed for Greenfield applications: when fiber is being placed to the customer premises directly. The splicing backboard holds fiber splice trays securely in a velcroed splice tray basket located directly in the middle of the backboard. Express led fiber slack is coiled around the splice tray with the proper bend radius guidelines observed. Grounding and bonding hardware is conveniently placed near the base of the pedestal. Strength member clamps secure fiber sheaths to the backboard quickly and easily.

**Compatibility Checklist**
- Cable Deployment Methods: Stub-Fed, Loop-Through, Branch and Drop
- Cable Types: Loose Tube
- Fiber Types: Stranded Fiber and Ribbon Fiber
- Termination Types: Fusion and Mechanical Splices
- Available Pedestal Sizes: 6”, 8”, 10” and 12” Diameters

**BDO-EB Pedestals**
The EB bracket is specially designed for Brownfield applications where a fiber overbuild will be located alongside legacy copper pairs. The splicing backboard holds fiber splice trays on one side, and has repositionable ladder bars for copper splicing on the reverse side. A bonding bar is provided with access to both sides of the splicing backboard. In all other aspects, the BDO-EB pedestal has the same features as the BDO-EG pedestal.

**Compatibility Checklist**
- Cable Deployment Methods: Stub-Fed, Loop-Through, Branch and Drop
- Cable Types: Central Core Tube, Loose Tube and Composite (Copper/Fiber)
- Fiber Types: Stranded Fiber and Ribbon Fiber
- Termination Types: Fusion and Mechanical Splices
- Available Pedestal Sizes: 10” and 14” Diameters

The copper side of the BDO-EB Pedestal features repositionable ladder bars with capacity for 300 (10” dia.) or 600 (14” dia.) copper pairs.
**BDO-ET Pedestals**

For networks employing pre-connectorized fiber drops, the BDO-ET line of fiber pedestals is the ideal solution to above-grade distribution points. They are a much more economical solution to housing sealed fiber terminals than are grade level boxes and other buried enclosures. They also offer installers and technicians many advantages over grade level boxes, including easier installation, greater accessibility, and more flexibility in placement. Specially designed terminal mounting plates accept most manufacturers’ 4, 6, 8 and 12 port sealed fiber terminal blocks. A BDO-ETS version is available that includes an integrated splice tray holder. A low profile version, the BDO-ETLP, is also available.

**Compatibility Checklist**

- **Cable Deployment Methods:** Stub-Fed and Drop (BDO-ET and BDO-ETLP), Stub-Fed, Loop-Through and Drop (BDO-ETS)
- **Cable Types:** None (BDO-ET and BDO-ETLP), Loose Tube (BDO-ETS)
- **Fiber Types:** Stranded Fiber (BDO-ET, BDO-ETS, and BDO-ETLP)
- **Termination Types:** Pre-Connectorized Drop and Sealed Fiber Terminal Mount (BDO-ET and BDO-ETLP), Fusion/Mechanical Splice, Pre-Connectorized Drop and Sealed Fiber Terminal Mount (BDO-ETS)
- **Available Pedestal Sizes:** 6”, 8” and 10” Diameters (BDO-ET and BDO-ETS), 6” and 8” (BDO-ETLP)

**BDO Vault Pedestals**

In FTTX installations, it is often desirable to have slack storage at a distribution/terminal point. BDO vault pedestals provide an excellent solution to this application. The BDO vault pedestal attaches to a variety of manufacturers’ buried vault lids using supplied hardware, creating a convenient above-grade, open architecture access point to the fiber splice and management. In this manner, technicians have easy access to splicing operations without having to enter the below-grade vault, saving time and money. Two models are available. The BDO-EVG vault pedestal features a greenfield bracket similar to a BDO-EG pedestal. The BDO-EVTLP features a low profile dome and an offset metal bracket that allows easy mounting of pre-connectorized sealed fiber terminals similar to a BDO-ET pedestal.

**Compatibility Checklist**

- **Cable Deployment Methods:** Stub-Fed, Loop-Through, Branch and Drop (BDO-EVG), Stub-Fed and Drop (BDO-EVTLP)
- **Cable Types:** Loose Tube (BDO-EVG), None (BDO-ETLPV)
- **Fiber Types:** Stranded Fiber and Ribbon Fiber (BDO-EVG), Stranded Fiber (BDO-EVTLP)
- **Termination Types:** Fusion and Mechanical Splices (BDO-EVG), Pre-Connectorized Drop and Sealed Fiber Terminal Mount (BDO-EVTLP)
- **Available Pedestal Sizes:** 6”, 8” and 10” Diameters (BDO-EVG), 6” and 8” (BDO-EVTLP)
CLOSED ARCHITECTURE FIBER PEDESTALS

Closed architecture fiber optic pedestals offer the highest level of protection of fiber optic loop distribution cable and customer service drops in FTTP deployments for years of dependable service. Charles Fiber Distribution Pedestals (CFDP) are designed to exceed Telcordia GR-771-CORE specifications and provide an unbeatable line of defense against the elements, flooding, fire, dirt, debris, insects, and corrosion. CFDP accomplish this by providing two-stage protection consisting of a sealed interior enclosure within the confines of a locked dome non-metallic buried distribution pedestal.

CFDP provide technicians with maximum flexibility in splicing techniques. CFDP can accommodate loop-through and stub-out distribution cable, ribbon and loose buffer tube type cable, branch and drop splices, and fiber slack storage. Optional bulkheads for pre-connectorized drops are available on select models.

CFDP-EPS Pedestals
The standard model CFDP features a removable inner dome that creates a sealed enclosure to protect the splicing backboard. The distribution cable side of splicing backboard includes a cable storage compartment, cable management guides, ground wire posts, and strength member clamps. The customer drop side of splicing backboard features a splice tray basket that holds fiber splice trays and has cable management guides for slack storage. All CFDP can be equipped with a bulkhead panel for pre-connectorized cable connections on both the distribution and drop sides of the interior enclosure.

Compatibility Checklist
- Cable Deployment Methods: Stub-Fed, Loop-Through, Branch and Drop
- Cable Types: Central Core Tube and Loose Tube
- Fiber Types: Stranded Fiber and Ribbon Fiber
- Termination Types: Fusion and Mechanical Splices
- Available Pedestal Sizes: 4”, 6”, 8” and 10” Diameters

CFDP-ELS Pedestals
CFDP-ELS feature all the same functionality as CFDP-EPS, with the added feature of two locking doors that provide separate access to the distribution and drop sides of the splicing backboard. This option is designed for those service providers that prefer to restrict access between splicers and service installers. Both compartments retain their weather-tight properties. All CFDP can be equipped with a bulkhead panel for pre-connectorized cable connections on both the distribution and drop sides of the interior enclosure.

Compatibility Checklist
- Cable Deployment Methods: Stub-Fed, Loop-Through, Branch and Drop
- Cable Types: Central Core Tube and Loose Tube
- Fiber Types: Stranded Fiber and Ribbon Fiber
- Termination Types: Fusion and Mechanical Splices
- Available Pedestal Sizes: 6”, 8”, 10” and 12” Diameters
INTERCONNECT PEDESTALS

CFDP Interconnect Pedestals
Charles Fiber Distribution Point (CFDP) Interconnect Pedestals provide pre-connectorized “interconnect panel” fiber drops to multiple broadband service customers at a fraction of the cost of Light Guide Cross-Connect (LGX) solutions or proprietary, hardened fiber connectors. The CFDP Interconnect Pedestal is ideal for multi-tenant cell site, FTTH, campus or strip mall environments where the customer requires high-capacity fiber bandwidth for wireless backhaul, private networks or data and video broadband services. With a built-in SC/APC or SC/UPC adapter bulkhead, Interconnect Pedestals facilitate fast and easy provisioning of fiber services to the end customer’s fiber multiplexing equipment. Fiber drops can be turned up, moved or disconnected on an “as needed” basis, giving telecom service providers added flexibility in their efforts to provide broadband voice, data and video services to customers whose bandwidth requirements may change seasonally or due to major events.

Compatibility Checklist
Cable Deployment Methods: Loop-Through, Branch and Drop
Cable Types: Central Core Tube and Loose Tube
Fiber Types: Stranded Fiber and Ribbon Fiber
Termination Types: Pre-Connectorized, Fusion and Mechanical Splices
Available Pedestal Sizes: 6”, 8”, 10” and 12” Diameters

Applications
• Cell Sites
• Fiber-to-the-Home (FTTH)
• Campus Environments
• Strip Malls
• Multi-Dwelling Units

BDO Interconnect Pedestals
BDO Interconnect Pedestals provide all the same pre-connectorized “interconnect panel” fiber drops and features as CFDP Interconnect Pedestals listed above, but in an open architecture design. A lift-off dome provides direct access to the fiber organizer, with its central office side and drop side organization.

Compatibility Checklist
Cable Deployment Methods: Loop-Through, Branch and Drop
Cable Types: Central Core Tube and Loose Tube
Fiber Types: Stranded Fiber and Ribbon Fiber
Termination Types: Pre-Connectorized, Fusion and Mechanical Splices
Available Pedestal Sizes: 6”, 8”, and 10” Diameters
**CFDP-ECS Pedestals**

Designed for co-located fiber and copper splice points, the CFDP-ECS includes a two-door splicing backboard that divides fiber on one side and copper on the other. On the fiber side, a splice tray basket, cable management guides, cable tie-down points and grounding hardware is provided. On the copper side, two splicing ladder bars are provided to house up to 800 copper pairs.

**Compatibility Checklist**

- **Cable Deployment Methods:** Stub-Fed, Loop-Through Branch and Drop
- **Cable Types:** Composite (Copper/Fiber), Central Core Tube and Loose Tube
- **Fiber Types:** Stranded Fiber and Ribbon Fiber
- **Termination Types:** Fusion and Mechanical Splices
- **Available Pedestal Sizes:** 8” Diameter

**CFDP Vault Pedestals**

For those service providers that desire an integrated distribution point/slack storage solution, a vault-mount version of the CFDP is available. The CFDP Vault Pedestal attaches to a variety of manufacturers’ buried vault lids using supplied hardware, creating a convenient above-grade access point to the fiber splice and management. GR-771 standards are met and flood protection maintained with the two-stage protection provided by the removable inner dome and locking outer dome.

**Compatibility Checklist**

- **Cable Deployment Methods:** Stub-Fed, Loop-Through, Branch and Drop
- **Cable Types:** Central Core Tube and Loose Tube
- **Fiber Types:** Stranded Fiber and Ribbon Fiber
- **Termination Types:** Fusion and Mechanical Splices
- **Available Pedestal Sizes:** 6” and 8” Diameters

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*Most major manufacturers of vaults and handholes offer CFDP Vault Pedestal-compatible lid options*
CROSS-CONNECT PEDESTALS

Charles Fiber Cross-Connects (CFXC)
CFXC offer a scalable, low cost alternative to placing traditional metallic fiber cross-connect cabinets in the outside plant. CFXC provide a convenient interconnect and testing point between the feeder network and the distribution field in FTTH networks. Unlike metallic cabinets, CFXC 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 concrete pad. CFXC are available in three pedestal diameters and five frame sizes with up to 72 (8”), 96 (10”), 144 (12”), 196 (12”) and 288 (12”) fiber counts. Both stake-mount and vault-mount configurations are available. Vault-mount models are ideal for locations that require splice case or slack cable storage at the same location as the cross-connect placement.

Compatibility Checklist
Cable Deployment Methods:                  Stub-Fed
Cable Types:                                                   Central Core Tube and Loose Tube
Fiber Types:                                                   Stranded Fiber and Ribbon Fiber
Termination Types:                                               Pre-Connectorized
Available Pedestal Sizes:                                     8’’ (72 Fibers), 10’’ (96 Fibers),
                                                             12” (144 Fibers), 12” (288 Fibers)

Applications
- Cross-Connect and Testing Points
- Neighborhoods/Subdivisions
- Campuses, Business Parks & Strip Malls

Side view shows fiber organizers with 3-way bend controls

SC/UPC and SC/APC fiber jumper kits are available (1 meter length with 2mm jackets and bend insensitive fiber)
FIBER TERMINALS — METALLIC

**Charles Fiber Interconnect Terminals (CFIT) - Outdoor Applications**

CFIT provide the same functionality as CFDP Interconnect Pedestals, but in a compact, rugged outdoor cabinet. This convenient form factor saves space and allows for one-person placement on walls, poles or H-Frame mounts. Sizes include the CFIT Standard (96 SC adapters), CFIT Compact (48 SC adapters), and the CFIT Slimline (8 SC adapters). The CFIT-D3 is designed as a demarcation terminal with lockable internal chambers that separate access between the service provider and up to three different subscribers. The CFIT-MG is a small cell terminal that can be utilized to increase data capacity without deploying additional fiber to the pole via wave division multiplexers (WDM).

**Charles Fiber Building Terminals (CFBT) - Indoor Applications**

For indoor applications, CFBT are wall mountable fiber interconnect enclosures designed for indoor use. They are ideally suited for terminating fiber optic cables in building entrance rooms; communication closets; or shelters for MDU, enterprise or cell site deployments; creating a point of presence (POP) for quick turn-up of cell customers needing fiber for their equipment upgrades. Sizes include the CFBT Standard (96 SC adapters), and the CFBT Compact (48 SC adapters). The CFBT-D3 serves as an indoor demarcation terminal with lockable internal chambers serving as a co-location enclosure for multiple carriers. A back haul provider can thus serve three different customers from one enclosure.
**FIBER TERMINALS — POLYCARBONATE**

**CFIT-Flex Compact**
Charles’ CFIT-Flex series of universal enclosures were designed to provide environmental protection of fiber, copper and coaxial equipment and slack storage. These versatile enclosures may be wall, pole, strand or pedestal mounted and configured to meet a variety of indoor and outdoor applications. With a back wall hole pattern simplifying component integration 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. Constructed of lightweight and rugged polycarbonate, the CFIT-Flex Compact (15”H x 12”W x 5.5”D) provides long-life environmental protection. A swing-out fiber bulkhead provides technician-friendly access to feed and drop cables without disturbing existing subscriber connections.

**CFIT-Flex Standard**
A larger capacity option, the CFIT-Flex Standard provides the same environmental protection and cable management features as the CFIT-Flex compact, but with a generous 16”H x 22”W x 8”D footprint. The back wall hole pattern simplifies component integration and provides more storage than the CFIT-Flex Compact. An optional fixed 72-port fiber bulkhead provides technician-friendly access to feed and drop cables without disturbing existing subscriber connections. Up to seven small hinged splice trays can be accommodated on either side of the bulkhead.
Charles Fiber Aerial Solutions (CFAS)
Charles Fiber Aerial Solutions (CFAS) provide simple, cost-effective enclosures for mid-span splice and/or fiber drop requirements. Efficient strand-mount designs provide user-friendly access and utilize standard and/or small Charles Hinged Splice Trays. The enclosure 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 require fiber bandwidth for aerial optical distribution. CFAS are available as a Drop Enclosure with 6 or 12 SC bulkhead adapter and two 4”x9” splice trays, or a Splice Enclosure with two 4”x6” splice trays and two 4”x9” splice trays.
FIBER TRANSITION TERMINALS

Charles Fiber Transition Terminals (CFTT)
Charles Fiber Transition Terminals (CFTT) are ideal for fiber-to-the-home (FTTH) or low density fiber circuits. They 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. 4 Port and 8 Port models with a choice of SC or LC adapters are available. An 8 Port Hybrid model includes a splice tray, 4 SC/APC to SC/APC adapters and 4 LC/APC to SC/APC hybrid adapters. CFTT feature PVC material construction and hex bolt locks for security.

FIBER RISERS

Charles Fiber Riser Pipes and Split Risers
Protecting fiber drops at the customer premises is an economical decision that saves time and money in the long run. Installed fibers can be damaged in many accidental ways, including string trimmers, lawn mowers, snagging, wind and rodents. Protecting these drop fibers is as simple as placing them in a fiber riser pipe. The finished result is both aesthetically pleasing and environmentally protective.

Charles offers both hollow tube and split risers for protecting fiber drops in 7/8” and 1 1/4” diameters. A variety of straight, offset, and elbow bend risers provides multiple options for every type of installation. The split riser, in which an installed cable or cable with a large, pre-connectorized end can be inserted into the riser, is effective for protecting existing installations without disrupting service.
FIBER SPLICE TRAYS

Charles Fiber Splice Tray (97-FIBR24TRAY - 4”x9”, 97-SMHTRAY - 4”x6”)
Unlike competitive fiber organizers featuring an in-line splice arrangement, Charles Fiber Splice Trays are specifically designed for butt-end splices in pedestal and cabinet enclosures including Charles CFDP, BDO, and Patch and Splice CFFP Series Fiber Pedestals; and CUBE and CFIT Remote Terminals. Charles Fiber Splice Trays accommodate up to 24 fusion, mass fusion (ribbon) or mechanical splices or up to 12 mechanical splices per tray. Their unique design allows the fiber organizer to be easily removed from the pedestal without disturbing fibers already placed in the tray, allowing technicians greater flexibility when reentering the tray to perform additional splices. 4”x9” and 4”x6” designs are available.

Features
- Ample buffer tube tie-down positions with wide openings for easy cable tie insertion
- Deep fiber well allows for fiber placement with minimal interference from buffer tubes
- Rubber splice module holds six (6) or twelve (12) splices securely in position
- Large storage area for fiber loops
- Fiber containment tabs are permanently affixed to the tray and meet industry fiber management specifications for acceptable bend radius
- Molded-in directional arrows show suggested fiber routing
- Convenient tabs hold clear plastic dust cover firmly in place

FIBER SPLITTER TRAYS

Charles Fiber Splitter Tray (CFST)
Charles Fiber Splitter Trays are used by fiber technicians to properly splice splitter input fibers and output fibers on a tray housed inside a fiber distribution pedestal such as a Charles Fiber Distribution Point (CFDP) or Buried Distribution Optical (BDO) Pedestal, or in an environmentally protected cabinet such as a Charles Universal Broadband Enclosure (CUBE).

The splitter tray kit includes either one or two splice trays, a mounted fiber splitter with stranded 250-micron fibers, transportation tubes and tie-wraps. 1x2, 1x4, and 1x8 splitter trays are offered with bare fiber input and outputs, or bare fiber inputs and connectorized pigtail outputs. A large count 1x32 splitter includes two splice trays for better fiber organization. Transportation tubes are included to allow for safe fiber ingress into and egress out of the tray, and attach to the butt-end of the tray with provided tie-wraps. Splitter trays measure 4”x9”.

1x2, 1x4, 1x8 and 1x16 CFST Kits include one splice tray, two transportation tubes, six tie-wraps, tray label and splicing instructions

1x32 CFST Kits include two splice trays, four transportation tubes, twelve tie-wraps, tray label and splicing instructions
OPTICAL TAPS

**Splitter Tray and Splitter Module Optical Taps**

Optical taps are used in Fiber-to-the-Home (FTTH) passive network architectures to divide a feed fiber into a pass-thru fiber leg and a drop leg connected to a 1x2, 1x4 or 1x8 Planar Lightwave Circuit (PLC) splitter for fiber distribution to subscribers. This solution reduces the number of distribution fibers required to provide service to subscribers particularly in low-density architectures with long fiber routes (i.e. rural road stretches).

Optical taps are commonly utilized in FTTH PON deployments leveraging a tapped trunk architecture. They may be installed within many Charles Industries fiber enclosures, including fiber distribution pedestals (BDO/CFDP), fiber cabinets (CFIT/CFBT), and aerial enclosures (CFAS); or third-party housings and closures.
FIBER ACCESSORIES

Fiber Optic Accessory Products
Charles Industries offers a wide assortment of high-quality fiber optic accessory products for integration with its fiber enclosures, terminals and buried distribution pedestals; as well as other manufacturers’ fiber equipment. All products are built to stringent industry standards for low optical signal loss and reliable performance.

Additional accessories may be available for your specific fiber equipment needs. Please call Charles Industries for special requests.
FIBER RACK SOLUTIONS

Charles Fiber Rack Solutions (CFRS)
Charles Fiber Rack Solutions (CFRS) provide flexible, multi-functional panels for patch, splice and splitter requirements within virtually any application. The efficient design of the splice area and bulkhead allows for maximum density while using just 1RU, 2RU or 4RU of valuable rack space.

CFRS feature aluminum construction with a powder coated finish. Swing-out shelf models allows technicians easy access to splice/splitter trays. A hinged tray design facilitates tray access without disturbing existing splices. The rear of the rack panel is open with cable management railing to neatly organize fiber cable in rackmount enclosures. A 4RU front and rear access model is also available with the rear panel providing access to six swing-out 4”x9” splice trays. All models are compatible with 19” or 23” equipment racks.
LiteVu™ Optical Monitoring System
The LiteVu™ Optical Monitoring System is a cost-effective solution for non-intrusive monitoring of power and transmission of an optical link, assisting operators in ensuring the performance and reliability of their optical infrastructure. LiteVu provides a view of network traffic in real time, thus allowing technicians to quickly identify anomalies within the data stream. Up to four slide-in optical monitoring modules may be added on an as-needed basis to provide “pay-as-you-grow” scalability. A 2RU chassis is constructed from powder coated aluminum with and off-white finish.

FIBER OPTICAL MONITORING SYSTEM

LiteVu 2RU
Slide-out shelf provides convenient access to Optical Tap Modules

FIBER WALL SOLUTIONS

Charles Fiber Wall Solutions (CFWS)
CFWS provide simple, cost-effective enclosures for patch and splice requirements within virtually any indoor application. The efficient design provides easy access and uses standard LGX footprint patch plates for up to 12 fiber ports. Powder-coated aluminum construction ensures durability, while multiple APC and UPC adapter plates provide flexibility and scalability for cost savings.

Ideal for use in building entrance terminals, telecom closets, open office and other indoor locations, CFWS are compactly designed for maximum density in space-constrained applications. Top and bottom cable entry grommets provide flexible protected access. Enclosures are easily mounted to walls using pre-drilled internal thru-holes and wall mount screws.
SEALED FIBER SPLICE CASE ENCLOSURES

Charles Multi-Purpose Housings (CMPH)
The CMPH is a large capacity housing designed to provide above-grade storage of FOSC-type sealed fiber splice cases along with fiber slack storage. A sturdy metal bracket with two offset rails allows the mounting of a variety of splice cases with convenient 360° access. The spacious internal area of the CMPH allows slack cable to be stored in the base of the housing. A ground bar with a 6-point bond plate and grounding lug is also included.

The two-piece dome and base design of the non-metallic CMPH housing is ideally suited to rehabilitation of metallic cabinets, as the base can easily be placed over existing installations. The dome can be removed by a single technician and features side self latches and bolt locks. An optional hasp lock is also available.

Applications
- Sealed Fiber Splice Case Storage
- Fiber Slack Storage
- Rehabilitation of Damaged Metallic Cabinets

Charles Splice Enclosure (CSE)
Charles Splice Enclosure (CSE) provides an affordable metallic enclosure solution for housing sealed fiber splice enclosures with cable slack storage. CSE offer a useful combination of superior environmental protection, ease of installation, and generous internal volume.

CSE are constructed of aluminum and powder coated for long service life. They are designed for pad mounting to a precast concrete pad or Charles advanced composite pad (CPAD), or direct-buried using two 42” mounting stakes. Each enclosure features two sets of doors with 3-point latching for easy access to the cabinet’s contents. A lower removable front panel enables the cabinet to be easily positioned over existing cables and conduits for new or rehabilitation situations.

Applications
- Sealed Fiber Splice Case Storage
- Fiber Slack Storage
BELOW GRADE ENCLOSURES

Charles Below Grade Enclosures (CBGE)
CBGE are lightweight, molded polyethylene vaults and handholes available in seven tapered rectangular and two round sizes. Constructed from high-density polyethylene (HDPE), CBGE are built to provide years of maintenance-free service and superior shelter for buried network components. CBGE allow technicians easy handhole 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.

Applications
CBGE are designed to meet or exceed ANSI/SCTE ratings for light duty, pedestrian-only (greenbelt) applications, including:
- Fiber optic and copper slack cable coiling and storage
- Access to sealed cases (splice cases, repeaters, load coils, SmartCoils™, etc.)
- Meter boxes
- Irrigation system and other waterway control valves
- Traffic signal controls
- Ground rods

Tier Rated Underground Enclosures (TRUE)
Charles’ Tier Rated Underground Enclosures™ (TRUE) are made from advanced composite material using a Resin Transfer Molding (RTM) process. Combining the design flexibility of RTM and the strength of advanced composite materials, TRUE grade level enclosures provide Tier 15 and 22 performance with ease of handling and installation, weighing up to 50-75% less than equivalent useable volume polymer concrete alternatives. The exterior surfaces of TRUE are finished with gelcoat, which cures to a durable, smooth finish resistant to ultraviolet degradation and hydrolysis. Four sizes of TRUE are available with cover sizes of 17”x30”, 24”x36”, 30”x48” and 30”x60”. Vault mount pedestal lid covers are available, and TRUE are stackable for shipping.

Applications
TRUE are designed to meet or exceed ANSI/SCTE-77 ratings and are available in Tier 15 and Tier 22 load ratings for use in the following applications:
- Fiber optic, copper and coaxial slack cable coiling and storage
- Access to sealed cases (splice cases, repeaters, load coils, SmartCoils™, etc.)
- Meter boxes / junction boxes
- Irrigation system and other waterway control valves
- Traffic and railway signal controls
- Ground rods
REMOTE ENCLOSURES FOR BACKHAUL AND FTTx

Charles Universal Broadband Enclosures
Charles Universal Broadband Enclosures (CUBE) bring a new level of compactness, integration, and quality to full featured Fiber Optic and Copper Remote Terminals. Constructed of welded aluminum or steel, CUBE Cabinets have a powder coated finish to withstand the elements and provide superior environmental protection. Their optimized size and weight allow technicians to install these terminals in virtually any location quickly and easily.

Designed to flexibly accommodate a variety of communications equipment, CUBE may be ordered pre-wired (integrated) to meet your power, protection and physical interface requirements. Many customizable sizes, features, and optional equipment provide the flexibility to meet your every application at remote, multi-user locations such as cell sites, business parks, campuses, strip malls, and apartment buildings.

Applications
- Macro Cell Equipment / CRAN
- Site Support (Power) - Batteries and Rectifiers
- Small Cell / DAS Cabinets & Concealment Shrouds
- Wireless Backhaul
- Multi-Purpose Enclosures for Equipment and Cable Slack
- Fiber to the Node (DSLAM)
- Ethernet / GPON / RFoG

CUBE RL Series
CUBE RL Series Cabinets are designed to support traditional 19” or 23” rackmount equipment and may be mounted on a wall, H-frame channel or pole. The RL Series is a robust set of enclosures that have been certified to Telcordia GR-487 specification for electronic enclosures.
**CUBE MP Series**

CUBE MP Series Cabinets are rugged, compact enclosures with steel mesh or wooden backboards designed for economical protection of a wide assortment of remotely deployed equipment. These multi-purpose cabinets are versatile performers adaptable to many common remote terminal applications for copper, fiber and coaxial. Common applications including housing small electronics, splice trays, smart meters, SCADA equipment, and security/monitoring hardware. MP Series cabinets are designed to meet NEMA 4X (sealed cabinets) or NEMA 3R (vented cabinets) standards.

**CUBE ID Series**

CUBE ID Series cabinets address the needs of indoor wireless applications. ID Series enclosures feature power, equipment and optional battery compartments, and are direct air cooled operation in indoor equipment areas. They provide up to 18RU front or 36RU front and rear mounting space for 23” rack mount equipment, with DAS electronics mounted on slanted, vented shelves. An optional battery compartment supports one string of -48VDC Saft Tel.X 180 Ni-Cd batteries.
**CUBE SS Series**

Charles CUBE Site Support Cabinets allow providers to install highly efficient rectifiers and the latest in battery technologies in durable, robust and GR-487 compliant padmount enclosures. With support for VRLA or Ni-Cd batteries, various rectifier and power distribution options, and thermal management options; Charles' small, medium and large site support cabinets protect network integrity with an environmentally friendly, energy efficient solution. Large Site Support Cabinet solutions are part of Charles' Macro Site solutions set, combining with CUBE padmount (PM) and battery backup (BB) cabinets to form a complete site solution. Charles can also create custom designs that integrate specific power solutions, call for details. CUBE Site Support Cabinets are seismic Zone 4 rated.

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**CUBE BBU Series**

CUBE BBU cabinets are ideally suited for cell sites and other outdoor environments when a large amount of battery backup time is required. Multiple BBU cabinets can be combined to achieve an even greater amount of battery backup time. BBU cabinets can be installed adjacent to or remotely from Charles Pad Mount Equipment Cabinet (CUBE:PM639) or Site Support (CUBE:SS cabinet to form a complete Macro Cell or CRAN Node solution. CUBE BBU cabinets are Zone 4 Seismic rated and designed to meet NEMA 3R standards, and support Ni-Cd or VRLA battery strings.
**CUBE PM Series**
The CUBE PM Series offers pad mountable cabinet options for high density installations. CUBE PM include bolt-mounted bases and lifting ears for placement by crane or other lifting equipment. CUBE PM cabinets offer ample room (16-39 RU) for electronics in the main chamber, with additional chamber options for added capacity that is separated for restricted access.

CUBE PM Series offer outstanding environmental protection standards and durable aluminum construction. PM Series Cabinets are certified to Telcordia GR-487 specifications for electronic equipment cabinets and designed to meet NEMA 4X (sealed cabinets) or 3R (vented cabinets) standards. Optional integrated power plants, protection, site monitoring, and fiber patch panels are available along with many thermal management options.

**CUBE SC Series**
To address the ever growing demand for mobile data consumption, Small Cells are being rapidly deployed in urban environments. Charles works with mobile operators, wireline backhaul providers and OEMs to develop compact enclosures for Small Cell deployments. Charles Small Cell enclosures house Ethernet demarcation devices, AC/DC rectifiers, Small Cell equipment and batteries for backup. Rugged enough to stand up to the outside plant environment, yet small and lightweight, Charles Small Cell CUBE Enclosures are poised to play a key part in the cellular network's future!
CONCEALMENT SHROUDS

Charles Concealment Shrouds
Charles Industries radio concealment shrouds offer aesthetically-pleasing concealment of radios at small cell, densification, and DAS remote sites. Both pole and ground mount shrouds are designed to conceal and protect high value radio assets while paving the way to municipal approval. Various shroud solutions have been created to address different radio and deployment options. Powder-coated finishes are available in multiple colors to match local surroundings. The SHRD60 series is curved to enhance the aesthetic look and feel of the solution. All solutions are subjected to extensive thermal analysis to ensure appropriate operating temperatures are maintained for the enclosed RAN equipment.

SHRD60
Pole Mount Curved Shrouds for low and high power Remote Radio Heads

SHRD56
Ground Mount Shrouds for Ericsson RRUS32 or Nokia 40/60/90W RRH, 160W Dual Band Radios, cMRO Radios, or Airscale Micro Radios

SHRD54
Pad Mount Shrouds for Ericsson RRUL11, RRUS12, RUL11 and RUS32 Remote Radio Heads

SHRD52
Pole Mount Shrouds for Nokia 40/60/90W Remote Radio Heads

SHRD51
Pole or Ground Mount Shrouds for Commscope ION and JMA TEKO DAS Remotes
CABINET MOUNTING PLATFORMS

Charles Composite Pads (CPAD)
CPAD are economical alternatives for concrete pads which eliminate on-site work, save time, and eliminate injury risk associated with handling and maneuvering heavy concrete slabs. With today’s compressed schedules to complete network builds, the CPAD solution enables rapid deployment with minimal on-site project planning and coordination. Made from advanced composite materials, CPADs are extremely durable (i.e., won’t crack over time), lightweight, and simple to install. With available options for both small cell, macro cell, and fiber hub deployments, there is a CPAD solution for all your wireless deployment builds. CPAD are custom designed to fit the mounting pattern as well as cable ingress/egress ports of the enclosure that is placed on top.

CPAD for Groundmount Small Cell Cabinets
1, 2 and 3 Bay CPAD Mounting Platforms for CUBE High-Power Small Cell Cabinets

CPAD for Macro Site Installations
2 Bay CPAD Mounting Platforms with Modular Extensions for CUBE BBU, PM and SS Series Cabinets

CPAD for Primary Flex Point Installations
Combination CPAD / TRUE Below Grade Enclosure for Fiber Hub / PFP Placements with Slack Storage
Charles Industries, Ltd. is a privately-held, diversified manufacturer of environmental enclosures and network equipment for fiber optic, copper, broadband cable and wireless networks. For more than 50 years, Charles has provided quality products and innovative, cost-efficient solutions to telecommunication, wireless and cable service providers; municipalities; utilities; contractors and engineering firms allowing them to better serve their customers' needs for reliable triple play services.

Research & Development Engineering
- Experienced engineers facilitate "in-house" development for all aspects of design, including mechanical, electrical, and thermal applications
- In-house engineering resources for material formulations, hardware fabrication, structural design, thermal analysis and system integration
- Extensive customer collaboration during concept development and prototype phases
- Aggressive time-to-market scheduling to meet our customers' commitments to their customers
- Research & Development includes in-house testing facilities, simulation tools, design verification tools and advanced prototyping capabilities
- State-of-the-art technologies in software, microelectronics and digital signal processing
- Environmental Testing and Accelerated Life Testing laboratories for customer, agency and validation testing
- Networked Documentation System for data management exchange

Supply Chain Management
- World class inventory management systems
- Global purchasing resources
- Key Supplier Partnering
- Supplier measurement tracking

Manufacturing Core Competencies
- Plastic extrusion and forming
- Plastic injection and rotational molding
- Metal fabrication and assembly
- In-house powder coating
- Integrated enclosure assembly and testing
- Thermal management
- Fiber management and routing
- Coil and transformer winding, assembly and test
- Integration of electrical and mechanical assemblies
- Robotic and automated process integration
- Advanced composite formulation and design
- Fully integrated CREO development and manufacturing systems

Quality Assurance
- Customer Satisfaction through Continuous Improvement
- All facilities are ISO 9001 / TL 9000 registered
- Products meet UL, cUL, FCC, NEBS, RDUP and other standards as required by industry usage

Charles Industries, Ltd. is a privately-held, diversified manufacturer of environmental enclosures and network equipment for fiber optic, copper, broadband cable and wireless networks. For more than 50 years, Charles has provided quality products and innovative, cost-efficient solutions to telecommunication, wireless and cable service providers; municipalities; utilities; contractors and engineering firms allowing them to better serve their customers' needs for reliable triple play services.

ISO 9001 & TL 9000 Registered

INNOVATIVE ENCLOSED SOLUTIONS™