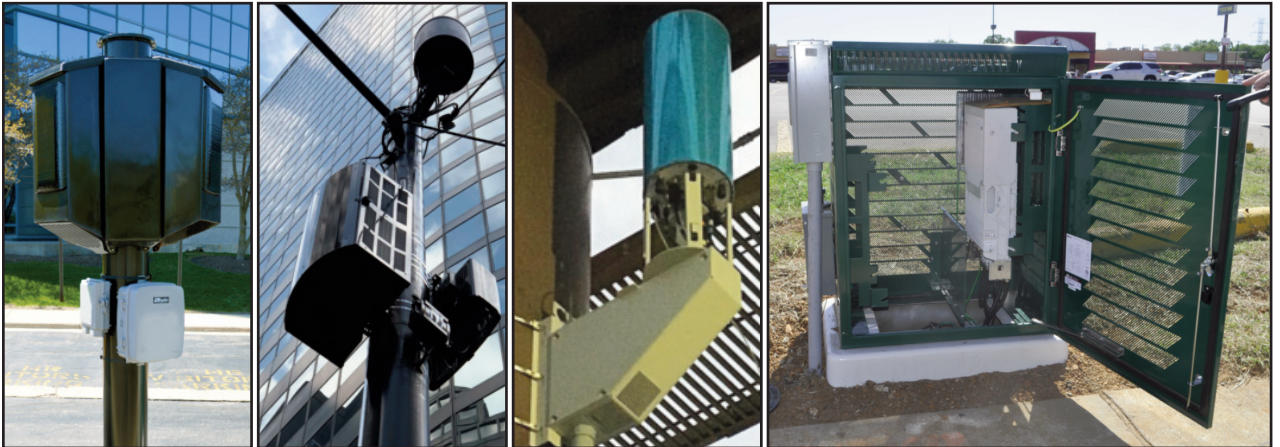


Charles 4G & 5G Solutions

The race to 5G next-gen networks is on, and Charles Industries is uniquely poised to help carriers succeed in the rollout of their cutting edge 5G cellular wireless investment. Charles' Innovative Enclosed Solutions™ expertise is being applied to 4G & 5G equipment concealment shrouds and fiber termination enclosures to offer solutions for housing and protecting the remotely deployed equipment that will bring greater speeds, lower latency and better connectivity to consumers. 5G is answering the call for the growing bandwidth needs of businesses and the general public, and Charles stands ready to assist in the network infrastructure transformation that is required to make it happen.

Charles 4G & 5G Solutions include concealment shrouds for Remote Radio Heads and power/battery equipment deployed in the outside plant, as well as compact fiber termination enclosures for fiber hand-off and multiplexing at Small Cell deployments.



4G & 5G Concealment Shrouds

Charles produces a variety of 4G & 5G Concealment Shrouds that each offer robust operational capability while also providing a level of concealment that renders operation discrete. mmWave 5G radios require antennas to be free from interference. Charles solutions leverage aesthetic openings to enable the antenna from 5G radios to protrude for a clear transmission path. They provide a platform on which a myriad of configurations of 5G radios and supporting equipment can be deployed to suit your needs. Our current 4G & 5G Concealment Shroud solutions fall into four main categories: Pole Top Shrouds, Pole Side Shrouds, Side Arm Mount Shrouds, and Ground Mount Shrouds.

Pole Top Shrouds

Pole Top Shrouds house and conceal remote radio heads (RRH) and other radio equipment atop utility and street lighting poles. The curved profiles of Charles' pole top shrouds blend in with both metal and wooden poles.

SHRD1 ■

- Central mast with a cylindrical, vented shroud
- Houses one to three Small Cell RRH units with a top mounting plate for a canister style antenna
- Radome antenna shroud and optional radio shroud skirts sold separately
- Many color options available

SHRD5 4G/5G ■ SHRD5 5G ■

- **4G/5G:** Houses 4G canister antenna and three 5G radios, select models house up to 3 additional 4G radios
- **5G:** Houses up to three 5G radios spaced at 120°
- Optional RF transparent cylindrical shrouding creates an overall solution that is one continuous diameter for optimal aesthetics
- Can be color matched to pole, optional 3M film to color match exposed 5G antenna face
- Bolts directly to the top of metal pole, or mounted to a wood pole with optional kit



SHRD1

4G



SHRD5 4G/5G

4G
5G



SHRD5 5G

5G



Pole Side Shrouds

Charles' Pole Side Shrouds utilize mounting kits to affix them to the sides of utility and street lighting poles. The shrouds can be mounted around the pole at heights specified by the carrier. Aesthetically pleasing designs and multiple color options appease municipal requirements for radio concealment and enable faster deployments.

SHRD60

- Aesthetically pleasing concealment of radios, power supplies, diplexers, combiners, splitters, fiber/power termination and slack storage
- Curved shape matches the pole contour, eliminating right angles found in typical outside plant enclosures
- Integrated support spine allows for equipment to be installed and pre-wired at ground level, on-site or at a staging facility
- Vented design for thermal regulation without active cooling

CLOK

- Discrete shroud per radio reduces overall deployment size while providing the flexibility to deploy a different number of radios at each pole
- Made of durable, lightweight ABS for minimizing overall impact on pole loading
- Adjustable to accommodate different diameter poles
- Cutout for 5G antenna face for optimum RF transmission
- Optional 3M film to color match exposed antenna face



SHRD60

4G



CLOK

5G

Side Arm Mount Shrouds

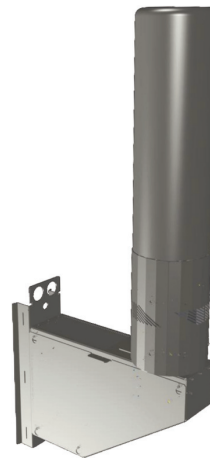
Charles' Side Arm Mount (SAM) places an antenna offset from a pole for better RF coverage. Multiple versions of the SAM are available to support a wide selection of different manufacturers' antennas.

SAM 4G

- Houses one LAA or CBRS radio
- Shroud under antenna conceals cables and connections
- Small vertical height allows for utility pole climbing around the SAM
- Pole mounting is accomplished with either bolts or metal banding

SAM 4G/5G

- Houses 4G canister antenna, three low-power 4G radios, and two 5G radios
- Curved aluminum antenna cable shrouds match diameter of canister antenna
- Aluminum cover panel conceals 4G radios
- Can be color matched to pole with optional 3M film to color match exposed 5G antenna face
- Each component can be accessed independently
- Pole mounting is achieved with either bolts or metal banding



SAM 4G

4G



SAM 4G/5G

4G
5G

Ground Mount Shrouds

SHRD56 are outdoor shrouds designed to house and protect multiple customer-supplied radios. These robust, vented shrouds are suitable for many RRH deployments.

SHRD56

- Houses two to five customer supplied RRH with mounting bracket options for both low and high power radios
- Features 8 position AC load center and optional meter socket
- Constructed of rugged .125" welded aluminum
- Can be mounted on Charles' CPAD composite material mounting platforms or poured-in-place concrete pads



SHRD56

4G

4G & 5G Direct Mount Fiber Termination Enclosures

Compact, flexible fiber termination enclosures are a critical element of 4G & 5G fiber backhaul networks. These terminals provide environmental protection for remote fiber demarcation points often located at utility/lighting poles, connecting multiple fibers to radios and providing testing/troubleshooting access points. These mid-pole solutions offer technicians easy, secure access to fiber adapters and allow quick turn-up of service on a grow-as-you-go basis. Rugged outdoor materials ensure network reliability against the elements, with fiber routing and slack storage features promoting safe, secure fiber management.

Fiber Transition Terminal

The CFTTE-24 is designed for Fiber-to-the-Small Cell applications. The terminal houses a 24 Port LC/UPC bulkhead with ample room for cable storage and 5 velcro tie-down points to keep cables organized.

CFTTE-24

- Lightweight, rugged polycarbonate construction provides superior environmental protection
- 24 ports for duplexed LC/UPC connectors
- Fiber bend control guides keep slack storage neatly organized within bend radius specifications
- Hex bolt lock provides security to internal fiber and equipment, and prevents unauthorized access
- Removable grommets offer secure, weatherproof cable entry
- May be mounted inside Charles' SHRD56 and SHRD60 Series Concealment Shrouds



CFTTE

4G
5G

Fiber Hand-Off Terminal

The CFIT-24 terminal is an aluminum, polemount enclosure designed for convenient fiber distribution to up to 24 ports. It is ideally suited to Small Cell installations where fiber is routed in the interior of a pole, as the CFIT-24 includes centric 1.25" and 2" knockouts on the rear wall of the terminal's interior compartment allowing fiber ingress/egress directly to the pole to which it is attached. The interior chamber is furnished with 24 LC/UPC adapter ports in a centralized location, with fiber management guides, fiber anchoring points, and Velcro attachment tabs surrounding the adapters for neat fiber management.

CFIT-24

- Compact fiber hand-off for Small Cell deployments
- 24 Port LC/UPC connector bulkhead
- Integrated fiber management and anchoring points
- Rear entry centric knockouts for conduit connection directly to interior of poles
- Two centric knockouts for top entry, two grommets for bottom entry
- Pole mount bracket provided for bolting or banding to poles
- Hinged door with gasket and door locks



CFIT-24

4G
5G



Power & Fiber Terminal

The CFIT-PF Power & Fiber Terminal provides a compact AC breaker and fiber hand-off for Small Cell deployments.

CFIT-PF

- Saves on attachment fees or space by utilizing only one enclosure to deliver power and fiber to radios
- AC breakers can be configured to specific required amperages for customer-specific radios, GFCI outlet and transient voltage suppressor
- 24 port LC/UPC connector bulkhead
- Fiber management and anchoring point features included
- Three bottom entry grommets provide easy cable entry/egress



CFIT-PF

4G
5G

DWDM Terminal

Charles CFIT-DWDM Terminal was designed to provide muxing wavelengths for a cascading Small Cell deployment. The compact enclosure features a downward hinged door to provide access to CWDM or DWDM modules (sold separately) housed in the interior compartment by a specially designed bracket.

CFIT-DWDM

- Feeds multiple radios with a limited fiber plant or mixes technologies down a single fiber strand
- 3 slots provided for CWDM or DWDM modules
- 4th slot holds a module that accepts a Corning® OptiTip® connector from the field or a module that interfaces to a LC/UPC fanout cable
- Can also be integrated into a Charles CNUB enclosure, providing a complete solution for power circuit protection, fiber termination, transient voltage protection and power metering



CFIT-DWDM

4G
5G

Ordering Information

To discuss the 4G & 5G Solutions presented in this brochure and their many customizable configurations, please call Charles at 847-806-6300 for more details. Our enclosure experts are also available to discuss custom configurations for your specific wireless and fiber network needs.



INNOVATIVE ENCLOSED SOLUTIONS™




Dependable Solutions, Superior Support

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

Charles Industries, LLC
An Amphenol Company

Voice: (847) 806-6300
FAX: (847) 806-6231
E-mail: mkt serv@charlesindustries.com

Product and company names mentioned herein may be trademarks or trade names of their respective owners.

 is a registered trademark of Charles Industries, LLC

D-OSP191-J19