

Charles Universal Broadband Enclosures

Environmental Enclosure Solutions for Wireless, Fiber, Copper & Coaxial Equipment



Charles Universal Broadband Enclosures (CUBE) are a comprehensive and highly-configurable solution set of enclosures designed for a broad range of wireless, wireline and utility applications. With more than 500 configurations designed to date, it is likely that there is an existing CUBE to fit your backhaul, power, wireless infrastructure or multipurpose application. When a new custom design is needed, Charles has the ability to respond quickly with innovative new enclosure designs.

CUBE Cabinets are constructed of welded aluminum or steel and have a powder coated finish to withstand the elements and provide superior environmental and thermal protection. Their compact size and weight allow technicians to install these terminals in virtually any location quickly and easily. Designed to flexibly and efficiently accommodate a variety of mission-critical communications equipment, CUBE may be ordered with integrated equipment to meet your power, protection and physical interface requirements.



Macro Cell



Small Cell



Concealment Shrouds



Backhaul



DAS / Venue



Multi-Purpose



Indoor



Utility



CUBE Applications

Macro Cell Equipment

With the strong push to roll out LTE, large numbers of new macro cells are being built. Cell site equipment has gotten smaller and more efficient over the years, and movement towards CRAN architecture further reduces the footprint. Charles has developed a line of CRAN solutions to assist these deployments with rugged and compact enclosures for today's dynamic cell site needs. Various thermal options are available to ensure your equipment is protected and your site is reliable.

Site Support (Power)

One of the biggest challenges wireless service providers face is to provide reliable power in an efficient and environmentally friendly manner. Charles has a line of site support cabinets which allow providers to install new, highly efficient rectifiers and batteries in a compact and durable enclosure. With varied options for economical thermal management, Charles' line of site support cabinets protects your network integrity with an environmentally friendly, energy efficient solution.

Small Cell Enclosures & Concealment Shrouds

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 radios 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!

Backhaul

As cell sites and distributed antenna systems (DAS) across the country are upgraded to support 4G services, the Charles CUBE portfolio offers a number of compact, robust and cost effective outdoor enclosures for wireless backhaul electronics. With flexible mounting options and support for multi-chamber designs and power options, CUBE RL and select CUBE PM Series solutions will help maximize the profits of your backhaul service offering.

Multi-Purpose

CUBE MP Series enclosures are rugged, compact environmental enclosures with steel mesh or wooden backboards designed to support a wide assortment of equipment and slack storage. These versatile indoor/outdoor solutions include compliant options for both NEMA 3R (vented) and 4X (sealed) standards.

Indoor

A growing number of deployments are being made in indoor environments, such as telecom equipment rooms. These spaces are common areas in which access by the general public may occur. Charles has developed a line of vented enclosures to provide safe and secure placement of equipment in indoor areas.

DAS Enclosures & Concealment Shrouds

Outdoor Distributed Antenna System (ODAS) deployments continue at an unprecedented rate. Charles addresses DAS applications with equipment cabinets for head-end gear and shrouds which enclose DAS remotes for security and aesthetic improvements to the communities in which they are deployed.

Ethernet / GPON / RFoG

Whether in a business park or a residential multi dwelling unit, carriers are delivering broadband solutions to increasing number of subscribers. CUBE solutions specifically targeted at supporting these services at MDUs have been developed. Customizable sizes, features and optional equipment provide the flexibility to meet your MDU applications.

Utility

Rugged enough to stand up to the rigors of the utility marketplace, but compact and cost effective to protect your investment while helping to bring your project in on budget, several CUBE options are available for housing aggregation equipment, smart meters and other utility equipment.

OEM

Charles has a diverse range of cabinet sizes and configurations. We leverage our state of the art sheet metal fabrication and powder coating manufacturing facility to deliver customized, integrated enclosure solutions to house and protect your electronics. Solutions for wireless backhaul, BTS, DSLAM and GPON MDU products have already been developed for many of the top OEM companies in the telecom market.



Macro Cell Cabinets

CUBE Padmount (PM), Site Support (SS) and Battery Backup (BB) Series cabinets combine to form a complete macro site solution set. Equipment can be placed in the PM639, while power and battery equipment is combined in the SS enclosures. A standalone BB cabinet may be utilized to provide additional reserve capacity. All three of these cabinet series are built to the same height, width and depth dimensions to provide an aesthetically pleasing lineup that facilitates uniform space requirements. Front and rear access doors allow technicians access to equipment storage areas and cable routing. All cabinets are GR-487 approved and ideal for CRAN architecture. Multiple thermal management options are available, including heat exchangers and air conditioners.



Macro Cell Solution of CUBE PM639, SS, and BB Cabinets



PM63912 Equipment Cabinets



SS4C215 Site Support Cabinets



BB48 or BB24 Battery Cabinets

Small Cell Cabinets

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 pole or ground mount deployments. Charles Small Cell CUBE enclosures house Ethernet demarcation devices, AC/DC rectifiers, Small Cell radios and batteries for backup. Rugged enough to stand up to the outside plant environment, yet small and lightweight, Charles Small Cell CUBE Enclosures meet NEMA 4X or NEMA 3R standards. Select CUBE RL Series Cabinets also have Small Cell applications.



SC1042NAN2



SC20942NE2



SC3042NNE2



RL20721



SC21632DP2

CUBE Series	Height	Weight	Depth	Description
LOW-PROFILE SMALL CELL CABINETS				
CUBE-SC104 Series	24"-48"	10.5"	19"	Power & Battery Only, 4RU, 19" Fixed Rail, Battery Compartment for Battery String
HIGH-POWER SMALL CELL CABINETS				
CUBE-SC204/209/304 Series	24"-72"	24-48"	21"	4RU or 9RU Power Compartment, 1 or 2 Battery Trays, Radio Shroud, Meter Socket, for 40W RRH
CUBE-SC216 Series	48"	24"	21"	16RU Power Compartment, 1 Battery Tray, Radio Shroud, for 60W RRH
RL207XX SERIES SMALL CELL CABINETS				
CUBE-RL207 Series	27"	28"	20"	7RU Equipment Chamber, 48VDC 580W Heat Exchanger, Battery Compartment for Battery String

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.



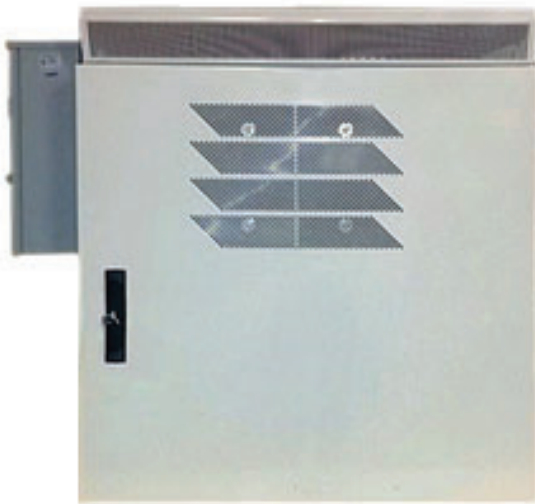
CISH51

Pole or ground mount shrouds for Commscope ION and JMA TEKO DAS Remotes



SHRD52

Pole mount shrouds for Nokia 40/60/90W Remote Radio Heads



SHRD56

Ground mount shrouds for Nokia 40W Remote Radio Heads or Nokia cMRO Radios



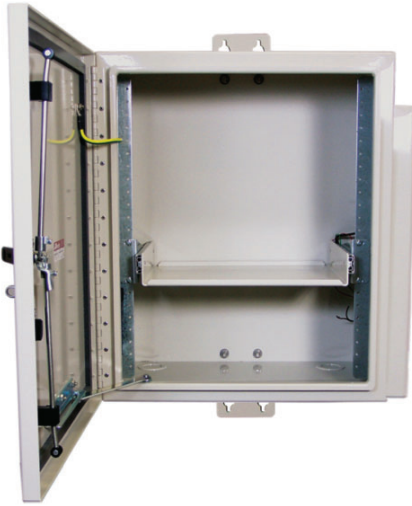
SHRD60

Pole mount curved shrouds for low and high power Remote Radio Heads

CISH51 49"x22.5"x12.5" 65 lbs.	CISH51LG 49"x32"x12.5" 95 lbs.	CISH51ST 42"x22.5"x12.5" 55 lbs.	SHRD52-101/401 48"x24"x20" 80 lbs.	SHRD52-601 64"x23"x14" 80 lbs.	SHRD56-101/401 36"x32"x22" 170 lbs.	SHRD60-051 46"x13.5"x14" 55 lbs.	SHRD60-401 70"x20"x18" 99 lbs.
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Backhaul

CUBE RL Series enclosures are single or multi-compartment cabinets designed for housing and protecting traditional 19" or 23" rackmount equipment. Options exist for wall, H-Frame or pole mounts for most models. Separate locking compartments on multi-chamber models offer division of provider and customer equipment access. At cellsites and other multi-user locations, this division of access allows customers to service their equipment and drops without the need to have the proprietary cabinet owner's technician open the cabinet for them. RL Series cabinets are certified to Telcordia GR-487 specifications for electronic equipment cabinets and are designed to meet NEMA 3R or 4X standards, depending upon configuration. Select CUBE PM Series cabinets are also frequently utilized for backhaul applications requiring a larger capacity padmount enclosure.



RL1003



RL2003



RL3000



PM4120H



PM4200

Model Number	RL1003	RL2000	RL2003	RL20721	RL2100	RL21221	RL21621	RL3000
Dimensions (HxWxD)	26"x22"x20"	21"x26"x16.5"	38"x23"x20"	27"x28"x20"	30"x26"x15.5"	38"x26"x20"	45"x26"x20"	28"x26"x16.5"
Equipment Chamber	14RU / 19"	5RU / 23"	14RU / 19"	7RU / 19"	9RU / 23"	12RU / 19"	16RU / 19"	5RU / 23"
Customer Chamber	—	3RU / 23"	6RU / 23"	—	—	—	—	3RU / 23"
Battery Chamber	—	—	—	13"x28"x20"	13"x26"x15.5"	15"x26"x20"	15"x26"x20"	7"x26"x16.5"

DAS / Venue

Many different CUBE enclosures provide critical equipment and battery protection for Distributed Antenna Systems (DAS) installed at stadiums and other venues. Charles has created solutions for both head-end equipment as well as remote equipment. For the head-end, the CUBE-PM639 equipment cabinet provides security and storage for head-end gear and fiber equipment. CFRS panels help to manage and terminate incoming fiber. CUBE Site Support (SS) and RL Series power and battery enclosures can be used to power remote units. An array of sizes and battery capacities ensures a right-sized solution for all deployment needs. Additionally, the CISH51 Concealment Shroud is useful for concealing and protecting up to three DAS remotes in a single location. Available in a variety of colors, the CISH51 blends into local surroundings for visually-aesthetic placements.



PM63912 Equipment Cabinet



SS4C215 Site Support Cabinet



CISH51 Concealment Shrouds



RL207 Cabinet

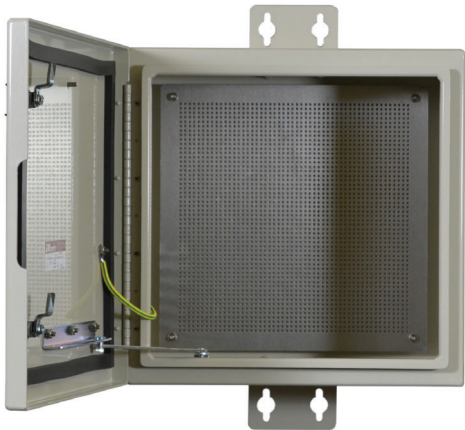


CFRS Fiber Rack Solutions

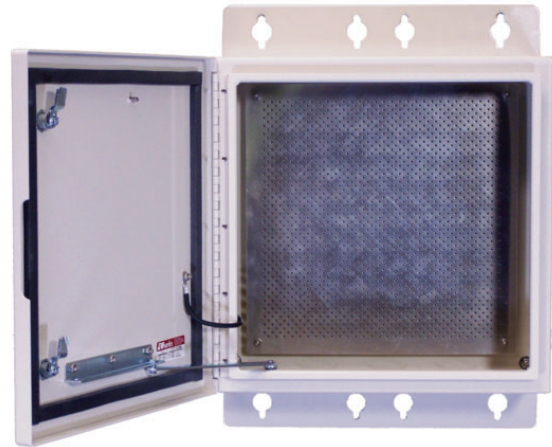


Multi-Purpose Cabinets

CUBE MP Series cabinets are rugged, compact enclosures designed for economical protection of a wide assortment of remotely deployed equipment. These multi-purpose cabinets with steel mesh or wooden backboards are versatile performers adaptable to many common remote terminal applications for copper, fiber and coaxial splices and equipment. Common applications include 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.



MP1818



MP2020



MP2424



MP3624



MP3636

MP Common Sizes: 18"x18"x10" 20"x20"x10" 24"x24"x8" 32"x16"x8" 36"x24"x12" 36"x36"x12"
Common sizes (HxWxD) represent existing CUBE designs typically stocked by Charles authorized distributors. Custom sizes are available by special order.

Indoor Cabinets & Battery Racks

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 and 36RU rear mounting space for 23" rack mount equipment, with DAS electronics mounted on slanted, vented shelves. Select CUBE RL Series multi-function enclosures also house power, Ethernet transport, and radio equipment in a compact footprint with optional battery backup compartments available. CIBR modular battery racks are a Seismic Zone 4 rated rack solution for up to six strings of batteries.



ID63612HN2



CIBR 6 Tray



RL21221



RL21621



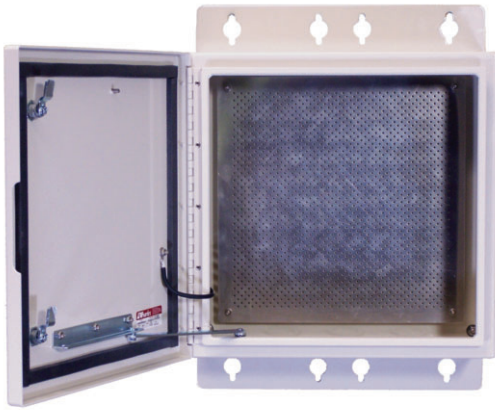
ID61812HN2



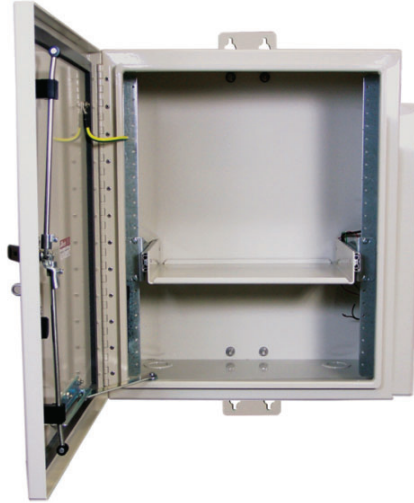
CIBR 3 Tray

Utility Cabinets

As private, leased line T1 services become unavailable through local incumbent telecom carriers, utility providers have a need to replace their internal communications networks with an internal network of their own. This takes the form of either a dedicated fiber network or secure wireless infrastructure. Charles CUBE outside plant cabinets are ideally suited for small, medium, or large size deployments of fiber or wireless gear. Many sizes and options are available, such as separate battery chambers; AC/DC power supplies; and fiber termination, patching, and management.



MP2020



RL1003



PM4110



PM52732



PM63922RF4

Series	PM4000	PM5000	PM6000
Width	28"	28"	32"
Overall Depth	20"	27"	32"
Equipment Chamber Capacity	16RU, 20RU, 24RU	14RU, 16RU, 20RU, 24RU, 27RU, 31RU	16RU, 24RU, 27RU, 31RU, 36RU, 39RU
Front and Rear Doors	Optional	✓	✓
Optional Battery Chamber	Up to (4) 100AH	Up to (4) 190AH	Up to (4) 190AH
Optional Handoff Chamber	✓	✓	✓

Third-Party Equipment Integration

As a full-service enclosure provider with its own U.S. based design, production and assembly facilities, Charles Industries is uniquely qualified to provide you directly with integrated equipment solutions. Our professionally trained workforce can install your valuable network electronics and powering hardware directly into a CUBE enclosure solution at the company's controlled integration facilities. This improves compliance and saves you time and money from having technicians do the work in uncontrolled worksite conditions

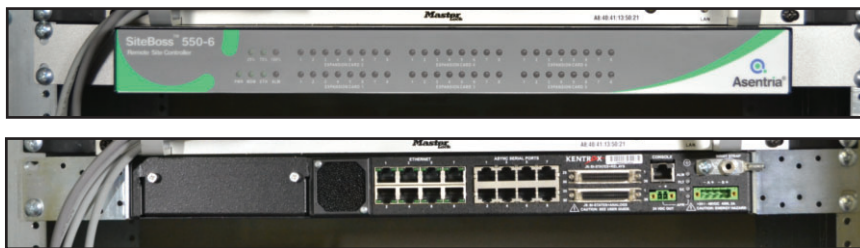
Charles' CUBE experts will work with you to best determine powering and thermal management options, wiring harnesses and cable organization, alarms and relays, power/surge protection, and other options to meet your unique integration requirements. Integrated solutions may then be tested for conformance and drop shipped to service provider worksites for installation convenience and time savings.



SITE ACCESS CONTROL



INTELLIGENT SITE MONITORING



SURGE PROTECTION



CABLE INGRESS/EGRESS



UPS MODULES



CPRI PANELS MODULES



CUBE Thermal Management & Accessories

Many optional features are available to optimize your CUBE to your specific application:

- Thermal systems, including:
 - Heat Exchangers
 - Air Conditioners
 - Direct Air Cooling
- Pre-wired cable harnesses
- Fiber splice and splitter trays
- Protector block interfaces (screw, punchdown, other)
- Integrated power (AC, AC with battery backup, DC)
- Surge protection
- Padlockable rackmount equipment cages
- Pre-stubbed cable types and lengths
- Door locks, security bolts, and door alarms
- Swing rack mounting rails
- Plinth bases
- Slide-out laptop trays
- Solar shielding
- Venting
- Aesthetic shrouds
- LED interior lighting
- Customer-specific labeling

Several other Charles product lines complement CUBE cabinet installations. For more information on these products, please visit www.charlesindustries.com or call 847-806-6300.



**Charles Fiber
Rack Systems
(CFRS)**



**Composite Pad
Mounting Platforms
(CPAD)**



**CPRI Monitoring
Rackmount Shelves**



**Charles Battery Racks
(CIBR)**

CUBE Configurations

The cabinets shown on these pages are representative of the more than 300 designed configurations Charles has developed for the CUBE family of environmental enclosures. To view the full line of CUBE Cabinets, please visit www.charlesindustries.com or scan the QR Code (requires QR Code Reader App) with your smart phone.



Multi-faceted design and manufacturing capabilities uniquely allow Charles Industries to meet its customers' deployment challenges with time-sensitivity and individual responsiveness. To discuss custom CUBE configurations, please call Charles at 847-806-6300 with your specific application information and requirements. Charles provides full engineering support and application consultation and will work with you to create the most reliable and cost-efficient enclosure solution for the deployment of your network's mission-critical equipment.



INNOVATIVE ENCLOSED SOLUTIONS™

With Charles, You Can Depend On:

- Field-proven and unequalled 24-hour technical support
- Individualized application consultation
- Responsive customer service

Visit our website at <http://www.charlesindustries.com>

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