COMMSCOPE®

HELIAX® FiberFeed® Direct

Simplify remote radio unit connectivity, making network modernization efforts more efficient and productive

- Standard configurations simplify planning and future expansion
- Universal design
- Plug and play installation

POWERED BY | **ANDREW**®

It's crowded at the top

Surging mobile data demands are making network modernization a priority. To increase performance and lower costs, operators are turning to the remote radio unit (RRU) at the top of a cell tower and the fiber-to-the-antenna (FTTA) that connects it.

The modernization is challenging, as FTTA systems incorporate a number of variables that are far from standardized. Indeed, tower-mounted RRUs require both fiber and power connections, for which there are a wide variety of connector types, sizes and counts. This patchwork of hardware makes it difficult to match the interfacing that OEMs place on their RRUs. Not to mention, maintenance and expansion can create even bigger headaches.

Additionally, the upgrade is time consuming and expensive, requiring operators to hardwire DC conductors and multiple fiber lines through junction boxes and then into RRUs. But, with a lack of RRU interface standards, connection requirements may prove confusing even to experienced network design engineers. And there's still the pressing concern of increased weight and wind load from the junction boxes at the tower top.

Collectively, the issues can become overwhelming, as they slow productivity and add complexity and cost to a site deployment—the very issues an FTTA site architecture is intended to prevent.

Customization is our specialty
Does your network require special considerations? As an industry leader in network modernization, we can design a solution that's right for you.

There's a better approach.

Yes, you can increase network coverage and capacity and expedite new site development while navigating the complexities of RRU deployments.

Built-in Scalability for Network Modernization

HELIAX FiberFeed Direct provides you with maximum flexibility, easily accommodating your expanding network needs.

Need to connect 3 RRU's today but you want the ability to add 3 at a future date? HELIAX FiberFeed Direct makes it easy: Use 3 of the cable's 6 built-in fiber/power cables and save the remaining 3 for future upgrades.

And if your needs increase dramatically, rest assured: HELIAX FiberFeed Direct has you covered, accommodating 12, 18 or more RRU's. Simply install the additional HFF Direct trunk cables—no redesign, no effects on existing systems.

No one can predict the future but with HFF Direct, you'll be prepared.

According to LTE World, remote radio unit (RRU) systems can reduce the energy consumed by a network by up to 30 percent. That's just one reason experts predict the RRU market will top $3 billion by 2016.

Minimize FTTA cabling challenges with HELIAX® FiberFeed® Direct

HELIAX FiberFeed Direct is a virtual plug-and-play hybrid breakout system that directly connects the RRU to the baseband unit. Integrating a canister breakout design and pre-installed connectors, the hybrid power-fiber cable eliminates the need for a junction box while accommodating a multitude of RRU interfaces through a radio matching fiber tail and where required a power jumper kit.

Configurations are scalable and can accommodate 18 or more RRUs and ease future RRU upgrades. The change of a fiber tail , and in some cases addition of a power jumper kit is all that is required to connect the new RRU interface, rather than the need to replace the entire trunk cable. As a result, you'll experience efficiencies throughout the installation process, speeding deployment while reducing the risk of downtime.

And, by eliminating the need for multiple cable runs and a junction box, HELIAX FiberFeed reduces weight and wind load burdens while reducing tower leasing costs.

Plug-and-play simplicity

Deployment with FiberFeed Direct is truly plug-and-play—simply attach the necessary cables and you're done.

We perform all of the intricate back-end work, with our global supply chain and expert turnkey deployment services working in tandem to ensure an accelerated installation process.

It's a comprehensive approach to network modernization that leverages the benefits of HELIAX while delivering:

- 33 percent less tower loading
- 50 percent labor savings
- Universal design

All of which combine to yield more reliable and efficient network upgrades, a healthier bottom line, and enhanced customer satisfaction. And it's all possible with CommScope and HELIAX FiberFeed Direct.

Contact your local CommScope sales representative to learn how HELIAX FiberFeed Direct can simplify your network modernization efforts.
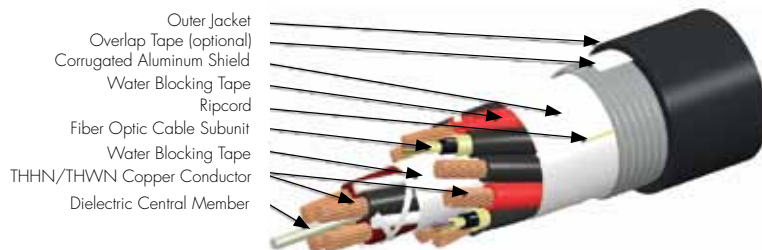
Direct Hybrid Trunk Cable for 3 and 6 Remote Radio Units (RRU's)

HELIAX® FiberFeed®—connectivity specifically engineered for RRU deployment

HELIAX FiberFeed hybrid cable combines power and fiber into a single high-performance run. It delivers the lightning-fast performance in a low-profile, easy-to-install and highly durable cable. HELIAX FiberFeed is a UL-listed copper/fiber feeder cable with a gel-free design to make installation a breeze. It features a weatherproof, UV-rated outer jacket; rugged, lightning-tested shield; and dry, moisture-blocking elements within each fiber component.

Features:

- Robust breakout design with numbered fibers and power conductors
- Stranded construction for easy bending and maximum fiber protection
- Corrugated aluminum shield protects from crush and animal damage
- Integrated rip cords for length management
- Factory test certificate included with every cable assembly

Outer Jacket
Overlap Tape (optional)
Corrugated Aluminum Shield
Water Blocking Tape
Ripcord
Fiber Optic Cable Subunit
Water Blocking Tape
THHN/THWN Copper Conductor
Dielectric Central Member

Robust Stranded Cable Construction

HELIAX FiberFeed Direct outdoor DLC connectors

provide ease of installation for tower-top fiber connections. Designed together with fiber tails within the breakout canisters, they easily accommodate virtually any RRU by by simply connecting the matching fiber tail.

Features:

- Simple assembly requiring no special tools
- Weatherproof to IP68 standards for water immersion and dust protection
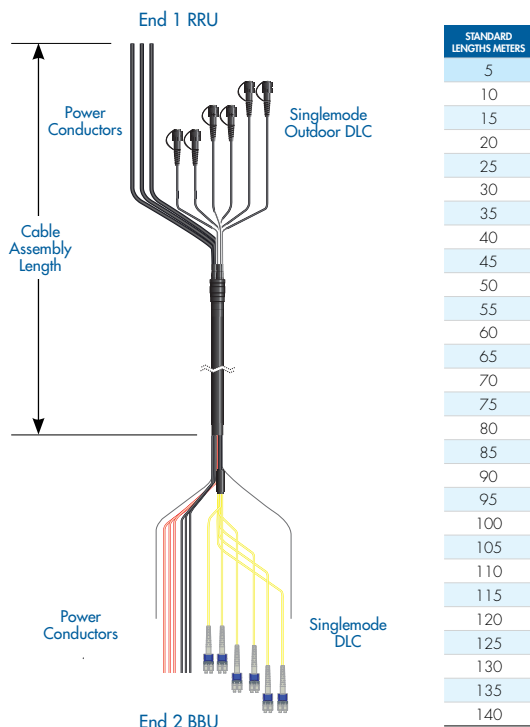- Robust composite body ensures reliable mechanical mating

(UL) TYPE TC-OF-ER FT4

HELIAX® FiberFeed® hybrid cable assemblies are UL listed Type TC-OF-ER FT4 and sunlight resistant in accordance with UL Subject 1277.

COMMSCOPE ANDREW HELIAX | FIBERFEED-HYBRID HTC-36SM-1006-218-APV >PVC< (UL) TYPE TC-OF-ER FT4

3 RRU Direct Hybrid Trunk Cable

End 1 RRU

Power Conductors

Singlemode Outdoor DLC

Cable Assembly Length

Power Conductors

Singlemode DLC

End 2 BBU

STANDARD LENGTHS METERS
5
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115
120
125
130
135
140

Cable Series	RRUs Supported	Number of Power Conductors	Power Conductor Wire Gauge (AWG)	Number of Fibers	End 1 Power Breakout (mm)	End 1 Fiber Breakout (mm)	End 2 Power Breakout (mm)	End 2 Fiber Breakout (mm)
FDH610-6S50	3	6	10	6	3000	1 x 800 1 x 650 1 x 500	1000	2 x 1200 2 x 1150 2 x 1100
FDH608-6S50	3	6	8	6	3000	1 x 800 1 x 650 1 x 500	1000	2 x 1200 2 x 1150 2 x 1100
FDH606-6S50	3	6	6	6	3000	1 x 800 1 x 650 1 x 500	1000	2 x 1200 2 x 1150 2 x 1100
FDH610-12S50	3	6	10	12	3000	2 x 800 2 x 650 2 x 500	1000	2 x 1200 2 x 1150 2 x 1100
FDH608-12S50	3	6	8	12	3000	2 x 800 2 x 650 2 x 500	1000	2 x 1200 2 x 1150 2 x 1100
FDH606-12S50	3	6	6	12	3000	2 x 800 2 x 650 2 x 500	1000	2 x 1200 2 x 1150 2 x 1100

3 RRU Direct Hybrid Trunk Cable, 10 AWG (3 x 3)

HELIAX® FiberFeed® Direct: 3X3, 10 AWG (13.3mm) conductors, 6 single mode fiber. Breakouts: 3 power cords @ 3M, 3 duplex fiber tails @ 0.5M with outdoor DLC, typical max length 65M
Part number base, specify length in Meters FDH610-6S50-xxM

3 RRU Direct Hybrid Trunk Cable, 10 AWG (3 x 6)

HELIAX® FiberFeed® Direct: 3X6, 10 AWG (13.3mm) conductors, 12 single mode fiber. Breakouts: 3 power cords @ 3M, 6 duplex fiber tails @ 0.5M with outdoor DLC, typical max length 65M
Part number base, specify length in Meters FDH610-12S50-xxM
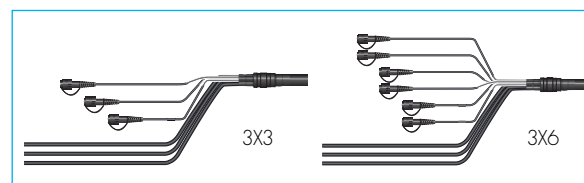
3 RRU Direct Hybrid Trunk Cable, 8 AWG (3 x 3)

HELIAX® FiberFeed® Direct: 3X3, 8 AWG (13.3mm) conductors, 6 single mode fiber. Breakouts: 3 power cords @ 3M, 3 duplex fiber tails @ 0.5M with outdoor DLC, typical max length 140M
Part number base, specify length in Meters FDH608-6S50-xxM

3 RRU Direct Hybrid Trunk Cable, 8 AWG (3 x 6)

HELIAX® FiberFeed® Direct: 3X6, 8 AWG (13.3mm) conductors, 12 single mode fiber. Breakouts: 3 power cords @ 3M, 6 duplex fiber tails @ 0.5M with outdoor DLC, typical max length 140M
Part number base, specify length in Meters FDH608-12S50-xxM

3 RRU Direct Hybrid Trunk Cable, 6 AWG (3 x 3)

HELIAX® FiberFeed® Direct: 3X3, 6 AWG (13.3mm) conductors, 6 single mode fiber. Breakouts: 3 power cords @ 3M, 3 duplex fiber tails @ 0.5M with outdoor DLC, typical max length 140M
Part number base, specify length in Meters FDH606-6S50-xxM

3 RRU Direct Hybrid Trunk Cable, 6 AWG (3 x 6)

HELIAX® FiberFeed® Direct: 3X6, 6 AWG (13.3mm) conductors, 12 single mode fiber. Breakouts: 3 power cords @ 3M, 6 duplex fiber tails @ 0.5M with outdoor DLC, typical max length 140M
Part number base, specify length in Meters FDH606-12S50-xxM

3X3
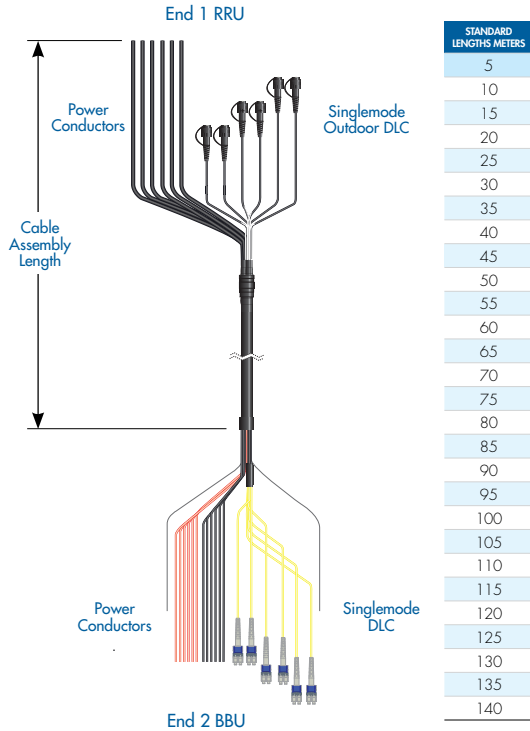
3X6

HELIAX® FiberFeed® Direct Part Number Explanation

FDH	610	6	S	50	50M
HELIAX® FiberFeed® Direct	# of Conductors and gauge	# of Fibers	Fiber Mode	Breakout Code	Length (in meters)

6 RRU Direct Hybrid Trunk Cable

End 1 RRU

Power Conductors

Singlemode Outdoor DLC

Cable Assembly Length

Power Conductors

Singlemode DLC

End 2 BBU

STANDARD LENGTHS METERS
5
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CABLE SERIES	RRUs SUPPORTED	NUMBER OF POWER CONDUCTORS	POWER CONDUCTOR WIRE GAUGE (AWG)	NUMBER OF FIBERS	END 1 POWER BREAKOUT (MM)	END 1 FIBER BREAKOUT (MM)	END 2 POWER BREAKOUT (MM)	END 2 FIBER BREAKOUT (MM)
FDH1210-12S50	6	12	10	12	3000	1 x 800 1 x 650 1 x 500	1000	2 x 1200 2 x 1150 2 x 1100
FDH1208-12S50	6	12	8	12	3000	1 x 800 1 x 650 1 x 500	1000	2 x 1200 2 x 1150 2 x 1100
FDH1206-6S50	6	12	6	12	3000	1 x 800 1 x 650 1 x 500	1000	2 x 1200 2 x 1150 2 x 1100
FDH1210-24S50	6	12	10	24	3000	2 x 800 2 x 650 2 x 500	1000	2 x 1200 2 x 1150 2 x 1100
FDH1208-24S50	6	12	8	24	3000	2 x 800 2 x 650 2 x 500	1000	2 x 1200 2 x 1150 2 x 1100
FDH1206-24S50	6	12	6	24	3000	2 x 800 2 x 650 2 x 500	1000	2 x 1200 2 x 1150 2 x 1100

6 RRU Direct Hybrid Trunk Cable, 10 AWG (6 x 6)
HELIAX® FiberFeed® Direct: 6X6, 10 AWG (13.3mm) conductors, 12 single mode fiber. Breakouts: 6 power cords @ 3M, 6 duplex fiber tails @ 0.5M with outdoor DLC, typical max length 65M
Part number base, specify length in Meters FDH1210-12S50-xxM

### 6 RRU Direct Hybrid Trunk Cable, 10 AWG (6 x 12)
HELIAX® FiberFeed® Direct: 6X12, 10 AWG (13.3mm) conductors, 24 single mode fiber. Breakouts: 6 power cords @ 3M, 12 duplex fiber tails @ 0.5M with outdoor DLC, typical max length 65M
Part number base, specify length in Meters FDH1210-24S50-xxM

6 RRU Direct Hybrid Trunk Cable, 8 AWG (6 x 6)
HELIAX® FiberFeed® Direct: 6X6, 8 AWG (13.3mm) conductors, 12 single mode fiber. Breakouts: 6 power cords @ 3M, 6 duplex fiber tails @ 0.5M with outdoor DLC, typical max length 140M
Part number base, specify length in Meters FDH1208-12S50-xxM

6 RRU Direct Hybrid Trunk Cable, 8 AWG (6 x 12)
HELIAX® FiberFeed® Direct: 6X12, 8 AWG (13.3mm) conductors, 24 single mode fiber. Breakouts: 6 power cords @ 3M, 12 duplex fiber tails @ 0.5M with outdoor DLC, typical max length 140M
Part number base, specify length in Meters FDH1208-24S50-xxM

6 RRU Direct Hybrid Trunk Cable, 6 AWG (6 x 6)
HELIAX® FiberFeed® Direct: 6X6, 6 AWG (13.3mm) conductors, 12 single mode fiber. Breakouts: 6 power cords @ 3M, 6 duplex fiber tails @ 0.5M with outdoor DLC, typical max length 140M
Part number base, specify length in Meters FDH1206-12S50-xxM

6 RRU Direct Hybrid Trunk Cable, 6 AWG (6 x 12)
HELIAX® FiberFeed® Direct: 6X12, 6 AWG (13.3mm) conductors, 24 single mode fiber. Breakouts: 6 power cords @ 3M, 12 duplex fiber tails @ 0.5M with outdoor DLC, typical max length 140M
Part number base, specify length in Meters FDH1206-24S50-xxM

6X6   6X12
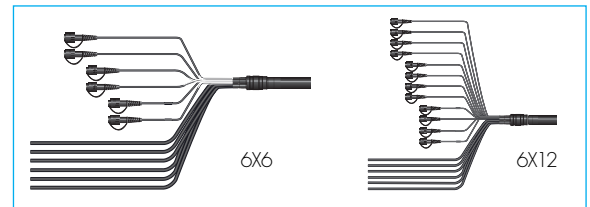
HELIAX® FiberFeed® Direct Part Number Explanation

FDH	1210	12	S	50	50M
HELIAX® FiberFeed® Direct	# of Conductors and gauge	# of Fibers	Fiber Mode	Breakout Code	Length (in meters)

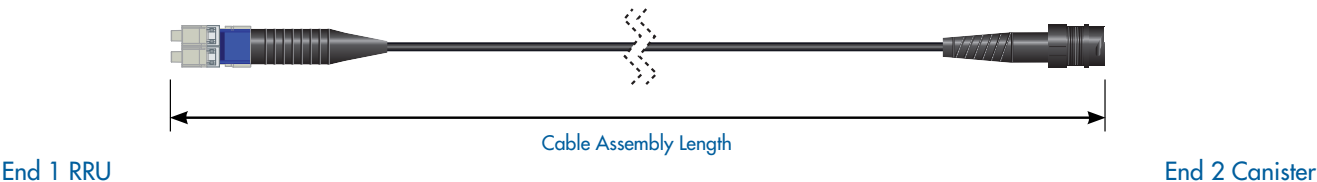**HELIAX FiberFeed Direct**

Fiber Tails

FiberFeed Direct fiber tails are constructed specifically for the final connection point at the RRU. Each is designed to fit a specific RRU and attach to the trunk cable with a robust 1/4" turn outdoor connector.

Features:
- Exact fit to RRU
- Rugged outdoor DLC connector for mating to truck cable
- Outdoor/indoor OFNR rated fiber cable

Singlemode DLC   Singlemode Outdoor DLC

Cable Assembly Length

End 1 RRU   End 2 Canister

HELIAX® FiberFeed® Direct Fiber Tails Part Number Explanation

DFJ	2	S	100	5M
HELIAX® FiberFeed® Discrete Fiber Tail	# of Fibers	Fiber Mode	Breakout Code	Length (in meters)

STANDARD LENGTHS METERS
1
2
3
4
5

1 RRU Tail, 2 Fiber
HELIAX® FiberFeed® Discrete fiber jumper, 2 single mode fiber, outdoor DLC connector at bottom, DLC at RRU
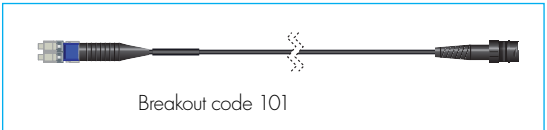Part number base, specify length in Meters DFJ-2S100-xM
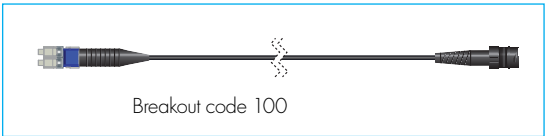
Breakout code 100

1 RRU Tail, 2 Fiber
HELIAX® FiberFeed® Discrete fiber jumper, 2 single mode fiber, outdoor DLC connector at bottom, DLC with 7 mm entry at RRU
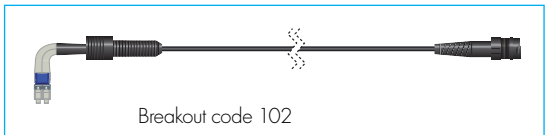Part number base, specify length in Meters DFJ-2S101-xM

Breakout code 101

1 RRU Tail, 2 Fiber
HELIAX® FiberFeed® Discrete fiber jumper, 2 single mode fiber, outdoor DLC connector at bottom, DLC with boot at RRU
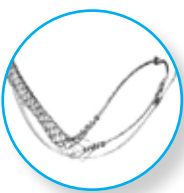Part number base, specify length in Meters DFJ-2S102-xM

Breakout code 102

Accessories

High-performance HELIAX® accessories help you reach your system's full potential.
CommScope offers a number of premium deployment accessories to help you mount and protect the HELIAX FiberFeed cables and connectors of your fiber to the antenna system.

Features:
- Designed and tested for fast, easy installations
- Stainless steel and EPDM components for long term reliability
- Universal tin plated grounding kit for any cable

PART NUMBER	DESCRIPTION
19256B-C	Hoisting grip for FDH610, FDH608, FDH606, FDH1210, FDH1208 and FDH1206 series cable
FA-1923-STH	Standard hanger for FDH610 series cables, kit of 10
42396A-5	Standard hanger for FDH608 and FDH606 series cables, kit of 10
42396A-9	Standard hanger for FDH1210 series cables, kit of 10
FA-3236-STH	Standard hanger with grommet for FDH1208 and FDH1206 series cable, kit of 10
FA-102997-HC3	Cable entry seal, 24-54mm, 4 inch port
FA-102993-HC3	Cable entry seal, 4 x 11-29mm, 4 inch port
2061664-1-HC3	Full AXS fiber protection sleeve, Ericsson RRU
UG12158-15B4-T	Universal grounding kit for FDH610, FDH608, FDH606, FDH1210, FDH1208 and FDH1206 series cable
FA-R2CT	Fiber connection kit, ALU RRU
FA-PCS10	Power cable seal kit, ALU RRU
FCCT-L	Connector cleaning tool
243684	Compact Angle adapter, 3/8" tapped hole
HG-5MM-12	Grommet for fibr tails
43211A	Standard hanger for 1/2" grommets kit of 10
SSH-12	SnapStack hanger for 1/2" grommets kit of 10
DCM-U	Replacement mount assembly for canister

WARNING: The hybrid fiber cables described in this product brochure must be installed using the hangers and accessories with the corresponding part numbers also described in this guide. Failure to use these accessories may result in an improper installation and/or product damage. Please also follow proper hoisting and attachment procedures.
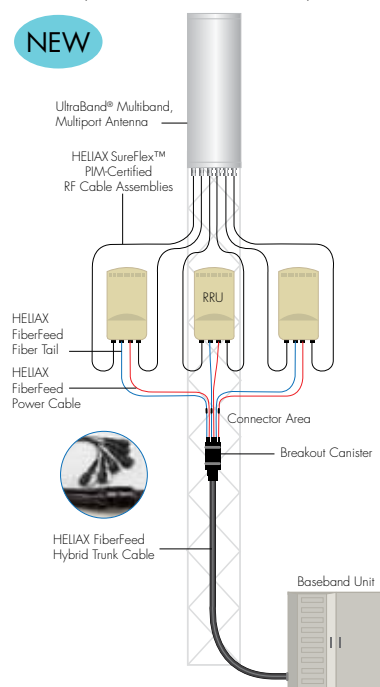
Fiber to the Antenna Solutions

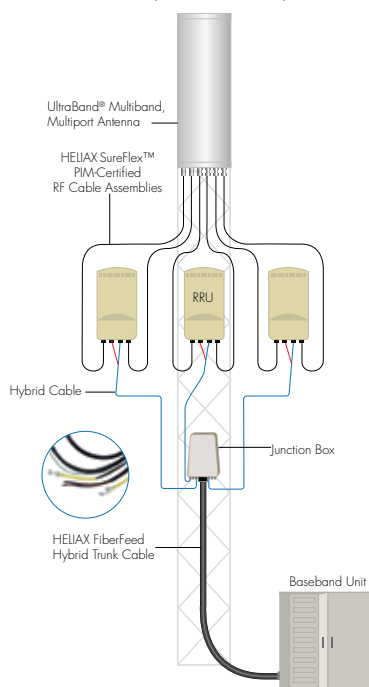**HELIAX FiberFeed Direct is a leading solution in the Fiber to the Antenna portfolio from CommScope.** Other systems include FiberFeed Hybrid and FiberFeed Discrete separate fiber and power components. Configured to meet your network modernization needs, these cost-effective solutions can handle the high-speed, high-bandwidth demands of today but still provide extra capacity for LTE, MIMO—or whatever the future holds.

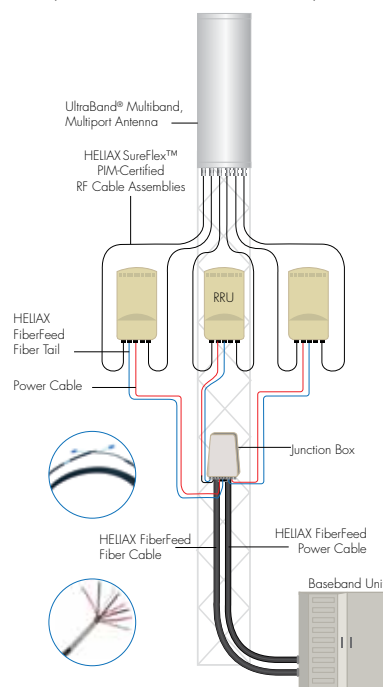### HELIAX® FiberFeed® Direct
Hybrid Fiber Breakout System

NEW

- UltraBand® Multiband, Multiport Antenna
- HELIAX SureFlex™ PIM-Certified RF Cable Assemblies
- RRU
- HELIAX FiberFeed Fiber Tail
- HELIAX FiberFeed Power Cable
- Connector Area
- Breakout Canister
- HELIAX FiberFeed Hybrid Trunk Cable
- Baseband Unit

HELIAX® FiberFeed® Hybrid
Standard Hybrid Fiber System

- UltraBand® Multiband, Multiport Antenna
- HELIAX SureFlex™ PIM-Certified RF Cable Assemblies
- RRU
- Hybrid Cable
- Junction Box
- HELIAX FiberFeed Hybrid Trunk Cable
- Baseband Unit

HELIAX® FiberFeed® Discrete
Separate Power and Fiber System

- UltraBand® Multiband, Multiport Antenna
- HELIAX SureFlex™ PIM-Certified RF Cable Assemblies
- RRU
- HELIAX FiberFeed Fiber Tail
- Power Cable
- Junction Box
- HELIAX FiberFeed Fiber Cable
- HELIAX FiberFeed Power Cable
- Baseband Unit

CommScope Certified Report Systems

WebTrak® gives you on-line factory test reports for Fiber, Hybrid Fiber, and Twisted Pair Cables, Assemblies and BSA Antennas

cTrak is our latest FREE mobile app to access factory tests on the go from your iPhone or iPad. Available on iTunes

On-line Self Paced Training Course

COMMSCOPE®
INFRASTRUCTURE ACADEMY

CommScope Fiber to the Antenna (FTTA) Available on our website through the CommScope Infrastructure Academy.

Field Engineering Services (FES)

FES gives Andrew Solutions' customers' access to technical support where and when it is needed the most— in the field.

We're proud to be a part of your network's story

Here at CommScope, we embrace our role as a trusted resource, partner and facilitator. We create the infrastructure that connects the world and evolves with every advance in technology. By investing all of our capabilities, resources, relationships and products into your toughest challenges, we continue our long history of solving problems together—paving the way for new ideas and fresh ways of thinking.

We're a trusted resource and partner around the world because we're invested in you: your people, your networks, your success. It inspires us to build relationships and infrastructure … connect people and technologies across protocols, oceans and time zones … and share what we learn along the way.

**This is our promise to you.
This is CommScope.**

COMMSCOPE®