COMMSCOPE®

CommScope In-Building Wireless Solutions

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Improve coverage and enhance capacity

CommScope's in-building wireless (IBW) solutions provide the products and services to address the most complex mobile challenges.

Wireless technology has become the primary communications method in public venues and commercial buildings for both personal communication and first responder services. As wireless penetration rates approach and exceed 100 percent, users demand that their wireless-connected electronic devices work just as effectively indoors as they do outdoors. First responders require reliable, ubiquitous radio coverage to ensure the safety of the public as well as themselves in emergency situations. CommScope's In-Building Wireless (IBW) Solutions provide the products and services to address the most complex mobile challenges.

CommScope's IBW Solutions include repeaters (or bi-directional amplifiers) and Distributed Antenna System (DAS) infrastructure. All of CommScope's products are modulation agnostic and broadband, ensuring a future-ready solution. A DAS is a network of spatially separated antennas connected by coaxial cable and fiber that provides wireless service within a building. A DAS can be driven by a radio base station directly or off-air using a repeater or a combination of the two depending on the needs of the wireless service providers (WSP) or public safety system managers.

There are two types of DAS infrastructure: passive and active. In a passive DAS, coaxial cable distributes the Radio Frequency (RF) signals from a base station or repeater. Splitters are then used to divert a fraction of the RF energy along the horizontal floors of the building via coaxial cabling. An active DAS is similar to a passive system, but uses fiber-optics to move the signals long distances before going into coaxial cable for the final transmission. This type of system (often called a hybrid-fiber-coax DAS) is broadband, scalable and extremely flexible.

Every DAS infrastructure used in an IBW Solution requires a signal source. WSPs play an influential role in the DAS infrastructure requirements to ensure the solution matches the operator's voice and data needs. Working closely with the WSPs is required, as they own the spectrum that is used by the IBW Solutions and it makes the optimization and operation of the system easier and more efficient.

Experience and excellence make CommScope's In-Building Wireless Solutions the right choice

In a world transformed by communications, convergence of voice, data and video brings today's mobile society together and enhances our lives, workplaces and communities.

CommScope's In-Building Wireless Solutions can help shape the mobile future. With a comprehensive product portfolio, CommScope supports today's mobile society and helps build the foundation for reliable wireless service. CommScope, through its Andrew brand, has world-leading wireless service provider customers, while, through its enterprise division, it does business with building owners and tenants the world over. This customer base and corresponding product portfolio make CommScope unique in supporting all communication needs to the sector.

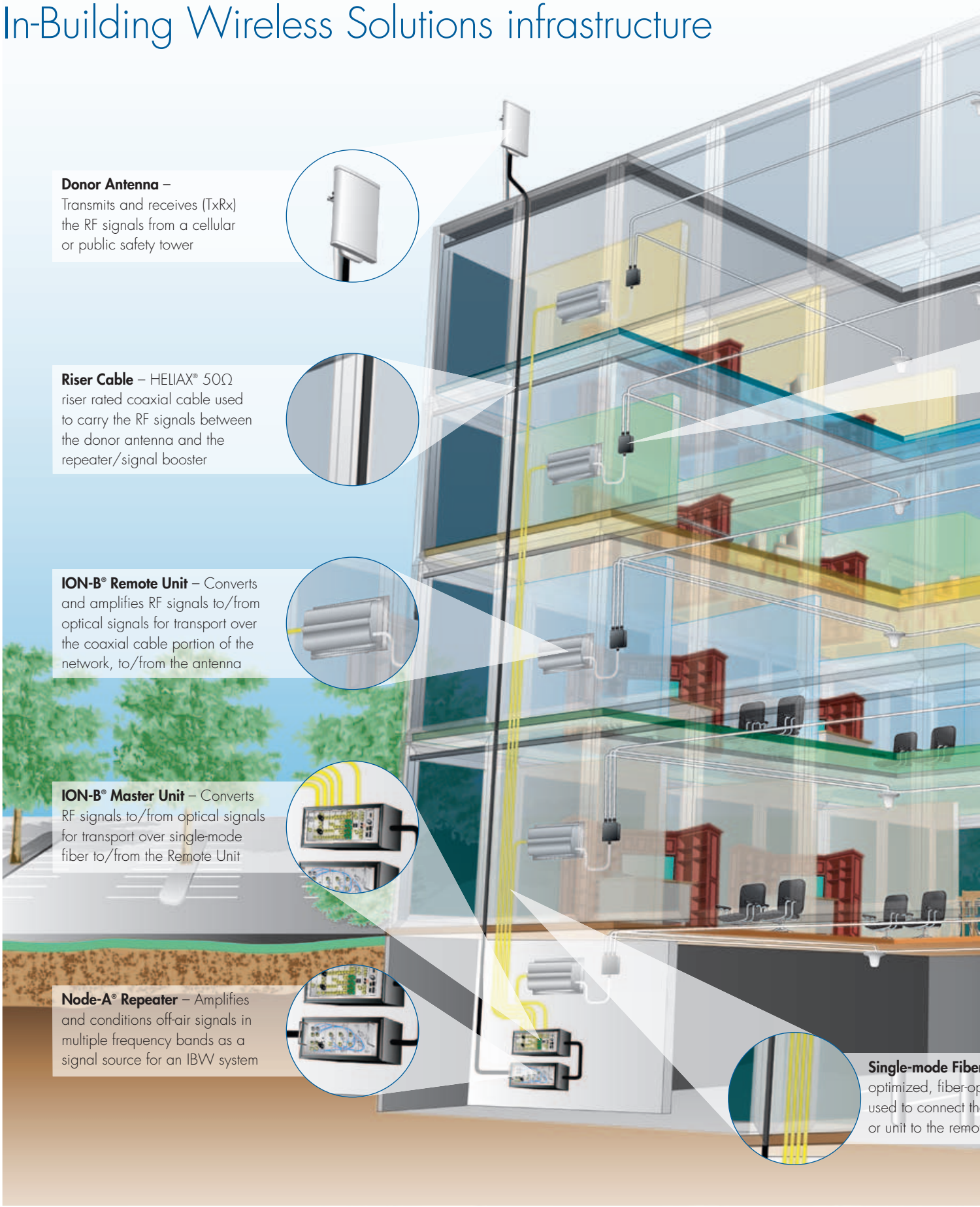
CommScope provides a one-stop source for managing the entire lifecycle of a wireless network. The IBW product line offers a complete solution that serves 2G, 3G, and 4G wireless networks. The signature Andrew "flash" logo, seen on microwave tower and cellular equipment throughout the world, symbolizes a 75-year legacy built upon excellence in customer service, quality and innovation.

CommScope is a recognized world leader in infrastructure solutions for communications networks, and its Andrew product line is an integral aspect of CommScope's network infrastructure solution. CommScope enables customers around the world to create a connected environment that supports current and future business and technology opportunities by providing the right network infrastructure solution.

Employees and guests; suppliers and customers all have come to expect reliable connectivity wherever they may be, from their car to the office. The promise of mobility is here and CommScope's IBW Solutions ensure that it has no boundaries.

CommScope provides a one-stop source for managing the entire lifecycle of a wireless network.

In-Building Wireless Solutions infrastructure



Donor Antenna – Transmits and receives (TxRx) the RF signals from a cellular or public safety tower

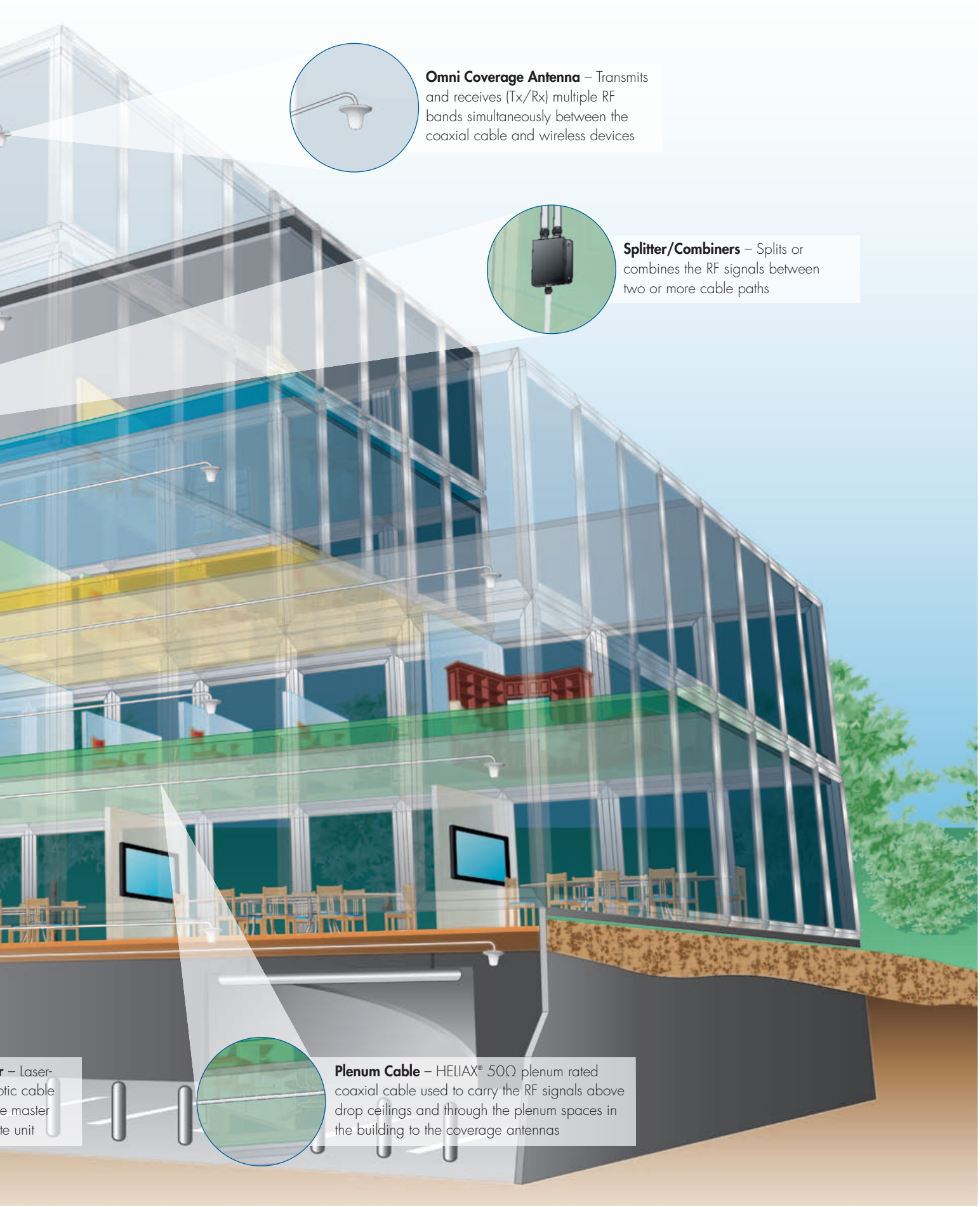
Riser Cable – HELIAX® 50Ω riser rated coaxial cable used to carry the RF signals between the donor antenna and the repeater/signal booster

ION-B® Remote Unit – Converts and amplifies RF signals to/from optical signals for transport over the coaxial cable portion of the network, to/from the antenna

ION-B® Master Unit – Converts RF signals to/from optical signals for transport over single-mode fiber to/from the Remote Unit

Node-A® Repeater – Amplifies and conditions off-air signals in multiple frequency bands as a signal source for an IBW system

Single-mode Fiber optimized, fiber-op used to connect th or unit to the remo



Omni Coverage Antenna – Transmits and receives (Tx/Rx) multiple RF bands simultaneously between the coaxial cable and wireless devices

Splitter/Combiners – Splits or combines the RF signals between two or more cable paths

r – Laser-
otic cable
e master
te unit

Plenum Cable – HELIAX® 50Ω plenum rated coaxial cable used to carry the RF signals above drop ceilings and through the plenum spaces in the building to the coverage antennas

IBW technology — A seamless fit for any building or campus

CommScope's In-Building Wireless Solutions ensure that everyone stays connected whenever and wherever they are.

The freedom that comes with wireless technology can get lost in the architectural design and layout of buildings, campuses and venues. Large buildings and campuses are often susceptible to weak or blocked signal areas. An IBW Solution is often implemented to ensure everyone stays connected. Forward-thinking businesses are enhancing coverage to integrate wireless applications that increase efficiency and productivity in an increasingly paperless society.

Bringing control to the enterprise

Flexibility and nimbleness are essential elements of business. Global enterprises are unwilling to be tethered to a single solution that limits the communications capabilities of their workforces, customers and suppliers. Carrier-neutral In-Building Wireless Solutions enable enterprises to take control of their own wireless communications and bring much-needed quality and reliability to wide-area voice and data service.

In office buildings with multiple tenants, CommScope's IBW Solutions can free the enterprise from a single-carrier service commitment, opening up competition and allowing new wireless services to be offered. Whether an employee is below ground level or on the 42nd floor, everyone can stay connected and productive.

Clear signals in campus environments

Campus wireless infrastructure designs must be capable of supporting waves of increased network traffic that come from special events, sporting exhibitions, or a bandwidth-intensive business day. For most multi-building environments, ubiquitous wireless access that comes from an IBW system is an extension of better service to the customers and guests.

For campuses covering a large land area with multiple buildings, CommScope's IBW and DAS technology provides an always-on, broadband solution for all WSPs and public safety systems on a single infrastructure. It brings peace of mind for those responsible to maintain harmony and provide excellent service.

Better support for emergency first responders

Globally, organizations like the National Fire Protection Association (NFPA) and the International Code Council (ICC) publish codes that mandate sufficient emergency first responder radio coverage in all commercial and large office buildings. Many municipalities adopted their own ordinances to ensure in-building coverage and similarly establish a specific level of public safety radio coverage in all large buildings and campuses. Government officials want to ensure first responders can communicate effectively indoors when emergencies arise.

CommScope's IBW Solutions amplify all wireless networks' coverage while serving as a communications lifeline to onsite emergency crews and security personnel. Similar to WSPs, CommScope works closely with local officials to ensure the deployment meets the minimal requirements set forth by local ordinances.

The CommScope global connection

CommScope offers turnkey design, installation, project management services, commissioning and optimization in a one-line-item bundle to solve your wireless problems. As wireless technologies become the preferred communications method indoors, CommScope is able to leverage its knowledge and history in wireless communications to benefit your business. Our services team applies an understanding of carrier requirements, public safety compliances and installation needs sharpened by numerous global installations.

CommScope in-building wireless partners

CommScope delivers the right solution with consistent product and installation quality through the PartnerPRO™ Network of certified in-building wireless partners. The successful completion of an IBW deployment requires well-defined project planning. CommScope's partners use an implementation process to ensure a successful IBW deployment that starts with an RF survey and concludes with commissioning and system acceptance.

CommScope DCCS engineering and project resources

CommScope provides direct turnkey services to many regions of the world. These state-of-the-art project offices offer the ability to provide innovative solutions to complex venues such as airports, railways and metros, sports venues, high-rises and other signature properties.

Advanced training on the world's most advanced infrastructure solutions

The CommScope Infrastructure Academy helps organizations achieve top-quality infrastructure design and installation. Backed by CommScope's proven expertise and insight, the academy's online format offers flexibility for learners at any level. Courses on network infrastructure solutions include twisted pair, fiber optic, coax and wireless technology. A variety of specialist courses address the latest in network infrastructure solutions. The CommScope Infrastructure Academy delivers training on demand: at your own convenient pace.

A 20-Year commitment to performance

Because we have such high standards for performance and reliability — and understand that the right network infrastructure is essential to the successful operation of today's business — we stand behind our products for 20 years. Our 20 Year extended product warranty on the transport portion of our wireless systems provides peace of mind and assurance that an investment today is not wasted tomorrow.*

A pledge to environmental stewardship

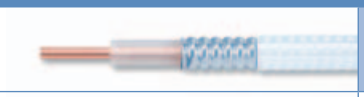
CommScope is building a solid foundation for our environmentally conscious initiatives by voluntarily reporting greenhouse gas emissions, achieving ISO 14001-2004 certification at most of our global facilities, and recycling more than 50 million pounds of metals, plastics and paper each year.

For more information about In-Building Wireless Solutions, visit **www.commscope.com.**

*When installed per Wired for Wireless® requirements.

CommScope turnkey solutions offer design, installation, project management services, commissioning and optimization in a one-line-item bundle to solve an enterprise's wireless problems.

IN-BUILDING WIRELESS COAXIAL CABLE, CONNECTORS, AND TOOLS ORDERING GUIDE

	Material ID	Product Description
Coaxial Cable – Bulk		
	AL4RPV-50	HELIAX® ½" Air Dielectric, Plenum, Aluminum Corrugated
	LDF4RK-50A	HELIAX® ½" Foam Dielectric, Riser, Copper Corrugated
	FXL-540-NHR	HELIAX® ½" Foam Dielectric, Riser, Aluminum Smoothwall
	HL4RP-50A	HELIAX® ½" Air Dielectric, Plenum, Copper Corrugated
	FXL-780-NHR	HELIAX® ⅞" Foam Dielectric, Riser, Aluminum Smoothwall

	Material ID	Product Description
Coaxial Cable – 1000ft Reels		
	AL4RPV-50-1000	HELIAX® ½" Air Dielectric, Plenum, Aluminum Corrugated, 1000FT Reel
	LDF4RK-50A-1000	HELIAX® ½" Foam Dielectric, Riser, Copper Corrugated, 1000FT Reel
	FXL-540-NHR-1000	HELIAX® ½" Foam Dielectric, Riser, Aluminum Smoothwall, 1000FT Reel
	HL4RP-50A-1000	HELIAX® ½" Air Dielectric, Plenum, Copper Corrugated, 1000FT Reel

	Material ID	Product Description
Coaxial Cable Connectors, 1/2" and 7/8" Cable		
	L4TNM-PSA	Type N Male Positive Stop for AL4RPV50, LDF4RK-50A, HL4RP-50A
	L4TNF-PSA	Type N Female Positive Stop for AL4RPV50, LDF4RK-50A, HL4RP-50A
	L4TDM-PSA	Type DIN Male Positive Stop for AL4-RPV50, LDF4RK-50A, HL4RP-50A
	L4TDF-PSA	Type DIN Female Positive Stop for AL4-RPV50, LDF4RK-50A, HL4RP-50A
	L4DR-PS	Type DIN Right Angle Positive Stop for AL4-RPV50, LDF4RK-50A, HL4RP-50A
	L4NR-PS	Type N Right Angle Positive Stop for AL4-RPV50, LDF4RK-50A, HL4RP-50A
	540EZNMV2	Type N Male EZfit® for 1/2" FXL-540
	540EZNFV2	Type N Female EZfit® for 1/2" FXL-540
	78EZNM	Type N Male EZfit® for 7/8" FXL-780
	78EZNF	Type N Female EZfit® for 7/8" FXL-780
	78EZDM	7-16 DIN Male EZfit® for 7/8" FXL-780
	78EZDF	7-16 DIN N Female EZfit® for 7/8" FXL-780
	540EZDMV2	Type DIN Male EZfit for 1/2" FXL-540
	540EZDFV2	Type DIN Female for 1/2" FXL-540
	540EZDMRV2	Type DIN Male Right Angle for 1/2" FXL-540
	540EZNMRV2	Type N Male Right Angle for 1/2" FXL-540

	Material ID	Product Description
Cable Preparation Tools, 1/2″ Cable		
	CPT-12U	EASIAX Plus® Automated Prep Tool for AL4-RPV-50, LDF4RK-50A, HL4RP-50A
	CPT-BK12U	Replacement Blade Kit for CPT-12U Cable Preparation Tool
	MCPT-L4	EASIAX® Manual Prep Tool for AL4-RPV-50, LDF4RK-50A, HL4RP-50A
	MCPT-BK4	Replacement Blade Kit for MCPT-L4 Cable Preparation Tool
	540-EZPT	EZfit® Automated Cable Preparation Tool for FXL540
	EZPT-BKU540	Replacement Blade Kit for 540-EZPT Cable Preparation Tool
	12-HPT	EZfit® Manual Cable Preparation Tool for FXL-540
	HPT-BK1278	Replacement Blade Kit for 12-HPT Cable Preparation Tool
	TW-12-EZFC	Torque Wrench for Front Clamping Nut on 1/2″ EZfit® connectors
	TW-12-EZV2	Torque Wrench for Rear Clamping Nut on 1/2″ EZfit® connectors
	EZW-7812	Combination Wrench for 1/2″ and 7/8″ EZfit Connectors
	540-MSS	Mid Span Stripping tool for grounding kit preparation on FXL-540 cable (SG and CSG series)
	GKT-L4SG	SG and CSG series grounding kit preparation on AL4RPV-50, AL4RP-50A, AL4RPV-50

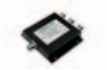
	Material ID	Product Description
Cable Preparation Tools, 7/8″ Cable		
	780-EZPT	EZfit® Automated Cable Preparation Tool for FXL-780 coaxial cable
	EZPT-BKU780	Replacement Blade Kit for 780-EZPT Cable Preparation Tool
	78-HPT	EZfit® Manual Cable Preparation Tool for 7/8″ coaxial cable
	HPT-BK1278	Replacement Blade Kit for 78-HPT Cable Preparation Tool
	TW-78-EZFC	Torque Wrench for 7/8″ EZfit® connectors
	EZW-7812	Combination Wrench for 1/2″ and 7/8″ EZfit® Connectors
	780-MSS	Mid Span Stripping tool for grounding kit preparation on FXL-780 cable (SG and CSG series)

	Material ID	Product Description
½" Corrugated Grounding Kit		
	CSGL4-15B4	Compact SureGround® Grounding Kit for 1/2" Corrugated Coaxial Cable

	Material ID	Product Description
Wired for Wireless Wall Organizer		
	760138610	Wired for Wireless® Wall Organizer

IN-BUILDING WIRELESS PASSIVE RF COMPONENTS

	Material ID	Product Description
Cell-Max™ Antennas		
	CELLMAX-O-CPUSE	Omni Indoor Antenna, 698–960/ 1710–2700 MHz
	CELLMAX-D-CPUSE	Directional Indoor Antenna, 698–960/1710–2700 MHz
	CELLMAX-EXT-CPUSE	Directional Outdoor Antenna, 698–960/1710–2700 MHz

	Material ID	Product Description
Low Power Splitters, Type N Connectors		
	S-2-CPUSE-L-N	2-Way Low Power Splitter, 698–2700 MHz, N
	S-3-CPUSE-L-N	3-Way Low Power Splitter, 698–2700 MHz, N
	S-4-CPUSE-L-N	4-Way Low Power Splitter, 698–2700 MHz, N

	Material ID	Product Description
High Power Reactive Splitters, Type N Connectors		
	S-2-CPUSE-H-N	2-Way Reactive High Power Splitter, 698–2700 MHz, N
	S-2-TCPUSE-H-N	2-Way Reactive High Power Splitter, 380–2700 MHz, N
	S-3-CPUSE-H-N	3-Way Reactive High Power Splitter, 698–2700 MHz, N
	S-3-TCPUSE-H-N	3-Way Reactive High Power Splitter, 380–2700 MHz, N
	S-4-CPUSE-H-N	4-Way Reactive High Power Splitter, 698–2700 MHz, N
	S-4-TCPUSE-H-N	4-Way Reactive High Power Splitter, 380–2700 MHz, N

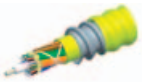
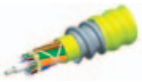
	Material ID	Product Description
High Power Reactive Splitters, 7-16 DIN Connectors		
	S-2-CPUSE-H-D	2-Way Reactive High Power Splitter, 698–2700 MHz, DIN
	S-2-TCPUSE-H-D	2-Way Reactive High Power Splitter, 380–2700 MHz, DIN
	S-3-CPUSE-H-D	3-Way Reactive High Power Splitter, 698–2700 MHz, DIN
	S-3-TCPUSE-H-D	3-Way Reactive High Power Splitter, 380–2700 MHz, DIN
	S-4-CPUSE-H-D	4-Way Reactive High Power Splitter, 698–2700 MHz, DIN
	S-4-TCPUSE-H-D	4-Way Reactive High Power Splitter, 380–2700 MHz, DIN

	Material ID	Product Description
Hybrid Couplers, Type N Connectors		
	H-3-CPUSE-N-A	3 dB Hybrid Coupler, 698–2700 MHz, N
	H-3-TC-N	3 dB Hybrid Coupler, 300–960 MHz, N
	H-4X4-CPUSE-N-A	4 x 4 Hybrid Matrix, 698–2700 MHz, N-A

	Material ID	Product Description
Directional Couplers, Type N Connectors		
	C-6-CPUSE-N	6 dB Directional Coupler, 698–2700 MHz
	C-6-TCPUSE-N	6 dB Directional Coupler, 380–2700 MHz
	C-10-CPUSE-N	10 dB Directional Coupler, 698–2700 MHz
	C-10-TCPUSE-N	10 dB Directional Coupler, 380–2700 MHz
	C-15-CPUSE-N	15 dB Directional Coupler, 698–2700 MHz
	C-15-TCPUSE-N	15 dB Directional Coupler, 380–2700 MHz
	C-20-CPUSE-N	20 dB Directional Coupler, 698–2700 MHz
	C-20-TCPUSE-N	20 dB Directional Coupler, 380–2700 MHz
	C-30-CPUSE-N	30 dB Directional Coupler, 698–2700 MHz, N
	C-30-TCPUSE-N	30 dB Directional Coupler, 380–2700 MHz, N

	Material ID	Product Description
50 Ohm Terminations		
	T-2-NF	Termination, 2 Watt, Type N Female
	T-2-NM	Termination, 2 Watt, Type N Male
	T-10-NF	Termination, 10 Watt, Type N Female
	T-10-NM	Termination, 10 Watt, Type N Male
	T-25-NF	Termination, 25 Watt, Type N Female
	T-25-NM	Termination, 25 Watt, Type N Male
	T-25-DF	Termination, 25 Watt, 7-16 DIN Female
	T-25-DM	Termination, 25 Watt, 7-16 DIN Male

IN-BUILDING WIRELESS FIBER COMPONENTS

	Material ID	Product Description
Fiber and Jumpers		
	FEWSASA42-JX	TeraSPEED® SC APC to SC APC, 1.6 mm Duplex, Riser, Yellow Jacket
	FEWSASA52-JX	TeraSPEED® SC APC to SC APC, 3.0 mm Duplex, Riser, Yellow Jacket
	760004333	P-006-DS-8W-FSUYL, Plenum Distribution Cable, 6 fiber single-unit
	760127795	P-006-DZ-8W-FSUYL, Plenum Distribution Cable, Interlocking Aluminum Armored with Plenum Jacket, 6 fiber single-unit
	760004358	P-012-DS-8W-FSUYL, Plenum Distribution Cable, 12 fiber single-unit
	760127803	P-012-DZ-8W-FSUYL, Plenum Distribution Cable, Interlocking Aluminum Armored with Plenum Jacket, 12 fiber single-unit

	Material ID	Product Description
Fiber and Jumpers		
	760060426	360 SME-4-G2, Surface Mount Enclosure, 4 Modules
	760103085	360G2-1U-MOD-SD, 1U Sliding Modular Cassette Shelf, 4 Modules
	760103150	360G2-1U-MOD-FX, 1U Fixed Modular Cassette Shelf, 4 Modules
	760103143	360G2-2U-MOD-SD, 2U Sliding Modular Cassette Shelf, 8 Modules
	760103168	360G2-2U-MOD-FX, 2U Fixed Modular Cassette Shelf, 8 Modules
	760101071	360G2-4U-MOD-SD, 4U Sliding Modular Cassette Shelf, 12 Modules
	760101055	360G2-4U-MOD-FX, 4U Fixed Modular Cassette Shelf, 12 Modules
	760110064	360G2-4U-MOD-FX-16, 4U Fixed Modular Cassette Shelf, 16 Modules

IN-BUILDING WIRELESS FIBER COMPONENTS

	Material ID	Product Description
Fiber Modules, Drum, and Splice Trays		
	760109579	360G2 Cartridge 6 SC Angled TeraSPEED® Green with Pigtails A
	760109769	360DP-6SCA-SM, Distribution Panel 6 SC Angled TeraSPEED® Green
	760056549	G2-Fiber Drum Kit, Fiber Drums for 1U and 2U Shelves
	760039867	RS-2AF-16SF, RoloSplice Kit with 2 fusion splice trays
	760031856	RS-4AF-16SF, RoloSplice Kit with 4 fusion splice trays
	760031054	SW-6AF-16SF, Splice Wallet Kit with 6 fusion splice trays

IN-BUILDING WIRELESS ORDERING GUIDE

Material ID	Product Description
ION™-B Low Power Distributed Antenna Systems	
TFAH-US7B-14	ION-B Remote 700/800/850/900/1700/1900 MHz, VAC
TFAH70/80-14	ION-B Remote 700PS/800PS MHz, VAC
TFAN50-14	ION-B Remote 450 MHz, VAC
TPRN14	ION-B Subrack 19" x 4HE, VAC
TSUN4	ION-B Supervision, 4HE x 7TE
TFLN2504/4	ION-B Master Optical Tx/Rx, 680–2700 MHz
TFLN4004/4	ION-B Master Optical Tx/Rx, 350–450 MHz
TPOI80/92/19E	TPOI Module, Active, 800/900/1900 MHz
TPOI85/17/19E	TPOI Module, Active, 850/1700/1900 MHz
TPOI7/17	TPOI Module 700/1700 MHz
TPOI-P70/80/92	TPOI Module Passive, 700/800/900 MHz
TPOI-P80/92/19E	TPOI Module Passive, 800/900/1900 MHz
TPOI-P85/17/19E	TPOI Module Passive, 850/1700/1900 MHz
TLCN2-W	ION-B 2-Way Splitter, 350–2700 MHz
TLCN4-W	ION-B 4-Way Splitter, 350–2700 MHz
TLCN8-W	ION-B 8-Way Splitter, 350–2700 MHz
TBP74	ION-B Blank Panel, 4HE
TML006	Termination, 50 Ohm, SMA
TIL-US1-HLW	ION-B Interconnect Link, 1 Fiber, 800/850/900/1700/1900 MHz
Node A RF Enhancers	
7561392-0018	Node A4 Subrack, VAC, No combiner
7577532-00	AF 727, 700 MHz (Commercial), 27dBm
7598983-00	AF 737, 700 MHz (Commercial), 37dBm
7577534-00	AF 7037, 700 MHz (Public Safety), 37 dBm
7577538-00	AF 8037, 806–824/851–869 MHz, 37 dBm
7577546-00	AF 9037, 896–902/935–941 MHz, 37 dBm
7577540-00	AF 8527, 824–849/869–894 MHz, 27 dBm
7577542-00	AF 8537, 824–849/869–894 MHz, 37 dBm
7577552-00	AF 1927, 1850–1915/1930–1995 MHz, 27 dBm
7577554-00	AF 1937, 1850–1915/1930–1995 MHz, 37 dBm
7577548-00	AF 1727, 1710–1755/2110–2155 MHz, 27 dBm
7577550-00	AF 1737, 1710–1755/2110–2155 MHz, 37 dBm
7574285-00	Dummy Module
7574290	1-way Combiner (350–3500 MHz)
7577517	2-way Combiner (350–960/1710–2170 MHz)
7580274-00	2-way Combiner (758–824/851–869 MHz)
7574288	4-way Combiner (806–869/896–941/1850–1995/2500–2700 MHz)
7606983	4-way Combiner (698–787/824–894/1710–1755/1850–1990 MHz)
7605086	USB/Ethernet Adapter (LAN)
7597821	Wall Mounting Kit Node A2 and A4 Indoors
7597820	Wall Mounting Kit Node A4 Outdoors
7597825	Pole Mounting Kit Node A4 Outdoors

COMMSCOPE®

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Visit our website at www.commscope.com or contact your local CommScope representative or Partner for more information.

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