AFL

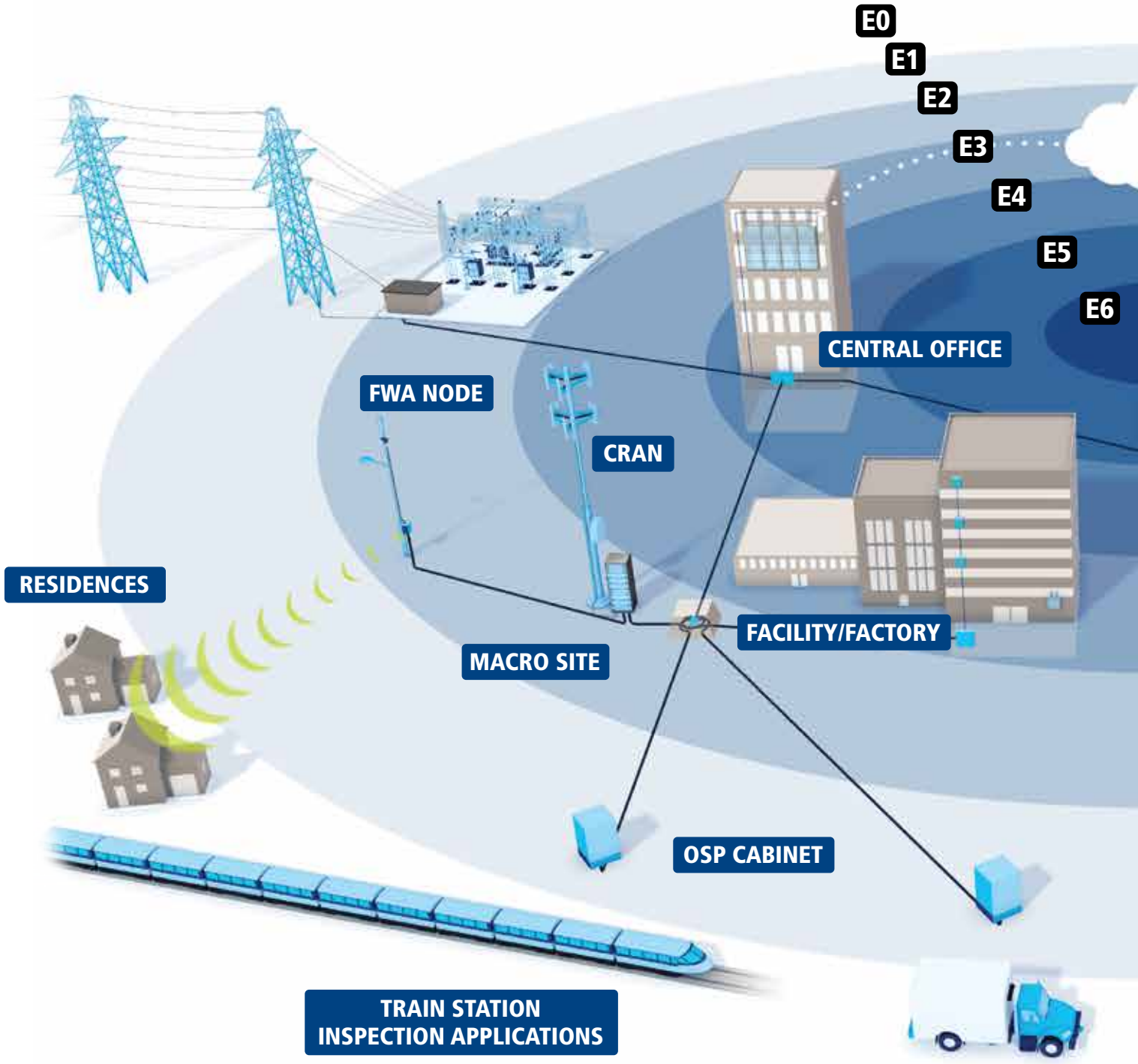
EDGE COMPUTING PRODUCT SOLUTIONS

Edge Solutions

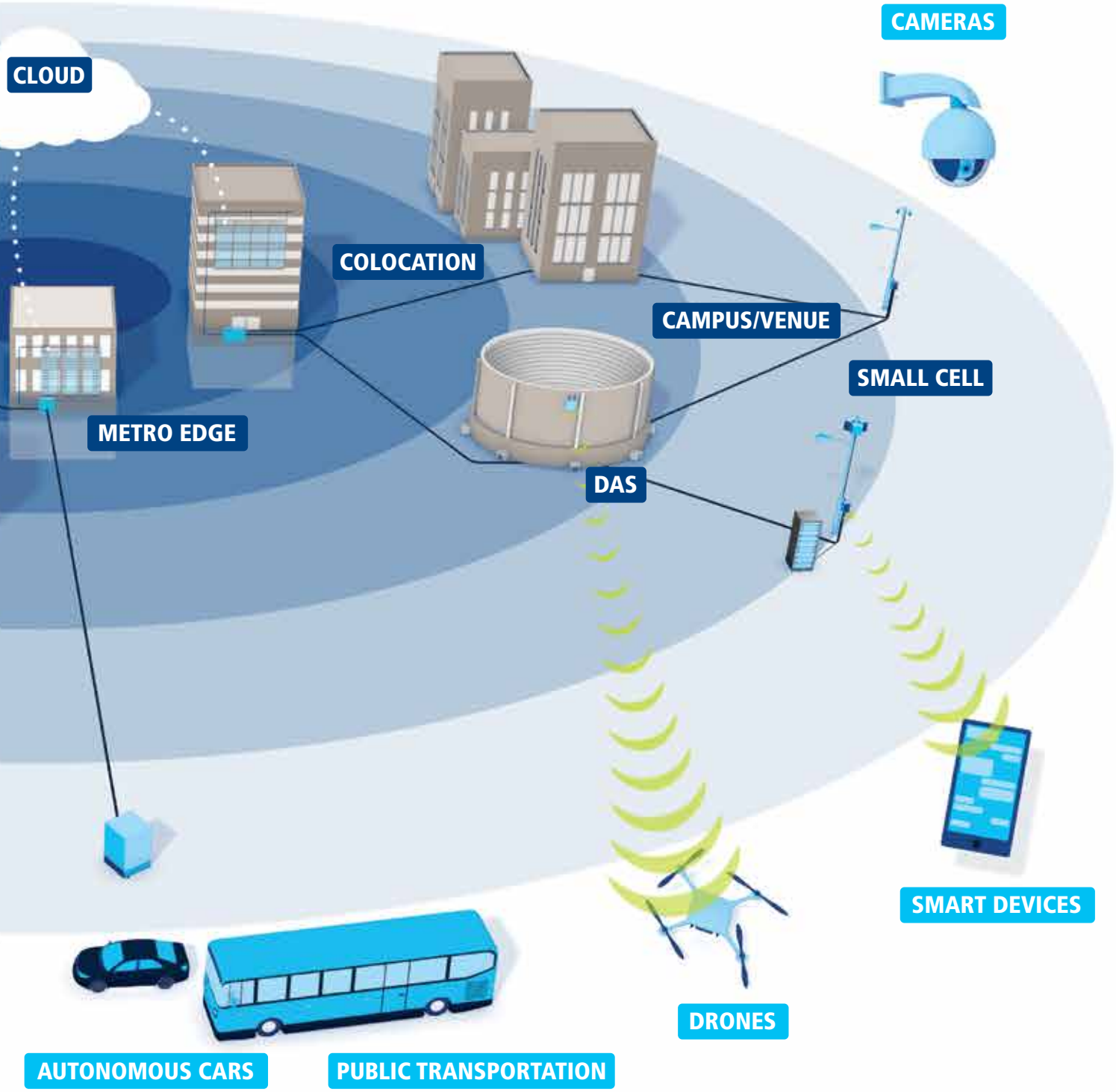
In today's hyperconnected world, companies need a way to scale and analyze data faster, cheaper and better. The only way to do that is to move out of the cloud and onto the edge of the network, where most of the future data will be generated.

Edge computing "extends" the cloud network by bringing it closer to the applications and delivering services such as compute storage and processing power. This relieves the load on the cloud data center processing units and reduces traffic between applications and the cloud. As a result, it reduces latency, increases network efficiency and saves companies money in backhaul costs.

The edge is a continuum and spans anywhere between the end-device and the cloud/internet.



E6	E5	E4	E3	E2	E1	E0
Cloud DC	MetroEdge, Colocation	Central Office	Facility, Factory, Campus, Venue	Macro Site, Small Cell/FWA, CRAN, Private LTE	OSP Cabinet/ Fixture	End Device



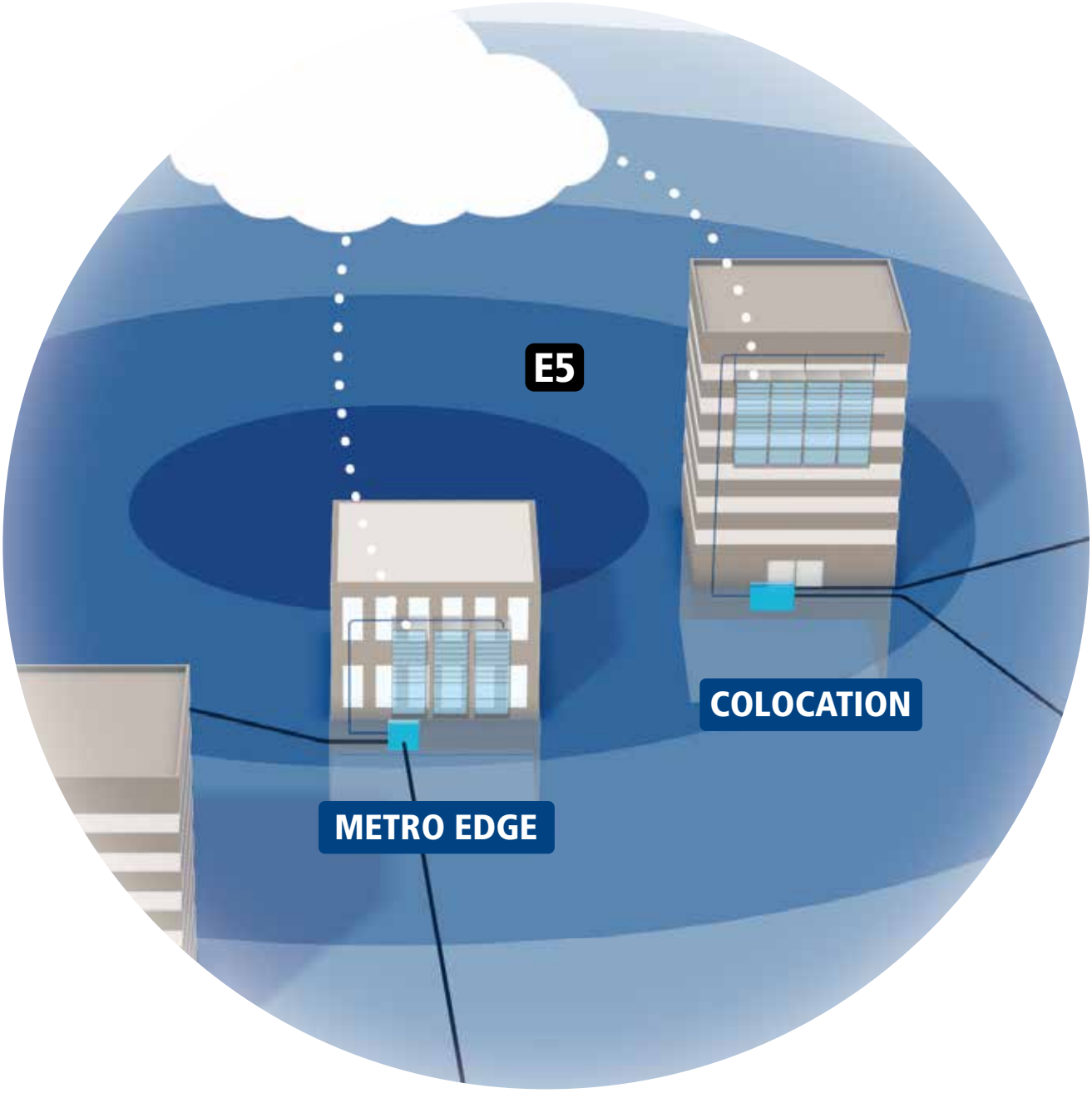
E5

Metro Edge (PoP) and Colocation Data Centers

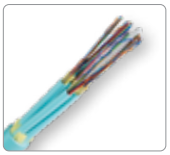
Network traffic is continuing to grow and a significant share of traffic will be terminated in regional and metro edge compute nodes. Cloud service providers, such as large hyperscalers, use existing Points of Presence (POP) or other telecom installations to deploy edge data center facilities when they are placed at a strategic location.

Edge Computing is making regional and colocation data centers more attractive. Their location in first- and second-tier markets make them convenient to deliver infrastructure to Enterprises in smaller increments. Colocation data centers host hundreds of different types of customers so will usually be either in or near a major city, serving a significant population.

These data centers demand flexible, scalable, high-performance fiber infrastructure, designed to support increasingly demanding applications and customer requirements. AFL has the expertise to make sure your network is giving you the competitive edge — from outside plant cable to the customer cage.



Premise MicroCore®



AFL's MicroCore cable family offers one of the most diverse and highest fiber density product offerings in the industry. MicroCore cabling forms the backbone of high-tech networks installed in applications ranging from the Local Area Network to the most complex data center environments. Flexibility of design and industry-leading performance are the hallmarks of AFL's cable offering.

Wrapping Tube Cable (WTC) with SpiderWeb Ribbon® (SWR®)

WTC with SWR is an ultra-high density, outside plant cable designed specifically for fiber-to-the-home (FTTH) or access markets. It is compliant with the latest issue of the outside plant cable standard, Telcordia GR-20. With an ultra-high density and a new ribbon technology called SpiderWeb Ribbon, WTC provides the smallest cable diameter and lowest weight, high-fiber count ribbon cable in the industry.

Inside Plant Cable Assemblies

AFL's ISP Cable Assemblies provide a high performance plug-and-play solution for premise installations where space is a premium. Used to interconnect panels or cassettes, the small diameter MicroCore® cable construction reduces the required pathway space and provides a flexible outer jacket in both single-mode and multimode configurations. Multiple breakout options are also available including LC, SC, SN® and MDC® single fiber connectors.

Field-Installable Connectors

AFL offers a wide variety of field-installable connectors. FUSEConnect® fusion-spliced connectors are uniquely designed and feature just six components. FASTConnect® field-installable connectors are factory pre-polished connectors that completely eliminate the need for hand polishing in the field. FUSEConnect® MPO splice-on connectors have an innovative factory pre-polished ferrule that allows for a field-termination process that eliminates the need for polishing, adhesives and crimping in the field and minimizes the potential for operator error and expensive connector scrap.

HD Mass Fusion Splice Wall Cabinets

AFL offers many indoor and outdoor patching and splicing solutions. From mass-fusion splice wall cabinets down to the splice trays, we have several products used for Edge Computing solutions. We offer wall mount enclosures, splice trays, patch and splice modules and adapters.

ASCEND® Fiber Housings

ASCEND fiber housings are available in 1RU, 2RU and 4RU sizes with densities of up to 144, 288, and 576 fibers, respectively. Designed to support incremental growth or a full-scale deployment, ASCEND housings provide the ultimate in ease-of-use and fiber management features.

xWDM — Passive Filtering

AFL's xWDM products provide scalable EDGE wavelength management solutions for new deployments and network upgrades, providing increased bandwidth over a single common fiber. Passive circuit design utilizes proven thin-film filter technology featuring low insertion loss, high isolation, and superior environmental stability.

Apex® Fiber Optic Splice Closures

Apex is a smaller closure with higher density which means it's easier to maximize available space when space is a premium. Our wedge-based sealing system with cable strain relief allows a cable to be installed into the closure and sealed in seconds. The universal splice holder module eliminates the need to stock different splice trays or splice holders for different jobs.

Fujikura 90R/90S+ Fusion Splicers

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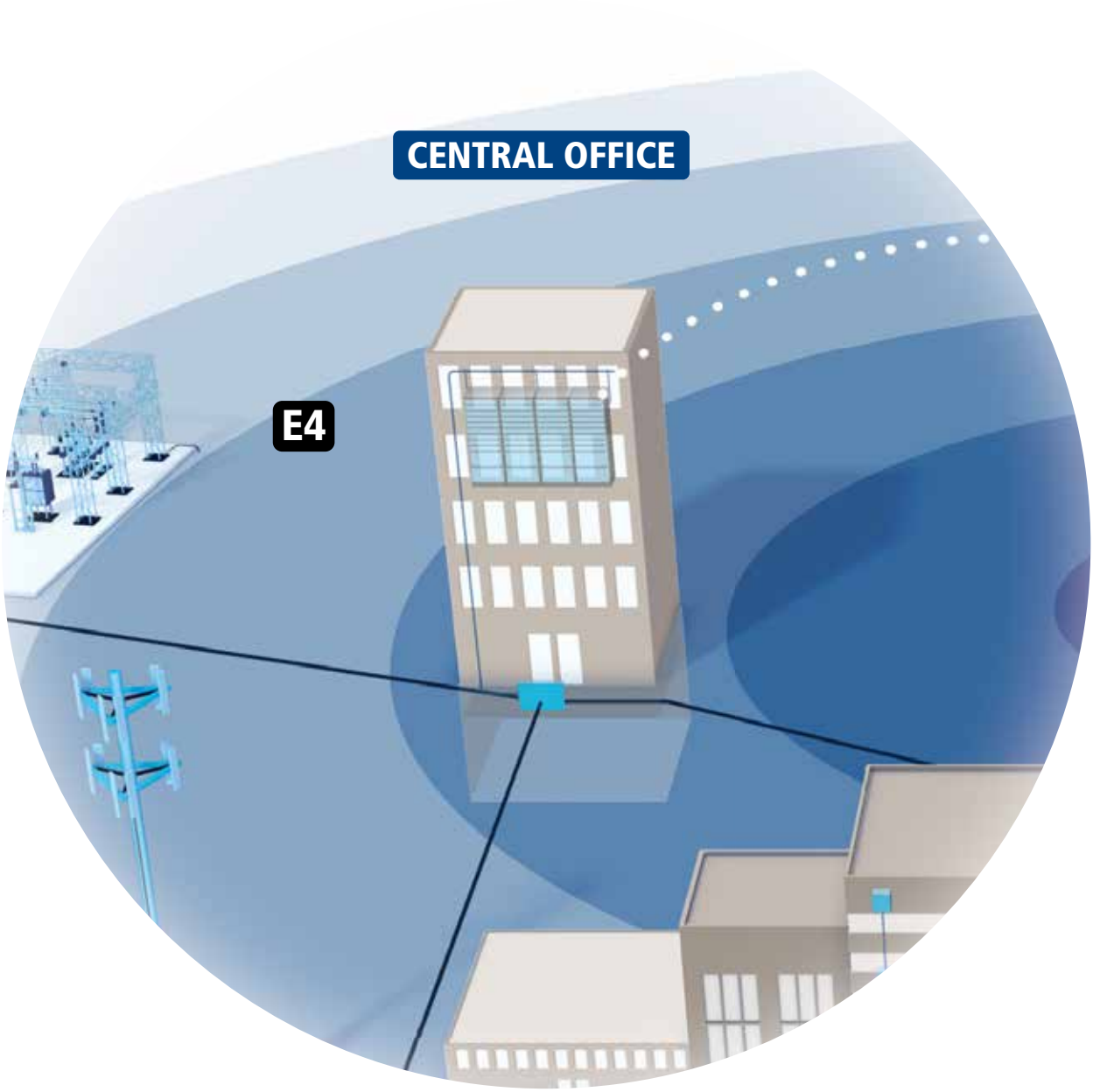
E4

Central Office

Privately owned by telecom service providers, central offices are found in every locality, and are regarded as being at the outer edge of the mobile network. While they formerly served fixed line connections, they are being repurposed into more digital facilities, making them good candidates for edge cloud data centers. Located between the RAN and the core, central offices are close to the end-user and data centers here can achieve latency of ~30 ms.



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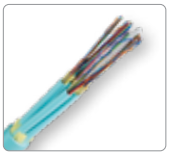

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Aerial Cable

AFL offers a complete portfolio of fiber optic cable, supporting hardware and compression accessories that are designed to meet the most demanding transmission and distribution environments. As the leading world manufacturer of fiber optic cable, AFL is uniquely positioned to provide a full line of All-Dielectric Self-Supporting (ADSS) aerial cables and Optical Ground Wire (OPGW) as well as supporting hardware and accessories.

Loose Tube Cable

Acting as the backbone for most of today's fiber based systems, stranded fiber optic cables play a critical role in the high speed network. AFL's Non-Armored Loose Tube fiber optic cables are designed to provide high fiber counts up to 288, which offers the flexibility and versatility required for today's standard installations.

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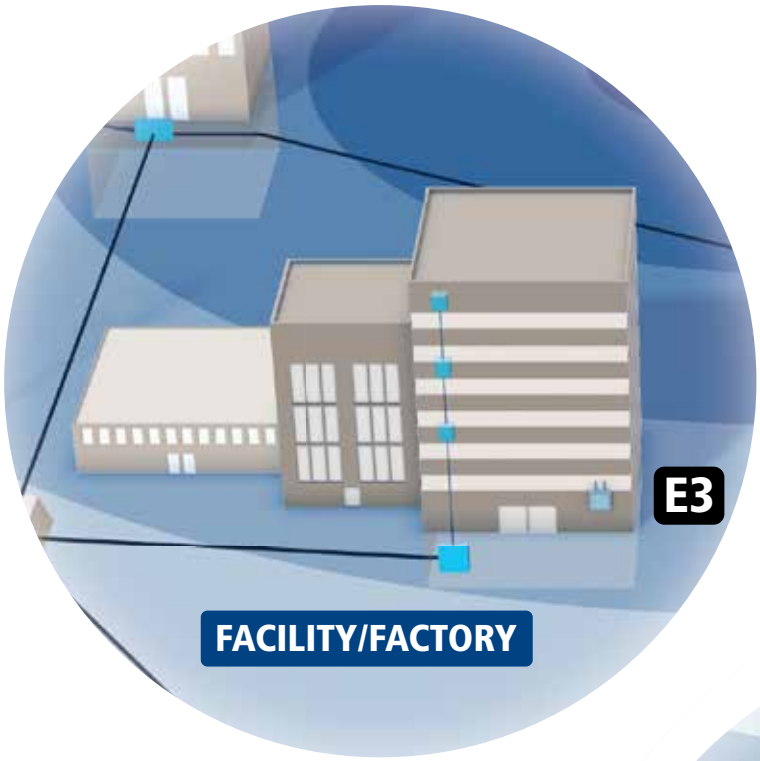
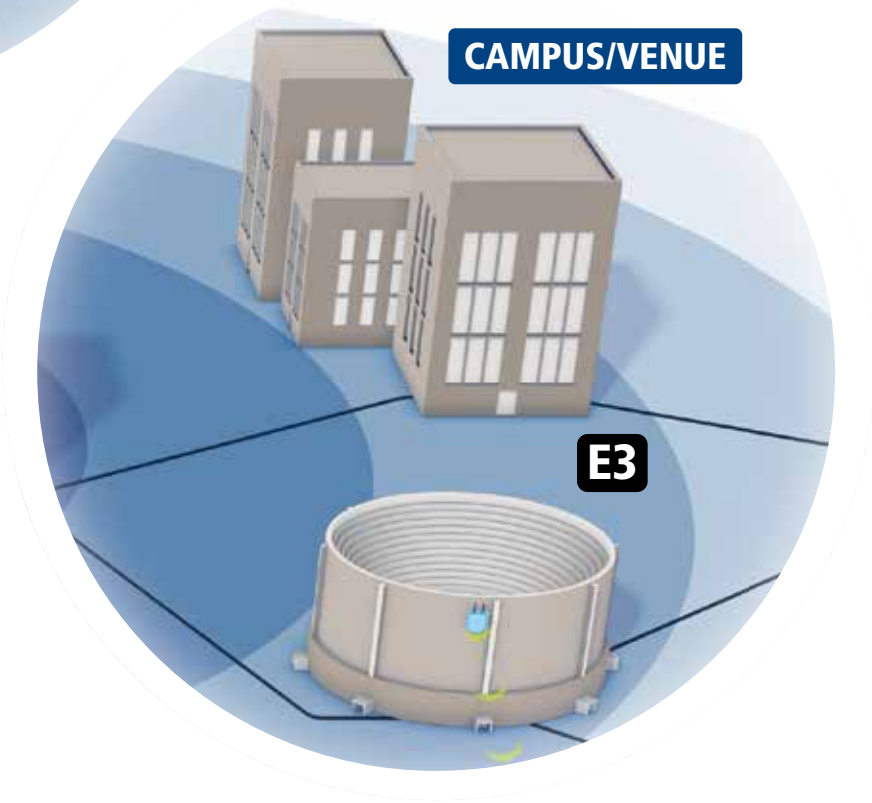
E3

Facility, Factory, Campus and Venue

The edge network will need to extend to office campuses, factories, warehouses, hospitals and logistic centers to support data collection from IoT devices and sensors.

Here we are referring to micro-data centers at the customer site. These can take many shapes or forms. We are seeing edge being deployed as one or two servers, as a rack co-located in the existing on-premises data center, or as a mini-data center enclosure which could be up to a single rack. These special-purpose edge data centers are small enough to fit in atypical data center locations, such as on the rooftops of commercial buildings, in parking lots, in business parks, on university campuses, or near high-traffic locations in major population clusters like sports stadiums.





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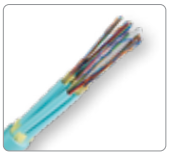

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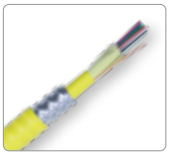
Interlocking Armored Cable



AFL's Interlocking Armored Cable is best used for routing inside of buildings where additional ruggedness is required or where increased rodent resistance is required. Jacketed aluminum interlocking armor provides the best balance of ruggedness, flexibility, and low weight.

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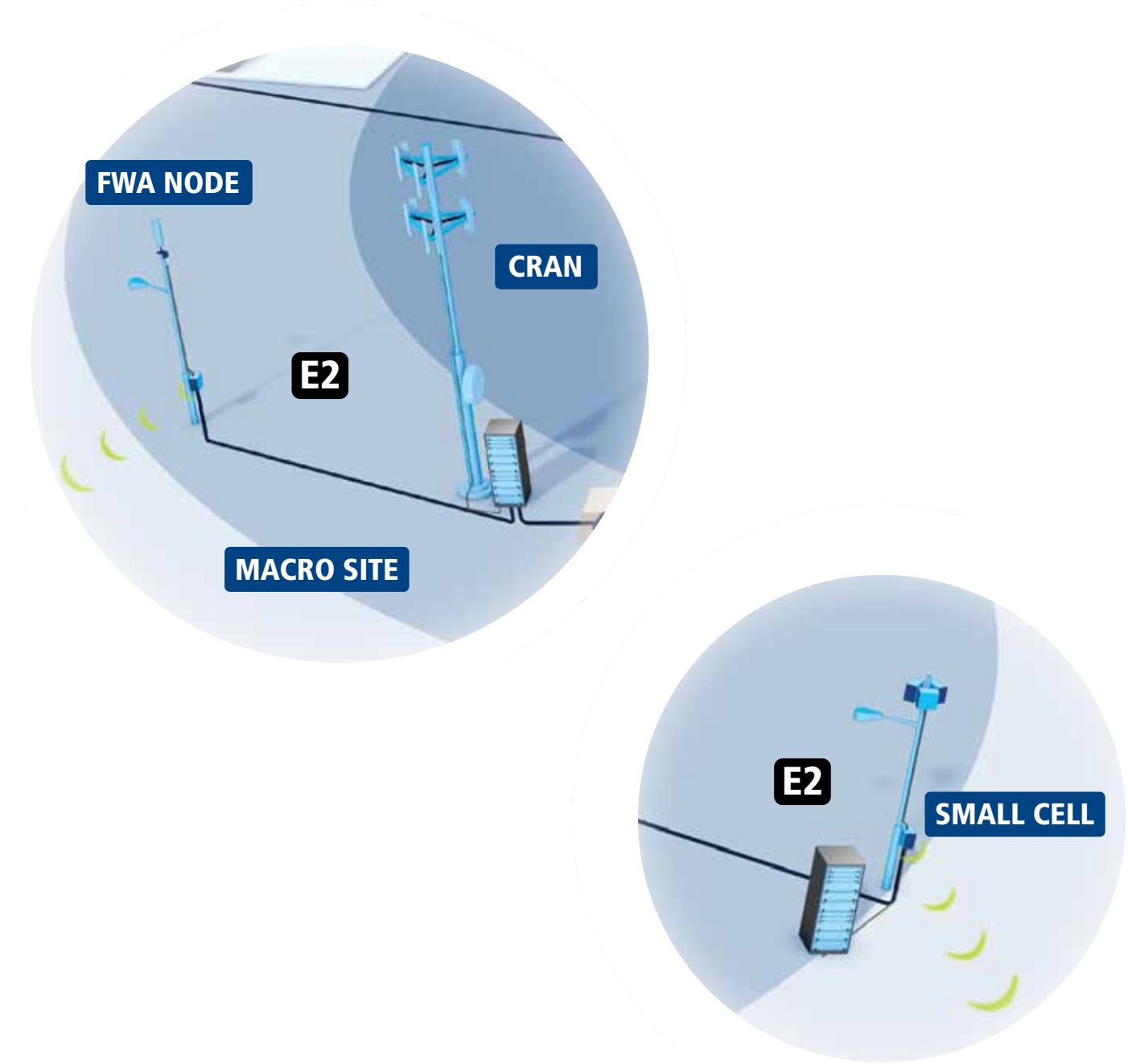
E2

Macro Site, Small Cell, CRAN, FWA and Private LTE Cell Nodes

Many edge computing models see cellular base stations as key points to connect end-user devices to the core network. Some edge strategies include the deployment of data storage and compute capacity at tower sites, which will require enclosures that reside at the base of the tower.

Edge compute co-located with small cells, Centralized Radio Access Network (CRAN), Fixed Wireless Access (FWA) and Private LTE Cell nodes provide commercial and operational advantages in key industry segments, such as automation and Industry 4.0, worksites, mission critical services, enterprises and public safety. These challenging environments drive the need for dense, high-performance compute outside of the data center and create a need for diversity in infrastructure. Such environments require designs that have the capability to meet strict space constraints as well as to operate in dusty, less maintained, lower temperature-regulated conditions.



Tactical Tight Buffered Cable

AFL Tactical Tight Buffered Cables are ideal for use in installations where extreme environmental conditions are present. Designed to be deployed and retrieved in the field, AFL's Tactical Tight Buffered Cables are highly resistant to damage caused by repeated impacts crushing forces, abrasion and extreme temperatures.

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Outside Plant Cable Assemblies

AFL single-mode SC Angled Indoor and Indoor/Outdoor MDU Drop Assemblies are designed to meet stringent performance requirements of the latest fiber-to-the-home (FTTH) applications. Bend-insensitive fiber reduces macrobending attenuation when routing the drops in tight environments and the SC angled connector guarantees the high performance return loss required of video signals.

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xWDM — Passive Filtering

As the edge will require a high number of new small cells, the centralized RAN becomes a critical hub within the front haul network. xWDM aids in handling this increased traffic by allowing existing fiber utilization via WDM enabled field terminals and closures instead of running 4-6 fiber channels to each small cell location.

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OptiNID® Duo Optical Demarcation Enclosure

The ultra-compact OptiNID Duo is designed with flexibility in mind with the capability to house up to 4 SC simplex or LC duplex adapters, along with the ability to house up to 18 single fiber or 6 mass fusion splices. The OptiNID Duo is also optimized for the use of AFL's FASTConnect® or FUSEConnect® field-installable connectors.

AFL TITAN RTD® FTTx System

The AFL TITAN RTD Multiport is a factory terminated OSP fiber terminal designed for quick and easy subscriber connections anywhere in the OSP network when used in conjunction with AFL TRIDENT® Hardened Fiber Optic Connectors. The sealed and rugged design of both the AFL TITAN RTD Multiport and AFL TRIDENT connector allow for long term reliability when installed anywhere in the network — underground, in pedestals, on poles, or on aerial strand or ADSS cables.

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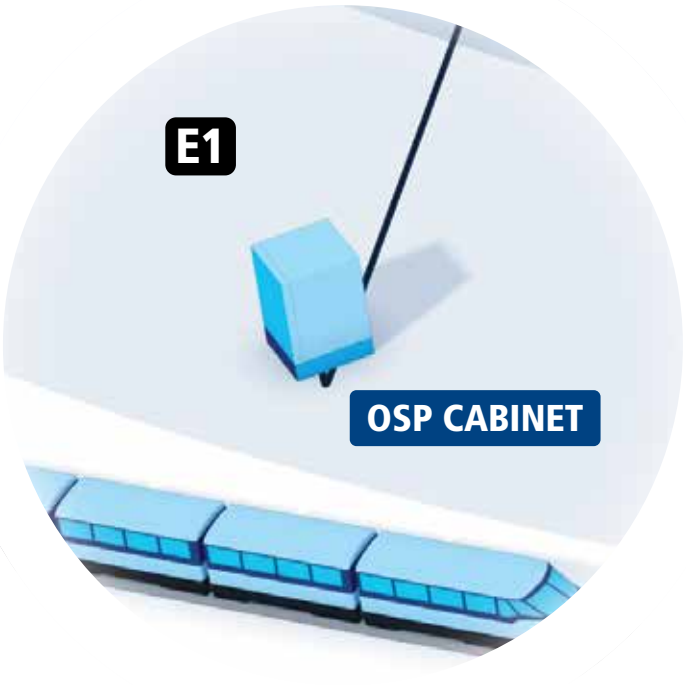
E1

Street-side OSP Cabinets/Fixtures

Street-side cabinets represent the smallest data center form factor at the edge. These cabinets are designed to hold anywhere from a quarter-rack to two full racks of modern data center equipment in highly remote locations. Infrastructure must meet strict space constraints as well as to operate in dusty, less maintained, lower temperature-regulated conditions. These are designed to be as close to the end-user as possible, where latency is lowest and 2-5ms roundtrip is achievable.



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LightLink 580 Optical Splicing and Distribution Enclosure

The LightLink (LL) 580 Optical Splicing and Distribution Enclosure provides for organizing, splicing and interconnecting fibers in broadband, distribution and building entrance applications. The splice tray panel is equipped with LGX® 118 footprint snaps so various types of connectors may be installed.

xWDM — Passive Filtering

Modules can be installed in standard LGX supported EDGE cabinets and are available with LC bulkheads in select configurations from 4 to 40 channels, including both single and dual circuit package designs. SC bulkhead modules are available in single circuit packages from 4 to 20 channels.

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Test and Inspection

Test and Inspection are a key component of delivering reliability at the edge and any edge deployment strategy. AFL's comprehensive portfolio of Test and Inspection solutions provide network optimization and assurance across the entire spectrum of diverse edge compute environments. Solutions such as optic inspection, cleaning and identification to optical loss testing and OTDRs, provide you with the confidence to deploy network infrastructure at the edge efficiently.

FlowScout™ PON Optical Power Meter (E2-E0)

AFL's power meters are designed to meet the demands in an outside plant environment. The FlowScout PON Optical Power Meter easily withstands a one-meter drop and has splash-resistant controls that are easy to use, even with gloves on. A range of field-swappable output adapters support multiple connector styles and enables access for easy cleaning. The efficient design ensures a long run time from its rechargeable Li-Polymer battery and includes an auto-off feature to save power.

FOCIS Lightning® Multi-Fiber Optic Connector Inspection System (E6-E0)

FOCIS Lightning is a compact self-contained inspection probe that captures and displays the entire MPO end-face image in less than two seconds. One button provides auto-focusing, centering, and pass/fail analysis at the connector and individual fiber level. It can complete a 24-fiber MPO inspection task in less than 15 seconds. Results can be easily shared via USB, WiFi and Bluetooth®.

FOCIS Flex – Fiber Optic Connector Inspection System (E6-E0)

FOCIS Flex makes connector inspection simple, fast, and convenient. With the press of a single button, FOCIS Flex auto-focuses, captures and centers the end-face image, applies Pass/Fail rules, displays image and Pass/Fail results, saves results internally and/or wirelessly transfers data to a paired FlexScan OTDR or a smart device. It is fast, small and easy to use to enable 100% connector inspection.

FlexScan® FS200 Single-mode OTDR (E6-E1)

AFL's FlexScan FS200 OTDR is an all-in-one solution for detecting, identifying, locating and resolving single-mode optical network issues. It is designed for both novice and expert technicians working in a range of environments, from FTTH PON to point-to-point networks. It applies industry-standard or user-set pass/fail criteria and displays results using LinkMap® color-coded icons to show the health of the network. FlexScans automate test setup, shorten test time and simplify results interpretation improving efficiency and reducing costs.

ROGUE® OLTS Certifier (E6-E1)

AFL's ROGUE OLTS Certifier measures insertion loss, return loss and length bi-directionally to industry standards on both multimode and single-mode networks. ROGUE OLTS Certifier is offered as a matched pair of units, with each unit featuring four test ports. Two of the ports combine a light source and power meter to enable bi-directional testing on single or dual fibers. The other two ports are a dedicated power meter and a visual fault identifier (VFI) to help troubleshoot networks.

Edge computing has the potential to unleash a variety of advanced use cases resulting in new user experiences and new business opportunities. However, the edge is not in one place, it is a continuum. Edge applications and environments are complex and demand solutions that address a range of unique characteristics. With our broad portfolio of fiber infrastructure solutions, AFL can help you configure the perfect solution for your specific edge environment.

Founded in 1984, AFL is an international manufacturer providing end-to-end solutions to the energy, service provider, enterprise, hyperscale and industrial markets as well as several emerging markets.

AFL's products are in use in over 130 countries and include fiber optic cable and hardware, transmission and substation accessories, outside plant equipment, connectivity, test and inspection equipment, and fusion splicing systems and training.

AFL also offers a wide variety of services supporting hyperscale, data center, enterprise, rural broadband, wireless and outside plant applications.

AFL is dedicated to bringing our customers quality solutions as well as delivering superior value.

Visit Our New Resource Center!

As an end-to-end solutions provider, AFL has a vast amount of content on the many aspects of fiber optic networks for a variety of broadband and telecom applications — now in one easy-to-find location. Introducing the new resource center, which provides quick and easy viewing of everything "AFL." Everything from instructional videos to best practices for test and inspection as well as:

- White Papers on industry-related technology and applications
- Quick access to brochures and PDFs
- Articles and blog posts on application-specific topics
- Video tutorials and instructions on various products

Explore the new AFL resource center and discover all that it has to offer! Go to Learn.AFLglobal.com

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