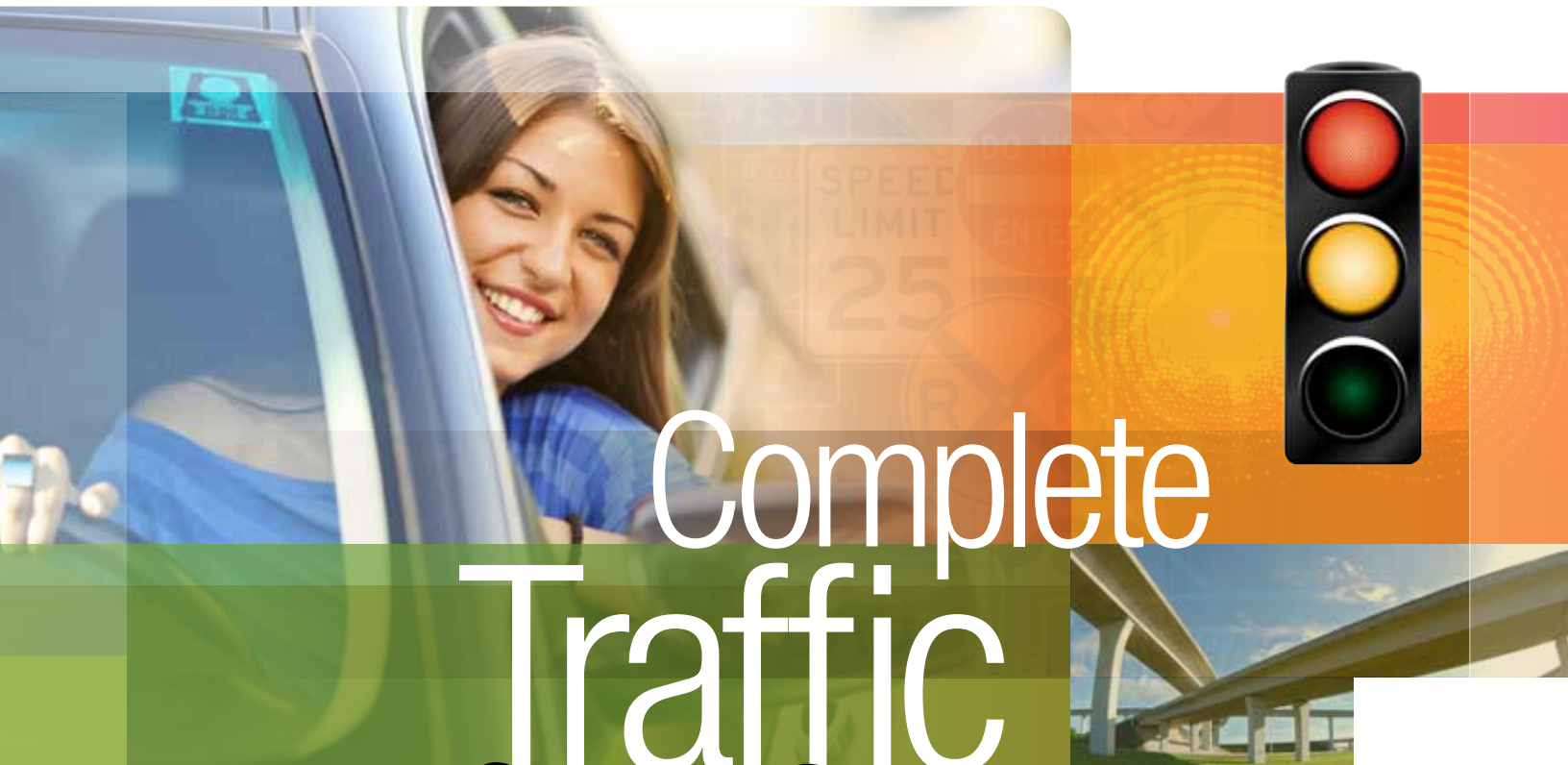


3M™ Fiber Solutions for Intelligent Traffic Systems



Complete Traffic Center Solutions



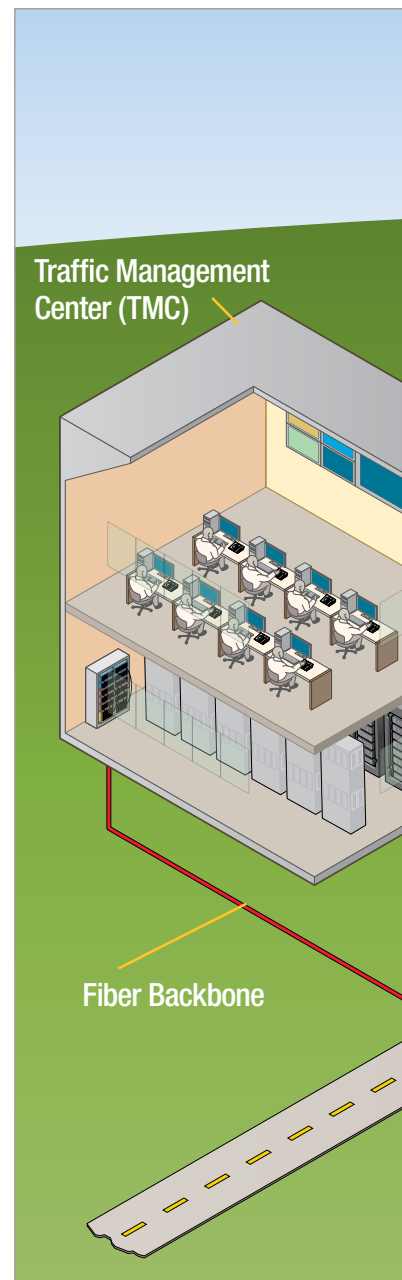


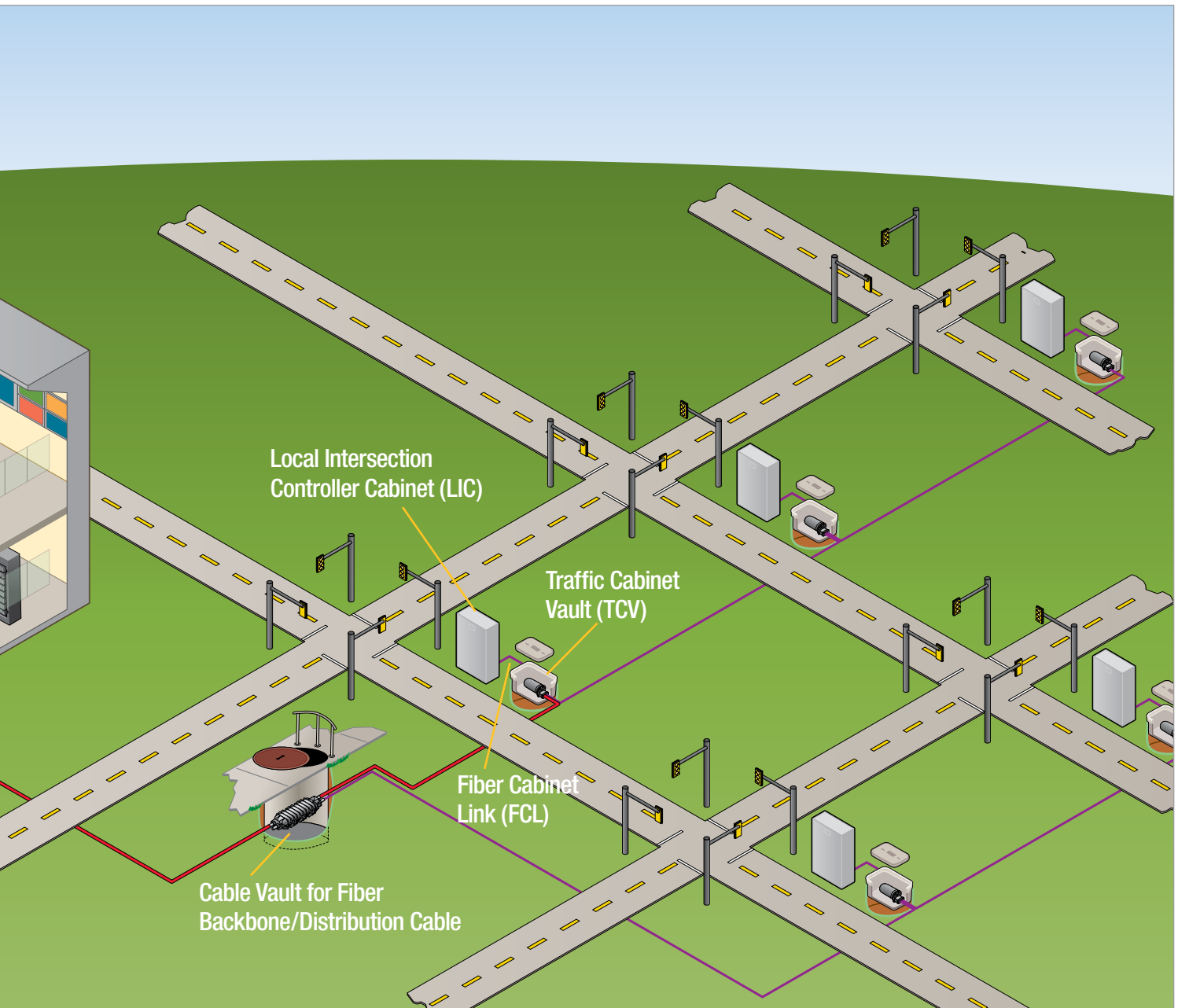
3M™ Fiber Solutions for intelligent Traffic Systems

3M provides a complete solution portfolio that fits most fiber ITS architectures. The portfolio includes products for the Traffic Management Center (TMC), Fiber Backbone and Distribution Network and interconnect solutions for Field Master Controller (FMC) Cabinet and Local Intersection Controller (LIC) Cabinet.

Our rugged FMC & LIC fiber interconnecting system provides quality, reliable, waterproof and dustproof protection in the cabinet or closure/cable vaults.

Plug-n-play factory-terminated drops are proven solutions that allow for fast and simple deployment and restoration.



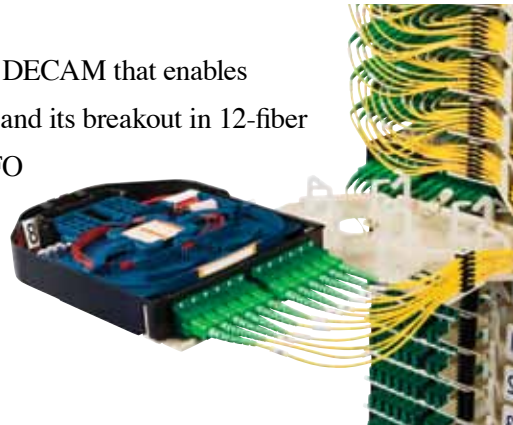


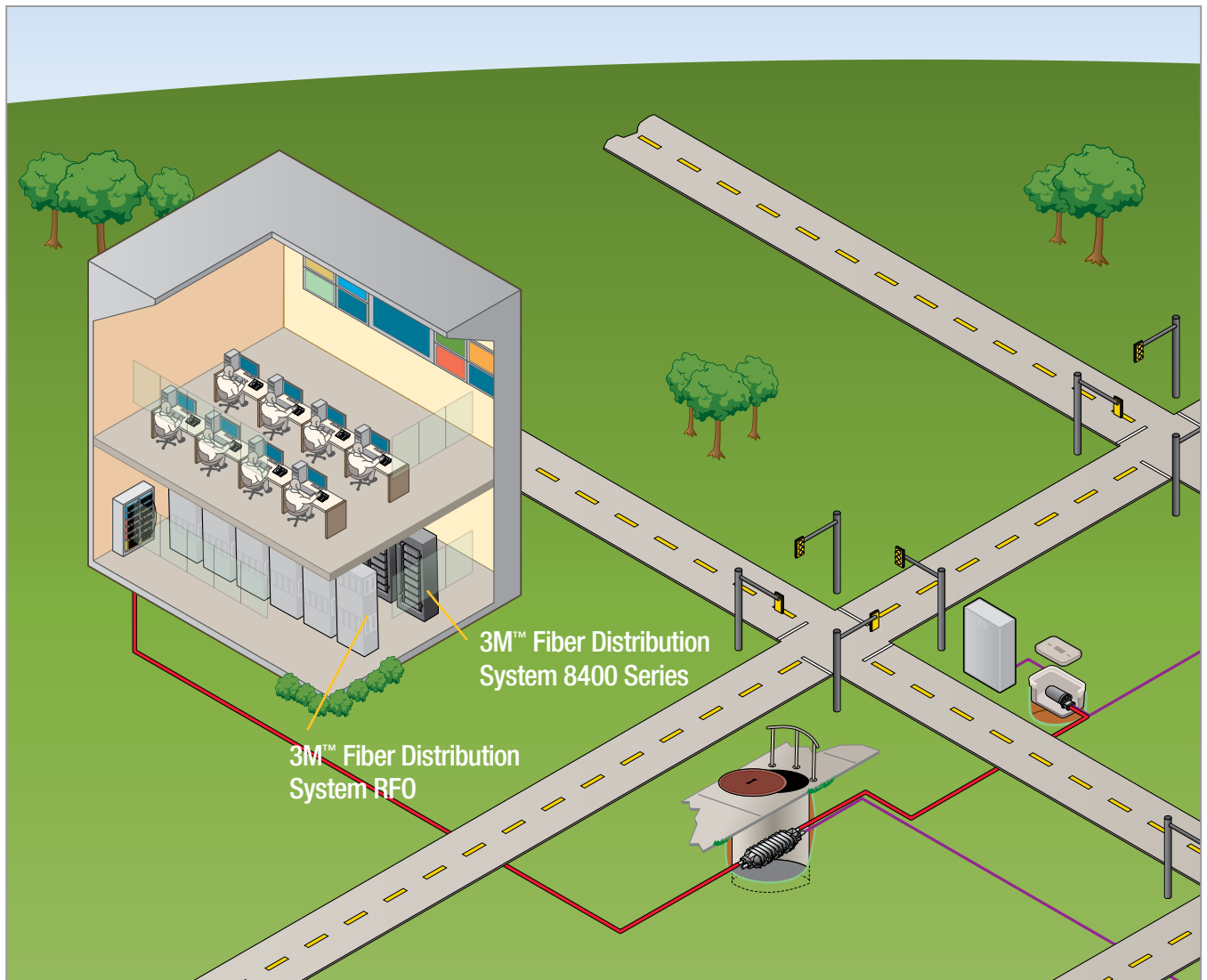
The Hub of Traffic Management

The Traffic Management Center (TMC) is the hub of a transportation management system. All information about the transportation network is collected here and combined with other data to help manage the network. Here, proper connections and fiber management is key. The fiber network begins at the TMC, and a “backbone” of cable is routed from this location to individual intersections or traffic control points.

3M™ Fiber Distribution System RFO

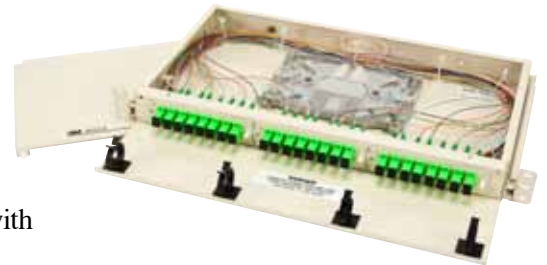
- Provides a very high density consolidation point of fiber termination.
- Modular and totally integrated design allows it to easily expand and grow.
- Available in different heights, up to 10.66 ft. / 3.25 m for 1056 fiber ports on a real estate footprint of 15.74 in. x 27.56 in. (0.4 m x 0.7 m).
- Part of the RFO distributor frame is the ruggedized 3M™ Clamp Kit DECAM that enables robust and rigid fixation and strain relief for the OSP fiber cable end and its breakout in 12-fiber increments. It also routes tubes to each 3M™ Fiber Cabling Block RFO and 3M™ Fiber Cassette RFO.
- The RFO system supports the use of 2.0 mm patch cords with either standard ITU G.652D fiber or bend-insensitive (G.657 A or B) fiber.





3M™ Fiber Distribution System 8400 Series

- This low-profile, compact solution for up to 24 connectors fits in one unit of rack space (1RU).
- Accommodates SC/UPC, SC/APC, LC, ST or FC connectors.
- Glide mounting system permits front access to rear compartment with drawer-like movement within the rack.
- Front panel shelf provides physical protection of the connectors as well as routing options for patch cords.
- Can be used and installed in 19 in. or 23 in. racks.
- Powder-painted, baked epoxy on galvanized steel.



Connectivity Products for your Fiber Backbone

3M™ Fiber Optic Splice Closure 2178

- Hermetically sealed closures for aerial, buried above-grade, vault (flame retardant), direct buried and buried below-grade applications.
- Designed for butt, inline or branch splicing configurations of armored or dielectric, single or ribbon fiber cables.
- Installation requires no special tools or complicated training procedures.
- Re-usable gasket seal allows easy re-entry with no additional material costs or special tools.
- Built-in spacious slack storage area and flexible splice tray system permits the closure to be used for loose buffer tube, and central tube single and ribbon fiber cables or a combination.



3M™ Fiber Optic Splice Closure 2178

Product Number	Size in. (mm) (L x W x H)	Splice Configuration	Cable Entry Ports	Maximum Splice Capacity
2178-XSB	14.6 x 10.1 x 4.6 (369.8 x 256.5 x 117.3)	Butt	3 Butt	48 Single Fusion 288 Mass Fusion
2178-XLB	14.6 x 10.1 x 5.8 (369.8 x 256.5 x 147)	Butt	3 Butt	96 Single Fusion 432 Mass Fusion
2178-S	21.9 x 8.5 x 4.7 (556.3 x 215.9 x 119.4)	Inline Butt	4 Inline 2 Butt	96 Single Fusion 288 Mass Fusion
2178-SL	21.9 x 8.5 x 8.0 (556.3 x 215.9 x 203.2)	Inline Butt	4 Inline 2 Butt	96 Single Fusion 288 Mass Fusion
2178-LS	21.9 x 8.5 x 8.0 (556.3 x 215.9 x 203.2)	Inline Butt	4 Inline 2 Butt	288 Single Fusion 864 Mass Fusion
2178-LL	21.9 x 8.5 x 11.3 (556.3 x 215.9 x 287.0)	Inline Butt	4 Inline 2 Butt	288 Single Fusion 864 Mass Fusion
2178-XL	27.0 x 13.3 x 11.0 (660.4 x 336.6 x 279.4)	Inline Butt	8 Inline 4 Butt	576 Single Fusion 1728 Mass Fusion

Connect & Protect your Fiber Backbone

3M™ Fiber Dome Closures

- Hermetically sealed closures for aerial, buried above-grade and buried below-grade applications.
- Designed for butt, single or ribbon fiber applications.
- No special tools are needed, which reduces tooling costs and allows for ease of installation and re-entry into the closure.
- A fixed O-ring sealing system and an innovative latching mechanism provides for simple, error-free closure sealing and re-entry.
- Utilizes the External Cable Assembly Module (ECAM) built-in cable entry port system.
 - Allows true plug-and-play capability, which may reduce installation and labor costs because the cable preparation and installation are completed outside of the closure body.
 - Built-in cable entry system allows the technician to add/remove cables from the closure without breaking the cable seals of previously installed cables.



3M™ Fiber Dome Closure Family

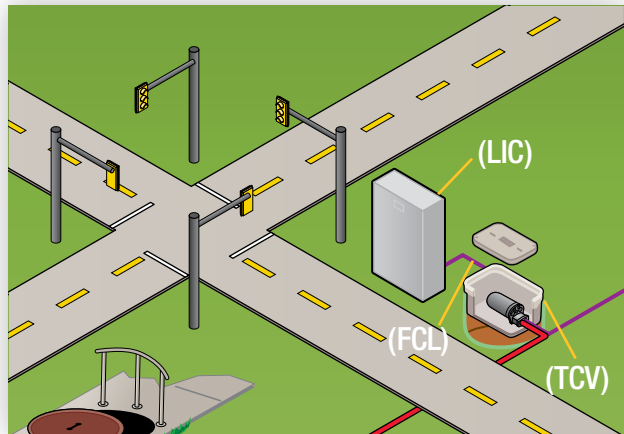
Closure	Dimensions (L x H (dia.) x W) mm (in.)	Cable Entry Ports & Size	Cable Entry Ports & Size	Splice Capacity (maximum)	Splice Trays	Ground Studs (# of feed-thru studs)
FDC 08M-A	385 x 182 x 152 (15.2 x 7.2 x 6.0)	Round Ports: 8 8: 12 mm (0.47 in.)	Oval Ports: 1 20 mm (0.79 in.) *for express applications	SF: 72 MF: 144	2539 2540	0 or 1
FDC 08S-B	541 x 182 x 152 (21.3 x 7.2 x 6.0)	Round Ports: 3 1: 12 mm (0.47 in.) 2: 18 mm (0.71 in.)	Oval Ports: 1 27 mm (1.06 in.) *for express applications	SF: 96 MF: 288	2538 2539 2540	0, 3 or 5
FDC 08S-C	541 x 182 x 152 (21.3 x 7.2 x 6.0)	Round Ports: 5 1: 12 mm (0.47 in.) 4: 18 mm (0.71 in.)	NA	SF: 96 MF: 288	2538 2539 2540	0, 3 or 5
FDC 08S-A	541 x 182 x 152 (21.3 x 7.2 x 6.0)	Round Ports: 8 8: 12 mm (0.47 in.)	Oval Ports: 1 20 mm (0.79 in.) *for express applications	SF: 96 MF: 288	2538 2539 2540	0 or 1
FDC 10S-D	548 x 255 (21.6 x 10.1)	Round Ports: 5 5: 18 mm (0.71 in.)	Oval Ports: 1 27 mm (1.06 in.) *for express applications	SF: 288 MF: 432	2541	0, 3 or 7
FDC 10S-E	548 x 255 (21.6 x 10.1)	Round Ports: 7 7: 18 mm (0.71 in.)	NA	SF: 288 MF: 432	2541	0, 3 or 7
FDC 12S	658 x 335 (25.9 x 13.2)	Round Ports: 5 5: 27 mm (1.06 in.)	Oval Ports: 1 27 mm (1.06 in.) *for express applications	SF: 576 MF: 864	2542	0, 3, 7 or 9

Interconnect Solutions

Field Master Controller (FMC) Cabinets and Local Intersection Controller (LIC) Cabinets

The Fiber Cabinet Link (FCL) is made up of the fiber optic facilities that provide the Field Master Controller Cabinet (FMC) and Local Intersection Controller Cabinets (LIC) access to the main fiber network. Options for interconnecting the FMC and LIC to the main fiber network are:

- Direct factory-terminated FCL
- Direct fusion-spliced FCL
- Factory-terminated FCL with watertight patch panel
- Fusion-spliced FCL with watertight patch panel



3M solutions to help you in this area include:



3M™ Fiber Dome Closure FDC 08M



3M™ Fiber Dome Stubbed Terminal FDST 08M



3M™ Fiber Dome Terminal Closure FDTC 08M



3M™ External Cable Assembly Module (ECAM) FCA Cable Assembly



3M™ Fiber Dome Closure FDC 08M

Product Features:

- This compact, hermetically sealed terminal closure (15.2 x 7.2 x 6.0 in.) can be placed in the harsh underground, aerial pole or strand environments.
- The fixed O-ring seal reduces the potential for craft error during the closure sealing process. Innovative latching mechanism provides for simple re-entry into closure by lifting the dome lid away from the base.
- External Cable Assembly Module (ECAM) port design allows true plug-and-play capability, which may reduce installation and labor costs.



ITS Applications:

- Direct fusion-spliced terminated FCL
- Fusion-spliced FCL with water-tight patch panel

Fast
simple & easy fiber
deployment

3M™ Fiber Dome Terminal Closure FDTC 08M

Product Features:

- The compact, hermetically sealed terminal closure design (15.2 x 7.2 x 6.0 in.) can be placed in the harsh underground, aerial pole or strand environments.
- Designed for butt, single or ribbon fiber applications, the FDTC 08M closure is equipped with an oval main cable port for express, midspan or loop-through splicing applications. It accommodates two 20 mm (0.79 in.) cables.
- Equipped with eight 0.47 in. (12 mm) cable ports that can accommodate 3M™ External Cable Assembly Module (ECAM) FCA Cable Assemblies or branch cables.
- Available with 4, 6, 8 or 12 SC, LC or ST connectors.
- Fixed O-ring seal reduces the potential for error during the closure sealing process. Innovative latching mechanism provides for simple re-entry into closure by lifting the dome lid away from the base.
- ECAM FCA cable/drop is terminated inside the terminal closure. This helps reduce the potential for connector contamination and provides better drop security than most external terminated drop (HFOC).



ITS Applications:

- Direct factory-terminated FCL
- Factory-terminated FCL with water-tight patch panel

Complete
family fits
most fiber ITS
architectures



3M™ Fiber Dome Stubbed Terminal FDST 08

Product Features:

- This compact, hermetically sealed terminal closure design can be placed in the harsh underground, aerial pole or strand environments.
- Equipped with eight cable ports which accommodates 3M™ External Cable Assembly Module (ECAM) FCA Cable Assemblies.
- Available with 4, 6, 8 or 12 SC, LC or ST connectors.
- ECAM FCA cable is terminated inside the terminal. This helps to reduce the potential for connector contamination and provides better drop security than most externally terminated drop cables (HFOC).
- Built-in ECAM cable/drop entry port termination system allows true plug-and-play capability which can help reduce installation and labor costs.
- Fixed O-ring sealing system along with an innovative latching mechanism provides simple, error-free terminal sealing and re-entry.
- Equipped with stubbed cables with bend-insensitive fibers various lengths.



ITS Applications:

- Factory-terminated FCL with water-tight patch panel
- Fusion-spliced FCL with water-tight patch panel

3M™ External Cable Assembly Module (ECAM) FCA Cable Assembly

Product Features:

- Direct connection in the FMC/LIC cabinet eliminates the need for a patch panel and interconnect patch cables.
- Factory termination and testing virtually eliminates splicing and site testing before installation at the TCV closure and field termination at the cabinet.
- ECAM FCA cable comes ready to install with a factory-installed pulling sock for pulling cable to the TCV, allowing for fast and easy installation.
- Fiber cable with bend-insensitive fiber allows for tighter bend radius of the ECAM FCA cable in cable vaults and cabinets.
- Available with various connectors (SC, LC and ST) and in lengths ranging from 50 to 1,400 feet.



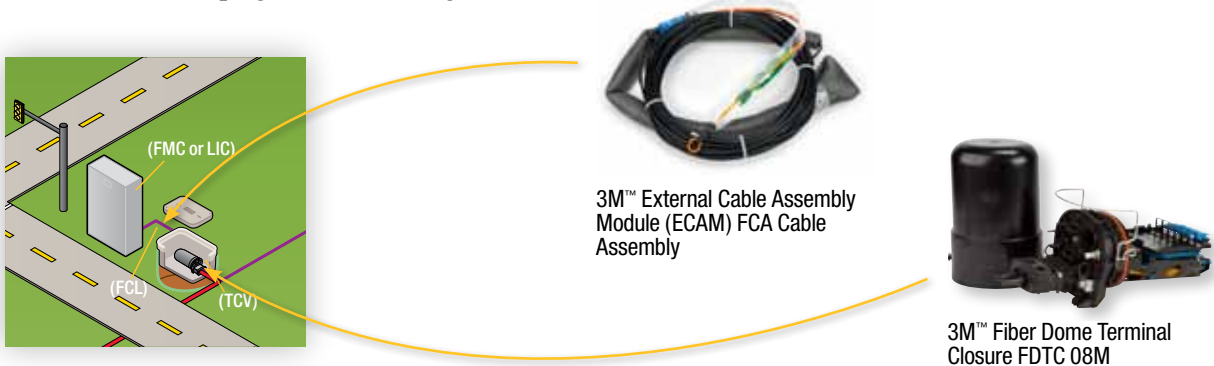
ITS Applications:

- Direct factory-terminated FCL
- Direct fusion-spliced terminated FCL
- Factory-terminated FCL with water-tight patch panel
- Fusion-spliced FCL with water-tight patch panel

3M ITS Solutions: FMC & LIC Fiber Interconnecting System

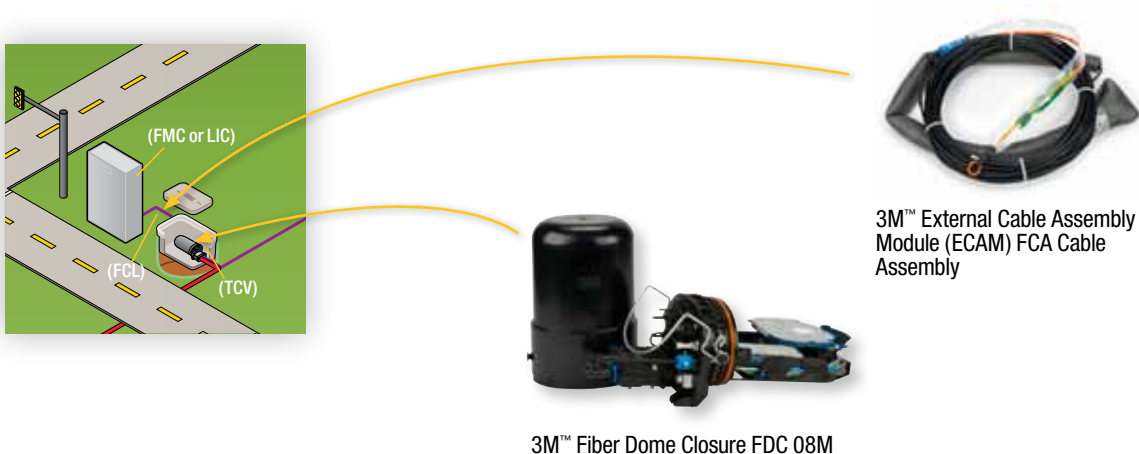
Direct Factory-Terminated FCL

The FMC/LIC cabinet is directly connected to the fiber network with a factory-terminated FCL with connectors on both ends. Inside the FMC/LIC cabinet, the FCL is secured to the cabinet and connected to the controller. At the TCV, the connectorized FCL plugs into a water-tight fiber terminal closure.



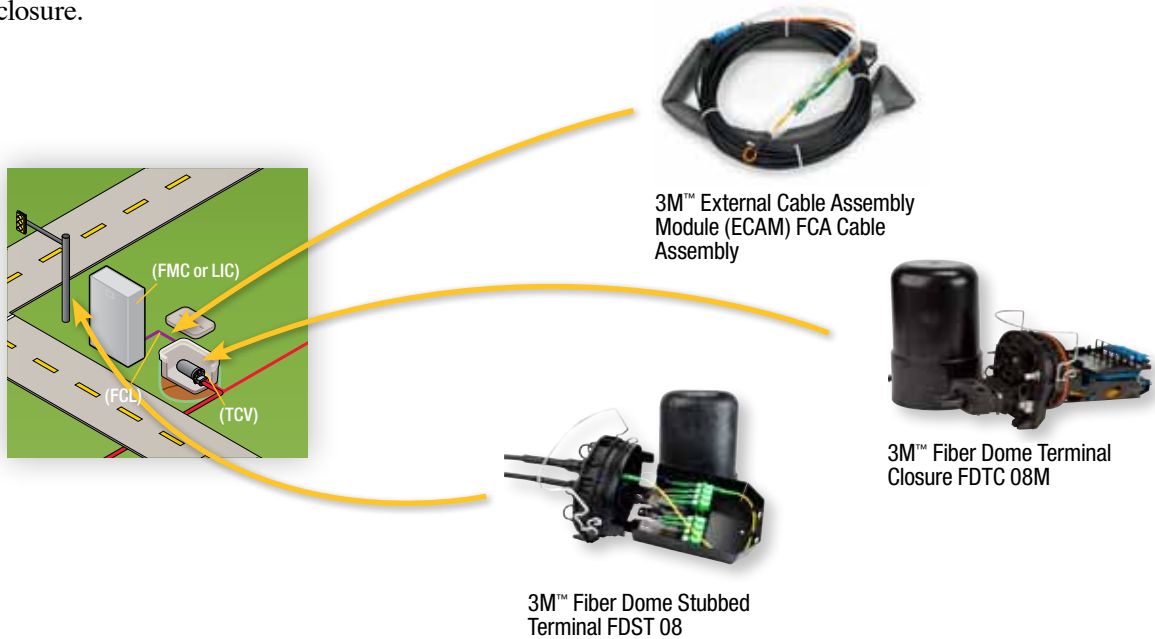
Direct Field-Spliced FCL

The FMC/LIC cabinet is directly connected to the fiber network with a direct fusion-spliced FCL that contains connectors on one end. Inside the FMC/LIC cabinet, the FCL is secured to the cabinet and connected to the controller. At the TCV, the FCL is fusion spliced in a water-tight fiber closure.



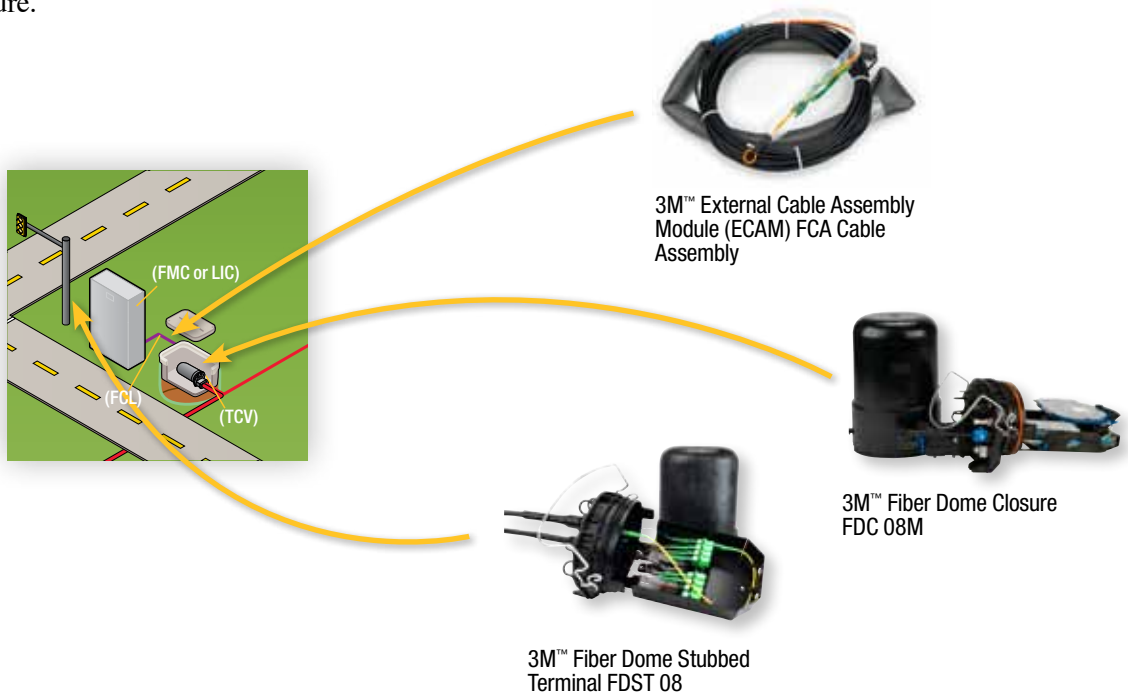
Factory-Terminated FCL with a Factory-Terminated Water-tight Patch Panel

The FMC/LIC cabinet is connected to the fiber network with a factory-terminated FCL with a factory-terminated water-tight patch panel. The patch panel is placed in the FMC/LIC cabinet and interconnected to the controller with a factory-terminated cable assembly. At the TCV, the factory-terminated stub tail of the patch panel is plugged into a terminal closure.



Fusion-Spliced FCL with a Factory-Terminated Water-tight Patch Panel

The FMC/LIC cabinet is connected to the fiber network with a fusion-spliced FCL with a factory-terminated water-tight patch panel. The patch panel is placed in the FMC/LIC cabinet and interconnected to the controller with a factory-terminated cable assembly. At the TCV, the stub tail of the patch panel is fusion-spliced in a water-tight fiber closure.



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