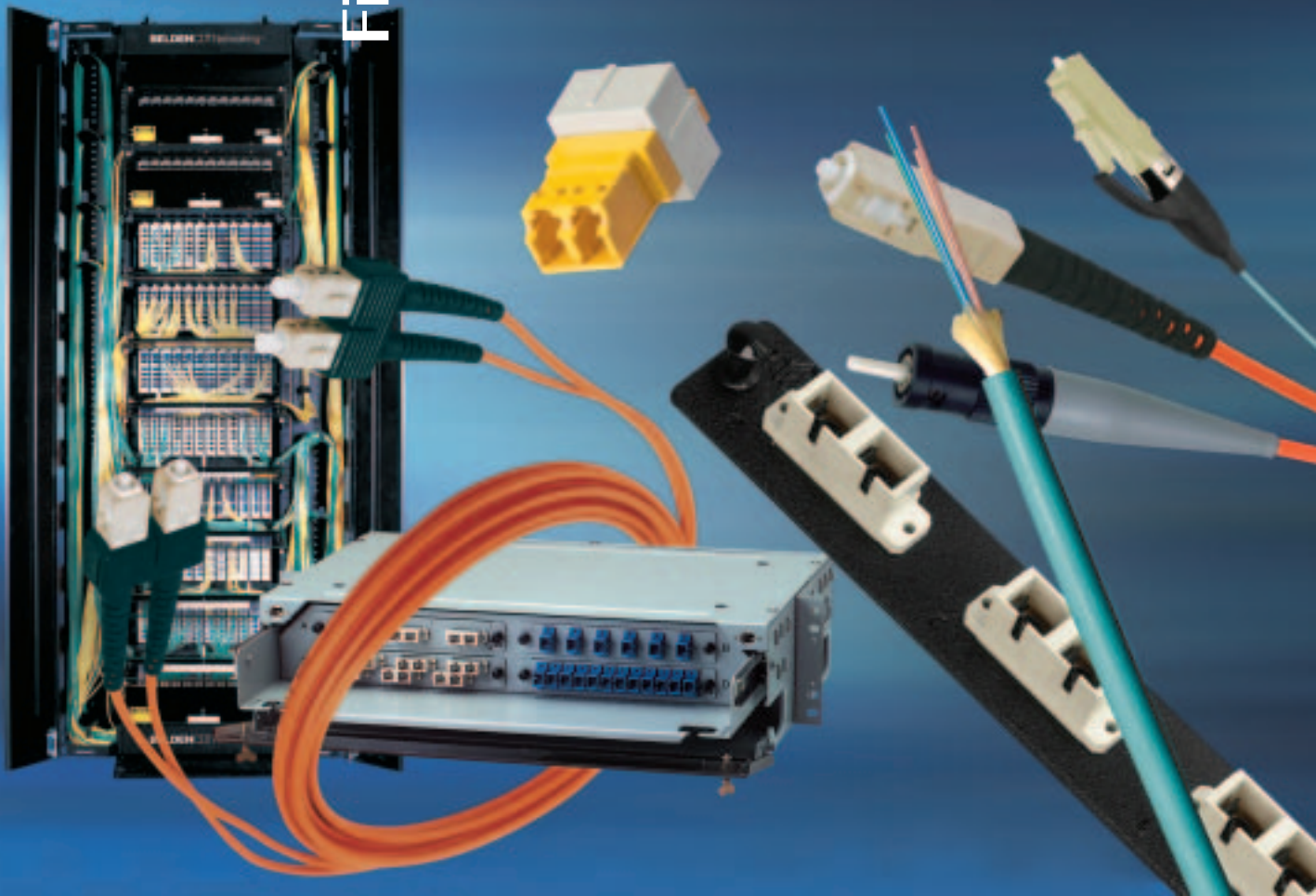




# Fiber Solutions Catalog

**BELDEN IBDN™ FIBEREXPRESS®  
SYSTEMS, CABLE AND  
CONNECTIVITY PRODUCTS**

**BELDEN**CDT



"The cable plant is the foundation of the entire network... It's like building a house. If you scrimp on the foundation, you put the entire house at risk."

THE GARTNER GROUP

Independent Industry Analysts and Consultants



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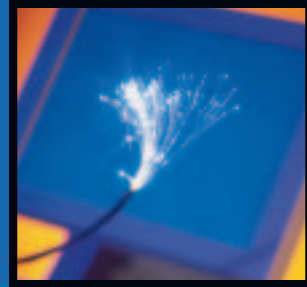
## **Preparing for the Future with Belden IBDN FiberExpress Solutions**

Belden CDT Networking has been involved in the development of optical fiber components since 1972 — evolving to its present status as an international supplier of high quality, cost-effective optical fiber cabling systems.

The Belden IBDN FiberExpress Solution is the culmination of Belden CDT Networking's experience in the optical fiber arena, offering users a complete, high-performance, end-to-end cabling system that supports both centralized and fiber-to-the desk (FTTD) topologies, as well as in-building or campus backbone cabling configurations.

The Belden IBDN FiberExpress Solution is, however, much more than an assemblage of top-performing products. It represents a whole new approach to the methodology of fiber optic cabling, i.e., FiberExpress systems are unique in their ability to offer both superior performance and a more cost effective, speedier and less complex installation process than traditional fiber optic cabling systems.

Belden CDT Networking developed the FiberExpress Solution to assure the smooth operation of your network and to provide for efficient network management — while continually reducing your total cost of ownership and preparing your system for the future.



## Offering Three Outstanding, Cost-effective Solutions

FiberExpress Solutions consist of a full range of multimode and singlemode cables, connectivity hardware, patch cords, cable assemblies, field connectors and a number of work area outlets. These solutions are characterized as fiber-to-the-desk systems, pre-terminated systems and in-building or campus backbone systems.

### FiberExpress Fiber-to-the-Desk (FTTD) Systems

Whether for horizontal distribution or centralized cabling, FiberExpress solutions include a wide range of products such as work area outlets and large capacity fiber management products that make the FTTD application a reality.

### FiberExpress Pre-terminated Systems

The ultimate in quick, easy and reliable optical networking is the FiberExpress Pre-terminated System. All components are factory connectorized and fully tested to ensure fast deployment and tremendous reliability. This flexible solution can be deployed for traditional LAN systems, as well as in specialized applications such as Data Centers and Storage Area Networks.

The FiberExpress Pre-terminated System is also well-suited for temporary situations, such as disaster recovery installations or convention center services.

| FIBER CHANNEL TOPOLOGY                                                     |                                              |                                        |                         |                              |
|----------------------------------------------------------------------------|----------------------------------------------|----------------------------------------|-------------------------|------------------------------|
| Belden IBDN FiberExpress SYSTEM MATRIX                                     | FIBER-TO-THE-DESK (FTTD) & CENTRALIZED FIBER | FiberExpress PRE-TERMINATED SOLUTIONS* | FIBER BACKBONE (Campus) | FIBER BACKBONE (In-Building) |
| <b>FiberExpress CABLES</b>                                                 |                                              |                                        |                         |                              |
| Breakout & Distribution Cable Series: MM & SM                              | ●                                            |                                        |                         | ●                            |
| Interconnect Cable Series: MM & SM                                         | ●                                            |                                        |                         |                              |
| Loose Tube (Campus) Cable Series: MM & SM                                  |                                              |                                        | ●                       | ●                            |
| MPO Cable Assemblies: MM & SM                                              | ●                                            | ●                                      | ●                       | ●                            |
| <b>CROSS-CONNECT HARDWARE IN THE TELECOM ROOM</b>                          |                                              |                                        |                         |                              |
| FiberExpress Manager With FiberExpress Manager Connector Modules: MM & SM  | ●                                            | ●                                      | ●                       | ●                            |
| FiberExpress Rack Mount Patch Panel with Universal Adapter Strips: MM & SM | ●                                            |                                        | ●                       | ●                            |
| FiberExpress Wall Mount Patch Panel with Universal Adapter Strips: MM & SM | ●                                            |                                        | ●                       | ●                            |
| FiberExpress Bar: MM & SM                                                  | ●                                            | ●                                      | ●                       | ●                            |
| <b>PATCH CORDS IN THE TELECOM ROOM AND AT THE WORK AREA</b>                |                                              |                                        |                         |                              |
| FiberExpress Patch Cords: MM & SM                                          | ●                                            | ●                                      | ●                       | ●                            |
| <b>OUTLETS AT THE WORK AREA</b>                                            |                                              |                                        |                         |                              |
| MDVO® Multimedia Outlets with MDVO Multimedia Modules                      | ●                                            |                                        |                         |                              |
| MediaFlex® Outlets with MediaFlex Multimedia Inserts                       | ●                                            |                                        |                         |                              |
| FiberExpress Bar: MM & SM (as MUTOA)                                       | ●                                            | ●                                      |                         |                              |
| <b>FIBER CONNECTIVITY</b>                                                  |                                              |                                        |                         |                              |
| Optimax® Connectors: MM & SM                                               | ●                                            |                                        | ●                       | ●                            |
| Epoxy Field Mountable Connectors: MM & SM                                  | ●                                            |                                        | ●                       | ●                            |
| Fiber Pigtails: MM & SM                                                    | ●                                            |                                        | ●                       | ●                            |

MM = Multimode • SM = Singlemode

\* FiberExpress Pre-terminated Solutions provide simple-to-install, high-performance fiber channels through custom length, high precision factory terminated cables and matching optical connectivity components.

## Offering Three Outstanding, Cost-effective Solutions *(cont.)*

### FiberExpress Backbone Systems

An inadequate or improperly installed network backbone can severely limit overall network performance and, therefore, your business' productivity and efficiency.

In today's environment, cabling network backbones are typically designed using a combination of both multimode and singlemode fiber cables. Configuring the right fiber backbone for your unique premise or campus application is a complex process. Fortunately, selecting the right fiber backbone cabling solution is comparatively easy when you specify Belden IBDN FiberExpress Systems.

Many factors will influence the design of your specific optical fiber backbone infrastructure and the appropriate mix of singlemode and multimode fiber products and technologies. Key design criteria will include:

### > Capacity and Topology Planning

#### *Deployed Belden IBDN Horizontal UTP Systems*

The role of the network backbone is, of course, to support the deployed and/or planned horizontal Belden IBDN cabling system. Higher bandwidth horizontal systems, such as the Belden IBDN 10GX System or 4800LX System, may indicate the use of singlemode fiber in the backbone for superior overall network performance.

#### *Horizontal to Backbone Data Rate Ratio*

Traditional design guidelines use a 1:10 data rate ratio; indicating, for example, that when 1Gb/s applications such as 1000BASE-T Ethernet are operating across the horizontal, the backbone should be capable of supporting throughputs of 10Gb/s or more.

### *Distances and Topologies*

The effective capacities of singlemode and multimode fiber channels have distance limitations. Generally speaking, singlemode fiber channels can operate at greater speeds over greater distances than multimode fiber channels. Distance considerations will be important criteria in campus or MAN backbone design, and must also be considered for in-building backbones and "centralized fiber network" topologies.

### > Return on Investment

#### *Legacy Networks and Active Equipment*

We seldom have the luxury of designing and deploying networks with a "clean slate" and accommodating existing cabling infrastructures and active equipment must be factored into backbone design considerations and may affect the singlemode/multimode mix.

#### *Cost of Ownership*

At first glance, fiber channels are typically more expensive than UTP channels; while singlemode fiber channels are typically more expensive than multimode channels. But, cost must always be considered in the context of performance, features and benefits – and ultimately in terms of "value."

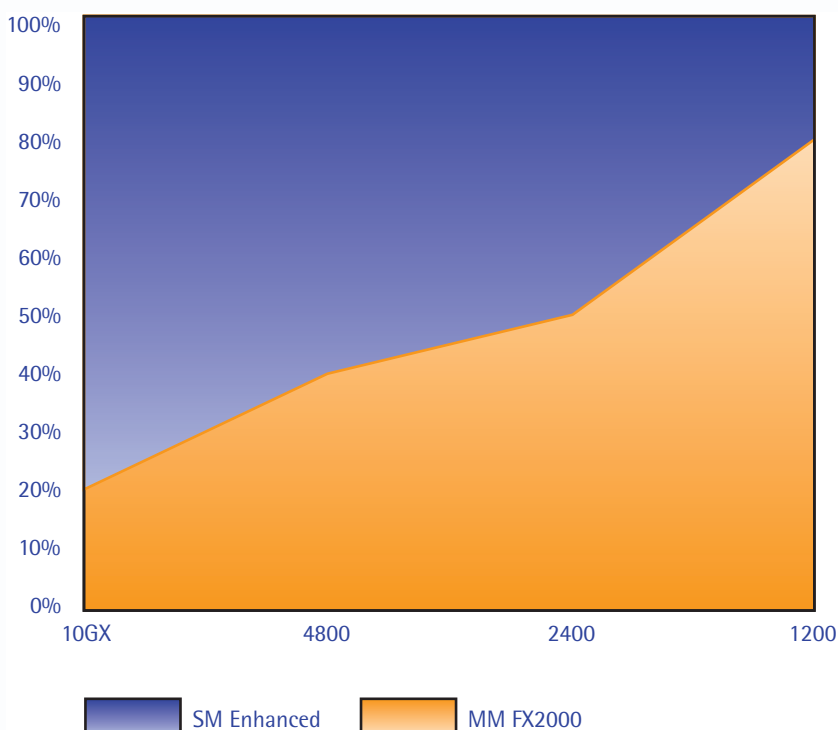


### *Future-proofing*

Cabling infrastructure design must consider not just current requirements, but also future growth, capacity and new applications. The same is true with fiber backbone planning and design. A marginal increase in investment today can extend the operational lifespan of your backbone, thereby increasing the return on your backbone networking investment.

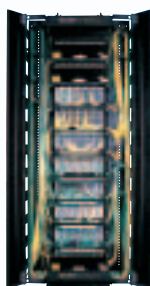
The table (right) is a much simplified guide of what mix of singlemode and multimode fiber to plan for once the horizontal structured cabling system has been identified. Singlemode and multimode cables each have their own price/performance/capacity characteristics and your network designer or consultant will configure the correct balance of multimode and singlemode cables for your specific backbone needs.

**Typical FiberExpress Backbone Singlemode and Multimode Channel Mix**



## Top-Quality, Field-proven Products Make the Difference

Belden IBDN FiberExpress components have over 20 years of field-proven telecommunications experience behind them. These products are designed with the same focus on quality and detail found in our complete Belden IBDN product line.



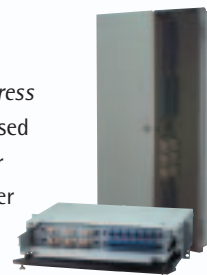
### Belden IBDN FiberExpress Manager

The FiberExpress Manager is a modular ensemble that facilitates management of large numbers of high-density, in-building terminations. The FiberExpress Manager allows up to 1920 singlemode or multimode fiber terminations in a single rack.

The FiberExpress Manager's connector module supports LC, SC, SC duplex, ST-compatible, FC and MT-RJ connectors. Its innovative release mechanism allows it to slide from the shelf like a PC card, greatly facilitating management of the patch cords.

### Belden IBDN FiberExpress Rack-mount and Wall-mount Patch Panels with Adapter Strips

Belden IBDN FiberExpress Patch Panels can be used with tight-buffered or loose-tube optical fiber cables. Since these panels are extremely versatile, they can be tailored to suit your individual needs in terms of density or management.

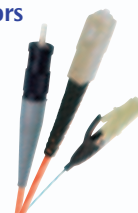


Universal Adapter Strips are pre-loaded with six (single density) or 12 (double density) adapter sleeves. The sleeves are offered in two different materials: Phosphor Bronze and Zirconia Ceramic and accommodate LC, SC, SC duplex, ST-compatible, FC and MT-RJ connectors.

### Belden IBDN FiberExpress Field-installable Connectors

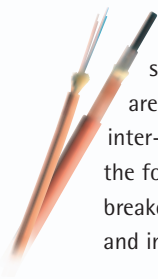
The Optimax Connector is a revolutionary field-installable optical fiber connector that requires no epoxy and no polishing.

The unique design of the patented mechanical splice body incorporates a factory-mounted fiber stub and a pre-polished ceramic ferrule. This technology provides a fast, secure and reliable LC, SC or ST-compatible optical fiber termination for either multimode or singlemode cable.





### Belden CDT's Fiber Cables



A variety of multimode and singlemode optical fiber cables are available for in-building and inter-building applications, including the following types: distribution, breakout, interconnect, loose tube and industrial armored.

### Belden IBDN FiberExpress Cable Assemblies

FiberExpress MPO Cable Assemblies have multi-fiber cables using single MPO connectors (6, 8 and 12-fiber) that are used to interconnect pre-terminated devices such as FiberExpress Manager Pre-terminated Modules and FiberExpress Bars.

Multi-fiber Cable Assemblies are factory-terminated fiber cables of various constructions (distribution, breakout, loose tube or ribbon) using simplex, duplex or multi-fiber connectors. The range of fan-out constructions, lengths and geometry suit virtually any application.



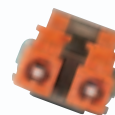
The FiberExpress Bar is an extremely compact, versatile and resilient linking panel. Resembling a power bar, it offers 6 or 12 fibers, pre-terminated with LC, SC, SC duplex, ST-compatible, FC or MTRJ connectors and a cord terminated with a multi-fiber MPO connector. These factory-tested mini patch panels can adapt to all kinds of properties or developments, and can serve as a consolidation or linking point.

### Belden IBDN FiberExpress Patch Cords

FiberExpress Duplex Patch Cord assemblies are of the highest quality available. They are assembled and 100% optically tested in the factory prior to shipment.



### Need an Even More Secure Infrastructure?



The FiberExpress Secure/Keyed LC System is designed to bring a whole new level of security into your network infrastructure design by enabling the physical segregation of any network segments that you designate. Based on the superior performance of the LC connector format, the FiberExpress Secure/Keyed LC System offers these outstanding features and benefits:

- > The system's connectors and adapters are available with six color-coded keying options for design flexibility and facility in network administration
- > Tamper-resistant key design — front and back — prevents intruder access
- > High-quality ceramic ferrule provides low insertion loss and excellent durability
- > Available in multimode 62.5µm, 50µm and laser optimized 50µm, so the system is ready for a variety of high-performance networks
- > Easy compatibility with all Belden CDT mounting hardware

Start designing your own FiberExpress Solution by selecting from the products featured in the following pages >>>>

# Fiber Media

FiberExpress Connectors



## Optimax Field Installable Connectors



AX101982 Optimax LC Connector

### Optimax Field Installable Connector

**The Optimax Connectors** are reliable field installable optical fiber connectors that are easy to install. They do not require epoxy, curing or polishing. Their unique design incorporates a factory polished fiber stub in a splice mechanism which provides a fast, secure, and reliable termination on optical fiber cables. All critical steps are performed in the factory, ensuring a superior-quality connection every time. Only simple tools are required for installation, making Optimax a cost effective field termination. Optimax Connectors are high-quality LC, SC and ST Compatible connectors that use a ceramic ferrule with a physical contact (PC) polish for Multimode and super physical contact (SPC) polish for Singlemode that ensures the best possible mating of optical fibers. Connectors are available for 62.5 or 50/125  $\mu\text{m}$  Multimode fiber and Singlemode fiber installations.



AX100029 with AX101794 Optimax SC Connector



A0408835 with AX101793 Optimax ST Compatible Connector

| DESCRIPTION                                                                               | ORDERING NUMBER |
|-------------------------------------------------------------------------------------------|-----------------|
| OPTIMAX FIELD INSTALLABLE CONNECTOR                                                       |                 |
| LC 62.5 $\mu\text{m}$ , Multimode, for 900 $\mu\text{m}$ buffered fiber only              | AX101981        |
| LC 50 $\mu\text{m}$ , Multimode, for 900 $\mu\text{m}$ buffered fiber only                | AX101982        |
| LC, Singlemode, for 900 $\mu\text{m}$ buffered fiber only                                 | AX101983        |
| SC 62.5 $\mu\text{m}$ , Multimode, for 900 $\mu\text{m}$ buffered fiber only              | AX100029        |
| SC 50 $\mu\text{m}$ , Multimode, for 900 $\mu\text{m}$ buffered fiber only                | AX101077        |
| SC, Singlemode, for 900 $\mu\text{m}$ buffered fiber only                                 | AX101792        |
| ST Compatible 62.5 $\mu\text{m}$ , Multimode, for 900 $\mu\text{m}$ buffered fiber only   | A0408835        |
| ST Compatible 50 $\mu\text{m}$ , Multimode, for 900 $\mu\text{m}$ buffered fiber only     | AX101075        |
| ST Compatible, Singlemode, for 900 $\mu\text{m}$ buffered fiber only                      | AX101791        |
| LC Accessory Kit for jacketed fiber, contains a 2 mm boot and a crimp sleeve              | AX101984        |
| SC Accessory Kit for jacketed fiber, contains 3 mm boot, crimp sleeves and a cord adapter | AX101794        |
| ST Accessory Kit for jacketed fiber, contains 3 mm boot, crimp sleeves                    | AX101793        |

### Optimax Tool Kits

#### Optimax Tool Kit

The **Optimax Tool Kit** is packaged in a small convenient carrying case and includes an LC, SC and ST compatible installation and training video (CD), installation instructions and all the tools required to terminate 900 µm buffered optical fiber and jacketed optical fiber.

The Optimax installation kit has all the tools and supplies required to install the Optimax LC, SC or ST Compatible Multimode and Singlemode connectors. Certain tool kit items can be purchased separately to accommodate installers already possessing basic optical fiber installation tools.



**AX100947** Optimax Tool Kit

| DESCRIPTION                                                                                                                                                                                                                        | ORDERING NUMBER |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| OPTIMAX TOOL KIT                                                                                                                                                                                                                   |                 |
| <b>LC/SC/ST Compatible (includes installation tools, fiber cleaver, crimping tool, instruction manual, microscope, tweezers, alcohol wipes, marker, scissors, waste bottle, fiber stripper, cable stripper and Training Video)</b> | AX100947        |
| <b>Optimax Tool Kit, Basic (excludes fiber stripper &amp; cleaver)</b>                                                                                                                                                             | AX100949        |
| <b>Optimax LC Tool Kit Upgrade (includes LC installation tool, instructions manual, foam for the case)</b>                                                                                                                         | AX102061        |
| OPTIMAX INDIVIDUAL COMPONENTS                                                                                                                                                                                                      |                 |
| <b>Fiber Cleaver</b>                                                                                                                                                                                                               | A0408829        |
| <b>Installation Tool LC (does not include tool-clamp)</b>                                                                                                                                                                          | AX102062        |
| <b>Installation Tools ST Compatible and SC (includes tool-clamp)</b>                                                                                                                                                               | A0403634        |
| <b>Microscope</b>                                                                                                                                                                                                                  | AX100910        |
| <b>Refurbishing Materials (includes 80 alcohol wipes and a black felt tip marker)</b>                                                                                                                                              | AX100951        |
| <b>Installation Instruction Manual, LC</b>                                                                                                                                                                                         | AX102063        |
| <b>Installation Instruction Manual, SC</b>                                                                                                                                                                                         | PX101318        |
| <b>Installation Instruction Manual, ST Compatible</b>                                                                                                                                                                              | PX101317        |
| <b>Installation &amp; Training Video, CD (see literature ordering form on the web)</b>                                                                                                                                             | NOT0580         |
| <b>Crimp Tool complete with die</b>                                                                                                                                                                                                | A0403641        |

### Epoxy Field Installable Connectors

#### Epoxy Field Installable Connector

**Epoxy Field Installable Connectors** are available as Multimode and Singlemode ST Compatible and SC field installable connectors. They require heat-cured epoxy and polishing.

Both types have a ceramic ferrule. Each connector comes complete with all the parts necessary for termination of tight buffered fibers as well as jacketed fibers. Parts include crimp sleeves, boots, cord adapter and dust cap.



**A0390851** Optical Fiber Field Installable Epoxy Connector, ST Compatible

| DESCRIPTION                                                         | ORDERING NUMBER |
|---------------------------------------------------------------------|-----------------|
| <b>Epoxy Field Installable Connector, Multimode, ST Compatible</b>  | A0390851        |
| <b>Epoxy Field Installable Connector, Multimode, SC Simplex</b>     | AX100919        |
| <b>Epoxy Field Installable Connector, Multimode, SC Duplex</b>      | AX100929        |
| <b>Epoxy Field Installable Connector, Singlemode, ST Compatible</b> | AX101412        |
| <b>Epoxy Field Installable Connector, Singlemode, SC Simplex</b>    | AX101411        |

# Fiber Media

FiberExpress  
Pre-Connectorized Assemblies



## Fiber Patch Cords



### Fiber Patch Cords

**FiberExpress Duplex Patch Cord Assemblies** are of the highest quality available. They are assembled and 100% optically tested in our factory prior to shipment. All patch cords are built with high-quality connectors and cables which guarantees superior performance and excellent reliability.

**AX200057** Patch Cord Multimode SC Duplex (568SC)

| DESCRIPTION                              | ORDERING NUMBER              | ORDERING NUMBER            | ORDERING NUMBER             | ORDERING NUMBER   |
|------------------------------------------|------------------------------|----------------------------|-----------------------------|-------------------|
| DUPLEX PATCH CORD                        | MULTIMODE,<br>FX300, 62.5 µm | MULTIMODE,<br>FX600, 50 µm | MULTIMODE,<br>FX2000, 50 µm | SINGLEMODE<br>SPC |
| <b>ST-ST, 2 m (6 ft.)</b>                | 70102419                     | AX200341                   | AX200799                    | AX200090          |
| <b>ST-ST, 3 m (10 ft.)</b>               | 70102420                     | AX200459                   | AX200795                    | AX200091          |
| <b>ST-ST, 5 m (16 ft.)</b>               | 70102447                     | AX200413                   | AX200800                    | AX200092          |
| <b>568SC-568SC, 2 m (6 ft.)</b>          | AX200056                     | AX200084                   | AX200603                    | AX200094          |
| <b>568SC-568SC, 3 m (10 ft.)</b>         | AX200057                     | AX200082                   | AX200589                    | AX200095          |
| <b>568SC-568SC, 5 m (16 ft.)</b>         | AX200058                     | AX200280                   | AX200624                    | AX200096          |
| <b>LC duplex-LC duplex, 2 m (6 ft.)</b>  | AX200517                     | AX200527                   | AX200664                    | AX200507          |
| <b>LC duplex-LC duplex, 3 m (10 ft.)</b> | AX200518                     | AX200528                   | AX200665                    | AX200508          |
| <b>LC duplex-LC duplex, 5 m (16 ft.)</b> | AX200519                     | AX200529                   | AX200666                    | AX200509          |
| <b>MTRJ-MTRJ, 2 m (6 ft.)</b>            | AX101122                     | AX101139                   | AX200801                    | AX101157          |
| <b>MTRJ-MTRJ, 3 m (10 ft.)</b>           | AX101123                     | AX101138                   | AX200802                    | AX101156          |
| <b>MTRJ-MTRJ, 5 m (16 ft.)</b>           | AX101125                     | AX101137                   | AX200803                    | AX101155          |
| HYBRID PATCH CORD                        | MULTIMODE,<br>FX300, 62.5 µm | MULTIMODE,<br>FX600, 50 µm | MULTIMODE,<br>FX2000, 50 µm | SINGLEMODE<br>SPC |
| <b>568SC-ST, 3 m (10 ft.)</b>            | AX200060                     | AX200196                   | AX200900                    | AX200421          |
| <b>LC duplex-ST, 3 m (10 ft.)</b>        | AX200699                     | AX200695                   | AX200809                    | AX200698          |
| <b>LC duplex-568SC, 3 m (10 ft.)</b>     | AX200580                     | AX200581                   | AX200668                    | AX200667          |
| <b>MTRJ-ST, 3 m (10 ft.)</b>             | AX101133                     | AX101151                   | AX200810                    | AX101166          |
| <b>MTRJ-568SC, 3 m (10 ft.)</b>          | AX101128                     | AX101143                   | AX200797                    | AX101161          |
| SINGLE-ENDED (PIGTAILS)                  | MULTIMODE,<br>FX300, 62.5 µm | MULTIMODE,<br>FX600, 50 µm | MULTIMODE,<br>FX2000, 50 µm | SINGLEMODE<br>SPC |
| <b>ST-open, 2 m (6 ft.)</b>              | 70100390                     | AX200458                   | AX200811                    | AX200097          |
| <b>SC-open, 2 m (6 ft.)</b>              | 70101714                     | AX200192                   | AX200653                    | AX200098          |
| <b>LC-open, 2 m (6 ft.)</b>              | AX200657                     | AX200658                   | AX200660                    | AX200659          |
| <b>MTRJ(m)-open, 3 m (10 ft.)</b>        | AX101366                     | AX101367                   | AX200812                    | AX101368          |

Also available as Simplex Patch Cords or custom assemblies, please contact Customer Service for more details.

## MPO Cable Assemblies

### MPO Cable Assembly

**MPO Cable Assemblies** are multi-fiber cables using single MPO connectors 6, 8 and 12-fiber that are used to interconnect pre-terminated devices such as FiberExpress Pre-terminated Modules and FiberExpress Bars. Depending on the application, MPO Cable Assemblies can use Ribbon Cables, or Loose Tube cables. MPO cables are available in lengths of up to 500 meters with a pulling-eye for ease of deployment.



AX250105 MPO Cable Assembly

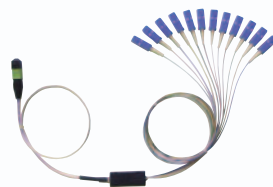
| DESCRIPTION                                                  | ORDERING NUMBER           | ORDERING NUMBER         | ORDERING NUMBER          | ORDERING NUMBER |
|--------------------------------------------------------------|---------------------------|-------------------------|--------------------------|-----------------|
| MPO CABLE ASSEMBLY, FOMC, MPO(F)-MPO(F), 1 PULLING EYE, OFNP | MULTIMODE, FX300, 62.5 µm | MULTIMODE, FX600, 50 µm | MULTIMODE, FX2000, 50 µm | SINGLEMODE      |
| 12 fibers, 10 m (33 ft.)                                     | AX250021                  | AX250345                | AX250457                 | AX250224        |
| 12 fibers, 20 m (66 ft.)                                     | AX250105                  | AX250376                | AX250412                 | AX250106        |
| 12 fibers, 50 m (164 ft.)                                    | AX250349                  | AX250065                | AX250387                 | AX250071        |
| 12 fibers, 75 m (246 ft.)                                    | AX250060                  | AX250066                | AX250413                 | AX250072        |
| 12 fibers, 100 m (328 ft.)                                   | AX250061                  | AX250067                | AX250458                 | AX250073        |

Also available in 6 or 8-fiber MPO Cable Assemblies, please contact Customer Service for more details.

## Multi-fiber Cable Assemblies

### Multi-fiber Cable Assembly

**Multi-fiber Cable Assemblies** are factory-terminated fiber cables of various constructions (distribution, breakout or ribbon) using simplex, duplex or multi-fiber connectors. They are available in configurations from 2-fiber up to 144-fiber with various kinds of fan-out constructions, lengths and geometry to suit virtually any application.



900 µm Fan-out Assembly



Multi-fiber Cable Assembly

| DESCRIPTION                | PRODUCT CODE                  | PRODUCT CODE                  |
|----------------------------|-------------------------------|-------------------------------|
| MULTI-FIBER CABLE ASSEMBLY | MULTIMODE, FX300, 62.5 µm     | MULTIMODE, FX600, 50 µm       |
| MPO(m)-ST, 12 fibers       | NXC-RPML-PGPNNN-STPFBN-N-01.5 | NXC-RPNL-PGPNNN-STPFBN-N-01.5 |
| MPO(m)-SC, 12 fibers       | NXC-RPML-PGPNNN-SCPFBN-N-01.5 | NXC-RPNL-PGPNNN-SCPFBN-N-01.5 |
| MPO(m)-LC, 12 fibers       | NXC-RPML-PGPNNN-LCPFBN-N-01.5 | NXC-RPNL-PGPNNN-LCPFBN-N-01.5 |
| MPO(m)-MTRJ (m), 12 fibers | NXC-RPML-PGPNNN-JBPFBN-N-01.5 | NXC-RPNL-PGPNNN-JBPFBN-N-01.5 |
|                            | MULTIMODE, FX2000, 50 µm      | SINGLEMODE                    |
| MPO(m)-ST, 12 fibers       | NXC-RPFL-PGPNNN-STPFBN-N-01.5 | NXC-RPSL-PGPNNN-STPFBN-N-01.5 |
| MPO(m)-SC, 12 fibers       | NXC-RPFL-PGPNNN-SCPFBN-N-01.5 | NXC-RPSL-PGPNNN-SCPFBN-N-01.5 |
| MPO(m)-LC, 12 fibers       | NXC-RPFL-PGPNNN-LCPFBN-N-01.5 | NXC-RPSL-PGPNNN-LCPFBN-N-01.5 |
| MPO(m)-MTRJ (m), 12 fibers | NXC-RPFL-PGPNNN-JBPFBN-N-01.5 | NXC-RPSL-PGPNNN-JBPFBN-N-01.5 |

# Fiber Media

FiberExpress  
Pre-Connectorized Assemblies



## FiberExpress Bar



**AX250001** FiberExpress Bar 12ST

## FiberExpress Bar

The **FiberExpress Bar** consists of a custom length fiber cable with, at one end, a factory pre-terminated rugged mini patch panel and, at the other end, a factory installed multi-fiber MPO connector. The very compact fiber patch panel contains 6 or 12 factory-terminated and tested connectors in a variety of styles. The ruggedness of the FiberExpress Bar makes it an ideal candidate for disaster recovery, industrial applications and other fiber deployment in harsh environment.



**MX100154** FiberExpress MPO Adapter

## FiberExpress Bar Accessories

The **MPO Adapter** is the sleeve that provides primary alignment and locking when connecting the 2 MPO connectors (male to female). It has a flange and a metal clip for panel mounting and it is included with each FiberExpress Bar (1 m with male connector).

The **19 in. Rack Mount Housing** is a 1U metal panel that holds 1 FiberExpress Bar. It has a live hinge on the left-hand side and swings out give access to the MPO connection and facilitate cable management and slack storage when used with the Slack Storage Tray.

The **Front Cover** is a smoked Plexiglas cover that protects the fiber cords connected to the FiberExpress Bar. It has 2 push rivets for positive locking and easy handling.

The **Slack Storage Tray** attaches to the back of the 19 in. Rack Mount Housing to facilitate cable management and slack storage. It has a storage capacity of 5 meters of 12-fiber ribbon cable.

The **Wall Mount Enclosure** can contain one FiberExpress Bar. It is made of heavy gauge steel and has a locking cover.

| DESCRIPTION                                                                              | ORDERING NUMBER              | ORDERING NUMBER            | ORDERING NUMBER             | ORDERING NUMBER |
|------------------------------------------------------------------------------------------|------------------------------|----------------------------|-----------------------------|-----------------|
| FIBEREXPRESS BAR                                                                         | MULTIMODE,<br>FX300, 62.5 µm | MULTIMODE,<br>FX600, 50 µm | MULTIMODE,<br>FX2000, 50 µm | SINGLEMODE      |
| 12 ST type, MPO (m), 1 m                                                                 | AX250001                     | AX250052                   | AX250459                    | AX250009        |
| 6 SC duplex (12 fibers), MPO (m), 1 m                                                    | AX250005                     | AX250054                   | AX250460                    | AX250011        |
| 6 MT-RJ (12 fibers), MPO (m), 1 m                                                        | AX250178                     | AX250179                   | AX250461                    | AX250180        |
| 12 LC, MPO (m), 1 m                                                                      | AX250539                     | AX250540                   | AX250541                    | AX250542        |
| FIBEREXPRESS BAR ACCESSORIES                                                             |                              |                            |                             |                 |
| MPO Adapter (6 or 12 fibers) included with each FiberExpress Bar (1 m - Male)            |                              |                            |                             | MX100154        |
| 19 in. Rack Mount Housing for FiberExpress Bar, Gray                                     |                              |                            |                             | AX100331        |
| 19 in. Rack Mount Housing for FiberExpress Bar, Black                                    |                              |                            |                             | AX100330        |
| Front Cover for FiberExpress rack mount housing                                          |                              |                            |                             | AX100332        |
| Slack Storage Tray for FiberExpress Bar, (capacity: 5 meters) including top cover, Gray  |                              |                            |                             | AX100329        |
| Slack Storage Tray for FiberExpress Bar, (capacity: 5 meters) including top cover, Black |                              |                            |                             | AX100328        |
| Wall Mount Enclosure, can contain one bar, Black                                         |                              |                            |                             | AC200004        |

Also available for 6-fibers, please contact Customer Service for more details.

## Secure/Keyed LC System

**The FiberExpress Secure/Keyed LC System** allows for physical segregation of network segments in secure fiber cabling infrastructures. All Secure/Keyed LC products are available with 6 different keying options, each carrying a different color to facilitate network administration. The keying detail inside the connector is totally tamper-resistant and cannot be re-produced inside a standard LC connector to violate the network security. All products comply with the FOCIS 10 standard and optical performance exceeds all industry standards for SFF connectors.

**The Optimax Secure/Keyed LC field installable connectors** are available in Multimode 50  $\mu\text{m}$  laser-optimized and 62.5  $\mu\text{m}$  fiber versions. They are high-quality connectors that use a ceramic ferrule with a physical contact (PC) polish for Multimode connectors.

**The Secure/Keyed LC Patch Cords and pigtails** are offered in Multimode 62.5  $\mu\text{m}$  (FX300), 50/125  $\mu\text{m}$  (FX600) and laser-optimized 50/125  $\mu\text{m}$  (FX2000) for the most demanding network performance.

**The Secure/Keyed LC Adapter Modules and Adapter Strips** can be used in all mounting hardware for workstation area, Consolidation Point or Telecom Room applications.

**The Secure/Keyed LC FiberExpress Manager Modules** can be used in 19 and 23 inch FiberExpress Manager Shelves to provide a high-density management system of up to 1920 terminated fibers per rack.



AX102197 Secure/Keyed LC Optimax



Secure/Keyed LC System

| DESCRIPTION                                                          | ORDERING NUMBER                       | ORDERING NUMBER                     | ORDERING NUMBER                      |
|----------------------------------------------------------------------|---------------------------------------|-------------------------------------|--------------------------------------|
| SECURE/KEYED LC OPTIMAX FOR<br>900 $\mu\text{m}$ BUFFERED FIBER ONLY | MULTIMODE<br>62.5 $\mu\text{m}$       | MULTIMODE<br>50 $\mu\text{m}$       |                                      |
| <b>K1, Red</b>                                                       | AX102203                              | AX102197                            |                                      |
| <b>K2, Green</b>                                                     | AX102204                              | AX102198                            |                                      |
| <b>K3, Yellow</b>                                                    | AX102205                              | AX102199                            |                                      |
| <b>K4, Black</b>                                                     | AX102206                              | AX102200                            |                                      |
| <b>K5, Orange</b>                                                    | AX102207                              | AX102201                            |                                      |
| <b>K6, Blue</b>                                                      | AX102208                              | AX102202                            |                                      |
| DESCRIPTION                                                          | ORDERING NUMBER                       | ORDERING NUMBER                     | ORDERING NUMBER                      |
| SECURE/KEYED LC DUPLEX<br>PATCH CORD KEYX-KEYX                       | MULTIMODE FX300<br>62.5 $\mu\text{m}$ | MULTIMODE FX600<br>50 $\mu\text{m}$ | MULTIMODE FX2000<br>50 $\mu\text{m}$ |
| <b>K1, Red, 2 m (6 ft.)</b>                                          | AX201365                              | AX201383                            | AX201401                             |
| <b>K1, Red, 3 m (10 ft.)</b>                                         | AX201371                              | AX201389                            | AX201407                             |
| <b>K1, Red, 5 m (16 ft.)</b>                                         | AX201377                              | AX201395                            | AX201413                             |
| <b>K2, Green, 2 m (6 ft.)</b>                                        | AX201366                              | AX201384                            | AX201402                             |
| <b>K2, Green, 3 m (10 ft.)</b>                                       | AX201372                              | AX201390                            | AX201408                             |
| <b>K2, Green, 5 m (16 ft.)</b>                                       | AX201378                              | AX201396                            | AX201414                             |
| <b>K3, Yellow, 2 m (6 ft.)</b>                                       | AX201367                              | AX201385                            | AX201403                             |
| <b>K3, Yellow, 3 m (10 ft.)</b>                                      | AX201373                              | AX201391                            | AX201409                             |
| <b>K3, Yellow, 5 m (16 ft.)</b>                                      | AX201379                              | AX201397                            | AX201415                             |
| <b>K4, Black, 2 m (6 ft.)</b>                                        | AX201368                              | AX201386                            | AX201404                             |
| <b>K4, Black, 3 m (10 ft.)</b>                                       | AX201374                              | AX201392                            | AX201410                             |
| <b>K4, Black, 5 m (16 ft.)</b>                                       | AX201380                              | AX201398                            | AX201416                             |
| <b>K5, Orange, 2 m (6 ft.)</b>                                       | AX201369                              | AX201387                            | AX201405                             |
| <b>K5, Orange, 3 m (10 ft.)</b>                                      | AX201375                              | AX201393                            | AX201411                             |
| <b>K5, Orange, 5 m (16 ft.)</b>                                      | AX201381                              | AX201399                            | AX201417                             |
| <b>K6, Blue, 2 m (6 ft.)</b>                                         | AX201370                              | AX201388                            | AX201406                             |
| <b>K6, Blue, 3 m (10 ft.)</b>                                        | AX201376                              | AX201394                            | AX201412                             |
| <b>K6, Blue, 5 m (16 ft.)</b>                                        | AX201382                              | AX201400                            | AX201418                             |

# Fiber Media

FiberExpress Secure/Keyed LC System



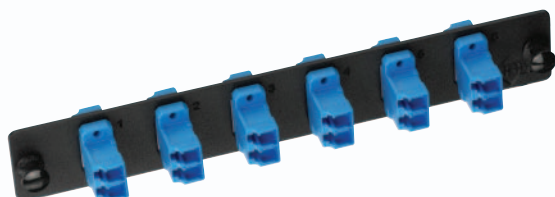
## FiberExpress Secure/Keyed LC System

| DESCRIPTION                                            | ORDERING NUMBER            | ORDERING NUMBER          | ORDERING NUMBER           |
|--------------------------------------------------------|----------------------------|--------------------------|---------------------------|
| SECURE/KEYED LC DUPLEX<br>PATCH CORD, HYBRID, KEYX-LCD | MULTIMODE FX300<br>62.5 µm | MULTIMODE FX600<br>50 µm | MULTIMODE FX2000<br>50 µm |
| <b>K1, Red, 2 m (6 ft.)</b>                            | AX201419                   | AX201437                 | AX201455                  |
| <b>K1, Red, 3 m (10 ft.)</b>                           | AX201425                   | AX201443                 | AX201461                  |
| <b>K1, Red, 5 m (16 ft.)</b>                           | AX201431                   | AX201449                 | AX201467                  |
| <b>K2, Green, 2 m (6 ft.)</b>                          | AX201420                   | AX201438                 | AX201456                  |
| <b>K2, Green, 3 m (10 ft.)</b>                         | AX201426                   | AX201444                 | AX201462                  |
| <b>K2, Green, 5 m (16 ft.)</b>                         | AX201432                   | AX201450                 | AX201468                  |
| <b>K3, Yellow, 2 m (6 ft.)</b>                         | AX201421                   | AX201439                 | AX201457                  |
| <b>K3, Yellow, 3 m (10 ft.)</b>                        | AX201427                   | AX201445                 | AX201463                  |
| <b>K3, Yellow, 5 m (16 ft.)</b>                        | AX201433                   | AX201451                 | AX201469                  |
| <b>K4, Black, 2 m (6 ft.)</b>                          | AX201422                   | AX201440                 | AX201458                  |
| <b>K4, Black, 3 m (10 ft.)</b>                         | AX201428                   | AX201446                 | AX201464                  |
| <b>K4, Black, 5 m (16 ft.)</b>                         | AX201434                   | AX201452                 | AX201470                  |
| <b>K5, Orange, 2 m (6 ft.)</b>                         | AX201423                   | AX201441                 | AX201459                  |
| <b>K5, Orange, 3 m (10 ft.)</b>                        | AX201429                   | AX201447                 | AX201465                  |
| <b>K5, Orange, 5 m (16 ft.)</b>                        | AX201435                   | AX201453                 | AX201471                  |
| <b>K6, Blue, 2 m (6 ft.)</b>                           | AX201424                   | AX201442                 | AX201460                  |
| <b>K6, Blue, 3 m (10 ft.)</b>                          | AX201430                   | AX201448                 | AX201466                  |
| <b>K6, Blue, 5 m (16 ft.)</b>                          | AX201436                   | AX201454                 | AX201472                  |
| SECURE/KEYED LC DUPLEX<br>PATCH CORD, HYBRID, KEYX-SCD | MULTIMODE FX300<br>62.5 µm | MULTIMODE FX600<br>50 µm | MULTIMODE FX2000<br>50 µm |
| <b>K1, Red, 2 m (6 ft.)</b>                            | AX201473                   | AX201491                 | AX201509                  |
| <b>K1, Red, 3 m (10 ft.)</b>                           | AX201479                   | AX201497                 | AX201515                  |
| <b>K1, Red, 5 m (16 ft.)</b>                           | AX201485                   | AX201503                 | AX201521                  |
| <b>K2, Green, 2 m (6 ft.)</b>                          | AX201474                   | AX201492                 | AX201510                  |
| <b>K2, Green, 3 m (10 ft.)</b>                         | AX201480                   | AX201498                 | AX201516                  |
| <b>K2, Green, 5 m (16 ft.)</b>                         | AX201486                   | AX201504                 | AX201522                  |
| <b>K3, Yellow, 2 m (6 ft.)</b>                         | AX201475                   | AX201493                 | AX201511                  |
| <b>K3, Yellow, 3 m (10 ft.)</b>                        | AX201481                   | AX201499                 | AX201517                  |
| <b>K3, Yellow, 5 m (16 ft.)</b>                        | AX201487                   | AX201505                 | AX201523                  |
| <b>K4, Black, 2 m (6 ft.)</b>                          | AX201476                   | AX201494                 | AX201512                  |
| <b>K4, Black, 3 m (10 ft.)</b>                         | AX201482                   | AX201500                 | AX201518                  |
| <b>K4, Black, 5 m (16 ft.)</b>                         | AX201488                   | AX201506                 | AX201524                  |
| <b>K5, Orange, 2 m (6 ft.)</b>                         | AX201477                   | AX201495                 | AX201513                  |
| <b>K5, Orange, 3 m (10 ft.)</b>                        | AX201483                   | AX201501                 | AX201519                  |
| <b>K5, Orange, 5 m (16 ft.)</b>                        | AX201489                   | AX201507                 | AX201525                  |
| <b>K6, Blue, 2 m (6 ft.)</b>                           | AX201478                   | AX201496                 | AX201514                  |
| <b>K6, Blue, 3 m (10 ft.)</b>                          | AX201484                   | AX201502                 | AX201520                  |
| <b>K6, Blue, 5 m (16 ft.)</b>                          | AX201490                   | AX201508                 | AX201526                  |
| SECURE/KEYED LC DUPLEX<br>PIGTAIL, KEYX-OPEN           | MULTIMODE FX300<br>62.5 µm | MULTIMODE FX600<br>50 µm | MULTIMODE FX2000<br>50 µm |
| <b>K1, Red, 2 m (6 ft.)</b>                            | AX201527                   | AX201533                 | AX201539                  |
| <b>K2, Green, 2 m (6 ft.)</b>                          | AX201528                   | AX201534                 | AX201540                  |
| <b>K3, Yellow, 2 m (6 ft.)</b>                         | AX201529                   | AX201535                 | AX201541                  |
| <b>K4, Black, 2 m (6 ft.)</b>                          | AX201530                   | AX201536                 | AX201542                  |
| <b>K5, Orange, 2 m (6 ft.)</b>                         | AX201531                   | AX201537                 | AX201543                  |
| <b>K6, Blue, 2 m (6 ft.)</b>                           | AX201532                   | AX201538                 | AX201544                  |

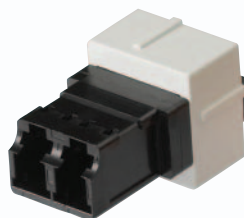
# Fiber Media

FiberExpress Secure/Keyed LC System

## FiberExpress Secure/Keyed LC System



**AX102124** Secure/Keyed LC Adapter Strip



**AX102098** Secure/Keyed LC Adapter Module



**AX102114** Secure/Keyed LC  
FiberExpress Manager Module

| DESCRIPTION                    | ORDERING NUMBER | ORDERING NUMBER | ORDERING NUMBER | ORDERING NUMBER |
|--------------------------------|-----------------|-----------------|-----------------|-----------------|
| SECURE/KEYED LC ADAPTER MODULE | GRAY HOLDER     | ALMOND HOLDER   | WHITE HOLDER    | BLACK HOLDER    |
| <b>K1, Red</b>                 | AX102089        | AX102095        | AX102101        | AX102107        |
| <b>K2, Green</b>               | AX102090        | AX102096        | AX102102        | AX102108        |
| <b>K3, Yellow</b>              | AX102091        | AX102097        | AX102103        | AX102109        |
| <b>K4, Black</b>               | AX102092        | AX102098        | AX102104        | AX102110        |
| <b>K5, Orange</b>              | AX102093        | AX102099        | AX102105        | AX102111        |
| <b>K6, Blue</b>                | AX102094        | AX102100        | AX102106        | AX102112        |

| DESCRIPTION                                | ORDERING NUMBER |
|--------------------------------------------|-----------------|
| SECURE/KEYED LC FIBEREXPRESS ADAPTER STRIP |                 |
| <b>K1, Red, 12 fibers</b>                  | AX102119        |
| <b>K2, Green, 12 fibers</b>                | AX102120        |
| <b>K3, Yellow, 12 fibers</b>               | AX102121        |
| <b>K4, Black, 12 fibers</b>                | AX102122        |
| <b>K5, Orange, 12 fibers</b>               | AX102123        |
| <b>K6, Blue, 12 fibers</b>                 | AX102124        |
| <b>K1, Red, 24 fibers</b>                  | AX102125        |
| <b>K2, Green, 24 fibers</b>                | AX102126        |
| <b>K3, Yellow, 24 fibers</b>               | AX102127        |
| <b>K4, Black, 24 fibers</b>                | AX102128        |
| <b>K5, Orange, 24 fibers</b>               | AX102129        |
| <b>K6, Blue, 24 fibers</b>                 | AX102130        |

| DESCRIPTION                                 | ORDERING NUMBER |
|---------------------------------------------|-----------------|
| SECURE/KEYED LC FIBEREXPRESS MANAGER MODULE | 12 FIBERS       |
|                                             | 24 FIBERS       |
| K1, Red, 12 fibers                          | AX102113        |
| K2, Green, 12 fibers                        | AX102114        |
| K3, Yellow, 12 fibers                       | AX102115        |
| K4, Black, 12 fibers                        | AX102116        |
| K5, Orange, 12 fibers                       | AX102117        |
| K6, Blue, 12 fibers                         | AX102118        |

Other Patch Cord lengths and configurations may be available, please contact Customer Service for more details.



Rack Components



**AX100934** FiberExpress Manager Shelf

### FiberExpress Manager Shelf

FiberExpress modules are rack-mounted using **FiberExpress Manager Shelves**. The shelves provide the total system with extra high connection density while facilitating cable routing and patch cord management.

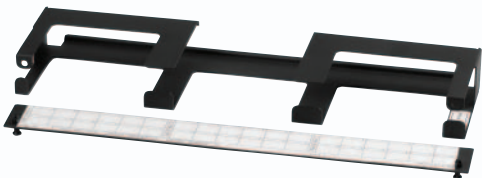
- For 19 in. or 23 in. rack
- 19 in. shelf holds up to 12 modules
- 23 in. shelf holds up to 16 modules



**AX101943** FiberExpress Manager 1U  
Rack Mount Patch Panel

### FiberExpress Manager 1U

The **FiberExpress Manager 1U Rack Mount Patch Panel** is a low-cost, compact assembly designed for interconnection or splicing of optical fiber cables, using up to three FiberExpress Manager Modules. The low-profile design minimizes rack space to only 45 mm (1.75 in.). An optional FiberExpress Manager 1U Cable Management Accessory is also available.



**AX102032** FiberExpress Manager 1U Cable  
Management Accessory

| DESCRIPTION                                         | ORDERING NUMBER |
|-----------------------------------------------------|-----------------|
| FIBEREXPRESS MANAGER SHELF                          |                 |
| Gray, 23 in., 10.9 Kg (24 lb)                       | AX100934        |
| Black, 23 in., 10.9 Kg (24 lb)                      | AX100935        |
| Gray, 19 in., 8.2 Kg (18 lb)                        | AX101084        |
| Black, 19 in., 8.2 Kg (18 lb)                       | AX101085        |
| FIBEREXPRESS MANAGER 1U, RACK MOUNT PATCH PANEL     |                 |
| Black, 19 in., 5 Kg (11 lb)                         | AX101943        |
| Gray, 19 in., 5 Kg (11 lb)                          | AX101944        |
| FIBER EXPRESS MANAGER 1U CABLE MANAGEMENT ACCESSORY |                 |
| Black, 19 in., 1 Kg (2 lb)                          | AX102032        |
| Gray, 19 in., 1 Kg (2 lb)                           | AX102033        |

## Racks

**Racks** are available in a freestanding floor mount version and as a Fiber Rack kit. Vertical and horizontal cable management channels provide cable and patch cord routing space and protection.



Universal Horizontal  
Cable Management Channels



Floor Mount Rack



Vertical Cable  
Management Channels

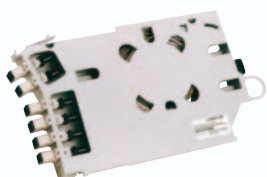
| DESCRIPTION                                                                                                                                 | ORDERING NUMBER |
|---------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| <b>FIBER RACK KIT</b>                                                                                                                       |                 |
| Knock-Down Rack Assembly, 44U, (one rack with one vertical & two universal horizontal channels), Gray, 23 x 84 in. (7 ft.), 52 Kg (113 lb)  | AX101177        |
| Knock-Down Rack Assembly, 44U, (one rack with one vertical & two universal horizontal channels), Black, 19 x 84 in. (7 ft.), 49 Kg (106 lb) | AX101176        |
| <b>FLOOR MOUNT RACK</b>                                                                                                                     |                 |
| Welded Rack Assembly, 44U, (with two universal horizontal channels), Black, 19 x 84 in. (7 ft.), 30 kg (65 lb)                              | AX101179        |
| Knock-Down Rack Assembly, 44U, (with two universal horizontal channels), Gray, 19 x 84 in. (7 ft.), 30 kg (65 lb)                           | AX101254        |
| Knock-Down Rack Assembly, 44U, (with two universal horizontal channels), Black, 19 x 84 in. (7 ft.), 30 kg (65 lb)                          | AX101178        |
| Knock-Down Rack Assembly, 44U, (with two universal horizontal channels), Gray, 23 x 84 in. (7 ft.), 32 kg (70 lb)                           | AX100930        |
| Knock-Down Rack Assembly, 44U, (with two universal horizontal channels), Black, 23 x 84 in. (7 ft.), 32 kg (70 lb)                          | AX100931        |
| <b>FIBER VERTICAL CABLE MANAGEMENT CHANNEL</b>                                                                                              |                 |
| Gray, 5 x 84 in., 16 Kg (35 lb)                                                                                                             | AX100932        |
| Black, 5 x 84 in., 16 Kg (35 lb)                                                                                                            | AX100933        |
| <b>UNIVERSAL HORIZONTAL CABLE MANAGEMENT CHANNEL</b>                                                                                        |                 |
| Gray, 19 in., 3 kg (6 lb)                                                                                                                   | AX101182        |
| Black, 19 in., 3 kg (6 lb)                                                                                                                  | AX101181        |
| Gray, 23 in., 4 kg (8 lb)                                                                                                                   | AX101183        |
| Black, 23 in., 4 Kg (8 lb)                                                                                                                  | AX101184        |

# Fiber Media

FiberExpress Manager



## FiberExpress Manager Modules



**AX101525** Connector Module Pre-terminated  
MPO-MT-RJ

## FiberExpress Manager Connector Module

**The Connector Module** is the basic building block of the FiberExpress Manager. It is designed with a unique release mechanism that allows it slide from the shelf like a PC card, easing management of patch cords.

| DESCRIPTION                                | ORDERING NUMBER            | ORDERING NUMBER                 | ORDERING NUMBER |
|--------------------------------------------|----------------------------|---------------------------------|-----------------|
| FIBEREXPRESS MANAGER CONNECTOR MODULE      | METAL SLEEVE,<br>MULTIMODE | ZIRCONIA CERAMIC,<br>SINGLEMODE |                 |
| <b>ST type, 6 fibers</b>                   | AX101089                   | AX100936                        |                 |
| <b>ST type, 12 fibers</b>                  | AX101187                   | AX101186                        |                 |
| <b>SC Simplex, 6 fibers</b>                |                            | AX100943                        |                 |
| <b>SC Duplex, 6 fibers</b>                 | AX101092                   | AX100944                        |                 |
| <b>SC Duplex (ST in), 12 fibers</b>        | AX101120                   | AX101119                        |                 |
| <b>SC Duplex, 12 UPC pigtails</b>          |                            | AX101715                        |                 |
| <b>SC Duplex, 12 fibers</b>                | AX101714                   | AX101713                        |                 |
| <b>LC, 12 fibers</b>                       | AX101528                   | AX101527                        |                 |
| <b>LC, 24 fibers, NEW</b>                  | AX102306                   | AX102305                        |                 |
| <b>FC, Singlemode/Multimode, 6 fibers</b>  |                            | AX100937                        |                 |
| DESCRIPTION                                | ORDERING NUMBER            | ORDERING NUMBER                 | ORDERING NUMBER |
|                                            | MULTIMODE 62.5 μm          | MULTIMODE 50 μm                 | SINGLEMODE      |
| <b>MPO(m)-ST type, 12 pre-terminated</b>   | AX101189                   | AX101190                        | AX101188        |
| <b>MPO(m)-SC Duplex, 12 pre-terminated</b> | AX101091                   | AX101114                        | AX101090        |
| <b>MPO(m)-MT-RJ(m), 12 pre-terminated</b>  | AX101525                   | AX101526                        | AX101524        |
| <b>MPO(m)-LC, 12 pre-terminated</b>        | AX101530                   | AX101531                        | AX101529        |
| <b>MPO(m)-LC, 24 pre-terminated, NEW</b>   | AX102309                   | AX102308                        | AX102307        |
|                                            | BEIGE, MULTIMODE           | BLUE, SINGLEMODE                |                 |
| <b>MT-RJ, 12 fibers</b>                    | AX101096                   | AX101581                        |                 |

## Accessories

### Flex Kit

The **Flex Kit** contains tubes and manifolds designed to split cables into individual fiber strands, and is suitable for 6 fibers up to 12 fibers. It is necessary for use with loose tube cables or when the fiber cable count does not match the number of connections in the FiberExpress Manager Connector Module. The Flex Kit tubes help to maintain proper fiber bend radius. One kit is required per 12 modules (one 19 in. shelf).



AX101098 Splice Holder Kit



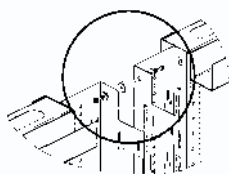
AX100945 Flex Kit

### Splice Holder Kit

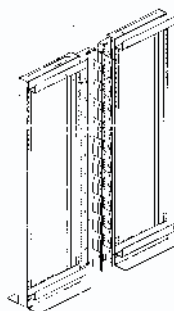
A **Splice Holder Kit** can be used to hold fusion or mechanical splices. Each splice holder can handle up to 6 splices.

| DESCRIPTION       | ORDERING NUMBER | ORDERING NUMBER |
|-------------------|-----------------|-----------------|
| FLEX KIT          |                 |                 |
| Flex Kit          |                 | AX100945        |
| Splice Holder Kit |                 | AX101098        |

## Multi-Rack Attachment Kit

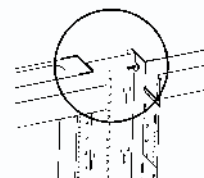


Multi-Rack attachment for double Vertical Cable Management Channel configuration

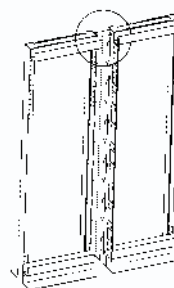


### Multi-Rack Attachment Kit

Allows the attachment of multiple racks in a side by side configuration when using the Belden Vertical Cable management channels (Fiber or Copper).



Multi-Rack attachment for single Vertical Cable Management Channel configuration



| DESCRIPTION               | ORDERING NUMBER | ORDERING NUMBER |
|---------------------------|-----------------|-----------------|
| MULTI-RACK ATTACHMENT KIT |                 |                 |
|                           |                 | AX101371        |

# Fiber Media

## FiberExpress Patch Panels



### Rack Mount Patch Panels (1U & 2U)



**AX100041** FiberExpress, 12/24 Port (1U) Rack Mount Patch Panel



**AX100069** FiberExpress, 24/48 Port (2U) Rack Mount Patch Panel

### FiberExpress Rack Mount Patch Panel 1U and 2U

The **FiberExpress 1U and 2U Rack Mount Patch Panels** are equipped with a special hinge that allows easy access to the rear of the patch panel without disturbing the optical fiber cable. A specially designed front panel allows connector protection and easy routing of optical fiber patch cords. The FiberExpress Rack Mount Patch Panels are also compatible with our 203 mm (8 in.) Splice Organizer Trays. This allows the optical fiber cable to be either terminated with fiber single-ended patch cords or field-installable connectors. The patch panels can be used with ST Compatible, SC, 568SC, FC, LC or MT-RJ adapter strips (ordered separately).

The FiberExpress 1U Rack Mount Patch Panel is a low-cost, compact assembly designed for interconnection or splicing of optical fiber cables, from 12 up to 48 fibers if MT-RJ or LC double density adapter strips are used. The low-profile design minimizes rack space to only 45 mm (1.75 in.). An optional smoked Plexiglas front cover is also available.

The FiberExpress 2U Rack Mount Patch Panel offers a high fiber capacity, 96 fibers if using double density MT-RJ or LC adapter strips. The FiberExpress 2U comes equipped with a smoked Plexiglas front cover that protects fiber connections while allowing for quick visual inspection.

| DESCRIPTION                                   | ORDERING NUMBER |
|-----------------------------------------------|-----------------|
| FiberExpress Rack Mount Patch Panel 1U, Gray  | AX100042        |
| FiberExpress Rack Mount Patch Panel 1U, Black | AX100041        |
| FiberExpress Rack Mount Patch Panel 2U, Gray  | AX100069        |
| FiberExpress Rack Mount Patch Panel 2U, Black | AX100068        |

### Rack Mount Patch Panels (3U)



**AX100078** FiberExpress (3U) Rack Mount Patch Panel

### FiberExpress Rack Mount Patch Panel 3U

The **FiberExpress 3U Rack Mount Patch Panel** can accommodate up to 96 optical fiber connections using MT-RJ or LC connectors. The connector panel is mounted on a sliding drawer for easy access to the back side (cable side) of the panel.

The FiberExpress 3U Rack Mount Patch Panel can be used with either optical fiber single-ended patch cords or field-installable connectors. If optical single-ended patch cords are to be used, organizer trays are easily accessible via the removable front access pull-out drawer. (Trays must be ordered separately.)

The FiberExpress 3U Rack Mount Patch Panel is a compact cross-connect assembly for the termination of optical fiber cables. The low-profile design minimizes required rack space 127 mm (5 in.). It is compatible with ST Compatible, SC, 568SC, MT-RJ, LC and FC adapter strips (ordered separately).

| DESCRIPTION                                   | ORDERING NUMBER |
|-----------------------------------------------|-----------------|
| FiberExpress Rack Mount Patch Panel 3U, Gray  | AX100078        |
| FiberExpress Rack Mount Patch Panel 3U, Black | AX100077        |

### Rack Mount Patch Panels (4U)

#### FiberExpress Rack Mount Patch Panel 4U

The **FiberExpress 4U Rack Mount Patch Panel** is an economical solution for the protection of optical fiber terminations and splices, up to 192 optical fibers if using MT-RJ or LC connectors. The connector panel, accepting the Universal Adapter Strips, is located inside the enclosure and swings out (left or right) to give easy access to the cable and splices.

The FiberExpress 4U Rack Mount Patch Panel is a compact Cross-Connect enclosure for the cross-connection, interconnection or splicing of optical fiber cables. The low-profile design minimizes required rack space 178 mm (7 in.). It can be used with with ST Compatible, SC, 568SC, MT-RJ, LC and FC adapter strips (ordered separately).



**AX100115** FiberExpress, 48/96 Port (4U) Rack Mount Patch Panel

| DESCRIPTION                                          | ORDERING NUMBER |
|------------------------------------------------------|-----------------|
| <b>FiberExpress Rack Mount Patch Panel 4U, Gray</b>  | AX100115        |
| <b>FiberExpress Rack Mount Patch Panel 4U, Black</b> | AX100116        |

### Wall Mount Fiber Patch Panels

#### FiberExpress Wall Mount Patch Panel

The **FiberExpress Wall Mount Patch Panel Series** is an economical solution for the protection of optical fiber terminations and splices in hostile environments.

Using the FiberExpress Universal Adapter Strips (ordered separately), the Wall Mount Patch Panels allow for flexible and customized patch panel design. They are compatible with most industry standard connections: ST Compatible, SC, 568SC, MT-RJ, LC and FC.

Available in gray and black, the FiberExpress Wall Mount Patch Panels have an ergonomic design, rugged construction and compact assemblies to effectively protect your optical fiber terminations and splices.



**AX100495** Small Wall Mount



**AX100541** Medium Wall Mount



**AX100543** Large Wall Mount

| DESCRIPTION                         | ORDERING NUMBER | ORDERING NUMBER | ORDERING NUMBER |
|-------------------------------------|-----------------|-----------------|-----------------|
| FIBEREXPRESS WALL MOUNT PATCH PANEL | SMALL           | MEDIUM          | LARGE           |
| <b>Gray</b>                         | AX100496        | AX100541        | AX100543        |
| <b>Black</b>                        | AX100495        | AX100540        | AX100542        |

# Fiber Media

FiberExpress Patch Panels



## Universal Optical Fiber Adapter Strips



**AX101729** Adapters loaded with 6 LC Duplex

### Optical Fiber Adapter Strips

**Universal Optical Fiber Adapter Strips** are pre-loaded with six (single density) or 12 (double density) adapter sleeves. Two types of adapter sleeves are available; Phosphor Bronze and Zirconia Ceramic. Adapter sleeves are used as the connecting interface between two optical fiber connectors. A Blank adapter strip is also available and can be used with any FiberExpress Patch Panel to fill in unused adapter strip openings.



**AX100094** Adapters loaded with 3 SC Duplex



**AX100066** Blank Strip

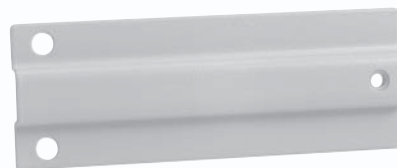
| DESCRIPTION                                                              | ORDERING NUMBER            | ORDERING NUMBER              |
|--------------------------------------------------------------------------|----------------------------|------------------------------|
| OPTICAL FIBER ADAPTER STRIPS, BLACK                                      | PHOSPHOR BRONZE, MULTIMODE | ZIRCONIA CERAMIC, SINGLEMODE |
| Single density, loaded with 6 ST Compatible Adapters                     | AX100088                   | AX100534                     |
| Double density, loaded with 12 ST Compatible Adapters                    | AX100080                   | AX100528                     |
| Single density, loaded with 3 SC Duplex Adapters                         | AX100094                   | AX101407                     |
| Single density, loaded with 6 SC Simplex Adapters                        | AX100092                   | AX100538                     |
| Double density, loaded with 6 SC Duplex Adapters                         | AX100098                   | AX101409                     |
| Double density, loaded with 12 SC Simplex Adapters                       | AX100084                   | AX100532                     |
| Single density, loaded with 6 FC Adapters                                | AX100090                   | AX100536                     |
| Double density, loaded with 12 FC Adapters                               | AX100082                   | AX100530                     |
| Single Density, loaded with 6 LC Duplex Adapters                         | AX101729                   | AX101731                     |
| Double density, loaded with 12 LC Duplex Adapters                        | AX101741                   | AX101743                     |
| DESCRIPTION                                                              | ORDERING NUMBER            |                              |
| MT-RJ, Single density, loaded with 6 MT-RJ, Black, Multimode/Singlemode  | AX101115                   |                              |
| MT-RJ, Double density, loaded with 12 MT-RJ, Black, Multimode/Singlemode | AX101117                   |                              |
| Blank Strip, Black                                                       | AX100066                   |                              |

## FiberExpress Rack Mount Patch Panels 1U & 2U Accessories

The accessories provide additional panel mounting flexibility for racks, cabinets and cable entry.



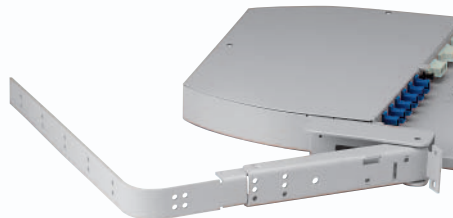
**AX100045** Front Cover for 1U



**AX101802** 23 in. Rack Universal Extension Bracket for 1U and 2U



**AX101800** 127 mm (5 in.) Universal Offset Bracket Kit, for 19 in. and 23 in. Racks 1U

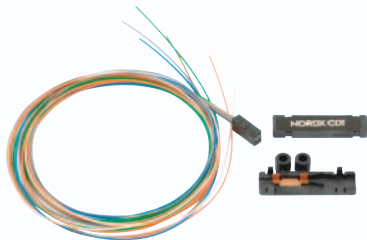


**AX100047** Right Side Cable Entry Bracket for 1U

| DESCRIPTION                                                                          | ORDERING NUMBER |
|--------------------------------------------------------------------------------------|-----------------|
| FIBEREXPRESS RACK MOUNT PATCH PANELS 1U AND 2U ACCESSORIES                           |                 |
| 127 mm (5 in.) Universal Offset Bracket Kit, for 19 in. and 23 in. racks (1U), Black | AX101799        |
| 127 mm (5 in.) Universal Offset Bracket Kit, for 19 in. and 23 in. racks (1U), Gray  | AX101800        |
| 127 mm (5 in.) Universal Offset Bracket Kit, for 19 in. and 23 in. racks (2U), Black | AX101797        |
| 127 mm (5 in.) Universal Offset Bracket Kit, for 19 in. and 23 in. racks (2U), Gray  | AX101798        |
| 23 in. Universal extension bracket, Black                                            | AX101801        |
| 23 in. Universal extension bracket, Gray                                             | AX101802        |
| Right side cable entry bracket (1U), Black                                           | AX100046        |
| Right side cable entry bracket (1U), Gray                                            | AX100047        |
| Right side cable entry bracket (2U), Black                                           | AX100073        |
| Right side cable entry bracket (2U), Gray                                            | AX100074        |
| Front Cover (1U), Smoked Plexiglass                                                  | AX100045        |



## Optical Fiber Splice Trays and Field Breakout Kits



**AX101100** Field Breakout Kit

### Optical Fiber Field Breakout Kit

The **Field Breakout Kit** is designed to attach to one tube of a loose-tube cable. Each kit has either six or twelve 900  $\mu$ m tubes that hold each of the coated fibers. For each end of the cable, one kit is needed for every tube. For example, a 12-fiber 62.5  $\mu$ m cable contains two 6-fiber tubes. This cable would require four kits, two for each end.

### Optical Fiber Splice Organizer Kits

**Optical Fiber Splice Organizer Kits** provide the accessories necessary for installing the FiberExpress Fiber Patch Panels, as well as other fiber terminals that accommodate the standard Optical Fiber Organizer Tray.



**A0649869** Optical Fiber Splice Organizer Kits and Trays

| DESCRIPTION                                                                  | ORDERING NUMBER |
|------------------------------------------------------------------------------|-----------------|
| Optical Fiber Field Breakout Kit, 6 fibers, 1/pack                           | AX101100        |
| Optical Fiber Field Breakout Kit, 12 fibers, 1/pack                          | AX101101        |
| Optical Fiber Splice Organizer Kit, Splice kit, tray, 203 mm (8 in.)         | A0649869        |
| Optical Fiber Splice Organizer Kit, Splice kit, tray, 305 mm (12 in.)        | A0318904        |
| Optical Fiber Splice Tray, Fusion, 203 mm (8 in.)                            | A0335015        |
| Optical Fiber Splice Tray, Fusion, 305 mm (12 in.)                           | A0316446        |
| Optical Fiber Splice Tray, Universal (mechanical or fusion), 203 mm (8 in.)  | AX100079        |
| Optical Fiber Splice Tray, Universal (mechanical or fusion), 305 mm (12 in.) | A0394328        |
| Optical Fiber Splice Tray, Tray cover, 203 mm (8 in.)                        | A0394331        |
| Optical Fiber Splice Tray, Tray cover, 305 mm (12 in.)                       | A0394330        |

### MediaFlex Plates

## MediaFlex Plate

**MediaFlex Plates** are one part of the comprehensive line of plates and inserts that snap together to create a full line of modular workstation outlets.

MediaFlex Plates can be mounted over standard NEMA type outlet boxes and rings to provide support for a variety of MediaFlex Adapters and Inserts. The fully modular construction combined with the front access design provides extensive configuration flexibility for current and future network needs. MediaFlex Plates are available in Single gang and Double gang configurations.

The Double gang faceplate comes with a stand-off ring included in the package. This ring allows for easy mounting with virtually any industry electrical box or mud/adaptor rings, therefore providing added installation flexibility.

Each plate has the capacity of up to 6 ports per Single gang and 12 ports per Double gang.



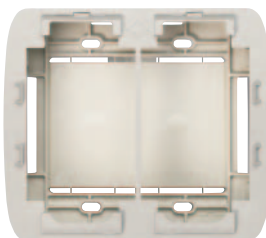
**AX101748** MediaFlex Plate, Single Gang



**AX101869** MediaFlex Plate, Double Gang

| DESCRIPTION        | ORDERING NUMBER | ORDERING NUMBER |
|--------------------|-----------------|-----------------|
| MEDIAFLEX PLATE    | SINGLE GANG     | DOUBLE GANG     |
| <b>Gray</b>        | AX101745        | AX101869        |
| <b>Almond</b>      | AX101746        | AX101870        |
| <b>Elec. White</b> | AX101747        | AX101871        |
| <b>Black</b>       | AX101748        | AX101872        |

### MediaFlex Adapter Boxes



**AX101874** MediaFlex Adapter Box, Double Gang

## MediaFlex Surface Adapter Box

**MediaFlex Surface Adapter Boxes** are one part of the comprehensive line of plates and inserts that snap together to create a full line of modular workstation outlets.

MediaFlex Surface Adapter Boxes can be mounted over standard NEMA type outlet boxes and rings to provide support for the MediaFlex plates. The MediaFlex Surface Adapter Boxes are available as a Double gang configuration. The double gang box allows more room for cable management and bend radius control.

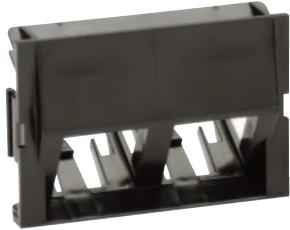
| DESCRIPTION                                            | ORDERING NUMBER |
|--------------------------------------------------------|-----------------|
| <b>MediaFlex Adapter Box, Double-Gang, Gray</b>        | AX101873        |
| <b>MediaFlex Adapter Box, Double-Gang, Almond</b>      | AX101874        |
| <b>MediaFlex Adapter Box, Double-Gang, Elec. White</b> | AX101875        |
| <b>MediaFlex Adapter Box, Double-Gang, Black</b>       | AX101876        |

# Fiber Media

## Workstation Outlets



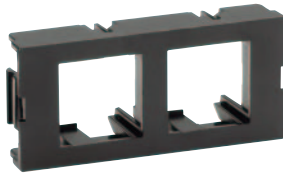
### MediaFlex Inserts



**AX101756** MediaFlex MDVO (style) Insert,  
2-port, Angled

### MediaFlex Insert

**MediaFlex MDVO-style Inserts** are available in a 2-port configuration in both Flush and Angled versions. They are compatible with all GigaFlex and MDVO Modules (EZ-MDVO and Multimedia). The inserts are two units high for the flush version and three units high for the angled version. Therefore three flush inserts or two angled inserts are required to fully populate a Single gang MediaFlex Plate.



**AX101752** MediaFlex MDVO (style) Insert,  
2-port, Flush

| DESCRIPTION                          | ORDERING NUMBER | ORDERING NUMBER |
|--------------------------------------|-----------------|-----------------|
| MEDIAFLEX MDVO (STYLE) INSERT        | FLUSH           | ANGLED          |
| 2-port, Gray, bag of 10 units        | AX101749        | AX101753        |
| 2-port, Almond, bag of 10 units      | AX101750        | AX101754        |
| 2-port, Elec. White, bag of 10 units | AX101751        | AX101755        |
| 2-port, Black, bag of 10 units       | AX101752        | AX101756        |



**AX101937** MediaFlex Duplex SC Insert,  
Angled

### MediaFlex Multimedia Insert

**MediaFlex Multimedia Inserts** provide optimum flexibility in configuring multimedia workstation outlets that respond to any present or future network needs. MediaFlex Multimedia Inserts along with other MediaFlex Inserts allow for easy configuration of outlets. All inserts are front loaded and easily snapped in and out of the MediaFlex Plates for easy installation and maintenance.

MediaFlex Multimedia Inserts are available in Angled versions only in order to allow for proper management of cable bend radius. The inserts are three units high, therefore two inserts are required to fully populate a Single gang faceplate and four inserts will fully populate a Double gang faceplate.

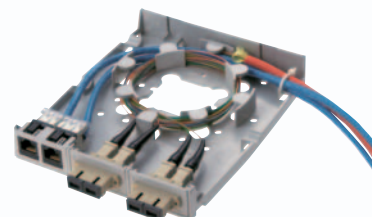
| DESCRIPTION                  | ORDERING NUMBER |
|------------------------------|-----------------|
| Duplex SC Singlemode, Gray   | AX101935        |
| Duplex SC Singlemode, Almond | AX101936        |
| Duplex SC Singlemode, White  | AX101937        |
| Duplex SC Singlemode, Black  | AX101938        |
| Duplex SC Multimode, Gray    | AX101939        |
| Duplex SC Multimode, Almond  | AX101940        |
| Duplex SC Multimode, White   | AX101941        |
| Duplex SC Multimode, Black   | AX101942        |

### MDVO Multimedia Outlet Boxes

## MDVO Multimedia Outlet Box

The **MDVO Multimedia Outlet Box** brings unique versatility for multimedia work area installations. The box design provides cable management and helps maintain cable bend radius. The outlet box's low profile design and side-entry offers better protection for patch cords. The outlet box can accept up to six EZ-MDVO, GigaFlex or MDVO Multimedia Modules or three SC Duplex adapters.

The MDVO Multimedia Outlet Box can be mounted directly on the wall or attached to standard electrical boxes. Included with the MDVO Multimedia box are three SC Duplex Mounting bezels and three MDVO Adapters.



**A0643205** MDVO Multimedia Outlet Box, shown here as terminated

| DESCRIPTION                                | ORDERING NUMBER |
|--------------------------------------------|-----------------|
| MDVO Multimedia Outlet Box, 6-port, Gray   | A0643205        |
| MDVO Multimedia Outlet Box, 6-port, Almond | A0643206        |
| MDVO Multimedia Outlet Box, 6-port, White  | A0643207        |
| MDVO Multimedia Outlet Box, 6-port, Black  | A0643208        |

# Fiber Media

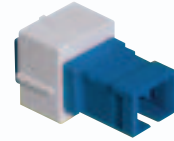
## Workstation Outlets



### MDVO Multimedia Modules

#### MDVO Multimedia Module

**MDVO Multimedia Modules** address audio/video and fiber applications. Fiber modules are available for LC Duplex, SC Simplex, ST Compatible multimode and MT-RJ multimode & singlemode connections. The SC Duplex Adapter is a fiber adapter sleeve with flanges that mounts into the SC Duplex mounting bezel (included in the MDVO Multimedia Outlet box). Audio/video modules are available for SVHS, RCA, BNC and Video F connections.



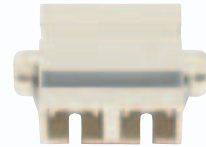
**A0407005** MDVO SC Fiber Module



**AX101467** MDVO MT-RJ Fiber Module



**A0407010** MDVO ST Compatible Fiber Module



**A0649254** SC Duplex Adapter

| DESCRIPTION                         | ORDERING NUMBER | ORDERING NUMBER | ORDERING NUMBER | ORDERING NUMBER |
|-------------------------------------|-----------------|-----------------|-----------------|-----------------|
| MDVO MULTIMEDIA MODULE              | GRAY            | ALMOND          | WHITE           | BLACK           |
| <b>LC Duplex Multimode</b>          | AX102209        | AX102210        | AX102211        | AX102212        |
| <b>LC Duplex Singlemode</b>         | AX102213        | AX102214        | AX102215        | AX102216        |
| <b>SC simplex, Multimode</b>        | A0407003        | A0407004        | A0407005        | A0407006        |
| <b>SC Duplex Adapter, Multimode</b> |                 | A0649254        |                 |                 |
| <b>ST Compatible, Multimode</b>     | A0407007        | A0407008        | A0407009        | A0407010        |
| <b>MT-RJ, Multimode, Almond</b>     |                 |                 |                 | AX101467        |
| <b>MT-RJ, Singlemode, Blue</b>      |                 |                 |                 | AX101466        |

Custom multimedia connectors are also available, please contact Customer Service for more details.

### Multi-User Outlet Boxes

#### Multi-User Outlet Box



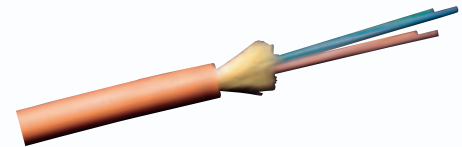
**AX100222** Multi-User Outlet Box.  
shown here with modules

**The Multi-User Outlet Box** is a versatile box that can be used in many different applications. The outlet box can accommodate up to 24 connections of any type, UTP, fiber or coax. The outlet box is ideal for use as a multi-user telecommunications assembly, or simply as a high-density multimedia telecommunications outlet. The Multi-User Outlet Box can also be used as a wall mounted patch panel in confined areas, such as shallow rooms and cabinets.

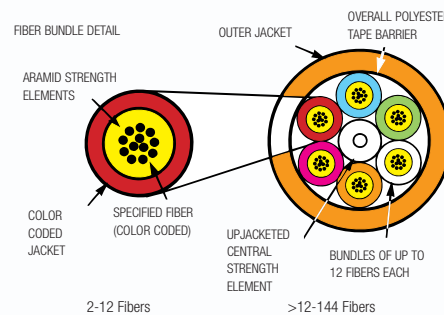
| DESCRIPTION                                   | ORDERING NUMBER |
|-----------------------------------------------|-----------------|
| <b>Multi-User Outlet Box, 24-port, Gray</b>   | AX100219        |
| <b>Multi-User Outlet Box, 24-port, Almond</b> | AX100220        |
| <b>Multi-User Outlet Box, 24-port, White</b>  | AX100221        |
| <b>Multi-User Outlet Box, 24-port, Black</b>  | AX100222        |

## Distribution Series

**FiberExpress Optical Fiber Distribution Cables** are designed for low to high fiber count in-building installations. They offer a high degree of flexibility for backbone and horizontal applications. These cables are made with 900  $\mu\text{m}$  tight buffered fiber and are available in Multimode 62.5  $\mu\text{m}$  and 50  $\mu\text{m}$ , Singlemode Enhanced or a combination of two types of fiber (composite) if required. All Distribution Cables are riser OFNR/FT4, plenum OFNP/FT6 or LSZH rated.



**M9B043** Distribution (plenum)



### Features & Benefits

- Available in sizes from 2 to 144 fibers
- 900  $\mu\text{m}$  tight-buffered fiber allows for use of field-installable connectors
- Riser (OFNR/FT4) or plenum (OFNP/FT6) listed
- Flexible thermoplastic jacket provides excellent handling characteristics
- Fibers & cable sub-units are color coded for easy identification
- Length markings in meters for easy determination of cable length
- Full dielectric construction, no grounding required
- For riser offering, MSHA approved cables are available.

### Applications

- Low to high fiber count requirements
- In-building backbone
- Fiber-to-the-desk applications
- Computer room.

### Cable Color Code

The Belden CDT Distribution Series jacket color codes standard is orange for Multimode FX300 and FX600 cables and aqua for FX2000 cables. The Distribution LSZH Series outer jacket color codes standard is green for Multimode FX300 cables, orange for FX600 cables and aqua for FX2000 cables. All Singlemode Enhanced cables have a yellow jacket. Fiber sub-units are color coded as per ANSI/TIA/EIA-568-B specifications. The standard color code allows for easy identification of fibers as follows: Blue, Orange, Green, Brown, Slate, White, Red, Black, Yellow, Violet, Rose or Aqua.

### Product Specifications

|                                  |                                  |
|----------------------------------|----------------------------------|
| Crush Resistance (EIA-455-41)    | 2000 N/cm                        |
| Impact Resistance (EIA-455-25)   | 2000 Impacts                     |
|                                  | w/1.6 N-m                        |
| Flexure (EIA-455-104)            | 2000 cycles min.                 |
| <b>Minimum Bend Radius</b>       |                                  |
| Installation (Short Term) - Load | 15x cable diameter               |
| Long Term - No Load              | 10x cable diameter               |
| <b>Riser</b>                     | UL/cUL rated Type OFNR / OFN FT4 |
|                                  | Flame Resistance UL 1666         |
| <b>Plenum</b>                    | UL/cUL rated Type OFNP / OFN FT6 |
|                                  | Flame Resistance NFPA 262        |
| <b>LSZH</b>                      | UL/cUL rated Type OFNR / OFN FT4 |
|                                  | Flame Resistance UL 1666         |
| Buffer Diameter                  | 900 $\mu\text{m}$                |
| Strength Member                  | Aramid Yarn                      |
| Central Strength Member          | Upjacketed                       |
| <b>Jacket Material</b>           |                                  |
| Riser                            | PVC                              |
| Plenum (non-unitized)            | PVC                              |
| Plenum (unitized)                | PVDF                             |
| Low Smoke Zero Halogen           | LSZH                             |
| <b>Buffer Material</b>           |                                  |
| Riser                            | PVC                              |
| Plenum                           | PVC                              |
| Low Smoke Zero Halogen           | LSZH                             |
| Color coding (Jacket and Fibers) | TIA/EIA 568-B.3, TIA/EIA 598-B   |
| <b>Temperature Range</b>         |                                  |
| Storage                          | -40 to +80°C                     |
| Operating                        | -20 to +70°C                     |

# Fiber Media

FiberExpress Cables



## Distribution Series (continued)

### Optical Specification - Riser, Plenum and LSZH Series

| FIBER TYPE                      | ATTENUATION (MAX.)<br>dB/km |         |         | OFL BANDWIDTH (MIN.)<br>MHz-km |         | RML BANDWIDTH (MIN.)<br>MHz-km |
|---------------------------------|-----------------------------|---------|---------|--------------------------------|---------|--------------------------------|
|                                 | 850 nm                      | 1300 nm | 1550 nm | 850 nm                         | 1300 nm | 850 nm                         |
| FiberExpress 300 (62.5 $\mu$ m) | 3.5                         | 1.25    | -----   | 200                            | 500     | 220                            |
| FiberExpress 600 (50 $\mu$ m)   | 3.5                         | 1.25    | -----   | 500                            | 500     | 510                            |
| FiberExpress 2000 (50 $\mu$ m)  | 3.5                         | 1.25    | -----   | 1500                           | 500     | 2000**                         |
| Singlemode Enhanced             | -----                       | 0.8*    | 0.5     | -----                          | -----   | -----                          |

OFL: Overfill launch

\* Wavelength: 1310 nm

RML: Restricted mode launch

\*\* EMB: Effective Modal Bandwidth

| FIBER TYPE                      | GIGABIT ETHERNET REACH (METERS)<br>IEEE 802.3Z |             | 10 GIGABIT ETHERNET<br>REACH (METERS) | 10 GIGABIT ETHERNET<br>REACH (METERS) |
|---------------------------------|------------------------------------------------|-------------|---------------------------------------|---------------------------------------|
|                                 | 1000BASE SX                                    | 1000BASE LX | 10GBASE-S                             | 10GBASE-L                             |
| FiberExpress 300 (62.5 $\mu$ m) | 300                                            | 550         | 33                                    | -----                                 |
| FiberExpress 600 (50 $\mu$ m)   | 600                                            | 600         | 82                                    | -----                                 |
| FiberExpress 2000 (50 $\mu$ m)  | 2000                                           | 600         | 300                                   | -----                                 |
| Singlemode Enhanced             | -----                                          | 5000        | -----                                 | 10000                                 |

Note 1: Mode launch conditioning patch cord is not required

Note 2: For proper design, please refer to the Belden IBDN Optical Fiber Design Guide

Note 3: Singlemode Enhanced is a low Water Peak Singlemode for CWDM applications and complies with ITU G.562.c/d

## Distribution Series (continued)

### Mechanical Characteristics

#### Distribution Riser Series

| FIBER COUNT | NUMBER OF SUB-UNITS | OUTSIDE DIAMETER     | WEIGHT                 | MINIMUM BEND RADIUS<br>INSTALLATION | LONG TERM         | MAXIMUM LOAD<br>INSTALLATION |
|-------------|---------------------|----------------------|------------------------|-------------------------------------|-------------------|------------------------------|
| 2           | 0                   | 4.67 mm (0.184 in.)  | 19 kg/km (13 lb/kft)   | 7.0 cm (2.8 in.)                    | 4.7 cm (1.8 in.)  | 801 Newton (180 lb)          |
| 4           | 0                   | 5.08 mm (0.200 in.)  | 24 kg/km (16 lb/kft)   | 7.6 cm (3.0 in.)                    | 5.1 cm (2.0 in.)  | 801 Newton (180 lb)          |
| 6           | 0                   | 5.59 mm (0.220 in.)  | 28 kg/km (19 lb/kft)   | 8.4 cm (3.3 in.)                    | 5.6 cm (2.2 in.)  | 1201 Newton (270 lb)         |
| 8           | 0                   | 5.97 mm (0.235 in.)  | 33 kg/km (22 lb/kft)   | 8.9 cm (3.5 in.)                    | 6.1 cm (2.4 in.)  | 1201 Newton (270 lb)         |
| 12          | 0                   | 6.48 mm (0.255 in.)  | 40 kg/km (27 lb/kft)   | 9.6 cm (3.8 in.)                    | 6.6 cm (2.6 in.)  | 1334 Newton (300 lb)         |
| 24          | 4                   | 12.60 mm (0.496 in.) | 124 kg/km (83 lb/kft)  | 18.8 cm (7.4 in.)                   | 12.7 cm (5.0 in.) | 4270 Newton (960 lb)         |
| 36          | 6                   | 16.36 mm (0.644 in.) | 204 kg/km (137 lb/kft) | 24.6 cm (9.7 in.)                   | 16.5 cm (6.4 in.) | 6405 Newton (1440 lb)        |
| 48          | 4                   | 15.93 mm (0.627 in.) | 195 kg/km (131 lb/kft) | 23.9 cm (9.4 in.)                   | 16.0 cm (6.3 in.) | 4203 Newton (945 lb)         |
| 72          | 6                   | 19.10 mm (0.750 in.) | 290 kg/km (195 lb/kft) | 28.6 cm (11.3 in.)                  | 19.1 cm (7.5 in.) | 6005 Newton (1350 lb)        |
| 96          | 8                   | 22.73 mm (0.895 in.) | 432 kg/km (290 lb/kft) | 34.0 cm (13.4 in.)                  | 22.9 cm (9.0 in.) | 8820 Newton (1983 lb)        |
| 144         | 12                  | 24.49 mm (0.964 in.) | 467 kg/km (314 lb/kft) | 36.8 cm (14.5 in.)                  | 24.4 cm (9.6 in.) | 12210 Newton (2745 lb)       |

| DESCRIPTION                                  | ORDERING NUMBER              | ORDERING NUMBER            | ORDERING NUMBER             | ORDERING NUMBER        |
|----------------------------------------------|------------------------------|----------------------------|-----------------------------|------------------------|
| DISTRIBUTION RISER SERIES<br>UL/cUL OFNR FT4 | MULTIMODE,<br>FX300, 62.5 µm | MULTIMODE,<br>FX600, 50 µm | MULTIMODE,<br>FX2000, 50 µm | SINGLEMODE<br>ENHANCED |
| <b>2 fibers</b>                              | M9B037                       | M9A037                     | M9C037                      | M9W037                 |
| <b>4 fibers</b>                              | M9B038                       | M9A038                     | M9C038                      | M9W038                 |
| <b>6 fibers</b>                              | M9B039                       | M9A039                     | M9C039                      | M9W039                 |
| <b>8 fibers</b>                              | M9B040                       | M9A040                     | M9C040                      | M9W040                 |
| <b>12 fibers</b>                             | M9B042                       | M9A042                     | M9C042                      | M9W042                 |
| <b>24 fibers</b>                             | M9B602                       | M9A602                     | M9C602                      | M9W602                 |
| <b>36 fibers</b>                             | M9B604                       | M9A604                     | M9C604                      | M9W604                 |
| <b>48 fibers</b>                             | M9B606                       | M9A606                     | M9C606                      | M9W606                 |
| <b>72 fibers</b>                             | M9B609                       | M9A609                     | M9C609                      | M9W609                 |
| <b>96 fibers</b>                             | M9B622                       | M9A622                     | M9C622                      | M9W622                 |
| <b>144 fibers</b>                            | M9B619                       | M9A619                     | M9C619                      | M9W619                 |

DISTRIBUTION COMPOSITE CABLES,  
RISER SERIES UL/cUL OFNR FT4

|                            |        |
|----------------------------|--------|
| <b>6xSM/12x62.5 FX300</b>  | M96992 |
| <b>12xSM/12x62.5 FX300</b> | M96963 |
| <b>6xSM/12x50 FX600</b>    | M96909 |
| <b>12xSM/12x50 FX600</b>   | M96908 |

All fiber optic products can be supplied in compliance with RoHS regulations. Please contact Customer Service for more details.



### Distribution Series (continued)

## Mechanical Characteristics

### Distribution Plenum Series

| FIBER COUNT | NUMBER OF SUB-UNITS | OUTSIDE DIAMETER     | WEIGHT                 | MINIMUM BEND RADIUS INSTALLATION | LONG TERM          | MAXIMUM LOAD INSTALLATION |
|-------------|---------------------|----------------------|------------------------|----------------------------------|--------------------|---------------------------|
| 2           | 0                   | 4.67 mm (0.184 in.)  | 19 kg/km (13 lb/kft)   | 7.0 cm (2.8 in.)                 | 4.7 cm (1.8 in.)   | 800 Newton (180 lb)       |
| 4           | 0                   | 4.42 mm (0.174 in.)  | 19 kg/km (13 lb/kft)   | 7.0 cm (2.8 in.)                 | 4.7 cm (1.8 in.)   | 867 Newton (195 lb)       |
| 6           | 0                   | 4.83 mm (0.190 in.)  | 22 kg/km (15 lb/kft)   | 7.6 cm (3.0 in.)                 | 5.1 cm (2.0 in.)   | 1201 Newton (270 lb)      |
| 8           | 0                   | 5.64 mm (0.222 in.)  | 28 kg/km (19 lb/kft)   | 8.5 cm (3.3 in.)                 | 5.6 cm (2.2 in.)   | 1201 Newton (270 lb)      |
| 12          | 0                   | 5.72 mm (0.225 in.)  | 33 kg/km (22 lb/kft)   | 8.6 cm (3.4 in.)                 | 5.8 cm (2.3 in.)   | 1334 Newton (300 lb)      |
| 24          | 4                   | 12.52 mm (0.493 in.) | 132 kg/km (89 lb/kft)  | 19.0 cm (7.5 in.)                | 12.6 cm (5.0 in.)  | 5618 Newton (1263 lb)     |
| 36          | 6                   | 15.34 mm (0.604 in.) | 202 kg/km (136 lb/kft) | 23.4 cm (9.2 in.)                | 15.6 cm (6.1 in.)  | 8509 Newton (1913 lb)     |
| 48          | 4                   | 15.62 mm (0.615 in.) | 199 kg/km (134 lb/kft) | 23.4 cm (9.2 in.)                | 15.7 cm (6.2 in.)  | 5538 Newton (1245 lb)     |
| 72          | 6                   | 19.91 mm (0.784 in.) | 323 kg/km (217 lb/kft) | 30.0 cm (11.8 in.)               | 19.8 cm (7.8 in.)  | 9310 Newton (2093 lb)     |
| 96          | 8                   | 24.40 mm (0.961 in.) | 460 kg/km (309 lb/kft) | 36.6 cm (14.4 in.)               | 24.4 cm (9.6 in.)  | 14612 Newton (3285 lb)    |
| 144         | 12                  | 26.34 mm (1.037 in.) | 543 kg/km (365 lb/kft) | 39.6 cm (15.6 in.)               | 26.4 cm (10.4 in.) | 16213 Newton (3645 lb)    |

| DESCRIPTION                                   | ORDERING NUMBER              | ORDERING NUMBER            | ORDERING NUMBER             | ORDERING NUMBER        |
|-----------------------------------------------|------------------------------|----------------------------|-----------------------------|------------------------|
| DISTRIBUTION PLENUM SERIES<br>UL/cUL OFNP FT6 | MULTIMODE,<br>FX300, 62.5 µm | MULTIMODE,<br>FX600, 50 µm | MULTIMODE,<br>FX2000, 50 µm | SINGLEMODE<br>ENHANCED |
| <b>2 fibers</b>                               | M9B043                       | M9A043                     | M9C043                      | M9W043                 |
| <b>4 fibers</b>                               | M9B044                       | M9A044                     | M9C044                      | M9W044                 |
| <b>6 fibers</b>                               | M9B045                       | M9A045                     | M9C045                      | M9W045                 |
| <b>8 fibers</b>                               | M9B046                       | M9A046                     | M9C046                      | M9W046                 |
| <b>12 fibers</b>                              | M9B048                       | M9A048                     | M9C048                      | M9W048                 |
| <b>24 fibers</b>                              | M9B612                       | M9A612                     | M9C612                      | M9W612                 |
| <b>36 fibers</b>                              | M9B614                       | M9A614                     | M9C614                      | M9W614                 |
| <b>48 fibers</b>                              | M9B616                       | M9A616                     | M9C616                      | M9W616                 |
| <b>72 fibers</b>                              | M9B620                       | M9A620                     | M9C620                      | M9W620                 |
| <b>96 fibers</b>                              | M9B623                       | M9A623                     | M9C623                      | M9W623                 |
| <b>144 fibers</b>                             | M9B621                       | M9A621                     | M9C621                      | M9W621                 |

DISTRIBUTION COMPOSITE CABLES,  
PLENUM SERIES UL/cUL OFNP FT6

|                            |        |
|----------------------------|--------|
| <b>6xSM/6x62.5 FX300</b>   | M97174 |
| <b>6xSM/12x62.5 FX300</b>  | M97041 |
| <b>12xSM/12x62.5 FX300</b> | M97219 |
| <b>6xSM/6x50 FX600</b>     | M97412 |
| <b>6xSM/12x50 FX600</b>    | M97411 |
| <b>12xSM/12x50 FX600</b>   | M96780 |

All fiber optic products can be supplied in compliance with RoHS regulations. Please contact Customer Service for more details.

## Distribution Series (continued)

### Mechanical Characteristics

#### Distribution LSZH Series

| FIBER COUNT | NUMBER OF SUBUNITS | MIN. THICKNESS OF JACKET | OUTSIDE DIAMETER    | WEIGHT                 | MINIMUM BEND RADIUS INSTALLATION | MINIMUM BEND RADIUS LONG TERM | MAXIMUM LOAD (INSTALLATION) |
|-------------|--------------------|--------------------------|---------------------|------------------------|----------------------------------|-------------------------------|-----------------------------|
| 2           | 0                  | 0.8 mm (0.032 in.)       | 4.9 mm (0.193 in.)  | 24 kg/km (16 lb/kft)   | 7.4 cm (2.9 in.)                 | 4.9 cm (1.9 in.)              | 800 Newton (180 lb)         |
| 4           | 0                  | 0.8 mm (0.032 in.)       | 5.3 mm (0.209 in.)  | 28 kg/km (19 lb/kft)   | 8.0 cm (3.1 in.)                 | 5.3 cm (2.1 in.)              | 800 Newton (180 lb)         |
| 6           | 0                  | 0.8 mm (0.032 in.)       | 5.8 mm (0.228 in.)  | 33 kg/km (22 lb/kft)   | 8.7 cm (3.4 in.)                 | 5.8 cm (2.2 in.)              | 1200 Newton (270 lb)        |
| 8           | 0                  | 0.8 mm (0.032 in.)       | 6.4 mm (0.252 in.)  | 38 kg/km (26 lb/kft)   | 9.6 cm (3.8 in.)                 | 6.4 cm (2.5 in.)              | 1200 Newton (270 lb)        |
| 12          | 0                  | 0.8 mm (0.032 in.)       | 6.9 mm (0.272 in.)  | 44 kg/km (30 lb/kft)   | 10.4 cm (4.1 in.)                | 6.9 cm (2.7 in.)              | 1200 Newton (270 lb)        |
| 16          | 0                  | 0.9 mm (0.035 in.)       | 8.8 mm (0.347 in.)  | 63 kg/km (43 lb/kft)   | 13.2 cm (5.2 in.)                | 8.8 cm (3.5 in.)              | 1400 Newton (315 lb)        |
| 24          | 0                  | 0.9 mm (0.035 in.)       | 9.8 mm (0.386 in.)  | 79 kg/km (54 lb/kft)   | 14.7 cm (5.8 in.)                | 9.8 cm (3.9 in.)              | 2000 Newton (450 lb)        |
| 36          | 6                  | 1.2 mm (0.047 in.)       | 20.0 mm (0.798 in.) | 313 kg/km (214 lb/kft) | 30.0 cm (11.8 in.)               | 20.0 cm (8.0 in.)             | 7200 Newton (1619 lb)       |
| 48          | 6                  | 1.2 mm (0.047 in.)       | 21.2 mm (0.835 in.) | 347 kg/km (237 lb/kft) | 31.8 cm (12.5 in.)               | 21.2 cm (8.4 in.)             | 7200 Newton (1619 lb)       |
| 72          | 6                  | 1.2 mm (0.047 in.)       | 22.4 mm (0.883 in.) | 395 kg/km (270 lb/kft) | 33.6 cm (13.2 in.)               | 22.4 cm (8.8 in.)             | 7200 Newton (1619 lb)       |
| 96          | 8                  | 1.2 mm (0.047 in.)       | 24.7 mm (0.973 in.) | 532 kg/km (364 lb/kft) | 37.1 cm (14.6 in.)               | 24.7 cm (9.7 in.)             | 7200 Newton (1619 lb)       |
| 144         | 12                 | 1.2 mm (0.047 in.)       | 27.6 mm (1.087 in.) | 561 kg/km (384 lb/kft) | 41.4 cm (16.3 in.)               | 27.6 cm (10.9 in.)            | 7200 Newton (1619 lb)       |

| DESCRIPTION              | ORDERING NUMBER           | ORDERING NUMBER         | ORDERING NUMBER          | ORDERING NUMBER     |
|--------------------------|---------------------------|-------------------------|--------------------------|---------------------|
| DISTRIBUTION LSZH SERIES | MULTIMODE, FX300, 62.5 µm | MULTIMODE, FX600, 50 µm | MULTIMODE, FX2000, 50 µm | SINGLEMODE ENHANCED |
| <b>2 fibers</b>          | M9B100                    | M9A100                  | M9C100                   | M9W100              |
| <b>4 fibers</b>          | M9B101                    | M9A101                  | M9C101                   | M9W101              |
| <b>6 fibers</b>          | M9B102                    | M9A102                  | M9C102                   | M9W102              |
| <b>8 fibers</b>          | M9B103                    | M9A103                  | M9C103                   | M9W103              |
| <b>12 fibers</b>         | M9B104                    | M9A104                  | M9C104                   | M9W104              |
| <b>16 fibers</b>         | M9B105                    | M9A105                  | M9C105                   | M9W105              |
| <b>24 fibers</b>         | M9B107                    | M9A107                  | M9C107                   | M9W107              |
| <b>36 fibers</b>         | M9B111                    | M9A111                  | M9C111                   | M9W111              |
| <b>48 fibers</b>         | M9B112                    | M9A112                  | M9C112                   | M9W112              |
| <b>72 fibers</b>         | M9B114                    | M9A114                  | M9C114                   | M9W114              |
| <b>96 fibers</b>         | M9B116                    | M9A116                  | M9C116                   | M9W116              |
| <b>144 fibers</b>        | M9B120                    | M9A120                  | M9C120                   | M9W120              |

Construction for LSZH cables differs from the drawing. Alternative fiber counts are available.

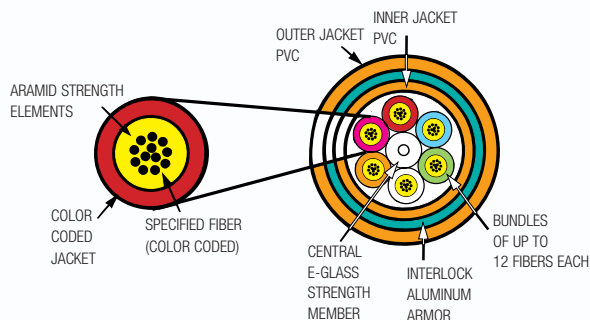
All fiber optic products can be supplied in compliance with RoHS regulations. Please contact Customer Service for more details.

### Industrial Armored

## Industrial Armored (Interlock)

**FiberExpress Interlock Armor Optical Fiber Cables** have a rugged construction that affords superior protection in adverse environments yet can also be installed in general purpose, riser and plenum environments. The armoring is available in aluminum or steel in Riser (OFCR) or plenum (OFCP) listings. Belden CDT Interlock Armor Optical Fiber Cables offer protection from crushing, cutting and rodents. Interlock Armor Cables are also a lower cost alternative to traditional installations utilizing plenum innerduct for protection. The cables can be installed in environments such as Industrial, Mining Operations, Backbone Installations, Inter and Intra Building Installations. Belden CDT offers these cables in 62.5 and 50  $\mu$ m Multimode fiber, Singlemode Enhanced fiber and hybrid compositions in loose tube or tight buffer constructions.

Fiber Bundle Detail



M9B231 Industrial Armored

### Features & Benefits

- Excellent mechanical protection
- Heavy duty construction
- Eliminates need for innerduct
- Also available for outside plant
- Interlock Steel Armor.

### Applications

- Industrial environments
- Rugged installations
- Manufacturing plants
- Mining Shafts
- Telecommunications and data trunk.

### Cable Color Code

#### Jacket

- Singlemode: Yellow
- 62.5/125  $\mu$ m: Orange
- 50/125  $\mu$ m 1 Gbe: Orange
- 50/125  $\mu$ m 10 Gbe: Orange

### Product Specifications

|                                  |                                  |
|----------------------------------|----------------------------------|
| Crush Resistance (EIA-455-41)    | 2000 N/cm                        |
| Impact Resistance (EIA-455-25)   | 2000 Impacts                     |
|                                  | w/3 N-m                          |
| <b>Minimum Bend Radius</b>       |                                  |
| Installation (Short Term) - Load | 20x cable diameter               |
| Long Term - No Load              | 15x cable diameter               |
| <b>Riser</b>                     | UL/cUL rated Type OFCR / OFC FT4 |
|                                  | Flame Resistance UL 1666         |
| <b>Plenum</b>                    | UL/cUL rated Type OFCP / OFC FT6 |
|                                  | Flame Resistance NFPA 262        |
| Buffer Diameter                  | 900 $\mu$ m                      |
| Strength Member                  | Aramid Yarn                      |
| Central Strength Member          | E-Glass                          |
| <b>Jacket Material</b>           |                                  |
| Riser                            | PVC                              |
| Plenum (non-unitized)            | PVC                              |
| Plenum (unitized)                | PVDF                             |
| <b>Buffer Material</b>           |                                  |
| Riser                            | PVC                              |
| Plenum                           | PVC                              |
| Color coding (Jacket and Fibers) | TIA/EIA 568-B.3, TIA/EIA 598-B   |
| <b>Temperature Range</b>         |                                  |
| Storage                          | -40 to +70°C                     |
| Operating                        | -20 to +70°C                     |

### Optical Specifications

| FIBER TYPE                 | ATTENUATION (MAX.)<br>dB/km |         |         | OFL BANDWIDTH (MIN.)<br>MHz-km |         | RML BANDWIDTH (MIN.)<br>MHz-km |         |
|----------------------------|-----------------------------|---------|---------|--------------------------------|---------|--------------------------------|---------|
|                            | 850 nm                      | 1300 nm | 1550 nm | 850 nm                         | 1300 nm | 850 nm                         | 1300 nm |
| FiberExpress 300 (62.5 μm) | 3.50                        | 1.25    | -----   | 200                            | 500     | 220                            | 500     |
| FiberExpress 600 (50 μm)   | 3.50                        | 1.25    | -----   | 500                            | 500     | 510                            | 500     |
| FiberExpress 2000 (50 μm)  | 3.50                        | 1.25    | -----   | 1500                           | 500     | 2000**                         | 500     |
| Singlemode Enhanced        | -----                       | 0.80*   | 0.50    | -----                          | -----   | -----                          | -----   |

OFL: Overfill launch

RML: Restricted mode launch

\* Wavelength: 1310 nm

\*\* EMB: Effective Modal Bandwidth

| FIBER TYPE                 | GIGABIT ETHERNET REACH (METERS)<br>IEEE 802.3Z |             | 10 GIGABIT ETHERNET<br>REACH (METERS) | 10 GIGABIT ETHERNET<br>REACH (METERS) |
|----------------------------|------------------------------------------------|-------------|---------------------------------------|---------------------------------------|
|                            | 1000BASE SX                                    | 1000BASE LX | 10GBASE-S                             | 10GBASE-L                             |
| FiberExpress 300 (62.5 μm) | 300                                            | 550         | 33                                    | 300                                   |
| FiberExpress 600 (50 μm)   | 600                                            | 600         | 82                                    | 300                                   |
| FiberExpress 2000 (50 μm)  | 2000                                           | 600         | 300                                   | 300                                   |
| Singlemode Enhanced        | -----                                          | 5000        | -----                                 | 10000                                 |

Note: Mode launch conditioning patch cord is not required. For proper design, please refer to the Belden IBDN Optical Fiber Design Guide. Singlemode Enhanced is a low Water Peak Singlemode for CWDM applications and complies with ITU G.652.c/d. Links longer than 550 m (as per standard) for the same link power budget are considered engineered links. To achieve a distance of 2000 m, please contact Belden IBDN Technical Support.



### Industrial Armored (continued)

#### Mechanical Characteristics

| FIBER COUNT   | OUTSIDE DIAMETER     | WEIGHT                  | MINIMUM BEND RADIUS<br>SHORT TERM | LONG TERM          | MAXIMUM LOAD<br>INSTALLATION |
|---------------|----------------------|-------------------------|-----------------------------------|--------------------|------------------------------|
| <b>RISER</b>  |                      |                         |                                   |                    |                              |
| 6             | 14.48 mm (0.570 in.) | 189 kg/km (127 lb/kft)  | 30.8 cm (11.4 in.)                | 21.7 cm (8.6 in.)  | 1201 Newton (270 lb)         |
| 12            | 15.74 mm (0.620 in.) | 221 kg/km (149 lb/kft)  | 31.5 cm (12.4 in.)                | 23.6 cm (9.3 in.)  | 1334 Newton (300 lb)         |
| 24            | 17.02 mm (0.670 in.) | 299 kg/km (201 lb/kft)  | 34.0 cm (13.4 in.)                | 25.5 cm (10.0 in.) | 1733 Newton (390 lb)         |
| 24 (unitized) | 21.46 mm (0.845 in.) | 391 kg/km (263 lb/kft)  | 42.9 cm (16.9 in.)                | 32.2 cm (12.7 in.) | 2700 Newton (600 lb)         |
| 36            | 24.64 mm (0.970 in.) | 548 kg/km (368 lb/kft)  | 49.3 cm (19.4 in.)                | 37.0 cm (14.6 in.) | 2700 Newton (600 lb)         |
| 48            | 24.64 mm (0.970 in.) | 548 kg/km (368 lb/kft)  | 49.3 cm (19.4 in.)                | 37.0 cm (14.6 in.) | 2700 Newton (600 lb)         |
| 72            | 27.82 mm (1.095 in.) | 716 kg/km (481 lb/kft)  | 55.6 cm (21.9 in.)                | 41.7 cm (16.4 in.) | 2700 Newton (600 lb)         |
| 96            | 31.62 mm (1.245 in.) | 930 kg/km (625 lb/kft)  | 63.2 cm (24.9 in.)                | 47.4 cm (18.7 in.) | 2700 Newton (600 lb)         |
| 144           | 33.55 mm (1.320 in.) | 1005 kg/km (675 lb/kft) | 67.1 cm (26.4 in.)                | 50.3 cm (19.8 in.) | 2700 Newton (600 lb)         |

|               |                      |                         |                    |                    |                      |
|---------------|----------------------|-------------------------|--------------------|--------------------|----------------------|
| <b>PLENUM</b> |                      |                         |                    |                    |                      |
| 6             | 11.96 mm (0.471 in.) | 129 kg/km (87 lb/kft)   | 23.9 cm (9.4 in.)  | 17.9 cm (7.1 in.)  | 1201 Newton (270 lb) |
| 12            | 12.85 mm (0.506 in.) | 153 kg/km (103 lb/kft)  | 25.7 cm (10.1 in.) | 19.3 cm (7.6 in.)  | 1334 Newton (300 lb) |
| 24            | 16.03 mm (0.631 in.) | 226 kg/km (152 lb/kft)  | 32.1 cm (12.6 in.) | 24.1 cm (9.5 in.)  | 1735 Newton (390 lb) |
| 24 (unitized) | 19.84 mm (0.781 in.) | 430 kg/km (289 lb/kft)  | 39.7 cm (15.6 in.) | 29.8 cm (11.7 in.) | 2700 Newton (600 lb) |
| 36            | 22.38 mm (0.881 in.) | 460 kg/km (309 lb/kft)  | 44.8 cm (17.6 in.) | 33.6 cm (13.2 in.) | 2700 Newton (600 lb) |
| 48            | 23.01 mm (0.906 in.) | 476 kg/km (320 lb/kft)  | 46.0 cm (18.1 in.) | 34.5 cm (13.6 in.) | 2700 Newton (600 lb) |
| 72            | 26.82 mm (1.056 in.) | 671 kg/km (451 lb/kft)  | 53.6 cm (21.1 in.) | 40.2 cm (15.8 in.) | 2700 Newton (600 lb) |
| 96            | 31.90 mm (1.256 in.) | 905 kg/km (608 lb/kft)  | 63.8 cm (25.1 in.) | 47.8 cm (18.8 in.) | 2700 Newton (600 lb) |
| 144           | 33.81 mm (1.331 in.) | 1022 kg/km (687 lb/kft) | 67.6 cm (26.6 in.) | 50.7 cm (20.0 in.) | 2700 Newton (600 lb) |

| DESCRIPTION                                      | ORDERING NUMBER              | ORDERING NUMBER            | ORDERING NUMBER             | ORDERING NUMBER        |
|--------------------------------------------------|------------------------------|----------------------------|-----------------------------|------------------------|
| INDUSTRIAL ARMORED<br>(ALUMINUM INTERLOCK), OFCR | MULTIMODE,<br>FX300, 62.5 µm | MULTIMODE,<br>FX600, 50 µm | MULTIMODE,<br>FX2000, 50 µm | SINGLEMODE<br>ENHANCED |
| <b>6 fibers</b>                                  | M9B230                       | M9A230                     | M9C230                      | M9W230                 |
| <b>12 fibers</b>                                 | M9B231                       | M9A231                     | M9C231                      | M9W231                 |
| <b>24 fibers</b>                                 | M9B232                       | M9A232                     | M9C232                      | M9W232                 |
| <b>24 fibers (unitized)</b>                      | M9B233                       | M9A233                     | M9C233                      | M9W233                 |
| <b>36 fibers</b>                                 | M9B234                       | M9A234                     | M9C234                      | M9W234                 |
| <b>48 fibers</b>                                 | M9B235                       | M9A235                     | M9C235                      | M9W235                 |
| <b>72 fibers</b>                                 | M9B236                       | M9A236                     | M9C236                      | M9W236                 |
| <b>96 fibers</b>                                 | M9B237                       | M9A237                     | M9C237                      | M9W237                 |
| <b>144 fibers</b>                                | M9B238                       | M9A238                     | M9C238                      | M9W238                 |
| INDUSTRIAL ARMORED<br>(ALUMINUM INTERLOCK), OFCP | MULTIMODE,<br>FX300, 62.5 µm | MULTIMODE,<br>FX600, 50 µm | MULTIMODE,<br>FX2000, 50 µm | SINGLEMODE<br>ENHANCED |
| <b>6 fibers</b>                                  | M9B240                       | M9A240                     | M9C240                      | M9W240                 |
| <b>12 fibers</b>                                 | M9B241                       | M9A241                     | M9C241                      | M9W241                 |
| <b>24 fibers</b>                                 | M9B242                       | M9A242                     | M9C242                      | M9W242                 |
| <b>24 fibers (unitized)</b>                      | M9B243                       | M9A243                     | M9C243                      | M9W243                 |
| <b>36 fibers</b>                                 | M9B244                       | M9A244                     | M9C244                      | M9W244                 |
| <b>48 fibers</b>                                 | M9B245                       | M9A245                     | M9C245                      | M9W245                 |
| <b>72 fibers</b>                                 | M9B246                       | M9A246                     | M9C246                      | M9W246                 |
| <b>96 fibers</b>                                 | M9B247                       | M9A247                     | M9C247                      | M9W247                 |
| <b>144 fibers</b>                                | M9B248                       | M9A248                     | M9C248                      | M9W248                 |

Belden CDT listed offering is not limited to the above part numbers.

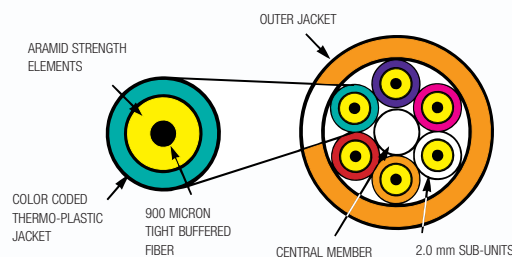
All fiber optic products can be supplied in compliance with RoHS regulations. Please contact Customer Service for more details.

## Breakout Series

**FiberExpress Optical Fiber Breakout Cables** are designed for low to medium fiber count in-building, harsh-environment installations. Breakout or fanout cables offer a high degree of flexibility for backbone and horizontal applications. They are made with 900  $\mu\text{m}$  tight-buffered fiber, each with a Riser, Plenum or LSZH rated jacket. Breakout cables are available in 62.5  $\mu\text{m}$  and 50  $\mu\text{m}$  Multimode fiber and Singlemode Enhanced fiber configurations.



**M9B011** Breakout (riser)



### Features & Benefits

- Available in sizes from 2 to 36 fibers
- 900  $\mu\text{m}$  tight-buffered fiber allows for use of field installable connectors
- Riser (OFNR/FT4) or plenum (OFNP/FT6) listed
- Full dielectric construction, no grounding required
- Fiber subunits are color coded for easy identification
- Length markings in meters for easy determination of cable length
- For riser offering, MSHA approved cables are available.

### Applications

- Low to medium fiber count requirements
- In-building backbone or horizontal deployment
- Office wiring
- Factory Floor Automation.

### Cable Color Code

The Belden CDT Breakout Series jacket color codes standard is orange for Multimode FX300 and FX600 cables and aqua for FX2000 cables. The Breakout LSZH Series outer jacket color codes standard is green for Multimode FX300 cables, orange for FX600 cables and aqua for FX2000 cables. All Singlemode Enhanced cables have a yellow jacket. Fiber sub-units are color coded as per ANSI/TIA/EIA-568-B specifications. The standard color code allows for easy identification of fibers as follows: Blue, Orange, Green, Brown, Slate, White, Red, Black, Yellow, Violet, Rose or Aqua.

### Product Specifications

|                                  |                                  |
|----------------------------------|----------------------------------|
| Crush Resistance (EIA-455-41)    | 2000 N/cm                        |
| Impact Resistance (EIA-455-25)   | 2000 Impacts                     |
|                                  | w/1.6 N-m                        |
| Flexure (EIA-455-104)            | 2000 cycles min.                 |
| <b>Minimum Bend Radius</b>       |                                  |
| Installation (Short Term) - Load | 15x cable diameter               |
| Long Term - No Load              | 10x cable diameter               |
| <b>Riser</b>                     | UL/cUL rated Type OFNR / OFN FT4 |
|                                  | Flame Resistance UL 1666         |
| <b>Plenum</b>                    | UL/cUL rated Type OFNP / OFN FT6 |
|                                  | Flame Resistance NFPA 262        |
| <b>LSZH</b>                      | UL/cUL rated Type OFNR / OFN FT4 |
|                                  | Flame Resistance UL 1666         |
| Buffer Diameter                  | 900 $\mu\text{m}$                |
| Strength Member                  | Aramid Yarn                      |
| Central Strength Member          |                                  |
| <b>Jacket Material</b>           |                                  |
| Riser                            | PVC                              |
| Plenum                           | PVC or PVDF                      |
| Low Smoke Zero Halogen           | LSZH                             |
| <b>Sub-unit Jacket Material</b>  |                                  |
| Riser                            | PVC                              |
| Plenum                           | PVC                              |
| Low Smoke Zero Halogen           | LSZH                             |
| <b>Buffer Material</b>           |                                  |
| Riser                            | PVC                              |
| Plenum                           | PVC                              |
| Low Smoke Zero Halogen           | LSZH                             |
| Color coding (Jacket and Fibers) | TIA/EIA 568-B.3, TIA/EIA 598-B   |
| <b>Temperature Range</b>         |                                  |
| Storage                          | -40 to +80°C                     |
| Operating                        | -20 to +70°C                     |



### Breakout Series (continued)

#### Optical Specification - Riser, Plenum and LSZH Series

| FIBER TYPE                 | ATTENUATION (MAX.) |         |         | OFL BANDWIDTH (MIN.) |         | RML BANDWIDTH (MIN.) |
|----------------------------|--------------------|---------|---------|----------------------|---------|----------------------|
|                            | dB/km              |         |         | MHz-km               |         | MHz-km               |
|                            | 850 nm             | 1300 nm | 1550 nm | 850 nm               | 1300 nm | 850 nm               |
| FiberExpress 300 (62.5 µm) | 3.5                | 1.25    | -----   | 200                  | 500     | 220                  |
| FiberExpress 600 (50 µm)   | 3.5                | 1.25    | -----   | 500                  | 500     | 510                  |
| FiberExpress 2000 (50 µm)  | 3.5                | 1.25    | -----   | 1500                 | 500     | 2000**               |
| Singlemode Enhanced        | -----              | 0.8*    | 0.5     | -----                | -----   | -----                |

OFL: Overfill launch

RML: Restricted mode launch

\* Wavelength: 1310 nm

\*\* EMB: Effective Modal Bandwidth

| FIBER TYPE                 | GIGABIT ETHERNET REACH (METERS)<br>IEEE 802.3Z |             | 10 GIGABIT ETHERNET<br>REACH (METERS) | 10 GIGABIT ETHERNET<br>REACH (METERS) |
|----------------------------|------------------------------------------------|-------------|---------------------------------------|---------------------------------------|
|                            | 1000BASE SX                                    | 1000BASE LX | 10GBASE-S                             | 10GBASE-L                             |
| FiberExpress 300 (62.5 µm) | 300                                            | 550         | 33                                    | -----                                 |
| FiberExpress 600 (50 µm)   | 600                                            | 600         | 82                                    | -----                                 |
| FiberExpress 2000 (50 µm)  | 2000                                           | 600         | 300                                   | -----                                 |
| Singlemode Enhanced        | -----                                          | 5000        | -----                                 | 10000                                 |

Note1: Mode launch conditioning patch cord is not required

Note2: For proper design, please refer to the Belden IBDN Optical Fiber Design Guide

Note3: Singlemode Enhanced is a low Water Peak Singlemode for CWDM applications and complies with ITU G.562.c/d

#### Mechanical Characteristics, sub-unit diameter: 2 mm

##### Breakout Riser Series

| FIBER COUNT | OUTSIDE DIAMETER     | WEIGHT                 | MINIMUM BEND RADIUS<br>INSTALLATION | LONG TERM         | MAXIMUM LOAD<br>INSTALLATION |
|-------------|----------------------|------------------------|-------------------------------------|-------------------|------------------------------|
| 2           | 6.60 mm (0.260 in.)  | 36 kg/km (24 lb/kft)   | 9.9 cm (3.9 in.)                    | 6.6 cm (2.6 in.)  | 801 Newton (180 lb)          |
| 4           | 8.15 mm (0.321 in.)  | 52 kg/km (35 lb/kft)   | 12.2 cm (4.8 in.)                   | 8.1 cm (3.2 in.)  | 1535 Newton (345 lb)         |
| 6           | 9.09 mm (0.358 in.)  | 80 kg/km (54 lb/kft)   | 13.6 cm (5.4 in.)                   | 9.1 cm (3.6 in.)  | 2415 Newton (543 lb)         |
| 8           | 10.29 mm (0.405 in.) | 103 kg/km (69 lb/kft)  | 15.4 cm (6.1 in.)                   | 10.3 cm (4.1 in.) | 2700 Newton (600 lb)         |
| 10          | 11.56 mm (0.455 in.) | 128 kg/km (86 lb/kft)  | 17.3 cm (6.8 in.)                   | 11.5 cm (4.5 in.) | 2700 Newton (600 lb)         |
| 12          | 13.06 mm (0.514 in.) | 164 kg/km (110 lb/kft) | 19.6 cm (7.7 in.)                   | 13.1 cm (5.1 in.) | 2700 Newton (600 lb)         |
| 18          | 13.21 mm (0.520 in.) | 155 kg/km (104 lb/kft) | 19.8 cm (7.8 in.)                   | 13.2 cm (5.2 in.) | 2700 Newton (600 lb)         |
| 24          | 14.99 mm (0.590 in.) | 201 kg/km (135 lb/kft) | 22.6 cm (8.9 in.)                   | 15.0 cm (5.9 in.) | 2700 Newton (600 lb)         |
| 36          | 17.27 mm (0.680 in.) | 250 kg/km (168 lb/kft) | 25.9 cm (10.2 in.)                  | 17.3 cm (6.8 in.) | 2700 Newton (600 lb)         |

| DESCRIPTION           | ORDERING NUMBER | ORDERING NUMBER | ORDERING NUMBER | ORDERING NUMBER |
|-----------------------|-----------------|-----------------|-----------------|-----------------|
| BREAKOUT RISER SERIES | MULTIMODE,      | MULTIMODE,      | MULTIMODE,      | SINGLEMODE      |
| UL/cUL OFNR FT4       | FX300, 62.5 µm  | FX600, 50 µm    | FX2000, 50 µm   | ENHANCED        |
| 2 fibers              | M9B005          | M9A005          | M9C005          | M9W005          |
| 4 fibers              | M9B006          | M9A006          | M9C006          | M9W006          |
| 6 fibers              | M9B007          | M9A007          | M9C007          | M9W007          |
| 8 fibers              | M9B008          | M9A008          | M9C008          | M9W008          |
| 10 fibers             | M9B009          | M9A009          | M9C009          | M9W009          |
| 12 fibers             | M9B010          | M9A010          | M9C010          | M9W010          |
| 18 fibers             | M9B011          | M9A011          | M9C011          | M9W011          |
| 24 fibers             | M9B012          | M9A012          | M9C012          | M9W012          |
| 36 fibers             | M9B083          | M9A083          | M9C083          | M9W083          |

2.5 mm Breakout cables are also available.

All fiber optic products can be supplied in compliance with RoHS regulations. Please contact Customer Service for more details.

## Breakout Series (continued)

### Mechanical Characteristics, sub-unit diameter: 2 mm

#### Breakout Plenum Series

| FIBER COUNT | OUTSIDE DIAMETER     | WEIGHT                 | MINIMUM BEND RADIUS<br>INSTALLATION | LONG TERM         | MAXIMUM LOAD<br>INSTALLATION |
|-------------|----------------------|------------------------|-------------------------------------|-------------------|------------------------------|
| 2           | 5.84 mm (0.230 in.)  | 31 kg/km (21 lb/kft)   | 8.9 cm (3.5 in.)                    | 5.8 cm (2.3 in.)  | 801 Newton (180 lb)          |
| 4           | 6.68 mm (0.263 in.)  | 45 kg/km (30 lb/kft)   | 9.9 cm (3.9 in.)                    | 6.6 cm (2.6 in.)  | 1535 Newton (345 lb)         |
| 6           | 7.11 mm (0.280 in.)  | 55 kg/km (37 lb/kft)   | 10.7 cm (4.2 in.)                   | 7.1 cm (2.8 in.)  | 2415 Newton (543 lb)         |
| 8           | 8.53 mm (0.336 in.)  | 82 kg/km (55 lb/kft)   | 13.0 cm (5.1 in.)                   | 8.7 cm (3.4 in.)  | 2700 Newton (600 lb)         |
| 10          | 9.78 mm (0.385 in.)  | 109 kg/km (73 lb/kft)  | 14.7 cm (5.8 in.)                   | 9.8 cm (3.9 in.)  | 2700 Newton (600 lb)         |
| 12          | 11.18 mm (0.440 in.) | 143 kg/km (96 lb/kft)  | 16.8 cm (6.6 in.)                   | 11.2 cm (4.4 in.) | 2700 Newton (600 lb)         |
| 18          | 11.43 mm (0.450 in.) | 132 kg/km (89 lb/kft)  | 17.3 cm (6.8 in.)                   | 11.4 cm (4.5 in.) | 2700 Newton (600 lb)         |
| 24          | 13.67 mm (0.558 in.) | 189 kg/km (127 lb/kft) | 20.6 cm (8.1 in.)                   | 13.7 cm (5.4 in.) | 2700 Newton (600 lb)         |
| 36          | 15.32 mm (0.620 in.) | 243 kg/km (163 lb/kft) | 23.6 cm (9.3 in.)                   | 15.7 cm (6.2 in.) | 2700 Newton (600 lb)         |

| DESCRIPTION                               | ORDERING NUMBER              | ORDERING NUMBER            | ORDERING NUMBER             | ORDERING NUMBER        |
|-------------------------------------------|------------------------------|----------------------------|-----------------------------|------------------------|
| BREAKOUT PLENUM SERIES<br>UL/cUL OFNP FT6 | MULTIMODE,<br>FX300, 62.5 µm | MULTIMODE,<br>FX600, 50 µm | MULTIMODE,<br>FX2000, 50 µm | SINGLEMODE<br>ENHANCED |
| <b>2 fibers</b>                           | M9B013                       | M9A013                     | M9C013                      | M9W013                 |
| <b>4 fibers</b>                           | M9B014                       | M9A014                     | M9C014                      | M9W014                 |
| <b>6 fibers</b>                           | M9B015                       | M9A015                     | M9C015                      | M9W015                 |
| <b>8 fibers</b>                           | M9B016                       | M9A016                     | M9C016                      | M9W016                 |
| <b>10 fibers</b>                          | M9B017                       | M9A017                     | M9C017                      | M9W017                 |
| <b>12 fibers</b>                          | M9B018                       | M9A018                     | M9C018                      | M9W018                 |
| <b>18 fibers</b>                          | M9B019                       | M9A019                     | M9C019                      | M9W019                 |
| <b>24 fibers</b>                          | M9B020                       | M9A020                     | M9C020                      | M9W020                 |
| <b>36 fibers</b>                          | M9B082                       | M9A082                     | M9C082                      | M9W082                 |

2.5 mm Breakout cables are also available.

All fiber optic products can be supplied in compliance with RoHS regulations. Please contact Customer Service for more details.

# Fiber Media

FiberExpress Cables



## Breakout Series (continued)

### Mechanical Characteristics

#### Breakout LSZH Series

| FIBER COUNT | MIN. THICKNESS OF JACKET | OUTSIDE DIAMETER    | WEIGHT                 | MINIMUM BEND RADIUS INSTALLATION | LONG TERM           | MAXIMUM LOAD (INSTALLATION) |
|-------------|--------------------------|---------------------|------------------------|----------------------------------|---------------------|-----------------------------|
| 2*          | 0.9 mm (0.035 in.)       | 7.8 mm (0.307 in.)  | 57 kg/km (39 lb/kft)   | 11.7 cm (4.606 in.)              | 7.8 cm (3.071 in.)  | 1200 Newton (270 lb)        |
| 4           | 0.9 mm (0.035 in.)       | 7.8 mm (0.307 in.)  | 55 kg/km (38 lb/kft)   | 11.7 cm (4.606 in.)              | 7.8 cm (3.071 in.)  | 1300 Newton (292 lb)        |
| 6           | 0.9 mm (0.035 in.)       | 9.3 mm (0.366 in.)  | 76 kg/km (52 lb/kft)   | 14.0 cm (5.512 in.)              | 9.3 cm (3.661 in.)  | 2000 Newton (450 lb)        |
| 8           | 0.9 mm (0.035 in.)       | 10.1 mm (0.398 in.) | 98 kg/km (67 lb/kft)   | 15.2 cm (5.984 in.)              | 10.1 cm (3.976 in.) | 2600 Newton (585 lb)        |
| 10*         | 0.9 mm (0.035 in.)       | 12.8 mm (0.504 in.) | 162 kg/km (110 lb/kft) | 19.2 cm (7.559 in.)              | 12.8 cm (5.039 in.) | 2600 Newton (585 lb)        |
| 12          | 0.9 mm (0.035 in.)       | 12.8 mm (0.504 in.) | 161 kg/km (110 lb/kft) | 19.2 cm (7.559 in.)              | 12.8 cm (5.039 in.) | 2700 Newton (600 lb)        |
| 18          | 0.9 mm (0.035 in.)       | 13.3 mm (0.524 in.) | 151 kg/km (103 lb/kft) | 20.0 cm (7.874 in.)              | 13.3 cm (5.236 in.) | 2700 Newton (600 lb)        |
| 24          | 0.9 mm (0.035 in.)       | 15.3 mm (0.602 in.) | 202 kg/km (138 lb/kft) | 23.0 cm (9.055 in.)              | 15.3 cm (6.234 in.) | 2700 Newton (600 lb)        |
| 36          | 1.0 mm (0.039 in.)       | 18.0 mm (0.709 in.) | 250 kg/km (171 lb/kft) | 27.0 cm (10.630 in.)             | 18.0 cm (7.087 in.) | 2700 Newton (600 lb)        |
| 48          | 1.0 mm (0.039 in.)       | 21.0 mm (0.827 in.) | 350 kg/km (239 lb/kft) | 31.5 cm (12.402 in.)             | 21.0 cm (8.268 in.) | 2700 Newton (600 lb)        |

\* - simplex cables + 2 fillers

| DESCRIPTION          | ORDERING NUMBER           | ORDERING NUMBER         | ORDERING NUMBER          | ORDERING NUMBER     |
|----------------------|---------------------------|-------------------------|--------------------------|---------------------|
| BREAKOUT LSZH SERIES | MULTIMODE, FX300, 62.5 μm | MULTIMODE, FX600, 50 μm | MULTIMODE, FX2000, 50 μm | SINGLEMODE ENHANCED |
| 2 fibers             | M9B130                    | M9A130                  | M9C130                   | M9W130              |
| 4 fibers             | M9B131                    | M9A131                  | M9C131                   | M9W131              |
| 6 fibers             | M9B132                    | M9A132                  | M9C132                   | M9W132              |
| 8 fibers             | M9B133                    | M9A133                  | M9C133                   | M9W133              |
| 10 fibers            | M9B134                    | M9A134                  | M9C134                   | M9W134              |
| 12 fibers            | M9B135                    | M9A135                  | M9C135                   | M9W135              |
| 18 fibers            | M9B136                    | M9A136                  | M9C136                   | M9W136              |
| 24 fibers            | M9B137                    | M9A137                  | M9C137                   | M9W137              |
| 36 fibers            | M9B138                    | M9A138                  | M9C138                   | M9W138              |
| 48 fibers            | M9B139                    | M9A139                  | M9C139                   | M9W139              |

2.5 mm Breakout cables are also available.

All fiber optic products can be supplied in compliance with RoHS regulations. Please contact Customer Service for more details.

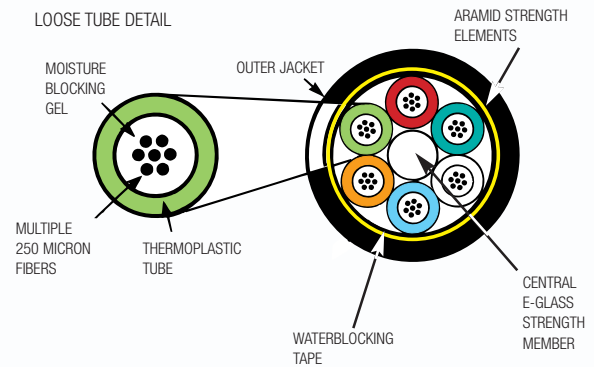
## Loose Tube (Campus) Outdoor Series

**FiberExpress Loose Tube (Campus) Optical Fiber Cables** are loose-tube buffered cables suited for outdoor applications such as lashed aerial or underground conduit. These all-dielectric cables are available in indoor/outdoor riser and plenum rated constructions. Loose tube Cables are available in 62.5 and 50  $\mu$ m Multimode fiber and Singlemode Enhanced fiber configurations.



**M9B510** Loose Tube (outdoor)

Fiber Bundle Detail - Outdoor Series



### Features & Benefits

- Available in sizes up to 216 fibers
- Gel-filled buffer tube prevents water migration
- All-dielectric strength member
- Available as riser rated OFN and OFNR/FT4 cable, thereby eliminating the need for service entrance splicing to in-building cable
- Full dielectric construction, no grounding required
- Fiber tubes are color coded for easy identification
- Length markings in meters for easy determination of cable length.

### Applications

- Medium to high fiber count requirements
- Inter-building duct installations
- Lashed aerial
- Indoor/outdoor
- Industrial outside plant.

### Cable Color Code

The Belden CDT Loose Tube (Campus) Series jacket is black in color. The buffer tubes are color coded as per ANSI/TIA/EIA-568-B specifications. The standard color code allows for easy identification of fibers and is as follows: Blue, Orange, Green, Brown, Slate, White, Red, Black, Yellow, Violet, Rose or Aqua.

### Product Specifications

|                                  |                                  |
|----------------------------------|----------------------------------|
| Crush Resistance (EIA-455-41)    | 2000 N/cm                        |
| Impact Resistance (EIA-455-25)   | 2000 Impacts                     |
|                                  | w/1.6 N-m                        |
| <b>Minimum Bend Radius</b>       |                                  |
| Installation (Short Term) - Load | 20x cable diameter               |
| Long Term - No Load              | 15x cable diameter               |
| <b>Riser</b>                     | UL/cUL rated Type OFNR / OFN FT4 |
|                                  | Flame Resistance UL 1666         |
| Buffer Tube                      | Gel filled Thermoplastic         |
| Strength Member                  | Aramid Yarn                      |
| Central Strength Member          | E-Glass                          |
| <b>Jacket Material</b>           |                                  |
| Outdoor                          | PE                               |
| Riser                            | PVC                              |
| <b>Buffer Material</b>           |                                  |
| Outdoor                          | PBT                              |
| Riser                            | PVC                              |
| Color coding (Jacket and Fibers) | TIA/EIA 568-B.3, TIA/EIA 598-B   |
| <b>Temperature Range Outdoor</b> |                                  |
| Storage                          | -50 to +80°C                     |
| Operating                        | -40 to +70°C                     |
| <b>Temperature Range Riser</b>   |                                  |
| Storage                          | -40 to +80°C                     |
| Operating                        | -40 to +70°C                     |

# Fiber Media

## FiberExpress Cables

### Loose Tube (Campus) Series (continued)

#### Optical Specification

| FIBER TYPE                 | ATTENUATION (MAX.) |         |         | OFL BANDWIDTH (MIN.) |         | RML BANDWIDTH (MIN.) |
|----------------------------|--------------------|---------|---------|----------------------|---------|----------------------|
|                            | dB/km              |         |         | MHz-km               |         | MHz-km               |
|                            | 850 nm             | 1300 nm | 1550 nm | 850 nm               | 1300 nm | 850 nm               |
| FiberExpress 300 (62.5 µm) | 3.5                | 1.25    | -----   | 200                  | 500     | 220                  |
| FiberExpress 600 (50 µm)   | 3.5                | 1.25    | -----   | 500                  | 500     | 510                  |
| FiberExpress 2000 (50 µm)  | 3.5                | 1.25    | -----   | 1500                 | 500     | 2000**               |
| Singlemode Enhanced        | -----              | 0.40*   | 0.30    | -----                | -----   | -----                |

OFL: Overfill launch

RML: Restricted mode launch

\* Wavelength: 1310 nm

\*\* EMB: Effective Modal Bandwidth

| FIBER TYPE                 | GIGABIT ETHERNET REACH (METERS) |             | 10 GIGABIT ETHERNET | 10 GIGABIT ETHERNET |
|----------------------------|---------------------------------|-------------|---------------------|---------------------|
|                            | IEEE 802.3Z                     |             | REACH (METERS)      | REACH (METERS)      |
|                            | 1000BASE-SX                     | 1000BASE-LX | 10GBASE-S           | 10GBASE-L           |
| FiberExpress 300 (62.5 µm) | 300                             | 550         | 33                  | -----               |
| FiberExpress 600 (50 µm)   | 600                             | 600         | 82                  | -----               |
| FiberExpress 2000 (50 µm)  | 2000                            | 600         | 300                 | -----               |
| Singlemode Enhanced        | -----                           | 5000        | -----               | 10000               |

Note1: Mode launch conditioning patch cord is not required

Note2: For proper design, please refer to the Belden IBDN Optical Fiber Design Guide

Note3: Singlemode Enhanced is a low Water Peak Singlemode for CWDM applications and complies with ITU G.562.c/d

#### Mechanical Characteristics

##### Loose Tube (Campus) Outdoor Series

| FIBER COUNT | FIBERS PER TUBE | OUTSIDE DIAMETER     | WEIGHT                 | MINIMUM BEND RADIUS INSTALLATION | LONG TERM          | MAXIMUM LOAD INSTALLATION |
|-------------|-----------------|----------------------|------------------------|----------------------------------|--------------------|---------------------------|
| 6           | 6               | 9.65 mm (0.38 in.)   | 67 kg/km (45 lb/kft)   | 19.3 cm (7.6 in.)                | 14.5 cm (5.6 in.)  | 2700 Newton (600 lb)      |
| 12          | 6               | 9.65 mm (0.38 in.)   | 68 kg/km (46 lb/kft)   | 19.3 cm (7.6 in.)                | 14.5 cm (5.6 in.)  | 2700 Newton (600 lb)      |
| 24          | 6               | 9.65 mm (0.38 in.)   | 68 kg/km (46 lb/kft)   | 19.3 cm (7.6 in.)                | 14.5 cm (5.6 in.)  | 2700 Newton (600 lb)      |
| 36          | 6               | 9.65 mm (0.38 in.)   | 71 kg/km (48 lb/kft)   | 19.3 cm (7.6 in.)                | 14.5 cm (5.6 in.)  | 2700 Newton (600 lb)      |
| 48          | 12              | 12.2 mm (0.48 in.)   | 106 kg/km (71 lb/kft)  | 24.4 cm (9.6 in.)                | 18.3 cm (7.1 in.)  | 2700 Newton (600 lb)      |
| 72          | 12              | 12.2 mm (0.48 in.)   | 107 kg/km (72 lb/kft)  | 24.4 cm (9.6 in.)                | 18.3 cm (7.1 in.)  | 2700 Newton (600 lb)      |
| 96          | 12              | 13.89 mm (0.547 in.) | 143 kg/km (96 lb/kft)  | 27.7 cm (10.9 in.)               | 20.8 cm (8.1 in.)  | 2700 Newton (600 lb)      |
| 144         | 12              | 17.78 mm (0.7 in.)   | 225 kg/km (151 lb/kft) | 35.6 cm (14 in.)                 | 26.7 cm (10.4 in.) | 2700 Newton (600 lb)      |
| 216         | 12              | 18.16 mm (0.715 in.) | 223 kg/km (150 lb/kft) | 36.3 cm (14.3 in.)               | 27.2 cm (10.7 in.) | 2700 Newton (600 lb)      |

##### Loose Tube (Campus) Indoor/Outdoor Riser Series

| FIBER COUNT | FIBERS PER TUBE | OUTSIDE DIAMETER     | WEIGHT                 | MINIMUM BEND RADIUS INSTALLATION | LONG TERM          | MAXIMUM LOAD INSTALLATION |
|-------------|-----------------|----------------------|------------------------|----------------------------------|--------------------|---------------------------|
| 6           | 6               | 9.65 mm (0.38 in.)   | 95 kg/km (64 lb/kft)   | 19.3 cm (7.6 in.)                | 14.5 cm (5.6 in.)  | 2700 Newton (600 lb)      |
| 12          | 6               | 9.65 mm (0.38 in.)   | 95 kg/km (64 lb/kft)   | 19.3 cm (7.6 in.)                | 14.5 cm (5.6 in.)  | 2700 Newton (600 lb)      |
| 24          | 6               | 9.65 mm (0.38 in.)   | 95 kg/km (64 lb/kft)   | 19.3 cm (7.6 in.)                | 14.5 cm (5.6 in.)  | 2700 Newton (600 lb)      |
| 36          | 6               | 9.65 mm (0.38 in.)   | 97 kg/km (65 lb/kft)   | 19.3 cm (7.6 in.)                | 14.5 cm (5.6 in.)  | 2700 Newton (600 lb)      |
| 48          | 12              | 12.2 mm (0.48 in.)   | 131 kg/km (88 lb/kft)  | 24.4 cm (9.6 in.)                | 18.3 cm (7.1 in.)  | 2700 Newton (600 lb)      |
| 72          | 12              | 12.2 mm (0.48 in.)   | 131 kg/km (88 lb/kft)  | 24.4 cm (9.6 in.)                | 18.3 cm (7.1 in.)  | 2700 Newton (600 lb)      |
| 96          | 12              | 13.89 mm (0.547 in.) | 168 kg/km (113 lb/kft) | 27.7 cm (10.9 in.)               | 20.8 cm (8.1 in.)  | 2700 Newton (600 lb)      |
| 144         | 12              | 17.78 mm (0.7 in.)   | 275 kg/km (185 lb/kft) | 35.6 cm (14 in.)                 | 26.7 cm (10.4 in.) | 2700 Newton (600 lb)      |

## Loose Tube (Campus) Series (continued)

| DESCRIPTION                                                                      | ORDERING NUMBER              | ORDERING NUMBER            | ORDERING NUMBER             | ORDERING NUMBER        |
|----------------------------------------------------------------------------------|------------------------------|----------------------------|-----------------------------|------------------------|
| LOOSE TUBE (CAMPUS)<br>OUTDOOR SERIES,<br>UV RATED, ALL DIELECTRIC,<br>PE JACKET | MULTIMODE,<br>FX300, 62.5 µm | MULTIMODE,<br>FX600, 50 µm | MULTIMODE,<br>FX2000, 50 µm | SINGLEMODE<br>ENHANCED |
| <b>6 fibers</b>                                                                  | M9B510T                      | M9A510T                    | M9C510T                     | M9W510T                |
| <b>12 fibers</b>                                                                 | M9B511T                      | M9A511T                    | M9C511T                     | M9W511T                |
| <b>24 fibers</b>                                                                 | M9B500T                      | M9A500T                    | M9C500T                     | M9W500T                |
| <b>36 fibers</b>                                                                 | M9B502T                      | M9A502T                    | M9C502T                     | M9W502T                |
| <b>48 fibers</b>                                                                 | M9B505T                      | M9A505T                    | M9C505T                     | M9W505T                |
| <b>72 fibers</b>                                                                 | M9B507T                      | M9A507T                    | M9C507T                     | M9W507T                |
| <b>96 fibers</b>                                                                 | M9B513T                      | M9A513T                    | M9C513T                     | M9W513T                |
| <b>144 fibers</b>                                                                | M9B509T                      | M9A509T                    | M9C509T                     | M9W509T                |
| <b>216 fibers</b>                                                                | M9B520T                      | M9A520T                    | M9C520T                     | M9W520T                |

LOOSE TUBE (CAMPUS), INDOOR/OUTDOOR RISER SERIES  
UV RATED, ALL DIELECTRIC, UL/cUL OFNR FT4

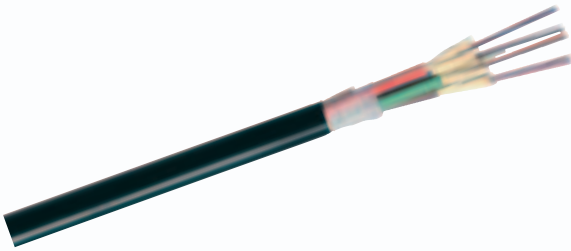
|                   |        |        |        |        |
|-------------------|--------|--------|--------|--------|
| <b>6 fibers</b>   | M9B810 | M9A810 | M9C810 | M9W810 |
| <b>12 fibers</b>  | M9B811 | M9A811 | M9C811 | M9W811 |
| <b>24 fibers</b>  | M9B812 | M9A812 | M9C812 | M9W812 |
| <b>36 fibers</b>  | M9B813 | M9A813 | M9C813 | M9W813 |
| <b>48 fibers</b>  | M9B814 | M9A814 | M9C814 | M9W814 |
| <b>72 fibers</b>  | M9B815 | M9A815 | M9C815 | M9W815 |
| <b>96 fibers</b>  | M9B816 | M9A816 | M9C816 | M9W816 |
| <b>144 fibers</b> | M9B817 | M9A817 | M9C817 | M9W817 |

Alternative fiber counts are available.

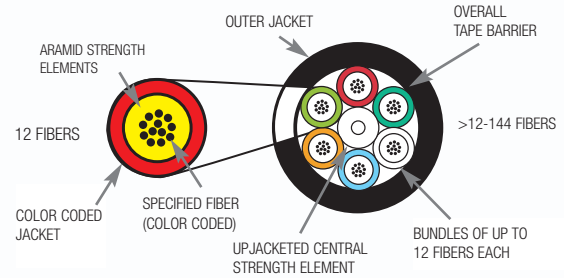
All fiber optic products can be supplied in compliance with RoHS regulations. Please contact Customer Service for more details.

## Loose Tube (Campus) Series (continued)

### Loose Tube (Campus) Plenum Series



**M9B202** Loose Tube (Plenum)



Fiber Bundle Detail

#### Features & Benefits

- Available in sizes up to 144 fibers
- Dry waterblocking technology within the tubes and under the cables' jacket.
- Available as Plenum rated OFNP/FT6 thereby eliminating the need for service entrance splicing to in-building cable
- Full dielectric construction, no grounding required
- Fiber and subunits are color coded for easy identification
- Length markings in meters for easy determination of cable length
- Small diameter and bend radius facilitate installation in tight spaces
- Fibers grouped into sets of 12 for maximum density
- Available in Multimode 50  $\mu\text{m}$ , 62.5  $\mu\text{m}$ , Singlemode, and hybrid constructions

#### Applications

- Medium to high fiber count requirements
- Interbuilding installations
- Lashed aerial
- Indoor/outdoor
- Campus Backbones
- Data Centers
- High Density Cable Trays.

#### Cable Color Code

The Indoor/Outdoor Plenum jacket is black in color. The buffer tubes are color coded as per ANSI/TIA/EIA-568-B specifications. The standard color code allows for easy identification of fibers and is as follows: Blue, Orange, Green, Brown, Slate, White, Red, Black, Yellow, Violet, Rose and Aqua.

#### Product Specifications

|                                  |                                                               |
|----------------------------------|---------------------------------------------------------------|
| Crush Resistance (EIA-455-41)    | 2000 N/cm                                                     |
| Impact Resistance (EIA-455-25)   | 2000 Impacts<br>w/1.6 N-m                                     |
| Flexure (EIA-455-104)            | 2000 cycles min.                                              |
| <b>Minimum Bend Radius</b>       |                                                               |
| Installation (Short Term) - Load | 20x cable diameter                                            |
| Long Term - No Load              | 15x cable diameter                                            |
| <b>Plenum</b>                    | UL/cUL rated Type OFNP / OFN FT6<br>Flame Resistance NFPA 262 |
| Buffer Tube                      | Aramid reinforced Thermoplastic                               |
| Strength Member                  | E-Glass and Aramid Yarn                                       |
| Central Strength Member          | Upjacketed                                                    |
| <b>Jacket Material</b>           |                                                               |
| Plenum (non-unitized)            | PVC                                                           |
| Plenum (unitized)                | PVDF                                                          |
| <b>Buffer Material</b>           |                                                               |
| Plenum                           | PVC                                                           |
| Color coding (Jacket and Fibers) | TIA/EIA 568-B.3, TIA/EIA 598-B                                |
| <b>Temperature Range Plenum</b>  |                                                               |
| Storage                          | -40 to +80°C                                                  |
| Operating                        | -40 to +70°C                                                  |

### Loose Tube (Campus) Series (continued)

#### Optical Specification

| FIBER TYPE                 | ATTENUATION (MAX.)<br>dB/km |         |         | OFL BANDWIDTH (MIN.)<br>MHz-km |         | RML BANDWIDTH (MIN.)<br>MHz-km |         |
|----------------------------|-----------------------------|---------|---------|--------------------------------|---------|--------------------------------|---------|
|                            | 850 nm                      | 1300 nm | 1550 nm | 850 nm                         | 1300 nm | 850 nm                         | 1300 nm |
| FiberExpress 300 (62.5 µm) | 3.50                        | 1.25    | -----   | 200                            | 500     | 220                            | 500     |
| FiberExpress 600 (50 µm)   | 3.50                        | 1.25    | -----   | 500                            | 500     | 510                            | 500     |
| FiberExpress 2000 (50 µm)  | 3.50                        | 1.25    | -----   | 1500                           | 500     | 2000**                         | 500     |
| Singlemode Enhanced        | -----                       | 0.80*   | 0.50    | -----                          | -----   | -----                          | -----   |

OFL: Overfill launch

RML: Restricted mode launch

\* Wavelength: 1310 nm

\*\* EMB: Effective Modal Bandwidth

| FIBER TYPE                 | GIGABIT ETHERNET REACH (METERS)<br>IEEE 802.3Z |             | 10 GIGABIT ETHERNET<br>REACH (METERS) | 10 GIGABIT ETHERNET<br>REACH (METERS) |
|----------------------------|------------------------------------------------|-------------|---------------------------------------|---------------------------------------|
|                            | 1000BASE SX                                    | 1000BASE LX | 10GBASE-S                             | 10GBASE-L                             |
| FiberExpress 300 (62.5 µm) | 300                                            | 550         | 33                                    | 300                                   |
| FiberExpress 600 (50 µm)   | 600                                            | 600         | 82                                    | 300                                   |
| FiberExpress 2000 (50 µm)  | 2000                                           | 600         | 300                                   | 300                                   |
| Singlemode Enhanced        | -----                                          | 5000        | -----                                 | 10000                                 |

Note: Mode launch conditioning patch cord is not required. For proper design, please refer to the Belden IBDN Optical Fiber Design Guide. Singlemode Enhanced is a low Water Peak Singlemode for CWDM applications and complies with ITU G.652.c/d. Links longer than 550 m (as per standard) for the same link power budget are considered engineered links. To achieve a distance of 2000 m, please contact Belden IBDN Technical Support.

#### Mechanical characteristics

| FIBER COUNT | FIBERS PER TUBE | OUTSIDE DIAMETER     | WEIGHT                 | MINIMUM BEND RADIUS<br>INSTALLATION | LONG TERM          | MAXIMUM LOAD<br>INSTALLATION |
|-------------|-----------------|----------------------|------------------------|-------------------------------------|--------------------|------------------------------|
| 6           | 6               | 6.7 mm (0.265 in.)   | 49 kg/km (33 lb/kft)   | 13.5 cm (5.3 in.)                   | 10.2 cm (4.0 in.)  | 1423 Newton (320 lb)         |
| 12          | 12              | 6.7 mm (0.265 in.)   | 49 kg/km (33 lb/kft)   | 13.5 cm (5.3 in.)                   | 10.2 cm (4.0 in.)  | 1423 Newton (320 lb)         |
| 24          | 12              | 9.12 mm (0.359 in.)  | 70 kg/km (47 lb/kft)   | 18.3 cm (7.2 in.)                   | 13.7 cm (5.4 in.)  | 1801 Newton (405 lb)         |
| 36          | 12              | 9.12 mm (0.359 in.)  | 70 kg/km (47 lb/kft)   | 18.3 cm (7.2 in.)                   | 13.7 cm (5.4 in.)  | 1801 Newton (405 lb)         |
| 48          | 12              | 9.12 mm (0.359 in.)  | 71 kg/km (48 lb/kft)   | 18.3 cm (7.2 in.)                   | 13.7 cm (5.4 in.)  | 1801 Newton (405 lb)         |
| 72          | 12              | 10.9 mm (0.429 in.)  | 106 kg/km (71 lb/kft)  | 21.8 cm (8.6 in.)                   | 16.3 cm (6.4 in.)  | 2602 Newton (585 lb)         |
| 96          | 12              | 12.73 mm (0.501 in.) | 156 kg/km (105 lb/kft) | 25.4 cm (10.0 in.)                  | 19.1 cm (7.5 in.)  | 4017 Newton (903 lb)         |
| 144         | 12              | 16.89 mm (0.665 in.) | 281 kg/km (189 lb/kft) | 33.8 cm (13.3 in.)                  | 25.4 cm (10.0 in.) | 5618 Newton (1263 lb)        |

| DESCRIPTION                                                                                           | ORDERING NUMBER              | ORDERING NUMBER            | ORDERING NUMBER             | ORDERING NUMBER        |
|-------------------------------------------------------------------------------------------------------|------------------------------|----------------------------|-----------------------------|------------------------|
| LOOSE TUBE (CAMPUS), INDOOR/<br>OUTDOOR PLENUM SERIES<br>UV RATED, ALL DIELECTRIC,<br>UL/cUL OFNP FT6 | MULTIMODE,<br>FX300, 62.5 µm | MULTIMODE,<br>FX600, 50 µm | MULTIMODE,<br>FX2000, 50 µm | SINGLEMODE<br>ENHANCED |
| <b>6 fibers</b>                                                                                       | M9B202                       | M9A202                     | M9C202                      | M9W202                 |
| <b>12 fibers</b>                                                                                      | M9B204                       | M9A204                     | M9C204                      | M9W204                 |
| <b>24 fibers</b>                                                                                      | M9B205                       | M9A205                     | M9C205                      | M9W205                 |
| <b>36 fibers</b>                                                                                      | M9B206                       | M9A206                     | M9C206                      | M9W206                 |
| <b>48 fibers</b>                                                                                      | M9B207                       | M9A207                     | M9C207                      | M9W207                 |
| <b>72 fibers</b>                                                                                      | M9B209                       | M9A209                     | M9C209                      | M9W209                 |
| <b>96 fibers</b>                                                                                      | M9B211                       | M9A211                     | M9C211                      | M9W211                 |
| <b>144 fibers</b>                                                                                     | M9B215                       | M9A215                     | M9C215                      | M9W215                 |

Alternative fiber counts are available.

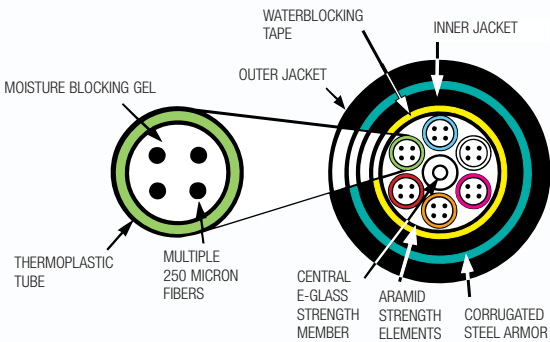
All fiber optic products can be supplied in compliance with RoHS regulations. Please contact Customer Service for more details.



Loose Tube (Campus) Direct Burial Armored Series

Loose Tube (Campus) Outdoor Armored Series

**FiberExpress Loose Tube (Campus) Armor Optical Fiber Cable Series** is made up of rugged fiber cables for applications in hostile environments. This series of cables has corrugated steel armor which provides added protection for direct burial applications. It is available as a riser rated OFCR/FT4 cable suited for in-building and outdoor applications.



Fiber Bundle Detail - Outdoor Armored Series



M9B382 Loose Tube (armored)

Features & Benefits

- Available in sizes up to 216 fibers
- Gel-filled buffer tube prevents water migration
- Available as riser rated OFCR/FT4 cable, thereby eliminating the need for service entrance splicing to in-building cable
- Fiber sub-units are color coded for easy identification
- Length markings in meters for easy determination of cable length
- Rodent Resistant.

Applications

- Direct burial
- Low to high fiber count requirements
- Inter-building duct installations
- Indoor/outdoor
- Industrial outside plant.

Cable Color Code

The Belden CDT Loose Tube (Campus) Armored series has a black jacket. Buffer units are color coded as per ANSI/TIA/EIA-568-B specifications. The standard color code allows for easy identification of fibers and is as follows: Blue, Orange, Green, Brown, Slate, White, Red, Black, Yellow, Violet, Rose or Aqua.

Product Specifications

|                                  |                                  |
|----------------------------------|----------------------------------|
| Crush Resistance (EIA-455-41)    | 2000 N/cm                        |
| Impact Resistance (EIA-455-25)   | 2000 Impacts                     |
|                                  | w/1.6 N-m                        |
| <b>Minimum Bend Radius</b>       |                                  |
| Installation (Short Term) - Load | 20x cable diameter               |
| Long Term - No Load              | 15x cable diameter               |
| <b>Riser</b>                     | UL/cUL rated Type OFCR / OFC FT4 |
|                                  | Flame Resistance UL 1666         |
| Buffer Tube                      | Gel filled Thermoplastic         |
| Strength Member                  | Aramid Yarn                      |
| Central Strength Member          | E-Glass                          |
| <b>Jacket Material</b>           |                                  |
| Outdoor                          | PE                               |
| Riser                            | PVC                              |
| <b>Buffer Material</b>           |                                  |
| Outdoor                          | PBT                              |
| Riser                            | PVC                              |
| Color coding (Jacket and Fibers) | TIA/EIA 568-B.3, TIA/EIA 598-B   |
| <b>Temperature Range Outdoor</b> |                                  |
| Storage                          | -50 to +80°C                     |
| Operating                        | -40 to +70°C                     |
| <b>Temperature Range Riser</b>   |                                  |
| Storage                          | -40 to +80°C                     |
| Operating                        | -40 to +70°C                     |

### Loose Tube (Campus) Direct Burial Armored Series (continued)

#### Optical Specification

| FIBER TYPE                      | ATTENUATION (MAX.)<br>dB/km |         |         | OFL BANDWIDTH (MIN.)<br>MHz-km |         | RML BANDWIDTH (MIN.)<br>MHz-km |
|---------------------------------|-----------------------------|---------|---------|--------------------------------|---------|--------------------------------|
|                                 | 850 nm                      | 1300 nm | 1550 nm | 850 nm                         | 1300 nm | 850 nm                         |
| FiberExpress 300 (62.5 microns) | 3.25                        | 1.0     | -----   | 200                            | 500     | 220                            |
| FiberExpress 600 (50 microns)   | 3.0                         | 1.0     | -----   | 500                            | 500     | 510                            |
| FiberExpress 2000 (50 microns)  | 3.0                         | 1.0     | -----   | 1500                           | 500     | 2000**                         |
| Singlemode Enhanced             | -----                       | 0.40*   | 0.30    | -----                          | -----   | -----                          |

OFL: Overfill launch

RML: Restricted mode launch

\* Wavelength: 1310 nm

\*\* EMB: Effective Modal Bandwidth

| FIBER TYPE                 | GIGABIT ETHERNET REACH (METERS)<br>IEEE 802.3Z |             | 10 GIGABIT ETHERNET<br>REACH (METERS) | 10 GIGABIT ETHERNET<br>REACH (METERS) |
|----------------------------|------------------------------------------------|-------------|---------------------------------------|---------------------------------------|
|                            | 1000BASE SX                                    | 1000BASE LX | 10GBASE-S                             | 10GBASE-L                             |
| FiberExpress 300 (62.5 µm) | 300                                            | 550         | 33                                    | -----                                 |
| FiberExpress 600 (50 µm)   | 600                                            | 600         | 82                                    | -----                                 |
| FiberExpress 2000 (50 µm)  | 2000                                           | 600         | 300                                   | -----                                 |
| Singlemode Enhanced        | -----                                          | 5000        | -----                                 | 10000                                 |

Note1: Mode launch conditioning patch cord is not required

Note2: For proper design, please refer to the Belden IBDN Optical Fiber Design Guide

Note3: Singlemode Enhanced is a low Water Peak Singlemode for CWDM applications and complies with ITU G.562.c/d

#### Mechanical Characteristics

##### Loose Tube (Campus) Outdoor

| FIBER COUNT | FIBERS PER TUBE | OUTSIDE DIAMETER     | WEIGHT                 | MINIMUM BEND RADIUS |                    | MAXIMUM LOAD INSTALLATION |
|-------------|-----------------|----------------------|------------------------|---------------------|--------------------|---------------------------|
|             |                 |                      |                        | INSTALLATION        | LONG TERM          |                           |
| 6           | 6               | 13.46 mm (0.530 in.) | 153 kg/km (103 lb/kft) | 26.9 cm (10.6 in.)  | 20.2 cm (8.0 in.)  | 2700 Newton (600 lb)      |
| 12          | 6               | 13.46 mm (0.530 in.) | 153 kg/km (103 lb/kft) | 26.9 cm (10.6 in.)  | 20.2 cm (8.0 in.)  | 2700 Newton (600 lb)      |
| 24          | 6               | 13.46 mm (0.530 in.) | 155 kg/km (104 lb/kft) | 26.9 cm (10.6 in.)  | 20.2 cm (8.0 in.)  | 2700 Newton (600 lb)      |
| 36          | 6               | 13.46 mm (0.530 in.) | 156 kg/km (105 lb/kft) | 26.9 cm (10.6 in.)  | 20.2 cm (8.0 in.)  | 2700 Newton (600 lb)      |
| 48          | 12              | 15.49 mm (0.610 in.) | 204 kg/km (137 lb/kft) | 31.0 cm (12.2 in.)  | 23.2 cm (9.2 in.)  | 2700 Newton (600 lb)      |
| 72          | 12              | 15.49 mm (0.610 in.) | 205 kg/km (138 lb/kft) | 31.0 cm (12.2 in.)  | 23.2 cm (9.2 in.)  | 2700 Newton (600 lb)      |
| 96          | 12              | 17.53 mm (0.690 in.) | 253 kg/km (170 lb/kft) | 35.1 cm (13.8 in.)  | 26.4 cm (10.4 in.) | 2700 Newton (600 lb)      |
| 144         | 12              | 22.10 mm (0.870 in.) | 365 kg/km (245 lb/kft) | 44.2 cm (17.4 in.)  | 33.3 cm (13.1 in.) | 2700 Newton (600 lb)      |
| 216         | 12              | 22.10 mm (0.870 in.) | 362 kg/km (243 lb/kft) | 44.2 cm (17.4 in.)  | 33.3 cm (13.1 in.) | 2700 Newton (600 lb)      |

##### Indoor / Outdoor Direct Burial / Armored

| FIBER COUNT | FIBERS PER TUBE | OUTSIDE DIAMETER    | WEIGHT                 | MINIMUM BEND RADIUS |                    | MAXIMUM LOAD INSTALLATION |
|-------------|-----------------|---------------------|------------------------|---------------------|--------------------|---------------------------|
|             |                 |                     |                        | SHORT TERM          | LONG TERM          |                           |
| 6           | 6               | 13.72 mm (0.54 in.) | 210 kg/km (141 lb/kft) | 27.4 cm (10.8 in.)  | 20.6 cm (8.1 in.)  | 2700 Newton (600 lb)      |
| 12          | 6               | 13.72 mm (0.54 in.) | 210 kg/km (141 lb/kft) | 27.4 cm (10.8 in.)  | 20.6 cm (8.1 in.)  | 2700 Newton (600 lb)      |
| 24          | 6               | 13.72 mm (0.54 in.) | 210 kg/km (141 lb/kft) | 27.4 cm (10.8 in.)  | 20.6 cm (8.1 in.)  | 2700 Newton (600 lb)      |
| 36          | 6               | 13.72 mm (0.54 in.) | 210 kg/km (141 lb/kft) | 27.4 cm (10.8 in.)  | 20.6 cm (8.1 in.)  | 2700 Newton (600 lb)      |
| 48          | 12              | 16.76 mm (0.66 in.) | 259 kg/km (174 lb/kft) | 33.5 cm (13.2 in.)  | 25.1 cm (9.9 in.)  | 2700 Newton (600 lb)      |
| 72          | 12              | 16.76 mm (0.66 in.) | 259 kg/km (174 lb/kft) | 33.5 cm (13.2 in.)  | 25.1 cm (9.9 in.)  | 2700 Newton (600 lb)      |
| 96          | 12              | 17.78 mm (0.70 in.) | 307 kg/km (206 lb/kft) | 35.6 cm (14 in.)    | 26.7 cm (10.5 in.) | 2700 Newton (600 lb)      |
| 144         | 12              | 22.35 mm (0.88 in.) | 449 kg/km (302 lb/kft) | 44.7 cm (17.6 in.)  | 33.5 cm (13.2 in.) | 2700 Newton (600 lb)      |

# Fiber Media

FiberExpress Cables



## Loose Tube (Campus) Direct Burial Armored Series (continued)

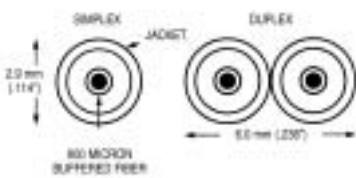
| DESCRIPTION                                                                         | ORDERING NUMBER              | ORDERING NUMBER            | ORDERING NUMBER             | ORDERING NUMBER        |
|-------------------------------------------------------------------------------------|------------------------------|----------------------------|-----------------------------|------------------------|
| LOOSE TUBE (CAMPUS)<br>OUTDOOR SERIES<br>UV RATED, ARMORED, PE JACKET               | MULTIMODE,<br>FX300, 62.5 µm | MULTIMODE,<br>FX600, 50 µm | MULTIMODE,<br>FX2000, 50 µm | SINGLEMODE<br>ENHANCED |
| <b>6 fibers</b>                                                                     | M9B381T                      | M9A381T                    | M9C381T                     | M9W381T                |
| <b>12 fibers</b>                                                                    | M9B382T                      | M9A382T                    | M9C382T                     | M9W382T                |
| <b>24 fibers</b>                                                                    | M9B384T                      | M9A384T                    | M9C384T                     | M9W384T                |
| <b>36 fibers</b>                                                                    | M9B386T                      | M9A386T                    | M9C386T                     | M9W386T                |
| <b>48 fibers</b>                                                                    | M9B389T                      | M9A389T                    | M9C389T                     | M9W389T                |
| <b>72 fibers</b>                                                                    | M9B391T                      | M9A391T                    | M9C391T                     | M9W391T                |
| <b>96 fibers</b>                                                                    | M9B398T                      | M9A398T                    | M9C398T                     | M9W398T                |
| <b>144 fibers</b>                                                                   | M9B393T                      | M9A393T                    | M9C393T                     | M9W393T                |
| <b>216 fibers</b>                                                                   | M9B400T                      | M9A400T                    | M9C400T                     | M9W400T                |
| LOOSE TUBE (CAMPUS) INDOOR/OUTDOOR RISER SERIES, UV RATED, ARMORED, UL/cUL OFCR FT4 |                              |                            |                             |                        |
| <b>6 fibers</b>                                                                     | M9B890                       | M9A890                     | M9C890                      | M9W890                 |
| <b>12 fibers</b>                                                                    | M9B891                       | M9A891                     | M9C891                      | M9W891                 |
| <b>24 fibers</b>                                                                    | M9B892                       | M9A892                     | M9C892                      | M9W892                 |
| <b>36 fibers</b>                                                                    | M9B893                       | M9A893                     | M9C893                      | M9W893                 |
| <b>48 fibers</b>                                                                    | M9B894                       | M9A894                     | M9C894                      | M9W894                 |
| <b>72 fibers</b>                                                                    | M9B895                       | M9A895                     | M9C895                      | M9W895                 |
| <b>96 fibers</b>                                                                    | M9B896                       | M9A896                     | M9C896                      | M9W896                 |
| <b>144 fibers</b>                                                                   | M9B897                       | M9A897                     | M9C897                      | M9W897                 |

All fiber optic products can be supplied in compliance with RoHS regulations. Please contact Customer Service for more details.

## Interconnect Cable Series

### Interconnect Series

**Interconnect Cables** are designed for low fiber-count premises environments. They are small and very flexible, making them ideal for confined spaces. Their aesthetic appearance makes these cables suitable for use in open office environments.



Fiber Bundle Detail



Fiber Duplex

### Features & Benefits

- Available in 1 or 2-fibers 62.5 and 50 µm Multimode or Singlemode Enhanced configurations
- Meets OFNR/FT4 riser and OFNP/FT6 rating requirements
- Small and flexible design
- One sub-unit is marked to permit easy identification of transmit and receive fibers
- Length markings to facilitate installation.

### Applications

- Patch panels
- Workstation equipment connections
- Horizontal distribution in open office environments.

### Cable Color Code

The Belden CDT Interconnect Series jacket color code standard is orange for both riser and plenum Multimode FX300 and FX600 cables and aqua for FX2000 cables. The only exception is the Multimode FX300 plenum cables which are gray. All Singlemode Enhanced cables are yellow.

## Interconnect Cable Series

### Product Specifications

|                                  |                                  |
|----------------------------------|----------------------------------|
| Crush Resistance (EIA-455-41)    | 200 N/cm                         |
| Impact Resistance (EIA-455-25)   | 20 Impacts                       |
|                                  | w/1.0 N-m                        |
| <b>Minimum Bend Radius</b>       |                                  |
| Installation (Short Term) - Load | 15x cable diameter               |
| Long Term - No Load              | 10x cable diameter               |
| <b>Riser</b>                     | UL/cUL rated Type OFNR / OFN FT4 |
|                                  | Flame Resistance UL 1666         |
| <b>Plenum</b>                    | UL/cUL rated Type OFNP / OFN FT6 |
|                                  | Flame Resistance UL 910          |
| Buffer Diameter                  | 900 µm                           |
| Strength Member                  | Aramid Yarn                      |

### Jacket Material

|        |     |
|--------|-----|
| Riser  | PVC |
| Plenum | PVC |

### Buffer Material

|        |     |
|--------|-----|
| Riser  | PVC |
| Plenum | PVC |

Color coding (Jacket and Fibers) TIA/EIA 568-B.3, TIA/EIA 598-B

### Temperature Range

|           |              |
|-----------|--------------|
| Storage   | -40 to +70°C |
| Operating | -20 to +70°C |

### Optical Specification

| FIBER TYPE                 | ATTENUATION (MAX.)<br>dB/km |         |         | OFL BANDWIDTH (MIN.)<br>MHz-km |         | RML BANDWIDTH (MIN.)<br>MHz-km |
|----------------------------|-----------------------------|---------|---------|--------------------------------|---------|--------------------------------|
|                            | 850 nm                      | 1300 nm | 1550 nm | 850 nm                         | 1300 nm | 850 nm                         |
| FiberExpress 300 (62.5 µm) | 3.5                         | 1.25    | -----   | 200                            | 500     | 220                            |
| FiberExpress 600 (50 µm)   | 3.5                         | 1.25    | -----   | 500                            | 500     | 510                            |
| FiberExpress 2000 (50 µm)  | 3.5                         | 1.25    | -----   | 1500                           | 500     | 2000**                         |
| Singlemode Enhanced        | -----                       | 0.8*    | 0.5     | -----                          | -----   | -----                          |

OFL: Overfill launch

\* Wavelength: 1310 nm

RML: Restricted mode launch

\*\* EMB: Effective Modal Bandwidth

| FIBER TYPE                 | GIGABIT ETHERNET REACH (METERS)<br>IEEE 802.3Z |             | 10 GIGABIT ETHERNET<br>REACH (METERS) | 10 GIGABIT ETHERNET<br>REACH (METERS) |
|----------------------------|------------------------------------------------|-------------|---------------------------------------|---------------------------------------|
|                            | 1000BASE SX                                    | 1000BASE LX | 10GBASE-S                             | 10GBASE-L                             |
| FiberExpress 300 (62.5 µm) | 300                                            | 550         | 33                                    | -----                                 |
| FiberExpress 600 (50 µm)   | 600                                            | 600         | 82                                    | -----                                 |
| FiberExpress 2000 (50 µm)  | 2000                                           | 600         | 300                                   | -----                                 |
| Singlemode Enhanced        | -----                                          | 5000        | -----                                 | 10000                                 |

Note1: Mode launch conditioning patch cord is not required

Note2: For proper design, please refer to the Belden IBDN Optical Fiber Design Guide

Note3: Singlemode Enhanced is a low Water Peak Singlemode for CWDM applications and complies with ITU G.562.c/d

### Mechanical Characteristics

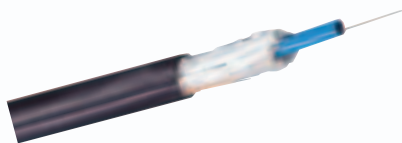
| FIBER COUNT | OUTSIDE DIAMETER               | WEIGHT               | MINIMUM BEND RADIUS |                  | MAXIMUM LOAD INSTALLATION |
|-------------|--------------------------------|----------------------|---------------------|------------------|---------------------------|
|             |                                |                      | INSTALLATION        | LONG TERM        |                           |
| 1           | 2.9 mm (0.114 in.)             | 13 kg/km (9 lb/kft)  | 4.3 cm (1.7 in.)    | 2.9 cm (1.1 in.) | 350 Newton (77 lb)        |
| 2           | 2.9 x 6.0 mm (0.11 x 0.23 in.) | 22 kg/km (15 lb/kft) | 4.3 cm (1.7 in.)    | 2.9 cm (1.1 in.) | 700 Newton (154 lb)       |

| DESCRIPTION                                 | ORDERING NUMBER           | ORDERING NUMBER         | ORDERING NUMBER          | ORDERING NUMBER     |
|---------------------------------------------|---------------------------|-------------------------|--------------------------|---------------------|
| INTERCONNECT RISER SERIES, UL/cUL OFNR FT4  | MULTIMODE, FX300, 62.5 µm | MULTIMODE, FX600, 50 µm | MULTIMODE, FX2000, 50 µm | SINGLEMODE ENHANCED |
| <b>1 fiber</b>                              | M97112                    | M9A001                  | M9C001                   | M9W001              |
| <b>2 fibers</b>                             | M96915                    | M9A002                  | M9C002                   | M9W002              |
| INTERCONNECT PLENUM SERIES, UL/cUL OFNP FT6 |                           |                         |                          |                     |
| <b>1 fiber</b>                              | M98086                    | M9A003                  | M9C003                   | M9W003              |
| <b>2 fibers</b>                             | M96919                    | M9A004                  | M9C004                   | M9W004              |

All fiber optic products can be supplied in compliance with RoHS regulations. Please contact Customer Service for more details.



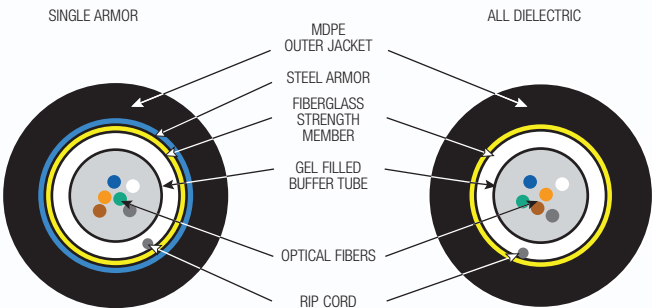
## Central Tubes (Campus)



**M9B155** Central Tube (Campus) Outdoor

## Central Tube (Campus) Outdoor and Outdoor Armored

**Central Tube (Campus) Optical Fiber Cables** are loose-tube buffered cables suited for outdoor applications such as lashed aerial or underground conduit. The Central Tube Armored series of cables has corrugated steel armor which provides added protection for direct burial applications. These central tube construction cables are a cost effective alternative to traditional Outside plant cables in fiber counts of 12 fibers or less, yet offer the same protection against crush, impact, and abrasion. These cables are available in outdoor rated constructions. Belden CDT offers these cables in 62.5 and 50  $\mu\text{m}$  Multimode fiber and Singlemode Enhanced fiber compositions.



### Features & Benefits

- Economical option for low fiber counts
- Quick and easy end preparation
- Fully waterblocked
- No rods – easy handling

### Applications

- Campus OSP backbones
- Drop cable
- Telecommunications and data trunk

### Product Specifications

|                                  |                                |
|----------------------------------|--------------------------------|
| Crush Resistance (EIA-455-41)    | 2000 N/cm                      |
| Impact Resistance (EIA-455-25)   | 2000 Impacts                   |
|                                  | w/1.6 N-m                      |
| <b>Minimum Bend Radius</b>       |                                |
| Installation (Short Term) - Load | 20x cable diameter             |
| Long Term - No Load              | 15x cable diameter             |
| Buffer Diameter                  | 900 $\mu\text{m}$              |
| Strength Member                  | Fiber Glass                    |
| <b>Jacket Material</b>           |                                |
| Outdoor                          | PE                             |
| Core Wrap                        | Water Swellable Tape           |
| <b>Buffer Tube Material</b>      |                                |
| Gel Filled Thermoplastic         | PBT                            |
| Color coding (Jacket and Fibers) | TIA/EIA 568-B.3, TIA/EIA 598-B |
| <b>Temperature Range</b>         |                                |
| Storage                          | -40 to +70°C                   |
| Operating                        | -40 to +70°C                   |

### Central Tubes (Campus) (continued)

#### Mechanical Characteristics

##### Central Tube outdoor

| FIBER COUNT | OUTSIDE DIAMETER    | WEIGHT               | MINIMUM BEND RADIUS<br>INSTALLATION | LONG TERM         | MAXIMUM LOAD<br>INSTALLATION |
|-------------|---------------------|----------------------|-------------------------------------|-------------------|------------------------------|
| 2           | 8.26 mm (0.325 in.) | 54 kg/km (36 lb/kft) | 16.7 cm (6.5 in.)                   | 12.4 cm (4.9 in.) | 2700 Newton (600 lb)         |
| 4           | 8.26 mm (0.325 in.) | 54 kg/km (36 lb/kft) | 16.7 cm (6.5 in.)                   | 12.4 cm (4.9 in.) | 2700 Newton (600 lb)         |
| 6           | 8.26 mm (0.325 in.) | 54 kg/km (36 lb/kft) | 16.7 cm (6.5 in.)                   | 12.4 cm (4.9 in.) | 2700 Newton (600 lb)         |
| 8           | 8.26 mm (0.325 in.) | 54 kg/km (36 lb/kft) | 16.7 cm (6.5 in.)                   | 12.4 cm (4.9 in.) | 2700 Newton (600 lb)         |
| 10          | 8.26 mm (0.325 in.) | 54 kg/km (36 lb/kft) | 16.7 cm (6.5 in.)                   | 12.4 cm (4.9 in.) | 2700 Newton (600 lb)         |
| 12          | 8.26 mm (0.325 in.) | 54 kg/km (36 lb/kft) | 16.7 cm (6.5 in.)                   | 12.4 cm (4.9 in.) | 2700 Newton (600 lb)         |

##### Central Tube outdoor armored

| FIBER COUNT | OUTSIDE DIAMETER     | WEIGHT                | MINIMUM BEND RADIUS<br>INSTALLATION | LONG TERM         | MAXIMUM LOAD<br>INSTALLATION |
|-------------|----------------------|-----------------------|-------------------------------------|-------------------|------------------------------|
| 2           | 10.41 mm (0.410 in.) | 108 kg/km (72 lb/kft) | 20.8 cm (8.2 in.)                   | 15.6 cm (6.2 in.) | 2700 Newton (600 lb)         |
| 4           | 10.41 mm (0.410 in.) | 108 kg/km (72 lb/kft) | 20.8 cm (8.2 in.)                   | 15.6 cm (6.2 in.) | 2700 Newton (600 lb)         |
| 6           | 10.41 mm (0.410 in.) | 108 kg/km (72 lb/kft) | 20.8 cm (8.2 in.)                   | 15.6 cm (6.2 in.) | 2700 Newton (600 lb)         |
| 8           | 10.41 mm (0.410 in.) | 108 kg/km (72 lb/kft) | 20.8 cm (8.2 in.)                   | 15.6 cm (6.2 in.) | 2700 Newton (600 lb)         |
| 10          | 10.41 mm (0.410 in.) | 108 kg/km (72 lb/kft) | 20.8 cm (8.2 in.)                   | 15.6 cm (6.2 in.) | 2700 Newton (600 lb)         |
| 12          | 10.41 mm (0.410 in.) | 108 kg/km (72 lb/kft) | 20.8 cm (8.2 in.)                   | 15.6 cm (6.2 in.) | 2700 Newton (600 lb)         |

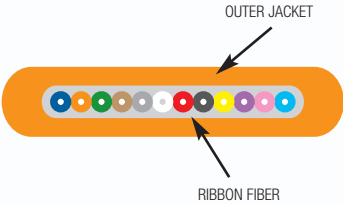
| DESCRIPTION                              | ORDERING NUMBER              | ORDERING NUMBER            | ORDERING NUMBER             | ORDERING NUMBER        |
|------------------------------------------|------------------------------|----------------------------|-----------------------------|------------------------|
| CENTRAL TUBE (CAMPUS)<br>OUTDOOR         | MULTIMODE,<br>FX300, 62.5 µm | MULTIMODE,<br>FX600, 50 µm | MULTIMODE,<br>FX2000, 50 µm | SINGLEMODE<br>ENHANCED |
| <b>2 fibers</b>                          | M9B150                       | M9A150                     | M9C150                      | M9W150                 |
| <b>4 fibers</b>                          | M9B151                       | M9A151                     | M9C151                      | M9W151                 |
| <b>6 fibers</b>                          | M9B152                       | M9A152                     | M9C152                      | M9W152                 |
| <b>8 fibers</b>                          | M9B153                       | M9A153                     | M9C153                      | M9W153                 |
| <b>10 fibers</b>                         | M9B154                       | M9A154                     | M9C154                      | M9W154                 |
| <b>12 fibers</b>                         | M9B155                       | M9A155                     | M9C155                      | M9W155                 |
| CENTRAL TUBE (CAMPUS)<br>OUTDOOR ARMORED | MULTIMODE,<br>FX300, 62.5 µm | MULTIMODE,<br>FX600, 50 µm | MULTIMODE,<br>FX2000, 50 µm | SINGLEMODE<br>ENHANCED |
| <b>2 fibers</b>                          | M9B170                       | M9A170                     | M9C170                      | M9W170                 |
| <b>4 fibers</b>                          | M9B171                       | M9A171                     | M9C171                      | M9W171                 |
| <b>6 fibers</b>                          | M9B172                       | M9A172                     | M9C172                      | M9W172                 |
| <b>8 fibers</b>                          | M9B173                       | M9A173                     | M9C173                      | M9W173                 |
| <b>10 fibers</b>                         | M9B174                       | M9A174                     | M9C174                      | M9W174                 |
| <b>12 fibers</b>                         | M9B175                       | M9A175                     | M9C175                      | M9W175                 |

Please contact the Technical Support Group for proper connectivity integration and installation guidance.

All fiber optic products can be supplied in compliance with RoHS regulations. Please contact Customer Service for more details.



Ribbon Series



## Ribbon Series

**Optical Fiber Ribbon Cables** are designed for Inter-equipment connections. Their small size, flexibility and low minimum bend radius is ideal for connection in tight spaces of switching equipment. These cables are suitable in applications with NEBS flammability requirements. The Ribbon cables are available in Multimode 62.5  $\mu$ m and 50  $\mu$ m and Singlemode Enhanced fiber. All ribbon cables are either riser OFNR/FT4 or plenum OFNP/FT6 rated.



M97066 Ribbon Series

### Features & Benefits

- Color coded fibers
- Suitable for use with standard ribbon connectors
- Half-inch minimum bend radius
- Tight center-to-center tolerances
- Optional identification printing available
- OFNR or OFN Rated

### Applications

- Inter-equipment connections
- NEBS applications

### Product Specifications

|                                            |                                  |
|--------------------------------------------|----------------------------------|
| Crush Resistance (EIA-455-41)              | 2000 N/cm                        |
| Impact Resistance (EIA-455-25)             | 2000 Impacts                     |
|                                            | w/1.6 N-m                        |
| Flexure (EIA-455-104)                      | 2000 cycles min.                 |
| <b>Minimum Bend Radius</b>                 |                                  |
| Installation (Short Term) - Load (FOTP-33) | 15x cable diameter               |
| Long Term - No Load                        | 10x cable diameter               |
| <b>Riser</b>                               | UL/cUL rated Type OFNR / OFN FT4 |
|                                            | Flame Resistance UL 1666         |
| <b>Plenum</b>                              | UL/cUL rated Type OFNP / OFN FT6 |
|                                            | Flame Resistance NFPA 262        |
| Strength Member                            | Aramid Yarn                      |
| <b>Jacket Material</b>                     |                                  |
| Riser                                      | PVC                              |
| Plenum                                     | PVC                              |
| Color coding (Jacket and Fibers)           | TIA/EIA 568-B.3, TIA/EIA 598-B   |
| <b>Temperature Range Plenum</b>            |                                  |
| Storage                                    | -40 to +80°C                     |
| Operating                                  | -20 to +70°C                     |

For additional specifications, please contact your Belden CDT Representative

### Ribbon Series

### Optical Specification

| FIBER TYPE                 | ATTENUATION (MAX.)<br>dB/km |         |         | OFL BANDWIDTH (MIN.)<br>MHz-km |         | RML BANDWIDTH (MIN.)<br>MHz-km |
|----------------------------|-----------------------------|---------|---------|--------------------------------|---------|--------------------------------|
|                            | 850 nm                      | 1300 nm | 1550 nm | 850 nm                         | 1300 nm | 850 nm                         |
| FiberExpress 300 (62.5 μm) | 3.5                         | 1.25    | -----   | 220                            | 500     | 220                            |
| FiberExpress 600 (50 μm)   | 3.5                         | 1.25    | -----   | 510                            | 500     | 510                            |
| FiberExpress 2000 (50 μm)  | 3.5                         | 1.25    | -----   | 1500                           | 500     | 2000**                         |
| Singlemode Enhanced        | -----                       | 0.8*    | 0.5     | -----                          | -----   | -----                          |

OFL: Overfill launch

RML: Restricted mode launch

\* Wavelength: 1310 nm

\*\* EMB: Effective Modal Bandwidth

| FIBER TYPE                 | GIGABIT ETHERNET REACH (METERS)<br>IEEE 802.3Z |             | 10 GIGABIT ETHERNET<br>REACH (METERS) | 10 GIGABIT ETHERNET<br>REACH (METERS) |
|----------------------------|------------------------------------------------|-------------|---------------------------------------|---------------------------------------|
|                            | 1000BASE SX                                    | 1000BASE LX | 10GBASE-S                             | 10GBASE-L                             |
| FiberExpress 300 (62.5 μm) | 300                                            | 550         | 33                                    | -----                                 |
| FiberExpress 600 (50 μm)   | 600                                            | 600         | 82                                    | -----                                 |
| FiberExpress 2000 (50 μm)  | 2000                                           | 600         | 300                                   | -----                                 |
| Singlemode Enhanced        | -----                                          | 5000        | -----                                 | 10000                                 |

Note1: Mode launch conditioning patch cord is not required

Note2: For proper design, please refer to the Belden IBDN Optical Fiber Design Guide

Note3: Singlemode Enhanced is a low Water Peak Singlemode for CWDM applications and complies with ITU G.562.c/d

### Mechanical Characteristics

| FIBER COUNT | OUTSIDE DIAMETER                | WEIGHT              | MINIMUM BEND RADIUS<br>INSTALLATION | LONG TERM        | MAXIMUM LOAD<br>INSTALLATION |
|-------------|---------------------------------|---------------------|-------------------------------------|------------------|------------------------------|
| 2           | 2.9 mm (0.114 in.)              | 7 kg/km (5 lb/kft)  | 4.4 cm (1.7 in.)                    | 2.9 cm (1.1 in.) | 444 Newton (100 lb)          |
| 4           | 2.0 x 2.9 mm (0.78 x 0.114 in.) | 6 kg/km (4 lb/kft)  | 4.4 cm (1.7 in.)                    | 2.9 cm (1.1 in.) | 444 Newton (100 lb)          |
| 6           | 2.0 x 3.5 mm (0.78 x 0.137 in.) | 9 kg/km (6 lb/kft)  | 5.3 cm (2.1 in.)                    | 3.5 cm (1.4 in.) | 444 Newton (100 lb)          |
| 8           | 2.0 x 4.0 mm (0.78 x 0.158 in.) | 9 kg/km (6 lb/kft)  | 6.0 cm (2.4 in.)                    | 4.0 cm (1.6 in.) | 444 Newton (100 lb)          |
| 12          | 2.0 x 4.6 mm (0.78 x 0.180 in.) | 10 kg/km (7 lb/kft) | 6.9 cm (2.7 in.)                    | 4.6 cm (1.8 in.) | 444 Newton (100 lb)          |

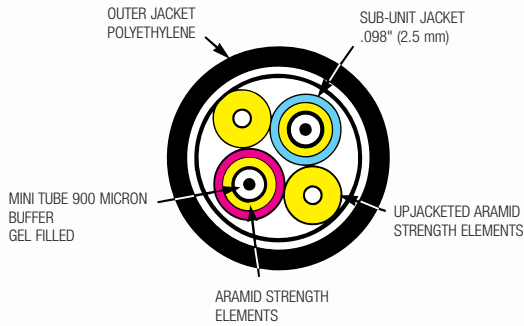
| DESCRIPTION                          | ORDERING NUMBER              | ORDERING NUMBER            | ORDERING NUMBER             | ORDERING NUMBER        |
|--------------------------------------|------------------------------|----------------------------|-----------------------------|------------------------|
| RIBBON RISER SERIES,<br>UL/cUL OFNR  | MULTIMODE,<br>FX300, 62.5 μm | MULTIMODE,<br>FX600, 50 μm | MULTIMODE,<br>FX2000, 50 μm | SINGLEMODE<br>ENHANCED |
| <b>2 fibers</b>                      | M97271                       | M97275                     | M97314                      | M97279                 |
| <b>4 fibers</b>                      | M97272                       | M97276                     | M97315                      | M97280                 |
| <b>6 fibers</b>                      | M97273                       | M97277                     | M97316                      | M97281                 |
| <b>8 fibers</b>                      | M97274                       | M97278                     | M97317                      | M97282                 |
| <b>12 fibers</b>                     | M97066                       | M97248                     | M97318                      | M97067                 |
| RIBBON PLENUM SERIES,<br>UL/cUL OFNP | MULTIMODE,<br>FX300, 62.5 μm | MULTIMODE,<br>FX600, 50 μm | MULTIMODE,<br>FX2000, 50 μm | SINGLEMODE<br>ENHANCED |
| <b>2 fibers</b>                      | M97196                       | M97201                     | M97210                      | M97224                 |
| <b>4 fibers</b>                      | M97197                       | M97202                     | M97211                      | M97225                 |
| <b>6 fibers</b>                      | M97198                       | M97203                     | M97212                      | M97022                 |
| <b>8 fibers</b>                      | M97199                       | M97204                     | M97213                      | M97189                 |
| <b>12 fibers</b>                     | M97071                       | M97021                     | M97214                      | M96954                 |

Fiber Ribbon Cable is to be sold as bulk cable. Fiber Ribbon Cable has not been qualified for field connectorization.

All fiber optic products can be supplied in compliance with RoHS regulations. Please contact Customer Service for more details.



## Micro Loose Tube



## Micro Loose Tube

**Micro Loose Tube (Campus) Optical Fiber Cables** are breakout style cables with the environmental advantages of a loose tube, gel filled cable. These cables are an ideal solution for indoor/outdoor installations. They offer the easy handling and termination of a breakout style cable. In this construction there is a small amount of gel surrounding the fibers making the cable suitable for installation in the most adverse outdoor applications, such as lashed aerial or conduits above or below the frost line. Belden CDT offers these cables in 62.5 and 50  $\mu\text{m}$  Multimode fiber and Singlemode Enhanced fiber compositions.



**M9B705** Micro Loose Tube Cable

### Features & Benefits

- Loose buffer dimensions compatible with standard connectors (900  $\mu\text{m}$ )
- Waterblock gel for moisture protection
- Breakout kits not required for connectorization

### Applications

- Ducts between buildings
- Telecommunications and data trunk

### Product Specifications

|                                  |                                |
|----------------------------------|--------------------------------|
| Crush Resistance (EIA-455-41)    | 600 N/cm                       |
| Impact Resistance (EIA-455-25)   | 20 Impacts                     |
|                                  | w/1.0 N-m                      |
| <b>Minimum Bend Radius</b>       |                                |
| Installation (Short Term) - Load | 20x cable diameter             |
| Long Term - No Load              | 15x cable diameter             |
| Mini Tube Diameter               | 900 $\mu\text{m}$              |
| Strength elements                | Aramid Yarn                    |
| Strength Member(s)               | Upjacketed Aramid              |
| <b>Jacket Material</b>           |                                |
| Outdoor                          | PE                             |
| Riser                            | PVC                            |
| <b>Buffer Tube Material</b>      |                                |
| Outdoor                          | PBT                            |
| Riser                            | PVC                            |
| Color coding (Jacket and Fibers) | TIA/EIA 568-B.3, TIA/EIA 598-B |
| <b>Temperature Range Plenum</b>  |                                |
| Storage                          | -40 to +70°C                   |
| Operating                        | -20 to +70°C                   |

## Micro Loose Tube (continued)

### Optical Specification

| FIBER TYPE                 | ATTENUATION (MAX.)<br>dB/km |         |         | OFL BANDWIDTH (MIN.)<br>MHz-km |         | RML BANDWIDTH (MIN.)<br>MHz-km |
|----------------------------|-----------------------------|---------|---------|--------------------------------|---------|--------------------------------|
|                            | 850 nm                      | 1300 nm | 1550 nm | 850 nm                         | 1300 nm | 850 nm                         |
| FiberExpress 300 (62.5 µm) | 3.5                         | 1.25    | -----   | 220                            | 500     | 220                            |
| FiberExpress 600 (50 µm)   | 3.5                         | 1.25    | -----   | 510                            | 500     | 510                            |
| FiberExpress 2000 (50 µm)  | 3.5                         | 1.25    | -----   | 1500                           | 500     | 2000**                         |
| Singlemode Enhanced        | -----                       | 0.8*    | 0.5     | -----                          | -----   | -----                          |

OFL: Overfill launch

RML: Restricted mode launch

\* Wavelength: 1310 nm

\*\* EMB: Effective Modal Bandwidth

| FIBER TYPE                 | GIGABIT ETHERNET REACH (METERS)<br>IEEE 802.3Z |             | 10 GIGABIT ETHERNET<br>REACH (METERS) | 10 GIGABIT ETHERNET<br>REACH (METERS) |
|----------------------------|------------------------------------------------|-------------|---------------------------------------|---------------------------------------|
|                            | 1000BASE SX                                    | 1000BASE LX | 10GBASE-S                             | 10GBASE-L                             |
| FiberExpress 300 (62.5 µm) | 300                                            | 550         | 33                                    | -----                                 |
| FiberExpress 600 (50 µm)   | 600                                            | 600         | 82                                    | -----                                 |
| FiberExpress 2000 (50 µm)  | 2000                                           | 600         | 300                                   | -----                                 |
| Singlemode Enhanced        | -----                                          | 5000        | -----                                 | 10000                                 |

Note1: Mode launch conditioning patch cord is not required

Note2: For proper design, please refer to the Belden IBDN Optical Fiber Design Guide

Note3: Singlemode Enhanced is a low Water Peak Singlemode for CWDM applications and complies with ITU G.562.c/d

### Mechanical Characteristics

#### Micro Loose Tube Outdoor Series

| FIBER COUNT | OUTSIDE DIAMETER     | WEIGHT                 | MINIMUM BEND RADIUS<br>INSTALLATION | LONG TERM         | MAXIMUM LOAD<br>INSTALLATION |
|-------------|----------------------|------------------------|-------------------------------------|-------------------|------------------------------|
| 1           | 8.64 mm (0.340 in.)  | 61 kg/km (41 lb/kft)   | 17.3 cm (6.8 in.)                   | 13.0 cm (5.1 in.) | 1468 Newton (330 lb)         |
| 2           | 9.14 mm (0.360 in.)  | 61 kg/km (41 lb/kft)   | 18.3 cm (7.2 in.)                   | 13.7 cm (5.4 in.) | 1535 Newton (345 lb)         |
| 4           | 9.14 mm (0.360 in.)  | 58 kg/km (39 lb/kft)   | 18.3 cm (7.2 in.)                   | 13.7 cm (5.4 in.) | 1267 Newton (285 lb)         |
| 6           | 10.62 mm (0.418 in.) | 80 kg/km (54 lb/kft)   | 21.2 cm (8.4 in.)                   | 15.9 cm (6.3 in.) | 1801 Newton (405 lb)         |
| 8           | 12.14 mm (0.478 in.) | 113 kg/km (76 lb/kft)  | 24.3 cm (9.6 in.)                   | 18.2 cm (7.2 in.) | 2700 Newton (600 lb)         |
| 12          | 15.60 mm (0.614 in.) | 192 kg/km (129 lb/kft) | 31.2 cm (12.3 in.)                  | 23.4 cm (9.2 in.) | 2700 Newton (600 lb)         |

#### Micro Loose Tube OFN Series

| FIBER COUNT | OUTSIDE DIAMETER     | WEIGHT                 | MINIMUM BEND RADIUS<br>INSTALLATION | LONG TERM         | MAXIMUM LOAD<br>INSTALLATION |
|-------------|----------------------|------------------------|-------------------------------------|-------------------|------------------------------|
| 1           | 8.74 mm (0.344 in.)  | 74 kg/km (50 lb/kft)   | 17.5 cm (6.9 in.)                   | 13.2 cm (5.2 in.) | 1468 Newton (330 lb)         |
| 2           | 9.25 mm (0.364 in.)  | 76 kg/km (51 lb/kft)   | 18.5 cm (7.3 in.)                   | 14.0 cm (5.5 in.) | 1535 Newton (345 lb)         |
| 4           | 9.25 mm (0.364 in.)  | 73 kg/km (49 lb/kft)   | 18.5 cm (7.3 in.)                   | 14.0 cm (5.5 in.) | 1267 Newton (285 lb)         |
| 6           | 10.72 mm (0.424 in.) | 101 kg/km (68 lb/kft)  | 21.2 cm (8.4 in.)                   | 15.9 cm (6.3 in.) | 1801 Newton (405 lb)         |
| 8           | 12.24 mm (0.482 in.) | 115 kg/km (77 lb/kft)  | 24.3 cm (9.6 in.)                   | 18.2 cm (7.2 in.) | 2700 Newton (600 lb)         |
| 12          | 15.70 mm (0.618 in.) | 193 kg/km (130 lb/kft) | 31.5 cm (12.4 in.)                  | 23.6 cm (9.3 in.) | 2700 Newton (600 lb)         |

#### Micro Loose Tube Indoor / Outdoor Series

| FIBER COUNT | OUTSIDE DIAMETER     | WEIGHT                 | MINIMUM BEND RADIUS<br>INSTALLATION | LONG TERM         | MAXIMUM LOAD<br>INSTALLATION |
|-------------|----------------------|------------------------|-------------------------------------|-------------------|------------------------------|
| 1           | 8.94 mm (0.352 in.)  | 80 kg/km (54 lb/kft)   | 17.8 cm (7.0 in.)                   | 13.5 cm (5.3 in.) | 1468 Newton (330 lb)         |
| 2           | 9.45 mm (0.372 in.)  | 82 kg/km (55 lb/kft)   | 18.8 cm (7.4 in.)                   | 14.2 cm (5.6 in.) | 1535 Newton (345 lb)         |
| 4           | 9.45 mm (0.372 in.)  | 76 kg/km (51 lb/kft)   | 18.8 cm (7.4 in.)                   | 14.2 cm (5.6 in.) | 1267 Newton (285 lb)         |
| 6           | 10.97 mm (0.432 in.) | 110 kg/km (74 lb/kft)  | 21.8 cm (8.6 in.)                   | 16.5 cm (6.5 in.) | 1801 Newton (405 lb)         |
| 8           | 12.45 mm (0.490 in.) | 140 kg/km (94 lb/kft)  | 24.9 cm (9.8 in.)                   | 18.8 cm (7.4 in.) | 2700 Newton (600 lb)         |
| 12          | 15.90 mm (0.626 in.) | 229 kg/km (151 lb/kft) | 31.8 cm (12.5 in.)                  | 23.9 cm (9.4 in.) | 2700 Newton (600 lb)         |

# Fiber Media

## Fiber Cables



### Micro Loose Tube (continued)

| DESCRIPTION                                               | ORDERING NUMBER              | ORDERING NUMBER            | ORDERING NUMBER             | ORDERING NUMBER        |
|-----------------------------------------------------------|------------------------------|----------------------------|-----------------------------|------------------------|
| MICRO LOOSE TUBE<br>OUTDOOR SERIES                        | MULTIMODE,<br>FX300, 62.5 µm | MULTIMODE,<br>FX600, 50 µm | MULTIMODE,<br>FX2000, 50 µm | SINGLEMODE<br>ENHANCED |
| <b>1 fiber</b>                                            | M9B700                       | M9A700                     | M9C700                      | M9W700                 |
| <b>2 fibers</b>                                           | M9B701                       | M9A701                     | M9C701                      | M9W701                 |
| <b>4 fibers</b>                                           | M9B702                       | M9A702                     | M9C702                      | M9W702                 |
| <b>6 fibers</b>                                           | M9B703                       | M9A703                     | M9C703                      | M9W703                 |
| <b>8 fibers</b>                                           | M9B704                       | M9A704                     | M9C704                      | M9W704                 |
| <b>12 fibers</b>                                          | M9B705                       | M9A705                     | M9C705                      | M9W705                 |
| MICRO LOOSE TUBE OFN SERIES,<br>UL/cUL OFN                | MULTIMODE,<br>FX300, 62.5 µm | MULTIMODE,<br>FX600, 50 µm | MULTIMODE,<br>FX2000, 50 µm | SINGLEMODE<br>ENHANCED |
| <b>1 fiber</b>                                            | M9B720                       | M9A720                     | M9C720                      | M9W720                 |
| <b>2 fibers</b>                                           | M9B721                       | M9A721                     | M9C721                      | M9W721                 |
| <b>4 fibers</b>                                           | M9B722                       | M9A722                     | M9C722                      | M9W722                 |
| <b>6 fibers</b>                                           | M9B723                       | M9A723                     | M9C723                      | M9W723                 |
| <b>8 fibers</b>                                           | M9B724                       | M9A724                     | M9C724                      | M9W724                 |
| <b>12 fibers</b>                                          | M9B725                       | M9A725                     | M9C725                      | M9W725                 |
| MICRO LOOSE TUBE<br>INDOOR/OUTDOOR SERIES,<br>UL/cUL OFNR | MULTIMODE,<br>FX300, 62.5 µm | MULTIMODE,<br>FX600, 50 µm | MULTIMODE,<br>FX2000, 50 µm | SINGLEMODE<br>ENHANCED |
| <b>1 fiber</b>                                            | M9B740                       | M9A740                     | M9C740                      | M9W740                 |
| <b>2 fibers</b>                                           | M9B741                       | M9A741                     | M9C741                      | M9W741                 |
| <b>4 fibers</b>                                           | M9B742                       | M9A742                     | M9C742                      | M9W742                 |
| <b>6 fibers</b>                                           | M9B743                       | M9A743                     | M9C743                      | M9W743                 |
| <b>8 fibers</b>                                           | M9B744                       | M9A744                     | M9C744                      | M9W744                 |
| <b>12 fibers</b>                                          | M9B745                       | M9A745                     | M9C745                      | M9W745                 |

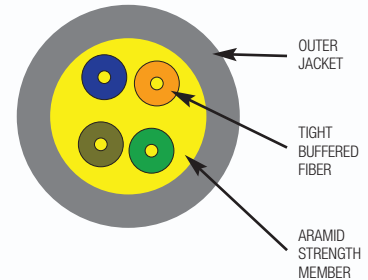
Please contact the Technical Support Group for proper connectivity integration and installation guidance.

All fiber optic products can be supplied in compliance with RoHS regulations. Please contact Customer Service for more details.

### Tactical Cables

#### Tactical Cable Outdoor

**Tactical Optical Fiber Cables** although small and lightweight, are designed to be extremely strong and rugged. They are designed specifically to maintain their performance qualities through repeated deployment and retrieval cycles. This performance is achieved by helically winding the cable core. These cables are an ideal solution for outdoor on-ground applications, military communications and ENG video communications indoor/outdoor installations. Belden CDT offers these cables in 62.5 and 50  $\mu\text{m}$  Multimode fiber and Singlemode Enhanced fiber compositions.



**M96575** Tactical Cable Outdoor

#### Features & Benefits

- Rugged jacket
- Durable design for repeated handling
- Designed to military standards
- Superior level of crush resistance

#### Applications

- ENG vehicles
- Outdoor events
- Re-deployable communications
- Digital camera transmission

#### Product Specifications

|                                  |                                |
|----------------------------------|--------------------------------|
| Crush Resistance (EIA-455-41)    | 440 N/cm                       |
| Impact Resistance (EIA-455-25)   | 200 Impacts                    |
|                                  | w/2.2 N-m                      |
| Flexure (EIA-455-104)            | 2000 cycles min.               |
| <b>Minimum Bend Radius</b>       |                                |
| Installation (Short Term) - Load | 15x cable diameter             |
| Long Term - No Load              | 8x cable diameter              |
| Buffer Diameter                  | 900 $\mu\text{m}$              |
| Strength Member                  | Aramid Yarn                    |
| <b>Jacket Material</b>           |                                |
| Outdoor                          | UV resistant PU                |
| <b>Buffer Material</b>           |                                |
| Outdoor                          | Polyester                      |
| Color coding (Jacket and Fibers) | TIA/EIA 568-B.3, TIA/EIA 598-B |
| <b>Temperature Range Plenum</b>  |                                |
| Storage                          | -70 to +85°C                   |
| Operating                        | -55 to +85°C                   |

For additional specifications, please contact your Belden CDT Representative

# Fiber Media

## Fiber Cables



### Tactical Cables (continued)

#### Optical Specification

| FIBER TYPE                 | ATTENUATION (MAX.)<br>dB/km |         |         | OFL BANDWIDTH (MIN.)<br>MHz-km |         | RML BANDWIDTH (MIN.)<br>MHz-km |
|----------------------------|-----------------------------|---------|---------|--------------------------------|---------|--------------------------------|
|                            | 850 nm                      | 1300 nm | 1550 nm | 850 nm                         | 1300 nm | 850 nm                         |
| FiberExpress 300 (62.5 µm) | 3.5                         | 1.25    | -----   | 220                            | 500     | 220                            |
| FiberExpress 600 (50 µm)   | 3.5                         | 1.25    | -----   | 510                            | 500     | 510                            |
| FiberExpress 2000 (50 µm)  | 3.5                         | 1.25    | -----   | 1500                           | 500     | 2000**                         |
| Singlemode Enhanced        | -----                       | 0.8*    | 0.5     | -----                          | -----   | -----                          |

OFL: Overfill launch

RML: Restricted mode launch

\*Wavelength: 1310 nm

\*\* EMB: Effective Modal Bandwidth

| FIBER TYPE                 | GIGABIT ETHERNET REACH (METERS)<br>IEEE 802.3Z |             | 10 GIGABIT ETHERNET<br>REACH (METERS) | 10 GIGABIT ETHERNET<br>REACH (METERS) |
|----------------------------|------------------------------------------------|-------------|---------------------------------------|---------------------------------------|
|                            | 1000BASE SX                                    | 1000BASE LX | 10GBASE-S                             | 10GBASE-L                             |
| FiberExpress 300 (62.5 µm) | 300                                            | 550         | 33                                    | -----                                 |
| FiberExpress 600 (50 µm)   | 600                                            | 600         | 82                                    | -----                                 |
| FiberExpress 2000 (50 µm)  | 2000                                           | 600         | 300                                   | -----                                 |
| Singlemode Enhanced        | -----                                          | 5000        | -----                                 | 10000                                 |

Note1: Mode launch conditioning patch cord is not required

Note2: For proper design, please refer to the Belden IBDN Optical Fiber Design Guide

Note3: Singlemode Enhanced is a low Water Peak Singlemode for CWDM applications and complies with ITU G.562.c/d

#### Mechanical Characteristics

| FIBER COUNT | OUTSIDE DIAMETER   | WEIGHT             | MINIMUM BEND RADIUS |                  | MAXIMUM LOAD         |
|-------------|--------------------|--------------------|---------------------|------------------|----------------------|
|             |                    |                    | INSTALLATION        | LONG TERM        | INSTALLATION         |
| 2           | 5.5 mm (0.217 in.) | 28 kg/km (19 lb/M) | 8.3 cm (3.2 in.)    | 5.5 cm (2.2 in.) | 1468 Newton (330 lb) |
| 4           | 5.7 mm (0.225 in.) | 31 kg/km (21 lb/M) | 8.6 cm (3.4 in.)    | 5.8 cm (2.3 in.) | 1468 Newton (330 lb) |
| 6           | 6.0 mm (0.236 in.) | 34 kg/km (23 lb/M) | 9.0 cm (3.5 in.)    | 6.0 cm (2.4 in.) | 1468 Newton (330 lb) |
| 8           | 6.3 mm (0.250 in.) | 39 kg/km (26 lb/M) | 9.7 cm (3.8 in.)    | 6.4 cm (2.5 in.) | 1468 Newton (330 lb) |
| 10          | 6.7 mm (0.265 in.) | 42 kg/km (28 lb/M) | 10.2 cm (4.0 in.)   | 6.9 cm (2.7 in.) | 1468 Newton (330 lb) |
| 12          | 7.1 mm (0.280 in.) | 46 kg/km (31 lb/M) | 10.5 cm (4.1 in.)   | 7.0 cm (2.8 in.) | 1468 Newton (330 lb) |

| DESCRIPTION            | ORDERING NUMBER              | ORDERING NUMBER            | ORDERING NUMBER             | ORDERING NUMBER        |
|------------------------|------------------------------|----------------------------|-----------------------------|------------------------|
| TACTICAL CABLE OUTDOOR | MULTIMODE,<br>FX300, 62.5 µm | MULTIMODE,<br>FX600, 50 µm | MULTIMODE,<br>FX2000, 50 µm | SINGLEMODE<br>ENHANCED |
| 2 fibers               | M96571                       | TBD                        | TBD                         | M96566                 |
| 4 fibers               | M96551                       | TBD                        | TBD                         | M96639                 |
| 6 fibers               | M96572                       | TBD                        | TBD                         | M96567                 |
| 8 fibers               | M96573                       | TBD                        | TBD                         | M96568                 |
| 10 fibers              | M96574                       | TBD                        | TBD                         | M96569                 |
| 12 fibers              | M96575                       | TBD                        | TBD                         | M96570                 |

Please contact the Technical Support Group for proper connectivity integration and installation guidance.

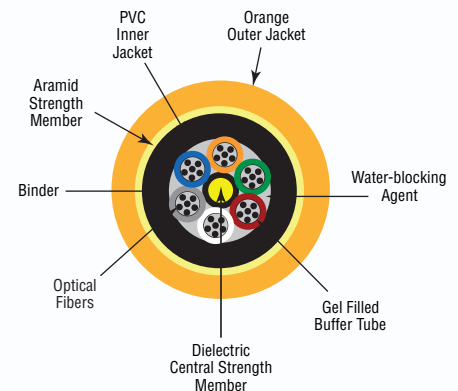
All fiber optic products can be supplied in compliance with RoHS regulations. Please contact Customer Service for more details.

### Tray Cables

## Tray Cable Indoor/Outdoor

**The TrayOptic® Series Cables** are designed for indoor/outdoor industrial application and feature a water-blocking agent for even greater protection. The TrayOptic Series passes the IEEE 383-2003 flame test. All TrayOptic Series products utilize Laser Optimized Fiber to handle Gigabit Ethernet light sources and expanded bandwidth requirements. Listed below are the part numbers for Multimode 62.5 µm fiber. TrayOptic Cables are also available with 50 µm or Singlemode fiber upon request.

TrayOptic cables with PVC outer jackets are well suited for a variety of applications while the CPE outer jacket should be considered when extra chemical or abrasion resistance is required. All TrayOptic cables are suitable for direct burial.



## Product Specifications

|                                  |                                           |
|----------------------------------|-------------------------------------------|
| Crush Resistance (EIA-455-41)    | 500 lbs./in. min.                         |
| Impact Resistance (EIA-455-25)   | 3.3 ft.-lbs./25 impacts min.<br>w/2.2 N-m |
| Flexure (EIA-455-104)            | 25 cycles, 12 lbs., 20 x OD radius min.   |
| <b>Minimum Bend Radius</b>       |                                           |
| Installation (Short Term) - Load | 20x cable diameter                        |
| Long Term - No Load              | 15x cable diameter                        |
| Buffer Diameter                  | 1.9 mm                                    |
| Strength Members                 | Aramid Yarn                               |
| <b>Jacket Material</b>           |                                           |
| Outdoor                          | PVC or CPE                                |
| Riser                            | UL/cUL rated Type OFNR / OFN FT4          |

## Temperature Range Plenum

|                                      |              |
|--------------------------------------|--------------|
| Storage                              | -40 to +70°C |
| Operating                            | -40 to +70°C |
| Fiber Specifications                 | 62.5µm       |
| Max. Attenuation (dB/km @850/1300nm) | 3.25/1.0     |
| Min. Bandwidth (MHz-km @850/1300nm)  | 200/500      |
| Numerical Aperture                   | 0.275        |

| DESCRIPTION                                         | ORDERING NUMBER |         |
|-----------------------------------------------------|-----------------|---------|
| TRAY CABLE INDOOR/OUTDOOR, MULTIMODE FX300, 62.5 µm | PVC             | CPE     |
| <b>2 fibers</b>                                     | I100255         | I100266 |
| <b>4 fibers</b>                                     | I100455         | I100466 |
| <b>6 fibers</b>                                     | I100655         | I100666 |
| <b>8 fibers</b>                                     | I400855         | I400866 |
| <b>12 fibers</b>                                    | I601255         | I601266 |
| <b>18 fibers</b>                                    | I601855         | I601866 |
| <b>24 fibers</b>                                    | I602455         | I602466 |
| <b>36 fibers</b>                                    | I603655         | I603666 |
| <b>48 fibers</b>                                    | I604855         | I604866 |
| <b>60 fibers</b>                                    | I606055         | I606066 |
| <b>72 fibers</b>                                    | I607255         | I607266 |

All fiber optic products can be supplied in compliance with RoHS regulations. Please contact Customer Service for more details.

# Fiber Media

## FiberExpress Cables

### Loose Tube Heavy-Duty Outdoor Series

### Loose Tube Heavy-Duty Outdoor Series

#### Characteristics

##### Operating temperature:

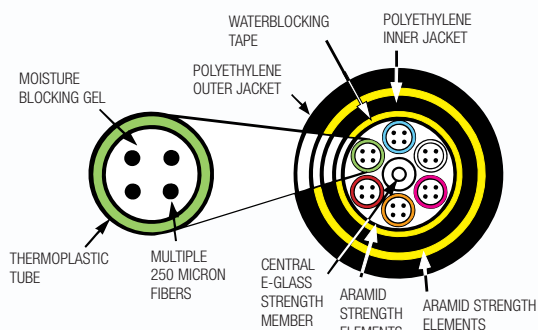
- -50 to -80°C (Storage)
- -40 to -70°C (Operating)

##### Color description:

- Fiber and Buffer Tubes: EIA/TIA 598-B
- Jacket: Black

#### Specifications

- Crush Resistance (EIA-455-41): 2000 N/cm
- Impact Resistance (EIA-455-25): 2000 Impacts @ 1.6 N-m
- Min. Ben Radius, Installation: 20X Cable O.D.
- Min. Ben Radius, Long Term: 15X Cable O.D.
- See Page 42 for Optical Specifications



**M9B840** Loose Tube Heavy-Duty Outdoor

#### Mechanical Characteristics

| FIBER COUNT | FIBERS PER TUBE | OUTSIDE DIAMETER     | WEIGHT                 | MINIMUM BEND RADIUS INSTALLATION | LONG TERM          | MAXIMUM LOAD INSTALLATION |
|-------------|-----------------|----------------------|------------------------|----------------------------------|--------------------|---------------------------|
| 2           | 2               | 11.18 mm (0.440 in.) | 89 kg/km (60 lb/kft)   | 22.4 cm (8.8 in.)                | 16.8 cm (6.6 in.)  | 2700 Newton (600 lb)      |
| 4           | 4               | 11.18 mm (0.440 in.) | 89 kg/km (60 lb/kft)   | 22.4 cm (8.8 in.)                | 16.8 cm (6.6 in.)  | 2700 Newton (600 lb)      |
| 6           | 6               | 11.18 mm (0.440 in.) | 89 kg/km (60 lb/kft)   | 22.4 cm (8.8 in.)                | 16.8 cm (6.6 in.)  | 2700 Newton (600 lb)      |
| 8           | 4               | 11.18 mm (0.440 in.) | 89 kg/km (60 lb/kft)   | 22.4 cm (8.8 in.)                | 16.8 cm (6.6 in.)  | 2700 Newton (600 lb)      |
| 12          | 6               | 11.18 mm (0.440 in.) | 89 kg/km (60 lb/kft)   | 22.4 cm (8.8 in.)                | 16.8 cm (6.6 in.)  | 2700 Newton (600 lb)      |
| 18          | 6               | 11.18 mm (0.440 in.) | 89 kg/km (60 lb/kft)   | 22.4 cm (8.8 in.)                | 16.8 cm (6.6 in.)  | 2700 Newton (600 lb)      |
| 24          | 6               | 11.18 mm (0.440 in.) | 89 kg/km (60 lb/kft)   | 22.4 cm (8.8 in.)                | 16.8 cm (6.6 in.)  | 2700 Newton (600 lb)      |
| 36          | 6               | 11.18 mm (0.440 in.) | 89 kg/km (60 lb/kft)   | 22.4 cm (8.8 in.)                | 16.8 cm (6.6 in.)  | 2700 Newton (600 lb)      |
| 48          | 12              | 13.72 mm (0.540 in.) | 202 kg/km (136 lb/kft) | 27.4 cm (10.8 in.)               | 20.6 cm (8.1 in.)  | 2700 Newton (600 lb)      |
| 72          | 12              | 13.72 mm (0.540 in.) | 202 kg/km (136 lb/kft) | 27.4 cm (10.8 in.)               | 20.6 cm (8.1 in.)  | 2700 Newton (600 lb)      |
| 96          | 12              | 15.37 mm (0.605 in.) | 226 kg/km (152 lb/kft) | 30.7 cm (12.1 in.)               | 23.0 cm (9.1 in.)  | 2700 Newton (600 lb)      |
| 144         | 12              | 19.30 mm (0.760 in.) | 379 kg/km (255 lb/kft) | 38.6 cm (15.2 in.)               | 28.9 cm (11.4 in.) | 2700 Newton (600 lb)      |
| 216         | 12              | 19.30 mm (0.760 in.) | 379 kg/km (255 lb/kft) | 38.6 cm (15.2 in.)               | 28.9 cm (11.4 in.) | 2700 Newton (600 lb)      |

| DESCRIPTION                          | ORDERING NUMBER           | ORDERING NUMBER         | ORDERING NUMBER          | ORDERING NUMBER     |
|--------------------------------------|---------------------------|-------------------------|--------------------------|---------------------|
| LOOSE TUBE HEAVY-DUTY OUTDOOR SERIES | MULTIMODE, FX300, 62.5 µm | MULTIMODE, FX600, 50 µm | MULTIMODE, FX2000, 50 µm | SINGLEMODE ENHANCED |
| <b>2 fibers</b>                      | M9B840                    | M9A840                  | M9C840                   | M9W840              |
| <b>4 fibers</b>                      | M9B841                    | M9A841                  | M9C841                   | M9W841              |
| <b>6 fibers</b>                      | M9B842                    | M9A842                  | M9C842                   | M9W842              |
| <b>8 fibers</b>                      | M9B843                    | M9A843                  | M9C843                   | M9W843              |
| <b>12 fibers</b>                     | M9B844                    | M9A844                  | M9C844                   | M9W844              |
| <b>18 fibers</b>                     | M9B845                    | M9A845                  | M9C845                   | M9W845              |
| <b>24 fibers</b>                     | M9B846                    | M9A846                  | M9C846                   | M9W846              |
| <b>36 fibers</b>                     | M9B847                    | M9A847                  | M9C847                   | M9W847              |
| <b>48 fibers</b>                     | M9B848                    | M9A848                  | M9C848                   | M9W848              |
| <b>72 fibers</b>                     | M9B849                    | M9A849                  | M9C849                   | M9W849              |
| <b>96 fibers</b>                     | M9B820                    | M9A820                  | M9C820                   | M9W820              |
| <b>144 fibers</b>                    | M9B821                    | M9A821                  | M9C821                   | M9W821              |
| <b>216 fibers</b>                    | M9B822                    | M9A822                  | M9C822                   | M9W822              |

All fiber optic products can be supplied in compliance with RoHS regulations. Please contact Customer Service for more details.

### Ordering number by page

|          |    |          |    |          |    |          |    |          |    |          |    |
|----------|----|----------|----|----------|----|----------|----|----------|----|----------|----|
| 70100390 | 10 | AX100219 | 28 | AX101122 | 10 | AX101745 | 25 | AX102095 | 15 | AX102216 | 28 |
| 70101714 | 10 | AX100220 | 28 | AX101123 | 10 | AX101746 | 25 | AX102096 | 15 | AX102305 | 18 |
| 70102419 | 10 | AX100221 | 28 | AX101125 | 10 | AX101747 | 25 | AX102097 | 15 | AX102306 | 18 |
| 70102420 | 10 | AX100222 | 28 | AX101128 | 10 | AX101748 | 25 | AX102098 | 15 | AX102307 | 18 |
| 70102447 | 10 | AX100328 | 12 | AX101133 | 10 | AX101749 | 26 | AX102099 | 15 | AX102308 | 18 |
| A0316446 | 24 | AX100329 | 12 | AX101137 | 10 | AX101750 | 26 | AX102100 | 15 | AX102309 | 18 |
| A0318904 | 24 | AX100330 | 12 | AX101138 | 10 | AX101751 | 26 | AX102101 | 15 | AX102310 | 15 |
| A0335015 | 24 | AX100331 | 12 | AX101139 | 10 | AX101752 | 26 | AX102102 | 15 | AX102311 | 15 |
| A0390851 | 9  | AX100332 | 12 | AX101143 | 10 | AX101753 | 26 | AX102103 | 15 | AX102312 | 15 |
| A0394328 | 24 | AX100495 | 21 | AX101151 | 10 | AX101754 | 26 | AX102104 | 15 | AX102313 | 15 |
| A0394330 | 24 | AX100496 | 21 | AX101155 | 10 | AX101755 | 26 | AX102105 | 15 | AX102314 | 15 |
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| M9C151  | 51 | M9C509T | 43 | M9C842 | 60 | M9W100 | 33 | M9W238  | 36 | M9W722   | 56 |
| M9C152  | 51 | M9C510T | 43 | M9C843 | 60 | M9W101 | 33 | M9W240  | 36 | M9W723   | 56 |
| M9C153  | 51 | M9C511T | 43 | M9C844 | 60 | M9W102 | 33 | M9W241  | 36 | M9W724   | 56 |
| M9C155  | 51 | M9C513T | 43 | M9C845 | 60 | M9W103 | 33 | M9W242  | 36 | M9W725   | 56 |
| M9C170  | 51 | M9C520T | 43 | M9C846 | 60 | M9W104 | 33 | M9W243  | 36 | M9W740   | 56 |
| M9C171  | 51 | M9C602  | 31 | M9C847 | 60 | M9W105 | 33 | M9W244  | 36 | M9W741   | 56 |
| M9C172  | 51 | M9C604  | 31 | M9C848 | 60 | M9W107 | 33 | M9W245  | 36 | M9W742   | 56 |
| M9C173  | 51 | M9C606  | 31 | M9C849 | 60 | M9W111 | 33 | M9W246  | 36 | M9W743   | 56 |
| M9C175  | 51 | M9C609  | 31 | M9C890 | 48 | M9W112 | 33 | M9W247  | 36 | M9W744   | 56 |
| M9C202  | 45 | M9C612  | 32 | M9C891 | 48 | M9W114 | 33 | M9W248  | 36 | M9W745   | 56 |
| M9C204  | 45 | M9C614  | 32 | M9C892 | 48 | M9W116 | 33 | M9W381T | 48 | M9W810   | 43 |
| M9C205  | 45 | M9C616  | 32 | M9C893 | 48 | M9W120 | 33 | M9W382T | 48 | M9W811   | 43 |
| M9C206  | 45 | M9C619  | 31 | M9C894 | 48 | M9W130 | 40 | M9W384T | 48 | M9W812   | 43 |
| M9C207  | 45 | M9C620  | 32 | M9C895 | 48 | M9W131 | 40 | M9W386T | 48 | M9W813   | 43 |
| M9C209  | 45 | M9C621  | 32 | M9C896 | 48 | M9W132 | 40 | M9W389T | 48 | M9W814   | 43 |
| M9C211  | 45 | M9C622  | 31 | M9C897 | 48 | M9W133 | 40 | M9W391T | 48 | M9W815   | 43 |
| M9C215  | 45 | M9C623  | 32 | M9W001 | 49 | M9W134 | 40 | M9W393T | 48 | M9W816   | 43 |
| M9C230  | 36 | M9C700  | 56 | M9W002 | 49 | M9W135 | 40 | M9W398T | 48 | M9W817   | 43 |
| M9C231  | 36 | M9C701  | 56 | M9W003 | 49 | M9W136 | 40 | M9W400T | 48 | M9W820   | 60 |
| M9C232  | 36 | M9C702  | 56 | M9W004 | 49 | M9W137 | 40 | M9W500T | 43 | M9W821   | 60 |
| M9C233  | 36 | M9C703  | 56 | M9W005 | 38 | M9W138 | 40 | M9W502T | 43 | M9W822   | 60 |
| M9C234  | 36 | M9C704  | 56 | M9W006 | 38 | M9W139 | 40 | M9W505T | 43 | M9W840   | 60 |
| M9C235  | 36 | M9C705  | 56 | M9W007 | 38 | M9W150 | 51 | M9W507T | 43 | M9W841   | 60 |
| M9C236  | 36 | M9C720  | 56 | M9W008 | 38 | M9W151 | 51 | M9W509T | 43 | M9W842   | 60 |
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| M9C240  | 36 | M9C723  | 56 | M9W011 | 38 | M9W155 | 51 | M9W513T | 43 | M9W845   | 60 |
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| M9C243  | 36 | M9C740  | 56 | M9W014 | 39 | M9W172 | 51 | M9W604  | 31 | M9W848   | 60 |
| M9C244  | 36 | M9C741  | 56 | M9W015 | 39 | M9W173 | 51 | M9W606  | 31 | M9W849   | 60 |
| M9C245  | 36 | M9C742  | 56 | M9W016 | 39 | M9W175 | 51 | M9W609  | 31 | M9W890   | 48 |
| M9C246  | 36 | M9C743  | 56 | M9W017 | 39 | M9W202 | 45 | M9W612  | 32 | M9W891   | 48 |
| M9C247  | 36 | M9C744  | 56 | M9W018 | 39 | M9W204 | 45 | M9W614  | 32 | M9W892   | 48 |
| M9C248  | 36 | M9C745  | 56 | M9W019 | 39 | M9W205 | 45 | M9W616  | 32 | M9W893   | 48 |
| M9C381T | 48 | M9C810  | 43 | M9W020 | 39 | M9W206 | 45 | M9W619  | 31 | M9W894   | 48 |
| M9C382T | 48 | M9C811  | 43 | M9W037 | 31 | M9W207 | 45 | M9W620  | 32 | M9W895   | 48 |
| M9C384T | 48 | M9C812  | 43 | M9W038 | 31 | M9W209 | 45 | M9W621  | 32 | M9W896   | 48 |
| M9C386T | 48 | M9C813  | 43 | M9W039 | 31 | M9W211 | 45 | M9W622  | 31 | M9W897   | 48 |
| M9C389T | 48 | M9C814  | 43 | M9W040 | 31 | M9W215 | 45 | M9W623  | 32 | MX100154 | 12 |
| M9C391T | 48 | M9C815  | 43 | M9W042 | 31 | M9W230 | 36 | M9W700  | 56 | NOT0580  | 9  |
| M9C393T | 48 | M9C816  | 43 | M9W043 | 32 | M9W231 | 36 | M9W701  | 56 | PX101317 | 9  |
| M9C398T | 48 | M9C817  | 43 | M9W044 | 32 | M9W232 | 36 | M9W702  | 56 | PX101318 | 9  |
| M9C400T | 48 | M9C820  | 60 | M9W045 | 32 | M9W233 | 36 | M9W703  | 56 |          |    |
| M9C500T | 43 | M9C821  | 60 | M9W046 | 32 | M9W234 | 36 | M9W704  | 56 |          |    |
| M9C502T | 43 | M9C822  | 60 | M9W048 | 32 | M9W235 | 36 | M9W705  | 56 |          |    |

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| NXC-RPFL-PGPNNN-JBPFBN-N-01.5 | 11 | NXC-RPNL-PGPNNN-JBPFBN-N-01.5 | 11 |
| NXC-RPFL-PGPNNN-LCPFBN-N-01.5 | 11 | NXC-RPNL-PGPNNN-LCPFBN-N-01.5 | 11 |
| NXC-RPFL-PGPNNN-SCPFBN-N-01.5 | 11 | NXC-RPNL-PGPNNN-SCPFBN-N-01.5 | 11 |
| NXC-RPFL-PGPNNN-STPFBN-N-01.5 | 11 | NXC-RPNL-PGPNNN-STPFBN-N-01.5 | 11 |
| NXC-RPML-PGPNNN-JBPFBN-N-01.5 | 11 | NXC-RPSL-PGPNNN-JBPFBN-N-01.5 | 11 |
| NXC-RPML-PGPNNN-LCPFBN-N-01.5 | 11 | NXC-RPSL-PGPNNN-LCPFBN-N-01.5 | 11 |
| NXC-RPML-PGPNNN-SCPFBN-N-01.5 | 11 | NXC-RPSL-PGPNNN-SCPFBN-N-01.5 | 11 |
| NXC-RPML-PGPNNN-STPFBN-N-01.5 | 11 | NXC-RPSL-PGPNNN-STPFBN-N-01.5 | 11 |



## 25-Year Product Warranty

The Belden IBDN components installed in a Belden IBDN "Certified" System will be warranted from the date of installation, and for a period of 25 years, against defects in materials and workmanship. These components also are warranted to meet or exceed the specifications of standards organizations such as ISO/IEC, CENELEC and TIA/EIA for the category of system installed.

If a Belden IBDN component in a Belden IBDN "Certified" System fails during the warranty period, Belden CDT Networking and a Belden IBDN Certified System Vendor will repair or replace the failed component — at no cost to the original, registered owner of the Belden IBDN System, including any labor charges.



## Lifetime Application Assurance Program

A Belden IBDN "Certified" System also is guaranteed to be capable of operating the applications which the system was originally designed to support, as well as any new applications introduced for that system category, for as long as the system owner remains in its original place of installation. (New applications are defined as any application introduced in the future by recognized standards organizations or user forums such as TIA/EIA, ISO/IEC, CENELEC and IEEE.)

If a Belden IBDN "Certified" System fails to operate an installed or future application on a system wide basis, or fails to provide the minimum performance parameters detailed in the applicable Performance & Warranties Profile, Belden CDT Networking and a Belden IBDN "Certified" System Vendor will repair or replace the system as required at no cost to the original, registered owner — including any labor charges.

As with all warranties and guarantees, some conditions apply. The Performance & Warranties Profile for each level of the Belden IBDN "Certified" System provides additional details.

For more information about Belden IBDN components, Belden IBDN "Certified" Systems, or our component and system warranties, please call: 1-800-262-9334 (U.S.A. and Canada) or 1-514-822-7593 (International).



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