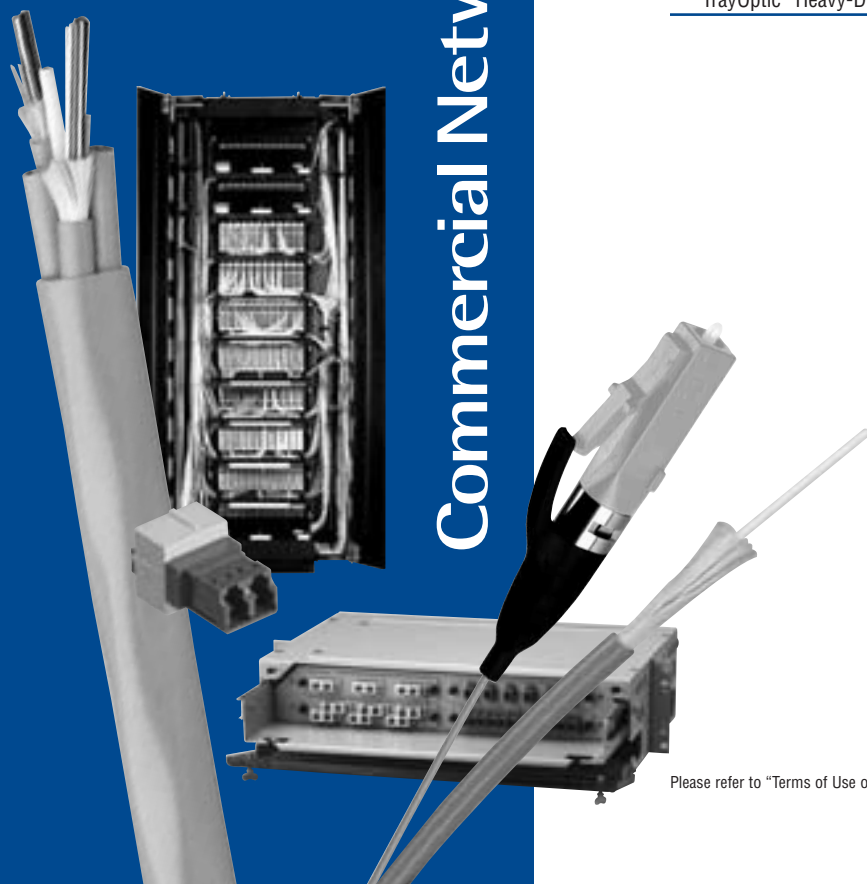




# Commercial Networking: Optical Fiber

16



## Table of Contents

| <b>Commercial Networking — Optical Fiber</b> | <b>Page No.</b>    |
|----------------------------------------------|--------------------|
| <b>Introduction</b>                          | <b>16.2</b>        |
| <b>Optical Fiber Connectivity Products</b>   | <b>16.4–16.17</b>  |
| FiberExpress Connectors                      | 16.4               |
| Pre-Connectorized Assemblies                 | 16.6               |
| FiberExpress Secure/Keyed LC System          | 16.9               |
| FiberExpress Manager                         | 16.11              |
| FiberExpress Patch Panels                    | 16.12              |
| FiberExpress Patch Panels Accessories        | 16.14              |
| FiberExpress Outlets                         | 16.15              |
| Network Connectivity Products                | 16.17              |
| <b>Optical Fiber Cables</b>                  | <b>16.18–16.34</b> |
| Fiber Cable Selection Guide                  | 16.18              |
| Interconnect Cable — Simplex & Duplex        | 16.19              |
| Distribution Cable                           | 16.20              |
| Breakout Style Cable                         | 16.22              |
| Industrial Armored Cable                     | 16.24              |
| Tactical Cable                               | 16.25              |
| Ribbon Cable                                 | 16.26              |
| Single Jacket, All Dielectric Cable          | 16.27              |
| Double Jacket, Armored Cable                 | 16.29              |
| Double Jacket, Heavy-Duty Cable              | 16.30              |
| Central Tube Cable                           | 16.31              |
| Micro Loose Tube Breakout Style Cable        | 16.33              |
| TrayOptic® Heavy-Duty, All Dielectric Cable  | 16.34              |

## Introduction

### Belden IBDN FiberExpress Systems

Optical fiber systems offer many benefits: high bandwidth and transmission speed, the potential for network growth, extended reach, fault tolerance, greater data security and support for Gigabit and multi-Gigabit protocols and networked applications. Beyond these traditional benefits, however, Belden offers the *FiberExpress* Solution, a complete end-to-end cabling system supporting both centralized and fiber-to-the-desk topologies, as well as backbone and campus cabling configurations. Our *FiberExpress* Solutions meet or exceed all applicable TIA/EIA, ISO/IEC and IEEE standards and offer:

- Reduced design complexities
- Greater deployment facility
- Quick installation
- Increased flexibility
- Cost effective pricing

### Primary FiberExpress System Components

Key components of the *FiberExpress* Systems are summarized below and are found on the catalog pages that follow.

#### Optimax® Connectors

Optimax Connectors are a revolutionary field-installable optical fiber connector. The unique design of the patented mechanical splice body of Optimax incorporates a factory mounted fiber stub and a pre-polished ceramic ferrule. This technology consistently provides a fast, secure and reliable LC, SC or ST Compatible optical fiber termination for multimode or single-mode cable. All critical steps are performed in the factory, ensuring a superior quality connection every time.



### The FiberExpress Manager

The *FiberExpress* Manager makes fiber management easier than ever before. Designed to streamline termination, connection and maintenance activities, the *FiberExpress* Manager uses a scalable, modular approach to adapt to a wide variety of situations. The total system provides extra high connection density while facilitating cable routing and patch cord management. The *FiberExpress* Manager is adaptable for almost all situations, traditional field termination or pre-terminated modules, which reduces design complexity and increases deployment efficiency.



### Extended Reach Optical Fiber Cables

Extended Reach Optical Fiber Cables propel your network into the future of cable technology with our multimode *FiberExpress* FX300, FX600 or FX2000 series. These series were developed to meet the existing needs of networks at 1 Gb/s (Ethernet, 1000Base-SX and 1000Base-LX) and new networks at 10 Gb/s (Ethernet, 10GBase-S and 10GBase-LX4). These series offer better reach for laser-based systems. For 1 Gb/s Ethernet at 850 nm (VCSEL), the FX300 and FX600 series provide a range of 984 ft (300 m) and 1,968 ft (600 m), respectively. For 10 Gb/s Ethernet at 850 nm (VCSEL), the FX2000 series provide a range of 984 ft (300 m) for 10GBase-S where all of multimode series can offer a 984 ft (300 m) range at 1300 nm (laser) for 10GBase-LX4. All of this while assuring total compatibility with LED systems and FDDI fiber installation cables. Our single-mode cable offering enhances the options for longer distance support — up to 40 km — for any of the Gigabit Ethernet applications.



### The FiberExpress Bar

The *FiberExpress* Bar is an extremely compact, modular and resilient linking panel. Resembling a power bar, it offers 6 or 12 fibers, pre-terminated with an SC, SC duplex, ST-compatible, LC, MT-RJ or FC connectors



and a cord terminated with a multi-fiber MPO connector — all of which are factory verified. The *FiberExpress* Bar can adapt to all kinds of properties or developments, and can serve as a consolidation or linking point. It's available in both single-mode and multimode media.

For the ultimate in quick, easy and reliable optical networking we also offer the *FiberExpress* Pre-connectorized System. Based on the concept of building blocks, the complete range of pre-terminated *FiberExpress* components bring flexibility to the design stage. The in-factory fabrication and verification of pre-terminated connections ensures the high-performance and high-quality of the product. These products are "plug and go" and their deployment requires no specialized tools — you can deploy 12 fibers in the same amount of time it takes to connect a power cord to a standard electrical plug. This pre-terminated technology will help to preserve the initial investment by its ability to be re-deployed while always ensuring quality results.

### Quality Installation and Service

All Belden IBDN systems are designed, installed and field-tested by fully-trained and certified system contractors and integrators to further assure superior systems performance. They are also backed by a strict System Certification and Warranty Program.

### System Certification and Warranty Program

The Belden IBDN Certification Program is a rigorous process that ensures that your Belden IBDN 'Certified' System is composed of Belden IBDN components, designed and installed by a factory-trained Certified System Vendor. Belden IBDN 'Certified' Systems are supported by a series of warranties that surpass conventional product warranties. Certification adds important end-to-end system performance guarantees and ensures full compliance with cabling industry standard specifications — even after system installation (Installable Performance®). A 25-year Product Warranty and a Lifetime Application Assurance program accompany each Belden IBDN 'Certified' System installation. These warranty programs include coverage for both parts and labor.

**Fiber Channel Topology**

| <b>FiberExpress®<br/>System Matrix</b>                                                                    | <b>Page<br/>No.</b> | <b>Fiber-to-the-Desk (FTTD)<br/>and Centralized Fiber</b> | <b>Fiber Backbone<br/>(In-Building)</b> | <b>Fiber Backbone<br/>(Campus)</b> | <b>FiberExpress<br/>Pre-Terminated Solutions*</b> |
|-----------------------------------------------------------------------------------------------------------|---------------------|-----------------------------------------------------------|-----------------------------------------|------------------------------------|---------------------------------------------------|
| <b>FiberExpress Cables</b>                                                                                |                     |                                                           |                                         |                                    |                                                   |
| <b>Distribution &amp; Breakout Cable Series</b><br>Multimode and Single-mode                              | 16.20–<br>16.23     | •                                                         |                                         |                                    | •                                                 |
| <b>Interconnect Cable Series</b><br>Multimode and Single-mode                                             | 16.19               | •                                                         |                                         |                                    |                                                   |
| <b>Loose Tube (Campus) Cable Series</b><br>MM, SM, Composite MM/SM                                        | 16.27–<br>16.34     |                                                           |                                         | •                                  | •                                                 |
| <b>Ribbon Cable Series</b><br>Multimode and Single-mode                                                   | 16.26               | •                                                         | •                                       | •                                  | •                                                 |
| <b>Cross-Connect Hardware in the Telecom Room</b>                                                         |                     |                                                           |                                         |                                    |                                                   |
| <b>FiberExpress Manager with<br/>FiberExpress Manager Connector Modules</b><br>Multimode and Single-mode  | 16.11               | •                                                         | •                                       | •                                  | •                                                 |
| <b>FiberExpress Rack Mount Patch Panel<br/>with Universal Adapter Strips</b><br>Multimode and Single-mode | 16.12               | •                                                         |                                         | •                                  | •                                                 |
| <b>FiberExpress Wall Mount Patch Panel<br/>with Universal Adapter Strips</b><br>Multimode and Single-mode | 16.13               | •                                                         |                                         | •                                  | •                                                 |
| <b>FiberExpress Bar:</b><br>Multimode and Single-mode                                                     | 16.8                | •                                                         | •                                       | •                                  | •                                                 |
| <b>Patch Cords in the Telecom Room and at the Work Area</b>                                               |                     |                                                           |                                         |                                    |                                                   |
| <b>FiberExpress Patch Cords:</b><br>Multimode and Single-mode                                             | 16.6                | •                                                         | •                                       | •                                  | •                                                 |
| <b>Outlets at the Work Area</b>                                                                           |                     |                                                           |                                         |                                    |                                                   |
| <b>MDVO® Multimedia Outlets<br/>with MDVO Multimedia Modules</b>                                          | 16.16               | •                                                         |                                         |                                    |                                                   |
| <b>MediaFlex® Outlets<br/>with MediaFlex Multimedia Inserts</b>                                           | 16.15               | •                                                         |                                         |                                    |                                                   |
| <b>FiberExpress Bar</b><br>Multimode and Single-mode (as MUTOA)                                           | 16.8                | •                                                         | •                                       |                                    |                                                   |
| <b>Fiber Connectivity</b>                                                                                 |                     |                                                           |                                         |                                    |                                                   |
| <b>Optimax® Connectors</b><br>Multimode and Single-mode                                                   | 16.4                | •                                                         |                                         | •                                  | •                                                 |
| <b>Epoxy Field Mountable Connectors</b><br>Multimode and Single-mode                                      | 16.5                | •                                                         |                                         | •                                  | •                                                 |
| <b>Fiber Pigtails</b><br>Multimode and Single-mode                                                        | 16.8                | •                                                         |                                         | •                                  | •                                                 |

MM = Multimode • SM = Single-mode

\*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.

## FiberExpress Connectors

### Optimax® Field Installable Connectors and Installation Tool Kits

AX101982 Optimax LC Connector



AX100029 with AX101794 Optimax SC Connector



A0408835 with AX101793 Optimax ST Compatible Connector



AX100947 Optimax Tool Kit



#### 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 Single-mode that ensures the best possible mating of optical fibers. Connectors are available for 62.5 or 50/125  $\mu\text{m}$  Multimode fiber and Single-mode fiber installations.

#### Optimax Installation Tool Kit

The **Optimax Installation Tool Kit** is packaged in a small convenient carrying case and includes an Optimax LC, SC and ST Compatible installation and training video, installation instructions and all the tools required to terminate 900  $\mu\text{m}$  buffered optical fiber and jacketed optical fiber.

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

| Description                                                                                                                                                                                                                    | Belden Part Number |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| <b>FiberExpress Connectors</b>                                                                                                                                                                                                 |                    |
| <b>Optimax Field Installable Connector</b>                                                                                                                                                                                     |                    |
| LC 62.5 $\mu\text{m}$ , Multimode*                                                                                                                                                                                             | AX101981           |
| LC 50 $\mu\text{m}$ , Multimode*                                                                                                                                                                                               | AX101982           |
| LC Single-mode*                                                                                                                                                                                                                | AX101983           |
| SC 62.5 $\mu\text{m}$ , Multimode*                                                                                                                                                                                             | AX100029           |
| SC 50 $\mu\text{m}$ , Multimode*                                                                                                                                                                                               | AX101077           |
| SC Single-mode*                                                                                                                                                                                                                | AX101792           |
| ST Compatible 62.5 $\mu\text{m}$ , Multimode*                                                                                                                                                                                  | A0408835           |
| ST Compatible 50 $\mu\text{m}$ , Multimode*                                                                                                                                                                                    | AX101075           |
| ST Compatible Single-mode*                                                                                                                                                                                                     | AX101791           |
| LC Accessory Kit for jacketed fiber (2 mm boot and a crimp sleeve)                                                                                                                                                             | AX101984           |
| SC Accessory Kit for jacketed fiber (3 mm boot, crimp sleeves, cord adapter)                                                                                                                                                   | AX101794           |
| ST Accessory Kit for jacketed fiber (3 mm boot, crimp sleeves)                                                                                                                                                                 | AX101793           |
| <b>Optimax Installation Tool Kit</b>                                                                                                                                                                                           |                    |
| LC/SC/ST Compatible<br>(includes installation tools, fiber cleaver, crimping tool, instruction manual, microscope, tweezers, alcohol wipes, marker, scissors, waste bottle, fiber stripper, cable stripper and Training Video) | AX100947           |
| Basic (excludes fiber stripper & cleaver)                                                                                                                                                                                      | AX100949           |
| Optimax LC Tool Kit Upgrade<br>(includes LC installation tool, instructions manual, foam for the case)                                                                                                                         | AX102061           |
| <b>Optimax Individual Components</b>                                                                                                                                                                                           |                    |
| Fiber Cleaver                                                                                                                                                                                                                  | A0408829           |
| Installation Tool LC (does not include tool-clamp)                                                                                                                                                                             | AX102062           |
| Installation Tools ST Compatible and SC (includes tool-clamp)                                                                                                                                                                  | A0403634           |
| Microscope                                                                                                                                                                                                                     | AX100910           |
| Refurbishing Materials (80 alcohol wipes and a black felt tip marker)                                                                                                                                                          | AX100951           |
| Installation Instruction Manual, LC                                                                                                                                                                                            | AX102063           |
| Installation Instruction Manual, SC                                                                                                                                                                                            | PX101318           |
| Installation Instruction Manual, ST Compatible                                                                                                                                                                                 | PX101317           |
| Installation & Training Video, CD (see literature ordering form on the web)                                                                                                                                                    | NOT0651            |
| Crimp Tool complete with die                                                                                                                                                                                                   | A0403641           |

These products are in the process of being assessed for RoHS compliance. Please check our Web Site for the most current RoHS status.

\*For 900  $\mu\text{m}$  buffered fiber only. For Optimax Single-mode termination on jacketed fiber, please use the appropriate Accessory Kit.

# FiberExpress Connectors

## Epoxy Field Installable Connectors

A0390851 Optical Fiber Field Installable Epoxy Connector, ST Compatible



### Epoxy Field Installable Connector

**Epoxy Field Installable Connectors** are available as Multimode and Single-mode 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.

| Description | Belden Part Number |             |
|-------------|--------------------|-------------|
|             | Multimode          | Single-mode |

### FiberExpress Connectors

| Epoxy Field Installable Connector |          |          |
|-----------------------------------|----------|----------|
| ST Compatible                     | A0390851 | AX101412 |
| SC Simplex                        | AX100919 | AX101411 |
| SC Duplex                         | AX100929 |          |

These products are in the process of being assessed for RoHS compliance. Please check our Web Site for the most current RoHS status.

## Pre-Connectorized Assemblies

### FiberExpress Patch Cords

AX200057 Patch Cord Multimode SC Duplex (568SC)



#### FiberExpress 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.

| Description | Belden Part Number        |                         |                          |                 |
|-------------|---------------------------|-------------------------|--------------------------|-----------------|
|             | Multimode, FX300, 62.5 µm | Multimode, FX600, 50 µm | Multimode, FX2000, 50 µm | Single-mode SPC |

#### FiberExpress Pre-Connectorized Assemblies

| Duplex Patch Cord                 |          |          |          |          |
|-----------------------------------|----------|----------|----------|----------|
| ST-ST, 2 m (6 ft.)                | 70102419 | AX200341 | AX200799 | AX200090 |
| ST-ST, 3 m (10 ft.)               | 70102420 | AX200459 | AX200795 | AX200091 |
| ST-ST, 5 m (16 ft.)               | 70102447 | AX200413 | AX200800 | AX200092 |
| 568SC-568SC, 2 m (6 ft.)          | AX200056 | AX200084 | AX200603 | AX200094 |
| 568SC-568SC, 3 m (10 ft.)         | AX200057 | AX200082 | AX200589 | AX200095 |
| 568SC-568SC, 5 m (16 ft.)         | AX200058 | AX200280 | AX200624 | AX200096 |
| LC duplex-LC duplex, 2 m (6 ft.)  | AX200517 | AX200527 | AX200664 | AX200507 |
| LC duplex-LC duplex, 3 m (10 ft.) | AX200518 | AX200528 | AX200665 | AX200508 |
| LC duplex-LC duplex, 5 m (16 ft.) | AX200519 | AX200529 | AX200666 | AX200509 |
| MTRJ-MTRJ, 2 m (6 ft.)            | AX101122 | AX101139 | AX200801 | AX101157 |
| MTRJ-MTRJ, 3 m (10 ft.)           | AX101123 | AX101138 | AX200802 | AX101156 |
| MTRJ-MTRJ, 5 m (16 ft.)           | AX101125 | AX101137 | AX200803 | AX101155 |
| Hybrid Patch Cord                 |          |          |          |          |
| 568SC-ST, 3 m (10 ft.)            | AX200060 | AX200196 | AX200900 | AX200421 |
| LC duplex-ST, 3 m (10 ft.)        | AX200699 | AX200695 | AX200809 | AX200698 |
| LC duplex-568SC, 3 m (10 ft.)     | AX200580 | AX200581 | AX200668 | AX200667 |
| MTRJ-ST, 3 m (10 ft.)             | AX101133 | AX101151 | AX200810 | AX101166 |
| MTRJ-568SC, 3 m (10 ft.)          | AX101128 | AX101143 | AX200797 | AX101161 |
| Single-ended (pigtails)           |          |          |          |          |
| ST-open, 2 m (6 ft.)              | 70100390 | AX200458 | AX200811 | AX200097 |
| SC-open, 2 m (6 ft.)              | 70101714 | AX200192 | AX200653 | AX200098 |
| LC-open, 2 m (6 ft.)              | AX200657 | AX200658 | AX200660 | AX200659 |
| MTRJ(m)-open, 3 m (10 ft.)        | AX101366 | AX101367 | AX200812 | AX101368 |

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

These products are in the process of being assessed for RoHS compliance. Please check our Web Site for the most current RoHS status.

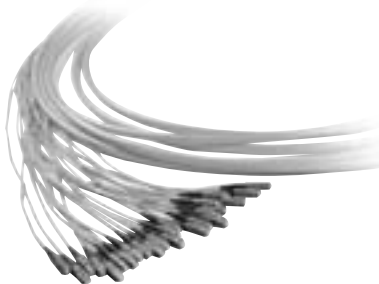
## FiberExpress Pre-Connectorized Assemblies

### Cable Assemblies

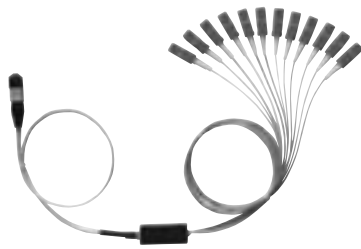
AX250105 MPO Cable Assembly



Multi-fiber Cable Assembly



900 µm Fan-out Assembly



#### 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.

#### 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.

| Description | Belden Part Number        |                         |
|-------------|---------------------------|-------------------------|
|             | Multimode, FX300, 62.5 µm | Multimode, FX600, 50 µm |

#### FiberExpress Pre-Connectorized Assemblies

| MPO Cable Assembly, FOMC, MPO(f)-MPO(f)         |                          |             |
|-------------------------------------------------|--------------------------|-------------|
| 1 pulling eye, OFNP, 12 fibers, 10 m (33 ft.)   | AX250021                 | AX250345    |
| 1 pulling eye, OFNP, 12 fibers, 20 m (66 ft.)   | AX250105                 | AX250376    |
| 1 pulling eye, OFNP, 12 fibers, 50 m (164 ft.)  | AX250349                 | AX250065    |
| 1 pulling eye, OFNP, 12 fibers, 75 m (246 ft.)  | AX250060                 | AX250066    |
| 1 pulling eye, OFNP, 12 fibers, 100 m (328 ft.) | AX250061                 | AX250067    |
|                                                 | Multimode, FX2000, 50 µm | Single-mode |
| 1 pulling eye, OFNP, 12 fibers, 10 m (33 ft.)   | AX250457                 | AX250224    |
| 1 pulling eye, OFNP, 12 fibers, 20 m (66 ft.)   | AX250412                 | AX250106    |
| 1 pulling eye, OFNP, 12 fibers, 50 m (164 ft.)  | AX250387                 | AX250071    |
| 1 pulling eye, OFNP, 12 fibers, 75 m (246 ft.)  | AX250413                 | AX250072    |
| 1 pulling eye, OFNP, 12 fibers, 100 m (328 ft.) | AX250458                 | AX250073    |

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

| Multi-fiber Cable Assembly, MPO(m)-ST      |                               |
|--------------------------------------------|-------------------------------|
| Multimode FX300, 62.5 µm, 12 fibers        | NXC-RPML-PGPNNN-STPFBN-N-01.5 |
| Multimode FX600, 50 µm, 12 fibers          | NXC-RPML-PGPNNN-STPFBN-N-01.5 |
| Multimode FX2000, 50 µm, 12 fibers         | NXC-RPFL-PGPNNN-STPFBN-N-01.5 |
| Single-mode, 12 fibers                     | NXC-RPSL-PGANNN-STSFBN-N-01.5 |
| Multi-fiber Cable Assembly, MPO(m)-SC      |                               |
| Multimode FX300, 62.5 µm, 12 fibers        | NXC-RPML-PGPNNN-SCPFBN-N-01.5 |
| Multimode FX600, 50 µm, 12 fibers          | NXC-RPML-PGPNNN-SCPFBN-N-01.5 |
| Multimode FX2000, 50 µm, 12 fibers         | NXC-RPFL-PGPNNN-SCPFBN-N-01.5 |
| Single-mode, 12 fibers                     | NXC-RPSL-PGANNN-SCSFBN-N-01.5 |
| Multi-fiber Cable Assembly, MPO(m)-LC      |                               |
| Multimode, FX300, 62.5 µm, 12 fibers       | NXC-RPML-PGPNNN-LCPFBN-N-01.5 |
| Multimode FX600, 50 µm, 12 fibers          | NXC-RPML-PGPNNN-LCPFBN-N-01.5 |
| Multimode FX2000, 50 µm, 12 fibers         | NXC-RPFL-PGPNNN-LCPFBN-N-01.5 |
| Single-mode, 12 fibers                     | NXC-RPSL-PGANNN-LCSFBN-N-01.5 |
| Multi-fiber Cable Assembly, MPO(m)-MTRJ(m) |                               |
| Multimode FX300, 62.5 µm, 12 fibers        | NXC-RPML-PGPNNN-JBPFBN-N-01.5 |
| Multimode FX600, 50 µm, 12 fibers          | NXC-RPML-PGPNNN-JBPFBN-N-01.5 |
| Multimode FX2000, 50 µm, 12 fibers         | NXC-RPFL-PGPNNN-JBPFBN-N-01.5 |
| Single-mode, 12 fibers                     | NXC-RPSL-PGANNN-JBSFBN-N-01.5 |

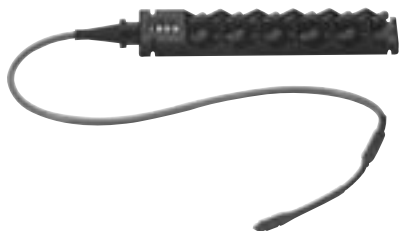
These products are in the process of being assessed for RoHS compliance. Please check our Web Site for the most current RoHS status.



## FiberExpress Pre-Connectorized Assemblies

### FiberExpress Bar

AX250001 FiberExpress Bar 12ST



MX100154 FiberExpress MPO Adapter



### 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.

### FiberExpress Bar Accessories

The **MPO Adapter** is the sleeve that provides primary alignment and locking when connecting the two MPO connectors (male to female). It has a flange and a metal clip for panel mounting and it is included with each FiberExpress Bar (1m 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 giving 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 | Belden Part Number             |                              |
|-------------|--------------------------------|------------------------------|
|             | Multimode, FX300, 62.5 $\mu$ m | Multimode, FX600, 50 $\mu$ m |

### FiberExpress Pre-Connectorized Assemblies

| FiberExpress Bar                     |                               |             |
|--------------------------------------|-------------------------------|-------------|
| 12 ST type, MPO (m), 1 m             | AX250001                      | AX250052    |
| 6 SC duplex, MPO (m), 12 fibers, 1 m | AX250005                      | AX250054    |
| 6 MT-RJ, MPO (m), 12 fibers, 1 m     | AX250178                      | AX250179    |
| 12 LC, MPO (m), 1 m                  | AX250539                      | AX250540    |
|                                      | Multimode, FX2000, 50 $\mu$ m | Single-mode |
| 12 ST type, MPO (m), 1 m             | AX250459                      | AX250009    |
| 6 SC duplex, MPO (m), 12 fibers, 1 m | AX250460                      | AX250011    |
| 6 MT-RJ, MPO (m), 12 fibers, 1 m     | AX250461                      | AX250180    |
| 12 LC, MPO (m), 1 m                  | AX250541                      | AX250542    |

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

| FiberExpress Bar Accessories                                                                |          |
|---------------------------------------------------------------------------------------------|----------|
| MPO Adapter (6 or 12 fibers)<br>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,<br>(capacity: 5 meters) including top cover, Gray  | AX100329 |
| Slack Storage Tray for FiberExpress Bar,<br>(capacity: 5 meters) including top cover, Black | AX100328 |
| Wall Mount Enclosure, can contain one bar, Black                                            | AC200004 |

These products are in the process of being assessed for RoHS compliance. Please check our Web Site for the most current RoHS status.



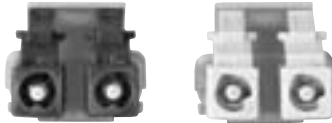
## FiberExpress Secure/Keyed LC System

### Optimax Field Installable Connectors and Patch Cords & Pigtaills

AX102197 Secure/Keyed LC Optimax



Secure/Keyed LC System



#### FiberExpress Secure/Keyed LC System

The **FiberExpress Secure/Keyed LC System** allows for physical segregation of networks 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 FOClS 10 standard and optical performance exceeds all industry standards for SFF connectors.

The **Secure/Keyed LC Optimax 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 Pigtaills** 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.

| Description | Belden Part Number |           |            |           |            |          |
|-------------|--------------------|-----------|------------|-----------|------------|----------|
|             | K1, Red            | K2, Green | K3, Yellow | K4, Black | K5, Orange | K6, Blue |

#### FiberExpress Secure/Keyed LC System

| Secure/Keyed LC Optimax*        |          |          |          |          |          |          |
|---------------------------------|----------|----------|----------|----------|----------|----------|
| Multimode 62.5 $\mu\text{m}$ ** | AX102203 | AX102204 | AX102205 | AX102206 | AX102207 | AX102208 |
| Multimode 50 $\mu\text{m}$ **   | AX102197 | AX102198 | AX102199 | AX102200 | AX102201 | AX102202 |

\*\*For 900  $\mu\text{m}$  buffered fiber only. The same accessory kit (AX101984) is used for 2 mm jacketed cable connector termination as for our regular Optimax LC offering.

| Secure/Keyed LC Duplex Patch Cord, KEYx-KEYx*     |          |          |          |          |          |          |
|---------------------------------------------------|----------|----------|----------|----------|----------|----------|
| 2 m (6 ft.), Multimode FX300, 62.5 $\mu\text{m}$  | AX201365 | AX201366 | AX201367 | AX201368 | AX201369 | AX201370 |
| 2 m (6 ft.), Multimode FX600, 50 $\mu\text{m}$    | AX201383 | AX201384 | AX201385 | AX201386 | AX201387 | AX201388 |
| 2 m (6 ft.), Multimode FX2000, 50 $\mu\text{m}$   | AX201401 | AX201402 | AX201403 | AX201404 | AX201405 | AX201406 |
| 3 m (10 ft.), Multimode FX300, 62.5 $\mu\text{m}$ | AX201371 | AX201372 | AX201373 | AX201374 | AX201375 | AX201376 |
| 3 m (10 ft.), Multimode FX600, 50 $\mu\text{m}$   | AX201389 | AX201390 | AX201391 | AX201392 | AX201393 | AX201394 |
| 3 m (10 ft.), Multimode FX2000, 50 $\mu\text{m}$  | AX201407 | AX201408 | AX201409 | AX201410 | AX201411 | AX201412 |
| 5 m (16 ft.), Multimode FX300, 62.5 $\mu\text{m}$ | AX201377 | AX201378 | AX201379 | AX201380 | AX201381 | AX201382 |
| 5 m (16 ft.), Multimode FX600, 50 $\mu\text{m}$   | AX201395 | AX201396 | AX201397 | AX201398 | AX201399 | AX201400 |
| 5 m (16 ft.), Multimode FX2000, 50 $\mu\text{m}$  | AX201413 | AX201414 | AX201415 | AX201416 | AX201417 | AX201418 |

| Secure/Keyed LC Duplex Hybrid Patch Cord, KEYx-LCD* |          |          |          |          |          |          |
|-----------------------------------------------------|----------|----------|----------|----------|----------|----------|
| 2 m (6 ft.), Multimode FX300, 62.5 $\mu\text{m}$    | AX201419 | AX201420 | AX201421 | AX201422 | AX201423 | AX201424 |
| 2 m (6 ft.), Multimode FX600, 50 $\mu\text{m}$      | AX201437 | AX201438 | AX201439 | AX201440 | AX201441 | AX201442 |
| 2 m (6 ft.), Multimode FX2000, 50 $\mu\text{m}$     | AX201455 | AX201456 | AX201457 | AX201458 | AX201459 | AX201460 |
| 3 m (10 ft.), Multimode FX300, 62.5 $\mu\text{m}$   | AX201425 | AX201426 | AX201427 | AX201428 | AX201429 | AX201430 |
| 3 m (10 ft.), Multimode FX600, 50 $\mu\text{m}$     | AX201443 | AX201444 | AX201445 | AX201446 | AX201447 | AX201448 |
| 3 m (10 ft.), Multimode FX2000, 50 $\mu\text{m}$    | AX201461 | AX201462 | AX201463 | AX201464 | AX201465 | AX201466 |
| 5 m (16 ft.), Multimode FX300, 62.5 $\mu\text{m}$   | AX201431 | AX201432 | AX201433 | AX201434 | AX201435 | AX201436 |
| 5 m (16 ft.), Multimode FX600, 50 $\mu\text{m}$     | AX201449 | AX201450 | AX201451 | AX201452 | AX201453 | AX201454 |
| 5 m (16 ft.), Multimode FX2000, 50 $\mu\text{m}$    | AX201467 | AX201468 | AX201469 | AX201470 | AX201471 | AX201472 |

| Secure/Keyed LC Duplex Hybrid Patch Cord, KEYx-SCD* |          |          |          |          |          |          |
|-----------------------------------------------------|----------|----------|----------|----------|----------|----------|
| 2 m (6 ft.), Multimode FX300, 62.5 $\mu\text{m}$    | AX201473 | AX201474 | AX201475 | AX201476 | AX201477 | AX201478 |
| 2 m (6 ft.), Multimode FX600, 50 $\mu\text{m}$      | AX201491 | AX201492 | AX201493 | AX201494 | AX201495 | AX201496 |
| 2 m (6 ft.), Multimode FX2000, 50 $\mu\text{m}$     | AX201509 | AX201510 | AX201511 | AX201512 | AX201513 | AX201514 |
| 3 m (10 ft.), Multimode FX300, 62.5 $\mu\text{m}$   | AX201479 | AX201480 | AX201481 | AX201482 | AX201483 | AX201484 |
| 3 m (10 ft.), Multimode FX600, 50 $\mu\text{m}$     | AX201497 | AX201498 | AX201499 | AX201500 | AX201501 | AX201502 |
| 3 m (10 ft.), Multimode FX2000, 50 $\mu\text{m}$    | AX201515 | AX201516 | AX201517 | AX201518 | AX201519 | AX201520 |
| 5 m (16 ft.), Multimode FX300, 62.5 $\mu\text{m}$   | AX201485 | AX201486 | AX201487 | AX201488 | AX201489 | AX201490 |
| 5 m (16 ft.), Multimode FX600, 50 $\mu\text{m}$     | AX201503 | AX201504 | AX201505 | AX201506 | AX201507 | AX201508 |
| 5 m (16 ft.), Multimode FX2000, 50 $\mu\text{m}$    | AX201521 | AX201522 | AX201523 | AX201524 | AX201525 | AX201526 |

| Secure/Keyed LC Pigtail, KEYx-open*              |          |          |          |          |          |          |
|--------------------------------------------------|----------|----------|----------|----------|----------|----------|
| 2 m (6 ft.), Multimode FX300, 62.5 $\mu\text{m}$ | AX201527 | AX201528 | AX201529 | AX201530 | AX201531 | AX201532 |
| 2 m (6 ft.), Multimode FX600, 50 $\mu\text{m}$   | AX201533 | AX201534 | AX201535 | AX201536 | AX201537 | AX201538 |
| 2 m (6 ft.), Multimode FX2000, 50 $\mu\text{m}$  | AX201539 | AX201540 | AX201541 | AX201542 | AX201543 | AX201544 |

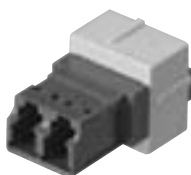
Other Patch Cord lengths and configurations may be available, please contact Customer Service for more details.

These products are in the process of being assessed for RoHS compliance. Please check our Web Site for the most current RoHS status. \* Patent Pending.

## FiberExpress Secure/Keyed LC System

Adapter Modules, Adapter Strips and FiberExpress Manager Modules

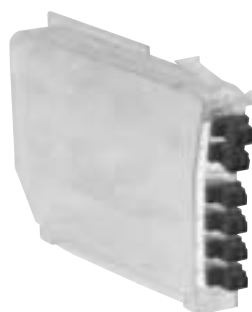
AX102098 Secure/Keyed LC Adapter Module



AX102124 Secure/Keyed LC Adapter Strip



AX102114 Secure/Keyed LC  
FiberExpress Manager Module



### FiberExpress Secure/Keyed LC System

The **FiberExpress Secure/Keyed LC System** allows for physical segregation of networks 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 **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.

| Description | Belden Part Number |           |            |           |            |          |
|-------------|--------------------|-----------|------------|-----------|------------|----------|
|             | K1, Red            | K2, Green | K3, Yellow | K4, Black | K5, Orange | K6, Blue |

### FiberExpress Secure/Keyed LC System

| Secure/Keyed LC Adapter Module*              |          |          |          |          |          |          |
|----------------------------------------------|----------|----------|----------|----------|----------|----------|
| Gray holder                                  | AX102089 | AX102090 | AX102091 | AX102092 | AX102093 | AX102094 |
| Almond holder                                | AX102095 | AX102096 | AX102097 | AX102098 | AX102099 | AX102100 |
| White holder                                 | AX102101 | AX102102 | AX102103 | AX102104 | AX102105 | AX102106 |
| Black holder                                 | AX102107 | AX102108 | AX102109 | AX102110 | AX102111 | AX102112 |
| Secure/Keyed LC FiberExpress Adapter Strip*  |          |          |          |          |          |          |
| 12 fibers                                    | AX102119 | AX102120 | AX102121 | AX102122 | AX102123 | AX102124 |
| 24 fibers                                    | AX102125 | AX102126 | AX102127 | AX102128 | AX102129 | AX102130 |
| Secure/Keyed LC FiberExpress Manager Module* |          |          |          |          |          |          |
| 12 fibers                                    | AX102113 | AX102114 | AX102115 | AX102116 | AX102117 | AX102118 |
| 24 fibers                                    | AX102310 | AX102311 | AX102312 | AX102313 | AX102314 | AX102315 |

\* Patent Pending.

These products are in the process of being assessed for RoHS compliance. Please check our Web Site for the most current RoHS status.

## FiberExpress Manager

### Rack Components and Modules

AX100934 FiberExpress Manager Shelf



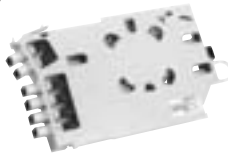
AX101943 FiberExpress Manager 1U Rack Mount Patch Panel



AX102032 FiberExpress Manager 1U Cable Management Accessory



AX101525 Connector Module Pre-terminated MPO-MT-RJ



#### 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- or 23-inch rack: 19 in. shelf holds up to 12 modules; 23 in. shelf holds up to 16 modules.

#### 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.

#### 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 to slide from the shelf like a PC card, easing management of patch cords.

| Description | Belden Part Number |       |
|-------------|--------------------|-------|
|             | Gray               | Black |

#### FiberExpress Manager

| FiberExpress Manager                                |          |          |
|-----------------------------------------------------|----------|----------|
| Shelf, 23 in., 10.9 kg (24 lb)                      | AX100934 | AX100935 |
| Shelf, 19 in., 8.2 kg (18 lb)                       | AX101084 | AX101085 |
| 1U, Rack Mount Patch Panel, 19 in., 5 kg (11 lb)    | AX101944 | AX101943 |
| 1U, Cable Management Accessory, 19 in., 1 kg (2 lb) | AX102033 | AX102032 |

| Description | Belden Part Number |            |           |                   |    |    |
|-------------|--------------------|------------|-----------|-------------------|----|----|
|             | ST Type            | SC Simplex | SC Duplex | SC Duplex (ST in) | LC | FC |

#### FiberExpress Manager

| FiberExpress Manager Connector Module             |                   |                 |             |          |          |          |
|---------------------------------------------------|-------------------|-----------------|-------------|----------|----------|----------|
| Metal Sleeve, Multimode, 6 fibers                 | AX101089          |                 | AX101092    |          |          |          |
| Zirconia Ceramic, Single-mode, 6 fibers           | AX100936          | AX100943        | AX100944    |          |          |          |
| Metal Sleeve, Multimode, 12 fibers                | AX101187          |                 | AX101714    | AX101120 | AX101528 |          |
| Zirconia Ceramic, Single-mode, 12 fibers          | AX101186          |                 | AX101713    | AX101119 | AX101527 |          |
| Zirconia Ceramic, Single-mode, 12 UPC pigtails    |                   |                 | AX101715    |          |          |          |
| Metal Sleeve, Multimode, 24 fibers                |                   |                 |             |          | AX102306 |          |
| Zirconia Ceramic, Single-mode, 24 fibers          |                   |                 |             |          | AX102305 |          |
| Zirconia Ceramic, Single-mode/Multimode, 6 fibers |                   |                 |             |          |          | AX100937 |
|                                                   | Multimode 62.5 µm | Multimode 50 µm | Single-mode |          |          |          |
| MPO(m)-ST type, 12 pre-terminated                 | AX101189          | AX101190        | AX101188    |          |          |          |
| MPO(m)-SC Duplex, 12 pre-terminated               | AX101091          | AX101114        | AX101090    |          |          |          |
| MPO(m)-MT-RJ(m), 12 pre-terminated                | AX101525          | AX101526        | AX101524    |          |          |          |
| MPO(m)-LC, 12 pre-terminated                      | AX101530          | AX101531        | AX101529    |          |          |          |
| MPO(m)-LC, 24 pre-terminated                      | AX102309          | AX102308        | AX102307    |          |          |          |
| MT-RJ, Beige, Multimode, 12 fibers                |                   |                 |             |          |          | AX101096 |
| MT-RJ, Blue, Single-mode, 12 fibers               |                   |                 |             |          |          | AX101581 |

These products are in the process of being assessed for RoHS compliance. Please check our Web Site for the most current RoHS status.

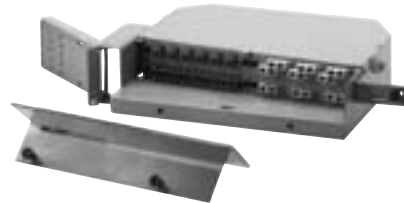
# FiberExpress Patch Panels

## Rack Mount Patch Panels

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



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



AX100078 FiberExpress (3U) Rack Mount Patch Panel



AX100115 FiberExpress, 48/96 Port (4U) 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 adapters 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 Plexiglass 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 Plexiglass front cover that protects fiber connections while allowing for quick visual inspection.

### 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 to 127 mm (5 in.). It is compatible with ST Compatible, SC, 568SC, MT-RJ, LC and FC adapters strips (ordered separately).

### 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 to 178 mm (7 in.). It can be used with ST Compatible, SC, 568SC, MT-RJ, LC and FC adapters strips (ordered separately).

| Description                                    | Belden Part Number |
|------------------------------------------------|--------------------|
| <b>FiberExpress Patch Panels</b>               |                    |
| <b>FiberExpress Rack Mount Patch Panel 1U*</b> |                    |
| Gray                                           | AX100042           |
| Black                                          | AX100041           |
| <b>FiberExpress Rack Mount Patch Panel 2U*</b> |                    |
| Gray                                           | AX100069           |
| Black                                          | AX100068           |
| <b>FiberExpress Rack Mount Patch Panel 3U</b>  |                    |
| Gray                                           | AX100078           |
| Black                                          | AX100077           |
| <b>FiberExpress Rack Mount Patch Panel 4U</b>  |                    |
| Gray                                           | AX100115           |
| Black                                          | AX100116           |

If Single-ended patch cords are to be spliced to the fiber cable, don't forget to order Splice Organizer Trays or Kits. Both these, and the Universal Adapter Strips can be ordered in the FiberExpress Accessories section.

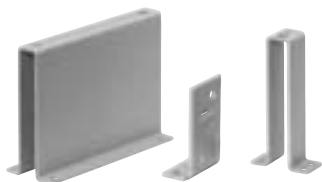
\*IMPORTANT: The FiberExpress 1U accepts two (2) 203 mm (8 in.) splice trays.  
The 2U accepts four (4) 203 mm (8 in.) splice trays.

These products are in the process of being assessed for RoHS compliance. Please check our Web Site for the most current RoHS status.

## FiberExpress Patch Panels

### Rack Mount Accessories and Wall Mount Patch Panels

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



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



AX100047 Right Side Cable Entry Bracket for 1U



AX100045 Front Cover for 1U



AX100543 Large Wall Mount



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

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

| Description                                  | Belden Part Number |
|----------------------------------------------|--------------------|
| <b>FiberExpress Patch Panels</b>             |                    |
| <b>Rack Mount Accessories (1U and 2U)</b>    |                    |
| 127 mm (5 in.) Universal Offset Bracket Kit: |                    |
| for 19 in. and 23 in. racks (1U), Black      | AX101799           |
| for 19 in. and 23 in. racks (1U), Gray       | AX101800           |
| for 19 in. and 23 in. racks (2U), Black      | AX101797           |
| 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           |

### 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.

| Description                      | Belden Part Number |
|----------------------------------|--------------------|
| <b>FiberExpress Patch Panels</b> |                    |
| <b>Wall Mount</b>                |                    |
| Small, Gray                      | AX100496           |
| Small, Black                     | AX100495           |
| Medium, Gray                     | AX100541           |
| Medium, Black                    | AX100540           |
| Large, Gray                      | AX100543           |
| Large, Black                     | AX100542           |

If optical Single-ended patch cords are to be spliced to the fiber cable, don't forget to order Splice Organizer Trays or Kits in FiberExpress Accessories section. Universal Adapter Strips can be ordered in FiberExpress Patch Panels section.

These products are in the process of being assessed for RoHS compliance. Please check our Web Site for the most current RoHS status.

AX100541 Medium Wall Mount



AX100495 Small Wall Mount

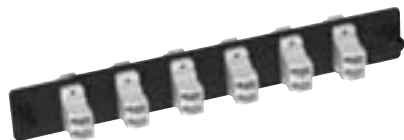




## FiberExpress Patch Panels Accessories

### Universal Optical Fiber Adapter Strips and Accessories

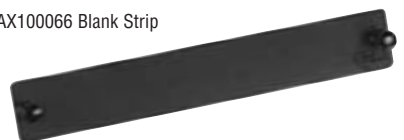
AX101729 Adapters loaded with 6 LC Duplex



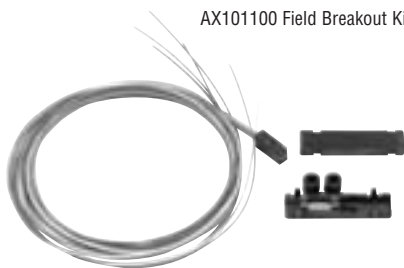
AX100094 Adapters loaded with 3 SC Duplex



AX100066 Blank Strip



AX101100 Field Breakout Kit



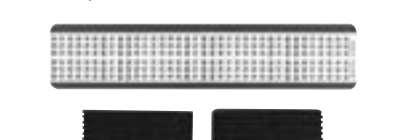
A0649869 Optical Fiber Splice Organizer Kits and Trays



AX100945 Flex Kit



AX101098 Splice Holder Kit



#### 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.

#### Optical Fiber Accessories

**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** provide the accessories necessary for installing the FiberExpress Fiber Patch Panels, as well as other fiber terminals that accommodate the standard Belden organizer tray.

**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).

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

| Description | Belden Part Number         |                               |
|-------------|----------------------------|-------------------------------|
|             | Phosphor Bronze, Multimode | Zirconia Ceramic, Single-mode |

#### FiberExpress Optical Fiber Adapter Strips

| Single Density, Black                              |          |          |
|----------------------------------------------------|----------|----------|
| Loaded with 6 ST Compatible Adapters               | AX100088 | AX100534 |
| Loaded with 3 SC Duplex Adapters                   | AX100094 | AX101407 |
| Loaded with 6 SC Simplex Adapters                  | AX100092 | AX100538 |
| Loaded with 6 FC Adapters                          | AX100090 | AX100536 |
| Loaded with 6 LC Duplex Adapters                   | AX101729 | AX101731 |
| MT-RJ, loaded with 6 MT-RJ, Multimode/Single-mode  | AX101115 |          |
| Double Density, Black                              |          |          |
| Loaded with 12 ST Compatible Adapters              | AX100080 | AX100528 |
| Loaded with 6 SC Duplex Adapters                   | AX100098 | AX101409 |
| Loaded with 12 SC Simplex Adapters                 | AX100084 | AX100532 |
| Loaded with 12 FC Adapters                         | AX100082 | AX100530 |
| Loaded with 12 LC Duplex Adapters                  | AX101741 | AX101743 |
| MT-RJ, loaded with 12 MT-RJ, Multimode/Single-mode | AX101117 |          |
| Blank Strip                                        |          |          |
| Black                                              | AX100066 |          |

#### FiberExpress Accessories

| Optical Fiber Field Breakout Kit                  |          |
|---------------------------------------------------|----------|
| 6 fibers, 1/pack                                  | AX101100 |
| 12 fibers, 1/pack                                 | AX101101 |
| Optical Fiber Splice Organizer Kit                |          |
| Splice kit, tray, 203 mm (8 in.)                  | A0649869 |
| Splice kit, tray, 305 mm (12 in.)                 | A0318904 |
| Optical Fiber Splice Tray                         |          |
| Fusion, 203 mm (8 in.)                            | A0335015 |
| Fusion, 305 mm (12 in.)                           | A0316446 |
| Universal (mechanical or fusion), 203 mm (8 in.)  | AX100079 |
| Universal (mechanical or fusion), 305 mm (12 in.) | A0394328 |
| Tray cover, 203 mm (8 in.)                        | A0394331 |
| Tray cover, 305 mm (12 in.)                       | A0394330 |
| Flex Kit                                          | AX100945 |
| Splice Holder Kit                                 | AX101098 |

These products are in the process of being assessed for RoHS compliance. Please check our Web Site for the most current RoHS status.

## FiberExpress Outlets

### MediaFlex Plates and Inserts

AX101869 MediaFlex Plate, Double Gang



AX101874 MediaFlex Adapter Box, Double Gang



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



AX101937 MediaFlex SC Duplex Insert, Angled



#### 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.

#### MediaFlex 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.

#### MediaFlex MDVO (style) 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.

#### 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                          | Belden Part Number |          |             |          |          |          |
|--------------------------------------|--------------------|----------|-------------|----------|----------|----------|
|                                      | Gray               | Almond   | Elec. White | Black    | White    | Ivory    |
| <b>FiberExpress Outlets</b>          |                    |          |             |          |          |          |
| <b>MediaFlex Plate</b>               |                    |          |             |          |          |          |
| Single Gang                          | AX101745           | AX101746 | AX101747    | AX101748 | AX102608 | AX102569 |
| Double Gang                          | AX101869           | AX101870 | AX101871    | AX101872 | AX102609 | AX102570 |
| <b>MediaFlex Adapter Box</b>         |                    |          |             |          |          |          |
| Single Gang                          | AX102480           | AX102481 | AX102482    | AX102483 | AX102484 | AX102485 |
| Double Gang                          | AX101873           | AX101874 | AX101875    | AX101876 | AX102610 | AX102571 |
| <b>MediaFlex MDVO (style) Insert</b> |                    |          |             |          |          |          |
| 2-port, Flush, bag of 10 units       | AX101749           | AX101750 | AX101751    | AX101752 | AX102612 | AX102572 |
| 2-port, Angled, bag of 10 units      | AX101753           | AX101754 | AX101755    | AX101756 | AX102613 | AX102573 |
| <b>MediaFlex SC Duplex</b>           |                    |          |             |          |          |          |
| SC Duplex Single-mode                | AX101935           | AX101936 | AX101937    | AX101938 | AX102619 | AX102649 |
| SC Duplex Multimode                  | AX101939           | AX101940 | AX101941    | AX101942 | AX102620 | AX102650 |

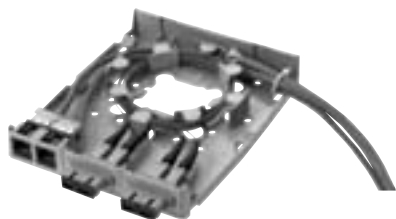
These products are in the process of being assessed for RoHS compliance. Please check our Web Site for the most current RoHS status.



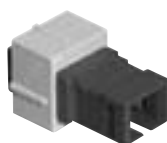
## FiberExpress Outlets

### MDVO Multimedia Outlet Boxes & Modules and Multi-User Outlet Boxes

A0643205 MDVO Multimedia Outlet Box, shown here as terminated



A0407005 MDVO SC Fiber Module



A0649254 SC Duplex Adapter



A0407010 MDVO ST Compatible Fiber Module



AX101467 MDVO MT-RJ Fiber Module



AX100222 Multi-User Outlet Box, shown here with modules



#### 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.

#### MDVO Multimedia Modules

**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 & single-mode 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.

#### Multi-User Outlet Box

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 | Belden Part Number |        |       |       |
|-------------|--------------------|--------|-------|-------|
|             | Gray               | Almond | White | Black |

#### FiberExpress Outlets

| MDVO Multimedia Outlet Box |          |          |          |          |
|----------------------------|----------|----------|----------|----------|
| 6-port                     | A0643205 | A0643206 | A0643207 | A0643208 |

Please note that SC Duplex adapters must be ordered separately (A0649254).

| MDVO Multimedia Module             |          |          |          |          |
|------------------------------------|----------|----------|----------|----------|
| LC Duplex Multimode                | AX102209 | AX102210 | AX102211 | AX102212 |
| LC Duplex Single-mode              | AX102213 | AX102214 | AX102215 | AX102216 |
| SC Simplex, Multimode, Blue insert | A0407003 | A0407004 | A0407005 | A0407006 |
| SC Duplex Adapter, Multimode       |          | A0649254 |          |          |
| ST Compatible, Multimode           | A0407007 | A0407008 | A0407009 | A0407010 |
| MT-RJ, Multimode                   |          | AX101467 |          |          |
| MT-RJ, Single-mode, Blue           |          | AX101466 |          |          |

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

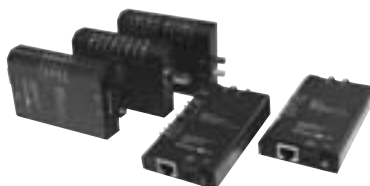
| Multi-User Outlet Box |          |          |          |          |
|-----------------------|----------|----------|----------|----------|
| 24-port               | AX100219 | AX100220 | AX100221 | AX100222 |

These products are in the process of being assessed for RoHS compliance. Please check our Web Site for the most current RoHS status.

## Network Connectivity Products

### Media Converters, Transceivers & Hubs and Network Tester

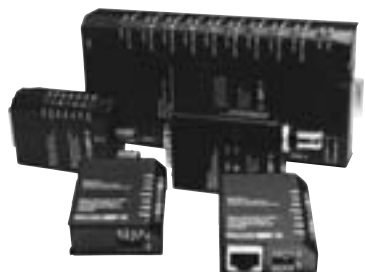
Media Converters



AX-1912 Media Converter Rack



AX050, 70 and 80 Transceivers and AX-509 Ethernet Hub



AX-110BT Realtime 10/100 Base-TX Ethernet Network Test Unit



#### Media Converters for Ethernet and Fast Ethernet

**Media Converters** enable the connection of dissimilar network cabling types, while maintaining the same network speed. A legacy Thinnet segment can be connected to a 10Base-T Hub or switch port with an AX-200 Converter or, link two different 10Base-T networks together over a multimode fiber optic link with a pair of AX-270s. Connect a legacy Thinnet segment over fiber with the AX-280 converter. The AX-5270 can be used for interbuilding links or attached to a fiber backbone.

#### Transceivers and Ethernet Hubs

**The AX-50, 70 and 80 Transceivers** enable the connection of a legacy AUI port to 10Base-T, Thinnet, or Fiber Optic media. The transceiver is powered from the host and requires no external power supply.

**The AX-509 Ethernet Hub** has an AUI port which accepts UTP, Fiber Optic or BNC transceivers. Specified for use by many U.S. Government Agencies. Includes a 110v/12v power supply.

#### Realtime 10/100 Base-TX Ethernet Network Test Unit

**The AX-110BT Realtime 10/100 Base-TX Ethernet Network Test Unit** is a cost effective way to quickly determine a network's operating condition. Plug the unit's patch cord into the tester, then into any open RJ-45 jack in an office, cubicle or conference room. Immediately see if the jack is a live network node capable of either 100 Mb/s or 10 Mb/s. Next check patch cord continuity and polarity. Connect the downlink to a PC to check NIC card link, speed and full or half duplex capabilities. Connect the uplink to a hub or switch port to verify link and speed.

| Description                                                                      | Belden Part Number |
|----------------------------------------------------------------------------------|--------------------|
| <b>Network Connectivity Products</b>                                             |                    |
| <b>Media Converter</b>                                                           |                    |
| 10Base-T/10Base2, RJ-45 to BNC                                                   | <b>AX-200</b>      |
| 10Base-T/10Base-FL, RJ-45 to ST-Compatible fiber connectors                      | <b>AX-270</b>      |
| 10Base2/10Base-FL, BNC to ST-Compatible fiber connectors                         | <b>AX-280</b>      |
| 100Base-TX/100Base-FX, SC-Compatible fiber connectors                            | <b>AX-5270SC</b>   |
| 100Base-TX/100Base-FX, ST-Compatible fiber connectors                            | <b>AX-5270ST</b>   |
| <b>Media Converter Rack</b>                                                      |                    |
| Holds up to 12 converters and multi lead power supplies, 19 in. rack-mount ready | <b>AX-1912-MCR</b> |
| Power Supply, 4-lead 110v/12v, powers up to 4 converters                         | <b>AX-270P4U</b>   |
| Power Supply, 8-lead 110v/12v, powers up to 8 converters                         | <b>AX-270P8U</b>   |
| <b>Transceivers and Ethernet Hubs</b>                                            |                    |
| UTP Transceiver, 10Base-T, AUI to RJ-45, side port                               | <b>AX-50</b>       |
| UTP Transceiver, 10Base-T, AUI to RJ-45, rear port                               | <b>AX-50R</b>      |
| Fiber Transceiver, 10Base-FL, AUI to ST-Compatible                               | <b>AX-70</b>       |
| Thinnet Transceiver, 10Base2, AUI to BNC                                         | <b>AX-80</b>       |
| Ethernet Hub with 8 RJ-45 10Base-T ports and 1 AUI port                          | <b>AX-509</b>      |
| <b>Network Tester</b>                                                            |                    |
| Realtime 10/100 Base-TX Ethernet Network Test Unit                               | <b>AX-110BT</b>    |

These products are in the process of being assessed for RoHS compliance. Please check our Web Site for the most current RoHS status.

## Cable Selection Guide

### Introduction

The Belden line of Optical Fiber Cables represents a new selection of the best optical fiber cable products offered by the consolidated resources of the Belden organization. The unmatched resources of Belden have now generated a complete line of indoor and outdoor cable products in tight buffered and loose tube constructions. This offering now expands the available applications for Belden optical fiber cable.

### Customer Service

Most of our optical fiber cables are available from stock. Many of these are available off-the-shelf from distributors. If you have a new or unusual application, or you cannot find a optical fiber cable in this catalog section that meets your technical requirements, contact Technical Support at 1-800-BELDEN-1 for additional information.

## Cable Selection Guide

### Optical Fiber Selection

| Type        | Grade          | Fiber Size (μ) | Standards Compliance                    | Link Length (m) | Data Rate (Gb) |
|-------------|----------------|----------------|-----------------------------------------|-----------------|----------------|
| Multimode   | 6              | 50/125         | exceeds TIA/EIA-568-B.3-1 ISO 11801 OM3 | 500             | 10             |
|             | 5              | 50/125         | TIA/EIA-568-B.3-1 ISO 11801 OM3         | 300             | 10             |
|             | 4              | 50/125         | TIA/EIA-568-B.3                         | 600             | 1              |
|             | 3              | 62.5/125       | TIA/EIA-568-B.3                         | 1,000           | 1              |
|             | 2              | 62.5/125       | TIA/EIA-568-B.3                         | 550             | 1              |
|             | 1 <sup>▲</sup> | 62.5/125       | FDDI grade <sup>†</sup>                 | —               | —              |
| Single-mode | —              | —              | ITU G.652.c/d <sup>††</sup>             | —               | —              |

<sup>▲</sup> Grade 1 fibers are available upon request.

<sup>†</sup> Used in most current cable plants, but not recommended for future installations, except as patch cordage

<sup>††</sup> Low water peak fiber with advantages for CWDM applications

### Color Code Charts

#### Jacket Color Chart

| Cable Type                        | Jacket Color |
|-----------------------------------|--------------|
| Loose Tube & Outside Plant Cables | Black        |
| Industrial Tray Cables            | Orange       |
| Tight Buffered Cables             |              |
| Grades 2,3,4                      | Orange       |
| Grades 5,6                        | Aqua         |
| Single-mode                       | Yellow       |

Nonstandard jacket colors are available upon request.

#### Fiber Sub-unit Color Code Chart\*

| Fiber/Tube No. | Color  | Fiber/Tube No. | Color  |
|----------------|--------|----------------|--------|
| 1              | Blue   | 7              | Red    |
| 2              | Orange | 8              | Black  |
| 3              | Green  | 9              | Yellow |
| 4              | Brown  | 10             | Violet |
| 5              | Slate  | 11             | Rose   |
| 6              | White  | 12             | Aqua   |

\*Per EIA/TIA 598-A

### Optical Specifications

| Grade:                                                           | 2         | 3         | 4         | 5                      | 6                      | Single-mode Enhanced <sup>6</sup> |
|------------------------------------------------------------------|-----------|-----------|-----------|------------------------|------------------------|-----------------------------------|
| Glass Type:                                                      | 62.5/125μ | 62.5/125μ | 50/125μ   | 50/125μ                | 50/125μ                |                                   |
| Operating Wavelength (nm)                                        | 850/1300  | 850/1300  | 850/1300  | 850/1300               | 850/1300               | 1310/1550                         |
| Min. OFL <sup>1</sup> Bandwidth (MHz-km)                         | 200/500   | 200/500   | 500/500   | 1500/500               | 3000/500               | —                                 |
| Min. Laser <sup>2</sup> Bandwidth (MHz-km)                       | 220/500   | 385/500   | 510/500   | 2000/500               | 4000/500               | —                                 |
| Max. Attenuation Loose Tube (dB/km)                              | 3.25/1.0  | 3.25/1.0  | 3.0/1.0   | 3.0/1.0                | 3.0/1.0                | 0.40/0.30                         |
| Max. Attenuation Tight Buffered <sup>3</sup> (dB/km)             | 3.50/1.25 | 3.50/1.25 | 3.50/1.25 | 3.50/1.25              | 3.50/1.25              | 0.80/0.50                         |
| 100 Mb Fast Ethernet Min. Link Length (meters S/L <sup>4</sup> ) | 300/2000  | 300/2000  | 300/2000  | 300/2000               | 300/2000               | —/5000                            |
| 1 Gb Ethernet Min. Link Length (meters S/L <sup>4</sup> )        | 300/550   | 500/1000  | 600/600   | 1000 <sup>5</sup> /600 | 1000 <sup>5</sup> /600 | —/5000                            |
| 10 Gb Ethernet Min. Link Length (meters S/L <sup>4</sup> )       | 35/300    | 35/300    | 85/300    | 300/300                | 500/300                | —/10,000                          |

<sup>1</sup> OFL = Overfilled Launch

<sup>2</sup> Effective Modal Bandwidth, determined by RML or DMD performance specifications

<sup>3</sup> Max. Attenuation for Tight Buffered, Ribbon, Micro-Loose Tube and Loose Tube Plenum Cables

<sup>4</sup> S/L = Short wavelength (850 nm) / Long wavelength (1310 nm)

<sup>5</sup> >2000 meters for engineered links

<sup>6</sup> Low water peak Single-Mode suitable for CWDM use complies with ITU G.652.c/d

## Interconnect Cable — Simplex and Duplex

### Tight Buffer — Riser & Plenum Rated

#### Applications

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

#### Product Description

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. Available in 1 or 2 fibers. One sub-unit is marked to permit easy identification of transmit and receive fibers. Length markings to facilitate installation.

|                                  |                                  |
|----------------------------------|----------------------------------|
| <b>Jacket Material</b>           | PVC                              |
| <b>Tight Buffer</b>              | PVC                              |
| <b>Strength Member</b>           | Aramid Yarn                      |
| <b>Color Code (Tight Buffer)</b> | Per EIA/TIA 598-A, see page 10.2 |
| <b>Jacket Color</b>              |                                  |
| Single-mode                      | Yellow                           |
| 62.5/125 μm                      | Orange                           |
| 50/125 μm / 1 Gbe                | Orange                           |
| 50/125 μm / 10 Gbe               | Aqua                             |

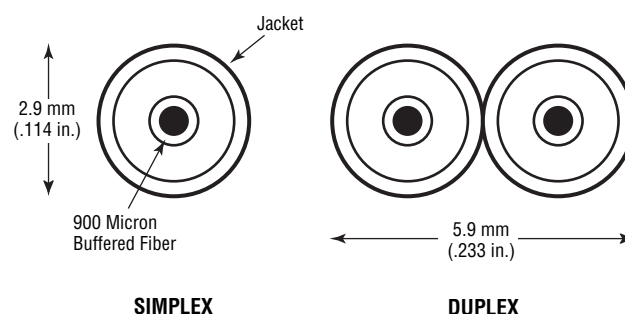
#### Ratings

|                  |          |
|------------------|----------|
| <b>Riser</b>     |          |
| UL Type          | OFNR     |
| cUL Type         | OFN FT4  |
| Flame Resistance | UL 1666  |
| <b>Plenum</b>    |          |
| UL Type          | OFNP     |
| cUL Type         | OFN FT6  |
| Flame Resistance | NFPA 262 |

#### Specifications

|                                       |                      |
|---------------------------------------|----------------------|
| <b>Temperature Range</b>              |                      |
| Storage                               | -40 to +70°C         |
| Operating                             | -20 to +70°C         |
| <b>Crush Resistance (EIA-455-41)</b>  | 200 N/cm             |
| <b>Impact Resistance (EIA-455-25)</b> | 20 Impacts @ 1.0 N-m |
| <b>Cyclic Flexing (EIA-455-104)</b>   | 2000 cycles, min.    |
| <b>Min. Bend Radius</b>               |                      |
| Installation                          | 15 x OD              |
| Long Term                             | 10 x OD              |
| <b>Optical Specifications</b>         | See page 10.2        |

#### Fiber Bundle Detail



| No. of Fibers | Belden Part Number           |                            |                             |                         | Outside Diameter |    | Weight     |       | Max. Install Load |   |
|---------------|------------------------------|----------------------------|-----------------------------|-------------------------|------------------|----|------------|-------|-------------------|---|
|               | 62.5 / 125μm<br>Std. / 1 Gbe | 50 / 125μm<br>Std. / 1 Gbe | 50 / 125μm<br>10 Gbe – 300M | Single-mode<br>Enhanced | Inch             | mm | Lbs./1000' | kg/km | Lbs.              | N |

#### Interconnect Cable Series

|                                      |        |        |        |        |             |           |    |    |     |     |
|--------------------------------------|--------|--------|--------|--------|-------------|-----------|----|----|-----|-----|
| <b>Riser (NEC/CEC OFNR/OFN FT4)</b>  |        |        |        |        |             |           |    |    |     |     |
| 1                                    | M97112 | M9A001 | M9C001 | M9W001 | 0.114       | 2.9       | 6  | 9  | 90  | 400 |
| 2                                    | M96915 | M9A002 | M9C002 | M9W002 | 0.11 x 0.23 | 2.9 x 5.9 | 12 | 18 | 180 | 801 |
| <b>Plenum (NEC/CEC OFNP/OFN FT6)</b> |        |        |        |        |             |           |    |    |     |     |
| 1                                    | M98086 | M9A003 | M9C003 | M9W003 | 0.114       | 2.9       | 6  | 9  | 90  | 400 |
| 2                                    | M96919 | M9A004 | M9C004 | M9W004 | 0.11 x 0.23 | 2.9 x 5.9 | 13 | 19 | 180 | 801 |

## Distribution Cable

Tight Buffer — Indoor Riser, Plenum & LSZH Rated

### Applications

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

### Product Description

Flexible thermoplastic jacket provides excellent handling characteristics. Fibers and 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.

#### Jacket Material

|                             |      |
|-----------------------------|------|
| Riser & Non-unitized Plenum | PVC  |
| Unitized Plenum             | PVDF |
| Low Smoke Zero Halogen      | LSZH |

#### Tight Buffer

|                        |      |
|------------------------|------|
| Riser & Plenum         | PVC  |
| Low Smoke Zero Halogen | LSZH |

#### Strength Member

Aramid Yarn

#### Color Code (Tight Buffer)

Per EIA/TIA 598-A,  
see page 10.2

#### Jacket Color

|                         |                              |
|-------------------------|------------------------------|
| Single-mode             | Yellow                       |
| 62.5/125 $\mu$ m        | Orange (Green for LSZH only) |
| 50/125 $\mu$ m / 1 Gbe  | Orange                       |
| 50/125 $\mu$ m / 10 Gbe | Aqua                         |

### Ratings

#### Riser

|                  |         |
|------------------|---------|
| UL Type          | OFNR    |
| cUL Type         | OFN FT4 |
| Flame Resistance | UL 1666 |

#### Plenum

|                  |          |
|------------------|----------|
| UL Type          | OFNP     |
| cUL Type         | OFN FT6  |
| Flame Resistance | NFPA 262 |

#### Low Smoke Zero Halogen

|                  |         |
|------------------|---------|
| UL Type          | OFNR    |
| cUL Type         | OFN FT4 |
| Flame Resistance | UL 1666 |

### Specifications

#### Temperature Range

|           |              |
|-----------|--------------|
| Storage   | -40 to +80°C |
| Operating | -20 to +70°C |

**Crush Resistance** (EIA-455-41) 2000 N/cm

**Impact Resistance** (EIA-455-25) 2000 Impacts @ 1.6 N-m

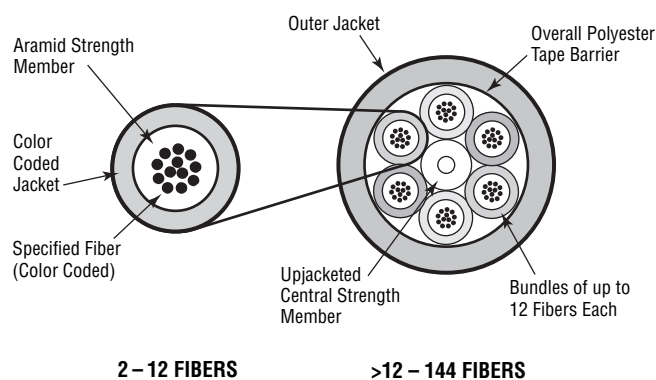
**Cyclic Flexing** (EIA-455-104) 2000 cycles, min.

#### Min. Bend Radius

|              |         |
|--------------|---------|
| Installation | 15 x OD |
| Long Term    | 10 x OD |

**Optical Specifications** See page 10.2

### Fiber Bundle Detail



## Distribution Cable

Tight Buffer — Indoor Riser, Plenum & LSZH Rated (*continued*)

| No. of Fibers | Belden Part Number           |                            |                             |                         | Outside Diameter |    | Weight     |       | Max. Install Load |   |
|---------------|------------------------------|----------------------------|-----------------------------|-------------------------|------------------|----|------------|-------|-------------------|---|
|               | 62.5 / 125µm<br>Std. / 1 Gbe | 50 / 125µm<br>Std. / 1 Gbe | 50 / 125µm<br>10 Gbe – 300M | Single-mode<br>Enhanced | Inch             | mm | Lbs./1000' | kg/km | Lbs.              | N |

### Distribution Cable Series

#### Riser (NEC/CEC OFNR/OFN FT4)

|     |         |         |         |         |       |       |     |     |      |       |
|-----|---------|---------|---------|---------|-------|-------|-----|-----|------|-------|
| 2   | M9B037  | M9A037  | M9C037  | M9W037  | 0.184 | 4.67  | 13  | 19  | 180  | 801   |
| 4   | M9B038  | M9A038  | M9C038  | M9W038  | 0.200 | 5.08  | 16  | 24  | 195  | 867   |
| 6   | M9B039  | M9A039  | M9C039  | M9W039  | 0.220 | 5.59  | 19  | 28  | 270  | 1201  |
| 8   | M9B040  | M9A040  | M9C040  | M9W040  | 0.235 | 5.97  | 22  | 33  | 270  | 1201  |
| 12  | M9B042  | M9A042  | M9C042  | M9W042  | 0.255 | 6.48  | 27  | 40  | 300  | 1334  |
| 24  | M9B601* | M9A601* | M9C601* | M9W601* | 0.325 | 8.26  | 42  | 63  | 390  | 1735  |
| 24  | M9B602  | M9A602  | M9C602  | M9W602  | 0.496 | 12.60 | 83  | 124 | 960  | 4270  |
| 36  | M9B604  | M9A604  | M9C604  | M9W604  | 0.644 | 16.36 | 137 | 204 | 1440 | 6405  |
| 48  | M9B606  | M9A606  | M9C606  | M9W606  | 0.627 | 15.93 | 131 | 195 | 945  | 4203  |
| 72  | M9B609  | M9A609  | M9C609  | M9W609  | 0.750 | 19.10 | 195 | 290 | 1350 | 6005  |
| 96  | M9B622  | M9A622  | M9C622  | M9W622  | 0.895 | 22.70 | 290 | 432 | 1983 | 8820  |
| 144 | M9B619  | M9A619  | M9C619  | M9W619  | 0.964 | 24.49 | 314 | 467 | 2745 | 12210 |

#### Composite Riser Cables

6xSM/12x62.5 M96992

12xSM/12x62.5 M96963

6xSM/12x50 M96909

12xSM/12x50 M96908

#### Plenum (NEC/CEC OFNP/OFN FT6)

|     |         |         |         |         |       |       |     |     |      |       |
|-----|---------|---------|---------|---------|-------|-------|-----|-----|------|-------|
| 2   | M9B043  | M9A043  | M9C043  | M9W043  | 0.184 | 4.67  | 14  | 21  | 180  | 801   |
| 4   | M9B044  | M9A044  | M9C044  | M9W044  | 0.174 | 4.42  | 13  | 19  | 195  | 867   |
| 6   | M9B045  | M9A045  | M9C045  | M9W045  | 0.190 | 4.83  | 16  | 24  | 270  | 1201  |
| 8   | M9B046  | M9A046  | M9C046  | M9W046  | 0.222 | 5.64  | 19  | 28  | 270  | 1201  |
| 12  | M9B048  | M9A048  | M9C048  | M9W048  | 0.225 | 5.72  | 22  | 33  | 300  | 1334  |
| 24  | M9B611* | M9A611* | M9C611* | M9W611* | 0.330 | 8.38  | 40  | 60  | 390  | 1735  |
| 24  | M9B612  | M9A612  | M9C612  | M9W612  | 0.493 | 12.52 | 89  | 132 | 1263 | 5618  |
| 36  | M9B614  | M9A614  | M9C614  | M9W614  | 0.594 | 15.09 | 134 | 199 | 1913 | 8509  |
| 48  | M9B616  | M9A616  | M9C616  | M9W616  | 0.599 | 15.21 | 131 | 195 | 1245 | 5538  |
| 72  | M9B620  | M9A620  | M9C620  | M9W620  | 0.754 | 19.15 | 197 | 293 | 2093 | 9310  |
| 96  | M9B623  | M9A623  | M9C623  | M9W623  | 0.904 | 22.96 | 268 | 399 | 2160 | 9608  |
| 144 | M9B621  | M9A621  | M9C621  | M9W621  | 1.047 | 26.59 | 365 | 543 | 3645 | 16213 |

#### Composite Plenum Cables

6xSM/6x62.5 M97174

6xSM/12x62.5 M97041

12xSM/12x62.5 M97219

6xSM/6x50 M97412

6xSM/12x50 M97411

12xSM/12x50 M96780

#### LSZH (NEC/CEC OFNR/OFN FT4)

|     |        |        |        |        |       |       |     |     |      |      |
|-----|--------|--------|--------|--------|-------|-------|-----|-----|------|------|
| 2   | M9B100 | M9A100 | M9C100 | M9W100 | 0.184 | 4.67  | 15  | 22  | 180  | 800  |
| 4   | M9B101 | M9A101 | M9C101 | M9W101 | 0.200 | 5.08  | 17  | 25  | 195  | 867  |
| 6   | M9B102 | M9A102 | M9C102 | M9W102 | 0.220 | 5.59  | 21  | 31  | 270  | 1201 |
| 8   | M9B103 | M9A103 | M9C103 | M9W103 | 0.235 | 5.97  | 24  | 36  | 270  | 1201 |
| 12  | M9B104 | M9A104 | M9C104 | M9W104 | 0.255 | 6.48  | 29  | 43  | 300  | 1334 |
| 16  | M9B105 | M9A105 | M9C105 | M9W105 | 0.347 | 8.80  | 43  | 63  | 315  | 1400 |
| 24  | M9B107 | M9A107 | M9C107 | M9W107 | 0.386 | 9.80  | 54  | 79  | 450  | 2000 |
| 36  | M9B111 | M9A111 | M9C111 | M9W111 | 0.798 | 20.00 | 214 | 313 | 1619 | 7200 |
| 48  | M9B112 | M9A112 | M9C112 | M9W112 | 0.835 | 21.20 | 237 | 347 | 1619 | 7200 |
| 72  | M9B114 | M9A114 | M9C114 | M9W114 | 0.883 | 22.40 | 270 | 395 | 1619 | 7200 |
| 96  | M9B116 | M9A116 | M9C116 | M9W116 | 0.973 | 24.70 | 364 | 532 | 1619 | 7200 |
| 144 | M9B120 | M9A120 | M9C120 | M9W120 | 1.087 | 27.60 | 384 | 561 | 1619 | 7200 |

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

\*Single jacket design.



## Breakout Style Cable

Tight Buffer — Indoor Riser, Plenum & LSZH Rated

### Applications

- Low to medium fiber count requirements
- In-building backbone or horizontal deployment
- Office wiring
- Factory floor automation and harsh environment installations

### Product Description

Full dielectric construction, no grounding required. Available with 2 to 36 fibers. 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.

#### Outer Jacket Material

|                        |      |
|------------------------|------|
| Riser & Plenum         | PVC  |
| Plenum                 | PVDF |
| Low Smoke Zero Halogen | LSZH |

#### Sub-unit Jacket Material

|                        |      |
|------------------------|------|
| Riser & Plenum         | PVC  |
| Low Smoke Zero Halogen | LSZH |

#### Tight Buffer

|                        |      |
|------------------------|------|
| Riser & Plenum         | PVC  |
| Low Smoke Zero Halogen | LSZH |

#### Strength Member

Aramid Yarn

**Color Code** (Tight Buffer) Per EIA/TIA 598-A, see page 10.2

#### Jacket Color

|                         |                              |
|-------------------------|------------------------------|
| Single-mode             | Yellow                       |
| 62.5/125 $\mu$ m        | Orange (Green for LSZH only) |
| 50/125 $\mu$ m / 1 Gbe  | Orange                       |
| 50/125 $\mu$ m / 10 Gbe | Aqua                         |

### Ratings

#### Riser

|                  |         |
|------------------|---------|
| UL Type          | OFNR    |
| cUL Type         | OFN FT4 |
| Flame Resistance | UL 1666 |

#### Plenum

|                  |          |
|------------------|----------|
| UL Type          | OFNP     |
| cUL Type         | OFN FT6  |
| Flame Resistance | NFPA 262 |

#### Low Smoke Zero Halogen

|                  |         |
|------------------|---------|
| UL Type          | OFNR    |
| cUL Type         | OFN FT4 |
| Flame Resistance | UL 1666 |

### Specifications

#### Temperature Range

|           |              |
|-----------|--------------|
| Storage   | -40 to +80°C |
| Operating | -20 to +70°C |

**Crush Resistance** (EIA-455-41) 2000 N/cm

**Impact Resistance** (EIA-455-25) 2000 Impacts @ 1.6 N-m

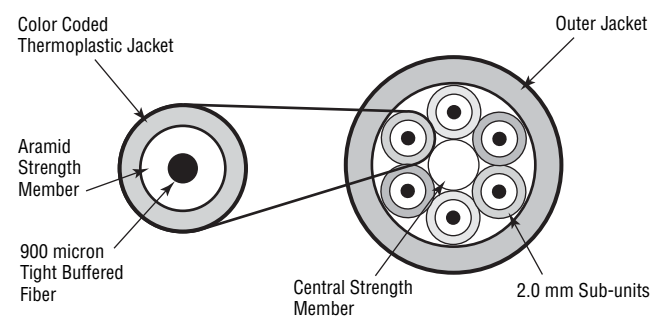
**Cyclic Flexing** (EIA-455-104) 2000 cycles, min.

#### Min. Bend Radius

|              |         |
|--------------|---------|
| Installation | 15 x OD |
| Long Term    | 10 x OD |

**Optical Specifications** See page 10.2

### Fiber Bundle Detail



## Breakout Style Cable

Tight Buffer — Indoor Riser, Plenum & LSZH Rated (*continued*)

| No. of<br>Fibers | Belden Part Number           |                            |                             |                         | Outside Diameter |    | Weight     |       | Max. Install Load |   |
|------------------|------------------------------|----------------------------|-----------------------------|-------------------------|------------------|----|------------|-------|-------------------|---|
|                  | 62.5 / 125µm<br>Std. / 1 Gbe | 50 / 125µm<br>Std. / 1 Gbe | 50 / 125µm<br>10 Gbe – 300M | Single-mode<br>Enhanced | Inch             | mm | Lbs./1000' | kg/km | Lbs.              | N |

### Breakout Cable Series

|                                      |        |        |        |        |       |       |     |     |     |      |
|--------------------------------------|--------|--------|--------|--------|-------|-------|-----|-----|-----|------|
| <b>Riser</b> (NEC/CEC OFNR/OFN FT4)  |        |        |        |        |       |       |     |     |     |      |
| 2                                    | M9B005 | M9A005 | M9C005 | M9W005 | 0.260 | 6.60  | 24  | 36  | 180 | 801  |
| 4                                    | M9B006 | M9A006 | M9C006 | M9W006 | 0.321 | 8.15  | 35  | 52  | 345 | 1535 |
| 6                                    | M9B007 | M9A007 | M9C007 | M9W007 | 0.358 | 9.09  | 54  | 80  | 543 | 2415 |
| 8                                    | M9B008 | M9A008 | M9C008 | M9W008 | 0.405 | 10.29 | 69  | 103 | 600 | 2700 |
| 10                                   | M9B009 | M9A009 | M9C009 | M9W009 | 0.455 | 11.56 | 86  | 128 | 600 | 2700 |
| 12                                   | M9B010 | M9A010 | M9C010 | M9W010 | 0.514 | 13.06 | 110 | 164 | 600 | 2700 |
| 18                                   | M9B011 | M9A011 | M9C011 | M9W011 | 0.520 | 13.21 | 104 | 155 | 600 | 2700 |
| 24                                   | M9B012 | M9A012 | M9C012 | M9W012 | 0.590 | 14.99 | 135 | 201 | 600 | 2700 |
| 36                                   | M9B083 | M9A083 | M9C083 | M9W083 | 0.680 | 17.27 | 168 | 250 | 600 | 2700 |
| <b>Plenum</b> (NEC/CEC OFNP/OFN FT6) |        |        |        |        |       |       |     |     |     |      |
| 2                                    | M9B013 | M9A013 | M9C013 | M9W013 | 0.230 | 5.84  | 20  | 30  | 180 | 801  |
| 4                                    | M9B014 | M9A014 | M9C014 | M9W014 | 0.263 | 6.68  | 30  | 45  | 345 | 1535 |
| 6                                    | M9B015 | M9A015 | M9C015 | M9W015 | 0.309 | 7.85  | 41  | 61  | 465 | 2068 |
| 8                                    | M9B016 | M9A016 | M9C016 | M9W016 | 0.336 | 8.53  | 55  | 82  | 600 | 2700 |
| 10                                   | M9B017 | M9A017 | M9C017 | M9W017 | 0.385 | 9.78  | 73  | 109 | 600 | 2700 |
| 12                                   | M9B018 | M9A018 | M9C018 | M9W018 | 0.391 | 9.93  | 65  | 97  | 600 | 2700 |
| 18                                   | M9B019 | M9A019 | M9C019 | M9W019 | 0.456 | 11.58 | 89  | 132 | 600 | 2700 |
| 24                                   | M9B020 | M9A020 | M9C020 | M9W020 | 0.544 | 13.82 | 117 | 174 | 600 | 2700 |
| 36                                   | M9B082 | M9A082 | M9C082 | M9W082 | 0.612 | 15.54 | 154 | 229 | 600 | 2700 |
| <b>LSZH</b> (NEC/CEC OFNR/OFN FT4)   |        |        |        |        |       |       |     |     |     |      |
| 2                                    | M9B130 | M9A130 | M9C130 | M9W130 | 0.290 | 7.37  | 39  | 57  | 270 | 1200 |
| 4                                    | M9B131 | M9A131 | M9C131 | M9W131 | 0.351 | 8.92  | 38  | 55  | 285 | 1268 |
| 6                                    | M9B132 | M9A132 | M9C132 | M9W132 | 0.358 | 9.09  | 52  | 76  | 543 | 2415 |
| 8                                    | M9B133 | M9A133 | M9C133 | M9W133 | 0.405 | 10.29 | 67  | 98  | 600 | 2700 |
| 10                                   | M9B134 | M9A134 | M9C134 | M9W134 | 0.455 | 11.56 | 110 | 162 | 600 | 2700 |
| 12                                   | M9B135 | M9A135 | M9C135 | M9W135 | 0.514 | 13.06 | 110 | 161 | 600 | 2700 |
| 18                                   | M9B136 | M9A136 | M9C136 | M9W136 | 0.520 | 13.21 | 103 | 151 | 600 | 2700 |
| 24                                   | M9B137 | M9A137 | M9C137 | M9W137 | 0.590 | 14.99 | 138 | 202 | 600 | 2700 |
| 36                                   | M9B138 | M9A138 | M9C138 | M9W138 | 0.680 | 17.27 | 171 | 250 | 600 | 2700 |

2.5 mm Breakout Cables are also available.

# Industrial Armored Cable

## Tight Buffer — Riser & Plenum Rated

### Applications

- Industrial environments
- Rugged installations
- Manufacturing plants
- Mining operations
- Telecommunications and data trunk
- Inter- and intra-building installations

### Product Description

Heavy duty construction with interlocking aluminum armor (steel available on request) provides excellent mechanical protection from cutting or crushing and eliminates need for innerduct. Rodent resistant. Also available for outside plant. Loose tube design available on request.

|                                |                                  |
|--------------------------------|----------------------------------|
| <b>Jacket Material</b>         |                                  |
| Riser & Plenum                 | PVC                              |
| <b>Buffer Tube</b>             | PVC                              |
| <b>Strength Member</b>         | Aramid Yarn                      |
| <b>Central Strength Member</b> | E-Glass                          |
| <b>Armor</b>                   | Aluminum                         |
| <b>Color Code (Buffer)</b>     | Per EIA/TIA 598-A, see page 10.2 |
| <b>Jacket Color</b>            |                                  |
| Single-mode                    | Yellow                           |
| 62.5/125 µm                    | Orange                           |
| 50/125 µm / 1 Gbe              | Orange                           |
| 50/125 µm / 10 Gbe             | Aqua                             |

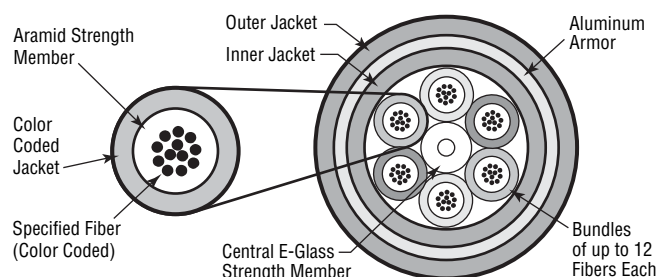
### Ratings

|                  |          |
|------------------|----------|
| <b>Riser</b>     |          |
| UL Type          | OFCR     |
| cUL Type         | OFC FT4  |
| Flame Resistance | UL 1666  |
| <b>Plenum</b>    |          |
| UL Type          | OFCP     |
| cUL Type         | OFC FT6  |
| Flame Resistance | NFPA 262 |

### Specifications

|                                       |                        |
|---------------------------------------|------------------------|
| <b>Temperature Range</b>              |                        |
| Storage                               | -40 to +70°C           |
| Operating                             | -20 to +70°C           |
| <b>Crush Resistance (EIA-455-41)</b>  | 2000 N/cm              |
| <b>Impact Resistance (EIA-455-25)</b> | 2000 Impacts @ 3.0 N-m |
| <b>Min. Bend Radius</b>               |                        |
| Installation                          | 20 x OD                |
| Long Term                             | 15 x OD                |
| <b>Optical Specifications</b>         | See page 10.2          |

### Fiber Bundle Detail



| No. of Fibers | Belden Part Number        |                         |                          |                      | Outside Diameter |    | Weight     |       | Max. Install Load |   |
|---------------|---------------------------|-------------------------|--------------------------|----------------------|------------------|----|------------|-------|-------------------|---|
|               | 62.5 / 125µm Std. / 1 Gbe | 50 / 125µm Std. / 1 Gbe | 50 / 125µm 10 Gbe – 300M | Single-mode Enhanced | Inch             | mm | Lbs./1000' | kg/km | Lbs.              | N |

### Industrial Armored Series

| <b>Riser (NEC/CEC OFCR/OFC FT4)</b>  |         |         |         |         |       |       |     |      |     |      |
|--------------------------------------|---------|---------|---------|---------|-------|-------|-----|------|-----|------|
| 6                                    | M9B230  | M9A230  | M9C230  | M9W230  | 0.570 | 14.50 | 126 | 188  | 270 | 1201 |
| 12                                   | M9B231  | M9A231  | M9C231  | M9W231  | 0.620 | 15.70 | 149 | 222  | 300 | 1334 |
| 24                                   | M9B232* | M9A232* | M9C232* | M9W232* | 0.670 | 17.00 | 179 | 266  | 390 | 1735 |
| 24                                   | M9B233  | M9A233  | M9C233  | M9W233  | 0.845 | 21.46 | 263 | 391  | 600 | 2700 |
| 36                                   | M9B234  | M9A234  | M9C234  | M9W234  | 0.970 | 24.64 | 368 | 548  | 600 | 2700 |
| 48                                   | M9B235  | M9A235  | M9C235  | M9W235  | 0.970 | 24.64 | 368 | 548  | 600 | 2700 |
| 72                                   | M9B236  | M9A236  | M9C236  | M9W236  | 1.095 | 27.82 | 481 | 716  | 600 | 2700 |
| 96                                   | M9B237  | M9A237  | M9C237  | M9W237  | 1.245 | 31.62 | 625 | 930  | 600 | 2700 |
| 144                                  | M9B238  | M9A238  | M9C238  | M9W238  | 1.320 | 33.55 | 675 | 1005 | 600 | 2700 |
| <b>Plenum (NEC/CEC OFCP/OFC FT6)</b> |         |         |         |         |       |       |     |      |     |      |
| 6                                    | M9B240  | M9A240  | M9C240  | M9W240  | 0.471 | 12.00 | 87  | 129  | 270 | 1201 |
| 12                                   | M9B241  | M9A241  | M9C241  | M9W241  | 0.506 | 12.90 | 103 | 153  | 300 | 1334 |
| 24                                   | M9B242* | M9A242* | M9C242* | M9W242* | 0.631 | 16.00 | 151 | 225  | 390 | 1735 |
| 24                                   | M9B243  | M9A243  | M9C243  | M9W243  | 0.781 | 19.84 | 289 | 430  | 600 | 2700 |
| 36                                   | M9B244  | M9A244  | M9C244  | M9W244  | 0.881 | 22.38 | 309 | 460  | 600 | 2700 |
| 48                                   | M9B245  | M9A245  | M9C245  | M9W245  | 0.906 | 23.01 | 320 | 476  | 600 | 2700 |
| 72                                   | M9B246  | M9A246  | M9C246  | M9W246  | 1.056 | 26.82 | 451 | 671  | 600 | 2700 |
| 96                                   | M9B247  | M9A247  | M9C247  | M9W247  | 1.256 | 31.90 | 608 | 905  | 600 | 2700 |
| 144                                  | M9B248  | M9A248  | M9C248  | M9W248  | 1.331 | 33.81 | 687 | 1022 | 600 | 2700 |

\*Single jacket design.

All optical fiber products can be supplied in compliance with RoHS regulations.



For more information, contact Belden Technical Support: 1-800-BELDEN-1 • [www.belden.com](http://www.belden.com)

## Tactical Cable

### Tight Buffer — Outdoor

#### Applications

- ENG vehicles
- Outdoor news, sporting or other events
- Digital camera transmission
- Military communications
- Re-deployable communications

#### Product Description

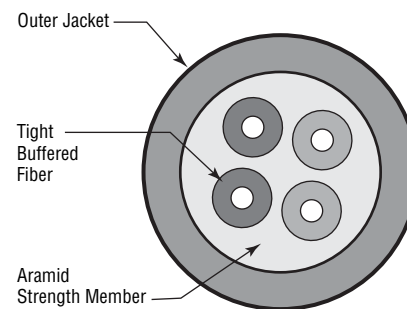
Small and lightweight with a rugged jacket, Tactical Cable provides a durable design for repeated deployment and retrieval cycles and a superior level of crush resistance. Designed to military standards. 50/125 micron fiber available on request.

|                                     |                                  |
|-------------------------------------|----------------------------------|
| <b>Jacket Material</b>              | UV-resistant PU                  |
| <b>Buffer</b>                       | Polyester                        |
| <b>Strength Member</b>              | Aramid Yarn                      |
| <b>Color Code</b> (Jacket & Fibers) | Per EIA/TIA 598-A, see page 10.2 |

#### Specifications

|                                       |                       |
|---------------------------------------|-----------------------|
| <b>Temperature Range</b>              |                       |
| Storage                               | -70 to +85°C          |
| Operating                             | -55 to +85°C          |
| <b>Crush Resistance</b> (EIA-455-41)  | 440 N/cm              |
| <b>Impact Resistance</b> (EIA-455-25) | 200 Impacts @ 2.2 N-m |
| <b>Cyclic Flexing</b> (EIA-455-104)   | 2000 cycles, min.     |
| <b>Min. Bend Radius</b>               |                       |
| Installation                          | 15 x OD               |
| Long Term                             | 8 x OD                |
| <b>Optical Specifications</b>         | See page 10.2         |

#### Fiber Bundle Detail



| No. of Fibers | Belden Part Number        |                      | Outside Diameter |    | Weight     |       | Max. Install Load |   |
|---------------|---------------------------|----------------------|------------------|----|------------|-------|-------------------|---|
|               | 62.5 / 125µm Std. / 1 Gbe | Single-mode Enhanced | Inch             | mm | Lbs./1000' | kg/km | Lbs.              | N |

#### Tactical Series

| Outdoor |        |        |       |     |    |    |     |      |
|---------|--------|--------|-------|-----|----|----|-----|------|
| 2       | M96571 | M96566 | 0.217 | 5.5 | 19 | 28 | 330 | 1468 |
| 4       | M96551 | M96639 | 0.225 | 5.7 | 21 | 31 | 330 | 1468 |
| 6       | M96572 | M96567 | 0.236 | 6.0 | 23 | 34 | 330 | 1468 |
| 8       | M96573 | M96568 | 0.250 | 6.3 | 26 | 39 | 330 | 1468 |
| 10      | M96574 | M96569 | 0.265 | 6.7 | 28 | 42 | 330 | 1468 |
| 12      | M96575 | M96570 | 0.280 | 7.1 | 31 | 46 | 330 | 1468 |

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

# Ribbon Cable

## Riser and Plenum Rated

### Applications

- Inter-equipment connections
- NEBS applications

### Product Description

Small size is ideal for connections in tight spaces. Color coded fibers. Suitable for use with standard ribbon connectors. Flexible, with half-inch minimum bend radius. Tight center-to-center tolerances. Optional identification printing available.

|                                     |                                  |
|-------------------------------------|----------------------------------|
| <b>Jacket Material</b>              | PVC                              |
| <b>Strength Member</b>              | Aramid Yarn                      |
| <b>Color Code</b> (Jacket & Fibers) | Per EIA/TIA 598-A, see page 10.2 |
| <b>Jacket Color</b>                 |                                  |
| Single-mode                         | Yellow                           |
| 62.5/125µm                          | Orange                           |
| 50/125 µm / 1 Gbe                   | Orange                           |
| 50/125 µm / 10 Gbe                  | Aqua                             |

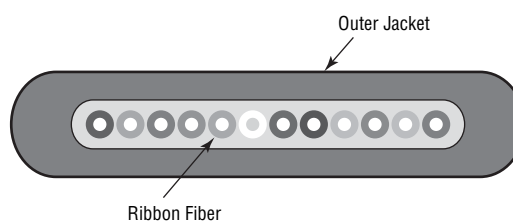
### Ratings

|                  |          |
|------------------|----------|
| <b>Riser</b>     |          |
| UL Type          | OFNR     |
| cUL Type         | OFN FT4  |
| Flame Resistance | UL 1666  |
| <b>Plenum</b>    |          |
| UL Type          | OFNP     |
| cUL Type         | OFN FT6  |
| Flame Resistance | NFPA 262 |

### Specifications

|                                       |                        |
|---------------------------------------|------------------------|
| <b>Temperature Range</b>              |                        |
| Storage                               | -40 to +80°C           |
| Operating                             | -20 to +70°C           |
| <b>Crush Resistance</b> (EIA-455-41)  | 2000 N/cm              |
| <b>Impact Resistance</b> (EIA-455-25) | 2000 Impacts @ 1.6 N-m |
| <b>Cyclic Flexing</b> (EIA-455-104)   | 2000 cycles, min.      |
| <b>Min. Bend Radius</b>               |                        |
| Installation                          | 15 x OD                |
| Long Term                             | 10 x OD                |
| <b>Optical Specifications</b>         | See page 10.2          |

### Fiber Bundle Detail



| No. of Fibers | Belden Part Number           |                            |                             |                         | Outside Diameter |    | Weight     |       | Max. Install Load |   |
|---------------|------------------------------|----------------------------|-----------------------------|-------------------------|------------------|----|------------|-------|-------------------|---|
|               | 62.5 / 125µm<br>Std. / 1 Gbe | 50 / 125µm<br>Std. / 1 Gbe | 50 / 125µm<br>10 Gbe – 300M | Single-mode<br>Enhanced | Inch             | mm | Lbs./1000' | kg/km | Lbs.              | N |

### Ribbon Series

| <b>Riser</b> (NEC/CEC OFNR/OFN FT4)  |        |        |        |        |              |           |   |    |     |     |
|--------------------------------------|--------|--------|--------|--------|--------------|-----------|---|----|-----|-----|
| 2                                    | M9B630 | M9A630 | M9C630 | M9W630 | 0.114        | 2.9       | 5 | 7  | 100 | 444 |
| 4                                    | M9B631 | M9A631 | M9C631 | M9W631 | 0.78 x 0.115 | 2.0 x 2.9 | 4 | 6  | 100 | 444 |
| 6                                    | M9B632 | M9A632 | M9C632 | M9W632 | 0.78 x 0.137 | 2.0 x 3.5 | 6 | 9  | 100 | 444 |
| 8                                    | M9B633 | M9A633 | M9C633 | M9W633 | 0.78 x 0.158 | 2.0 x 4.0 | 6 | 9  | 100 | 444 |
| 12                                   | M9B634 | M9A634 | M9C634 | M9W634 | 0.78 x 0.180 | 2.0 x 4.6 | 7 | 10 | 100 | 444 |
| <b>Plenum</b> (NEC/CEC OFNP/OFN FT6) |        |        |        |        |              |           |   |    |     |     |
| 2                                    | M9B640 | M9A640 | M9C640 | M9W640 | 0.114        | 2.9       | 5 | 7  | 100 | 444 |
| 4                                    | M9B641 | M9A641 | M9C641 | M9W641 | 0.78 x 0.115 | 2.0 x 2.9 | 4 | 6  | 100 | 444 |
| 6                                    | M9B642 | M9A642 | M9C642 | M9W642 | 0.78 x 0.137 | 2.0 x 3.5 | 6 | 9  | 100 | 444 |
| 8                                    | M9B643 | M9A643 | M9C643 | M9W643 | 0.78 x 0.158 | 2.0 x 4.0 | 6 | 9  | 100 | 444 |
| 12                                   | M9B644 | M9A644 | M9C644 | M9W644 | 0.78 x 0.180 | 2.0 x 4.6 | 7 | 10 | 100 | 444 |

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

## Single Jacket, All Dielectric Cable

Loose Tube — Outdoor, and Indoor/Outdoor Riser Rated

### Applications

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

### Product Description

Gel-filled buffer tube prevents water migration. All-dielectric strength member. Available as Riser rated cable, thereby eliminating the need for service entrance splicing to in-building cable. Full dielectric construction, no grounding required. Available with up to 216 fibers. Length markings in meters for easy determination of cable length.

|                                |                                  |
|--------------------------------|----------------------------------|
| <b>Jacket Material</b>         |                                  |
| Outdoor                        | PE                               |
| Riser                          | PVC                              |
| <b>Buffer Tube</b>             | PBT                              |
| <b>Strength Member</b>         | Aramid Yarn                      |
| <b>Central Strength Member</b> | E-Glass                          |
| <b>Color Code (Buffer)</b>     | Per EIA/TIA 598-A, see page 10.2 |
| <b>Jacket Color</b>            | Black                            |

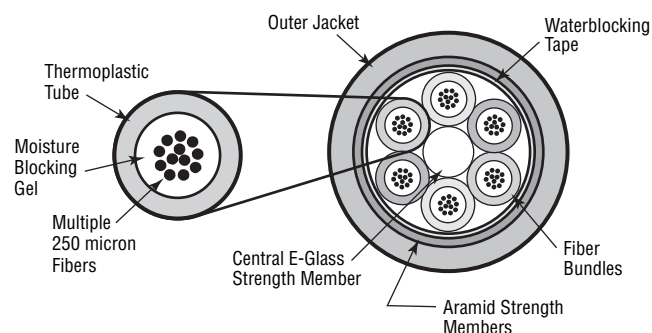
### Ratings

|                  |         |
|------------------|---------|
| <b>Riser</b>     |         |
| UL Type          | OFNR    |
| cUL Type         | OFN FT4 |
| Flame Resistance | UL 1666 |

### Specifications

|                                           |                        |
|-------------------------------------------|------------------------|
| <b>Temperature Range (Outdoor Series)</b> |                        |
| Storage                                   | -50 to +80°C           |
| Operating                                 | -40 to +70°C           |
| <b>Temperature Range (Riser Series)</b>   |                        |
| Storage                                   | -40 to +80°C           |
| Operating                                 | -40 to +70°C           |
| <b>Crush Resistance (EIA-455-41)</b>      | 2000 N/cm              |
| <b>Impact Resistance (EIA-455-25)</b>     | 2000 Impacts @ 1.6 N-m |
| <b>Min. Bend Radius</b>                   |                        |
| Installation                              | 20 x OD                |
| Long Term                                 | 15 x OD                |
| <b>Optical Specifications</b>             | See page 10.2          |

### Fiber Bundle Detail



| No. of Fibers | Fibers Per Tube | Belden Part Number        |                         |                          |                      | Outside Diameter |    | Weight     |       | Max. Install Load |   |
|---------------|-----------------|---------------------------|-------------------------|--------------------------|----------------------|------------------|----|------------|-------|-------------------|---|
|               |                 | 62.5 / 125µm Std. / 1 Gbe | 50 / 125µm Std. / 1 Gbe | 50 / 125µm 10 Gbe – 300M | Single-mode Enhanced | Inch             | mm | Lbs./1000' | kg/km | Lbs.              | N |

### Loose Tube Series

| Outdoor                      |    |         |         |         |         |      |       |     |     |     |      |
|------------------------------|----|---------|---------|---------|---------|------|-------|-----|-----|-----|------|
| 6                            | 6  | M9B510T | M9A510T | M9C510T | M9W510T | 0.38 | 9.65  | 44  | 65  | 600 | 2700 |
| 12                           | 6  | M9B511T | M9A511T | M9C511T | M9W511T | 0.38 | 9.65  | 44  | 65  | 600 | 2700 |
| 24                           | 6  | M9B500T | M9A500T | M9C500T | M9W500T | 0.38 | 9.65  | 45  | 67  | 600 | 2700 |
| 36                           | 6  | M9B502T | M9A502T | M9C502T | M9W502T | 0.38 | 9.65  | 47  | 70  | 600 | 2700 |
| 48                           | 12 | M9B505T | M9A505T | M9C505T | M9W505T | 0.48 | 12.19 | 70  | 104 | 600 | 2700 |
| 72                           | 12 | M9B507T | M9A507T | M9C507T | M9W507T | 0.48 | 12.19 | 70  | 104 | 600 | 2700 |
| 96                           | 12 | M9B513T | M9A513T | M9C513T | M9W513T | 0.55 | 13.89 | 93  | 138 | 600 | 2700 |
| 144                          | 12 | M9B509T | M9A509T | M9C509T | M9W509T | 0.70 | 17.78 | 149 | 222 | 600 | 2700 |
| 216                          | 12 | M9B520T | M9A520T | M9C520T | M9W520T | 0.72 | 18.16 | 148 | 220 | 600 | 2700 |
| Riser (NEC/CEC OFNR/OFN FT4) |    |         |         |         |         |      |       |     |     |     |      |
| 6                            | 6  | M9B810  | M9A810  | M9C810  | M9W810  | 0.38 | 9.65  | 63  | 94  | 600 | 2700 |
| 12                           | 6  | M9B811  | M9A811  | M9C811  | M9W811  | 0.38 | 9.65  | 62  | 92  | 600 | 2700 |
| 24                           | 6  | M9B812  | M9A812  | M9C812  | M9W812  | 0.38 | 9.65  | 61  | 91  | 600 | 2700 |
| 36                           | 6  | M9B813  | M9A813  | M9C813  | M9W813  | 0.38 | 9.65  | 60  | 89  | 600 | 2700 |
| 48                           | 12 | M9B814  | M9A814  | M9C814  | M9W814  | 0.48 | 12.19 | 89  | 132 | 600 | 2700 |
| 72                           | 12 | M9B815  | M9A815  | M9C815  | M9W815  | 0.48 | 12.19 | 87  | 129 | 600 | 2700 |
| 96                           | 12 | M9B816  | M9A816  | M9C816  | M9W816  | 0.55 | 13.89 | 114 | 170 | 600 | 2700 |
| 144                          | 12 | M9B817  | M9A817  | M9C817  | M9W817  | 0.70 | 17.78 | 187 | 278 | 600 | 2700 |

Alternative fiber counts are available.



# Single Jacket, All Dielectric Cable

## Loose Tube — Indoor/Outdoor Plenum Rated

### Applications

- Medium to high fiber count requirements
- Inter-building duct installations
- Lashed aerial
- Indoor/outdoor
- Campus backbones
- Data Centers
- High Density Cable Trays

### Product Description

Dry waterblocking technology used within tubes and under jacket. Available as Plenum rated cable, thereby eliminating the need for service entrance splicing to in-building cable. Small diameter and bend radius facilitate installation in tight spaces. Full dielectric construction, no grounding required. Available with up to 144 fibers. Fibers grouped into sets of 12 for maximum density. Length markings in meters for easy determination of cable length.

|                                |                                     |
|--------------------------------|-------------------------------------|
| <b>Jacket Material</b>         | PVC<br>Non-unitized<br>Unitized     |
| <b>Buffer Tube</b>             | PVC                                 |
| <b>Strength Member</b>         | E-Glass and Aramid Yarn             |
| <b>Central Strength Member</b> | Upjacketed                          |
| <b>Color Code (Buffer)</b>     | Per EIA/TIA 598-A,<br>see page 10.2 |
| <b>Jacket Color</b>            | Black                               |

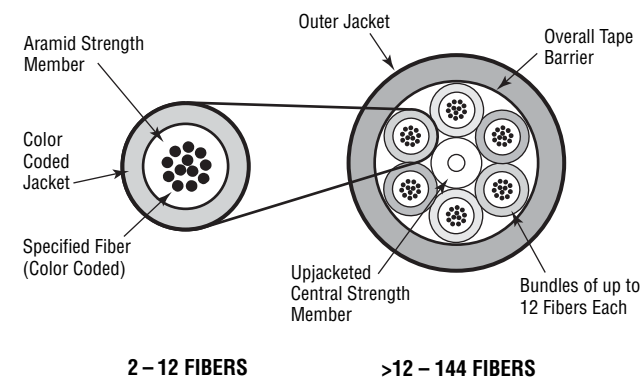
### Ratings

|                  |          |
|------------------|----------|
| <b>Plenum</b>    | OFNP     |
| UL Type          | OFN FT6  |
| cUL Type         | NFPA 262 |
| Flame Resistance |          |

### Specifications

|                                       |                        |
|---------------------------------------|------------------------|
| <b>Temperature Range</b>              |                        |
| Storage                               | -40 to +80°C           |
| Operating                             | -40 to +70°C           |
| Installation                          | 0 to +60°C             |
| <b>Crush Resistance (EIA-455-41)</b>  | 2000 N/cm              |
| <b>Impact Resistance (EIA-455-25)</b> | 2000 Impacts @ 1.6 N-m |
| <b>Cyclic Flexing (EIA-455-104)</b>   | 2000 cycles, min.      |
| <b>Min. Bend Radius</b>               |                        |
| Installation                          | 20 x OD                |
| Long Term                             | 15 x OD                |
| <b>Optical Specifications</b>         | See page 10.2          |

### Fiber Bundle Detail



| No. of Fibers | Fibers Per Tube | Belden Part Number        |                         |                          |                      | Outside Diameter |    | Weight     |       | Max. Install Load |   |
|---------------|-----------------|---------------------------|-------------------------|--------------------------|----------------------|------------------|----|------------|-------|-------------------|---|
|               |                 | 62.5 / 125µm Std. / 1 Gbe | 50 / 125µm Std. / 1 Gbe | 50 / 125µm 10 Gbe – 300M | Single-mode Enhanced | Inch             | mm | Lbs./1000' | kg/km | Lbs.              | N |

### Loose Tube Series

| Plenum (NEC/CEC OFNP/OFN FT6) |    |        |        |        |        |       |       |     |     |      |      |
|-------------------------------|----|--------|--------|--------|--------|-------|-------|-----|-----|------|------|
| 6                             | 6  | M9B202 | M9A202 | M9C202 | M9W202 | 0.265 | 6.70  | 33  | 49  | 320  | 1423 |
| 12                            | 12 | M9B204 | M9A204 | M9C204 | M9W204 | 0.265 | 6.70  | 33  | 49  | 320  | 1423 |
| 24                            | 12 | M9B205 | M9A205 | M9C205 | M9W205 | 0.359 | 9.12  | 47  | 70  | 405  | 1801 |
| 36                            | 12 | M9B206 | M9A206 | M9C206 | M9W206 | 0.359 | 9.12  | 47  | 70  | 405  | 1801 |
| 48                            | 12 | M9B207 | M9A207 | M9C207 | M9W207 | 0.359 | 9.12  | 48  | 71  | 405  | 1801 |
| 72                            | 12 | M9B209 | M9A209 | M9C209 | M9W209 | 0.429 | 10.90 | 71  | 106 | 585  | 2602 |
| 96                            | 12 | M9B211 | M9A211 | M9C211 | M9W211 | 0.501 | 12.73 | 105 | 156 | 903  | 4017 |
| 144                           | 12 | M9B215 | M9A215 | M9C215 | M9W215 | 0.665 | 16.89 | 189 | 281 | 1263 | 5618 |

Alternative fiber counts and hybrid constructions are available.

## Double Jacket, Armored Cable

Loose Tube – Outdoor, and Indoor/Outdoor Riser Rated

### Applications

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

### Product Description

Gel-filled buffer tube prevents water migration. Available as Riser rated cable, thereby eliminating the need for service entrance splicing to in-building cable. Rodent resistant. Available in sizes up to 216 fibers. Length markings in meters for easy determination of cable length.

|                                |                                  |
|--------------------------------|----------------------------------|
| <b>Jacket Material</b>         |                                  |
| Outdoor                        | PE                               |
| Riser                          | PVC                              |
| <b>Buffer Tube</b>             |                                  |
| Outdoor                        | PBT                              |
| Riser                          | PVC                              |
| <b>Strength Member</b>         | Aramid Yarn                      |
| <b>Central Strength Member</b> | E-Glass                          |
| <b>Armor</b>                   | Corrugated Steel Tape            |
| <b>Color Code (Buffer)</b>     | Per EIA/TIA 598-A, see page 10.2 |
| <b>Jacket Color</b>            | Black                            |

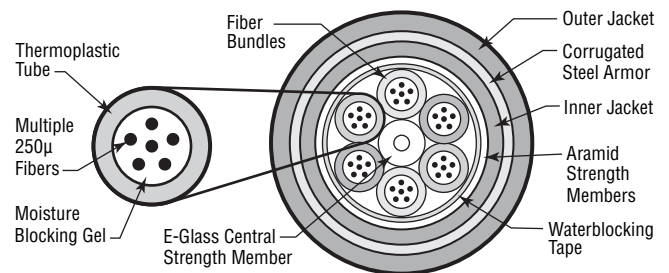
### Ratings

|                  |         |
|------------------|---------|
| <b>Riser</b>     |         |
| UL Type          | OFCR    |
| cUL Type         | OFC FT4 |
| Flame Resistance | UL 1666 |

### Specifications

|                                       |                        |
|---------------------------------------|------------------------|
| <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           |
| <b>Crush Resistance (EIA-455-41)</b>  | 2000 N/cm              |
| <b>Impact Resistance (EIA-455-25)</b> | 2000 Impacts @ 1.6 N-m |
| <b>Min. Bend Radius</b>               |                        |
| Installation                          | 20 x OD                |
| Long Term                             | 15 x OD                |
| <b>Optical Specifications</b>         | See page 10.2          |

### Fiber Bundle Detail



| No. of Fibers | Fibers Per Tube | Belden Part Number        |                         |                          |                      | Outside Diameter |    | Weight     |       | Max. Install Load |   |
|---------------|-----------------|---------------------------|-------------------------|--------------------------|----------------------|------------------|----|------------|-------|-------------------|---|
|               |                 | 62.5 / 125µm Std. / 1 Gbe | 50 / 125µm Std. / 1 Gbe | 50 / 125µm 10 Gbe – 300M | Single-mode Enhanced | Inch             | mm | Lbs./1000' | kg/km | Lbs.              | N |

### Loose Tube Series — Armored

| Outdoor                      |    |         |         |         |         |      |       |     |     |     |      |
|------------------------------|----|---------|---------|---------|---------|------|-------|-----|-----|-----|------|
| 6                            | 6  | M9B381T | M9A381T | M9C381T | M9W381T | 0.53 | 13.46 | 101 | 150 | 600 | 2700 |
| 12                           | 6  | M9B382T | M9A382T | M9C382T | M9W382T | 0.53 | 13.46 | 102 | 152 | 600 | 2700 |
| 24                           | 6  | M9B384T | M9A384T | M9C384T | M9W384T | 0.53 | 13.46 | 103 | 153 | 600 | 2700 |
| 36                           | 6  | M9B386T | M9A386T | M9C386T | M9W386T | 0.53 | 13.46 | 103 | 153 | 600 | 2700 |
| 48                           | 12 | M9B389T | M9A389T | M9C389T | M9W389T | 0.65 | 16.51 | 144 | 214 | 600 | 2700 |
| 72                           | 12 | M9B391T | M9A391T | M9C391T | M9W391T | 0.65 | 16.51 | 142 | 211 | 600 | 2700 |
| 96                           | 12 | M9B398T | M9A398T | M9C398T | M9W398T | 0.69 | 17.53 | 168 | 250 | 600 | 2700 |
| 144                          | 12 | M9B393T | M9A393T | M9C393T | M9W393T | 0.87 | 22.10 | 241 | 359 | 600 | 2700 |
| 216                          | 12 | M9B400T | M9A400T | M9C400T | M9W400T | 0.87 | 22.10 | 241 | 359 | 600 | 2700 |
| Riser (NEC/CEC OFCR/OFC FT4) |    |         |         |         |         |      |       |     |     |     |      |
| 6                            | 6  | M9B890  | M9A890  | M9C890  | M9W890  | 0.54 | 13.72 | 138 | 205 | 600 | 2700 |
| 12                           | 6  | M9B891  | M9A891  | M9C891  | M9W891  | 0.54 | 13.72 | 137 | 204 | 600 | 2700 |
| 24                           | 6  | M9B892  | M9A892  | M9C892  | M9W892  | 0.54 | 13.72 | 136 | 202 | 600 | 2700 |
| 36                           | 6  | M9B893  | M9A893  | M9C893  | M9W893  | 0.54 | 13.72 | 135 | 201 | 600 | 2700 |
| 48                           | 12 | M9B894  | M9A894  | M9C894  | M9W894  | 0.66 | 16.76 | 176 | 262 | 600 | 2700 |
| 72                           | 12 | M9B895  | M9A895  | M9C895  | M9W895  | 0.66 | 16.76 | 172 | 256 | 600 | 2700 |
| 96                           | 12 | M9B896  | M9A896  | M9C896  | M9W896  | 0.70 | 17.78 | 206 | 307 | 600 | 2700 |
| 144                          | 12 | M9B897  | M9A897  | M9C897  | M9W897  | 0.88 | 22.35 | 302 | 449 | 600 | 2700 |

## Double Jacket, Heavy-Duty Cable

### Loose Tube — Outdoor

#### Applications

- Direct burial
- Harsh environments
- Applications requiring good ozone-, moisture- and weather-resistance

#### Product Description

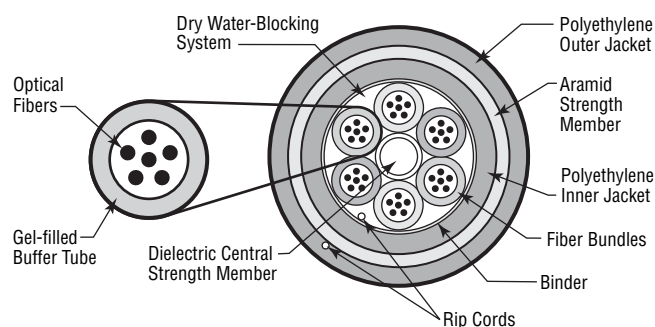
Gel-filled buffer tube prevents water migration.  
Available with up to 216 fibers.

|                                |                                  |
|--------------------------------|----------------------------------|
| <b>Jacket Material</b>         |                                  |
| Outer Jacket:                  | PE                               |
| Inner Jacket:                  | PE                               |
| <b>Buffer Tube</b>             |                                  |
|                                | PBT                              |
| <b>Strength Member</b>         |                                  |
|                                | Aramid Yarn                      |
| <b>Central Strength Member</b> |                                  |
|                                | E-Glass                          |
| <b>Core Wrap</b>               |                                  |
|                                | Water Swellable Tape             |
| <b>Color Code (Buffer)</b>     |                                  |
|                                | Per EIA/TIA 598-A, see page 10.2 |
| <b>Jacket Color</b>            |                                  |
|                                | Black                            |

#### Specifications

|                                       |                        |
|---------------------------------------|------------------------|
| <b>Temperature Range</b>              |                        |
| Storage                               | -50 to +80°C           |
| Operating                             | -40 to +70°C           |
| <b>Crush Resistance (EIA-455-41)</b>  |                        |
|                                       | 2000 N/cm              |
| <b>Impact Resistance (EIA-455-25)</b> |                        |
|                                       | 2000 Impacts @ 1.6 N-m |
| <b>Min. Bend Radius</b>               |                        |
| Installation                          | 20 x OD                |
| Long Term                             | 15 x OD                |
| <b>Optical Specifications</b>         |                        |
|                                       | See page 10.2          |

#### Fiber Bundle Detail



| No. of Fibers | Fibers Per Tube | Belden Part Number        |                         |                          |                      | Outside Diameter |    | Weight     |       | Max. Install Load |   |
|---------------|-----------------|---------------------------|-------------------------|--------------------------|----------------------|------------------|----|------------|-------|-------------------|---|
|               |                 | 62.5 / 125µm Std. / 1 Gbe | 50 / 125µm Std. / 1 Gbe | 50 / 125µm 10 Gbe – 300M | Single-mode Enhanced | Inch             | mm | Lbs./1000' | kg/km | Lbs.              | N |

#### Loose Tube Series — Heavy Duty

| Outdoor |    |        |        |        |        |      |       |     |     |     |      |
|---------|----|--------|--------|--------|--------|------|-------|-----|-----|-----|------|
| 2       | 2  | M9B840 | M9A840 | M9C840 | M9W840 | 0.44 | 11.18 | 60  | 89  | 600 | 2700 |
| 4       | 4  | M9B841 | M9A841 | M9C841 | M9W841 | 0.44 | 11.18 | 60  | 89  | 600 | 2700 |
| 6       | 6  | M9B842 | M9A842 | M9C842 | M9W842 | 0.44 | 11.18 | 60  | 89  | 600 | 2700 |
| 8       | 4  | M9B843 | M9A843 | M9C843 | M9W843 | 0.44 | 11.18 | 60  | 89  | 600 | 2700 |
| 12      | 6  | M9B844 | M9A844 | M9C844 | M9W844 | 0.44 | 11.18 | 60  | 89  | 600 | 2700 |
| 18      | 6  | M9B845 | M9A845 | M9C845 | M9W845 | 0.44 | 11.18 | 60  | 89  | 600 | 2700 |
| 24      | 6  | M9B846 | M9A846 | M9C846 | M9W846 | 0.44 | 11.18 | 60  | 89  | 600 | 2700 |
| 36      | 6  | M9B847 | M9A847 | M9C847 | M9W847 | 0.44 | 11.18 | 60  | 89  | 600 | 2700 |
| 48      | 12 | M9B848 | M9A848 | M9C848 | M9W848 | 0.54 | 13.72 | 136 | 202 | 600 | 2700 |
| 72      | 12 | M9B849 | M9A849 | M9C849 | M9W849 | 0.54 | 13.72 | 136 | 202 | 600 | 2700 |
| 96      | 12 | M9B820 | M9A820 | M9C820 | M9W820 | 0.61 | 15.37 | 152 | 226 | 600 | 2700 |
| 144     | 12 | M9B821 | M9A821 | M9C821 | M9W821 | 0.76 | 19.30 | 255 | 379 | 600 | 2700 |
| 216     | 12 | M9B822 | M9A822 | M9C822 | M9W822 | 0.76 | 19.30 | 255 | 379 | 600 | 2700 |

## Central Tube Cable

### Loose Tube—Outdoor, and Outdoor Armored

#### Applications

- Campus OSP backbones
- Drop cable
- Telecommunications and data trunk
- Direct burial (armored only)
- Lashed aerial

#### Product Description

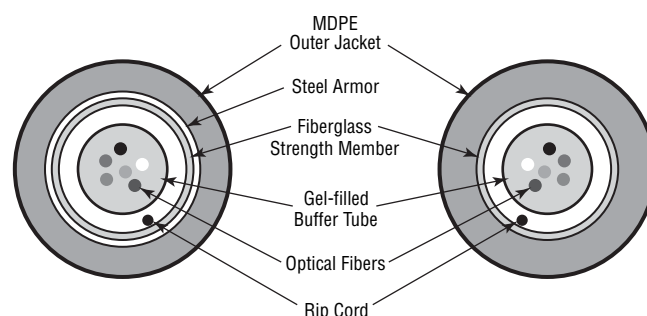
Economical option for low fiber counts. Quick and easy end preparation. Fully waterblocked with gel-filled buffer tube. No rods — easy handling. Crush, impact and abrasion resistant.

|                                      |                                  |
|--------------------------------------|----------------------------------|
| <b>Jacket Material</b>               | PE                               |
| <b>Buffer Tube</b>                   | PBT                              |
| <b>Core Wrap</b>                     | Water Swellable Tape             |
| <b>Strength Member</b>               | Fiberglass                       |
| <b>Armor</b>                         | Corrugated Steel                 |
| <b>Color Codes</b> (Jacket & Fibers) | Per EIA/TIA 598-A, see page 10.2 |
| <b>Jacket Color</b>                  | Black                            |

#### Specifications

|                                       |                        |
|---------------------------------------|------------------------|
| <b>Temperature Range</b>              |                        |
| Storage                               | -40 to +70°C           |
| Operating                             | -40 to +70°C           |
| <b>Crush Resistance</b> (EIA-455-41)  | 2000 N/cm              |
| <b>Impact Resistance</b> (EIA-455-25) | 2000 Impacts @ 1.6 N-m |
| <b>Min. Bend Radius</b>               |                        |
| Installation                          | 20 x OD                |
| Long Term                             | 15 x OD                |
| <b>Optical Specifications</b>         | See page 10.2          |

#### Fiber Bundle Detail



SINGLE ARMOR

ALL DIELECTRIC

| No. of Fibers | Belden Part Number           |                            |                             |                         | Outside Diameter |    | Weight     |       | Max. Install Load |   |
|---------------|------------------------------|----------------------------|-----------------------------|-------------------------|------------------|----|------------|-------|-------------------|---|
|               | 62.5 / 125µm<br>Std. / 1 Gbe | 50 / 125µm<br>Std. / 1 Gbe | 50 / 125µm<br>10 Gbe – 300M | Single-mode<br>Enhanced | Inch             | mm | Lbs./1000' | kg/km | Lbs.              | N |

#### Central Tube Series

| Outdoor         |        |        |        |        |       |       |    |     |     |      |
|-----------------|--------|--------|--------|--------|-------|-------|----|-----|-----|------|
| 2               | M9B150 | M9A150 | M9C150 | M9W150 | 0.325 | 8.26  | 36 | 54  | 600 | 2700 |
| 4               | M9B151 | M9A151 | M9C151 | M9W151 | 0.325 | 8.26  | 36 | 54  | 600 | 2700 |
| 6               | M9B152 | M9A152 | M9C152 | M9W152 | 0.325 | 8.26  | 36 | 54  | 600 | 2700 |
| 8               | M9B153 | M9A153 | M9C153 | M9W153 | 0.325 | 8.26  | 36 | 54  | 600 | 2700 |
| 10              | M9B154 | M9A154 | M9C154 | M9W154 | 0.325 | 8.26  | 36 | 54  | 600 | 2700 |
| 12              | M9B155 | M9A155 | M9C155 | M9W155 | 0.325 | 8.26  | 36 | 54  | 600 | 2700 |
| Outdoor Armored |        |        |        |        |       |       |    |     |     |      |
| 2               | M9B170 | M9A170 | M9C170 | M9W170 | 0.410 | 10.41 | 72 | 108 | 600 | 2700 |
| 4               | M9B171 | M9A171 | M9C171 | M9W171 | 0.410 | 10.41 | 72 | 108 | 600 | 2700 |
| 6               | M9B172 | M9A172 | M9C172 | M9W172 | 0.410 | 10.41 | 72 | 108 | 600 | 2700 |
| 8               | M9B173 | M9A173 | M9C173 | M9W173 | 0.410 | 10.41 | 72 | 108 | 600 | 2700 |
| 10              | M9B174 | M9A174 | M9C174 | M9W174 | 0.410 | 10.41 | 72 | 108 | 600 | 2700 |
| 12              | M9B175 | M9A175 | M9C175 | M9W175 | 0.410 | 10.41 | 72 | 108 | 600 | 2700 |

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

## Micro Loose Tube Breakout Style Cable

Loose Tube – Outdoor, Indoor/Outdoor OFN & Indoor/Outdoor Riser Rated

### Applications

- Ducts between buildings (above or below frost lines)
- Lashed aerial
- Telecommunications and data trunk

### Product Description

Easy handling and termination of a breakout style cable. Loose buffer dimensions compatible with standard connectors (900 µm). Waterblocking gel for moisture protection. Breakout kits not required for connectorization.

#### Jacket Material

|                 |     |
|-----------------|-----|
| Outdoor         | PE  |
| Riser           | PVC |
| General Purpose | TPE |

#### Buffer tube

|                 |     |
|-----------------|-----|
| Outdoor + Riser | PBT |
|-----------------|-----|

#### Strength Elements

Aramid Yarn

#### Strength Member(s)

Upjacketed Aramid

#### Color Codes (Jacket & Fibers)

Per EIA/TIA 598-A,  
see page 10.2

#### Jacket Color

Black

### Ratings

#### Riser

|                  |         |
|------------------|---------|
| UL Type          | OFNR    |
| cUL Type         | OFN FT4 |
| Flame Resistance | UL 1666 |

#### General Purpose

|                  |         |
|------------------|---------|
| UL/cUL Type      | OFN     |
| Flame Resistance | UL 1581 |

### Specifications

#### Temperature Range

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

#### Crush Resistance (EIA-455-41)

600 N/cm

#### Impact Resistance (EIA-455-25)

20 Impacts @ 1.0 N-m

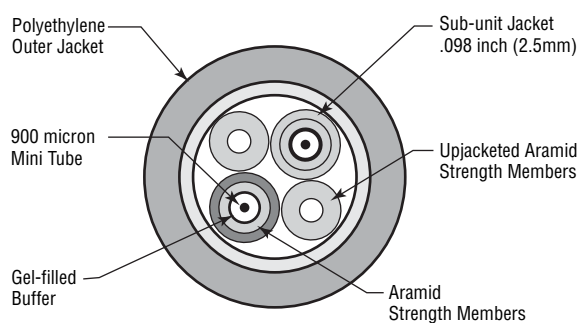
#### Min. Bend Radius

|              |         |
|--------------|---------|
| Installation | 20 x OD |
| Long Term    | 15 x OD |

#### Optical Specifications

See page 10.2

### Fiber Bundle Detail



## Micro Loose Tube Breakout Style Cable

Loose Tube – Outdoor, Indoor/Outdoor OFN & Indoor/Outdoor Riser Rated (*continued*)

| No. of Fibers                  | Belden Part Number           |                            |                             |                         | Outside Diameter |       | Weight     |       | Max. Install Load |      |
|--------------------------------|------------------------------|----------------------------|-----------------------------|-------------------------|------------------|-------|------------|-------|-------------------|------|
|                                | 62.5 / 125µm<br>Std. / 1 Gbe | 50 / 125µm<br>Std. / 1 Gbe | 50 / 125µm<br>10 Gbe – 300M | Single-mode<br>Enhanced | Inch             | mm    | Lbs./1000' | kg/km | Lbs.              | N    |
| <b>Micro Loose Tube Series</b> |                              |                            |                             |                         |                  |       |            |       |                   |      |
| <b>Outdoor</b>                 |                              |                            |                             |                         |                  |       |            |       |                   |      |
| 1                              | M9B700                       | M9A700                     | M9C700                      | M9W700                  | 0.340            | 8.64  | 41         | 61    | 330               | 1468 |
| 2                              | M9B701                       | M9A701                     | M9C701                      | M9W701                  | 0.360            | 9.14  | 41         | 61    | 345               | 1535 |
| 4                              | M9B702                       | M9A702                     | M9C702                      | M9W702                  | 0.360            | 9.14  | 39         | 58    | 285               | 1267 |
| 6                              | M9B703                       | M9A703                     | M9C703                      | M9W703                  | 0.418            | 10.62 | 54         | 80    | 405               | 1801 |
| 8                              | M9B704                       | M9A704                     | M9C704                      | M9W704                  | 0.478            | 12.14 | 76         | 113   | 600               | 2700 |
| 12                             | M9B705                       | M9A705                     | M9C705                      | M9W705                  | 0.614            | 15.60 | 129        | 192   | 600               | 2700 |
| <b>Indoor/Outdoor OFN</b>      |                              |                            |                             |                         |                  |       |            |       |                   |      |
| 1                              | M9B720                       | M9A720                     | M9C720                      | M9W720                  | 0.344            | 8.74  | 50         | 74    | 330               | 1468 |
| 2                              | M9B721                       | M9A721                     | M9C721                      | M9W721                  | 0.364            | 9.25  | 51         | 76    | 345               | 1535 |
| 4                              | M9B722                       | M9A722                     | M9C722                      | M9W722                  | 0.364            | 9.25  | 49         | 73    | 285               | 1267 |
| 6                              | M9B723                       | M9A723                     | M9C723                      | M9W723                  | 0.424            | 10.72 | 68         | 101   | 405               | 1801 |
| 8                              | M9B724                       | M9A724                     | M9C724                      | M9W724                  | 0.482            | 12.24 | 77         | 115   | 600               | 2700 |
| 12                             | M9B725                       | M9A725                     | M9C725                      | M9W725                  | 0.618            | 15.70 | 130        | 193   | 600               | 2700 |
| <b>Indoor/Outdoor Riser</b>    |                              |                            |                             |                         |                  |       |            |       |                   |      |
| 1                              | M9B740                       | M9A740                     | M9C740                      | M9W740                  | 0.352            | 8.94  | 54         | 80    | 330               | 1468 |
| 2                              | M9B741                       | M9A741                     | M9C741                      | M9W741                  | 0.372            | 9.45  | 55         | 82    | 345               | 1535 |
| 4                              | M9B742                       | M9A742                     | M9C742                      | M9W742                  | 0.372            | 9.45  | 51         | 76    | 285               | 1267 |
| 6                              | M9B743                       | M9A743                     | M9C743                      | M9W743                  | 0.432            | 10.97 | 74         | 110   | 405               | 1801 |
| 8                              | M9B744                       | M9A744                     | M9C744                      | M9W744                  | 0.490            | 12.45 | 94         | 140   | 600               | 2700 |
| 12                             | M9B745                       | M9A745                     | M9C745                      | M9W745                  | 0.626            | 15.90 | 151        | 229   | 600               | 2700 |

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

# TrayOptic® Heavy-Duty, All Dielectric Cable

Loose Tube — Indoor/Outdoor Riser Rated

## Applications

- Industrial and other harsh environment applications
- Factory automation
- Direct burial

## Product Description

Laser Optimized Fiber to handle Gigabit Ethernet light sources and expanded bandwidth requirements. Passes IEEE 383-2003 flame test. Waterblocking agent for moisture protection. CPE outer jacket option provides extra chemical or abrasion resistance.

|                        |             |
|------------------------|-------------|
| <b>Fiber Type</b>      | 62.5/125μ   |
| <b>Jacket Material</b> | PVC or CPE  |
| <b>Strength Member</b> | Aramid Yarn |
| <b>Jacket Color</b>    | Orange      |

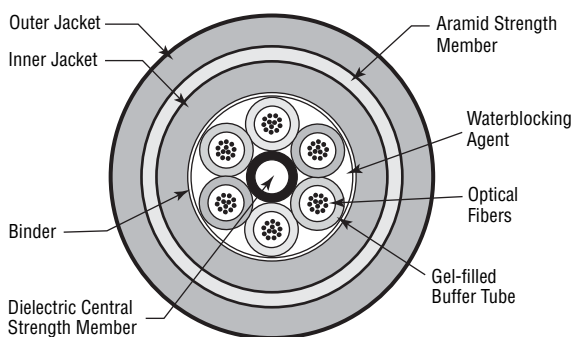
## Ratings

|                  |               |
|------------------|---------------|
| <b>Riser</b>     |               |
| UL Type          | OFNR          |
| cUL Type         | OFN FT4       |
| Flame Resistance | IEEE 383-2003 |

## Specifications

|                                       |                                         |
|---------------------------------------|-----------------------------------------|
| <b>Temperature Range</b>              |                                         |
| Storage                               | -40 to +70°C                            |
| Operating                             | -40 to +70°C                            |
| <b>Crush Resistance (EIA-455-41)</b>  | 2000 N/cm                               |
| <b>Impact Resistance (EIA-455-25)</b> | 2000 impacts @ 1.6N-m                   |
| <b>Cyclic Flexing (EIA-455-104)</b>   | 25 cycles, 12 lbs., 20 x OD radius min. |
| <b>Min. Bend Radius</b>               |                                         |
| Installation                          | 20 x OD                                 |
| Long Term                             | 15 x OD                                 |
| <b>Maximum Installation Load</b>      | 600 lbs. (2700 N)                       |
| <b>Optical Specifications</b>         | See page 10.2                           |

## Fiber Bundle Detail



| No. of Fibers | Fibers Per Tube | Outside Diameter |    | PVC Jacket      |                   |              | CPE Jacket      |                   |              |
|---------------|-----------------|------------------|----|-----------------|-------------------|--------------|-----------------|-------------------|--------------|
|               |                 | Inches           | mm | Belden Part No. | Weight Lbs./1000' | Weight kg/km | Belden Part No. | Weight Lbs./1000' | Weight kg/km |

## TrayOptic Series

| Riser (NEC/CEC OFNR/OFN FT4) |    |       |       |         |     |     |         |     |     |
|------------------------------|----|-------|-------|---------|-----|-----|---------|-----|-----|
| 2                            | 2  | 0.440 | 11.18 | I100255 | 88  | 131 | I100266 | 83  | 124 |
| 4                            | 4  | 0.440 | 11.18 | I100455 | 88  | 131 | I100466 | 83  | 124 |
| 6                            | 6  | 0.440 | 11.18 | I100655 | 88  | 131 | I100666 | 83  | 124 |
| 8                            | 4  | 0.440 | 11.18 | I400855 | 88  | 131 | I400866 | 83  | 124 |
| 12                           | 6  | 0.440 | 11.18 | I601255 | 88  | 131 | I601266 | 83  | 124 |
| 18                           | 6  | 0.440 | 11.18 | I601855 | 88  | 131 | I601866 | 83  | 124 |
| 24                           | 6  | 0.440 | 11.18 | I602455 | 88  | 131 | I602466 | 83  | 124 |
| 36                           | 6  | 0.440 | 11.18 | I603655 | 88  | 131 | I603666 | 83  | 124 |
| 48                           | 12 | 0.540 | 13.72 | I604855 | 136 | 202 | I604866 | 129 | 192 |
| 60                           | 12 | 0.540 | 13.72 | I606055 | 136 | 202 | I606066 | 129 | 192 |
| 72                           | 12 | 0.540 | 13.72 | I607255 | 136 | 202 | I607266 | 129 | 192 |