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LC SECURE Connectors

(See Connectors, Adapters, Tooling & Accessories Section 1, pages 8-10)

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MT-RJ SECURE Connectors

(See Connectors, Adapters, Tooling & Accessories Section 1, pages 8, 13)

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(See Cable Assemblies & Backplane Interconnects Section 2, pages 125-133)

MPO SECURE Connectors

(See Connectors, Adapters, Tooling & Accessories Section 1, pages 8, 11, 12)

LIGHTPLANE Connector System

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(See Cable Assemblies & Backplane Interconnects Section 2, pages 138-152)

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Expanded SECURE Connector Product Line Includes MPO and LC Interfaces

Ten variants in ten colors
offered in two new
interfaces



Tyco Electronics has expanded its SECURE connector product offering to include both MPO and LC interfaces. Through the use of ten different color/key variations, customers operating multiple networks in common areas can physically segregate their network throughout the system, from the backbone to the equipment panel.

Primary colors and keys are available in red, blue, yellow and green, with additional, secondary options for up to ten different color/keying configurations. Only connectors and adapters of the same color will intermate, and no standard product can plug into a secure adapter.

The LC SECURE product is compatible with both jack-

eted and buffered fiber. It is available in both LIGHTCRIMP PLUS and standard epoxy/polish styles for singlemode and multimode fibers. Each connector features a color-coded key that will only mate with like-colored adapters to minimize connection to the wrong networks. Standard colors include red, blue, green and yellow. An additional six colors are available as needed.

The MPO SECURE products are available in the same colors and are compatible with color-coded MPO SECURE cassettes. Standard MPO SECURE trunk cables are available in fiber counts to 72 fibers. MPO SECURE cassettes are available as twelve or

twenty-four fiber assemblies. Cables and cassettes are available with 50 μ m, Laser Optimized (10 Gig) and 62.5 μ m multimode fiber.

The success of the MT-RJ SECURE product line has fostered growing interest in the SECURE product concept. The addition of the LC and MPO interfaces to the AMP NETCONNECT SECURE product portfolio will allow a wider adoption of the concept and allow more customers to take advantage of the benefits the system offers.

A complete line of connectivity, cable assemblies, and cables are available for MT-RJ SECURE, LC SECURE and MPO SECURE. See pages 9-13 for details.



LC SECURE Product Offering

LIGHTCRIMP PLUS and Epoxy Style LC Product Facts

- **LIGHTCRIMP PLUS—**
No Epoxy/No Polish
- Strip, Cleave and Crimp
- LC small form factor design is half the size of SC
- 10 exclusive connector variants
- Color coded plugs & adapters match MT-RJ & MPO SECURE offerings
- **LIGHTCRIMP PLUS—**
Termination to 250 or 900 μm tight-buffered fiber, 1.6–2.0 mm jacketed fiber using standard tooling
- **Epoxy Style—**Termination to 250 or 900 μm tight-buffered fiber 1.6 – 2.0 mm jacketed fiber
- **Epoxy Style—**Suitable for use with heat-cured or anaerobic (quick cure) adhesives (See instruction sheet for recommended anaerobic adhesives)
- **Product qualification to TIA/EIA 568-B.3**
- **Field installable duplex clip (black) for polarity correction if needed**
- **Plug nose features can provide up to 70 mutually exclusive keying combinations**
- **Distinct keyway geometry on plug nose & color coding assures identifiable key-type**
- **Extended lugs on plug side-walls prevent SECURE connectors from mating with non-secure adapters**
- **Molded internal geometry produces tamper resistant system**
- **Key placement allows SECURE plugs to interface with standard 1.25 mm test equipment, inspection microscopes and application tooling**
- **Termination kits — same as standard product**



LIGHTCRIMP PLUS LC SECURE Kits

Color	Simplex 50/125 MM SECURE	Simplex 50/125 Laser Optimized (10 Gig) MM SECURE	Simplex 62.5/125 MM SECURE	Simplex SM SECURE	Notes
Red	1828853-1	1828854-1	1828855-1	1828856-1	Primary
Yellow	1828853-2	1828854-2	1828855-2	1828856-2	Primary
Green	1828853-3	1828854-3	1828855-3	1828856-3	Primary
Blue	1828853-4	1828854-4	1828855-4	1828856-4	Primary
Rose	1828853-5	1828854-5	1828855-5	1828856-5	
Aqua	1828853-6	1828854-6	1828855-6	1828856-6	
Brown	1828853-7	1828854-7	1828855-7	1828856-7	
Violet	1828853-8	1828854-8	1828855-8	1828856-8	
Orange	1828853-9	1828854-9	1828855-9	1828856-9	
Slate	1-1828853-0	1-1828854-0	1-1828855-0	1-1828856-0	

Highlighted Part Numbers are routinely stocked for shortest lead times.

Epoxy Style LC Kits

Color	Simplex Jumper Multimode	Simplex Buffer Multimode	Simplex Jumper Singlemode	Simplex Buffer Singlemode	Notes
Red	1828078-1	1828861-1	1828079-1	1828862-1	Primary
Yellow	1828078-2	1828861-2	1828079-2	1828862-2	Primary
Green	1828078-3	1828861-3	1828079-3	1828862-3	Primary
Blue	1828078-4	1828861-4	1828079-4	1828862-4	Primary
Rose	1828078-5	1828861-5	1828079-5	1828862-5	
Aqua	1828078-6	1828861-6	1828079-6	1828862-6	
Brown	1828078-7	1828861-7	1828079-7	1828862-7	
Violet	1828078-8	1828861-8	1828079-8	1828862-8	
Orange	1828078-9	1828861-9	1828079-9	1828862-9	
Slate	1-1828078-0	1-1828861-0	1-1828079-0	1-1828862-0	

Highlighted Part Numbers are routinely stocked for shortest lead times.

**Duplex Clip:
Part Number 1754371-1**

Note: All part numbers are RoHS compliant.

LC SECURE Product Offering (Continued)

LC Duplex Adapters Product Facts

- Flange mount, flangeless, and SL Series for use with AMP NETCONNECT SL panels
- High quality ceramic sleeves
- Suitable for singlemode and multimode
- Key and color compatible to Epoxy Style and LIGHTCRIMP PLUS Product



LC Duplex Adapters

Color	SECURE Adapter Flanged	SECURE Adapter Flangeless	SECURE Adapter SL	Notes
Red	1828073-1	1828074-1	1828075-1	Primary
Yellow	1828073-2	1828074-2	1828075-2	Primary
Green	1828073-3	1828074-3	1828075-3	Primary
Blue	1828073-4	1828074-4	1828075-4	Primary
Rose	1828073-5	1828074-5	1828075-5	
Aqua	1828073-6	1828074-6	1828075-6	
Brown	1828073-7	1828074-7	1828075-7	
Violet	1828073-8	1828074-8	1828075-8	
Orange	1828073-9	1828074-9	1828075-9	
Slate	1-1828073-0	1-1828074-0	1-1828075-0	

Highlighted Part Numbers are routinely stocked for shortest lead times.

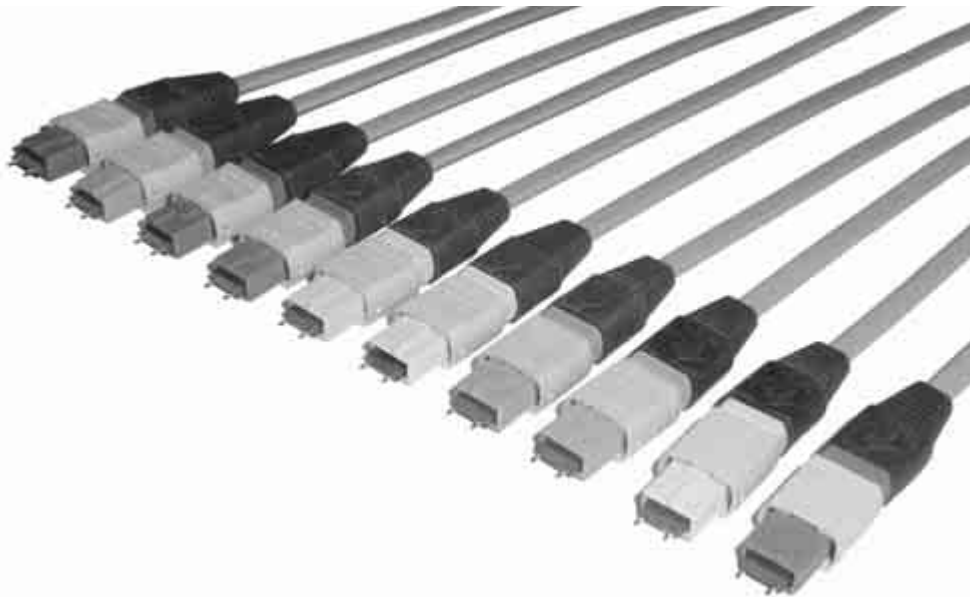
Note: All part numbers are RoHS compliant.

MPO SECURE Fiber Optic Products

MPO SECURE Trunk Cable Assemblies

Product Facts

- Feature color-coded, keyed designs to limit improper connections in segregated or SECURE networks
 - MPO SECURE plug only mates with same color MPO SECURE port
- Trunk cable fiber polarity is pair-flipped (AB/BA)
 - Trunk cables with straight-through polarity (AB/BA) are available
- Pulling socks protect MPO terminations during installation
- Twelve (12) fibers per MPO SECURE plug
- Additional counts and lengths are available
- Trunk cables come pre-tested and ready for immediate use
- MPO SECURE trunk cables are plenum cables
 - Plenum cables can be used in riser spaces
- For use with MPO SECURE Cassettes listed on page 12



Description	Fiber Type	SECURE Color/Keying	Part Number
12-Fiber	50/125 μm Multimode	Red	6754273-X
		Yellow	6754276-X
		Green	6754274-X
		Blue	6754275-X
	Laser Optimized (10 Gig) (850 nm LO 50/125 μm) Multimode	Red	6754420-X
		Yellow	6754421-X
		Green	6754422-X
		Blue	6754423-X
	62.5/125 μm Multimode	Red	6754269-X
		Yellow	6754272-X
		Green	6754270-X
	24-Fiber	50/125 μm Multimode	Blue
Red			6754281-X
Yellow			6754284-X
Laser Optimized (10 Gig) (850 nm LO 50/125 μm) Multimode		Green	6754282-X
		Blue	6754283-X
		Red	6754424-X
62.5/125 μm Multimode		Yellow	6754425-X
		Green	6754426-X
		Blue	6754427-X
62.5/125 μm Multimode		Red	6754277-X
		Yellow	6754280-X
		Green	6754278-X
		Blue	6754279-X

X denotes length in feet: -1 = 10, -2 = 20, -3 = 30, -4 = 40, -5 = 50, -6 = 60, -7 = 70, -8 = 80, -9 = 90, 1- -0 = 100, 1- -1 = 110, 1- -2 = 120, 1- -3 = 130, 1- -4 = 140, 1- -5 = 150, 1- -6 = 160, 1- -7 = 170, 1- -8 = 180, 1- -9 = 190, 2- -0 = 200, 2- -1 = 210, 2- -2 = 220, 2- -3 = 230, 2- -4 = 240, 2- -5 = 250, 2- -6 = 260, 2- -7 = 270, 2- -8 = 280, 2- -9 = 290, 3- -0 = 300

Note: All part numbers are RoHS compliant.

MPO SECURE Fiber Optic Products (Continued)

MPO SECURE Optical Fiber Cassettes

Product Facts

- **Cassette fiber polarity is pair-flipped (AB/BA)**
 - **Cassettes with straight-through polarity (AB/AB) are available**
- **Cassettes have one MPO connection (12-Fiber) or two MPO connections (24-Fiber) on the back of each cassette**
- **Cassettes house MPO one or two 12-fiber break-out assemblies**
- **Cassettes have same footprint as Snap-in Adapter Plates**
 - **Mount in all AMP NETCONNECT enclosures that accept Snap-in Adapter Plates**
- **Cassettes come pre-tested and ready for immediate use**
- **MPO SECURE cassettes accept one or two MPO SECURE connectors and transition to the same color MT-RJ SECURE connectors**
- **MPO SECURE plug only mates with same color MPO SECURE port**
- **For use only with MPO SECURE Trunk Cable Assemblies on this page**



Description	Fiber Count	Duplex Port Count	Part Number	
			MT-RJ	LC
50/125 μm Multimode	12	6	6754286-X	1918779-X
	24	12	6754288-X	1918780-X
62.5/125 μm Multimode	12	6	6754285-X	1918781-X
	24	12	6754287-X	1918782-X
Laser Optimized (10 Gig)	12	6	1918777-X	1918783-X
	24	12	1918778-X	1918784-X

X denotes color: -1 = Standard; -2 = Red; -3 = Green; -4 = Blue; -5 = Yellow; -6 = Orange; -7 = Brown; -8 = Violet; -9 = Rose; 1- -0 = Slate; 1- -1 = Aqua.

Note: All part numbers are RoHS compliant.

**MT-RJ SECURE Product Expansion —
Now 10 Variants of the MT-RJ SECURE Products**



In response to several customers, the MT-RJ SECURE product line has been expanded with an additional six color/key versions. In addition to the original four colors (blue, green, red and yellow), the six new colors (brown, rose, aqua, violet, slate and orange) now make for ten variations. In keeping with the MT-RJ SECURE products features, only plugs and jacks of the same color will mate, and none of the MT-RJ SECURE products will mate with the standard versions. A complete line of jacks, cable assemblies and colored cables are available. For more information see pages 73, 74 and 121.



Rugged Fiber Optic Products

Product Facts

- Expanded Beam
 - PRO BEAM Sr.Connectors
 - PRO BEAM Jr.Connectors
 - PRO BEAM Mini Connectors
 - Mini 38999
 - Mini ARINC
 - Mini GPRC
- LuxCis Optical Termini
 - One common terminus for GPRC, 38999, ARINC, Quadrax Cavity Reducers
- Sealed Circular LC ODVA Conforming Connector



Expanded Beam Products



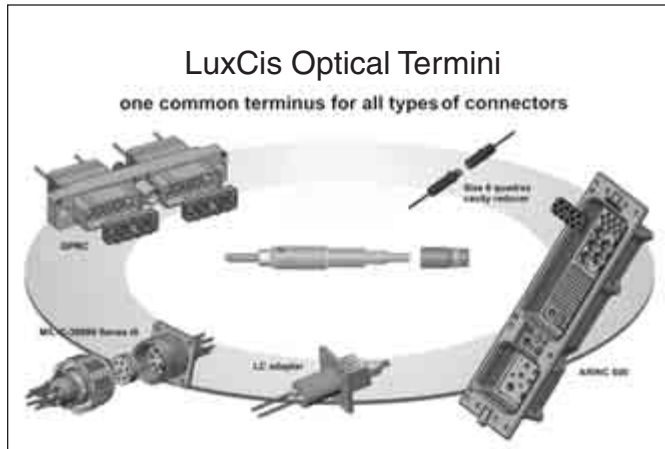
PRO BEAM Sr., Jr. & Mini Connectors

Tyco Electronics is proud to offer a full rugged fiber optic product family.

With Tyco Electronics' Expanded Beam, LuxCis Optical Termini, and the

Sealed Circular LC ODVA Conforming Connector, the end user is guaranteed a complete choice that meets their cost and optical performance needs in multiple industries.

For specific information, please contact your local Tyco Electronics Sales Representative.



LuxCis Optical Termini

LuxCis is a trademark of Radiall, S.A. Product is manufactured under license from Radiall, S.A.

ASSEMBLY CAPABILITIES
Tyco Electronics has extensive Rugged Optic Harness capabilities. Please consult your local Tyco Electronics Sales Representative for assistance.



Sealed Circular LC ODVA Conforming Connector

Rugged Fiber Optic Products (Continued)

Expanded Beam Products

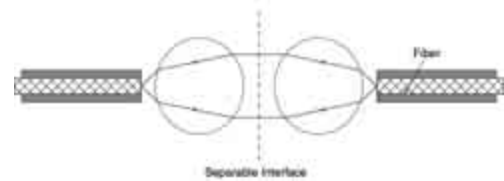
Product Facts

- PRO BEAM Sr., PRO BEAM Jr. and PRO BEAM Mini Connector field deployable interconnects
- ARINC 600 connectors, with inserts/holder blocks designed for Mini Expanded Beam — up to 128 channels on size 3 ARINC 600
- MIL-C-38999 Series III shell size 11 style circular connectors — Cable assemblies up to 4 fibers
- Unique Modular Design, for use with multimode and singlemode fiber
- Tactical cables, cable reels, backpacks
- Cable assembly and termination services
- Ball lens expands cross-sectional area of light over 200 times for multimode and over 2000 times for singlemode
- Rugged hermaphroditic construction (i.e., same insert mates to each other)
- Physically non-contacting mating conditions; no wear, installed fiber ferrule protected by ball lens



From left to right: PRO BEAM Sr., PRO BEAM Jr. & Mini Expanded Beam inserts.

Expanded Beam Technology



Expanded Beam Principle

Fiber Optic Interconnect/Cable System using Expanded Beam technology, which physically expands and collimates the transmission signal into an optical beam over 14 times its original diameter (the cross sectional area of the light beam increases over 200 times for multimode optical signals). For singlemode signals, the collimated beam is over 45 times its original diameter (the cross-

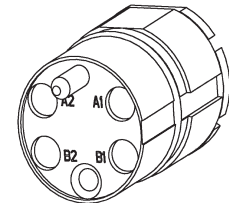
sectional area of the light beam increases over 2,000 times.). It is then refocused back down onto the core of the receiving fiber. This approach provides ease of alignment and low sensitivity to thermal changes and contamination. High strength, precision connector housings enhance a durable connection, optimizing low loss and repeatable performance.

Suitable for aerospace, avionics, field-deployable communications, marine ship-to-shore applications, security systems, mobile diagnostic units, oil and gas exploration and other harsh environment applications demanding strength, durability and reliable performance in conditions of multiple coupling/decouplings, blindmate situations, and high vibration.

Product Facts

- No wear on fiber optic interface; Very vibration resistant
- Easy to handle, easy to clean. Durable connection that is highly resistant to dirt/debris
- Singlemode or multimode
- Common 850/1300 Dual Wavelength, 1310, or 1550 nm wavelengths
- Easy alignment for low-loss, repeatable performance
- Consistent overall optical "link budget" assured
- Low sensitivity to thermal fluctuations and interface contamination
- Repeatable low-loss performance in harsh environments

Expanded Beam Inserts



- PRO BEAM Sr. Insert — the original, larger format, Field Tactical, hermaphroditic Connector System
- PRO BEAM Jr. Insert — the second generation, reduced size, Field Tactical Connector System
- Mini Expanded Beam Insert for multi-channel small form factor — the smallest expanded beam multi-channel insert in the industry, a Tyco Electronics exclusive



ASSEMBLY CAPABILITIES
Tyco Electronics has extensive Rugged Optic Harness capabilities. Please consult your local Tyco Electronics Sales Representative for assistance.

Rugged Fiber Optic Products (Continued)

PRO BEAM Jr. Connectors

Performance Specifications

Optical, Multimode Version

Insertion Loss, Typical —
0.7 dB @ 1300 nm*

Optical, Singlemode Version

Insertion Loss, Typical —
0.7 dB @ 1310 nm or 1500 nm*

Return Loss — > 34 dB @ 1310 nm
or 1500 nm**

*When tested with reference quality
launch/receive cable assemblies

**RL Tested Open Ended

Mechanical

Vibration, Sinusoidal —

10 - 500 Hz, 3 directions;
0.75 mm amplitude @ 10g acceleration

Bump — 4,000 Bumps, 6 directions
@ 50g acceleration

Free Fall — 500 falls on concrete;
Severity 1.2 m

Coupling Endurance —
3,000 couplings

Weight —

Plug — 123 grams, typical
D-Hole bulkhead — 102 grams, typical

Temperature

Operational Temperature —
-40°C/+85°C

Storage Temperature —
-55°C/+85°C

Temperature, Cyclic —
-55°C/+85°C

Humidity (Damp Heat) —95% RH

Immersion

Water — 15 m depth (plug) -
15 m (Bulkhead)

Material and Finish

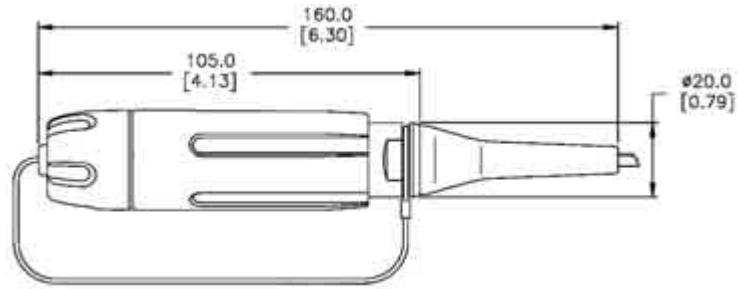
Shell Alloy — Aluminum; or nickel
aluminum bronze (high saline environ-
ment)

**Plating (For Aluminum Shells
Only)** — clear hard anodized; or green
chromate conversion zinc (PRO BEAM
Jr. Bulkheads only)

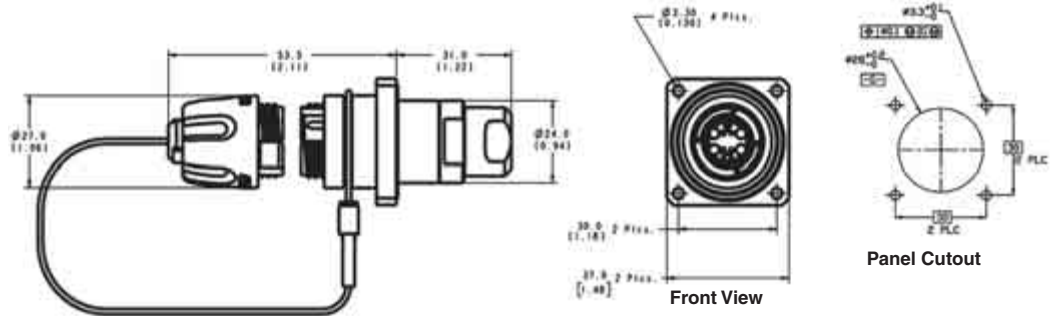
**Bulkhead Connector Panel
Thicknesses**

**PRO BEAM Jr. Bulkhead Connector
D-Hole** — 4 mm max.

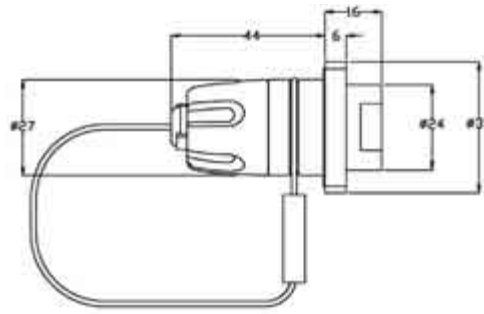
**PRO BEAM Jr. Bulkhead Connector
Square Flange** — 6 mm max.



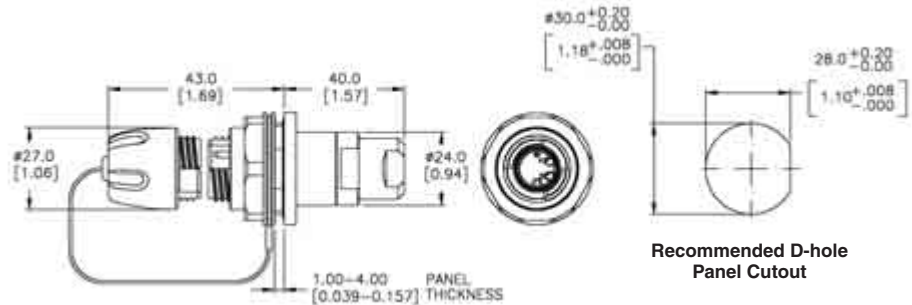
PRO BEAM Jr. Cable Connector, Plug



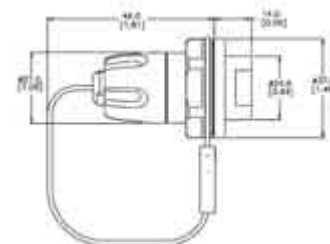
PRO BEAM Jr. Square Flange Mount Bulkhead



PRO BEAM Jr., Low Profile,
Square Flange Mount Bulkhead



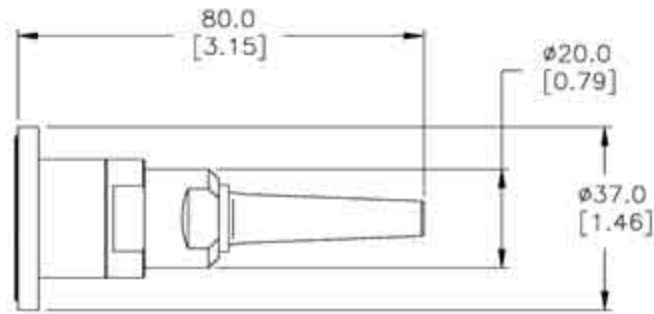
PRO BEAM Jr. D-Hole Bulkhead, Standard Cable Adapter



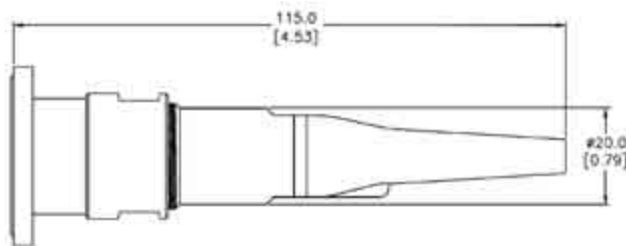
PRO BEAM Jr. Low Profile D-Hole Bulkhead

Rugged Fiber Optic Products (Continued)

PRO BEAM Jr. Connectors
(Continued)



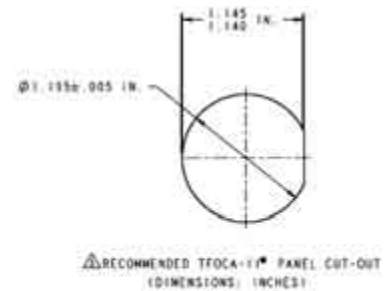
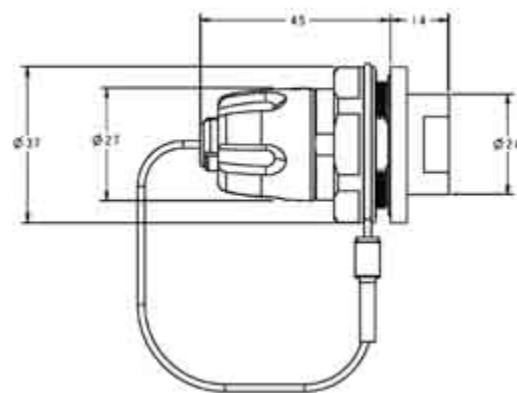
Standard Bulkhead Cable Adapter, with Boot



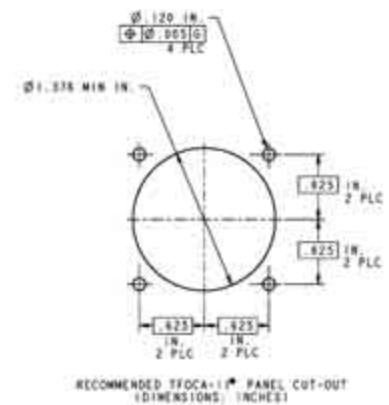
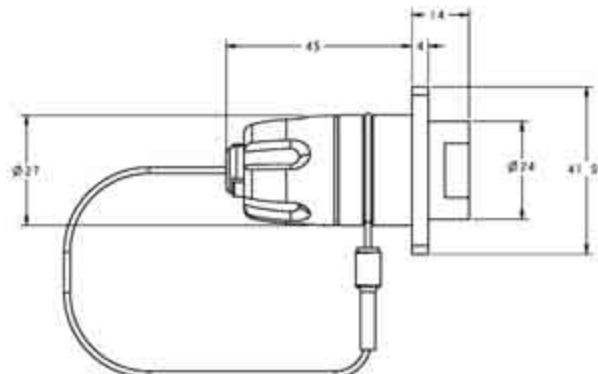
Environmentally Sealed Bulkhead Cable Adapter, with Boot

PRO BEAM Jr. Replacement Receptacles for TFOCA-II Panel Mount Connector Applications
(see page 18 for Part Numbers)

Panel Cutout Dimensions



PRO BEAM Jr. D-Hole Low Profile Buffered Fiber Bulkhead Replacement Connector for TFOCA-II Product



PRO BEAM Jr. Square Flange, Low Profile, Buffered Fiber Bulkhead Replacement for TFOCA-II Product

TFOCA-II is a trademark of Amphenol Fiber Systems International.

Rugged Fiber Optic Products (Continued)

PRO BEAM Jr. Connectors

(Continued)

Connector Assembly

- 1 Shell Kit
- 1 Insert Kit
- 1 Cable Adapter Kit*
- X Ferrule Kits (X = No. of optical channels)

Part Numbers listed are Shell alloy = aluminum Plating = hard anodized. Consult Tyco Electronics for other plating/material options such as NiAlBz for Naval applications.

ASSEMBLY CAPABILITIES
Tyco Electronics has extensive Rugged Optic Harness capabilities. Please consult your local Tyco Electronics Sales Representative for assistance.

Technical Documents

Product Specification

108-2177 Design Objectives

Application Specification

114-13099

Instruction Sheets

- 408-8791 Grounding D-Hole Bulkhead
- 408-8797 Plug
- 408-8798 Standard D-Hole Bulkhead
- 408-8811 Sealed D-Hole Bulkhead
- 408-8834 Low Profile Square Flange Bulkhead
- 408-8840 Low Profile D-Hole Bulkhead
- 408-8841 Standard Square Flange Bulkhead

<http://www.tycoelectronics.com/documents>

PRO BEAM Jr. Connector Shell Kits

Description	Part Number
PRO BEAM Jr. Plug w/EPDM rubber	1754436-1
PRO BEAM Jr. Plug w/Fluorosilicone rubber	1754436-2
PRO BEAM Jr. D-Hole Low Profile, Buffered Fiber Bulkhead	1693741-1
PRO BEAM Jr. D-Hole Standard Bulkhead	1754437-1
PRO BEAM Jr. D-Hole Sealed Bulkhead	1754438-1
PRO BEAM Jr. Square Flange Low Profile Buffered Fiber Bulkhead	1754439-1
PRO BEAM Jr. Square Flange Standard Bulkhead	1754440-1
PRO BEAM Jr. Square Flange Sealed Bulkhead	1754441-1

PRO BEAM Jr. Replacement Receptacles for TFOCA-II Panel Mount Connector Applications

Description	Part Number
PRO BEAM Jr. TFOCA-II Replacement D-Hole Low-Profile Buffered Fiber Bulkhead	1754445-1 ♦
PRO BEAM Jr. TFOCA-II Replacement D-Hole Sealed Bulkhead	1754446-1 ♦
PRO BEAM Jr. TFOCA-II Replacement Square Flange Low-Profile Buffered Fiber Bulkhead	1754447-1 ♦
PRO BEAM Jr. TFOCA-II Replacement Square Flange Sealed Bulkhead	1754448-1 ♦

PRO BEAM Jr. Insert Kits

Description	Part Number
2 x 850 / 1300 nm Multimode	1515743-1
2 x 1310 nm Singlemode	1515739-1
2 x 1550 nm Singlemode	1516040-1
4 x 850 / 1300 nm Multimode	1515747-1
4 x 1310 nm Singlemode	1515740-1
4 x 1550 nm Singlemode	1516041-1

Ferrule Kits

Fiber Hole Size	Mode	PRO BEAM Connector	Part Number
125 µm	SM	Jr.	1588908-2
126 µm	SM	Jr.	1588908-1
126 µm	MM	Jr.	1588700-1

PRO BEAM Jr. Connector Plug & Sealed Bulkhead Cable Adapter Kits

Cable Dia. (Max.)	Part Number
3.10 .122	1515814-1
3.60 .142	1515781-3
4.10 .161	1515848-2
4.60 .181	1516147-1
5.10 .201	1515834-2
5.65 .222	1515827-2
6.10 .240	1515859-3
6.70 .264	1588116-1
7.50 .295 (Breakout Cable Only)	1828168-1 (Plug)
7.50 .295	1754719-3 (Sealed Bulkhead)

PRO BEAM Jr. Connector Standard Bulkhead Cable Adapter Kits*

Cable Dia. (Max.)	Part Number
3.10 [.122]	1515791-2
3.60 [.142]	1515808-1
5.10 [.201]	1515835-2
5.65 [.222]	1515829-1
6.10 [.240]	1515796-2
4 x 3.00 [4 x .118]	1515749-1

*Standard Cable Adapter — Not applicable for Low Profile.

Note: Part Numbers are RoHS compliant except: ♦ Indicates non-RoHS compliant.

Rugged Fiber Optic Products (Continued)

PRO BEAM Jr. Connectors

(Continued)

Spare Parts & Tools

Technical Documents

Product Specifications

408-8857 Curing Fixtures for PRO BEAM Jr. and Sr. Connectors

408-8828 Cleaning Procedure for EB C/A's

Tooling Specifications

408-8795 Crimp Tool with Die Set for PRO BEAM Jr. and Sr. Connectors

408-10022 Die Assembly for Mini and Jr. Circular Crimps

<http://www.tycoelectronics.com/documents>



Curing Fixtures

Connector	Part Number
PRO BEAM Jr. Cable Plug (having cable with KEVLAR strength member fiber)	1693797-1
PRO BEAM Jr. Sealed D-Hole Bulkhead	
PRO BEAM Jr. Standard D-Hole and Square Flange Bulkhead	1693800-1
PRO BEAM Jr. Low Profile Buffered Fiber Bulkhead	1754122-1

Instruction Sheet 408-8857. Available at www.tycoelectronics.com

Cable Crimp Components

Description	Part Number
Crimp Sleeve (use with all PRO BEAM Jr. Connector Crimp Support sizes)	1515269-2
2.2 mm Crimp Support	1515567-1
3.1 mm Crimp Support	1515568-1
3.6 mm Crimp Support	1515569-1
3.8 mm Crimp Support	1515570-1
4.1 mm Crimp Support	2-1515270-0
4.6 mm Crimp Support	1516142-1
5.1 mm Crimp Support	1515571-1
5.65 mm Crimp Support	1515572-1
6.1 mm Crimp Support	1515573-1
6.5 mm Crimp Support	1515574-1
6.7 mm Crimp Support	1515575-1
Square Crimp Support for (4) 3 mm Cables	1515632-1

Ferrule Kits

Fiber Hole Size	Mode	PRO BEAM	Part Number
125 μm	SM	Jr.	1588908-2
126 μm	SM	Jr.	1588908-1
126 μm	MM	Jr.	1588700-1

Protective Caps

Description	PRO BEAM	Part Number
Standard cap, for D-Hole Bulkhead	Jr.	1515868-1
Standard cap, for Flange Mount Bulkhead	Jr.	1515787-2
Standard cap, for connector plug	Jr.	1515867-1

KEVLAR is a trademark of E. I. du Pont de Nemours and Company.

Note: All part numbers are RoHS compliant.

Rugged Fiber Optic Products (Continued)

PRO BEAM Mini Connectors

Tyco Electronics is pleased to announce the natural extension from our PRO BEAM Sr. and Jr. Connector product lines.

The PRO BEAM Mini Connector saves space and weight and is perfect for high density applications. The product offers the same durability as its larger counterparts.



PRO BEAM Sr., Jr. & Mini Connectors



PRO BEAM Mini Plug Connector

Connector Assembly

- 1 Shell Kit
- 1 Insert Kit
- 1 Cable Adapter Kit*
- X Ferrule Kits (X = No. of optical channels)

*Not applicable for Low Profile

PRO BEAM Mini Connector Shell Kits

Type	Mount Style	Attribute Difference	Part Number		
			(HA Aluminum)	(OD Aluminum)	(NiAlBronze)
Plug		EPDM Grip	1828698-1	N/A	1828698-2
Bulkhead	D-Hole	Low Profile - Buffered Fiber	1828699-1	1828699-2 ♦	1828699-3
		Low Profile - 1.8 Jacketed	1985140-1	1985140-2	1985140-3
	Square Flange	Sealed	1918185-1	*	1918185-2
		Low Profile - Buffered Fiber	1828826-1	*	*
		Neutrik Cutout-Drop-In	1918603-1	*	*

* Contact Tyco Electronics for availability.

PRO BEAM Mini Insert Kits

Description	Part Number
2 x 850 / 1300 nm Dual Multimode	1374759-4
2 x 1310 nm Singlemode	1588129-2
2 x 1550 nm Singlemode	1588128-2
4 x 850 / 1300 nm Dual Multimode	1374759-2
4 x 1310 nm Singlemode	1588129-3
4 x 1550 nm Singlemode	1588128-3

Ferrule Kits

Fiber Hole Size	Mode	PRO BEAM Connector	Part Number
125 µm	SM	Mini	1754700-1
126 µm	SM	Mini	1754700-2
126 µm	MM	Mini	1754699-1

ASSEMBLY CAPABILITIES

Tyco Electronics has extensive Rugged Optic Harness capabilities. Please consult your local Tyco Electronics Sales Representative for assistance.

PRO BEAM Mini Cable Adapter Kits For Plug

Cable Diameter	Part Number
5 mm	1828700-1
5.5 mm	1828700-2
6 mm	1828700-3

Note: Part Numbers are RoHS compliant except: ♦ Indicates non-RoHS compliant.

Rugged Fiber Optic Products (Continued)

PRO BEAM Mini Connectors

(Continued)

Performance Specifications

Optical, Multimode Version

Insertion Loss, Typical —
0.7 dB @ 1300 nm*

Optical, Singlemode Version

Insertion Loss, Typical —
0.8 dB @ 1310 nm*

Return Loss — > 34 dB @ 1310 nm
or 1550 nm**

*When tested with reference quality
launch/receive cable assemblies

**RL Tested Open Ended

Mechanical

Vibration, Sinusoidal —

10 - 500 Hz, 3 directions;
0.75 mm amplitude @ 10g acceleration

Bump — 4,000 Bumps, 3 directions
@ 40g acceleration

Free Fall — 500 falls on concrete;
Severity 1.2 m

Coupling Endurance —
3,000 couplings

Weight —

Plug — 50 grams, typical
D-Hole bulkhead — 39 grams, typical

Temperature

Operational Temperature —

-40°C/+85°C

Storage Temperature —

-55°C/+85°C

Temperature, Cyclic —

-55°C/+85°C

Humidity (Damp Heat) — 95% RH

Immersion

Water — 5 m depth (plug) -
2 m (Bulkhead)

Pressure

Low Pressure — 25 kPa @ -55°C

Material and Finish

Shell Alloy — Aluminum; or nickel
aluminum bronze (high saline environ-
ment)

**Plating (For Aluminum Shells
Only)** — clear hard anodized; or green
chromate conversion zinc (PRO BEAM
Jr. Bulkheads only)

Technical Documents

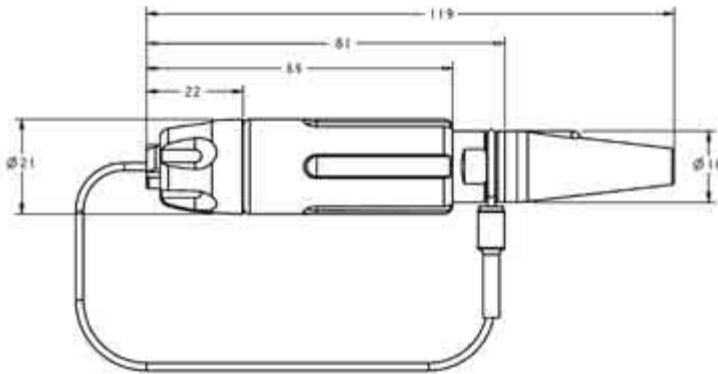
408-10065 Plug

408-10067 Square Flange Bulkhead

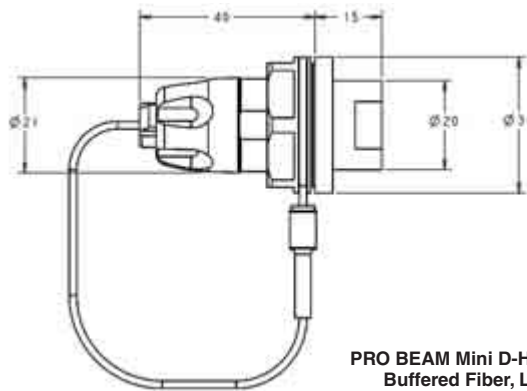
408-10069 Low Profile D-Hole Bulkhead

408-10076 Sealed D-Hole Bulkhead

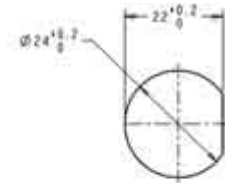
<http://www.tycoelectronics.com/documents>



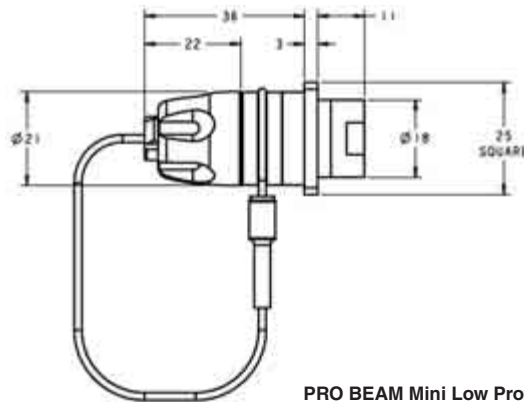
PRO BEAM Mini Cable Connector, Plug



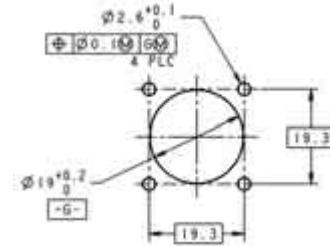
PRO BEAM Mini D-Hole Bulkhead,
Buffered Fiber, Low Profile



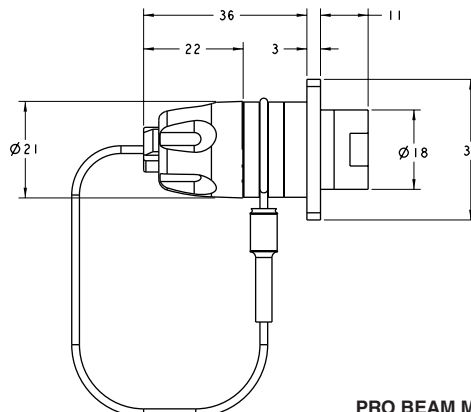
Recommended Panel Cutout



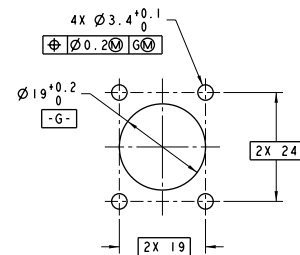
PRO BEAM Mini Low Profile, Square Flange Mount Bulkhead



Recommended Panel Cutout



PRO BEAM Mini Bulkhead with XLR Flange

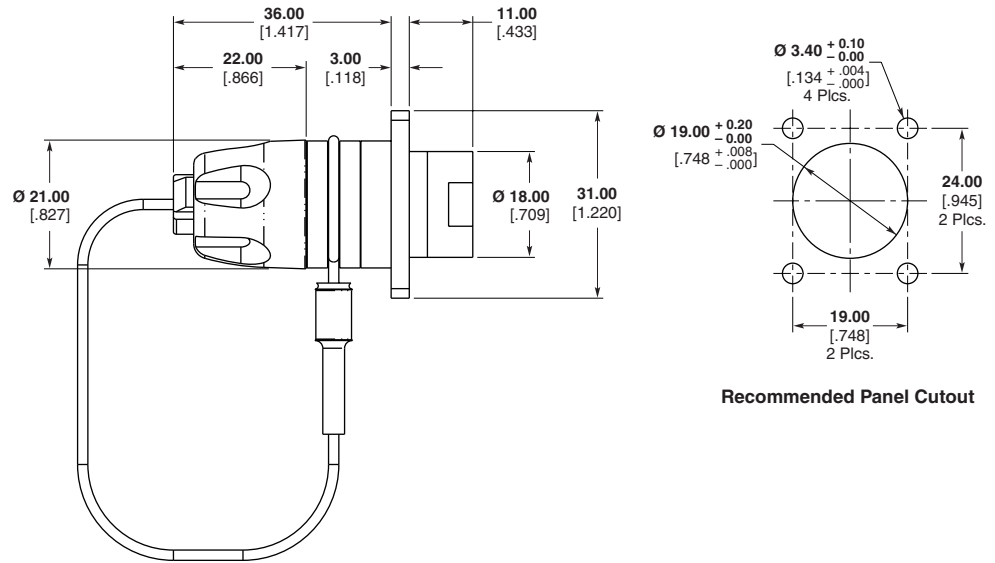


Recommended Panel Cutout

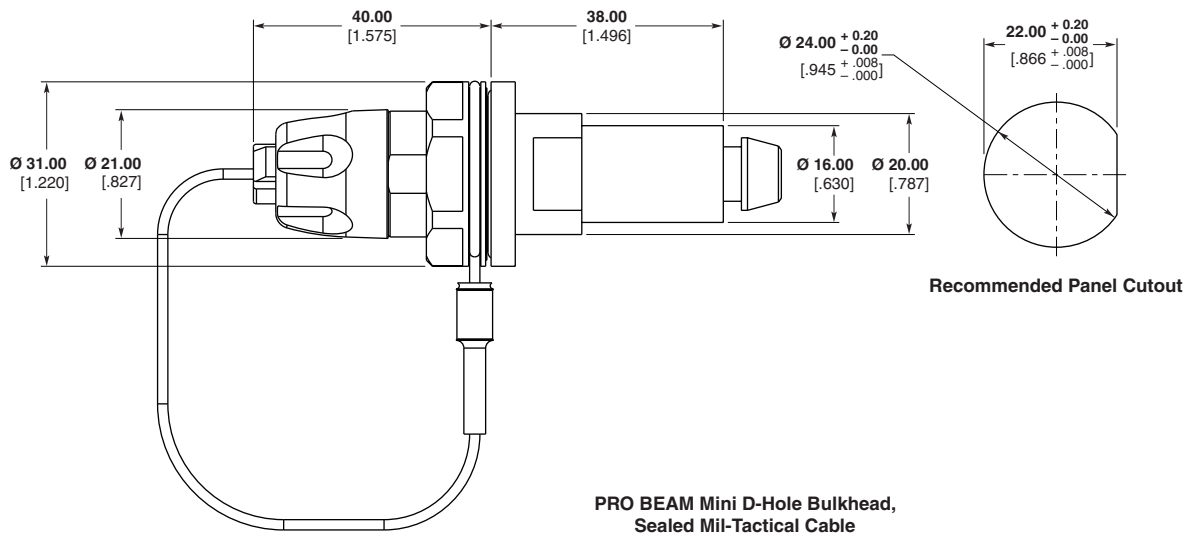
Rugged Fiber Optic Products (Continued)

PRO BEAM Mini Connectors

(Continued)



**PRO BEAM Mini Low Profile,
Alternate Square Flange Mount Bulkhead**



**PRO BEAM Mini D-Hole Bulkhead,
Sealed Mil-Tactical Cable**



Rugged Fiber Optic Products (Continued)

PRO BEAM Sr. Connectors

Performance Specifications

Optical, Multimode Version
Insertion Loss, Typical —
0.7 dB @ 1300 nm*

Optical, Singlemode Version
Insertion Loss, Typical —
0.7 dB @ 1310 nm*

Return Loss — > 34 dB
@ 1310 nm or 1550 nm**

*When tested with reference quality
launch/receive cable assemblies

**RL Tested Open Ended

Mechanical

Vibration, Sinusoidal —
10 - 500 Hz, 3 directions;
0.75 mm amplitude @ 10g acceleration

Bump — 4,000 Bumps, 6 directions,
@ 50g acceleration

Free Fall — 500 falls on concrete;
Severity 1.2 m

Coupling Endurance —
3,000 couplings

Weight —
Plug — 290 grams, typical
Chassis bulkhead — 150 grams, typical

Temperature

Operational Temperature —
-40°C/+85°C

Storage Temperature —
-55°C/+85°C

Temperature, Cyclic —
-55°C/+85°C

Humidity (Damp Heat) — 95% RH

Immersion

Water — 5 m depth (plug),
2 m (Bulkhead)

Material and Finish

Shell Alloy — Aluminum; or nickel
aluminum bronze (high saline environ-
ment)

**Plating (For Aluminum Shells
Only)** — clear hard anodized

**Bulkhead Connector Panel
Thicknesses**

PRO BEAM Sr. D-Hole Connector —
6.5 mm max.

**PRO BEAM Sr. Square Flange
Connector** — 8.5 mm max.

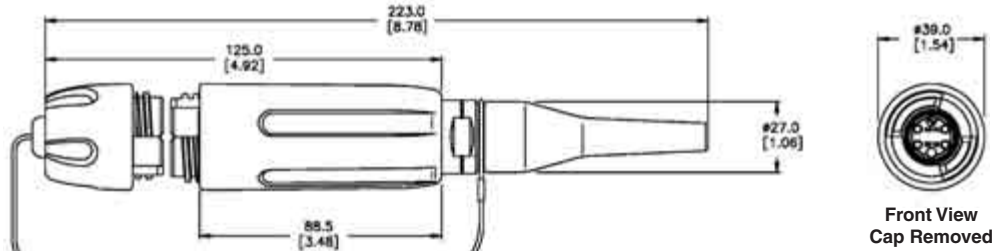
Technical Documents

Product Specifications

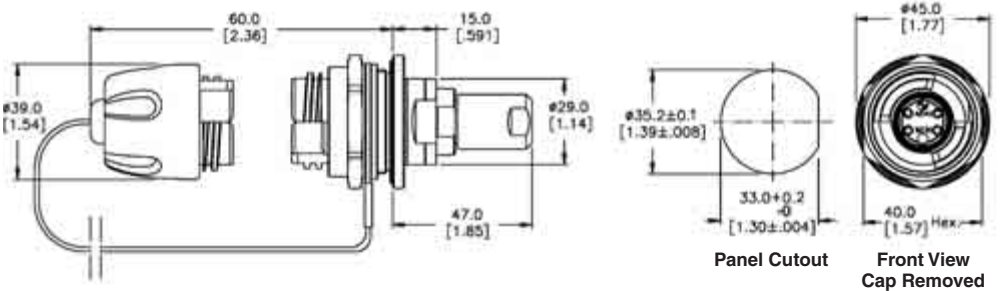
408-8799 Plug
408-8800 D-Hole Bulkhead
408-8877 Square Flange Bulkhead

Application Specification

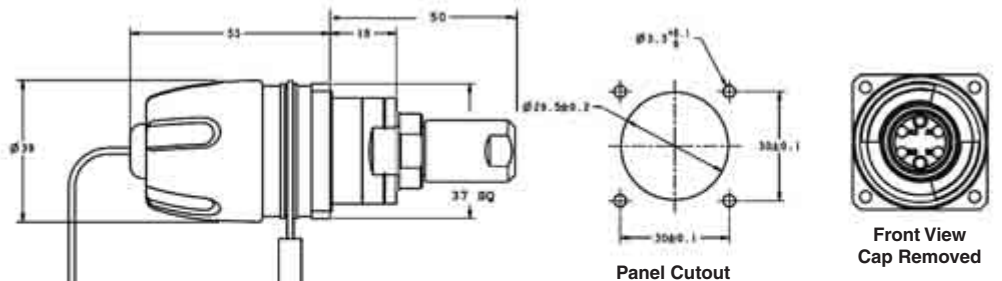
114-13122
<http://www.tycoelectronics.com/documents>



PRO BEAM Sr. Cable Connector, Plug



PRO BEAM Sr. D-Hole Bulkhead with Standard Cable Adapter



PRO BEAM Sr. Square Flange Mount Bulkhead with Standard Cable Adapter

**Please contact your local
Tyco Electronics
Sales Representative
for Part Numbers and
availability.**

Rugged Fiber Optic Products (Continued)

PRO BEAM Sr. Connectors

(Continued)

Connector Assembly

- 1 Shell Kit
- 1 Insert Kit
- 1 Cable Adapter Kit*
- X Ferrule Kits (X = No. of optical channels)

*Not applicable for Low Profile

Part numbers listed are Shell alloy = aluminum Plating = hard anodized. Consult Tyco Electronics for other plating/material options such as NiAlBz for Naval applications.

PRO BEAM Sr. Connector Shell Kits	Part Number
PRO BEAM Sr. Plug w/EPDM rubber	1754842-1
PRO BEAM Sr. D-Hole Standard Bulkhead	1754843-1
PRO BEAM Sr. Square Flange Standard Bulkhead	1754844-1

PRO BEAM Sr. Insert Kits	Part Number
2 x 850 / 1300 nm Multimode	1693001-1
2 x 1310 nm Singlemode	1515734-2
4 x 850 / 1300 nm Multimode	1693001-2
4 x 1310 nm Singlemode	1515735-1

Ferrule Kits

Fiber Hole Size	Mode	PRO BEAM Connector	Part Number
125 µm	SM	Sr.	1515941-1
126 µm	SM	Sr.	1515941-2
126 µm	MM	Sr.	1588801-1



PRO BEAM Sr. Connector Plug Adapter Kits

Cable Dia. (Max.)	Part Number
5.10 .201	1515940-1
5.65 .222	1515940-3
6.20 .244	1515940-5

Technical Documents

Product Specifications

- 408-8857 Curing Fixtures for PRO BEAM Jr. and Sr. Connectors
- 408-8828 Cleaning Procedure for EB C/A's

Tooling Specifications

- 408-8795 Crimp Tool with Die Set for PRO BEAM Jr. and Sr. Connectors
- 408-10022 Die Assembly for Mini and Jr. Circular Crimps

<http://www.tycoelectronics.com/documents>

PRO BEAM Sr. Connector Standard Bulkhead Cable Adapter Kits

Cable Dia. (Max.)	Style	Part Number
5.10 .201	Standard Cable Adapter	1515847-1
5.65 .222	Standard Cable Adapter	1515724-2
Buffered Fiber	Low Profile Adapter	1515299-2

Note: All part numbers are RoHS compliant.

Rugged Fiber Optic Products (Continued)

Cable Assemblies and Accessories

Product Facts

- Ruggedized cable assemblies custom tailored for field use in harsh environments
- Heavy-duty light-weight cable reel organizes and protects connectors and cable for easy pay-out and safe storage
- Options for 500 meter reels include special backpack harnesses, a separate reel stand, or a combination reel and reel stand

Featured Cable Assemblies



TFOCA to PRO BEAM Jr. Plug Cable Assembly
1828536-1 ♦

LP D-Hole Bulkhead to 4 ST 62.5/125 on 1.8 mm cable
6828454-1 ♦

Plug to Plug (100 meters)
6754475-2

Typical Reels and Reel Stands for Field-Deployable Cable Assemblies



1918930-1



Tactical Reel/Drum Options

PRO BEAM Jr. Kits

PRO BEAM Jr. Termination Kit
1828650-1

Cleaning Kit
1828335-2

Cable Reels

Reel Capacity (Random Lay)

Cable Diameter		Notes/Description	Flange Diameter	Part Number
5.0 mm	5.5 mm			
225 M	186 M	Reel & Reel Stand Combination Reel can be detached from stand without tools	310 mm	1918930-1
297 M	247 M	Reel*	310 mm	1754515-1
570 M	462 M	Reel*	370 mm	1754515-2
998 M	816 M	Reel*	460 mm	1754515-3
1271 M	1052 M	Reel*	510 mm	1754515-4

* See Accessories options below

ASSEMBLY CAPABILITIES

Tyco Electronics has extensive Rugged Optic Harness capabilities. Please consult your local Tyco Electronics Sales Representative for assistance.



Backpack with Reel



Reel with Stand "Static Frame"



Backpack Harness

Accessories

Description	Reel Diameter	Part Number
Backpack	370 mm Dia. Reel	1754516-1*
Backpack	460 mm Dia. Reel	1754516-2*
Backpack	510 mm Dia. Reel	1754516-3*
Static Frame	500 mm Dia. Max	1754517-1*
Static Frame	700 mm Dia. Max	1754517-2*

* Reel must be ordered separately.

Note: For lower cost alternative options. Please contact your local Tyco Electronics' Sales Representative or Tyco Electronics Product Information Center at 1-800-522-6752.

Note: Part Numbers are RoHS compliant except: ♦ Indicates non-RoHS compliant.

TFOCA-II is a trademark of Amphenol Fiber Systems International.

Rugged Fiber Optic Products (Continued)

**Tactical Field
Splice Repair Kit
Part Number 1985212-1**



Materials List

Quantity	Description
4	Flexible Splice Housings
10	Mechanical Splices
1	Cleaver
1	Cable Stripper
2	Buffer Stripper (sizes): 126 micron, 200 micron
1	Utility Knife with 3 Spare Blades
1	KEVLAR Shears
1	6 inch Metal Ruler, (units in metric)
1	Illuminated Microscope with Batteries
40	Alcohol (at least 70%) Pads
1	Wipes, 5 x 8 inch, 280 count box
1	Plastic Frame Safety Glasses (ANSI approved lenses)
1	Tweezers
1	Roll Tape
1	Fine Tip Marking Pen
1	Set of Instructions (illustrated) — Waterproof
1	Portable Field Storage Case. This case shall be ruggedized and house all components necessary to repair broken cable. Dimensions of the case shall not exceed 7.5" H x 20" W x 14" — Black in color.

KEVLAR is a trademark of E. I. du Pont de Nemours and Company.

Note: All part numbers are RoHS compliant.



Rugged Fiber Optic Products (Continued)

Optical Test Set for Fiber Optic Cables — Designed for harsh environments

Product Facts

- Especially designed to support the installation of optical links in the field
- Able to test both cable drums and entire links
- Powered by batteries with high autonomy
- Suitable for diagnostics and construction teams
- Easy to use, ergonomic, rugged design
- Suitable for cable length up to 10 km
- Supports up to 4 fibers per cable with various types of connectors



Diagnostic Features

Power Meter

The optical power from any source can easily be measured with the power meter function.

Optical Source

A continuous optical signal is generated and transmitted with selectable output power.

Drum Test / Cable Test

Test of an entire cable drum with automatic good/bad indication. The test of an entire cable is realized with a 2nd KPG-opt or a loop connector.

Test Frames (optional)

The KPG-opt can generate specific test frames as used in optical networks and LOS systems.

Optical Tester

Description	Part Number
850 nm 38999 III Size 11 Optical Test Kit	1918016-1
850/1300 nm PRO BEAM Jr. Optical Test Kit	1918016-2
1310 nm PRO BEAM Jr. Optical Test Kit	1985006-1

For additional wavelength testers, contact your local Tyco Electronics Sales Representative.

Protective Case
1918082-1

Note: All part numbers are RoHS compliant.

Rugged Fiber Optic Products (Continued)

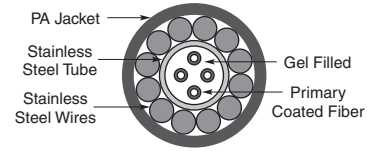
ARMOR-LIGHT Tactical Field Deployable Fiber Optic Cable for Extreme Environments (Metallic for Rodent Proof)



4-Color Optical Fiber Cable Specification for Armored Cable for Ruggedized Applications

Construction:

- 4-color coded fibers
- Fiber types 50/125/250 μm, 62.5/125/250 μm and 9/125/250 μm
- Stainless steel gel filled tube
- Stainless steel wire
- Jacket — Nylon, black



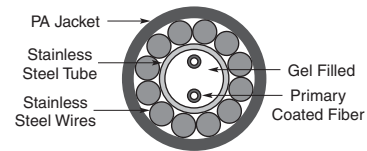
Fiber Type	Part Number	Outside Dia. (mm)	Weight kg/km	Max. Attenuation dB/km				Bandwidth MHz-km	
				850 nm	1300 nm	1310 nm	1550 nm	850 nm	1300 nm
62.5/125	1588957-1	3.8	24	3.5	1.0	X	X	160	500
50/125	1588957-2	3.8	24	2.7	0.9	X	X	400	1200
SM	1588957-4	3.8	24	X	X	0.40	0.25	X	X

Notes: 35 mm recommended bend radius.
3.1 kN breaking strength.

2-Color Optical Fiber Cable Specification for Armored Cable for Ruggedized Applications

Construction:

- 2-color coded fibers
- Fiber types 50/125/250 μm, 62.5/125/250 μm and 9/125/250 μm
- Stainless steel gel filled tube
- Stainless steel wire
- Jacket — Nylon, black



Fiber Type	Part Number	Outside Dia. (mm)	Weight kg/km	Max. Attenuation dB/km				Bandwidth MHz-km	
				850 nm	1300 nm	1310 nm	1550 nm	850 nm	1300 nm
62.5/125	1693808-1	3.8	24	3.5	1.0	X	X	160	500
50/125	1693808-2	3.8	24	2.7	0.9	X	X	400	1200
SM	1693808-4	3.8	24	X	X	0.40	0.25	X	X

Notes: 35 mm recommended bend radius.
3.1 kN breaking strength.

Note: All part numbers are RoHS compliant.

Non-Metallic Tactical Field Deployable Fiber Optic Cable

Product Facts

- All terrain field deployable cable, up to 4 fibers, singlemode or multimode
- Developed for deployment under the most demanding conditions
- Tight buffered fibers are protected by Aramid yarns and a tough ruggedized polyurethane sheath
- Tested in accordance with MIL-PRF-85045
- Flexible, water resistant, high crush resistant, and lightweight,
- Designs available to be resilient against radiation exposure

Technical Data

Mil-Standard Distribution Cable — 2 Fiber Singlemode

Attenuation — ≤ 0.5 dB/km @ 1310 nm / ≤ 0.5 dB/km @ 1550 nm

Diameter — 5.8 mm

Weight — 25 kg/km

Minimum Bending Radius — 29 mm

Crush Resistance — 2000 N/cm

Operating Temperature — -55° C to +85° C

Mil-Standard Distribution Cable — 4 Fiber Singlemode

Attenuation — ≤ 0.5 dB/km @ 1310 nm / ≤ 0.5 dB/km @ 1550 nm

Diameter — 5.8 mm

Weight — 27 kg/km

Minimum Bending Radius — 28 mm

Crush Resistance — 2000 N/cm

Operating Temperature — -55° C to +85° C

Mil-Standard Distribution Cable — 2 Fiber Multimode

Fiber Type — 50 μm/125 μm and 62.5/125

Attenuation — ≤ 3.5 dB/km @ 850 nm / ≤ 1.0 dB/km @ 1300 (62.5/125); ≤ 3.5 dB/km @ 850 nm / ≤ 1.5 dB/km @ 1300 (50/125)

Mil-Standard Distribution Cable — 4 Fiber Multimode

Fiber Type — 50 μm/125 μm and 62.5/125

Attenuation — ≤ 3.5 dB/km @ 850 nm / ≤ 1.0 dB/km @ 1300 (62.5/125); ≤ 3.5 dB/km @ 850 nm / ≤ 1.5 dB/km @ 1300 (80/125)

Other fibers (i.e. Polyimide, Silicon buffer, Carbon coated, radiation hardened, etc.) are available upon request.

Contact Tyco Electronics or your local Tyco Electronics Sales Representative for part numbers, pricing, and availability.

Rugged Fiber Optic Products (Continued)

“Mini” Expanded Beam for Harsh Environments

(Continued)

Use with:	Mini EB 38999 Connector Shell Kits (N-Key)					
	Ø1.8 mm Max Simplex Cable		MIL-Tactical Distribution Cable		Buffered Fiber Only	
	Electroless Ni Plate	OD Zn/Ni	Electroless Ni Plate	OD Zn/Ni	Electroless Ni Plate	OD Zn/Ni
Finish:						
Plug:	6754518-1	1754518-7 ♦	6828045-1	1828045-7 ♦	1918883-1	1918883-7 ♦
Jam-Nut Receptacle:	6754519-1	1754519-7 ♦	6828046-1	1828046-7 ♦	1918884-1	1918884-7 ♦
Flange-Mount Receptacle:	6754520-1	1754520-7 ♦	6828047-1	1828047-7 ♦	1918885-1	1918885-7 ♦

PRO BEAM Mini Insert Kits

Description	Part Number
2 x 850 / 1300 nm Dual Multimode	1374759-4
2 x 1310 nm Singlemode	1588129-2
2 x 1550 nm Singlemode	1588128-2
4 x 850 / 1300 nm Dual Multimode	1374759-2
4 x 1310 nm Singlemode	1588129-3
4 x 1550 nm Singlemode	1588128-3

Ferrule Kits

Fiber Hole Size	Mode	PRO BEAM Connector	Part Number
125 µm	SM	Mini	1754700-1
126 µm	SM	Mini	1754700-2
126 µm	MM	Mini	1754699-1

Note: Part Numbers are RoHS compliant except: ♦ Indicates non-RoHS compliant.

Expanded Beam Avionics-Related Standards and Specifications for ARINC 600, 664, 763 and 801

ARINC 664 — Aircraft Data Network

Tyco Electronics' ARINC Connectors with Mini Expanded Beam inserts will meet/exceed all 100 Base-FX Ethernet LAN applications

ARINC 763 — Avionics Network Server System —

Tyco Electronics' ARINC 600 Connectors are designed to meet/exceed 100 Base-FX Ethernet LAN applications.

Network Server Unit (NSU) — can use ARINC 600 Size 1 connector with up to 8 Expanded Beam fiber optic channels (two Mini Expanded Beam inserts in cavity C)

Server Interface Unit (SIU) — can use ARINC 600 Size 3 connector with up to 16 Expanded Beam fiber optic channels (four Mini Expanded Beam inserts in cavity F)

Integrated Network Server Unit (INSU) — can use ARINC 600 Size 3 connector with up to 16 Expanded Beam fiber optic channels (four Mini Expanded Beam inserts in cavity F)

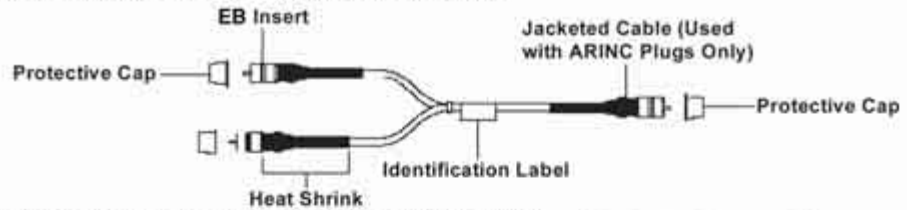
ARINC 801 — Fiber Optics Working Group

Tyco Electronics provides a single reference point for Flight Level Optics that are multi-sourced.

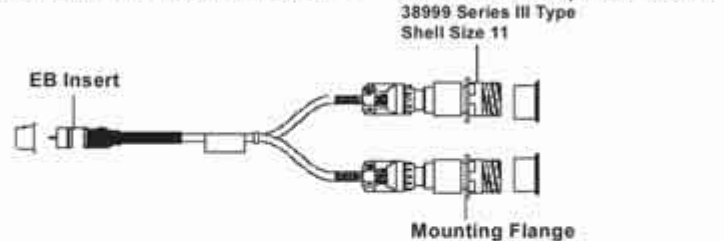
Rugged Fiber Optic Products (Continued)

Typical Assemblies for In-Flight Network Applications

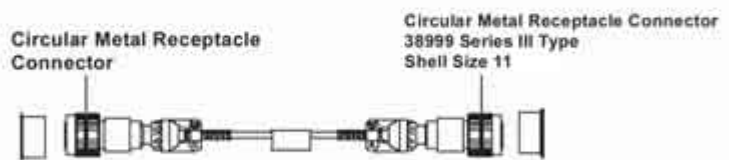
ARINC EB Connector-to-ARINC EB Connector Cable Assembly



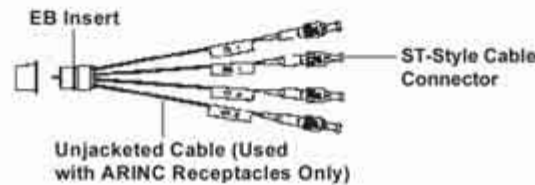
ARINC EB Connector-to-Circular Metal Connector Cable Assembly



Circular Metal Connector-to-Circular Metal Connector Cable Assembly



ARINC EB Connector-to-ST-Style Cable Assembly



Typical Assemblies



ASSEMBLY CAPABILITIES

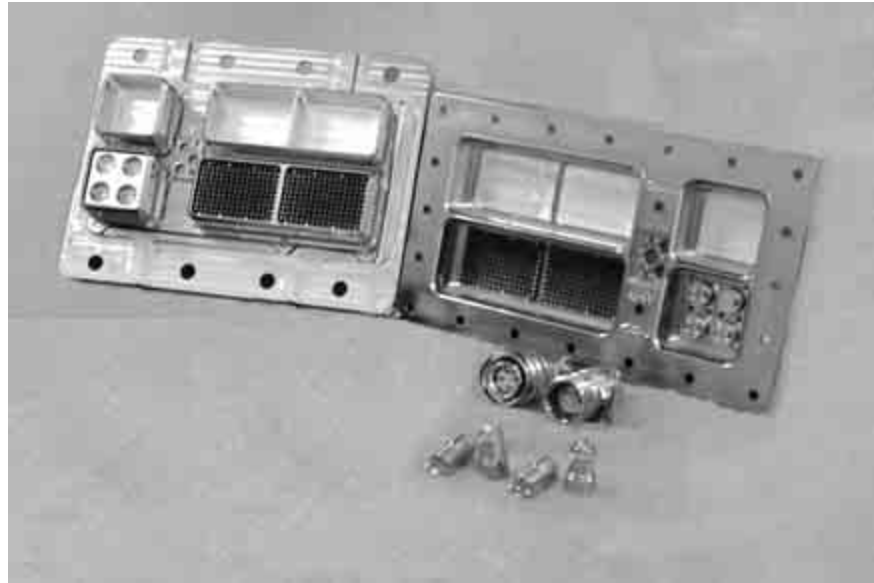
Tyco Electronics has extensive Rugged Optic Harness capabilities. Please consult your local Tyco Electronics Sales Representative for assistance.

Rugged Fiber Optic Products (Continued)

ARINC 600 and 404

Product Facts

- For Mini Expanded Beam Inserts
- For use in 100 base-FX Ethernet LAN applications per ARINC 664 and ARINC 763
- Insert holders designed to ARINC 600, Supplement 13 or to specific customer needs for Mini Expanded Beam inserts
- Drop-In Insert Holders utilize Standard ARINC 600 Retainers
 - Hard Stop on Plug Side
 - Spring-Loaded Stop on Receptacle Side
 - Captive Hardware
- Facial Sealing — Optional
 - Bonded to Receptacle Block Mating Face
 - Raised Collar Seal around Optics Insert compresses against Chamfer on Plug Block Mating Face

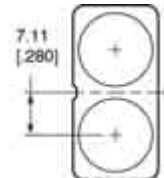


ARINC 600 Insert Holders for Mini-Expanded Beam Contacts

Size 1 Power Cavities



ARINC 600, 1 Position
1MP

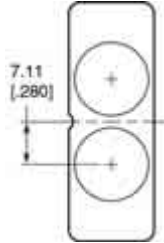


ARINC 600, 2 Position
2MP

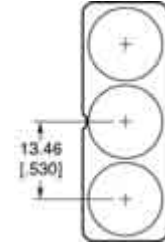
Size 1 Signal Cavities



ARINC 600, 1 Position
1MS



ARINC 600, 2 Position
2MS



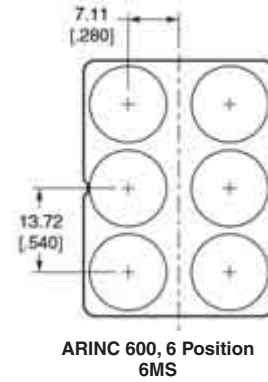
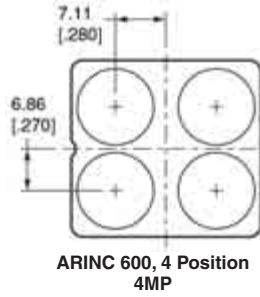
ARINC 600, 3 Position
3MS

ASSEMBLY CAPABILITIES
Tyco Electronics has extensive Rugged Optic Harness capabilities. Please consult your local Tyco Electronics Sales Representative for assistance.

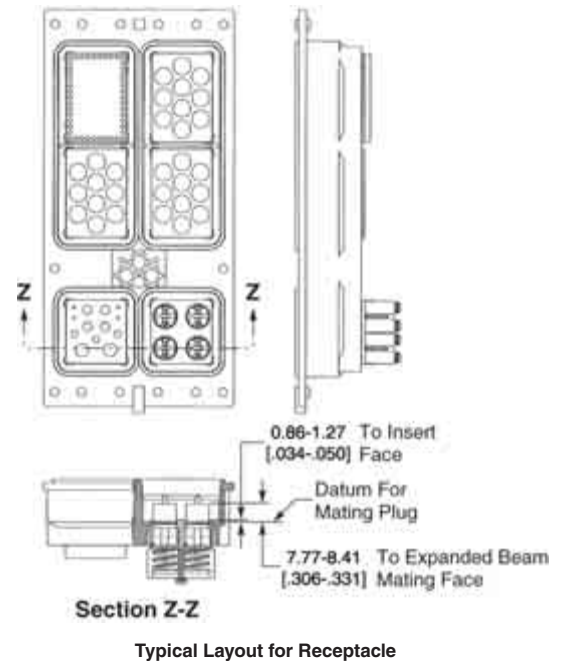
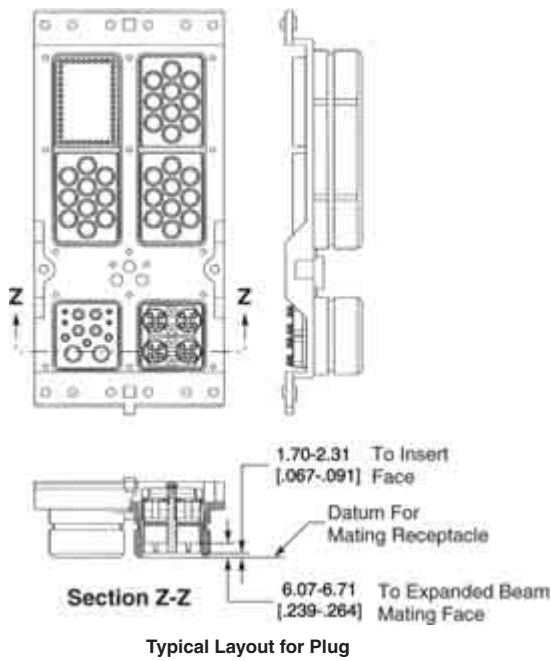
See next page (33) for Size 2 / 3 Power and Signal Cavities

Rugged Fiber Optic Products (Continued)

Size 2 / 3
Power and Signal Cavities

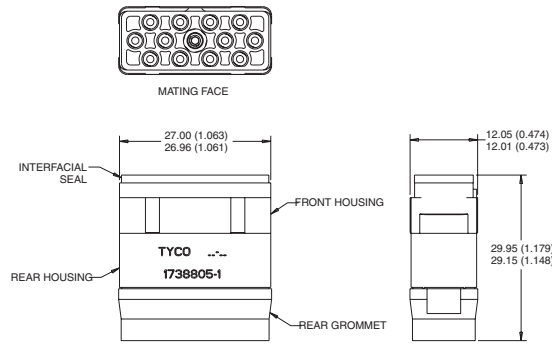


**ARINC 600 Insert Holders
for Mini-Expanded Beam
Contacts**



Rugged Fiber Optic Products (Continued)

F12 LuxCis Insert Assemblies



Product Facts

- ARINC 801 approved
- Optical termini for use with GPR, ARINC 600, circular MIL-DTL-38999 connectors
- Industry Standard 1.25 mm ceramic ferrule
- Compatible with 1.5-2.2 mm tight jacket and loose tube cable construction:
 - MT - Tight jacket cable
 - ML - Loose tube cable
- Singlemode (SM) and Multimode (MM) versions
- LuxCis Optical Termini part numbers:
 - 1828199-1 MM/ML Version
 - 1828200-1 MM/MT Version
 - 1918614-1 SM/ML Version
 - 1918616-1 SM/ML Version-APC
 - 1918615-1 SM/MT Version
 - 1918617-1 SM/MT Version-APC

Materials:

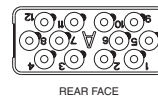
- Housings** – Nickel Plated Copper
- Ferrule** – Zirconia
- Spring** – Stainless Steel
- Crimp Sleeve** – Nickel Plated Copper
- Protective Cover** – Silicone

Optical Performance

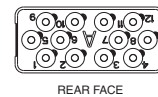
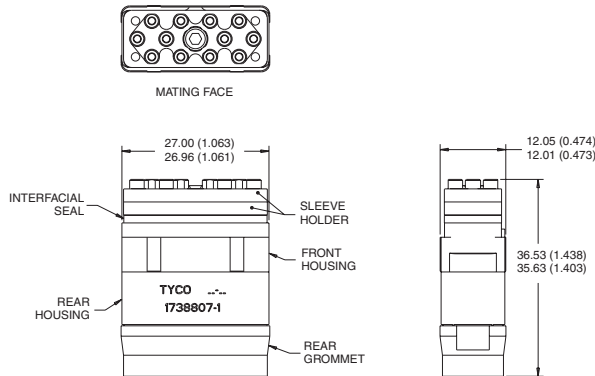
- Singlemode**, 1310 nm/1550 nm (UPC)
 - Attenuation, Mean** – 0.15dB
 - Return Loss** - >50dB
- Multimode**, 850 nm, 1310 nm
 - Attenuation, Mean** – 0.10dB
 - Return Loss** - >20dB

Assembly Capabilities

Tyco Electronics has extensive Rugged Optic Harness capabilities. Please consult your local Tyco Electronics Sales Representative for assistance.

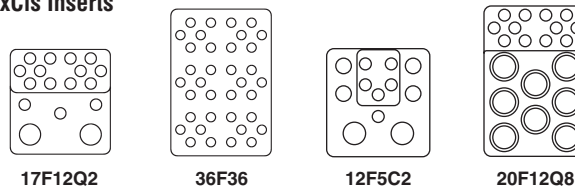


Insert Assembly, without Sleeve Holder, Environmental, F12
Key A 1738805-1
Key B 1738806-1



Insert Assembly, with Sleeve Holder, Environmental, F12, Key A
GPRB
Key A 1738807-1
Key B 1738808-1

LuxCis Inserts



LuxCis Inserts and Cavity Reducers accept LuxCis Optical Termini.

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Note: All part numbers are RoHS compliant.



Rugged Fiber Optic Products (Continued)

Comparative on Expanded Beam Inserts

Comparative on Expanded Beam Inserts' weight and Insertion Forces when applied to an ARINC housing

- ARINC 600 connector mated pair size 2 = 440 grams (without copper contacts)
- ARINC style Mini and Junior size Expanded Beam inserts = 5 pounds insertion force each when applied to the Rack and Panel ARINC Connector inserts
- Signal Cavity Optical Holder insert (i.e.: holds up to six mini inserts with four fiber ball lenses each or up to 24 fibers each insert set) = @ 30 grams
- Power Cavity Optical Holder insert (i.e.: holds up to four mini inserts with four fiber ball lenses each or up to 16 fibers each insert set) = @ 20 grams
- Insert mated pair PRO BEAM Jr. Connector insert set = @ 41.79 grams
- Insert mated pair PRO BEAM mini Connector insert set = @ 16.17 grams
- Fiber = single fiber ≤ 4 kg / km
- Fiber = four fiber jacketed with a support member ≤ 24 kg / km
- Static spring force per mated Expanded Beam insert pair = 5 lbs.

LuxCis Optical Termini Notes

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Product is manufactured under license from Radiall, S.A.

Sealed Circular LC ODVA Conforming Notes

Rugged Fiber Optic Products (Continued)

LuxCis Optical Termini

Product Facts

- Optical termini for use with GPR, ARINC 600, circular MIL-DTL-38999 connectors.
- Industry Standard 1.25 mm ceramic ferrule
- Compatible with 1.5-2.2 mm Tight jacket and loose tube cable construction:
 - MT - Tight jacket cable
 - ML - Loose tube cable
- SM / MM versions

Materials

- Housings** — Nickel Plated Copper
- Ferrule** — Zirconia
- Spring** — Stainless Steel
- Crimp Sleeve** — Nickel Plated Copper
- Protective Cover** — Silicone

Optical Performance

Singlemode, 1310 nm/1550 nm (UPC):

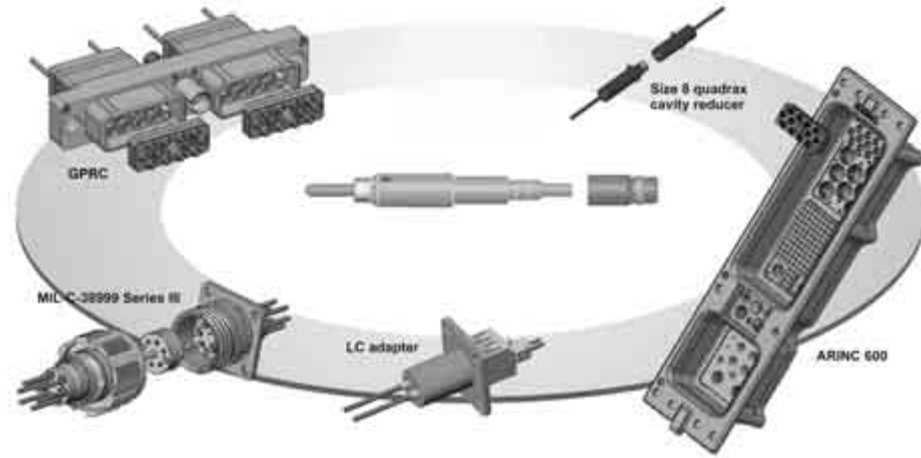
- Attenuation, Mean** — 0.15dB
- Return Loss** — > 50dB

Multimode, 850 nm/1310 nm:

- Attenuation, Mean** — 0.10dB
- Return Loss** — > 20dB

LuxCis Optical Termini

one common terminus for all types of connectors



Mechanical / Environmental Performance

Test Description	Standard	LuxCis Optical Termini in GPR A & B Connector	LuxCis Optical Termini in 38999 Connector	LuxCis Optical Termini in ARINC 600 Connector
Thermal Shock	SAE-AS-13441 met 1003.1	-55C /+100C	-55C /+100C	-55C /+100C
Temperature Life	TIA/EIA 455-20A	500h @ +100C	500h @ +100C	500h @ +100C
Vibration	TIA/EIA 455-11	8h/axis 3.8g ² /Hz 43 G rms	8h/axis 3.8g ² /Hz 43 G rms	8h/axis 0.2g ² /Hz 16.4 G rms
Shock	TIA/EIA 455-14A	300 G - 3ms	300 G - 3ms	50G - 11ms
Mate/Unmate (GPR/ARINC 600)	SAE-AS-13441 met 2016	100 Cycles	N/A	100 Cycles
Mate/Unmate (38999)	TIA/EIA 455-21A	N/A	500 Cycles	N/A
Maint. Aging	SAE-AS-13441 met 2002-1	10 Cycles	10 Cycles	10 Cycles
Salt Spray	SAE-AS-13441 met 1001.1 cond C	96 hr	500 hr	48 hr
Cable Ret. (1.8 mm)	SAE-AS-13441 met 2009-1	68N	68N	68N
Humidity (GPR/38999)	TIA/EIA 455-5 met B7A	10 cycles / 24h 90% RH -25C/+65C	10 cycles / 24h 90% RH -25C/+65C	N/A
Humidity (ARINC 600)	TIA/EIA 455-5 met B	N/A	N/A	10 cycles / 24h 90% RH -25C/+65C
Altitude Imm.	TIA/EIA 455-15	10,000 ft (69.6kPa)	10,000 ft (69.6kPa)	10,000 ft (69.6kPa)



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Rugged Fiber Optic Products (Continued)

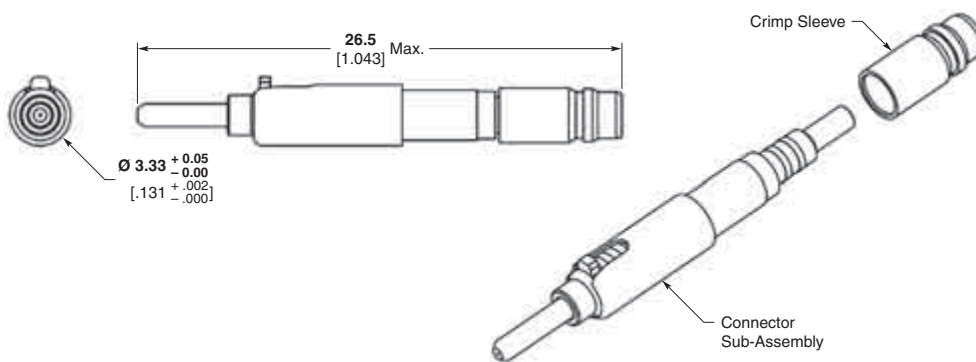
LuxCis Optical Termini
(Continued)

There are three types of LuxCis Optical Termini available dependent upon cable structure.

Tyco Electronics has multiple connector types/families available for the LuxCis Optical Termini System.

These are:

- **General Purpose Rectangular Connectors**
 - F5 & F12 Inserts
- **MIL-DTL-38999 connectors**
 - 13-04, 15-06, 21-16
- **ARINC 600**
 - F12 combinations and F36
- **Quadrax Cavity Reducers**
- **Motherboard & Daughtercard Solutions**



LuxCis Optical Termini Part Numbers

Cable Dia.	Cable Structure ML (loose & tight) MT (ultra tight)	S/M Fiber 125.3 µm PC/UPC	S/M Fiber 125.3 µm APC	M/M Fiber 128 µm PC
0.9mm Buffer	—	*	*	*
1.5 - 2.2 mm	ML	*	*	1828199-1
1.5 - 2.2 mm	MT	*	*	1828200-1

Consult your local Tyco Electronics Sales Representative for additional options.

* Contact Tyco Electronics for availability.

Accessories	Part Number
Dust Cap (bag of 10)	1828221-1

LuxCis Cavity Reducers

Size 8 Quadrax	Part Number	LuxCis Cavity Reducer
Pin Quadrax adapter for LuxCis Optical Termini in Quadrax FR type cavity	1757727-1	Quadrax cavity reducer (FR/FR) for receptacle shell
Pin Quadrax adapter for LuxCis Optical Termini in Quadrax RR type cavity	1757710-1	Quadrax cavity reducer (RR/RR) for receptacle shell
Socket Quadrax adapter for LuxCis Optical Termini in Quadrax RR type cavity	1757711-1	Quadrax cavity reducer (RR/RR) for plug shell

Connector Options:
For part numbers, details, and / or additional connector types and arrangements, contact your local Tyco Electronics Sales Representative.

ASSEMBLY CAPABILITIES
Tyco Electronics has extensive Rugged Optic Harness capabilities. Please consult your local Tyco Electronics Sales Representative for assistance.

Cable Structure

	Loose Structure	Tight Structure	Ultra Tight Structure
Movement between fiber & 900 µm buffer	Yes	No	No
Movement between 900 µm & cable jacket	Yes	Yes	No

Adapters

Type	Version	Alignment Sleeve	Part Number	Dim.
LuxCis Optical Termini to LuxCis Optical Termini	Simplex Bulkhead Feedthrough Type	Ceramic Zirconia	1828996-1	Fig. 1
LuxCis Optical Termini to LuxCis Optical Termini	Simplex Straight	Ceramic Zirconia	1828997-1	Fig. 2
LuxCis Optical Termini to LC	Simplex LC Panel Cutout	Ceramic Zirconia	1828979-1	Fig. 3
LuxCis Optical Termini to LC	Duplex LC Panel Cutout	Ceramic Zirconia	1828980-1	Fig. 4
LuxCis Optical Termini to LC	Duplex MIL-DTL-38999 Panel Cutout	Ceramic Zirconia	1828995-1	Fig. 5

Tools

Description/Function	Part Number
Metal Extraction Tool (M81 969/1-03)	91066-3
Plastic Extraction Tool (M81 969/1403)	M81969/14-03
Daniels Right Angle Insertion Tool	DAK83-16*
Daniels Right Angle Removal Tool	DRK83-16*

* Contact Daniels Manufacturing

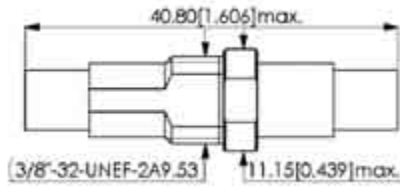
Note: All part numbers are RoHS compliant.

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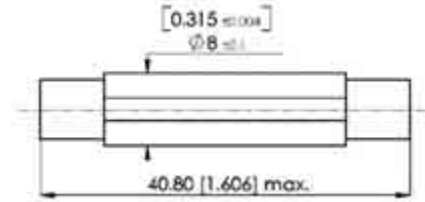
Rugged Fiber Optic Products (Continued)



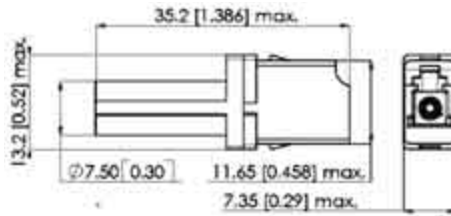
LuxCis Optical Termini Adapter Dimensions



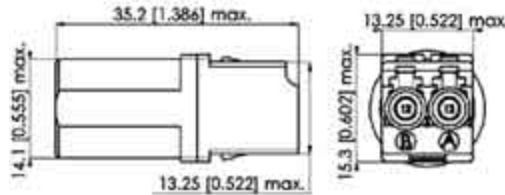
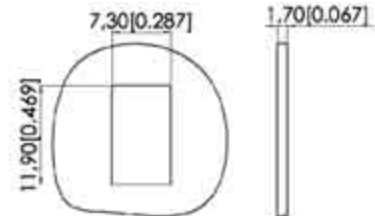
Terminus to Terminus Bulkhead Feedthrough



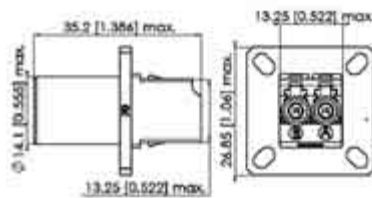
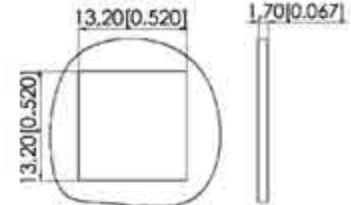
Terminus to Terminus Straight



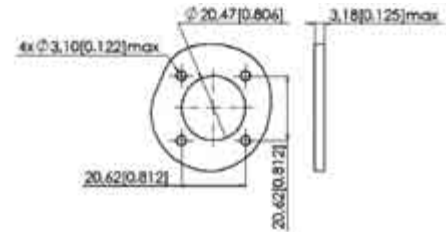
Terminus to LC Simplex



Terminus to LC Duplex, LC Panel



Terminus to LC Duplex, MIL-DTL-38999 Panel Cutout



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Product is manufactured under license
from Radiall, S.A.



**LuxCis Optical Termini
Termination Kit
Part Number 1828644-X**



Rugged Fiber Optic Products (Continued)

Most of the tools included in the Termination Kit are commonly used in the fiberoptic industry (strippers, cutting pliers and all accessories for fiber and cable preparation). The items in the table below are specially made for the LuxCis Optical Termini System. Their use is highly recommended to achieve mechanical and optical performances.

Qty -2	Qty -1	Description	Part Number	Item #
1	1	Label, Termination Kit	1918887-1	28
1	1	Insertion and Extraction Tool	91066-3	27
2	2	1.25 mm Swab	1828355-1	26
1	1	LC Polishing Bushing	1754074-1	25
1	1	Polishing Plate	501197-1	24
1	1	Polishing Pad	501523-1	23
10	10	0.3 µm Polishing Film	228433-5	22
5	5	Fine Diamond Polishing Film	503887-1	21
10	10	5 µm Polishing Film	228433-8	20
15	15	9 µm Polishing Film	1374484-1	19
1	1	Cleave Tool	504064-1	18
1	—	Curing Oven Block	1918510-1	17
1	—	Curing oven	502130-1	16
1	1	Resin injector tips	1918509-2	15
1	1	Resin injector	1918509-1	14
5	5	Epoxy, 353ND	504035-1	13
10	10	Alcohol Fiber Wipe	501857-2	12
1	1	Inner Ferrule Shaping Tool	1918511-1	11
1	1	Hexagonal key	19840-5	10
1	1	Fiber Stripping tool (125 µm)	1754708-1	9
1	1	Handtool	58532-1	8
1	1	Die-set, LuxCis Optical Termini	1828889-1	7
1	1	KEVLAR Shears	1278637-1	6
1	1	Cable Jacket Strip Tool	1278531-1	5
1	—	1.25 mm Microscope Adapter	1754765-1	4
1	—	200x Microscope	1754767-1	3
1	—	Carrying case, Weekender	1918881-1	2
—	1	Carrying case, Attache	1918834-1	1

The following tools are necessary for product termination but are not included in the kit: Alcohol, canned air, and clean cloth. Other accessories available include ruler, tweezers, cleaning tip, roller adhesive tape, moss cable support and permanent ink markers.



**LuxCis Optical Termini
Service Tool Kit (Inspection,
testing & cleaning)
Part Number 1828335-1**

**LuxCis Optical Termini
Service Tool Kit
(Cleaning only)
Part Number 1828335-2**

**LuxCis Optical Termini
Service Tool Kit
(Testing only)
Part Number 1828335-3**

**LuxCis Optical Termini
Service Tool Kit
(Hand Held Digital Probe Kit)
Part Number 1828335-4**

Tool Kit Contents

Item #	Comp Part Number	Description	-1	-2	-3	-4
1	1278540-1	Soft Carry Bag	1	—	—	—
2	1754767-1	200x Microscope	1	—	—	—
3	1754765-1	LC Microscope adapter	1	—	—	—
4	6374613-5	LC - SC 50/125 cable assembly	2	—	—	—
5	6374615-5	LC - SC 62.5/125 cable assembly	2	—	—	—
6	1918808-1	1.25 mm swab	2	2	—	—
7	1918810-1	OPTIPOP C Card Cleaner	2	5	—	—
8	1828349-1	Optical Loss Test Set	1	—	1	—
9	1828350-1	OLTS 1.25 mm detector cap	1	—	1	—
10	1828352-1	Visual Fault Locator	1	—	1	—
11	1828353-1	VFL 1.25 mm Adapter	1	—	1	—
12	1828465-1	Label, Service Kit	1	—	1	—
13	1918222-1	Inspection, Hand Held Digital Probe Kit	—	—	—	1
14	1918223-1	1.25 mm Adapter, Digital Probe	—	—	—	1

- 1 inspection, cleaning & testing
- 2 cleaning
- 3 testing
- 4 Hand Held Digital Probe Kit

Note: All part numbers are RoHS compliant.

KEVLAR is a trademark of E.I. du Pont de Nemours and Company.

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OPTIPOP is a trademark of NTT Advanced Technology Corporation.

Rugged Fiber Optic Products (Continued)

Hand Held Visual Fault Locator (VFL)

Product Facts

- 650 nm (visible) Class 2 1.0 mW max Diode Laser
- Continuous and flashing (2-3 Hz pulsed) modes
- Rugged rubber shell and body design modeled after a popular military connector
- Lanyard attached dust cover
- Standard 2.5 mm adapter for SC, ST, and FC connectors
- Optional 1.25 mm adapter for LC and MU connectors.
- Unique design allows adapter to permanently reside on VFL so it is not misplaced allowing user to choose 1.25 mm or 2.5 mm
- Uses 1 “AA” style battery for >30 hours of continuous use
- Soft-sided belt case for convenience and storage



The Tyco Electronics Hand Held Visual Fault Locator (VFL) is a rugged and affordable solution for identifying breaks and bending in optical fibers and cabling. Its powerful, red (650 nm) laser provides the ability to locate damaged, broken, or tightly bent fibers that cause undesirable attenuation in your system.

The jacket of the cable will glow red at the location of the fault. The FLASH button

allows the user to toggle between continuous or pulsed mode. The compact, rugged, and balanced design is based upon a popular harsh environment fiber optic connector. The single “AA” style battery is good for >30 hours of continuous use and the soft-sided protective case with belt loop provides a convenient and protective means of storage.

Applications

Affordable VFL Solution for:

- Identifying breaks, bends, and other damage in optical fibers
- Tracing fiber paths
- Identifying termination errors
- Continuity testing

Product Dimensions

Length — 18.5 cm [7.283 in]

Width — 2.2 cm [0.866 in]

Thickness — 2.2 cm [0.866 in]

Weight (w/battery) — 150 g [0.33 lb]

Description	Part Number
Hand Held Visual Fault Locator	1828352-1
1.25 mm Adapter for Hand Held VFL	1828353-1
Includes Part Numbers 1828352-1 and 1828353-1	1828352-2

Combination LIGHTCRIMP PLUS SC/ST/LC Termination Kit Part Number 1985162-1



Note: All part numbers are RoHS compliant.



Rugged Fiber Optic Products (Continued)

Sealed Circular LC ODVA Conforming Connector

Product Facts

- IP67 rated to ensure protection from dust and water immersion
 - LC connector qualified to Telcordia GR-326 and TIA/EIA 568B.3
 - Temperature range of -40°C to 85°C
 - Bayonet-style mechanical lock
 - Flame retardant materials per UL 94 V-0
 - Dual mounting bulkhead design
 - Singlemode and multimode fiber
 - Can be used with cable types 9/125, 50/125 and 62.5/125
 - LC to LC internal to the box Jumpers
 - LC connector accepts tactical cable with 4.5 mm – 7.5 mm OD
 - ODVA Conforming Plug to X interface on tactical with break out
 - ODVA Conforming Plug to Plug on tactical cable
 - Build to customer need
- Applications**
- The LC ODVA Conforming Connector is ideal for:
- Harsh environments where chemicals, corrosive gases and liquids are commonplace
 - Inside and outside industrial plant and equipment that interface with industrial Ethernet networks
 - Remote interface applications such as towers and antennae as well as FTTX in PON and at the home applications
 - Mobile routers and internet hardware

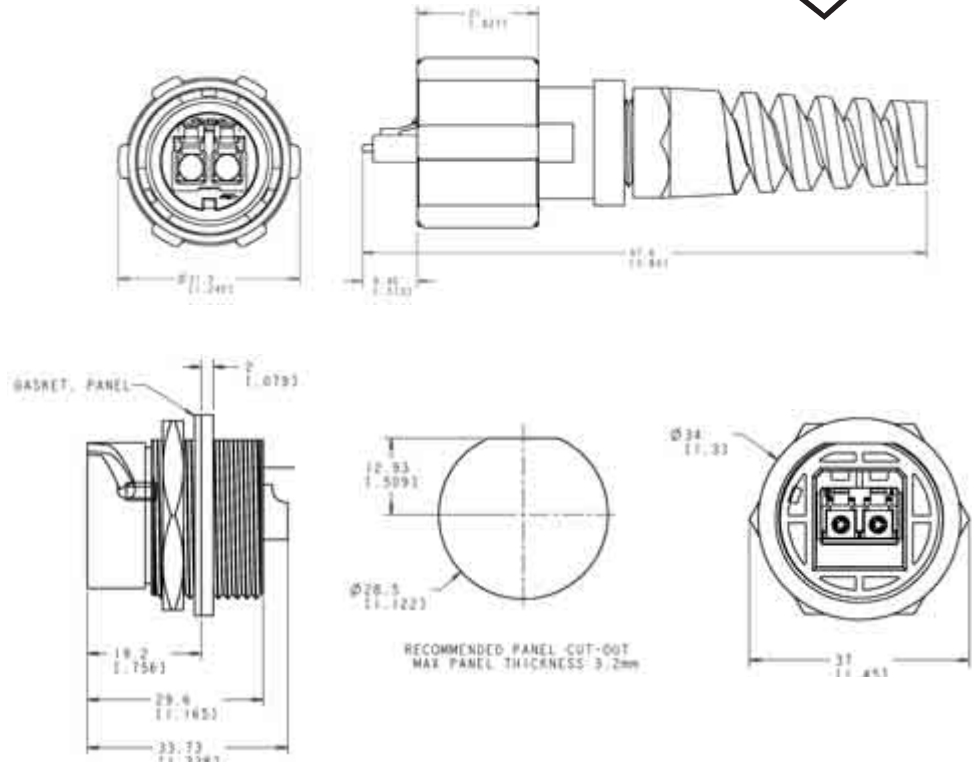


Plug Part Numbers:
1828618-1 (Multimode)
1828618-2 (Singlemode)

Receptacle Part Numbers:
1828619-1 (Multimode)
1828619-2 (Singlemode)

Plug & Receptacle Cap Part Numbers:
Plug Cap 1828740-1
Receptacle Cap 1918177-1

ASSEMBLY CAPABILITIES
Tyco Electronics has extensive Rugged Optic Harness capabilities. Please consult your local Tyco Electronics Sales Representative for assistance.



Standard Cable Assemblies

Part Number	Description
1828935-X	ODVA LC Interface, 62.5, 2 Fiber
1828936-X	ODVA LC Interface, Singlemode, 2 Fiber

Note: X = length in meters

Contact your local Tyco Electronics Sales Representative for information on upcoming product.

Note: All part numbers are RoHS compliant.

Rugged Fiber Optic Products (Continued)



**Coming Soon —
Sealed Circular LC
Shielded EMI Connector**

**EMI Shielded Receptacle
Assembly**

- Components are thin film coated using a four-step SS/Cu/Cu/SS vacuum deposition process
- This coating results in an approximate 99% shielding effectiveness over uncoated assemblies



Rugged Fiber Optic Products (Continued)

Rugged Media Converter & Ethernet Link Extender Solutions

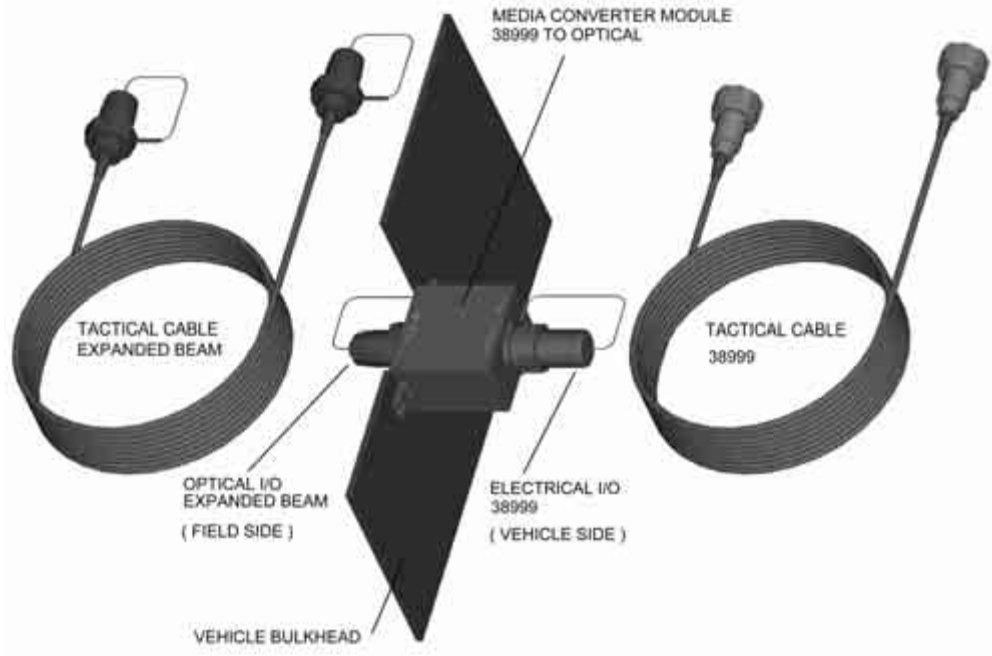
Harsh Environment Optical Media Converter Assemblies allowing blind mate field applications over one, two, or four fibers

Tyco Electronics offers solutions for Harsh Environment applications of Ethernet Media Converters.

This page demonstrates Tyco Electronics' capabilities for Advanced Optical Modules. These include Fast, Gigabit, and Ethernet Link Extenders.

For additional Advanced Optical Modules, see Fiber Management & Packaged Solutions, Catalog 1307895, Section 3.

Contact your local Tyco Electronics Sales Representative with your specific design needs.



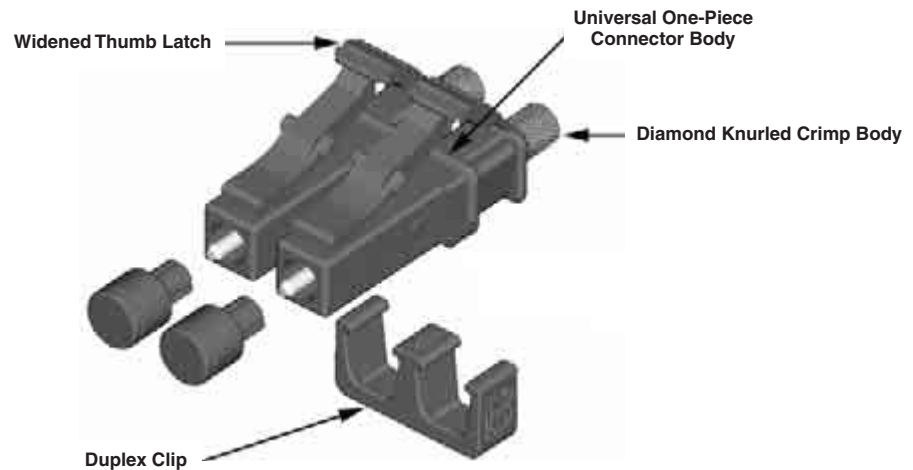
Design Objectives

Specifications	Results
Standard	IEEE802.3, IEEE802.3u Ethernet @ 10/100 Mb/s
Data Rates	10 and 100 Mb/s auto negotiation (option to force 10 Mb/s for legacy systems)
Duplex Mode	Full or half-duplex auto-negotiation and N-Way support
Max. Forward Rate	14,880 packets per second (pps) @ 10 Mb/s, 148,800 pps @ 100 Mb/s
Fiber Connector	Multimode
Fiber Working Range	TBD
Optical Budget	TBD
Optical Wavelength	Multimode
Emissions	Complies with FCC Class A and CE Class A
Safety	UL, CE
Temperature Range	-40° - 85°C with humidity 10% to 90% non-condensing
Dimensions	Ø 2.0" (51 mm) X 7.7" (195 mm) from cap to cap Ø 2.0" (51 mm) X 6.6" (168 mm) X 7.6" (194 mm) for 90 assembly
Power Consumption	TBD
Power	5VDC
Qualification	Complies with MIL-STD-810D environmental requirements

LC Connectors

One-Piece LC Connector Product Facts

- Singlemode Telecordia GR-326 tested (Report #501-652)
- Multimode TIA/EIA 568-B.3 tested
- Singlemode and Multimode are compatible with both anaerobic adhesives and heat cure epoxy adhesives
- Universal Connector Body
 - Common body for simplex or duplex
 - Common body for jumper or buffer applications
 - Fewer parts to inventory
- Duplex Clip
 - Field installable
 - Makes simplex assemblies duplex
 - Correct polarity errors
 - Used for both jumpers and buffered fiber applications
- One-Piece Body
 - Improved rigidity
 - Improved side-load strength



- Color coded to comply with 568 C
 - Aqua for 50/125 laser optimized
 - Black for standard 50/125
 - Beige for 62.5/125
 - Blue for singlemode
 - Widened Thumb Latch
 - Increased hit area
 - Increased bend strength
 - Ramped front latch for snag resistance
 - Diamond Knurled Crimp Body
 - Increased tensile proof strength
 - Identical to Tyco Electronics' SC/FC design
- Performance Characteristics**
 Insertion Loss — 0.2 dB Typical
 Reflectance — -55 dB Typical
 Operating Temperature — -40°C to +75°C
 Durability — 500 Cycles

LC Connector Kits

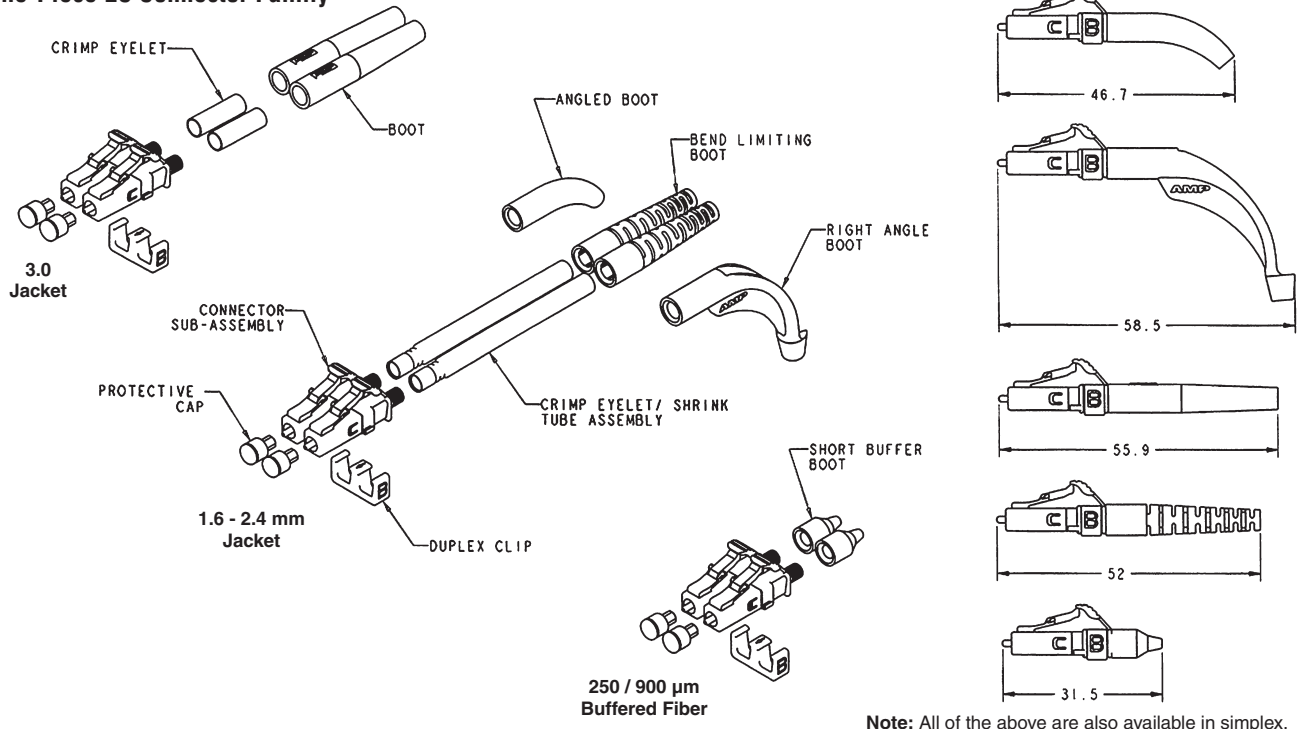
Description	Fiber Type	Housing Color	Boot Color	Used with	Individual Pack Part Number	Bulk Pack Part Number
Simplex	Singlemode	Blue	Blue	900 µm Buffered	1918384-1	1918384-2
				1.6-2.0 mm Jacketed	1918266-1	1918266-2
				3.0 mm Jacketed	1918374-1	1918374-2
				900 µm Buffered	1918385-3	1918385-5
				1.6-2.0 mm Jacketed	1918267-3	1918267-5
				3.0 mm Jacketed	1918375-3	1918375-5
	Multimode	Beige	Black	900 µm Buffered	1918385-4	1918385-6
				1.6-2.0 mm Jacketed	1918267-4	1918267-6
				3.0 mm Jacketed	1918375-4	1918375-6
				900 µm Buffered	1918385-1	1918385-2
				1.6-2.0 mm Jacketed	1918267-1	1918267-2
				3.0 mm Jacketed	1918375-1	1918375-2
Duplex	Singlemode	Blue	Blue	900 µm Buffered	1918387-1	1918387-2
				1.6-2.0 mm Jacketed	1918372-1	1918372-2
				3.0 mm Jacketed	1918376-1	1918376-2
				900 µm Buffered	1918388-3	1918388-5
				1.6-2.0 mm Jacketed	1918373-3	1918373-5
				3.0 mm Jacketed	1918377-3	1918377-5
	Multimode	Beige	Black	900 µm Buffered	1918388-4	1918388-6
				1.6-2.0 mm Jacketed	1918373-4	1918373-6
				3.0 mm Jacketed	1918377-4	1918377-6
				900 µm Buffered	1918388-1	1918388-2
				1.6-2.0 mm Jacketed	1918373-1	1918373-2
				3.0 mm Jacketed	1918377-1	1918377-2
Duplex Clip	For use with Simplex Kits	Black	—	—	1754371-1	—

Note: All part numbers are RoHS compliant.



LC Connectors (Continued)

One-Piece LC Connector Family



Note: All of the above are also available in simplex.

LC Connector Component Selection Chart (bulk packaged)

Fiber Type	Simplex Connector Assembly & Dust Cap	Duplex Clip	Cable Size	Crimp Eyelet with Heat Shrink	Crimp Eyelet	Strain Relief Description	Strain Relief Part Number (see chart below)
Singlemode (blue hsg.)	1828456-1	1754371-1	1.6-2.0 mm	6374150-1	—	Straight/Bend Limiting	1588153-X
			1.6-2.0 mm	6374150-1	—	Angled	1374737-X
			1.6-2.0 mm	6374150-1	—	50 Degree Angle	6457543-X
			2.4 mm	6588189-1	—	Straight/Bend Limiting	1588153-X
			2.4 mm	6588189-1	—	Angled	1374737-X
			2.4 mm	6588189-1	—	50 Degree Angle	6457543-X
			3.0 mm	—	5504118-3	Straight	502716-X
			900 µm	—	—	900 µm Buffer, 10 mm	6588612-X
			1.6-2.0 mm	6374150-1	—	Straight/Bend Limiting	1588153-X
			1.6-2.0 mm	6374150-1	—	Angled	1374737-X
Multimode (beige hsg.)	1754625-1	1754371-1	1.6-2.0 mm	6374150-1	—	50 Degree Angle	6457543-X
			2.4 mm	6588189-1	—	Straight/Bend Limiting	1588153-X
			2.4 mm	6588189-1	—	Angled	1374737-X
			2.4 mm	6588189-1	—	50 Degree Angle	6457543-X
			3.0 mm	—	5504118-3	Straight	502716-X
			900 µm	—	—	900 µm Buffer, 10 mm	6588612-X



Crimp Tool Dieset only - 1588175-1
Crimp Tool with Dieset - 1588176-1
Instruction Sheet: 408-8675
<http://www.tycoelectronics.com/documents>

Termination Kit - 1754462-1
Upgrade Kit for Anaerobic terminations - 1754603-1

Strain Relief Color

Base Part Number	Beige	Blue	Black	Red	Aqua
1588153	-5	-2	-3	—	-8
1374737	-2	-1	-3	—	—
6457543	-1	-2	-4	—	—
502716	-3	-4	-1	-5	-11
6588612	-1	-2	-5	-4	-8

Note: All part numbers are RoHS compliant.

LC Connectors (Continued)

Tight Jacketed LC Connectors

Product Facts

- Multimode or singlemode
- Simplex or duplex
- Tested using MIL-PRF-85045/16 2.0 mm cable
- LC Commercial Item Description (CID) interim approval by the Naval Surface Warfare Center, Dahlgren Division

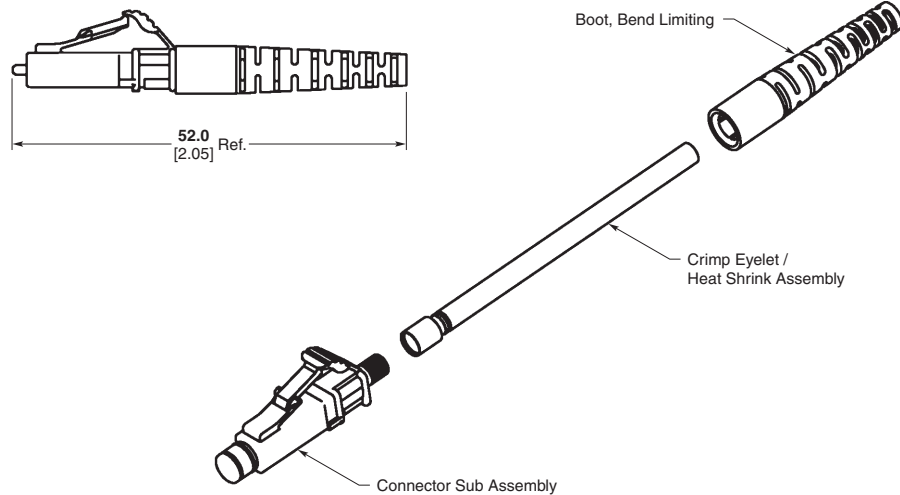
Application

- In Flight Networks
- Shipboard Applications
- Aero Market



The tight jacketed LC Connectors are non pull-proof versions of the standard connectors that are designed for use with tight construction cable. Unlike

standard connectors, this design allows the jacket and buffer to move together, reducing the chances of micro-bends and fiber breakage.



Fiber Type	Kit Part Number	Description
Singlemode (blue body & straight boot)	6828095-X	Simplex, 1.6–2.0 mm
	6828130-X	Duplex, 1.6–2.0 mm
	1918228-X	Simplex, 2.4 mm
Multimode (beige body & straight boot)	6828094-X	Simplex, 1.6–2.0 mm
	6828129-X	Duplex, 1.6–2.0 mm
	1918153-X	Simplex, 2.4 mm

Note: X = -1 for individual package, -2 for bulk package.
Instruction Sheet 408-10014. See <http://www.tycoelectronics.com/documents>.
Duplex Clip Available (Part Number 1754371-1).

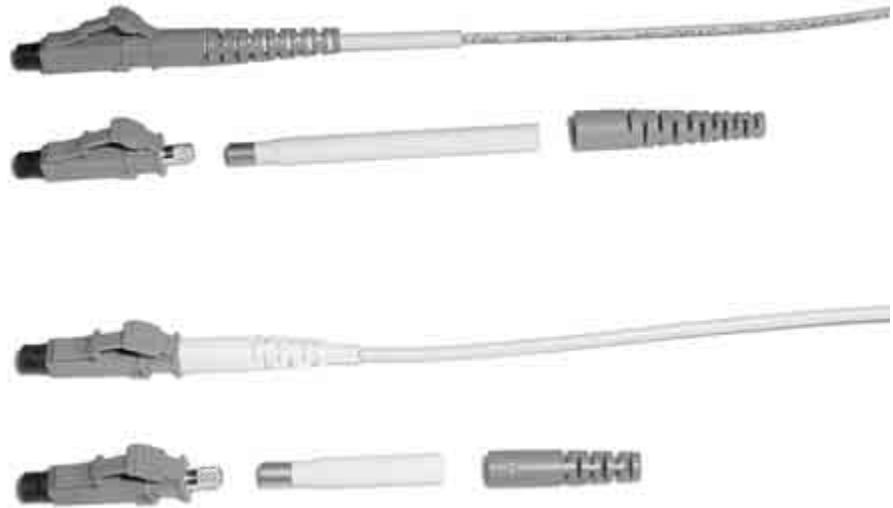
Note: All part numbers are RoHS compliant.



Short Boot LC Connector

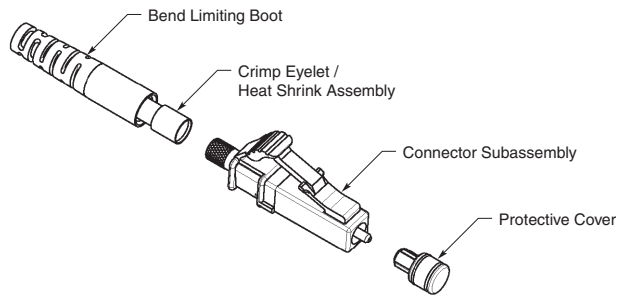
Product Facts

- Overall LC connector length 42.5 mm (compares to 52 mm standard product)
- Multimode or singlemode
- Simplex or duplex
- Anti-snag rear connector latch
- For 1.6 mm to 2.4 mm cable
- GR-326 Small Form-Factor Performance Requirements



The short boot LC connector provides GR-326 level performance while reducing ferrule tip to boot length to 42.5 mm. The 20% reduction in length is ideal for

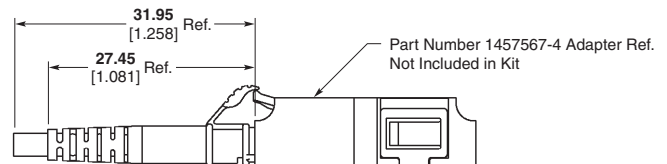
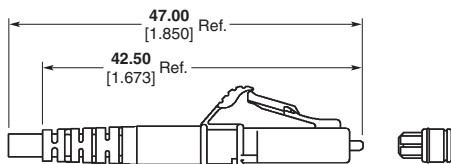
installing in cabinets or other enclosed spaces, protecting against potential mechanical damage from closed cabinet doors.



Fiber Type	Kit Part Number	Description
Singlemode (blue body & straight blue boot)	1918407-X	Simplex, 1.6-2.0 mm
	1918406-X	Duplex, 1.6-2.0 mm
Multimode (beige body & straight beige boot)	1918405-X	Simplex, 1.6-2.0 mm
	1918404-X	Duplex, 1.6-2.0 mm

Note: X = -1 for individual package, -2 for bulk package

The boot (1918403-X) is also sold separately, for use with any Tyco Electronics LC connector.



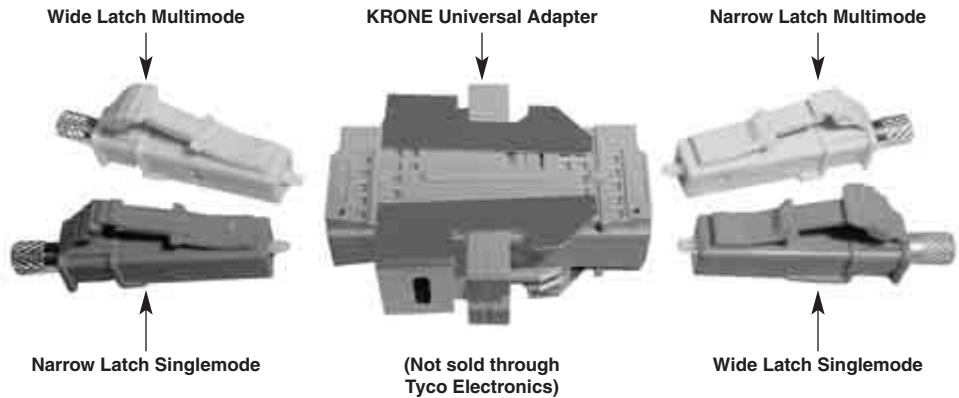
Note: All part numbers are RoHS compliant.

LC Connectors (Continued)

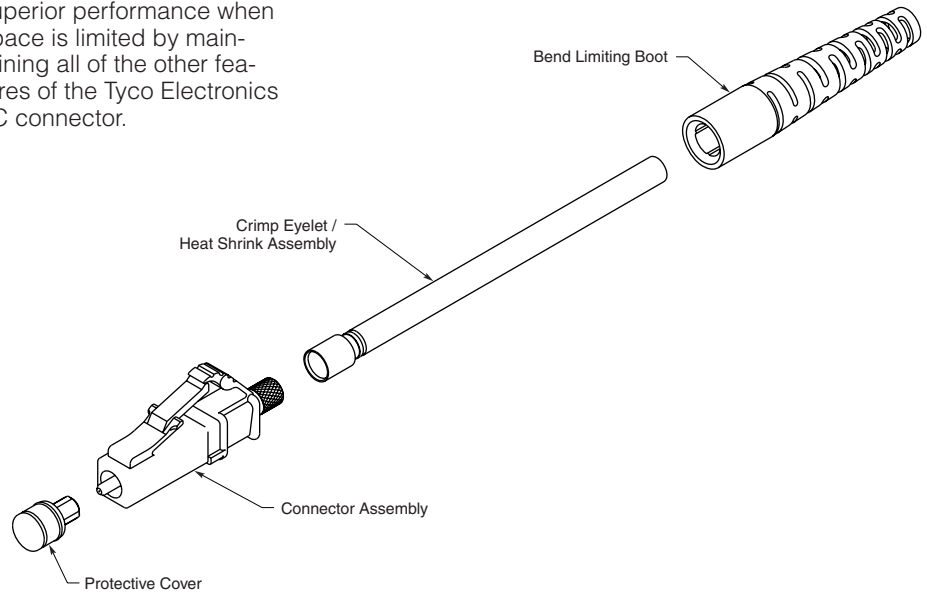


Narrow Latch LC Connector
Product Facts

- One-piece housing
- Reduced thumb latch for tight interconnections
- Mates with Krone universal 1.25 mm adapter
- Multimode or singlemode
- Duplex through use of clip (Part Number 1754371-1)
- Anti-snap rear connector latch
- Subassembly can be used with 900 μm to 3.0 mm cable
- GR-326 Small Form Factor Performance

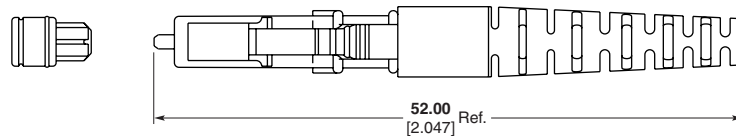


The reduced thumb latch on this connector provides superior performance when space is limited by maintaining all of the other features of the Tyco Electronics LC connector.



Fiber Type	Kit Part Number	Description
Singlemode (Blue Body & Straight Blue Boot)	1918538-X	Simplex, 1.6-2.0 mm
Multimode (Beige Body & Straight Beige Boot)	1918539-X	Simplex, 1.6-2.0 mm

Note: X = -1 for individual package, -2 for bulk package



KRONE is a trademark of KRONE Optical Systems, Inc.

Note: All part numbers are RoHS compliant.

LC Connectors (Continued)



LC/SC Flexible Boot

Product Facts

- Compatible with any Tyco Electronics LC Connector
- Compatible with Tyco Electronics SC Part Numbers 6588714-3 and 6588715-5
- Controls cable radius in limited space environments
- For use with 1.6 to 2.4 mm multimode or singlemode cable
- Requires crimp eyelet with heat shrink (Part Number 6374150-X or 6588189-1)



Base Part Number	Beige	Blue	Black	Red
1918003	-5	-2	-3	—



LC/SC 900 µm GR-326 Style Boot

Product Facts

- Compatible with any Tyco Electronics LC Connector
- Compatible with Tyco Electronics SC parts 6588714-3 and 6588715-5
- Provides bend limiting support
- For use with 900 µm multimode or singlemode fiber



Base Part Number	Beige	Blue	Black	Green
1828184	-4	-1	-2	-3

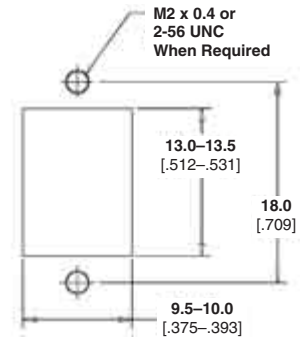
Note: All part numbers are RoHS compliant.

LC Adapters

LC Duplex Adapter for SC Cutout — Plastic



Alignment Sleeve Material	Description	Housing Color	Part Numbers
Metal	Flanged	Beige	6457567-8
		Black	2-6457567-1
		Aqua	2-6457567-0
	Flangeless	Beige	1-6457567-3
		Black	6457567-7
		Aqua	1-6457567-8
Ceramic	Flanged	Beige	6457567-5
		Black	1-6457567-7
		Aqua	1-6457567-6
	Flangeless	Blue	6457567-4
		Green	6457567-6
		Beige	6457567-2
	Flangeless	Black	1-6457567-5
		Aqua	1-6457567-4
		Blue	6457567-1
		Green	6457567-3

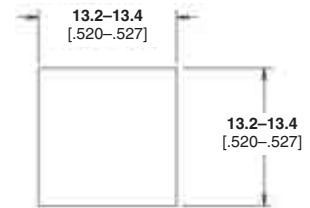


Recommended Panel Cutout
Max. Panel Thk. 1.70 [.067]



LC Duplex Adapter for LC Cutout — Plastic

Alignment Sleeve Material	Description	Housing Color	Part Numbers
Metal	Duplex Sr-Jr	Beige	1985150-4
		Blue	1985150-3
	Duplex Sr-Sr	Beige	1985149-4
		Blue	1985149-3
Ceramic	Duplex Sr-Jr	Beige	1985150-2
		Blue	1985150-1
	Duplex Sr-Sr	Beige	1985149-2
		Blue	1985149-1

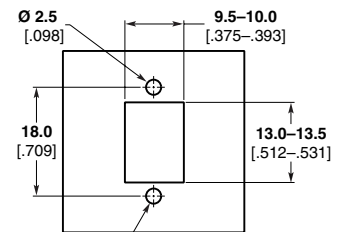


Recommended Panel Cutout
Panel Thk. 1.2/1.7 [.047/.067]



LC Adapter for SC Cutout — Metal

Alignment Sleeve Material	Description	Housing Color	Part Numbers
Ceramic	Flanged	Electroless Nickel	1754683-1
	Flangeless		1754682-1
	Flangeless w/ EMI Shielding		1754727-1

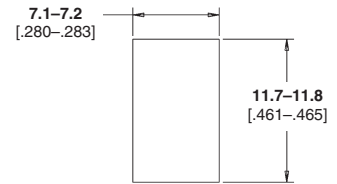


Recommended Panel Cutout
Panel Thk. 1.2/1.7 [.047/.067]



LC Simplex Adapter — Plastic

Alignment Sleeve Material	Description	Housing Color	Part Numbers
Ceramic	Simplex Adapter	Beige	1457062-2
		Blue	1457062-1



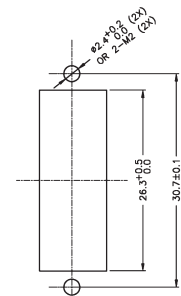
Recommended Panel Cutout
Panel Thk. 1.2/1.7 [.047/.067]



LC Quad Adapter — Plastic Flanged

Alignment Sleeve Material	Description	Housing Color	Part Numbers
Metal	Flanged	Beige	1695790-5
Ceramic	Flanged	Blue	1695790-4

Note: All part numbers are RoHS compliant.



Recommended Panel Cutout
Max. Panel Thk. 1.7 [.067]

MU High Density Connectors

Product Facts

- Singlemode and multimode product range
- For digital network applications PC end face available on both singlemode and multimode connectors
- For analog network applications, APC end face available on singlemode connectors (8°)
- Connector design uses 1.25 mm ceramic ferrule technology
- Polarized for precise insertion
- Factory terminated cable assemblies
- LSZH sheathed cable available
- High optical performance (low insertion, high return loss)
- High density (up to 8 lines per module)

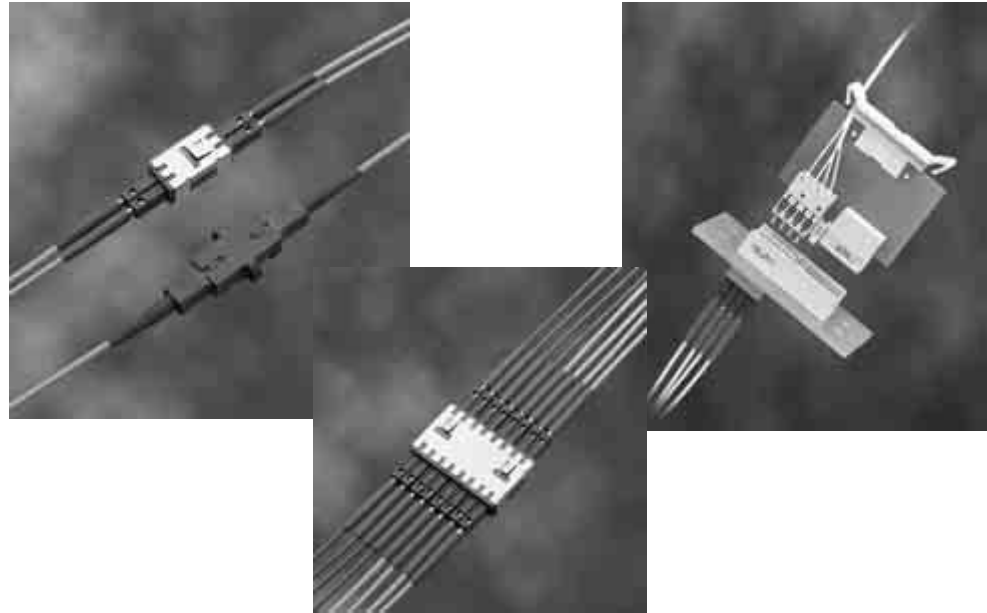
Performance Characteristics

- Insertion Loss** — 0.1 dB Typical
- Reflectance** — -55 dB Typical
- Operating Temperature** — -25°C to +75°C
- Durability** — 500 Cycles

Key Applications

Front Panel I/O and High Density Patch Panels for Optical Transmission Equipment, Optical Distribution Frames and Optical Network Units.

- Full range of simplex, duplex and 8 position bulkhead adapters
- Color coded adapters for ease of identification
- Tuneable versions available to achieve lower insertion losses
- “Push-pull” type latching mechanism



Tyco Electronics' MU high density fiber optic interconnection system offers a solution for high performance telecommunications networking.

The system centers around the fully standardized MU connector, which is also sometimes known as the Mini SC. The MU connector is at least half the size of the standard SC connector. It can offer twice the port density but all the optical performance of traditional fiber optic connectors.

Featuring a similar latching mechanism to the SC connector, the MU is just as easy to connect and disconnect.

The MU system includes a complete range of multimode and singlemode pre-terminated cable assemblies; bulkhead adapters; backplane housings; system card housings; connector kits; termination tooling and customer polishing processes.

- Fully compliant with relevant IEC standards (IEC 60874-1, CECC 86 305 801)
- Exceeds ETSI performance requirements (ETSI Grade P)

Back Panel I/O in Optical Transmission and Switching Equipment

- 8 position Type L optical modules available
- 2.0 mm misalignment pickup tolerance during mating
- Zero force on backplane when fully mated

Description	Part Number
FOKIT MU SM PC 0.9 125/1.0	1348982-1 ♦
FOKIT MU SM PC 0.9 126/1.0	1348982-2 ♦
FOKIT MU SM PC 125 μm, 2.0 mm	106875-1 ♦
FOKIT MU SM PC 126 μm, 2.0 mm	106875-2 ♦

Note: Part Numbers are RoHS compliant except: ♦ Indicates non-RoHS compliant.

- Zero tensile load on daughter card when fully mated
- Constant mating force during 2.5 mm free float
- Fully compliant with IEC 60917 and IEC 61076-4-101

MU Standards Compliance

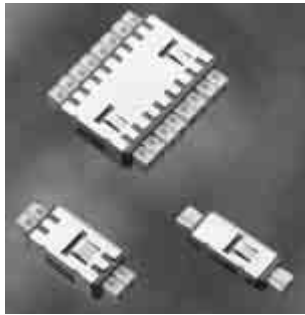
Product range — MU cable assembly

Applicable standards — IEC 60874-1
CECC 86 305 801 (MU-APC)
I-ETS 300 671
IEC 61300

Product range — Z-PACK 2 mm HM Product

Applicable standards — IEC 60917
IEC 61076-4-101

MU High Density Connectors (Continued)



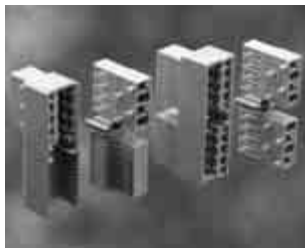
MU Bulkhead Adapter

The MU bulkhead adapter is designed to help save valuable panel space in high density applications. The adapter enables the interconnection of two MU connectors and features a 1.25 mm ceramic alignment sleeve to ensure precise fiber alignment and low insertion loss, both during and after the interconnection process.

The MU bulkhead adapter is available in PC and APC versions for both digital and ana-

log network applications. It is also available in a choice of simplex, duplex and 8 position versions.

Description	Part Number
PC finish	
Simplex MU Adapter	233263-1 ♦
Duplex MU Adapter	233263-3 ♦
Duplex MU Adapter with SC cut-out	1348840-2
APC finish	
Duplex MU Adapter with SC cut-out	1348840-1



Z-PACK 2 mm HM¹ Type L and M Connector Housings

Z-PACK 2 mm HM connector housings offer a solution to the demand for discrete fiber lines, allowing single disconnects and routing on the backplane.

The 8 position Type L connector housing is fully optical and can accommodate up to 8 fiber lines. These connector housings are available in female configurations and are designed for use on the system card.

The hybrid Type M connector housing combines optical and electrical contacts in one housing, with 55 signal contact positions and 4 fiber optic lines. It allows easy migration from combined optical / electrical to full optical backplane

inter-connections. Female Type M connector housings are suitable for use on the system card while male Type M connector housings are designed for back panel application.

Tyco Electronics also designs and manufactures a range of MT based fiber optic backplane connectors, LIGHTRAY MPX fiber optic backplane connectors. For further information, see Cable Assemblies & Backplane Interconnects Section 2, pages 137-151.

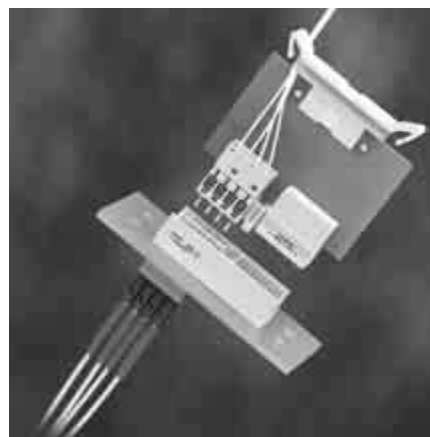
Description	Part Number
Type L	
Male	106743-1 ♦
Female	106744-1

¹HM : Hard Metric

MU Backplanes

Product Facts

- Complies to IEC 60917 and IEC 61076-4-101
- Constant mating force during 2.5 mm free float
- Zero tensile load on system card and backplane when fully mated
- Low insertion / extraction forces
- Scalable system allows easy implementation of future upgrades
- Low loss
- High return loss
- APC versions available
- Float in all directions (including x and y)
- Misalignment pick up tolerances 2.0 horizontal, 2.5 mm vertical, and 2 degrees angular



Description	Part Number
2 Position	
Backplane Housing (includes mounting bracket)	1391160-1 ♦
Systemcard Housing	1391095-1
4 Position	
Backplane Housing (includes mounting bracket)	1391161-1 ♦
Systemcard Housing	1391094-1

Note: Future product extensions planned: 6 position and 8 position versions. Please contact your local Sales Engineer for additional information.

Note: Part Numbers are RoHS compliant except: ♦ Indicates non-RoHS compliant.

Product Facts

- One-piece connector body:
 - Fastest assembly
 - Field installable
 - Anaerobic adhesive compatible
- Compliant with
 - JIS C-5973
 - Fibre Channel
 - TIA FOCIS-3
- Pre-radiused ceramic ferrules
- For 125 µm cladding diameter
- Instruction Sheet 408-8674 <http://www.tycoelectronics.com/documents>
- Color coded to comply with 568C
 - Aqua for 50/125 laser optimized
 - Black for standard 50/125
 - Beige for 62.5/125
 - Blue for singlemode

Performance Characteristics for Singlemode SC Connector Kits — Polymer Crimp Body

- Insertion Loss — <0.2 dB Typical
- Return Loss — <-55 dB Typical
- Durability — 200 Cycles

Performance Characteristics for GR-326 Style Product

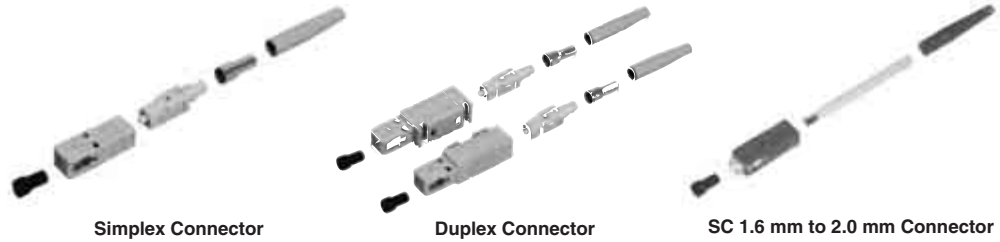
- Insertion Loss — <0.2 dB Typical
- Return Loss — <-59 dB Typical
- Durability — 200 Cycles
- Tested to GR-326 (Test Report 501-584)
- Tunable — 6 positions

Performance Characteristics for Multimode SC Connector Kits

- Insertion Loss — <0.2 dB Typical
- Durability — 500 Cycles
- TIA 586B Compliant

Note: All part numbers are RoHS compliant.

SC Connectors



Singlemode SC Connector Kits — Polymer Crimp Body

Description	Housing Color	Boot Color	Used With	Part Numbers		
				Individual Pack	Bulk Pack	Crimp Tool
Simplex	Blue	Blue	900 µm Buffered, 3.0 mm Jacketed	5504646-7	—	503911-1
			3.0 mm Jacketed	5504646-1	5504646-2	503911-1
			2.4 mm Jacketed	5504933-2	5504933-4	492026-1
			2.0 mm Jacketed	5503934-2	5503934-3	492026-1
Duplex	Blue	Blue	900 µm Buffer	5492123-1	5492123-2	N/A
			3.0 mm Jacketed	5504655-1	5504655-2	503911-1
			2.0 mm Jacketed	5504936-2	—	492026-1

GR-326 Style Singlemode SC Connector Kits — Metal Crimp Body

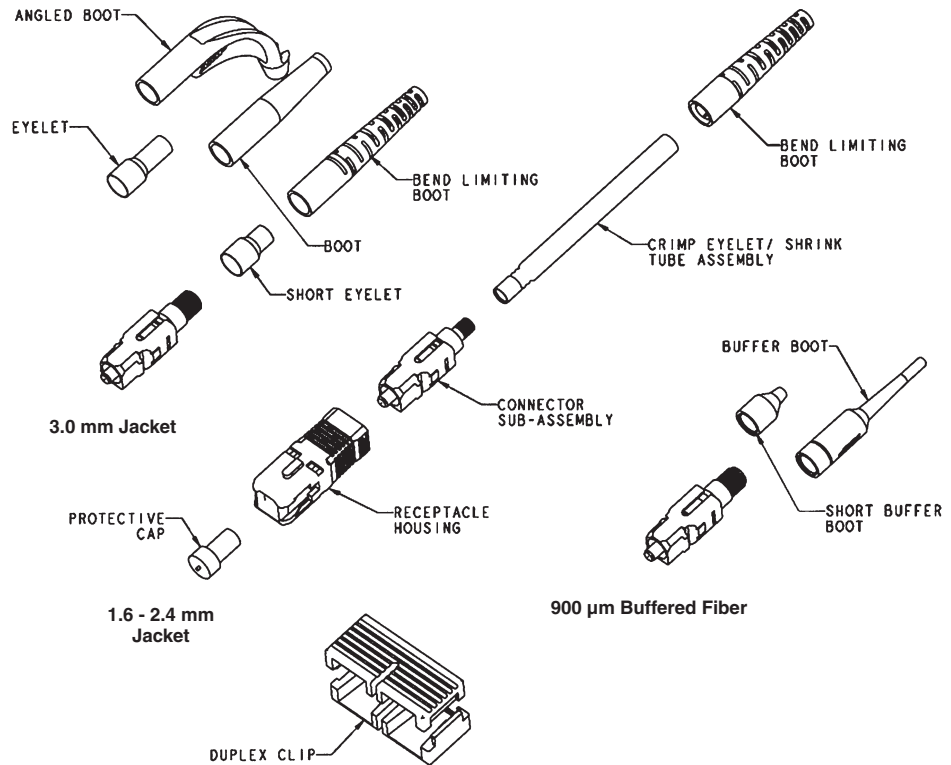
Description	Housing Color	Boot Color	Used With	Part Numbers		
				Individual Pack	Bulk Pack	Crimp Tool
Simplex	Blue	Blue	3.0 mm Jacketed	4-1918861-5	—	(1) 492131-1 (1) 58532-1
			2.4 mm Jacketed	6588714-5	6588714-6	1588176-1
			2.0 mm Jacketed	6588714-1	6588714-4	1588176-1
Duplex	Blue	Blue	2.4 mm Jacketed	6693776-5	6693776-6	1588176-1
			2.0 mm Jacketed	6693776-1	6693776-2	1588176-1

Multimode SC Connector Kits

Description	Housing Color	Boot Color	Used With	Part Numbers		
				Individual Pack	Bulk Pack	Crimp Tool
Simplex	Beige	Aqua	900 µm Buffered, 3.0 mm Jacketed	1-5503948-1	—	503911-1
			3.0 mm Jacketed	1-5503948-0	—	503911-1
			2.0 mm Jacketed	5504931-5	—	492026-1
			900 µm Buffer	5504932-5	—	N/A
			900 µm Buffered, 3.0 mm Jacketed	1-5503948-2	—	503911-1
	Beige	Black	3.0 mm Jacketed	1-5503948-3	5503948-8	503911-1
			2.0 mm Jacketed	5504931-6	5504931-3	492026-1
			900 µm Buffer	5504932-1	5504932-2	N/A
			900 µm Buffered, 3.0 mm Jacketed	5503948-5	—	503911-1
			3.0 mm Jacketed	5503948-1	5503948-2	503911-1
Duplex	Beige	Beige	2.4 mm Jacketed	5504930-1	5504930-2	492026-1
			2.0 mm Jacketed	5504931-1	—	492026-1
			900 µm Buffer	5504932-6	—	N/A
			3.0 mm Jacketed	5504657-8	—	503911-1
			2.0 mm Jacketed	5504928-3	—	492026-1
	Beige	Aqua	3.0 mm Jacketed	5504657-9	—	503911-1
			2.0 mm Jacketed	5504928-4	—	492026-1
			3.0 mm Jacketed	5504657-1	5504657-2	503911-1
			2.4 mm Jacketed	5504927-1	5504927-2	492026-1
			2.0 mm Jacketed	5504928-1	—	492026-1

SC Connectors (Continued)

SC Connector Components



SC Duplex Clip (Black)
Part Number 6348522-1

Use 2 pieces to duplex
simplex housings



SC Connector Component Selection Chart (bulk packaged)

Fiber Type	Simplex Connector Sub-Assembly	Duplex Clip*	Cable Size	Crimp Eyelet w/ Heat Shrink	Crimp Eyelet	Strain Relief Part Number**
Singlemode - GR-326 Style	6457215-5	(2) 6348522-1	3.0 mm	—	504973-3	1588491-X
			2.4 mm	6588189-1	—	1588153-X
	6588714-3	(2) 6348522-1	1.6-2.0 mm	6374150-2	—	1588153-X
			900 µm	—	—	1828184-X
Singlemode - Polymer Crimp Body	5492123-7	(2) 6348522-1	3.0 mm	—	503970-3	5503971-X
			2.4 mm	—	503970-6	5503971-X
	—	—	2.0 mm	—	503970-9	5503971-X
			900 µm	—	—	6457493-X (long) 6278309-X (short)
Multimode - Metal Crimp Body (Ceramic Ferrule)	6588715-5	(2) 6348522-1	2.4 mm	6588189-1	—	1588153-X
			1.6-2.0 mm	6374150-2	—	1588153-X
			900 µm	—	—	1828184-X
Multimode - Polymer Crimp Body (Ceramic Ferrule)	5503948-7	(2) 6348522-1	3.0 mm	—	503970-3	5503971-X
			2.4 mm	—	503970-6	5503971-X
	—	—	2.0 mm	—	503970-9	5503971-X
			900 µm	—	—	6457493-X (long) 6278309-X (short)

* For Fibre Channel compliant assemblies, use one (1) piece each of Part Number 503487-Y and 503488-Y. (Dash refers to color — refer to customer drawing for details).

** Strain relief dash number indicates color - see page 55 for details.

Note: All part numbers are RoHS compliant.

SC Connectors (Continued)



3.0 mm - GR-326 Style



3.0 mm Angled



900 µm Short



900 µm



GR-326 Style 900 µm

SC Strain Reliefs — Jacketed Cable

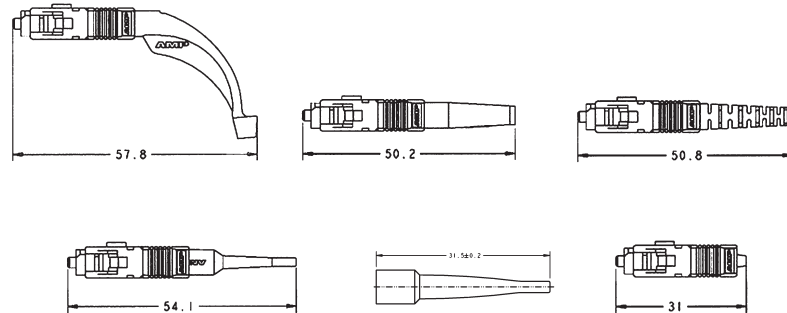
Description	GR-326 Style	Part Number			
		Color			
		Black	Red	Beige	Blue
3.0 mm	No	1-5503971-0	1-5503971-1	5503971-1	5503971-2
2.4 mm	No	1-5503971-2	1-5503971-3	5503971-3	5503971-4
2.0 mm	No	2-5503971-3	2-5503971-7	5503971-5	5503971-6
3.0 mm	Yes	—	—	—	1588491-2
1.6 mm - 2.4 mm	Yes	1588153-3	—	1588153-5	1588153-2

SC Strain Reliefs — Angled

Description		Part Number		
		Color		
		Black	Beige	Blue
3.0 mm	Simplex	1278705-3	1278705-2	1278705-1
2.0 mm	Simplex	1374737-3	1374737-2	1374737-1
2.0 mm	45° Simplex	6457543-4	6457543-1	6457543-2

SC Strain Reliefs — 900 micron

Description	Part Number		
	Color		
	Black	Beige	Blue
Long (33 mm) 900 µm	6457493-3	6457493-9	6457493-1
Short (10 mm) 900 µm	6278309-1	—	6278309-2
GR-326 Style 900 µm	1828184-2	1828184-4	1828184-1



SC Low Loss Loopback Connector

Part Number 5503141-1

Product Facts

- 62.5/125 Multimode
- Use for Equipment Testing
- 0.6 dB Insertion Loss
- 0.5" Ferrule Centerline

Part Number 5503141-2

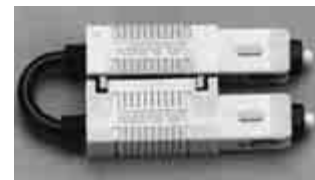
Product Facts

- 50/125 Multimode
- Use for Equipment Testing
- 0.8 dB Insertion Loss
- 0.5" Ferrule Centerline

Part Number 5504883-1

Product Facts

- Singlemode
- Use for Equipment Testing
- 1.5 dB Insertion Loss
- 0.5" Ferrule Centerline



Note: All part numbers are RoHS compliant.

SC Connectors (Continued)

Tight Jacketed SC Connectors

Product Facts

- Multimode or singlemode
- Simplex or duplex
- Tested using MIL-PRF-85045/16 2.0 mm cable
- SC Commercial Item Description (CID) interim approval by Naval Surface Warfare Center, Dahlgren Division

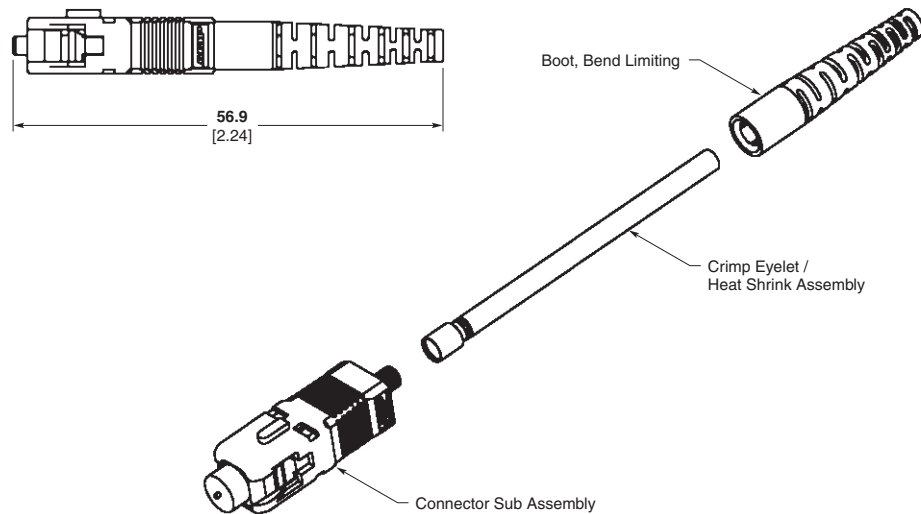
Application

- In Flight Networks
- Shipboard Applications
- Aero Market



The tight jacketed SC Connectors are non pull-proof versions of the standard connectors that are designed for use with tight construction cable. Unlike

standard connectors, this design allows the jacket and buffer to move together, reducing the chances of micro-bends and fiber breakage.



Tight Jacketed SC Connector Kits

Fiber Type	Kit Part Number	Description
Singlemode (blue body & straight boot)	6828100-X	Simplex, 1.6–2.0 mm
	1828573-X	Duplex, 1.6–2.0 mm
	1918227-X	Simplex, 2.4 mm
Multimode (beige body & straight boot)	6828099-X	Simplex, 1.6–2.0 mm
	1828574-X	Duplex, 1.6–2.0 mm
	1918154-X	Simplex, 2.4 mm

Note: X = -1 for individual package, -2 for bulk package. Instruction Sheet 408-10015. See <http://www.tycoelectronics.com/documents>.

Note: All part numbers are RoHS compliant.

SC Connectors (Continued)

SC Adapters

Product Facts

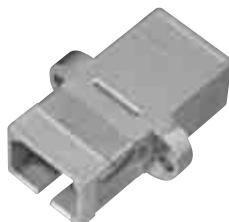
- Suitable for any SC connector
- Available with metal or ceramic alignment sleeves
- Choice of housing materials and colors
- Color coded to comply with 568C
 - Aqua for 50/125 laser optimized
 - Black for standard 50/125
 - Beige for 62.5/125
 - Blue for singlemode
- Duplex adapters accept two simplex connectors or one duplex connector
- Assortment of hybrid configurations available
- Mounting screws available
Part Number 503663-1
- Slide-on cover available
- EMI gasketed parts available



SC Simplex Adapter - Plastic



Flangeless SC Simplex Adapter - Plastic



SC Simplex Adapter - Metal



Flangeless SC Simplex Adapter - Metal



SC Duplex Adapter - Plastic

Note: All part numbers are RoHS compliant.

SC Simplex Adapter - Plastic

Alignment Sleeve Material/Application	Housing Color	Part Numbers
Metal/MM only	Beige	5504614-1
	Black	5504614-3
	Aqua	5504614-4
Metal	Beige	5502632-9
	Black	5502632-7
	Aqua	2-5502632-3
	Blue	5502632-8
Ceramic	Beige	1-5502632-2
	Black	1-5502632-0
	Aqua	2-5502632-4
	Blue	1-5502632-1
Ceramic/APC	Green	1828028-2

Flangeless SC Simplex Adapter - Plastic

Alignment Sleeve Material	Housing Color	Part Numbers
Metal	Black	5504632-1
	Blue	5504632-3
Ceramic	Black	5504632-2
	Aqua	5504632-6
	Blue	5504632-4
	Green	5504632-5

SC Simplex Adapter - Metal

Alignment Sleeve Material	Housing Color	Part Numbers
Metal	Electroless Nickel	6278348-1
Ceramic	Electroless Nickel	6278348-3

Flangeless SC Simplex Adapter - Metal

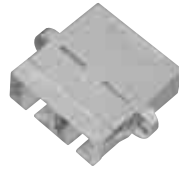
Alignment Sleeve Material	Housing Color	Part Numbers
Metal	Electroless Nickel	6278348-5
Ceramic	Electroless Nickel	6278348-7

SC Duplex Adapter - Plastic

Alignment Sleeve Material/Application	Housing Color	Part Numbers
Metal/MM only	Beige	5504640-1
	Black	5504640-4
	Aqua	5504640-6
Metal	Beige	5502776-9
	Black	5502776-7
	Aqua	2-5502776-5
	Blue	5502776-8
Ceramic	Beige	1-5502776-2
	Black	1-5502776-0
	Aqua	2-5502776-6
	Blue	1-5502776-1
Ceramic/APC	Green	2-5502776-3

SC Connectors (Continued)

SC Adapters (Continued)



SC Duplex Adapter

SC Duplex Adapter - Metal

Alignment Sleeve Material	Housing Color	Part Numbers
Metal	Electroless Nickel	6278049-1
Ceramic	Electroless Nickel	6278049-3



SC Duplex Metal Adapter w/ EMI Shielding

Shielded SC Duplex Adapter - Metal

Alignment Sleeve Material	Housing Color	Part Numbers
Metal	Electroless Nickel	6374223-1
Ceramic	Electroless Nickel	6374223-3

- Designed to help prevent EMI leak
- Ideal for high-speed applications

SC to ST Hybrid Adapters



SC to ST Simplex Adapter - Plastic

SC to ST Simplex Adapter - Plastic

Alignment Sleeve Material	Housing Color	Part Numbers
Metal	Beige	5502780-3
	Black	5502780-1
	Aqua	2-5502780-0
	Blue	5502780-2
Ceramic	Beige	5502780-6
	Black	5502780-4
	Aqua	2-5502780-1
	Blue	5502780-5



SC to ST Simplex Adapter - Metal

SC to ST Simplex Adapter - Metal

Alignment Sleeve Material	Housing Color	Part Numbers
Metal	Electroless Nickel	6278350-1
Ceramic	Electroless Nickel	6278350-3

Note: All part numbers are RoHS compliant.



SC Connectors (Continued)

SC to ST Hybrid Adapters
(Continued)



Flangeless SC to ST Simplex Adapter - Metal

Flangeless SC to ST Simplex Adapter - Metal

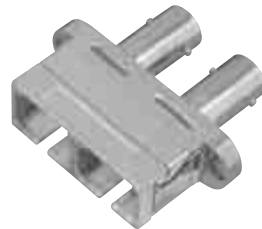
Alignment Sleeve Material	Housing Color	Part Numbers
Metal	Electroless Nickel	6278350-5
Ceramic	Electroless Nickel	6278350-7



SC to ST Duplex Adapter - Plastic

SC to ST Duplex Adapter - Plastic

Alignment Sleeve Material	Housing Color	Part Numbers
Metal (MM Only)	Beige	5504663-4
	Black	5504663-6
	Aqua	5504663-5
Metal	Beige	5503137-3
	Black	5503137-1
	Aqua	2-5503137-1
	Blue	5503137-2
Ceramic	Beige	5503137-6
	Black	5503137-4
	Aqua	1-5503137-9
	Blue	5503137-5



SC to ST Duplex Adapter - Metal

SC to ST Duplex Adapter - Metal

Alignment Sleeve Material	Housing Color	Part Numbers
Metal	Electroless Nickel	6278051-1
Ceramic	Electroless Nickel	6278051-3

Slide-on Retractable Cover for SC Simplex or Duplex Applications



The Tyco Electronics slide-on retractable cover is used for simplex or duplex SC applications. These retractable doors slip onto the end of existing Tyco Electronics adapters and can be mounted after the adapter has already been installed.

- 1693539-1** — Blue Simplex SC
- 1693539-2** — Beige Simplex SC
- 1693539-3** — Green Simplex SC
- 1693540-1** — Blue Duplex SC
- 1693540-3** — Green Duplex SC

Note: All part numbers are RoHS compliant.

ST Connectors — Epoxy Type

Product Facts

- Epoxy type connector
- Pre-radiused ceramic ferrule
- Available in bulk packages
- Crimp tool
Part Number 58433-4

Singlemode Ceramic

Performance Characteristics

Insertion Loss — 0.3 dB typical

Back Reflection — <-40 dB typical

Durability — 200 cycles

Materials

Ferrule Material — Ceramic

Body Material — Nickel Plated Brass

Coupling Nut Material —
Plated Die Cast

Ceramic



Singlemode ST Connector Kits — Ceramic Ferrule

Body	Coupling Nut	Boot Color	Used With	Individual Pack Part Number	Bulk Pack Part Number	IS Sheet
Nickel-plated Brass	Zinc	Yellow (900 µm)	900 µm and 250 µm Fibers	5503613-2	5503613-3	408-9645
	Zinc	Yellow (Bend-Limiting)	900 µm and 250 µm Fibers, 3.0 mm Cable	5502579-2	—	408-9645
	Zinc	Yellow (Short)	900 µm and 250 µm Fibers, 3.0 mm Cable	5502580-2	5502580-4	408-9645

Multimode Ceramic

Performance Characteristics

Insertion Loss — 0.3 dB typical

Durability — 500 cycles

Ceramic



Multimode ST Connector Kits — Ceramic Ferrule

Body	Coupling Nut	Boot Color	Used With	Individual Pack Part Number	Bulk Pack Part Number	IS Sheet
Polymer	Polymer	Black (Short)	3.0 mm Cable	—	503569-2	408-9971
		Black (Short)	900 µm Fiber, 3.0 mm Cable	503571-1	—	408-9971
		Black (Buffer)/ Black (Short)	900 µm and 250 µm Fibers, 2.4 mm & 3.0 mm Cable	5503571-3	—	408-9971
	Zinc	Black (Short)	3.0 mm Cable	503677-2	503677-1	408-9971
Nickel-plated Brass	Zinc	Black (Short)	3.0 mm Cable	—	5492458-2	408-9645
		Black (Buffer)/ Black (Short)	900 µm and 3.0 mm Cable	5492458-1	—	408-9645
		Black (Buffer)/ Black (Bend Limiting)	900 µm and 250 µm Fibers, 2.4 mm & 3.0 mm Cable	5501380-1	—	408-9645
		Black (Short)	2.4 mm & 3.0 mm Cable	1-5501380-6	2-5501380-0	408-9645
		Black (Right Angle)	900 µm and 250 µm Fibers, 2.4 mm & 3.0 mm Cable	5502674-1	—	408-9645

Note: All part numbers are RoHS compliant.

ST Connectors — Epoxy Type (Continued)

Polymer Composite

**Multimode
Polymer Composite**

Performance Characteristics

- Insertion Loss** — 0.3 dB Typical
- Durability** — 500 Cycles
- Crimp Tool** — Part Number 58433-4
- Instruction Sheet** — 408-9971
<http://www.tycoelectronics.com/documents>

Materials

- Ferrule** — Composite Polymer
- Body** — Polymer
- Coupling Nut** — Polymer



Multimode ST Connector Kits — Polymer Ferrule

Body	Coupling Nut	Boot Color	Used With	Individual Pack Part Number	Bulk Pack Part Number
Polymer	Polymer	Black (Buffer)/ Black (Short)	900 µm and 250 µm Fibers, 3.0 mm Cable	5503415-1	—
		Black (Short)	3.0 mm Cable	—	503424-3

Stainless Steel

**Multimode
Stainless Steel**

Performance Characteristics

- Insertion Loss** — 0.3 dB Typical
- Operating Temp. Range** —
-30°C to +70°C
- Durability** — 500 cycles
- Crimp Tool** — Part Number 58551-1
- Instruction Sheet** — 408-4151
<http://www.tycoelectronics.com/documents>

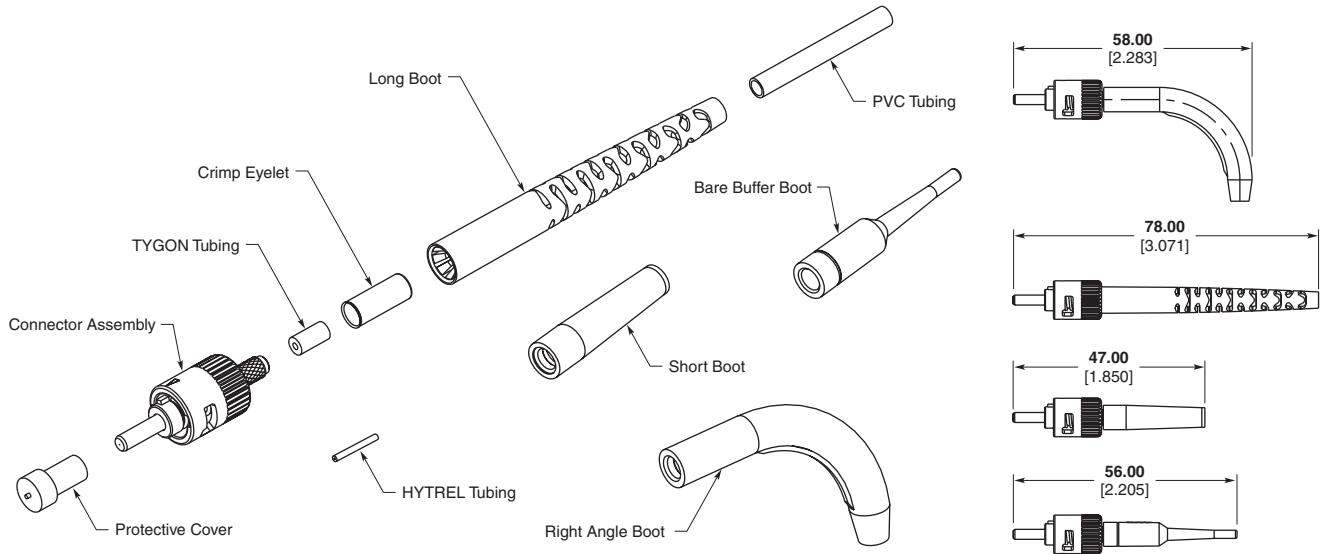


Multimode ST Connector Kits — Stainless Steel Ferrule

Body	Ferrule Designation	Boot Color	Used With	Part Number
Stainless Steel	125	Black (Bend Limiting)	3.0 mm Cable	5504008-3
		Black (Long)	4.3 mm Cable	5504008-4
	140	Black (Bend Limiting)	3.0 mm Cable	5504008-7
	231	Black (Bend Limiting)	3.0 mm Cable	1-5504008-4
	240	Black (Bend Limiting)	3.0 mm Cable	1-5504008-3
	280	Black (Short)	3.0 mm Cable	4-5504008-6

Note: All part numbers are RoHS compliant.

ST Connectors — Epoxy Type (Continued)



ST Connector Component Selection Chart (Bulk Packaged)

Fiber Type	Connector Sub-Assembly	Cable Size	Crimp Eyelet	Tubing	Strain Relief Part Number*
Singlemode - Ceramic Ferrule Metal Body, Metal Nut	5502578-2	1.6-2.0 mm	501971-3	5501275-2	503219-X
		2.4 mm	501971-3	5501275-1	502128-X
		2.4 mm	501971-3	5501275-1	501457-X
		3.0 mm	501971-3	—	502128-X
		3.0 mm	501971-3	—	501457-X
Multimode - Ceramic Ferrule Metal Body, Metal Nut	5492458-5	1.6-2.0 mm	501971-3	5501275-2	503219-X
		2.4 mm	501971-3	5501275-1	502128-X
		2.4 mm	501971-3	5501275-1	501457-X
		3.0 mm	501971-3	—	502128-X
		3.0 mm	501971-3	—	501457-X
Multimode - Ceramic Ferrule Metal Body, Polymer Nut	5501458-8	1.6-2.0 mm	501971-3	5501275-2	503219-X
		2.4 mm	501971-3	5501275-1	502128-X
		2.4 mm	501971-3	5501275-1	501457-X
		3.0 mm	501971-3	—	502128-X
		3.0 mm	501971-3	—	501457-X
Multimode - Ceramic Ferrule Polymer Body, Metal Nut	503676-5	1.6-2.0 mm	501971-3	5501275-2	503219-X
		2.4 mm	501971-3	5501275-1	502128-X
		2.4 mm	501971-3	5501275-1	501457-X
		3.0 mm	501971-3	—	502128-X
		3.0 mm	501971-3	—	501457-X
Multimode - Ceramic Ferrule Polymer Body, Polymer Nut	503676-4	1.6-2.0 mm	501971-3	5501275-2	503219-X
		2.4 mm	501971-3	5501275-1	502128-X
		2.4 mm	501971-3	5501275-1	501457-X
		3.0 mm	501971-3	—	502128-X
		3.0 mm	501971-3	—	501457-X
		900 μm	501971-3	502179-7	5503628-X

* Strain relief dash number indicates color - see chart on page 63 for details.

TYGON is a trademark of Saint-Gobain Performance Plastics Corporation.
HYTREL is a trademark of E.I. du Pont de Nemours and Company.

Note: All part numbers are RoHS compliant.

ST Connectors — Epoxy Type (Continued)



Bend Limiting

Short

Right Angle

Buffer

Bend Limiting

Strain Relief Bulk packages (100 pcs./package)

Color	Bend Limiting	Short (3.0 mm)	Right Angle	Buffer	Short (2.0 mm)	Bend Limiting (2.0 mm)
Black	502128-1	501457-1	5502667-1	5503628-1	503219-1	233454-4
Blue	502128-7	501457-5	5502667-2	—	—	233454-2
Beige	—	501457-4	—	1-5503628-9	503219-4	233454-6

Product Facts

- Free-hanging or panel mount design

ST Coupling Receptacles



Alignment Sleeve Material	Packaging	Part Number
Polymer Composite Multimode	Single	501381-1
	Bulk (1000)	501381-2
Metal Multimode	Single	504021-1
	Bulk (50)	504021-2
Zirconia Ceramic Singlemode	Single	502750-1
	Bulk (50)	502750-2

ST Polymer Duplex Receptacle



Alignment Sleeve Material	Color	Part Number
Metal/MM Only	Beige	504662-2
Metal/MM Only	Lt. Almond	504662-1

ST Active Device Mounts — Multimode

Product Facts

- Designed to accept multimode TO-18, TO-46 and TO-52 active devices
- Nickel plated, die cast zinc
- Mount to PCB or through panel
- Includes positioning ring



Description	Packaging	Height	Part Number
Standard height	Single	.410	5501474-1
Low profile	Single	.280	5502585-2
Low profile	Single (100)	.314	5504022-2
Low profile	Bulk (50)	.314	5504022-3

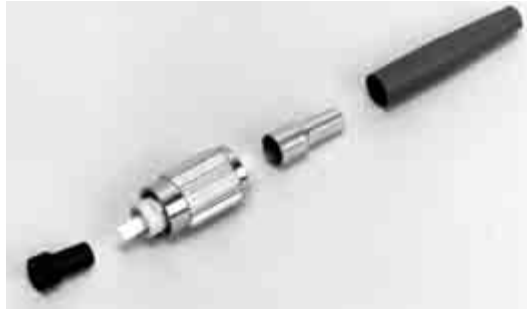
Note: All part numbers are RoHS compliant.

FC Connectors

Product Facts

- One-piece connector body:
 - Fastest assembly
- Compliant with:
 - JIS C-5970
- Pre-radiused ferrule

Instruction Sheet — 408-8674
<http://www.tycoelectronics.com/documents>



Singlemode FC Connector Kits - Polymer Crimp Body

Performance Characteristics

Insertion Loss — <0.2 dB Typical

Return Loss — <-59 dB Typical

Durability — 200 Cycles

Singlemode FC Connector Kits — Polymer Crimp Body

Boot Color	Used With	Individual Pack Part Number	Bulk Pack Part Number	Crimp Tool
Blue	3.0 mm Jacketed	5504649-1	5504649-8	503911-1
	2.4 mm Jacketed	5504914-2	—	492026-1
	2.0 mm Jacketed	5504915-2	—	492026-1
	900 µm Buffer	—	5492052-5	N/A

GR-326 Style FC Connector Kits - Metal Crimp Body Singlemode

Performance Characteristics

Insertion Loss — <0.2 dB Typical

Return Loss — <-59 dB Typical

Tested to GR-326

Tuning — 6 position

GR-326 Style Singlemode FC Connector Kits — Metal Crimp Body

Boot Color	Used With	Individual Pack Part Number	Bulk Pack Part Number	Crimp Tool
Blue	3.0 mm Jacketed	4-1918962-2	—	(1) 492131-1 (1) 58532-1
	2.4 mm Jacketed	6754264-5	6754264-6	1588176-1
	2.0 mm Jacketed	6754264-4	6754264-7	1588176-1
	900 µm Buffer	6754264-2	—	1588176-1



3.0 mm - GR-326 Style



3.0 mm Angled



900 µm Short



900 µm



GR-326 Style 900 µm

FC Strain Reliefs — Jacketed Cable

Description	GR-326 Style	Part Number			
		Color			
		Black	Red	Beige	Blue
3.0 mm	No	1-5503971-0	1-5503971-1	5503971-1	5503971-2
2.4 mm	No	1-5503971-2	1-5503971-3	5503971-3	5503971-4
2.0 mm	No	2-5503971-3	2-5503971-7	5503971-5	5503971-6
3.0 mm	Yes	—	—	—	1588491-2
1.6 mm - 2.4 mm	Yes	1588153-3	—	1588153-5	1588153-2

FC Strain Reliefs — Angled

Description		Part Number		
		Color		
		Black	Beige	Blue
3.0 mm	Simplex	1278705-3	1278705-2	1278705-1
2.0 mm	Simplex	1374737-3	1374737-2	1374737-1
2.0 mm	45° Simplex	6457543-4	6457543-1	6457543-2

FC Strain Reliefs — 900 micron

Description		Part Number		
		Color		
		Black	Beige	Blue
Long (33 mm) 900 µm		6457493-3	6457493-9	6457493-1
Short (10 mm) 900 µm		6278309-1	—	6278309-2
GR-326 Style 900 µm		1828184-2	1828184-4	1828184-1

Note: All part numbers are RoHS compliant.

FC Connectors (Continued)

FC Connector Component Selection Chart (bulk packaged)

Fiber Type	Simplex Connector Sub-Assembly	Cable Size	Crimp Eyelet w/ Heat Shrink	Crimp Eyelet	Strain Relief Part Number*
Singlemode - GR-326 Style	6754264-8	1.6-2.0 mm	6374150-1	—	1588153-X
		2.4 mm	6588189-1	—	1588153-X
	6457216-5	3.0 mm	—	504973-3	1588491-X
Singlemode Polymer Crimp Body	5504649-9	2.4 mm	—	503970-6	5503971-X
		3.0 mm	—	503970-3	5503971-X
		900 µm	—	—	6457493-X (long) 6278309-X (short)
Multimode - Ceramic Ferrule	6374778-2	1.6-2.0 mm	6374150-1	—	1588153-X
		2.4 mm	6588189-1	—	1588153-X
	5504922-3	3.0 mm	—	503970-3	5503971-2
		900 µm	—	—	6457493-9 (long) 6278309-1 (short)

* Strain relief dash number indicates color - see page 64 for details.

FC Adapters



FC Square Flange Adapter

FC Simplex Square Flange Adapter - Metal

Alignment Sleeve Material	Panel Cut-out	Keyway Slot (Nom.)	Part Numbers
Metal	Square Flange	Std. 2.33 mm	5501506-2
Ceramic	Square Flange	Std. 2.33 mm	5501506-1



FC 8 mm/9 mm Dia. Round

FC Simplex 8 mm/9 mm Dia. Round (D-Hole) Adapter - Metal

Alignment Sleeve Material	Panel Cut-out	Keyway Slot (Nom.)	Part Numbers
Metal (Copper)	D-Hole	Std. 2.33 mm	5504407-1
Ceramic	D-Hole	Std. 2.33 mm	5504407-3
Ceramic/APC	D-Hole	2.05 mm Type R	5504407-8
Ceramic/APC	D-Hole	Prec. 2.02 mm	5504407-7



FC 8 mm Dia. Round (Double D)

FC Simplex 8 mm Dia. Round (Double D-Hole) Adapter - Metal

Alignment Sleeve Material	Panel Cut-out	Keyway Slot (Nom.)	Part Numbers
Metal	Double D-Hole	Std. 2.33 mm	5504013-1

Note: All part numbers are RoHS compliant.

FC Connectors (Continued)

Hybrid Adapters - SC/FC/ST



FC to ST Simplex Adapter - Metal

Hybrid FC to ST Simplex Adapter - Metal

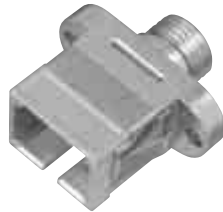
Alignment Sleeve Material	Housing Color	Part Numbers
Metal	Electroless Nickel	5503640-1
Ceramic	Electroless Nickel	5503640-2



SC to FC Simplex Adapter - Plastic

SC to FC Simplex Adapter - Plastic

Alignment Sleeve Material	Housing Color	Part Numbers
Metal	Black	5502871-1
Ceramic	Blue	5502871-4



SC to FC Simplex Adapter - Metal

SC to FC Simplex Adapter - Metal

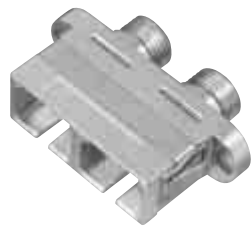
Alignment Sleeve Material	Housing Color	Part Numbers
Metal	Electroless Nickel	6278349-1
Ceramic	Electroless Nickel	6278349-3



Flangeless SC to FC Simplex Adapter - Metal

Flangeless Simplex Adapter - Metal

Alignment Sleeve Material	Housing Color	Part Numbers
Metal	Electroless Nickel	6278349-5
Ceramic	Electroless Nickel	6278349-7



SC to FC Duplex Adapter - Metal

SC to FC Duplex Adapter - Metal

Alignment Sleeve Material	Housing Color	Part Numbers
Metal	Electroless Nickel	6278050-1
Ceramic	Electroless Nickel	6278050-3

Note: All part numbers are RoHS compliant.



FSD Connector Components — Multimode

Product Facts

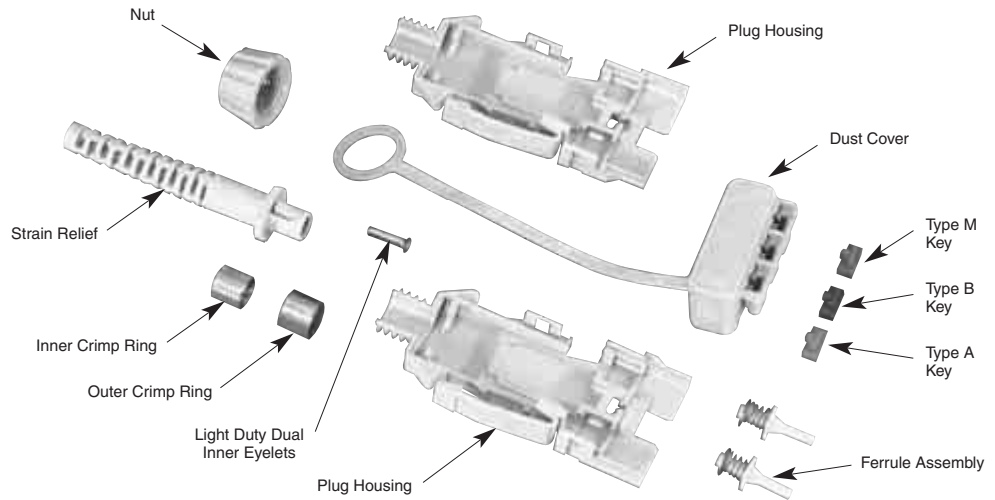
- Meets specifications of FDDI PMD - ANSI X3.166
- Ceramic ferrules available
- Designed in polarization and user defined keying

Performance Characteristics

Insertion Loss — 0.5 dB typical
Durability — Ceramic Ferrules 500 cycles

Ceramic Instruction Sheet

408-9373
<http://www.tycoelectronics.com/documents>



FSD

Diameter (µm)	Part Number				Replacement Ferrules
	Cable Type				
	DUALAN Cable		Light Duty DUALAN Cable		
	Single Packed	Bulk Packed	Single Packed	Bulk Packed	
Ceramic Ferrules					
125	5501780-1	5501780-3*	5502015-1	5502015-3*	5501779-1

Termination Kit: 503746-6

* Bulk packed, 200 per package.

Assembly Fixtures: with Polishing Tool: 501795-1; without Polishing Tool: 502023-1

Field Keyable FSD Receptacles and Adapters



Multimode Receptacles

Description	Sleeve Material	
	Metal	Ceramic
FSD to FSD	502806-2	502806-4
FSD to ST	502808-2	502808-4

Note: All part numbers are RoHS compliant.

ESCON Connector Components

ESCON Connector Plug

Product Facts

- Multimode
- IBM Approved
- Simple field assembly

Performance Characteristics

Assembly Loss — 0.2 dB Typical

Durability — 200 cycles

Instruction Sheet

408-9808

<http://www.tycoelectronics.com/documents>



Description	Part Number
125 µm	Black
DUALAN Cable	5492181-1
DUALAN Cable	5492181-2*

* Bulk packed, 50 per package
Termination Kit: 503746-6.

ESCON Receptacles

Product Facts

- Multimode



Description	Part Number
	Black
ESCON to ESCON	502825-2
ESCON to ST	502826-2

ESCON Assembly Fixture Kit

Used to hold ferrules during assembly, epoxy curing, and polishing. Allows simultaneous polishing of both ferrules.



Description	Part Number
	Black
Without Polishing Bushing	492236-2
Polishing Bushing	492269-1

ESCON is a trademark of IBM Corporation.

Note: All part numbers are RoHS compliant.

FSMA Products — Multimode

Product Facts

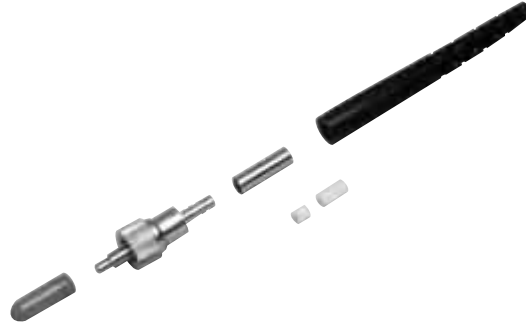
- Industry compatible with 905 (FSMA-I) and 906 (FSMA-II) style connectors
- Terminates fiber sizes from 125 through 1000 microns in diameter
- Design parameters conform to NATO and IEC interface standards

Performance Characteristics

Insertion Loss — 1.3 dB Typical
Temperature Range — -55°C to +105°C
Durability — 200 cycles

Documentation

Product Specification
108-45106
Instruction Sheet
408-9863
FSMA 905 & 906
Test Report
501-359
<http://www.tycoelectronics.com/documents>



FSMA Connectors

Ferrule Material	Connector Body Material	Fiber Diameter (µm)	Nominal Jacket O.D.		
			3.1 mm		4.3 mm
			905	906	905
Stainless Steel	Nickel-Plated Brass	125	5504566-1	5504014-1	5504567-1
		140	5504566-2	1-5504014-0	5504567-2
		231	5504566-7	—	—
		336	1-5504566-4	—	—
		720	—	—	3-5504567-9
		1000	3-5504566-0	—	—
		1050	3-5504566-1	—	2-5504567-9
		2050	—	—	3-5504567-3

Adapter

Product Facts

- Precision mating adapter for all FSMA connectors
- In-line splice or panel mount design



Description	Part Number
FSMA Adapters	
Hex Flange, Stainless Steel	501049-1
Hex Flange, Stainless Steel, Counterbore, Sealed	501050-1
Fixed Flange, Nickel-Plated Brass	5504026-1
In-Line, Stainless Steel	504028-1
In-Line, Nickel-Plated Brass, Counterbore	5504030-1
In-Line, Stainless Steel, Counterbore, Short	504031-1

Active Device Mount

Product Facts

- Designed to house TO-18, TO-46, and TO-52 devices
- Constructed of nickel plated die cast zinc alloy or stainless steel
- Mounts to PC board or through panel



Description	Part Number
FSMA Active Device Mounts	
PC Mount Receptacle, Die Cast	5502136-1
PC Mount Receptacle, Die Cast, Bulk Packaged	5502136-2
PC Mount Receptacle, Stainless Steel	501055-1

Note: All part numbers are RoHS compliant.

MT-RJ Connectors

MT-RJ Plugs

Product Facts

- Designed to meet TIA/EIA 568-B.3
- Each MT-RJ Connector houses two fibers
- Half the size of duplex SC and ST Connectors
- Options available include:
 - Multimode or singlemode
 - Mini DUALAN or Mini Zipcord cable
 - With or without guide pins
- SECURE Connector Kits

Performance Characteristics

Insertion Loss — Typical (dB) 0.2 dB

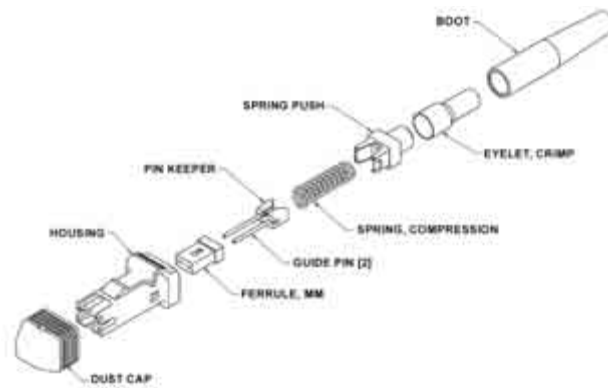
Operating Temperature —
-10°C to 60°C

Durability — 500 Cycles

Instruction Sheet

408-4540

<http://www.tycoelectronics.com/documents>



Standard MT-RJ Connectors

Fiber Type	Cable Type	Pins	Part Number
Singlemode	3.0 mm DUALAN	Without Guide Pins	6278399-1
	3.0 mm DUALAN	With Guide Pins	6278399-2
	1.8 mm Mini Zipcord	Without Guide Pins	6278751-1
	1.8 mm Mini Zipcord	With Guide Pins	6278751-2
Multimode	3.0 mm DUALAN	Without Guide Pins	6278398-1
	3.0 mm DUALAN	With Guide Pins	6278398-2
	1.8 mm Mini Zipcord	Without Guide Pins	6278750-1
	1.8 mm Mini Zipcord	With Guide Pins	6278750-2

SECURE MT-RJ Connectors

Fiber Type	Cable Type	Pins	Color	Part Number
Multimode	1.8 mm Mini Zipcord	Without Guide Pins	Red	1918356-1
			Yellow	1918356-2
			Green	1918356-3
			Blue	1918356-4
			Rose	1918356-5
			Aqua	1918356-6
			Brown	1918356-7
			Violet	1918356-8
			Orange	1918356-9
			Slate	1-1918356-0

MT-RJ to MT-RJ Adapter

Simplex Part Number:
1278017-1 (light almond)

Duplex Part Number:
6374906-1 (Almond)

MT-RJ to MT-RJ Simplex Adapter



MT-RJ to MT-RJ Duplex Adapter



Note: All part numbers are RoHS compliant.

MT-RJ Connectors (Continued)

SL Series Outlets

Product Facts

- Front-loading modules snap in and out for easy access
- Modular approach for flexibility
- “Invisible” icon holes stay hidden until used
- Individual jacks and inserts increase configuration and color-coding options
- MT-RJ SL Series housing accepts one MT-RJ Jack sold separately (See pages 119-122)

MT-RJ SL Series Housing

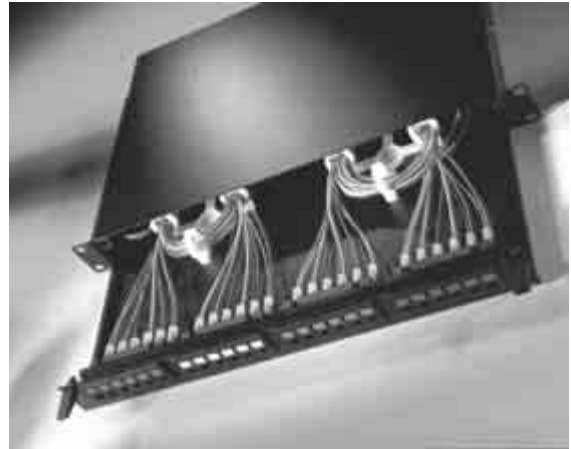
Color	Part Number
Almond	1374416-1
Black	1374416-2
White	1374416-3
Gray	1374416-4
Orange	1374416-5
Blue	1374416-6
Red	1374416-7
Yellow	1374416-8
Green	1374416-9
Violet	1-1374416-0
Electrical Ivory	1-1374416-1
Rose	2-1374416-3
Aqua	2-1374416-4
Brown	2-1374416-5
Slate	2-1374416-6



MT-RJ Optical Patch Panel

Tyco Electronics' MT-RJ optical patch panels feature 24-port (48 fiber) capacity in a 1U high rack mounted enclosure and offer twice the fiber density of conventional patch panels. Features include pre-installed cable management, rugged cable entry

strain relief, and a sliding, tilt-out drawer for easy termination of tight buffer or loose tube cable. Adjustable mounting brackets allow the user to mount the enclosure in forward, flush or recessed positions. The patch panel is supplied ready for MT-RJ jack installation.



Description	Part Number
1U Patch Panel with four, six-position MT-RJ interface housing Cable Management Rings (2 pieces), Cable Glands PG16, PG13.5, Dust Caps (24 pieces). (Jack modules not included)	1206704-4

MT-RJ Snap-In Adapter Plate

The MT-RJ snap-in adapter plate manages six MT-RJ Patch panel jacks (ordered separately, see page 73). The adapter plate is designed to fit into existing rack and wall mount enclosures with the benefit of industry standard labels and icons for port identification.

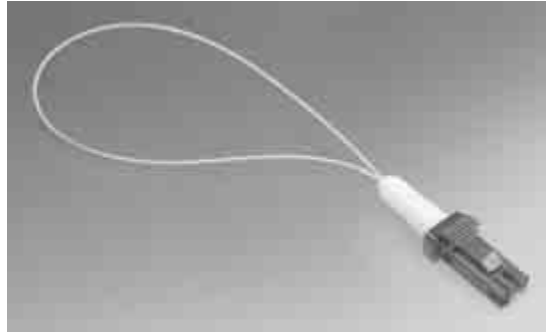


Description	Part Number
MT-RJ Snap-In Adapter Plates (Jack modules not included)	1278328-3

Note: All part numbers are RoHS compliant.

MT-RJ Connectors (Continued)

MT-RJ Loopbacks



Description	Part Number
MT-RJ to Singlemode Loopback	6278358-1
MT-RJ to Multimode Loopback, 50/125 μm	6278357-1
MT-RJ to Multimode Loopback, 62.5/125 μm	6278153-1

MT-RJ Cable Assemblies

See Cable Assemblies & Backplane Interconnects Section.

MT-RJ Bend Limiting Boots **Part Number 6374208-X**



Product Facts

- **Compatible with all MT-RJ Jacks (see pages 119-122)**

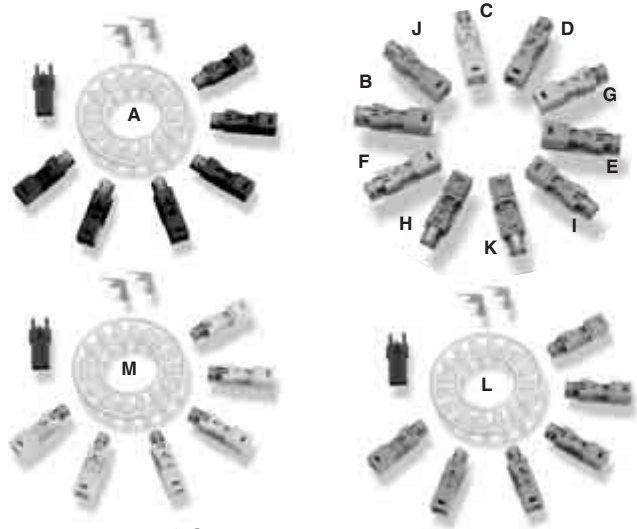
Color	Part Number
Black	6374208-4
Beige	6374208-5

Note: All part numbers are RoHS compliant.

MT-RJ Patch Panel Jacks, No Epoxy, No Polish

Product Facts

- Patch panel jacks terminate either two 900 μm tight-buffered fibers or two 250 μm coated fibers (select appropriate part number):
 - No epoxy, no polishing, no crimping
 - Two (2) fibers in one ferrule
 - Re-terminatable – improves yield
 - Tunable
 - No bench tool required
- Each part number includes:
 - Six (6) patch panel jacks
 - Two (2) actuation tools
 - Fiber guide
 - Icon wheel
- Jack design eliminates need for MT-RJ Coupler
- Match fiber type of cable to fiber type of MT-RJ Jack
- Small form factor design is half the size of SC duplex
- Six (6) patch panel jacks fit in the MT-RJ Snap-in Adapter Plate (see page 72)
- SL Series Housings and bend-limiting boots sold separately (see pages 70, 72 and 78)
- MT-RJ Cable Assemblies on pages 121 and 122
- MT-RJ SECURE Jacks feature color-coded, keyed designs to limit improper connections in segregated or SECURE networks
- MT-RJ SECURE Plug only mates with same color MT-RJ SECURE Jack
- MT-RJ SECURE Cable Assemblies on pages 121 and 122
- Singlemode MT-RJ pigtail jacks on page 123



Easy 3-Step Termination



Fiber Type	Jack Color	Figure	Part Number		
			250 μm Coated Fiber	900 μm Tight-buffered Fiber	
50/125 μm Multimode	Standard	Black	A	6278303-1	6588880-1
		RED	B	6278807-1	6588879-1
		YELLOW	C	6278807-2	6588879-2
	SECURE	GREEN	D	6278807-3	6588879-3
		BLUE	E	6278807-4	6588879-4
		ROSE	F	6278807-5	6588879-5
		AQUA	G	6278807-6	6588879-6
		BROWN	H	6278807-7	6588879-7
		VIOLET	I	6278807-8	6588879-8
		ORANGE	J	6278807-9	6588879-9
		SLATE	K	1-6278807-0	1-6588879-0
		Gray	L	6278303-4	6588880-3
		RED	B	6693951-1	6693949-1
YELLOW	C	6693951-2	6693949-2		
GREEN	D	6693951-3	6693949-3		
Laser Optimized (10 Gig) (850 nm LO 50/125 μm) Multimode	Standard	BLUE	E	6693951-4	6693949-4
		ROSE	F	6693951-5	6693949-5
		AQUA	G	6693951-6	6693949-6
	SECURE	BROWN	H	6693951-7	6693949-7
		VIOLET	I	6693951-8	6693949-8
		ORANGE	J	6693951-9	6693949-9
		SLATE	K	1-6693951-0	1-6693949-0
		Beige	M	6278303-2	6588880-2
		RED	B	6278808-1	6588878-1
		YELLOW	C	6278808-2	6588878-2
		GREEN	D	6278808-3	6588878-3
		BLUE	E	6278808-4	6588878-4
		SECURE	ROSE	F	6278808-5
AQUA	G		6278808-6	6588878-6	
BROWN	H		6278808-7	6588878-7	
VIOLET	I		6278808-8	6588878-8	
ORANGE	J		6278808-9	6588878-9	
SLATE	K		1-6278808-0	1-6588878-0	

Note: Highlighted part numbers are routinely stocked for shortest lead times.

Note: All part numbers are RoHS compliant.

MT-RJ Outlet Jacks, No Epoxy, No Polish

Product Facts

- Outlet jacks terminate two 900 µm tight-buffered fibers
 - No epoxy, no polishing, no crimping
 - Two fibers in one ferrule
 - Re-terminatable - improves yield
 - Tunable
 - No bench tool required
- Each part number includes:
 - One (1) outlet jack
 - Actuation tool
 - Bend-limiting boot
 - SL Series Housing
- Match fiber type of cable to fiber type of MT-RJ Jack
- Jack design eliminates need for MT-RJ Coupler
- Small form factor design is half the size of SC duplex
- SL Series Housing allows use in any faceplate or outlet that accepts SL Series Jacks
- MT-RJ Cable Assemblies on pages 121 and 122
- MT-RJ SECURE Jacks feature ten color-coded, keyed designs to limit improper connections in segregated or SECURE networks
 - MT-RJ SECURE plug only mates with same color MT-RJ SECURE Jack
- MT-RJ SECURE Cable Assemblies on page 121

Easy 3-Step Termination



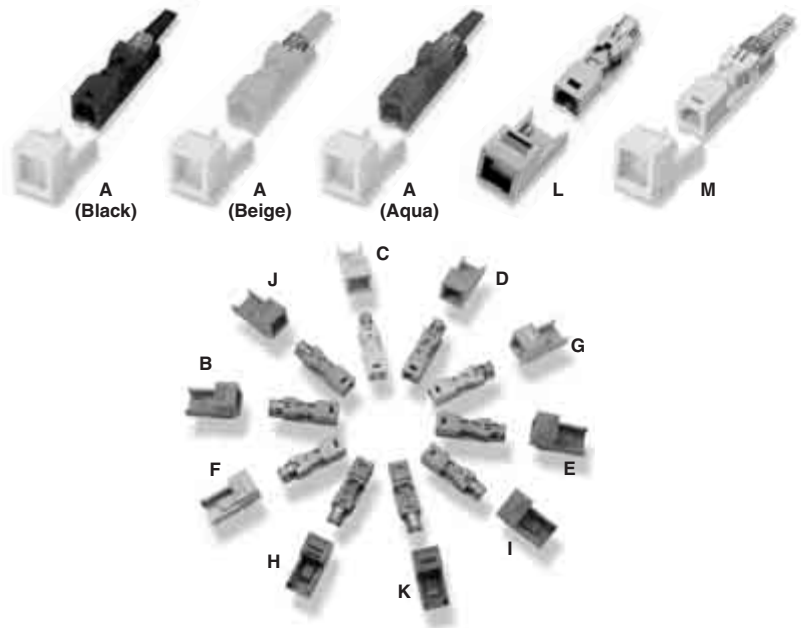
Strip



Cleave



Lock



Fiber Type	Jack Color	Housing Color	Figure	Part Number	
50/125 µm Multimode	Standard	Black	A	6278414-X	
	SECURE	RED	RED	B	6278811-1
		YELLOW	YELLOW	C	6278811-2
		GREEN	GREEN	D	6278811-3
		BLUE	BLUE	E	6278811-4
		ROSE	ROSE	F	6278811-5
		AQUA	AQUA	G	6278811-6
		BROWN	BROWN	H	6278811-7
		VIOLET	VIOLET	I	6278811-8
		ORANGE	ORANGE	J	6278811-9
SLATE		SLATE	K	1-6278811-0	
Laser Optimized (10 Gig) (850 nm LO 50/125 µm) Multimode	Standard	Gray	L	1-6278414-2	
	SECURE	RED	RED	B	6754252-1
		YELLOW	YELLOW	C	6754252-2
		GREEN	GREEN	D	6754252-3
		BLUE	BLUE	E	6754252-4
		ROSE	ROSE	F	6754252-5
		AQUA	AQUA	G	6754252-6
		BROWN	BROWN	H	6754252-7
		VIOLET	VIOLET	I	6754252-8
		ORANGE	ORANGE	J	6754252-9
SLATE		SLATE	K	1-6754252-0	
62.5/125 µm Multimode	Standard	Beige	M	6278415-X	
	SECURE	RED	RED	B	6278810-1
		YELLOW	YELLOW	C	6278810-2
		GREEN	GREEN	D	6278810-3
		BLUE	BLUE	E	6278810-4
		ROSE	ROSE	F	6278810-5
		AQUA	AQUA	G	6278810-6
		BROWN	BROWN	H	6278810-7
		VIOLET	VIOLET	I	6278810-8
		ORANGE	ORANGE	J	6278810-9
SLATE		SLATE	K	1-6278810-0	

X denotes housing color: -1 = Almond, -2 = Black, -3 = White, -4 = Gray, -5 = Orange, -6 = Blue, -7 = Red, -8 = Yellow, -9 = Green, 1 - 0 = Violet, 1 - -1 = Electrical Ivory

Note: Highlighted part numbers are routinely stocked for shortest lead times.

Note: All part numbers are RoHS compliant.

LIGHTCRIMP PLUS No Epoxy, No Polish LC, SC and ST Connectors

Product Facts

- Multimode connector kits come with accessories needed to terminate to 250 µm fiber, 900 µm tight-buffered fiber, and 900 µm easy-strip
 - SC and ST kits also terminate 3 mm cables
- Singlemode connector kits terminate to 250 µm fiber, 900 µm tight-buffered fiber, 900 µm easy-strip and buffer tube splitter kits
- Easy installation:
 - No epoxy, no polishing
 - No bench tool required
 - Strip, cleave and crimp
- Easy identification:
 - Singlemode is blue
 - Laser Optimized (10 Gig) is aqua — 10 Gb/s applications
 - 62.5/125 µm is beige
 - 50/125 µm is black
- Match fiber type of cable to fiber type of LIGHTCRIMP PLUS
- Mates with standard couplers, adapters and adapter plates
- LC small form factor design is half the size of SC
- Tested to and meets TIA/EIA 568-B.3
- Termination tool kits on page 86

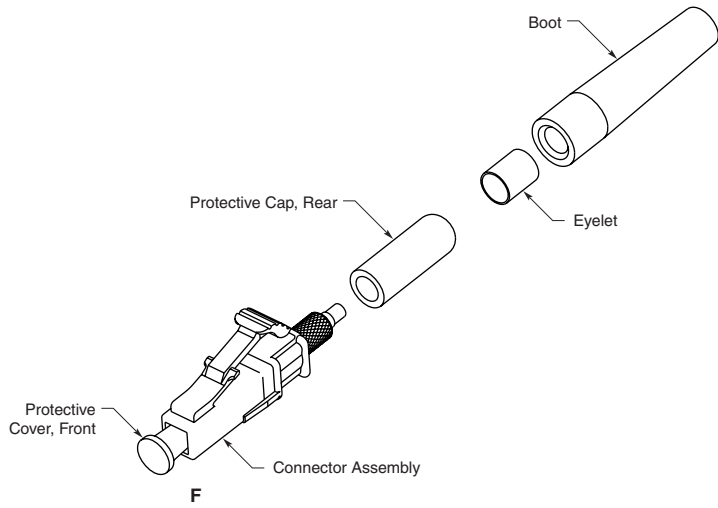


Performance Characteristics

Insertion Loss — Typical (dB)
0.2 dB Singlemode; 0.3 dB Multimode

Temperature Range —
-10°C to 60°C, tested to -40°C to 75°C

Durability — 500 cycles



LIGHTCRIMP PLUS No Epoxy, No Polish LC, SC and ST Connectors (Continued)

Connector Type	Fiber Type	Housing Color	Boot Color	Used With	Figure	Part Number	IS Sheet
Simplex LC	Singlemode	Blue	Blue	900 µm & 250 µm Fibers	A	6754482-1	408-8925
	50/125 µm Multimode	Beige	Black	900 µm & 250 µm Fibers	B	6754483-2	408-8925
	Laser Optimized (10 Gig) (850 nm LO 50/125 µm) Multimode	Beige	Aqua	900 µm & 250 µm Fibers	–	6754483-4	408-8925
	62.5/125 µm Multimode	Beige	Beige	900 µm & 250 µm Fibers	B	6754483-1	408-8925
Simplex LC Jacketed	Singlemode Jacketed	Blue	Blue	1.6 - 2.0 mm Cable	F	1918626-1	408-8925
	62.5/125 µm Multimode Jacketed	Beige	Beige	1.6 - 2.0 mm Cable	F	1918627-1	408-8925
	50/125 µm Multimode Jacketed	Beige	Black	1.6 - 2.0 mm Cable	F	1918627-2	408-8925
	Laser Optimized (10 Gig) (850 nm LO 50/125 µm) Multimode Jacketed	Gray	Aqua	1.6 - 2.0 mm Cable	F	1918627-3	408-8925
Simplex SECURE LC	50/125 µm Multimode Jacketed	Various	Various	1.6 - 2.0 mm Cable	F	1828857-X ¹	408-8925
	Laser Optimized (10 Gig) (850 nm LO 50/125 µm) Multimode Jacketed	Various	Various	1.6 - 2.0 mm Cable	F	1828858-X ¹	408-8925
	62.5/125 µm Multimode Jacketed	Various	Various	1.6 - 2.0 mm Cable	F	1828859-X ¹	408-8925
	Singlemode Jacketed	Various	Various	1.6 - 2.0 mm Cable	F	1828860-X ¹	408-8925
Duplex LC	Singlemode	Blue	Blue	900 µm & 250 µm Fibers	–	6754484-1	408-8725
	50/125 µm Multimode	Beige	Black	900 µm & 250 µm Fibers	–	6754485-2	408-8725
	Laser Optimized (10 Gig) (850 nm LO 50/125 µm) Multimode	Beige	Aqua	900 µm & 250 µm Fibers	–	6754485-4	408-8725
	62.5/125 µm Multimode	Beige	Beige	900 µm & 250 µm Fibers	–	6754485-1	408-8725
Simplex SC	Singlemode*	Blue	Blue	900 µm & 250 µm Fibers	C	6693276-1	408-4471
	50/125 µm Multimode	Beige	Black	900 µm & 250 µm Fibers, 3 mm Cable	D	6278079-2	408-4471
	Laser Optimized (10 Gig) (850 nm LO 50/125 µm) Multimode	Beige	Aqua	900 µm & 250 µm Fibers, 3 mm Cable	–	6588291-2	408-4471
	62.5/125 µm Multimode	Beige	Beige	900 µm & 250 µm Fibers, 3 mm Cable	D	5492643-1	408-4471
Duplex SC	Singlemode	Blue	Blue	900 µm & 250 µm Fibers	–	6693278-1	408-8603
	50/125 µm Multimode	Beige	Black	900 µm & 250 µm Fibers, 3 mm Cable	–	6278080-2	408-8603
	Laser Optimized (10 Gig) (850 nm LO 50/125 µm) Multimode	Beige	Aqua	900 µm & 250 µm Fibers, 3 mm Cable	–	6588292-2	408-8603
	62.5/125 µm Multimode	Beige	Beige	900 µm & 250 µm Fibers, 3 mm Cable	–	6278009-1	408-8603
ST	50/125 µm Multimode	Metallic	Black	900 µm & 250 µm Fibers, 3 mm Cable	E	6278082-1	408-4457
	62.5/125 µm Multimode	Metallic	Beige	900 µm & 250 µm Fibers, 3 mm Cable	E	5492642-2	408-4457
Duplex LC Clip		Black	—	Package of 6 clips (for use with Simplex kits)	G	1754371-2	—
Duplex SC Clip (Use 2)		Black	—	2 pieces make one clip (for use with Simplex kits)	G	6348522-1	—

Note: Highlighted part numbers are routinely stocked for shortest lead times.

* Able to terminate up to 3 mm jacket.

¹ Dash denotes housing color: -1 Red, -2 Yellow, -3 Green, -4 Blue, -5 Rose, -6 Aqua, -7 Brown, -8 Violet, -9 Orange, 1- -0 Slate.

Note: All part numbers are RoHS compliant.

LIGHTCRIMP No Epoxy, Polish SC and ST Connectors

Product Facts

- No epoxy needed
- Easy installation: strip, crimp, cleave and polish
- Each connector kit comes with accessories needed to terminate to 250 μm fiber, 900 μm tight-buffered fiber, and 3 mm cables
 - Duplex part numbers contain two connectors
- Multimode connectors are suitable for use with 50/125 μm, Laser Optimized (10 Gig) (850 nm LO 50/125 μm) and 62.5/125 μm fibers
- Mates with standard couplers, adapters and adapter plates
- Meets TIA/EIA 568-B.3

Performance Characteristics

Insertion Loss — 0.4 dB typical
Temperature Range — -40°C to 65°C
Durability — 500 cycles



Description			Figure	Part Number	IS Sheet
Simplex SC	Multimode	Ceramic Ferrule	A	5503692-1	408-4066
Duplex SC	Multimode	Ceramic Ferrule	—	5503693-1	408-4066
	Singlemode	Ceramic Ferrule	B	5504000-1	408-9860
ST	Multimode	Stainless Steel Ferrule	C	5504034-1	408-9860
		Ceramic Ferrule	B	5504001-1	408-9860
		Polymer	—	5492168-1	408-9860

Note: All part numbers are RoHS compliant.

CORELINK Optical Fiber Splices

Product Facts

- Each CORELINK splice mates two 900 µm tight-buffered fibers or two 250 µm coated fibers
- Easy to install
- Reusable
- No bench tool required
- Splices sold in packs of 12
 - Includes 2 actuator keys
- Optional CORELINK installation tool shown below
- Designed to TIA/EIA 568-B.3



Performance Characteristics

Mean Splice Loss — < 0.3 dB
Mean Return Loss — -26 dB
Temperature Range —
 -0°C to 60°C

Description			Part Number
CORELINK Splice	Singlemode	Clear	503577-1
2 Replacement keys in key holder			503681-1

Note: Highlighted part number is routinely stocked for shortest lead times.

Instruction Sheet

408-4019
<http://www.tycoelectronics.com/documents>

CORELINK Splice Workstation

Part Number 503605-1

Product Facts

- Optional tool for installing CORELINK mechanical splices
- Convenient fiber and splice holder for easy installation
- Works with singlemode and multimode CORELINK mechanical splices



Instruction Sheet

408-4131
<http://www.tycoelectronics.com/documents>

Note: All part numbers are RoHS compliant.



Optical Fiber Cables



Optical Fiber Cable Performance

Product Facts

- **AMP NETCONNECT Optical Fiber Cables are tested and designed to the most recent applicable industry standards for premise cabling, network and telecommunications applications, including:**
 - IEEE 802.3
 - Ethernet
 - Fast Ethernet
 - Gigabit Ethernet
 - 10 Gigabit Ethernet
 - FDDI
 - ATM
 - Fibre Channel
 - Token Ring
 - TIA/EIA-568
 - ISO 11801
 - ICEA-596
 - ICEA-640
 - ICEA-696
 - IEC 793-1
 - IEC 794-1
 - Telecordia GR-409-CORE
 - Telecordia GR-20-CORE

AMP NETCONNECT Optical Fiber Cables

AMP NETCONNECT optical fiber cables contain the highest quality optical fiber and offer the best performance for LED-based, laser-based, and VCSEL-based (ex: Gigabit Ethernet and 10 Gigabit Ethernet) applications. AMP NETCONNECT multimode optical fibers offer performance guaranteed to go beyond the IEEE 802.3z distances for Gigabit Ethernet, and are guaranteed

to support IEEE 802.3ae distances for Ten Gigabit Ethernet while still supporting slower protocols such as Fast Ethernet and FDDI.

The AMP NETCONNECT Laser Optimized 10 Gig Optical Fiber System is a high performance cabling system which has been designed to meet or exceed the requirements of the 10 Gigabit Ethernet application while still supporting all legacy LED and VCSEL applications. The system

fulfills the specifications of IEEE 802.3ae for 10GBASE-SR (10 Gigabit Ethernet serial transmission on MMF at 850 nm) and complies to the OM-3 fiber type and link class definitions of the 2nd edition of ISO 11801. All AMP NETCONNECT Laser Optimized 10 Gig Optical Fiber System components have been designed and optimized to offer a complete, end-to-end system to support today's applications and provide an easy migration to higher data rates.

Fiber	Gigabit Ethernet @ 850 nm	Gigabit Ethernet @ 1300 nm	10 Gigabit Ethernet Serial @ 850 nm	10 Gigabit Ethernet WDM @ 1300 nm
Multimode 62.5/125 μm	300 m	550 m	33 m	300 m
Multimode 50/125 μm	600 m	600 m	82 m	300 m
Laser Optimized 10 Gig (850 nm Laser Optimized 50/125 μm) Multimode	1000 m	600 m	300 m	300 m

Optical Fiber Cable Specifications

	Singlemode (1300/1550 nm)	Laser Optimized 10 Gig (850 nm LO 50/125 μm) Multimode (850/1300 nm)	Multimode 50/125 μm (850/1300 nm)	Multimode 62.5/125 μm (850/1300 nm)
Indoor Cables				
Maximum Attenuation (dB/km)	0.7/0.7	3.5/1.5	3.5/1.5	3.5/1.5
OFL Bandwidth (MHz*km)	—/—	1500/500	500/500	200/500
Laser Bandwidth (MHz*km)	—/—	2000/—	—/—	—/—

Optical Fiber Cable Temperature Ranges

		Riser	Plenum
Interconnect (Tight Buffered) Cables	Storage	-40° C to +65° C (-40° F to +149° F)	-40° C to +65° C (-40° F to +149° F)
	Operating	-20° C to +50° C (-4° F to +122° F)	-20° C to +50° C (-4° F to +122° F)
	Installation	-20° C to +50° C (-4° F to +122° F)	-20° C to +50° C (-4° F to +122° F)
Indoor, Distribution (Tight Buffered) Cables	Storage	-40° C to +65° C (-40° F to +149° F)	-40° C to +65° C (-40° F to +149° F)
	Operating	-20° C to +50° C (-4° F to +122° F)	0° C to +50° C (32° F to +122° F)
	Installation	-20° C to +50° C (-4° F to +122° F)	0° C to +50° C (32° F to +122° F)

Note: Part Numbers are RoHS compliant except: ♦ Indicates non-RoHS compliant.

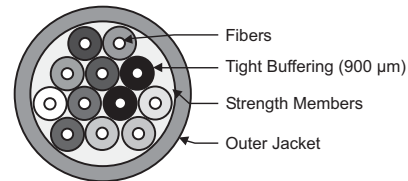
Optical Fiber Cables (Continued)



Distribution, 6-12 Fiber

Product Facts

- Suitable for horizontal and in-building backbone cabling and for direct termination with epoxy/polish, LIGHTCRIMP, LIGHTCRIMP PLUS and MT-RJ jacks
- Suitable for inter-building cabling if buried in conduit, below the frost line
- Strippable 900 µm tight buffer coating allows for easy connectorization
- TIA color-coded fibers for easy identification
- UL and cUL listed OFNR (Riser) and OFNP(Plenum)
- Interlocking armor available



Distribution Cables

Fiber Count	Unit Count Unit (Fibers/Unit)	Fiber Type	UL/NEC Ratings	Part Number	Weight kg/km (lb/kft)	Diameter mm (in)	Tensile Load N (lbf)		Bending Radius mm (in)						
							Installation	Long Term	Installation	Long Term					
6	1 (6)	Singlemode	Riser	1664036-6	22 (15)	4.8 (0.19)	667 (150)	167 (38)	96 (3.8)	48 (1.9)					
			Plenum	1664037-6	24 (16)		445 (100)	111 (25)							
		Multimode 50/125 µm	Riser	2-1664038-1	22 (15)		667 (150)	167 (38)							
			Plenum	2-1664039-1	24 (16)		445 (100)	111 (25)							
		Laser Optimized 10 Gig Multimode 50/125 µm	Riser	8-1664038-9	22 (15)		667 (150)	167 (38)							
			Plenum	8-1664039-9	24 (16)		445 (100)	111 (25)							
		Multimode 62.5/125 µm	Riser	1-1664040-1	22 (15)		667 (150)	167 (38)							
			Plenum	1-1664041-1	24 (16)		445 (100)	111 (25)							
		8	1 (8)	Singlemode	Riser		1664042-6	24 (16)			4.9 (0.19)	667 (150)	167 (38)	108 (4.2)	54 (2.1)
					Plenum		1664043-6	26 (18)				445 (100)	111 (25)		
Multimode 50/125 µm	Riser			2-1664044-1	24 (16)	667 (150)	167 (38)								
	Plenum			2-1664045-1	26 (18)	445 (100)	111 (25)								
Laser Optimized 10 Gig Multimode 50/125 µm	Riser			8-1664044-9	24 (16)	667 (150)	167 (38)								
	Plenum			8-1664045-9	26 (18)	445 (100)	111 (25)								
Multimode 62.5/125 µm	Riser			1-1664046-1	24 (16)	667 (150)	167 (38)								
	Plenum			1-1664047-1	26 (18)	445 (100)	111 (25)								
12	1 (12)			Singlemode	Riser	1664048-6	36 (24)	6.2 (0.24)	667 (150)	167 (38)		124 (4.8)	62 (2.4)		
					Plenum	1664049-6	46 (31)		445 (100)	111 (25)					
		Multimode 50/125 µm	Riser	2-1664050-1	36 (24)	667 (150)	167 (38)								
			Plenum	2-1664051-1	46 (31)	445 (100)	111 (25)								
		Laser Optimized 10 Gig Multimode 50/125 µm	Riser	8-1664050-9	36 (24)	667 (150)	167 (38)								
			Plenum	8-1664051-9	46 (31)	445 (100)	111 (25)								
		Multimode 62.5/125 µm	Riser	1-1664052-1	36 (24)	667 (150)	167 (38)								
			Plenum	1-1664053-1	46 (31)	445 (100)	111 (25)								

Notes: All of these cables are available with interlocking armor. Call for more information. Highlighted part numbers are routinely stocked for shortest lead times.

Note: Part Numbers are RoHS compliant except: ♦ Indicates non-RoHS compliant.

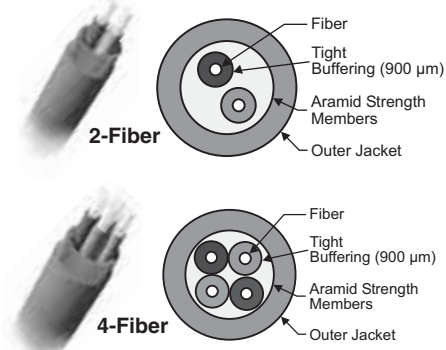
Optical Fiber Cables (Continued)



Horizontal, 2-4 Fiber

Product Facts

- Suitable for direct termination with epoxy/polish, **LIGHTCRIMP**, **LIGHTCRIMP PLUS** and **MT-RJ** jacks
- Blue, green, red and yellow **Dual and Quad multimode cables for MT-RJ SECURE Networks or network segregation**
- **Aramid yarn reinforcement**
- **UL and cUL listed OFNR (Riser) and OFNP(Plenum)**



2-Fiber (Dual)

Fiber Count	Unit Count Unit (Fibers/Unit)	Fiber Type	UL/NEC Ratings	Jacket Color	Part Number	Weight kg/km (lb/kft)	Diameter mm (in)	Tensile Load N (lbf)		Bending Radius mm (in)		
								Installation	Long Term	Installation	Long Term	
2	1(2)	Singlemode	Riser	Yellow	1664024-6	19 (13)	4.8 (0.19)	220 (50)	55 (12.5)	95 (3.8)	48 (1.9)	
			Plenum	Yellow	1664025-6	23 (16)						
				Orange	2-1664026-1	19 (13)						
				Blue	2-1664026-0	19 (13)						
			Riser	Green	2-1664026-2	19 (13)						
		Red		2-1664026-4	19 (13)							
			Multimode 50/125 µm	Yellow	2-1664026-6	19 (13)						
				Orange	2-1664027-1	23 (16)						
				Blue	2-1664027-0	23 (16)						
				Plenum	Green	2-1664027-2						23 (16)
					Red	2-1664027-4						23 (16)
				Yellow	2-1664027-6	23 (16)						
			Laser Optimized 10 Gig Multimode 50/125 µm	Riser	Aqua	8-1664026-9						19 (13)
				Plenum	Aqua	8-1664027-9						23 (16)
					Orange	1-1664028-1						19 (13)
					Blue	1-1664028-0						19 (13)
			Multimode 62.5/125 µm	Riser	Green	1-1664028-2						19 (13)
					Red	1-1664028-4						19 (13)
				Yellow	1-1664028-6	19 (13)						
				Orange	1-1664029-1	23 (16)						
	Blue	1-1664029-0		23 (16)								
	Plenum	Green		1-1664029-2	23 (16)							
		Red		1-1664029-4	23 (16)							
	Yellow	1-1664029-6		23 (16)								

4-Fiber (Quad)

4	1(4)	Singlemode	Riser	Yellow	1664030-6	21 (14)	4.8 (0.19)	220 (50)	55 (12.5)	95 (3.8)	48 (1.9)	
			Plenum	Yellow	1664031-6	25 (17)						
				Orange	2-1664032-1	21 (14)						
				Blue	2-1664032-0	21 (14)						
			Riser	Green	2-1664032-2	21 (14)						
		Red		2-1664032-4	21 (14)							
			Multimode 50/125 µm	Yellow	2-1664032-6	21 (14)						
				Orange	2-1664033-1	25 (17)						
				Blue	2-1664033-0	25 (17)						
				Plenum	Green	2-1664033-2						25 (17)
					Red	2-1664033-4						25 (17)
				Yellow	2-1664033-6	25 (17)						
			Laser Optimized 10 Gig Multimode 50/125 µm	Riser	Aqua	8-1664032-9						21 (14)
				Plenum	Aqua	8-1664033-9						25 (17)
					Orange	1-1664034-1						21 (14)
					Blue	1-1664034-0						21 (14)
			Multimode 62.5/125 µm	Riser	Green	1-1664034-2						21 (14)
					Red	1-1664034-4						21 (14)
				Yellow	1-1664034-6	21 (14)						
				Orange	1-1664035-1	25 (17)						
	Blue	1-1664035-0		25 (17)								
	Plenum	Green		1-1664035-2	25 (17)							
		Red		1-1664035-4	25 (17)							
	Yellow	1-1664035-6		25 (17)								

Note: Highlighted part numbers are routinely stocked for shortest lead times.

Note: Part Numbers are RoHS compliant except: ♦ Indicates non-RoHS compliant.

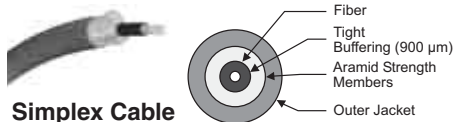
Optical Fiber Cables (Continued)



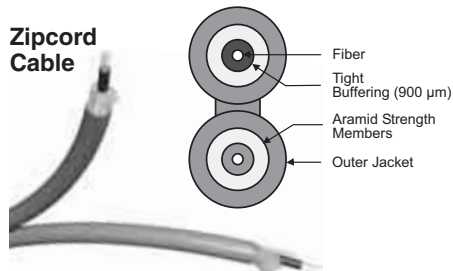
Interconnect, 1-2 Fiber

Product Facts

- Suitable for pigtails, patch cords and internal equipment connections
- Aramid yarn reinforcement
- UL and cUL listed OFNR (Riser) and OFNP(Plenum)



Simplex Cable



Zipcord Cable

Simplex (2.0 mm)

Fiber Count	Unit Count Unit (Fibers/Unit)	Fiber Type	UL/NEC Ratings	Part Number	Weight kg/km (lb/kft)	Diameter mm (in)	Tensile Load N (lbf)		Bending Radius mm (in)	
							Installation	Long Term	Installation	Long Term
1	1 (1)	Singlemode	Riser	1664006-6	5 (3)	2.0 (0.08)	220 (50)	55 (12.5)	40 (1.6)	20 (0.8)
			Plenum	1664007-6	6 (4)					
		Multimode 50/125 μm	Riser	2-1664008-1	5 (3)					
			Plenum	2-1664009-1	6 (4)					
		Laser Optimized 10 Gig Multimode 50/125 μm	Riser	8-1664008-9	5 (3)					
			Plenum	8-1664009-9	6 (4)					
Multimode 62.5/125 μm	Riser	1-1664010-1	5 (3)							
	Plenum	1-1664011-1	6 (4)							

Simplex (2.9 mm)

1	1 (1)	Singlemode	Riser	1664000-6	8 (5)	2.9 (0.11)	220 (50)	55 (12.5)	58 (2.8)	29 (1.1)
			Plenum	1664001-6	9 (6)					
		Multimode 50/125 μm	Riser	2-1664002-1	8 (5)					
			Plenum	2-1664003-1	9 (6)					
		Laser Optimized 10 Gig Multimode 50/125 μm	Riser	8-1664002-9	8 (5)					
			Plenum	8-1664003-9	9 (6)					
Multimode 62.5/125 μm	Riser	1-1664004-1	8 (5)							
	Plenum	1-1664005-1	9 (6)							

Zipcord (2.0 mm)

2	2 (1)	Singlemode	Riser	1664018-6	6 (4)	2.0 x 4.0 (0.08 x 0.16)	220 (50)	55 (12.5)	40 (2.2)	20 (0.8)
			Plenum	1664019-6	8 (5)					
		Multimode 50/125 μm	Riser	2-1664020-1	6 (4)					
			Plenum	2-1664021-1	8 (5)					
		Laser Optimized 10 Gig Multimode 50/125 μm	Riser	8-1664020-9	6 (4)					
			Plenum	8-1664021-9	8 (5)					
Multimode 62.5/125 μm	Riser	1-1664022-1	6 (4)							
	Plenum	1-1664023-1	8 (5)							

Zipcord (2.9 mm)

2	2 (1)	Singlemode	Riser	1664012-6	15 (10)	2.9 x 5.8 (0.11 x 0.22)	220 (50)	55 (12.5)	58 (2.2)	29 (1.1)
			Plenum	1664013-6	18 (12)					
		Multimode 50/125 μm	Riser	2-1664014-1	15 (10)					
			Plenum	2-1664015-1	18 (12)					
		Laser Optimized 10 Gig Multimode 50/125 μm	Riser	8-1664014-9	15 (10)					
			Plenum	8-1664015-9	18 (12)					
Multimode 62.5/125 μm	Riser	1-1664016-1	15 (10)							
	Plenum	1-1664017-1	18 (12)							

Note: Highlighted part numbers are routinely stocked for shortest lead times.

Note: Part Numbers are RoHS compliant except: ♦ Indicates non-RoHS compliant.

MPO Connectors

Product Facts

- Tested to Telecordia GR-1435
- Push Pull Latching
- 4, 8, 12, OR 24 fibers
- Color-coded housings differentiate singlemode and multimode:
 - Multimode - Beige
 - Singlemode - Green
- Manufactured to IEC Standards 61754-7 and TIA/EIA 604-5

Industry Standard

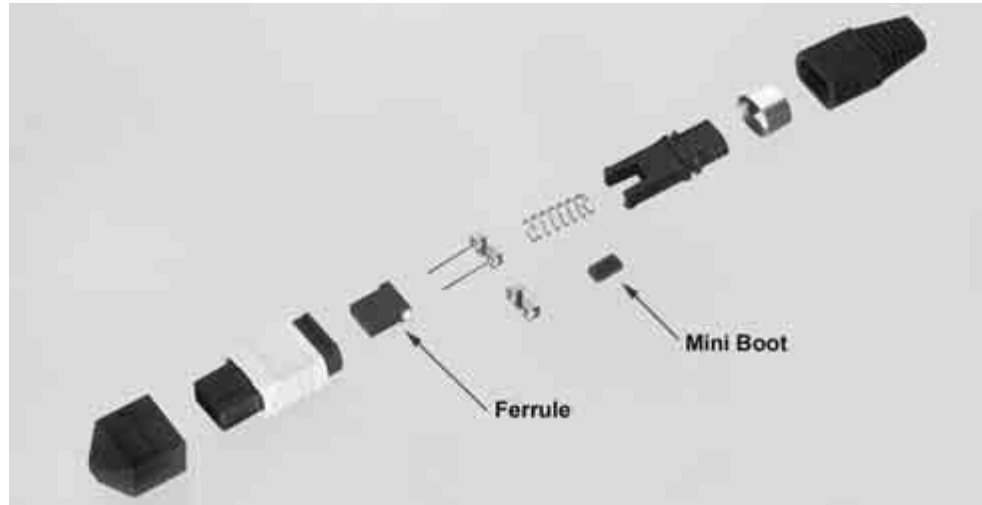
Performance Characteristics

Singlemode

- Insertion Loss (Typ) — 0.25 dB
- Insertion Loss (Max) — 0.75 dB
- Return Loss — > 55 dB

Multimode

- Insertion Loss (Typ) — 0.2 dB
- Insertion Loss (Max) — 0.5 dB
- Return Loss — > 20 dB



MPO Connector Kit Selection - Plug Kits

Fiber Type	Female (no pins)	Male (with pins)
Singlemode	6457981-1	6457981-2
Multimode	6457983-1	6457983-2

Note: Ferrules and Mini-Boots are sold separately. See chart below for proper part numbers.



MPO Ferrule Kit with Mini-Boot

Fiber Type	4 Position	8 Position	12 Position
Singlemode	5492221-1	5492221-2	5492221-3
Multimode	5503839-1	5503839-2	5503839-3

Crimping Tool with Dieset

1588698-1



MPO Adapters

Adapter Type	Single Pack	50 pc Bulk Pack
Adapter w/flange	1588172-1	1588172-5
Adapter w/flange and clip	1588172-2	1588172-6
Adapter w/o flange	1588172-3	1588172-7
Adapter w/o flange and w/clip	1588172-4	1588172-8

Note: All part numbers are RoHS compliant.

Tooling

Powermeter Launch Lead Kits for Optical Testing and Certification



Today testing of fiber optic links is more sensitive than ever. AMP NETCONNECT test kits guarantee precise and replicable fiber testing. All kits contain connectors with controlled end faces and support testing with 3 jumper test method in accordance to ISO/IEC 14763-3.

Each kit contains:

- Test leads for simplex and duplex IL test
- Test leads for CPR tests
- Fiber coupling bushes
- Two mandrels (Multimode only)
- Cleaning aides
- Instruction manual
- Data sheet of end face geometry

Description	Part Number
50 µm, Multimode Launch Lead	Y-6695241-X
62.5 µm, Multimode Launch Lead	Y-6695243-X
9 µm, Singlemode Launch Lead	Y-6695245-X

Y- -X	Connector Type
-1	SC/PC to SC/PC
-2	SC/PC to ST/PC
-3	SC/PC to LC/PC
-4	SC/PC to FC/PC
-5	SC/PC to MT-RJ

Y- -X	Connector Type
-6	ST/PC to SC/PC
-7	ST/PC to ST/PC
-8	ST/PC to LC/PC
-9	ST/PC to FC/PC
1- -0	ST/PC to MT-RJ

Y- -X	Connector Type
1- -1	LC/PC to SC/PC
1- -2	LC/PC to ST/PC
1- -3	LC/PC to LC/PC
1- -4	LC/PC to FC/PC
1- -5	LC/PC to MT-RJ

Y- -X	Connector Type
1- -6	FC/PC to SC/PC
1- -7	FC/PC to ST/PC
1- -8	FC/PC to LC/PC
1- -9	FC/PC to FC/PC
2- -0	FC/PC to MT-RJ

Explanation: Connector 1 — to test equipment
Connector 2 — under test

OTDR Launch Lead Kits for Optical Testing and Certification

Each kit contains:

- Launch and tail lead
- Length 400 m Multimode and 500 m Singlemode
- Data sheet of end face geometry
- Coupling bushings
- Cleaning aides
- Instruction manual



Description	Part Number
50 µm, Multimode Launch Lead	Y-6695240-X
62.5 µm, Multimode Launch Lead	Y-6695242-X
9 µm, Singlemode Launch Lead	Y-6695244-X

Y- -X	Connector Type
-1	SC/PC to SC/PC
-2	SC/PC to ST/PC
-3	SC/PC to LC/PC
-4	SC/PC to FC/PC
-5	SC/PC to MT-RJ

Y- -X	Connector Type
-6	ST/PC to SC/PC
-7	ST/PC to ST/PC
-8	ST/PC to LC/PC
-9	ST/PC to FC/PC
1- -0	ST/PC to MT-RJ

Y- -X	Connector Type
1- -1	LC/PC to SC/PC
1- -2	LC/PC to ST/PC
1- -3	LC/PC to LC/PC
1- -4	LC/PC to FC/PC
1- -5	LC/PC to MT-RJ

Y- -X	Connector Type
1- -6	FC/PC to SC/PC
1- -7	FC/PC to ST/PC
1- -8	FC/PC to LC/PC
1- -9	FC/PC to FC/PC
2- -0	FC/PC to MT-RJ

Explanation: Connector 1 — to test equipment
Connector 2 — under test

Consumables for Power Meter and OTDR Launch Lead Kits

Description	Part Number
Cleaning Lens Book	434376-1
Compressed Air Bottle	1206860-1
Cleaning Stick 2.50 mm	1918807-1
Cleaning Stick 1.25 mm	1918808-1
Cleaning Stick MT-RJ	1391089-1

Note: Part Numbers are RoHS compliant except: ♦ Indicates non-RoHS compliant.



Tooling (Continued)

Tool Kit Compatibility Chart

	Part Number	MT-RJ Jacks	MT-RJ SECURE Jacks	MT-RJ Plugs	LIGHTCRIMP PLUS			LIGHTCRIMP		Epoxy/Polish						
					LC	SC	ST	SC	ST	LC	SC	ST	FC	FSD	FSMA	
Deluxe Premises Termination Tool Kit	1278949-2	X	X		X	X	X	X	X							
	1278949-3*	X	X		X	X	X	X	X							
MT-RJ Jack Tool Kit	1278346-1	X	X													
	1278346-2*	X	X													
LIGHTCRIMP PLUS No Epoxy/ No Polish Universal Tool Kit	1278118-4	X	X		X	X	X									
	1278118-5*	X	X		X	X	X									
MT-RJ Plug Termination Kit	1278745-1			X												
	1278745-2*			X												
LIGHTCRIMP PLUS No Epoxy/ No Polish LC Tool Kit	1754845-1				X											
	1754845-2*				X											
LIGHTCRIMP PLUS No Epoxy/ No Polish SC Tool Kit	1278022-1					X										
	1278022-2*					X										
LIGHTCRIMP PLUS No Epoxy/ No Polish ST Tool Kit	492697-1						X									
	492697-2*						X									
LIGHTCRIMP SC/ST No Epoxy/Polish Tool Kits	503957-1							X	X							
	503957-3							X	X							
	492543-1							X	X							
LIGHTCRIMP SC No Epoxy/ Polish Tool Kits	503706-1							X								
	503706-2							X								
LIGHTCRIMP ST No Epoxy/ Polish Tool Kits	503330-1								X							
	503330-3								X							
	492322-1								X							
Pro-installer Epoxy/ Polish Tool Kits	501258-7									X ¹	X	X	X	X	X	X
	501258-8									X ¹	X	X	X	X	X	X
	501258-9									X ¹	X	X	X	X	X	X
Epoxy/Polish SC/FC Tool Kit (no microscope, no curing oven)	503746-7									X ²	X		X			
Epoxy/Polish ST Tool Kit (no microscope, no curing oven)	503746-1									X ²		X				
Epoxy/Polish FSMA Tool Kit (no microscope, no curing oven)	503746-2									X ²						X
Epoxy/Polish FSD Tool Kit (no microscope, no curing oven)	503746-6									X ²				X		

¹ For LC terminations, also order Part Number 1754462-1.

² For LC terminations, also order Part Number 1754603-1.

*Includes Precision Cleaver and Microscope.

Epoxy/Polish Connector Consumables/Compatibility Chart

	Epoxies (Part Number)			Polishing Films (Part Number)					Consumable Package* Part Number
	EPO-TEK (504035-1)	TRA-CON (501195-4)	HYSOL (502418-1)	9 µm (1374484-1)	5 µm (228433-8)	Diamond Film (503887-1)	0.3 µm (228433-5)	Final Polishing Film (502748-2)	
LC Singlemode	X	X	X	X	X	X	X	—	502306-4
LC Multimode	X	X	X	X	X	X	X	—	502306-4
SC Singlemode	X	X	X	—	X	—	X	X	502306-2
SC Multimode	X	X	X	—	X	—	X	X	502306-2
ST Singlemode	—	X	X	—	X	—	X	X	502306-2
ST Multimode	—	X	X	—	X	—	X	—	502306-1

*Epoxy & film for » 100 connectors.

Note: All part numbers are RoHS compliant.

Tooling (Continued)

Deluxe Premises Termination Tool Kit
Part Number 1278949-2
Part Number 1278949-3
(Includes Precision Cleaver and Microscope)

Product Facts

- Includes all tools need for installing popular field-installable connectors
 - MT-RJ and MT-RJ SECURE Jacks
 - LIGHTCRIMP PLUS SC, LC and ST connectors
 - LIGHTCRIMP SC and ST connectors
- Convenient carrying case
- Includes consumables for LIGHTCRIMP connector terminations
 - For additional LIGHTCRIMP connector terminations, order additional polishing films 228433-9, 228433-8, 228433-7 and 228433-5 (page 93)
- Includes instructional CD-ROM video



MT-RJ Jack Termination Tool Kit
Part Number 1278346-1
Part Number 1278346-2
(Includes Precision Cleaver and Microscope)

Product Facts

- Includes all tools needed for installing MT-RJ and MT-RJ SECURE Jacks



MT-RJ Plug Termination Tool Kit
Part Number 1278745-1
Part Number 1278745-2
(Includes Precision Cleaver and Microscope)

Product Facts

- Includes all tools needed to terminate MT-RJ Plug in handy plastic case
- Contents: Cleave pen, Jacket/Buffer/Coating Stripper, KEVLAR Shears, Strip Template, Cable Clamps, Cure Fixtures, Crimp Tool, Die Sets, Epoxy Dispensers

LIGHTCRIMP PLUS Termination Tool Kits



Product Facts

- Includes all tools needed for installing the listed type LIGHTCRIMP PLUS no epoxy/no polish connectors, MT-RJ and MT-RJ SECURE Jacks
- LIGHTCRIMP PLUS Connector Termination Video CD-Rom also available separately, Part Number 1374503-1
- Convenient carrying case

Description	Part Number	
Universal LIGHTCRIMP PLUS No epoxy/No polish Tool Kit (SC, LC, ST and MT-RJ Jack)	1278118-4	1278118-5 ¹
LIGHTCRIMP PLUS LC Connector Termination Tool Kit	1754845-1	1754845-2 ¹
LIGHTCRIMP PLUS SC Connector Termination Tool Kit	1278022-1	1278022-2 ¹
LIGHTCRIMP PLUS ST Connector Termination Tool Kit	492697-1	492697-2 ¹

¹ Includes Precision Cleaver and Microscope.

Note: All part numbers are RoHS compliant.

KEVLAR is a trademark of E.I. du Pont de Nemours and Company.

Tooling (Continued)

No Epoxy/No Polish Upgrade and Adaptive Termination Tool Kits

Product Facts

- Upgrade Tool Kit supplements existing LIGHTCRIMP PLUS Tool Kits with tools needed to install LC connectors
- Adaptive Tool Kits supplements existing fiber optic tool kits with the tools needed to terminate
- LIGHTCRIMP PLUS connectors**
 - Saves money on full tool kit by reusing tools from currently owned tool kits

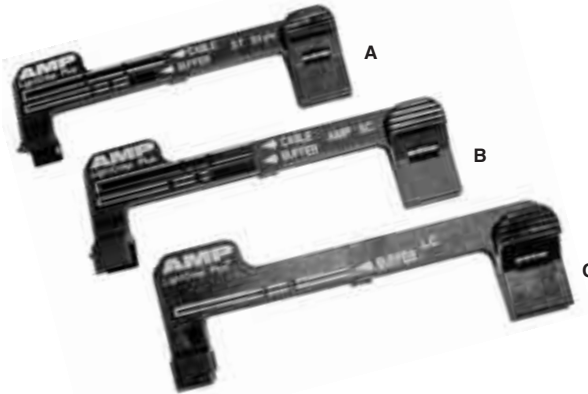
Description	Terminates	Includes	Cost Savings	Part Number
LC LIGHTCRIMP PLUS Upgrade Kit	LIGHTCRIMP PLUS LC	LC Die Set and Cable Holder	Low Cost Upgrade for Current Tool Kit	1754847-2
LC LIGHTCRIMP PLUS Adaptive Kit	LIGHTCRIMP PLUS LC	Crimp Tool, LC Die Set, LC Cable Holder, Cleave Tool and Instruction Sheet	Fiber and Cable Strippers in Current Tool Kit	1754846-1 1754846-2*
SC LIGHTCRIMP PLUS Adaptive Kit	LIGHTCRIMP PLUS SC	Crimp Tool, SC Die Set, SC Cable Holder, Cleave Tool and Instruction Sheet	Fiber and Cable Strippers in Current Tool Kit	1754737-1 1754737-2*
Combination LIGHTCRIMP PLUS Adaptive Kit	LIGHTCRIMP PLUS SC and ST	Crimp Tool, SC and ST Die Sets, SC and ST Cable Holders, Cleave Tool and Instruction Sheets	Fiber and Cable Strippers in Current Tool Kit	1754739-1 1754739-2*
ST LIGHTCRIMP PLUS Adaptive Kit	LIGHTCRIMP PLUS ST	Crimp Tool, ST Die Set, ST Cable Holder, Cleave Tool and Instruction Sheet	Fiber and Cable Strippers in Current Tool Kit	1754738-1 1754738-2*

*Includes microscope and precision cleaver

LIGHTCRIMP PLUS Cable Holders

Product Facts

- Used in LIGHTCRIMP PLUS connector terminations (included in LIGHTCRIMP PLUS Tool Kits)



Description	Figure	Part Number
ST	A	492703-1
SC	B	1278023-1
LC	C	1754138-1

Fiber Optic Cleave Tool
Part Number 492674-1

Product Facts

- Cleave fibers for LIGHTCRIMP PLUS connectors
- One is included in basic tool kits for MT-RJ Jacks and LIGHTCRIMP PLUS connectors (not the LC Upgrade Kit)
- Easy to use: clamp, score and bend
- Blade life-span is » 1000 cleaves



Note: All part numbers are RoHS compliant.

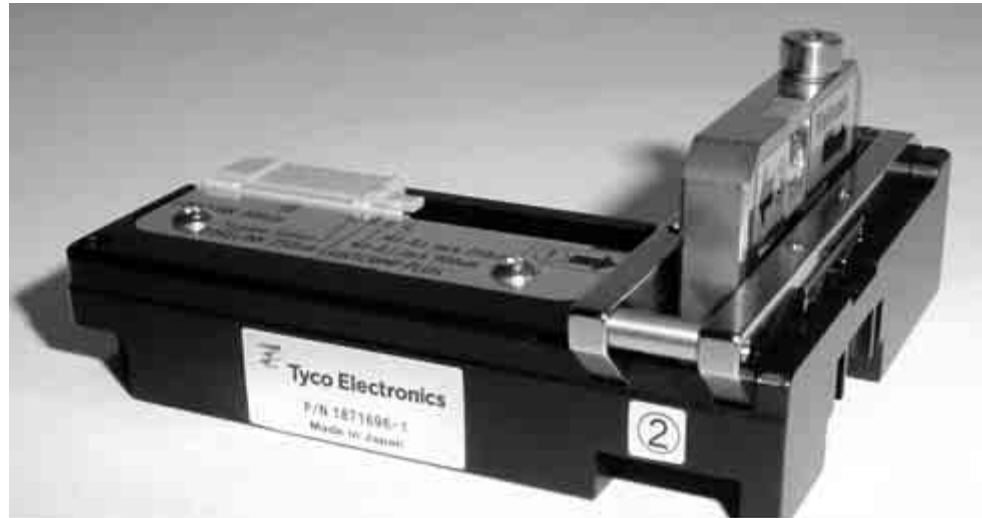
Tooling (Continued)



“New” Hand Held Precision Cleaver

**Part Number 1871696-1
Hand Held Precision Cleaver**

**Part Number 1871696-2
Hand Held Precision Cleaver
with Trash Can
(not a stocked item)**



Product Facts

- **Operator independent = no craft sensitivity = consistent cleave every time**
- **Hand held operation**
- **10,000 cleave blade life**
- **4, 6, 8, 10, and 18 millimeter cleave lengths**
- **Product specific markings for LIGHTCRIMP PLUS and MT-RJ jack connectors, CORELINK splice, and fusion splicing**
- **Cleaved surface angle < 1.5°**
- **No lip, no fracture, and no roll-off**
- **Padded belt case for convenience and storage**
- **Neck lanyard included**

Tyco Electronics' hand held precision fiber cleaver provides precision quality cleaves with the feel and robustness of a full scale precision cleaver in a hand held size at an exceptionally competitive price. The 10,000 cleave blade life far exceeds that of any other hand held cleaver currently on the market. The detailed scale markings indicate

proper cleave lengths for popular Tyco Electronics field installable fiber optic connectors and mechanical splices in addition to the standard numerical markings for other applications including fusion splicing. The included belt pouch and neck lanyard ensure that the cleaver is always within reach.

Applications

Affordable precision cleaving solution for:

- **Field installable mechanical splice connectors**
- **Fusion splicing**
- **Mechanical splicing**
- **Bare fiber adapters**

Product Dimensions

Length — 74 mm [2.913 in.]
Width — 65.5 mm [2.578 in.]
Thickness — 33.5 mm [1.318 in.]
Weight — 136 g [0.30 lb.]

Note: All part numbers are RoHS compliant.

Tooling (Continued)

LIGHTCRIMP Termination Tool Kits

Product Facts

- Includes all tools needed for installing the listed type LIGHTCRIMP no epoxy/polish connectors
- Convenient carrying case
- Includes consumables for installing 60 LIGHTCRIMP connectors
 - For additional LIGHTCRIMP terminations, order additional polishing films 228433-9, 228433-8, 228433-7 and 228433-5 (page 93)
- Note: photo is representative of kits — contents may vary by Part Number



Description		Microscope (if listed)	Part Number
LIGHTCRIMP SC	Termination Kit	—	503706-1
		Premium Microscope	503706-2
LIGHTCRIMP ST	Termination Kit	—	503330-1
		Premium Microscope	503330-3
	Mini Tool Kit	—	492322-1
LIGHTCRIMP SC and ST	Termination Kit	—	503957-1
		Premium Microscope	503957-2
	Mini Tool Kit	—	492543-1

LIGHTCRIMP Cleave Tool
Part Number 503705-1

Product Facts

- Used in both SC and ST LIGHTCRIMP Connector terminations
- Included in the Deluxe and LIGHTCRIMP Tool Kits



Note: All part numbers are RoHS compliant.

Tooling (Continued)

Pro-Installer Epoxy/Polish Connector Termination Tool Kits

Product Facts

- Includes all tools necessary to install SC, ST, and FC Connectors
 - For LC terminations, also order Part Number 1754462-1
- Tool kits include:
 - Pro-Crimper II Hand Tool and crimping dies
 - Polishing bushings
 - Polishing film (also sold separately, page 93)
 - Cable and fiber strippers
 - Scissors
 - Scribe tool
- Includes polishing films to install 60 epoxy/polish connectors
 - Epoxy is sold separately (see page 92)
- Kits available with curing oven and microscope or without
- Convenient carrying case
- Photo is representative of kits — contents vary by Part Number



Professional Installer Kit

Description	Part Number
With 110 V Curing Oven and Microscope	501258-7
With 220 V Curing Oven and Microscope	501258-8
Without Curing Oven or Microscope	501258-9

Epoxy/Polish Connector Termination Tool Kits

Product Facts

- Includes all tools necessary to install the listed epoxy/polish connectors
 - For LC terminations, also order Part Number 1754603-1
- Tool kits include:
 - Pro-Crimper II Hand Tool and crimping dies
 - Polishing bushings
 - Polishing film (also sold separately, page 93)
 - Cable and fiber strippers
 - Scissors
 - Scribe tool
- Includes polishing films to install » 60 epoxy/polish connectors
 - Epoxy is sold separately (see page 92)
- Does not include curing oven or microscope
- Convenient carrying case



Description	Part Number
SC and FC	503746-7
ST	503746-1
FSMA	503746-2
FSD	503746-6

Note: All part numbers are RoHS compliant.

Tooling (Continued)

Cable Stripper
Part Number 1375317-1

Product Facts

- Cyclops Stripper ideal for stripping twisted pair (UTP and STP) and fiber optic cables up to 10.92 [0.43] diameter



Sapphire-Tipped Scribe Tool and Accessories

Product Facts

- Long-lasting sapphire blade
- Pen-type casing
- Used to install all Epoxy/Polish Connectors
- Included in Epoxy/Polish Tool Kits



Description	Part Number
Sapphire-tipped Scribe Tool	504064-1
Replacement Blades	504290-1

Note: All part numbers are RoHS compliant.

Tooling (Continued)

Epoxy/Polish LC Termination Accessories

Product Facts

- Supplement epoxy/polish tool kits on page 90 with these components to terminate LC Epoxy/Polish Connectors

- Different polishing films are required for LC polishing (see table on page 85 and films on page 93)

Description	Part Number
LC Polishing Puck — Metal	1754074-1
LC Cable Preparation Template	1588756-1
LC Hand Tool and Die Set	1588176-1
LC 1.25 mm Ferrule Microscope Adapter	1278997-1
LC Oven Block Assembly	1457628-1
LC Adaptive Kit — Anaerobic Epoxy Style	1754603-1
LC Adaptive Kit — Heat Cure	1754462-1

EPO-TEK 353ND Epoxy
Part Number 504035-1



Product Facts

- For use with SC and LC Connectors
- Pre-measured two-part packets for consistent results
- Long pot life once mixed
- Heat-cured epoxy
- Supplied in 4-gram packets
- Cures in 15 minutes at 115° C

TRA-CON Epoxies
Part Number 1918652-1



Product Facts

- For use with SC, LC, and ST Connectors
- Pre-measured two-part packets for consistent results
- Can be heat-cured or cured at ambient temperature
- Supplied in 2-gram packets
- Each packet terminates » 250 connectors
- 25 packets per pack
- Pot life = 30 minutes
- Cures in:
 - 24 hours @ 25° C
 - 2 hours @ 65° C
 - 10 minutes @ 110° C

HYSOL Epoxy-Tubes
Part Number 502418-1



Product Facts

- For use with SC, LC, ST, FSD, FC, and FSMA Connectors
- Two-part epoxy in two tubes
- Heat-cured epoxy
- Terminates » 400 connectors
- One set of two (2) tubes per part number
- Pot life = 30 minutes
- Cures in 30 minutes at 100° C

QC Quick Cure Adhesive

Product Facts

- One-part adhesive eliminates the hassle and mess of mixing
- Applies easily and cures in minutes without heat or UV light
- Works with standard multimode epoxy-style connectors without performance degradation
- Faster procedure for time-saving productivity and lower installed costs
- Not for use with singlemode terminations



Tube Size	Typical Connector Terminations Per Tube*	Part Number
3 grams	100	492508-1

*Your individual termination techniques will affect the number of terminations per tube.

Note: All part numbers are RoHS compliant.

Tooling (Continued)

Epoxy Applicator Syringe
Part Number 501473-3

Product Facts

- 3 cc capacity



Epoxy Curing Oven

Product Facts

- Reduces time required to cure epoxy
- Provides a uniform, controlled curing environment
- Used for all epoxy/polish connectors
- Comes equipped to cure up to four Duplex Connectors and 12 Simplex Connectors at once
 - Optional blocks reconfigure to 8 Duplex or 24 Simplex Connectors
- Variable temperature control (60°C to 125°C)
- Includes thermometer and cable support bracket
- Two voltage options
- Curing sleeves on page 98



Description	Part Number
110 VAC	502134-1
220 VAC	502134-2
Adapter Block for 8 Duplex Connectors	502222-1
Adapter Block for 24 Single Connectors	502129-1
Block Assembly for 1,6, 2.0 & 2.4 mm SC and FC (metal crimp body) and LC Connectors	1457528-1

Polishing Films

Product Facts

- Used to install LIGHTCRIMP and epoxy/polish connectors

Description	Part Number							
	FSMA	Multimode ST	Singlemode ST	FC	FSD/RSD	SC	LIGHTCRIMP XTC	LC
Hand Polishing Film:								
15 µm ⁴	—	—	—	—	—	—	228433-9	—
9 mm	—	—	—	—	—	—	—	1374484-1 ³
5 µm ⁴	228433-8	228433-8	228433-8	228433-8	228433-8	228433-8	228433-8	228433-8
1 µm ⁴	228433-7	228433-7	—	—	228433-7	—	228433-7	—
Fine Diamond Film¹								
0.3 µm ⁴	228433-5	228433-5	228433-5	228433-5	228433-5	228433-5	228433-5	228433-5
Final Polish Film¹								
	—	—	502748-2	502748-2	—	502748-2	—	—
Consumables Kit²								
	502306-1	502306-1	502306-2	502306-2	502306-1	502306-2	—	502306-4

¹ Pack of 5.

² Contains all consumable supplies for at least 100 connectors.

³ Pack of 15.

⁴ Pack of 100.

Note: All part numbers are RoHS compliant.

Tooling (Continued)

Hand Held Visual Fault Locator (VFL)

Product Facts

- 650 nm (visible) Class 2 1.0 mW max Diode Laser
- Continuous and flashing (2-3 Hz pulsed) modes
- Rugged rubber shell and body design modeled after a popular military connector
- Lanyard attached dust cover
- Standard 2.5 mm adapter for SC, ST, and FC connectors
- Optional 1.25 mm adapter for LC and MU connectors.
- Unique design allows adapter to permanently reside on VFL so it is not misplaced allowing user to choose 1.25 mm or 2.5 mm
- Uses 1 “AA” style battery for >30 hours of continuous use
- Soft-sided belt case for convenience and storage



The Tyco Electronics Hand Held Visual Fault Locator (VFL) is a rugged and affordable solution for identifying breaks and bending in optical fibers and cabling. Its powerful, red (650 nm) laser provides the ability to locate damaged, broken, or tightly bent fibers that cause undesirable attenuation in your system.

The jacket of the cable will glow red at the location of the fault. The FLASH button

allows the user to toggle between continuous or pulsed mode. The compact, rugged, and balanced design is based upon a popular harsh environment fiber optic connector. The single “AA” style battery is good for >30 hours of continuous use and the soft-sided protective case with belt loop provides a convenient and protective means of storage.

Applications

Affordable VFL Solution for:

- Identifying breaks, bends, and other damage in optical fibers
- Tracing fiber paths
- Identifying termination errors
- Continuity testing

Product Dimensions

- Length** — 18.5 cm [7.283 in]
- Width** — 2.2 cm [0.866 in]
- Thickness** — 2.2 cm [0.866 in]
- Weight (w/battery)** — 150 g [0.33 lb]

Description	Part Number
Hand Held Visual Fault Locator	1828352-1
1.25 mm Adapter for Hand Held VFL	1828353-1
Includes Part Numbers 1828352-1 and 1828353-1	1828352-2

Note: All part numbers are RoHS compliant.

Tooling (Continued)

Hand Held Microscope

Product Facts

- High quality glass optics
 - 200X magnification
- Optimal visual examination of terminated ends
 - 500um field of view
- Dual illumination
 - Coaxial for inspecting polish quality
 - Oblique for general conditions
- Pre-centered, threaded adapter mount provides easy focusing and changing of connectors
- Field and laboratory examination for multimode and singlemode fibers
- Portable
- Integral infrared filter for safety
 - Do NOT use any microscope to view active fiber signals
- Disposable, Type LR44 batteries
- Long-life LED (approximately 100,000 hours of operation)
- Each Kit includes:
 - 10-power objective microscope with an impact resistant ergonomic rubber shell and high quality glass optics
 - 20-power eyepiece
 - Padded carrying case with an integrated belt loop and internal adapter storage pocket
 - Neck lanyard with safety breakaway feature
 - Universal 2.5 mm ferrule adapter (for SC, ST and FC)
- Other adapters available are:
 - Universal 1.25 mm (adapts LC and MU)
 - MT-RJ
 - MPO
 - MPO APC
 - MPX
 - MPX APC



Tyco Electronics' hand held microscope incorporates high quality glass optics and dual illumination lighting for unsurpassed 200X magnification. With a 500 µm Field of View (FOV) and both coaxial and oblique illuminations, this microscope will meet the proposed TIA/IEC hand held microscope specification for a polish quality scope (coaxial) and general conditions scope (oblique) in one compact unit.

The built in IR-laser attenuation filter will provide protection from accidental exposure to active fibers, although intentional and prolonged viewing of active fibers is not recommended. The ergonomic, impact resistant shell provides a rugged feel, and the included padded belt case and neck lanyard ensure that the microscope is always within reach.

Applications

Affordable inspection device for:

- Polish inspection
- General conditions (debris) inspection
- Cleave quality inspection
- Verifying core size

Product Dimensions

Length — 186.9 mm [7.359 in.]
Width — 51.6 mm [2.030 in.]
Height — 31.5 mm [1.240 in.]
Weight — 317.5 g [0.70 lb.]

Description		Part Number
Hand Held Microscope		1754767-1
	1.25 mm Universal LC and MU	1754765-1
	2.5 mm Universal SC, ST and FC	1754766-1
	SC APC	1828833-1
	MT-RJ	1754768-1
Adapters	MPO	1828836-1
	MPO APC	1828837-1
	LIGHTRAY MPX Connectors	1828834-1
	LIGHTRAY MPX APC Connectors	1828835-1
	FSMA	1985040-1*

* Coupling adapter Part Number 1985041-1 required.

DANGER: Active fibers should never be viewed through a microscope.

Note: All part numbers are RoHS compliant.

Tooling (Continued)

MTP/MPO IBC Cleaner
Part Number 1918809-1

Product Facts

- Cleans male or female MTP/MPO connectors
- Pre-washed cleaning cloth is lint and debris free
- Each cleaner is capable of more than 400 cleanings
- Can be used for bulkhead and unmated MTP/MPO cleaning
- Protective dust cover doubles as an adapter cap for cleaning unmated connectors
- FOCIS 5-Type MTP/MPO interface compliant
- Removes dust and oil contamination
- Ideal solution for cleaning parallel optics transceivers



The MTP/MPO IBC (In Bulkhead Cleaner) dry cloth cleaner offered by Tyco Electronics utilizes a densely woven micro-fiber cloth that cleans male (with pins) or female MTP/MPO connectors while in adapters, bulkheads, faceplates, or in unmated form with the unique adapter/dust cover. The unique cleaning cloth also reduces static charge

making it one of the most advanced cleaning systems available for bulkhead optical connector cleaning.

Applications

For effective cleaning of:

- Male and female MTP/MPO connectors inside mating adapters
- Unmated male and female MTP/MPO connectors using included adapter

- Parallel optics transceivers
- Networking gear including switches and routers
- Factory or field connectors

Product Dimensions

Length — 184.2 mm [7.25 in.]
Width — 56.5 mm [2.22 in.]
Thickness — 22 mm [0.866 in.]
Adapter Length — 19.5 mm [0.759 in.]

MTP is a trademark of US Conec Ltd.

OPTIPOP R Reel Cleaner

Product Facts

- Static attraction is minimized
- Ultra clean micro-fiber cloth captures debris and other contamination
- Robust cloth does not fray or leave fibrous material behind
- Reduces the number of field and test issues caused by contaminated end faces
- High-end cost effective cleaning solution



The OPTIPOP R dry cloth cassette cleaners offered by Tyco Electronics utilize a densely woven micro-fiber cloth that cleans fiber optic connector tips while reducing static charge. This makes them one of the most advanced cleaning systems available for optical connector cleaning.

Applications

A variety of reel cleaner configurations allow for use on the major optical connector types including FC, SC, ST, LC, MU, ODVA conforming, MT-RJ, and MPO.

Product Dimensions

Length — 127 mm [5.00 in.]
Width — 83 mm [3.26 in.]
Thickness — 48 mm [1.89 in.]
Weight — 150 g [0.33 lb.]



Reel Cleaner Refill (Six per Pack)
Part Number 1918806-1

Description	Part Number
MPO w/pins reel cleaner	1918802-1
One slot reel cleaner; 1.25 mm, 2.5 mm, MT No Pins	1918803-1
MT-RJ plug w/pins reel cleaner	1918804-1
Two slot reel cleaner; 1.25 mm and 2.5 mm	1918805-1
Reel cleaner refill (six per pack)	1918806-1

OPTIPOP is a trademark of NTT Advanced Technology Corporation.

Note: All part numbers are RoHS compliant.



Tooling (Continued)

OPTIPOP C Card Cleaner

Product Facts

- Static attraction is minimized
- Ultra clean micro-fiber cloth captures debris and other contamination
- Robust cloth does not fray or leave fibrous material behind
- Reduces the number of field and test issues caused by contaminated end faces
- Compact size



Card Cleaner Refill (Ten per Pack)
Part Number 1918811-1

The compact OPTIPOP C dry cloth card cleaner offered by Tyco Electronics utilizes a densely woven micro-fiber cloth that cleans fiber optic connector tips while reducing static charge. This makes it one of the most advanced cleaning systems available for optical connector cleaning.

Applications

The card cleaner can be used on major optical connector types including FC, SC, ST, LC, MU, LC, ODVA, MT-RJ*, and MPO*.

*Without guide pins installed.

Product Dimensions

- Length** — 120 mm [4.72 in.]
- Width** — 57 mm [2.24 in.]
- Thickness** — 16 mm [0.63 in.]
- Weight** — 60 g [0.13 lb.]

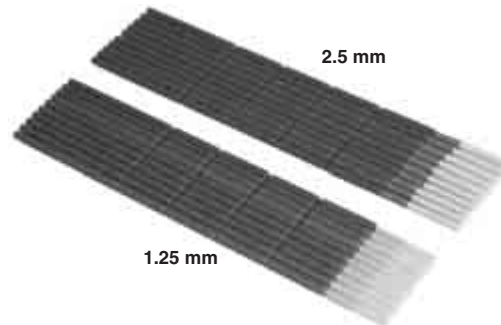
Description	Part Number
Fiber connector card cleaner	1918810-1
Card cleaner refill (ten per pack)	1918811-1

OPTIPOP is a trademark of NTT Advanced Technology Corporation.

NEOCLEAN Stick Cleaner

Product Facts

- Perforated handle for customizing length and angle
- Ultra clean micro-fiber cloth captures debris and other contamination while minimizing static attraction
- Robust cloth does not fray or leave fibrous material behind
- Reduces the number of field and test issues caused by contaminated end faces
- Convenient packaging



The NEOCLEAN dry cloth stick cleaners offered by Tyco Electronics utilize a densely woven micro-fiber cloth that cleans fiber optic connector tips while reducing static charge. This makes them one of the most advanced cleaning systems available for bulkhead optical connector cleaning.

Applications

The stick cleaners can be used on major single fiber optical connector types inside bulkhead adapters including FC, SC, ST, LC, MU, LC ODVA, and MT-RJ Jacks in addition to transceivers and lenses.

Product Dimensions

- Part Number 1918807-1**
2.5 mm Stick Cleaner
Overall Length — 151.2 mm [5.95 in.]
Tip Diameter — 1.25 mm [0.049 in.]
Handle Diameter — 2.65 mm [0.104 in.]
Tip Length — 12.6 mm [0.496 in.]



- Part Number 1918808-1**
1.25 mm Stick Cleaner
Overall Length — 151.2 mm [5.95 in.]
Tip Diameter — 2.5 mm [0.098 in.]
Handle Diameter — 2.65 mm [0.104 in.]
Tip Length — 20.0 mm [0.787 in.]



NEOCLEAN is a trademark of NTT Advanced Technology Corporation.

Note: All part numbers are RoHS compliant.

Tooling (Continued)

Hand Tools



PRO-CRIMPER III Hand Tool

Instruction Sheet 408-4020
<http://www.tycoelectronics.com/documents>

PRO-CRIMPER III Hand Tool

Connector	Cable Jacket Diameter (mm)	Part Number		
		Hand Tool w/ Die Set	Hand Tool Only	Die Set Only
FSMA	3.0	58551-1	58532-1	58552-1 (hex die)
ST Ceramic	3.0	58433-4	58532-1	58424-1
ST Stainless Steel	3.0	58433-4	58532-1	58424-1
ST Polymer Composite	3.0	58433-4	58532-1	58424-1
ST Ceramic Used with Loose Tube	3.8	—	58532-1	503890-1
ST Stainless Steel (504XXX series only)	3.0	58551-1	58532-1	58552-1
SC/FC (Polymer crimp body)	3.0	503911-1	58532-1	503910-1
	2.4 & 3.0	492026-1	58532-1	492025-1
SC, FC (Metal crimp body)	1.6-2.0, 2.4	1588176-1	58532-1	1588175-1
SC/FC (Metal crimp body)	3.0	—	58532-1	492131-1
FSD - Ceramic	DUALAN & LDD	58519-1	58532-1	58510-1
FSD - Polymer	DUALAN & LDD	58519-1	58532-1	58510-1
FSD/MC - Ceramic	DUALAN & LDD	58519-1	58532-1	58510-1
FSD Breakout Kit	DUALAN & Protection Kit	58519-1	58532-1	58510-1
LIGHTCRIMP Plus and LIGHTCRIMP ST	3.0	492623-1	58532-2	492622-1
LIGHTCRIMP Plus and LIGHTCRIMP SC	3.0	492782-1	58532-2	492783-1
LIGHTCRIMP Plus LC	1.6 – 2.0	1754137-1	58532-2	1754136-1
MT-RJ Plug	1.8	1278632-1	58532-1	1278627-1
LC	3.0, 2-4, 1.6-2.0	1588176-1	58532-1	1588175-1

Polishing Bushing, Curing Sleeves and Strip Card Kits

Connector	Cable Jacket Diameter (mm)	Part Number		
		Polishing Bushing	Curing Sleeves/Pieces	Strip Card Kit
FSMA	3.0	228025-1	502249-1 (12 pcs.)	501818-1
ST				
Ceramic, Stainless Steel	3.0	503337-1 (Metal) 503304-1 (Black Polymer)	502259-1 (12 pcs.)	501818-1
Polymer Composite	3.0	503304-2 (Beige Polymer)	502259-1 (12 pcs.)	501818-1
FC	3.0	504862-1	502862-2 (6 pcs.)	1754636-1
SC	3.0	502631-1 (Black Polymer)	502656-1 (1 pc.)	1754636-1
LC		1754074-1 (Metal) 1918196-1 (Black Polymer)	1457630-X ¹ (12 pcs.)	1588756-1
FSD - Ceramic & Polymer	DUALAN & LDD	501795-1*	502023-1**	501818-1

* Curing Assembly Kit with polishing bushing.
 ** Curing Assembly Kit without polishing bushing.
¹ -1 LC 900 μm
 -2 LC jacketed cable

Note: All part numbers are RoHS compliant.