

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



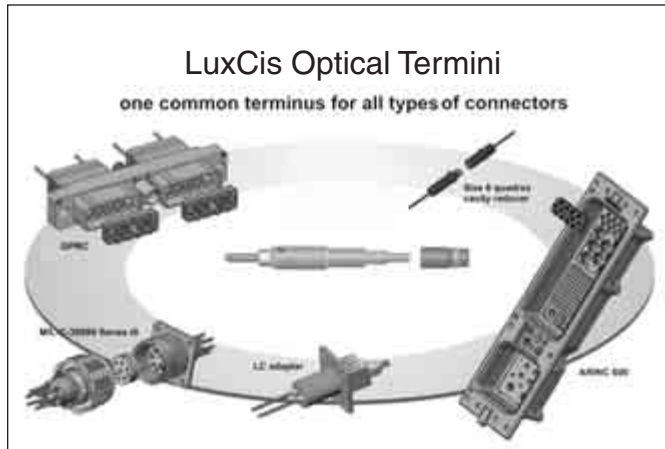
PRO BEAM Sr., Jr. & Mini Connectors

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

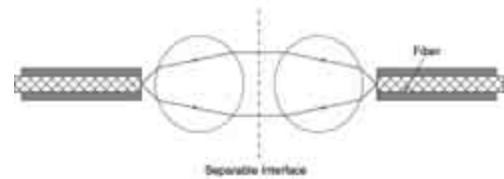
- PRO BEAM Sr., PRO BEAM Jr. and PRO BEAM Mini Connector field deployable interconnects
- ARINC 600 connectors, with inserts/holder blocks designed for Mini Expanded Beam — up to 128 channels on size 3 ARINC 600
- MIL-C-38999 Series III shell size 11 style circular connectors — Cable assemblies up to 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.

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-

Expanded Beam Technology



Expanded Beam Principle

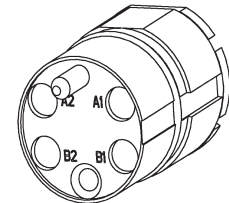
sectional area of the light beam increases over 2,000 times.). It is then refocused back down onto the core of the receiving fiber. This approach provides ease of alignment and low sensitivity to thermal changes and contamination. High strength, precision connector housings enhance a durable connection,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

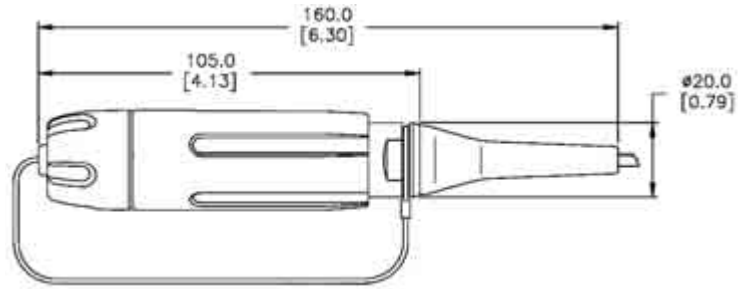
Shell Alloy — Aluminum; or nickel
aluminum bronze (high saline environ-
ment)

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

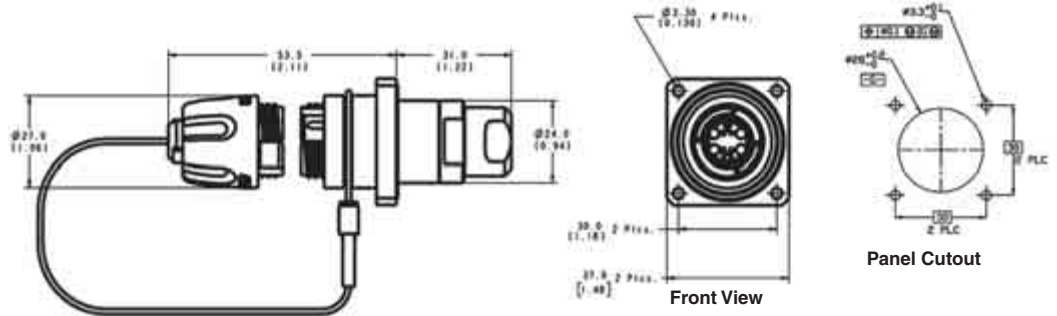
**Bulkhead Connector Panel
Thicknesses**

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

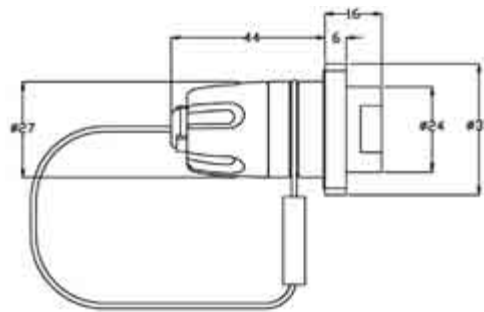
**PRO BEAM Jr. Bulkhead Connector
Square Flange** — 6 mm max.



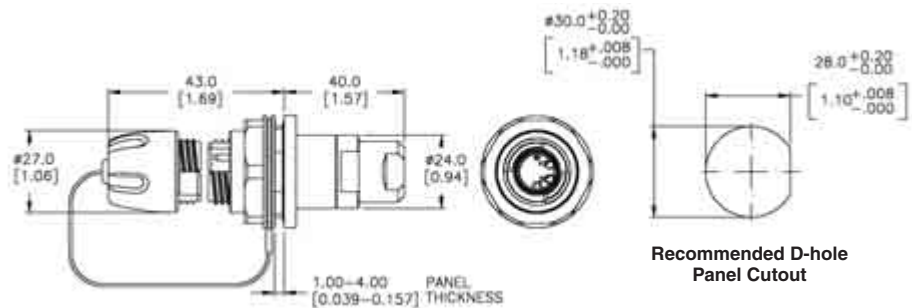
PRO BEAM Jr. Cable Connector, Plug



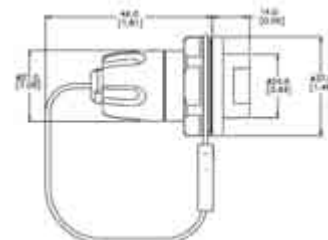
PRO BEAM Jr. Square Flange Mount Bulkhead



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



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

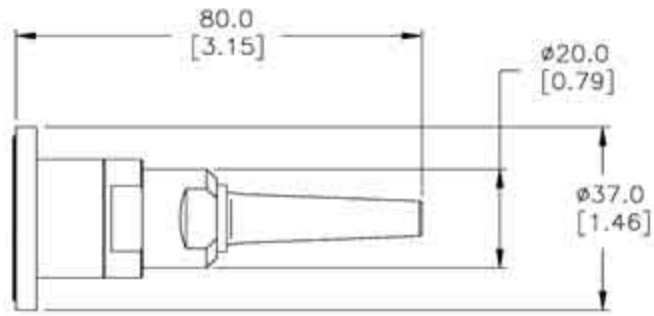


PRO BEAM Jr. Low Profile D-Hole Bulkhead

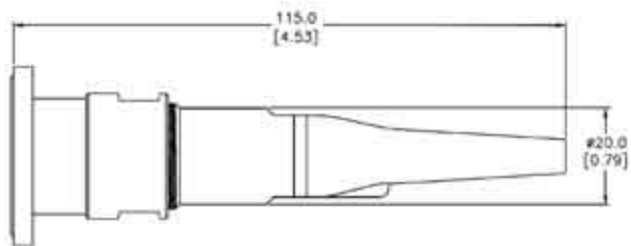
Rugged Fiber Optic Products (Continued)

PRO BEAM Jr. Connectors

(Continued)



Standard Bulkhead Cable Adapter, with Boot

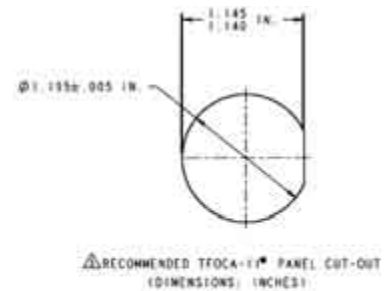
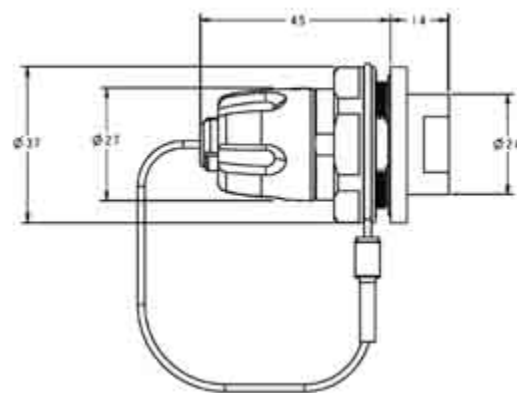


Environmentally Sealed Bulkhead Cable Adapter, with Boot

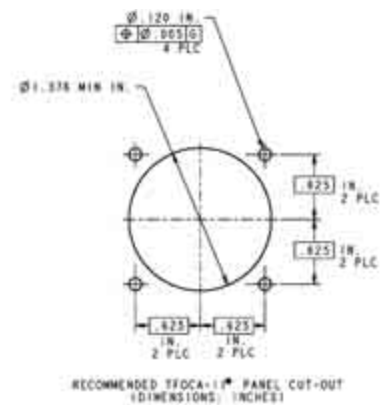
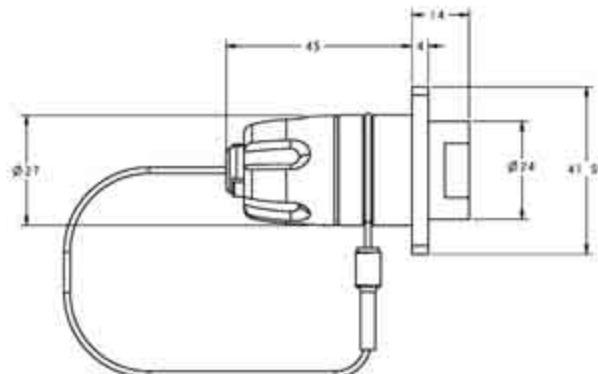
PRO BEAM Jr. Replacement Receptacles for TFOCA-II Panel Mount Connector Applications

(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.



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

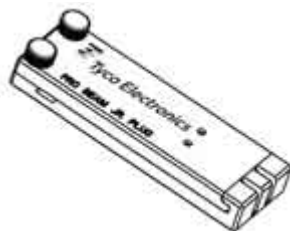
408-8828 Cleaning Procedure for EB C/A's

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 μ m	SM	Jr.	1588908-2
126 μ m	SM	Jr.	1588908-1
126 μ m	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

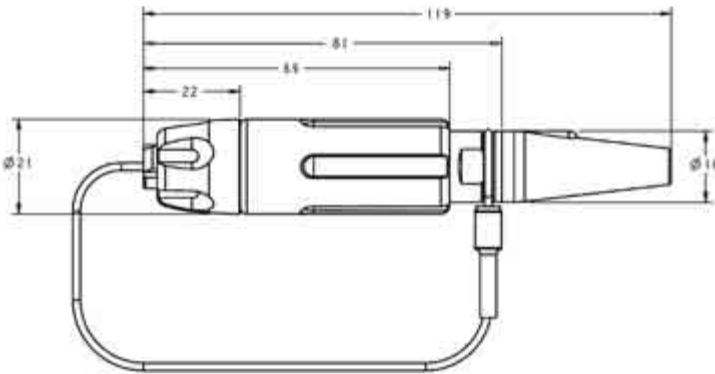
408-10065 Plug

408-10067 Square Flange Bulkhead

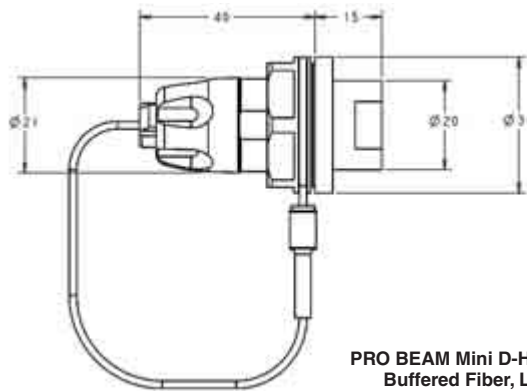
408-10069 Low Profile D-Hole Bulkhead

408-10076 Sealed D-Hole Bulkhead

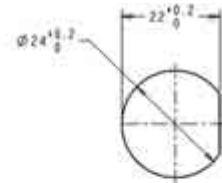
<http://www.tycoelectronics.com/documents>



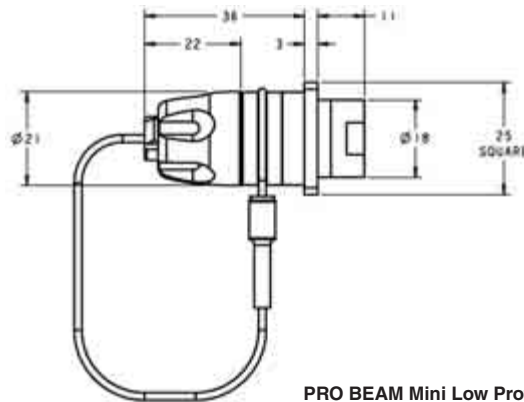
PRO BEAM Mini Cable Connector, Plug



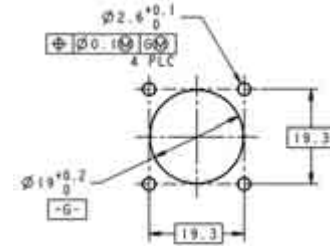
PRO BEAM Mini D-Hole Bulkhead,
Buffered Fiber, Low Profile



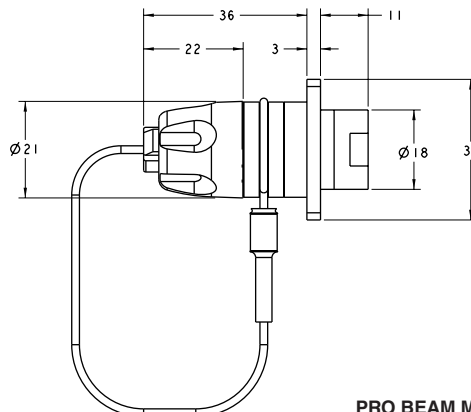
Recommended Panel Cutout



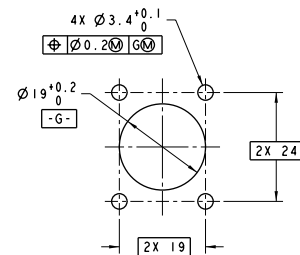
PRO BEAM Mini Low Profile, Square Flange Mount Bulkhead



Recommended Panel Cutout



PRO BEAM Mini Bulkhead with XLR Flange

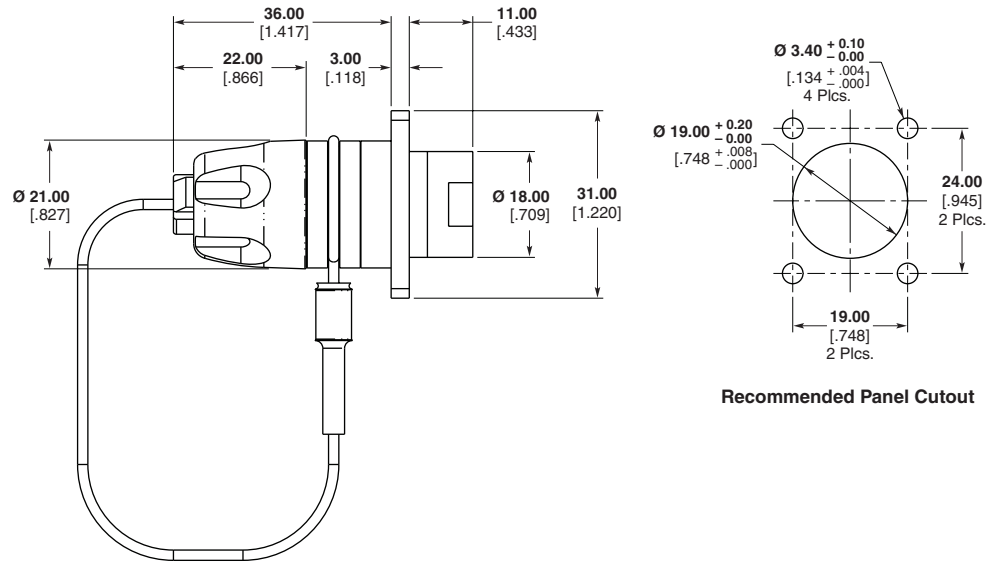


Recommended Panel Cutout

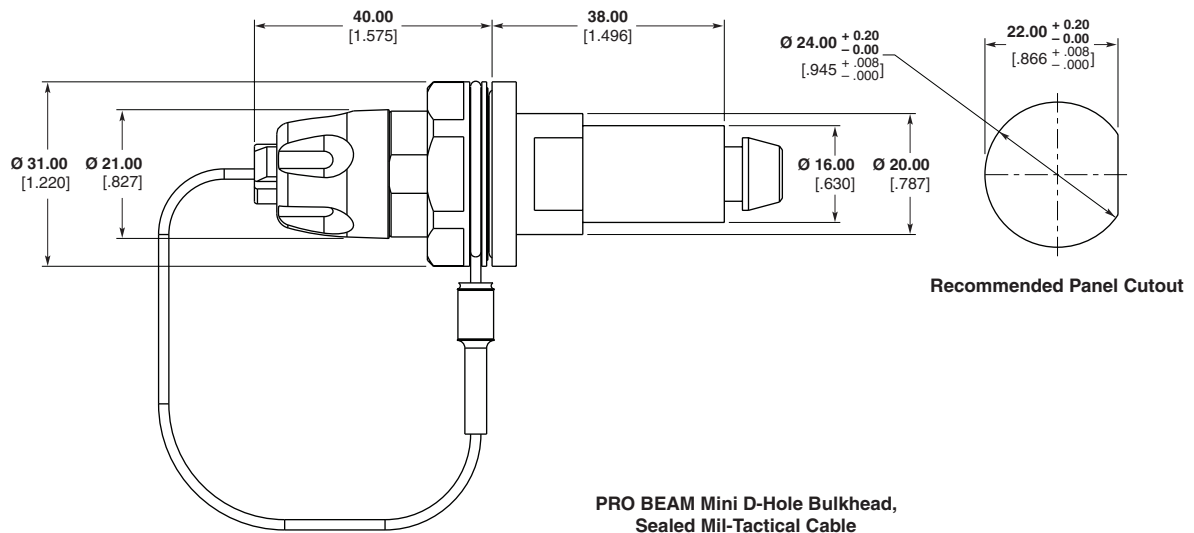
Rugged Fiber Optic Products (Continued)

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.

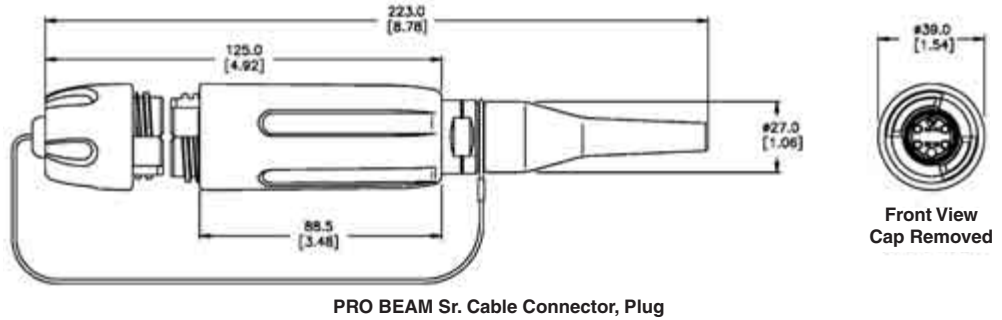
**PRO BEAM Sr. Square Flange
Connector** — 8.5 mm max.

Technical Documents

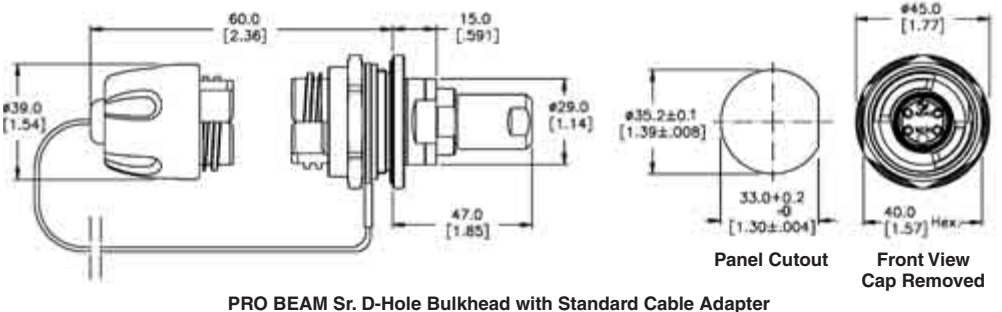
Product Specifications
408-8799 Plug
408-8800 D-Hole Bulkhead
408-8877 Square Flange Bulkhead

Application Specification

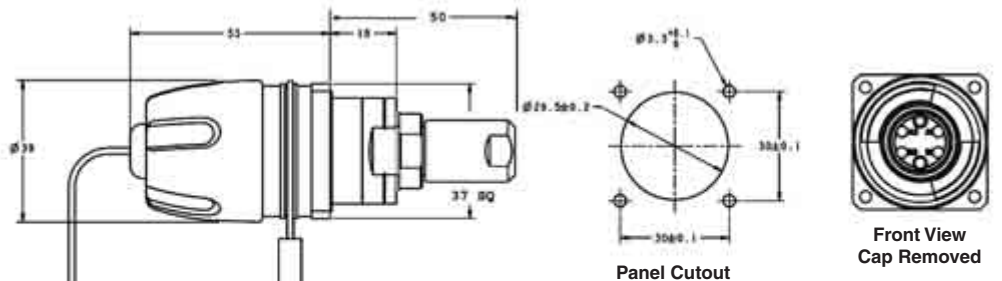
114-13122
<http://www.tycoelectronics.com/documents>



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)

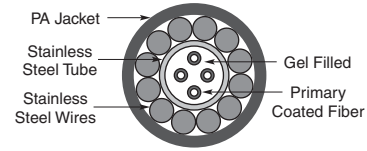
ARMOR-LIGHT Tactical Field Deployable Fiber Optic Cable for Extreme Environments (Metallic for Rodent Proof)



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



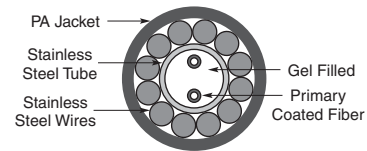
Fiber Type	Part Number	Outside Dia. (mm)	Weight kg/km	Max. Attenuation dB/km				Bandwidth MHz-km	
				850 nm	1300 nm	1310 nm	1550 nm	850 nm	1300 nm
62.5/125	1588957-1	3.8	24	3.5	1.0	X	X	160	500
50/125	1588957-2	3.8	24	2.7	0.9	X	X	400	1200
SM	1588957-4	3.8	24	X	X	0.40	0.25	X	X

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)

	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
Use with:						
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)

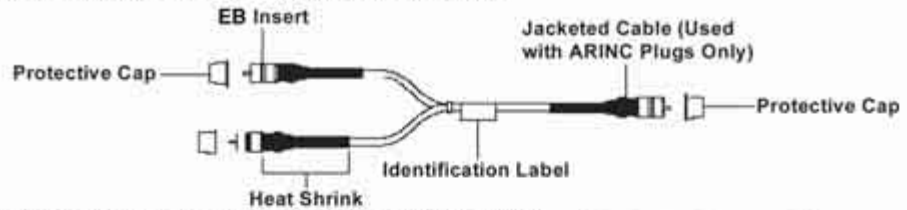
ARINC 801 — Fiber Optics Working Group

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

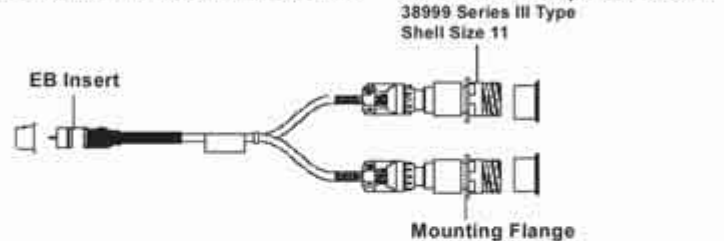
Rugged Fiber Optic Products (Continued)

Typical Assemblies for In-Flight Network Applications

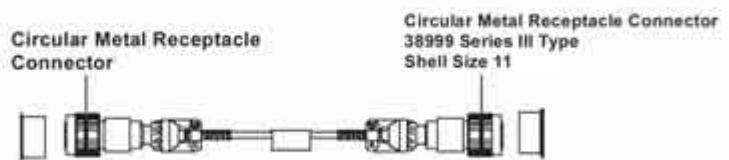
ARINC EB Connector-to-ARINC EB Connector Cable Assembly



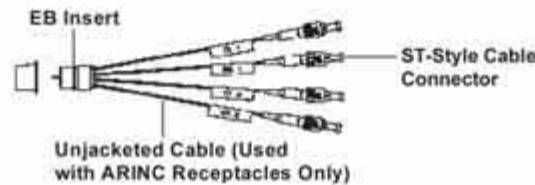
ARINC EB Connector-to-Circular Metal Connector Cable Assembly



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

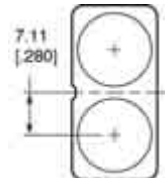


ARINC 600 Insert Holders for Mini-Expanded Beam Contacts

Size 1 Power Cavities



ARINC 600, 1 Position
1MP

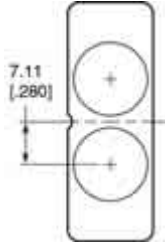


ARINC 600, 2 Position
2MP

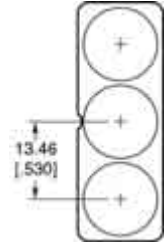
Size 1 Signal Cavities



ARINC 600, 1 Position
1MS



ARINC 600, 2 Position
2MS



ARINC 600, 3 Position
3MS

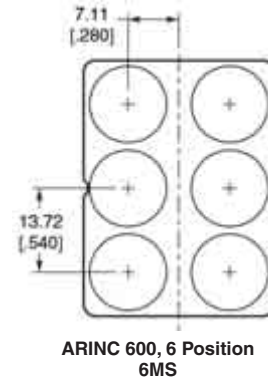
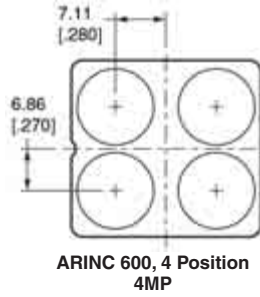
ASSEMBLY CAPABILITIES
Tyco Electronics has extensive Rugged Optic Harness capabilities. Please consult your local Tyco Electronics Sales Representative for assistance.

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

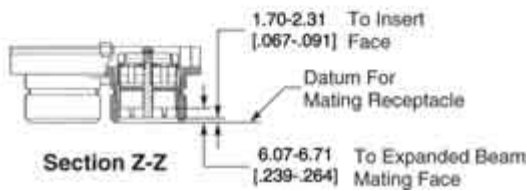
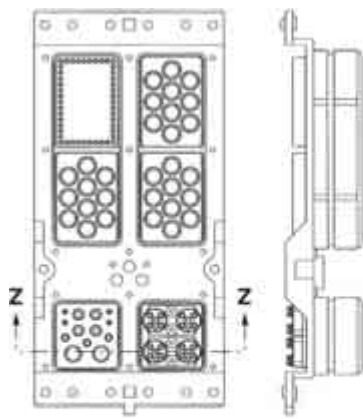


Rugged Fiber Optic Products (Continued)

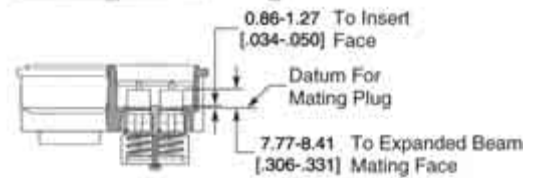
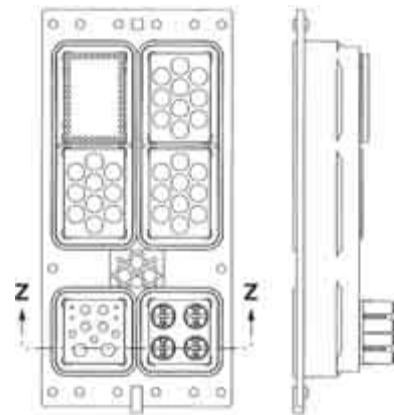
Size 2 / 3
Power and Signal Cavities



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



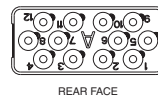
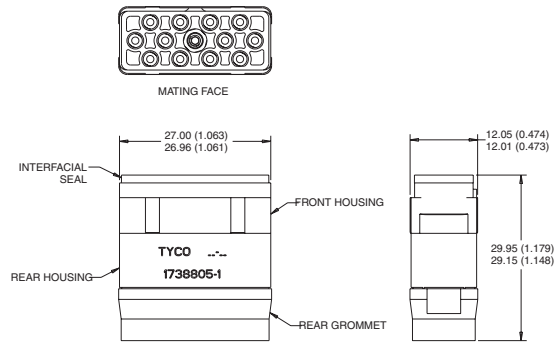
Typical Layout for Plug



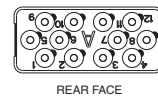
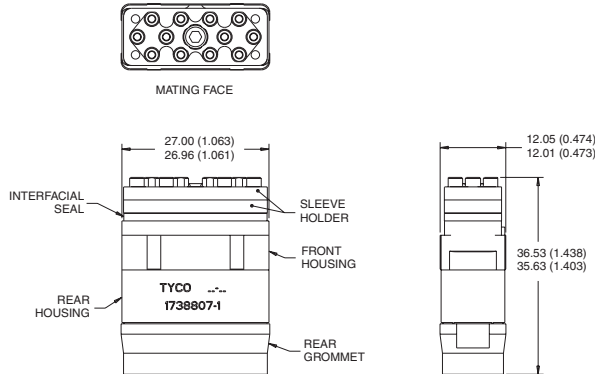
Typical Layout for Receptacle

Rugged Fiber Optic Products (Continued)

F12 LuxCis Insert Assemblies



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



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

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

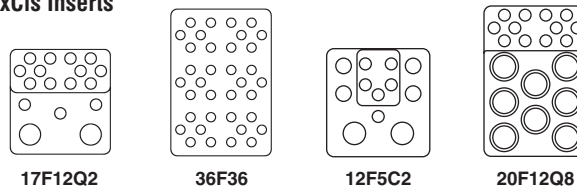
Optical Performance

- 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.

LuxCis Inserts



LuxCis Inserts and Cavity Reducers accept LuxCis Optical Termini.

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

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

LuxCis is a trademark of Radiall, S.A.
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):

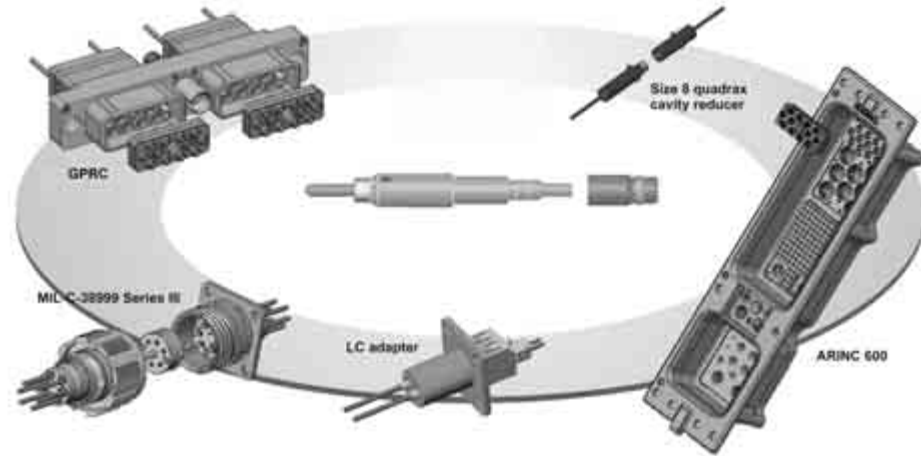
- Attenuation, Mean** — 0.15dB
- Return Loss** — > 50dB

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)



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

LuxCis Optical Termini
(Continued)

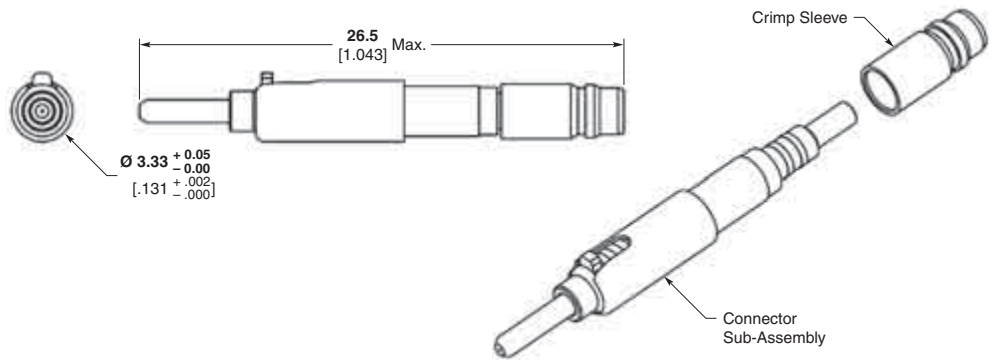
There are three types of LuxCis Optical Termini available dependent upon cable structure.

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**

Rugged Fiber Optic Products (Continued)



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

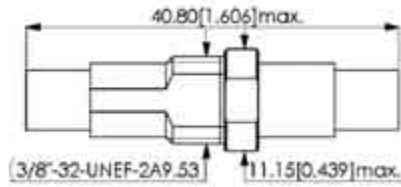
Note: All part numbers are RoHS compliant.

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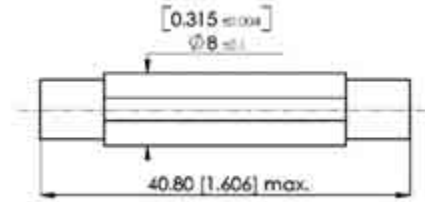
Rugged Fiber Optic Products (Continued)



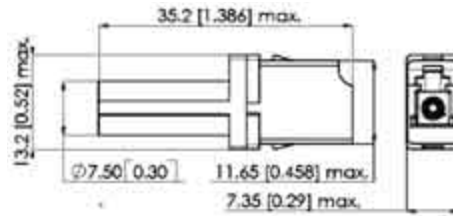
LuxCis Optical Termini Adapter Dimensions



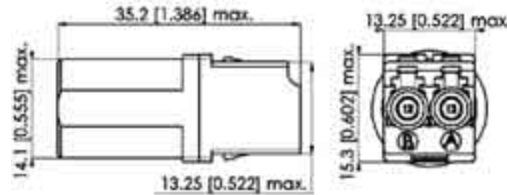
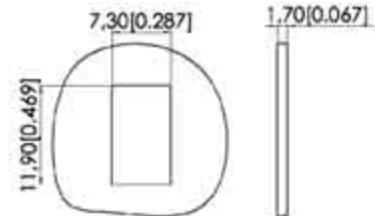
Terminus to Terminus Bulkhead Feedthrough



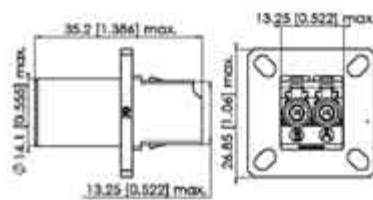
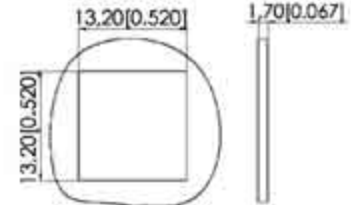
Terminus to Terminus Straight



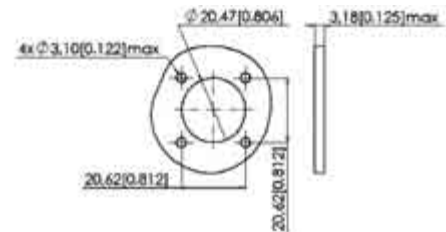
Terminus to LC Simplex



Terminus to LC Duplex, LC Panel



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



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**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

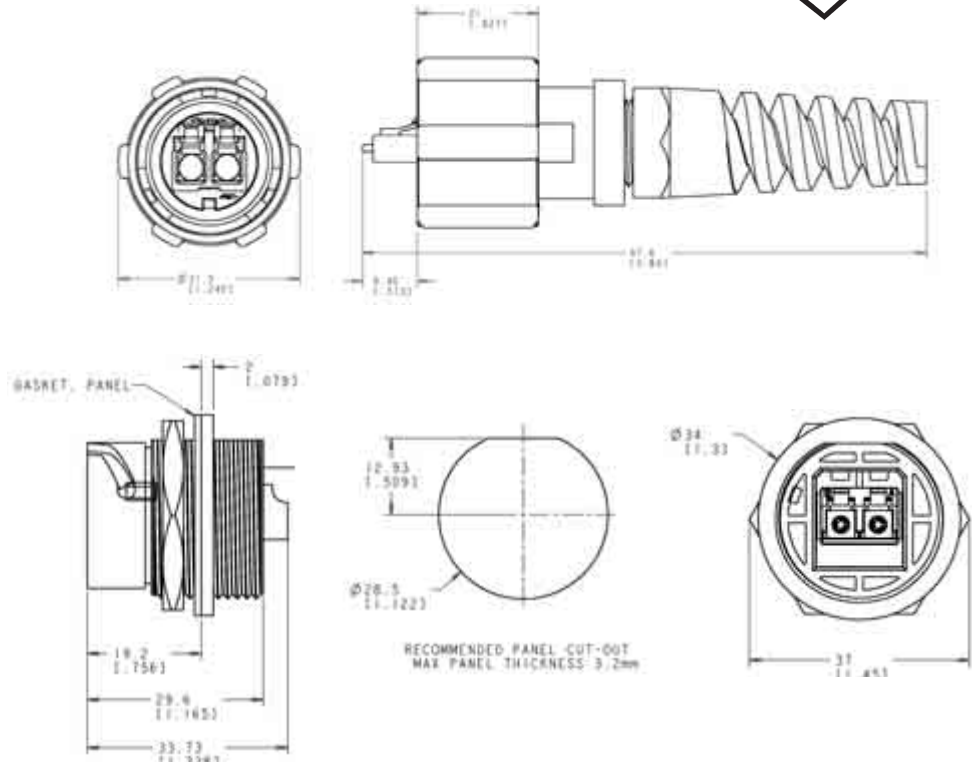


Plug Part Numbers:
1828618-1 (Multimode)
1828618-2 (Singlemode)

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)

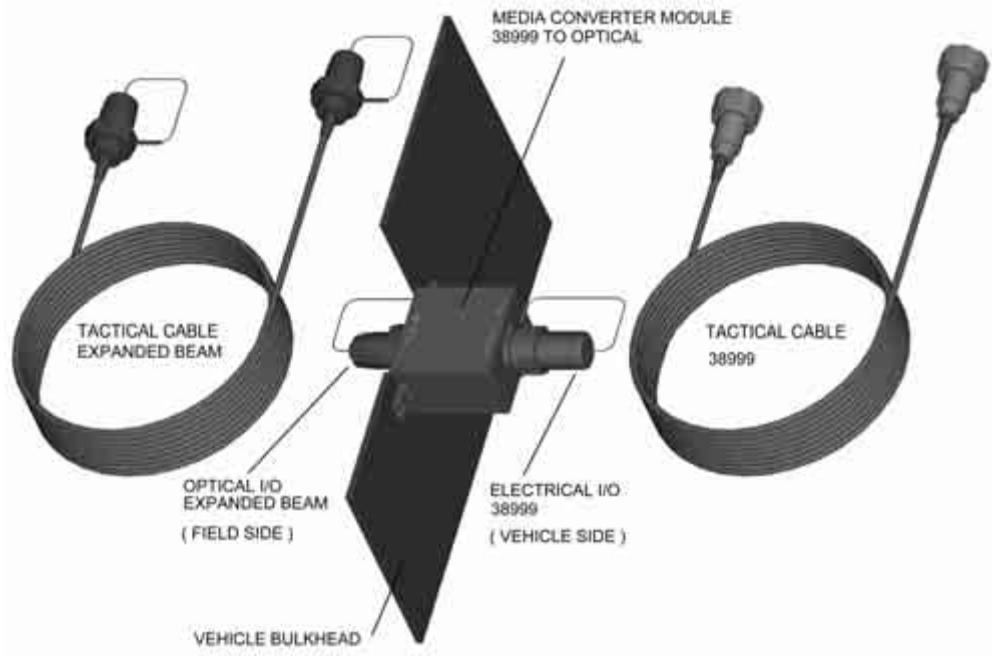
Rugged Media Converter & Ethernet Link Extender Solutions

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