



## PRO BEAM® Series

PRO BEAM® expanded beam field deployable interconnect  
F739

PRO BEAM® is a registered trade mark of TE Connectivity

RADIALL   
The next connexion



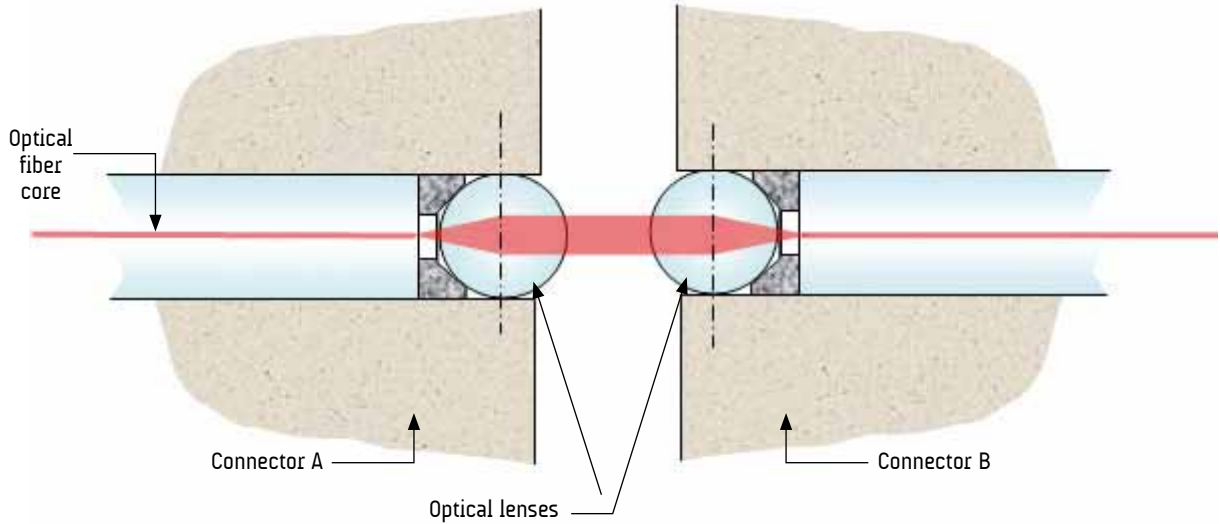
|  | Pages     |
|--|-----------|
| <b>Introduction</b> .....  | 12-4      |
| Benefits of the expanded beam technology .....                     | 12-4      |
| Key characteristics .....  | 12-5      |
| Applications .....   | 12-5      |
| Standardization .....  | 12-5      |
| <br><b>Characteristics and performance</b> .....                   | <br>12-6  |
| <br><b>PRO BEAM® Junior product range</b>                          |           |
| Straight plug .....  | 12-7      |
| Bulkhead receptacle D-Hole shape, for multi fiber cable .....      | 12-7      |
| Bulkhead receptacle with D-Shape, low profile .....                | 12-7      |
| Bulkhead receptacle with square flange for multi fiber cable ..... | 12-8      |
| Bulkhead receptacle with square flange low profile .....           | 12-8      |
| <br><b>PRO BEAM® product range</b> .....                           | <br>12-9  |
| <br><b>Cable assemblies for tactical communication</b> .....       | <br>12-10 |
| <br><b>Accessories</b> .....                                       | <br>12-12 |

# INTRODUCTION

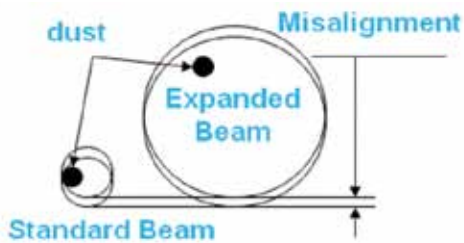
The PRO BEAM® is a fiber optic interconnect solution based on the expanded beam technology.

Description of the expanded beam technology:

- Light beam from fiber A is expanded and then collimated through lens A and transmitted to connector B through an air gap
- Light is then refocused onto the core of fiber B through lens B and travels within fiber B



## BENEFITS



### • Advantages of the expanded beam technology

- The beam is expanded: the connection will be less sensitive to dust pollution. It is also less sensitive to alignment variations due to environmental conditions
- This is a contactless connection: there is less risk of degradation of the optical interfaces

## KEY FEATURES

With the PRO BEAM® connector range, Radiall provides a field proven interconnect solution for harsh environment applications. Among main features and benefits, PRO BEAM® shows:

- A unique modular system with inserts that can be used in various connector types, with MultiMode or SingleMode fibers and various cable diameters
- A ruggedized hermaphroditic construction, allowing easy connection and great flexibility for cable assembly management on the field
- Inserts that are designed to be optimal at the operating wavelength (common 850nm / 1300nm dual wavelengths, 1310nm or 1550nm wavelengths)
- Inserts that are designed to ensure alignment and low loss repeatable performance
- Inserts that can have 2 or 4 channels
- Very high mating capability due to its ruggedized construction and the absence of contact between the 2 optical interfaces
- Easy maintenance: insensitivity to particular pollution and ease of cleaning because of the protective coating on the lenses

## APPLICATIONS

- Field deployable Army and Navy communication systems
- Avionics
- Broadcast
- Oil research
- Transportation
- Any other application in harsh environment requiring durability, easy maintenance and reliable performance with multiple connection cycles

## STANDARDIZATION

The PRO BEAM® connectors are described in MIL-PRF-83526/20 and MIL-PRF-83526/21.

# CHARACTERISTICS AND PERFORMANCE

## OPTICAL CHARACTERISTICS

|                          | MultiMode        | SingleMode                |
|--------------------------|------------------|---------------------------|
| Insertion loss (typical) | 0.7 dB (1300 nm) | 0.7 dB (1310 nm)          |
| Insertion loss (Maximum) | 1.5 dB           | 2 dB                      |
| Return loss              |                  | > 34 dB (1310 or 1550 nm) |

## MECHANICAL CHARACTERISTICS

|                                       |   |
|---------------------------------------|---|
| Vibration, sinusoidal                 | 10 - 500 Hz, 3 directions, 0.75 mm amplitude, 10 g acceleration |
| Bumps                                 | 4000 bumps, 3 directions, 40 g acceleration                     |
| Free fall on concrete, severity 1.2 m | 500 falls   |
| Mating endurance                      | 3000 mating cycles  |

## ENVIRONMENTAL CHARACTERISTICS

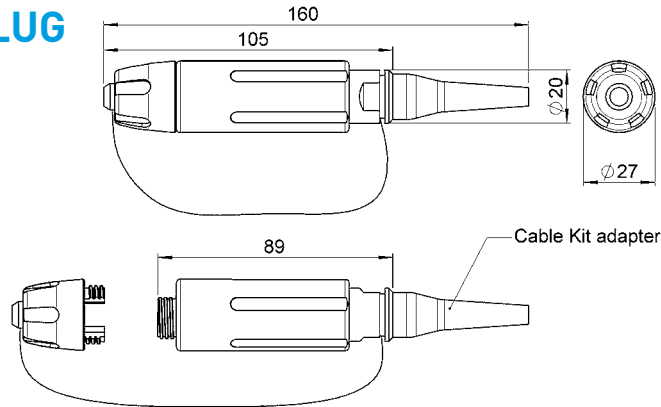
|                       |               |
|-----------------------|---------------|
| Operating temperature | -40°C / +85°C |
| Storage temperature   | -55°C / +85°C |
| Humidity (damp heat)  | 95% HR        |
| Immersion             | 15 m depth    |

## MATERIAL

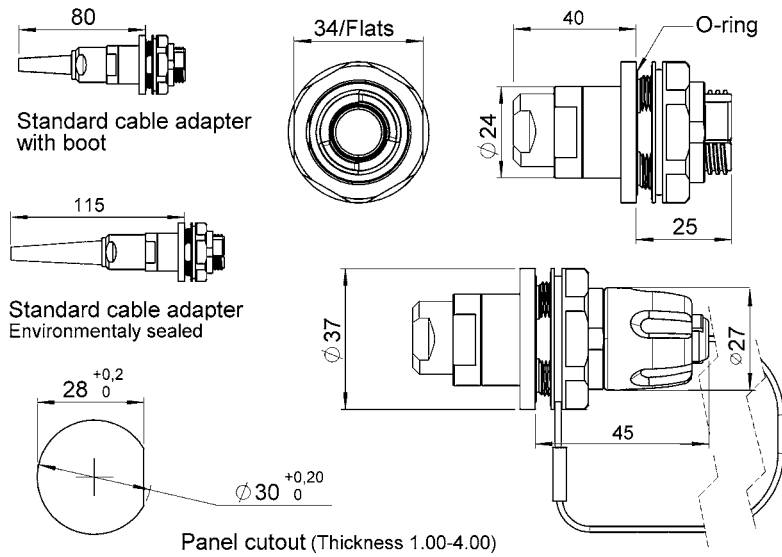
|           |  |
|-----------|--|
| Shell     | Aluminum   |
| Plating   | Clear hard anodized  |
| Plug boot | EPDM rubber (high resistance to tearing and damage, ideal for outdoor exposure) or fluorosilicone (to be used when direct contact with petrochemicals) |

For other materials such as Nickel Aluminum Bronze connectors for naval applications, please contact your local Radiall representative.

**STRAIGHT PLUG**

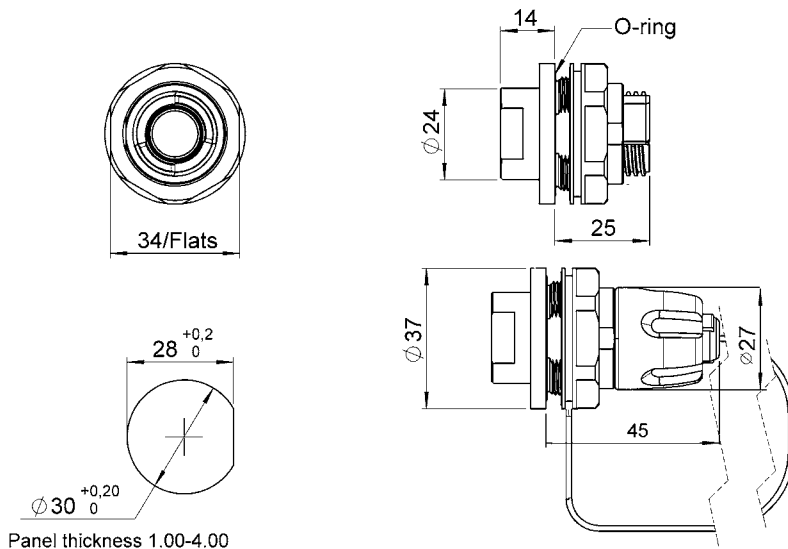


**BULKHEAD RECEPTACLE D-HOLE SHAPE, FOR MULTI FIBER CABLE**



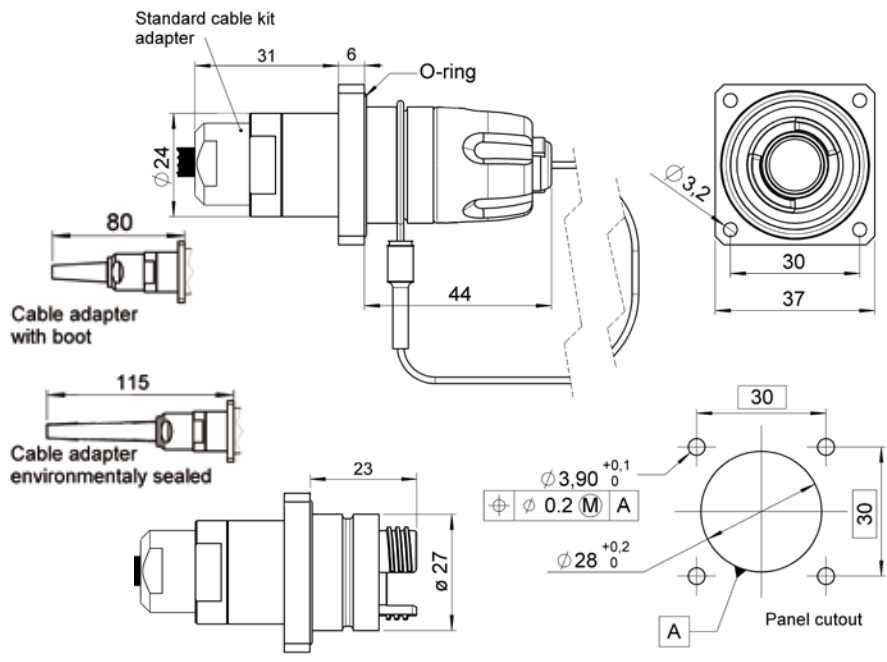
**BULKHEAD RECEPTACLE WITH D-SHAPE, LOW PROFILE**

To be assembled with up to 4 cables, maximum diameter 1.6 mm



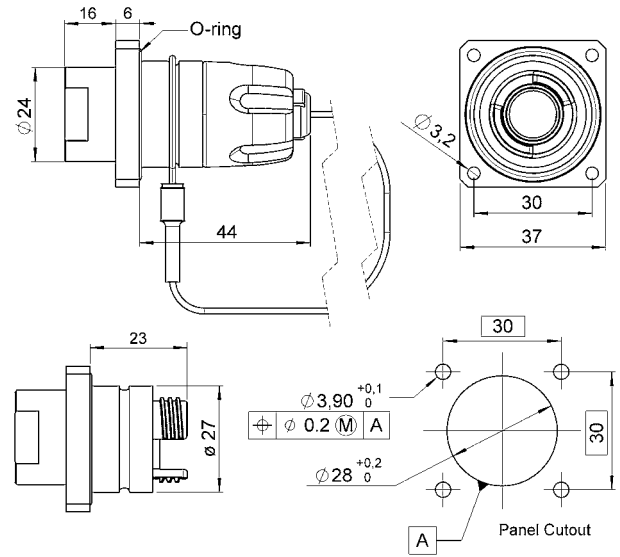
**PRO BEAM® JUNIOR PRODUCT RANGE**

**BULKHEAD RECEPTACLE WITH SQUARE FLANGE FOR MULTI FIBER CABLE**



**BULKHEAD RECEPTACLE WITH SQUARE FLANGE, LOW PROFILE**

To be assembled with up to 4 cables, maximum diameter 1.6 mm



Technical datasheets are available on the Radiall website or via your local Radiall representative



## PRO BEAM® JUNIOR PRODUCT RANGE

PRO BEAM®



Radiall offers the PRO BEAM® Junior product range along with other products with the same design but with different sizes, like the PRO BEAM® Mini. These tactical connectors are only available through cable assemblies, with a wide range of field orientated accessories. Refer to the cable assembly section (pages 12-10 to 12-11) for part numbers for PRO BEAM® cable assemblies.

Radiall also offers expanded beam interconnect solutions using the Mini expanded beam insert in other connector packaging.



For more information on these products, please contact your local Radiall representative.



## CABLE ASSEMBLIES FOR TACTICAL COMMUNICATION

Radiall produces high quality and high performance cable assemblies for ground tactical applications combining various cables and connectors including.

- **Cables:**

- Military tactical multi fiber cables including anti-rodent, high crush resistance or armored cables
- Outdoor multi fiber cables
- Various cable diameters can be accommodated

Cables are using either MultiMode fibers (50/125  $\mu\text{m}$ , 62.5/125  $\mu\text{m}$  or larger core fiber) or SingleMode fibers.

Any other request or for specific cable requirement, please contact your local Radiall representative.

- **Connectors / contacts:**

- Probeam® expanded beam connectors
- LuxCis® ARINC 801 MIL-DTL-38999 based connectors
- If a fan out configuration:
  - LuxCis® ARINC 801, including the single channel LxCR
  - Size 12 and 16 optical contacts (MIL-PRF-29504 cavity compatible)
  - Ruggedized LC, SC, ST, FC connectors
  - EN 4531 contacts

Some connectors can be polished with an APC process. Please refer to the connector catalogues for more information. Radiall can terminate many other connectors or contacts. Please contact Radiall for more information.

# CABLE ASSEMBLIES FOR TACTICAL COMMUNICATION

PRO BEAM®

Part numbers for standard tactical cable assemblies including PRO BEAM® connectors



## F739 0 0 4 2 1 1 M 100

**F739: PRO BEAM® series**

**End 1:**

- 0: Plug with EPDM rubber boot
- 1: Plug with fluorosilicone boot
- 2: Receptacle D-Hole fan out type
- 3: Receptacle D-Hole standard type
- 4: Receptacle D-Hole sealed type
- 5: Receptacle square flange fan out type
- 6: Receptacle square flange standard type
- 7: Receptacle square flange sealed type

**End 2:**

- 0: Plug with EPDM rubber boot
- 1: Plug with fluorosilicone boot
- 2: No termination
- 3: LC PC connector
- 4: LC APC connector
- 5: ST PC connector
- 6: SC PC connector
- 7: LuxCis® APC contact
- 8: FC PC connector
- 9: LuxCis® PC contact

**Number of channels 2 or 4**

**Optimal wavelength**

- 2: 1310 nm SingleMode
- 3: 1550 nm SingleMode
- 4: 850 and 1300 nm, OM3 Multimode 50/125 µm fiber
- 5: 850 and 1300 nm, MultiMode 50/125 µm fiber
- 6: 850 and 1300 nm, MultiMode 62.5/125 µm fiber

**Cable type**

- 1: Multifiber cable, 5.5 mm diameter
- 2: Multifiber cable, 5 mm diameter
- 3: Multifiber cable, 6.1 mm diameter
- 4: Multifiber cable, antiodent with bittering agent, 5.8 mm diameter
- 5: Simplex cable, 1.6 to 1.8 mm diameter
- 6: Multifiber armored cable

**Reel**

- 0: No reel (up to 20 m long cable assemblies)
- 1: Field deployable reel (size A: up to 300 m)
- 2: Field deployable reel (size B: up to 500 m)
- 3: Field deployable reel (size C: up to 800 m)
- 5: Reel for backpack
- 6: Disposable reel

**Length unit:**

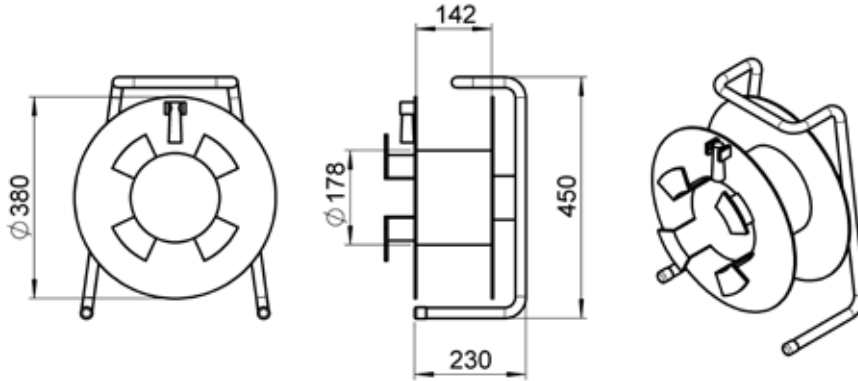
- C for centimeter
- M for meter

**Length of the cable (3 digits)**

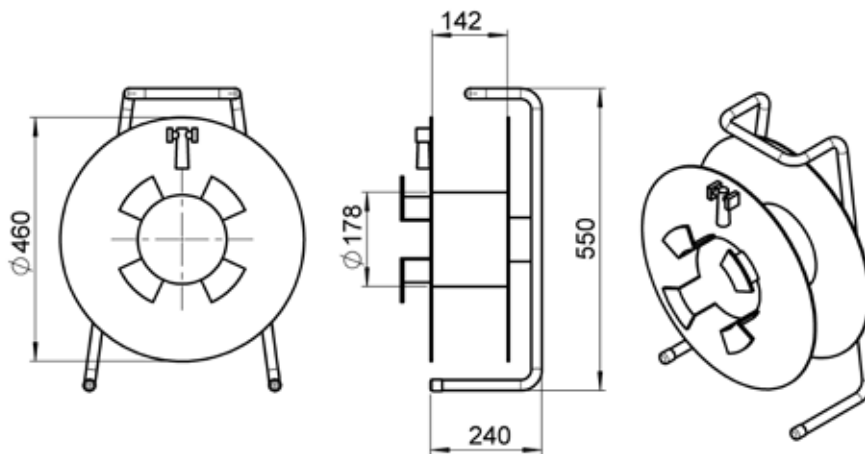
**ACCESSORIES**

Radiall provides cable assemblies with various field orientated accessories such as reels and backpack:

**Gantry reel - size A**



**Gantry reel - size B**



Technical datasheets with standard length tolerance and labelling information are available. For any other cable assembly configuration or specific requirement (additional test, specific labeling, additional protection of the cable, type of cable), please contact your local Radiall representative.



AEROSPACE



AUTOMOTIVE



DEFENSE



INDUSTRIAL



INSTRUMENTATION



MEDICAL



SPACE



TELECOM

## EUROPE

### France - RADIALL S.A.

101, Rue Ph. Hoffmann  
93116 ROSNY sous BOIS (Paris)  
Tel.: +33 1 49 35 35 35 - Fax: +33 1 48 54 63 63  
E-Mail: info@radiall.com

### Finland - RADIALL SF

P.O. Box 202 - 90101 OULU  
Tel.: +358 407 522 412  
E-Mail: infofi@radiall.com

### Germany - RADIALL GmbH

Carl-Zeiss Str. 10 Postfach 200143  
D63307 - RÖDERMARK (Frankfurt)  
Tel.: +49 60 74 91 07 0 - Fax: +49 60 74 91 07 70  
E-Mail: infode@radiall.com

### Italy - RADIALL Elettronica S.R.L.

Via Concordia, 5 - 20090 ASSAGO MILANO  
Tel.: +39 02 48 85 121 - Fax: +39 02 48 84 30 18  
E-Mail: infoit@radiall.com  
Regional office: Roma

### Netherlands - RADIALL B.V.

Hogebrinkerweg 15b - 3871 KM HOEVELAKEN  
Tel.: +31 33 253 40 09 - Fax: +31 33 253 45 12  
E-Mail: infofl@radiall.com

### Sweden - RADIALL A.B.

Sjöängsvägen 2 - SE-192 72 SOLLENTUNA (Stockholm)  
Tel.: +46 844 434 10 - Fax: +46 875 449 16  
E-Mail: infose@radiall.com

### U.K. - RADIALL Ltd.

Ground Floor, 6 The Grand Union Office Park,  
Packet Boat Lane  
UXBRIDGE Middlesex UB8 2GH (London)  
Tel.: +44 1895 425 000 - Fax: +44 1895 425 010  
E-Mail: infouk@radiall.com

## NORTH AMERICA

### USA - RADIALL USA, Inc.

8950 South 52<sup>nd</sup> Street, Suite 401  
Tempe, Arizona 85284  
Tel.: +1 480 682 9400 - Fax: +1 480 682 9403  
E-Mail: infousa@radiall.com

## ASIA

### China - SHANGHAI RADIALL Electronic Co., Ltd.

N° 390 Yong He Road 200072 - SHANGHAI  
Tel.: +86 21 66 52 37 88 - Fax: +86 21 66 52 11 77  
E-Mail: infosh@radiall.com

### Japan - NIHON RADIALL

Shibuya-ku Ebisu 1-5-2, Kougetsu Bldg 405  
TOKYO 150-0013  
Tel.: +81 3 3440 6241 - Fax: +81 3 3440 6242  
E-Mail: infojp@radiall.com

### Hong Kong - RADIALL Electronics Ltd.

Flat D, 6/F, Ford Glory Plaza,  
37-39 Wing Hong Street  
Cheung Sha Wan  
KOWLOON HONG KONG  
Tel: +852-2959-3833 - Fax: +852-2959-2636  
E-Mail: infohk@radiall.com

### India - RADIALL India Pvt. Ltd.

25 D, II Phase, Peenya Industrial Area  
BANGALORE 560058  
Tel.: +91 80 83 95 271 - Fax: +91 80 83 97 228  
E-Mail: infoin@radiall.com

## ALSO REPRESENTED IN

|                |             |              |
|----------------|-------------|--------------|
| Australia      | Hungary     | Poland       |
| Austria        | Indonesia   | Russia       |
| Belgium        | Israel      | Singapore    |
| Brazil         | Korea       | Spain        |
| Czech Republic | Latvia      | Switzerland  |
| Denmark        | Lithuania   | Taiwan       |
| Estonia        | Malaysia    | Thailand     |
| Greece         | Norway      | Vietnam      |
|                | Philippines | South Africa |

For the above countries, please contact the local agent or RADIALL at info@radiall.com

