

FIBER OPTIC CONNECTORS & COMPONENTS

MIL-DTL-38999

for LuxCis® FIBER OPTIC TERMINI
Arinc 801/EN4645



RADIALL 
The next connexion

COMPANY Profile

Founded in 1952 in France, RADIALL started as a family owned company making coaxial plugs. Today, RADIALL is an international and global manufacturer of interconnect components including **RF coaxial connectors and cable assemblies, antennas, fiber optic components, microwave components, and multipin connectors** for the Automotive, Civil Aviation, Defense, Industrial, Medical, Space and Telecommunication markets.



QSE (Quality Safety Environment) POLICY

RADIALL maintains a quality management system conforming to international standards, including for environmental protection. Our customers' recognition of our products quality and sustainability of our company, demonstrates the efficiency of our quality system.



CERTIFICATIONS

Certified ISO 9001 since 1994, RADIALL has a pro-active policy in terms of conforming to international standards. Today, all RADIALL sites are certified to **ISO 9001:2000** and some

dedicated activities are AS9100 or TS 16949. Our process approach gives us the tool for continuous improvement in all our activities.



A major step in our environment policy was the **ISO 14001** certification of our Voreppe plant in 2001. RADIALL complies with European directives such as **RoHS** for hazardous substance restrictions and **EuP** for environmentally friendly designs of energy-using products.

Some RADIALL product lines are on **MIL, ESA/SCC** Qualified Product Lists.

RADIALL is therefore proud to be recognized by leading industrial customers for its quality of service and products.



A WORLDWIDE ENGINEERING & MANUFACTURING CAPABILITY

RADIALL has expertise centers and manufacturing locations on 3 continents. Through 9 industrial sites, RADIALL offers customers the proximity they need to obtain the best quality service and delivery performance. Our facilities feature state of the art equipment for the many technologies involved in the design, manufacturing and assembly of interconnect products. This international organization allows RADIALL to offer its outstanding quality products at competitive prices.

Technical information and sales contacts are available on: www.radiall.com



	Page
Introduction	4
Shell dimensions	5
Insert arrangements	6
Shell plugs and receptacles	7
Protective caps	8
Backshells & harnesses	9
Performances	10
LuxCis® termini contacts	11
Tools	11

The LuxCis® principle is based on the use of identical fiber optic termini contacts that can be inserted in either plug or receptacle cavities of multipin MIL-DTL-38999 circular connectors. A removable sleeve-holder, installed on the plug, ensures fine alignment and centring of the LuxCis® termini. This technology allows easy access to optical faces for inspection and cleaning operations.



Sleeve-holder



LuxCis®
A new high density termini for harsh environment

EPX B modular connector
size 8 Quadrax cavity reducer
ARINC 600 connector
MIL-C-38999 series III
LC adapter

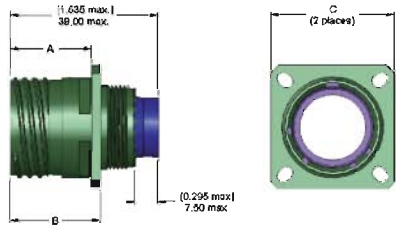
Fiber optic interconnect solution
ARINC 80I standard compliant

RADIALL
The next connection

For detailed information on the LuxCis® product range, refer to the general LuxCis® catalogue (D6F206CE - 2008 February Edition).

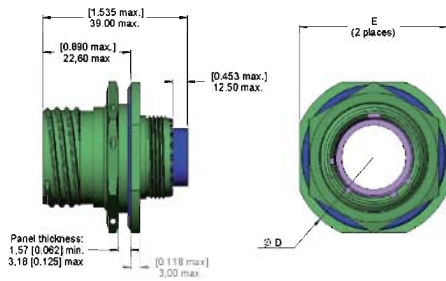


SQUARE FLANGE RECEPTACLES



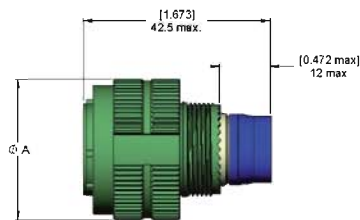
Shell size	A max. mm (inch)		B max mm (inch)		C max mm (inch)
	Metallic shell	Composite shell	Metallic shell	Composite shell	
9	20.83 (0.820)	19.69 (0.775)	23.15 (0.911)	23.19 (0.913)	24.10 (0.948)
11					26.50 (1.043)
13					28.90 (1.137)
15					31.30 (1.232)
17					33.70 (1.323)
19					36.90 (1.449)
21	20.07 (0.790)	18.92 (0.745)	23.14 (0.911)	23.14 (0.911)	40.10 (1.575)
23					43.30 (1.701)
25					46.40 (1.823)

JAM NUT RECEPTACLES



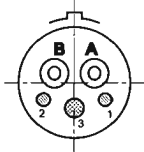
Shell size	Dia. D max mm (inch)	E max mm (inch)
9	30.50 (1.200)	27.40 (1.079)
11	35.20 (1.386)	32.20 (1.268)
13	38.40 (1.512)	35.30 (1.390)
15	41.60 (1.638)	38.50 (1.516)
17	44.80 (1.764)	41.70 (1.642)
19	49.50 (1.949)	46.40 (1.827)
21	52.70 (2.075)	49.60 (1.953)
23	55.90 (2.200)	52.80 (2.079)
25	59.00 (2.323)	56.00 (2.205)

PLUGS

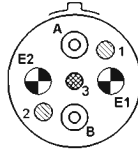


Shell size	Dia. A max mm (inch)
9	21.82 (0.859)
11	25.00 (0.984)
13	29.40 (1.157)
15	32.50 (1.280)
17	35.70 (1.405)
19	38.50 (1.516)
21	41.70 (1.642)
23	44.90 (1.768)
25	48.00 (1.890)

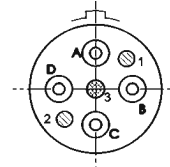
FRONT PLUG FACE VIEWS



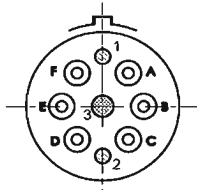
Size 11
2 LuxCis® termini



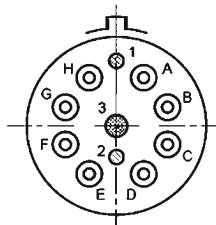
Size 13
2 LuxCis® termini
2 Electrical cavities



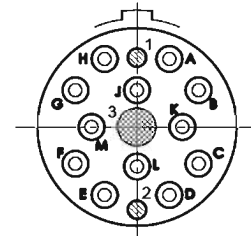
Size 13
4 LuxCis® termini



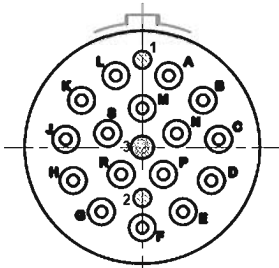
Size 15
6 LuxCis® termini



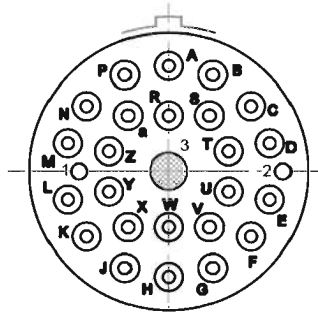
Size 17
8 LuxCis® termini



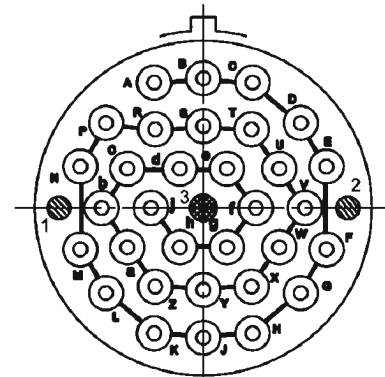
Size 19
12 LuxCis® termini



Size 21
16 LuxCis® termini



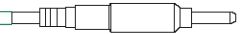
Size 23
24 LuxCis® termini



Size 25
32 LuxCis® termini

Legends:

- 1 and 2 alignment pins
- 3 sleeve-holder screw
- A, B, etc cavities for LuxCis® contacts
- E1, E2, etc electrical cavities



PART NUMBERING

R8 W 11 M 2FO S C N

I - Series

R8 MIL-DTL-38999 series III

II - Shell type

W Plug
R Wall-mount receptacle
N Jam-nut receptacle

III - Shell size

11 - 13 - 15 - 17 - 19 - 21 - 23 - 25

IV - Shell material and finish

O Aluminium olive drab cadmium Salt spray: 500h
N Nickel plated aluminium Salt spray: 48h
M Nickel plated Corrosion site Salt spray: 2000h
G Nickel Aluminium bronze Salt spray: 500h
S Passivated stainless steel Salt spray: 500h
T Nickel plated stainless steel Salt spray: 48h

V - Contacts layout

2FO 2 LuxCis® termini for shell size 11
4FO 4 LuxCis® termini for shell size 13
6FO 6 LuxCis® termini for shell size 15
8FO 8 LuxCis® termini for shell size 17
12FO 12 LuxCis® termini for shell size 19
16FO 16 LuxCis® termini for shell size 21
24FO 24 LuxCis® termini for shell size 23
32FO 32 LuxCis® termini for shell size 25
2FO2E 2 LuxCis® termini+2 electric contacts for shell size 13 (see note 1)
 (consult with Radiall for other hybrid arrangement)

VI - Insert specification

S Sealed insert for plug (W shell)
p Sealed insert for receptacle (R or N shell)

VII - Insert material

A Anodized aluminium insert (see note 2)
C Non-metalized Composite insert (see note 3)

VIII - Polarization

N - A - B - C - D - E

(Contact Radiall to get Technical Data Sheet)

Note 1 - Electrical contacts must be ordered separately. See table below.

Note 2 - Anodized aluminium inserts are recommended in case of EMI protection requirement.

Note 3 - Available for size 11 / 13 / 15. Please consult us for availability on other sizes.

Note 4 - A sealing cap for unused cavity is available under Part number 616 912.

HERMAPHRODITE ELECTRICAL CONTACTS FOR HYBRID INSERTS

Wire size	Part number	Crimping tool	Positioner	Ins/ext tool
16-18-20	617 235 003	282 291	282 581 013	282 515 (M81969/1-03)
20-22-24	617 235 002	(M22520/1-01)		



PART NUMBERING

R8B R NC O 15

I - Series

- R8B** Metal protective cap family
- R8C** Plastic dust cap family

II - Cap type

- W** Plug protective cap
- R** Square flange receptable protective cap
- N** Jam nut receptable protective cap

III - Cord type

- NC** Nylon cord
- CH** Metallic chain

IV - Material and finish

- A** Aluminium
- G** Nickel aluminium bronze
- N** Aluminium electroless nickel
- O** Aluminium olive drab cadmium
- S** Passivated stainless steel
- T** Nickel plated stainless steel

- P** Plastic dust cap
- AP** Antistatic plastic dust cap


V - Size

11 - 13 - 15 - 17 - 19 - 21 - 23 - 25



BACKSHELL RANGE

Part number	Finish	Size	Type	Number of channels	Cable dia. (mm)
F723 401 000	Cadmium	#13	Multi-cable	4 voies	2,4
F723 410 000	Cadmium	#19	Multi-cable	12 voies	2,4
F723 500 000	Cadmium	#13	Multi-cable	4 voies	2,4
F723 510 000	Cadmium	#19	Multi-cable	12 voies	2,4
F723 520 000	Cadmium	#21	Multi-cable	16 voies	2,4
F723 530 000	Cadmium	#11	Multi-cable	2 voies	2,4
F723 540 000	Cadmium	#23	Multi-cable	21 voies	2,4
F723 613 000	Cadmium	#13	Mono-cable		8 mm maxi
F723 615 000	Cadmium	#15	Mono-cable		8 mm maxi



(Ask Radiall for Technical Data Sheet and mounting instructions and tools)

HARNESS MANUFACTURING

A production line is dedicated to the manufacture of custom harnesses for **severe environments**. Some examples of our services: all optical harnesses, specific marking and labeling, installation of various multipin connectors such as MIL-DTL-38999, Arinc 404 and 600, EPX with a large choice of standard interfaces (LC, SC, ST...). All fiber sizes and polishing options are available (PC/UPC/APC). We give our customer reliable, flexible solutions for all types of harnesses as well as the assistance of our R&D to help with design and customization. All harnesses are strictly controlled in our AS9100 certified factories, and delivered fully tested and traceable. Consult us for all specific need.



Harness with MIL-DTL-38999 circular connector and LC duplex fiber optic connectors.

Harness with MIL-DTL-38999 square flange receptacle and LC duplex fiber optic connectors.



Harness with EPX connectors and LC simplex fiber optic connectors.



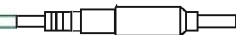


OPTICAL PERFORMANCES

	Singlemode (UPC) (1310/1550nm)	Singlemode /APC (1310/1550nm)	Singlemode (PC) (850nm/1310nm)
Attenuation - Mean - Standard deviation (against a reference plug, IEC 61300-3-4 Method B)	0.15 dB 0.10 dB	0.20 dB 0.12 dB	0.10 dB 0.07 dB
Return loss (maximum low variation : IEC 61300-3-6)	> 50 dB	> 60 dB	> 20 dB

MECHANICAL and ENVIRONMENTAL PERFORMANCES

Test	Standard	LuxCis® in MIL-DTL-38999 connector
Thermal Shocks	SAE-AS-13441 met 1003.1	-55°C / +125°C
Temperature endurance	TIA/EIA 455-20A	1000h at +100°C
Vibration	TIA/EIA 455-11	8h / axis, 3.8g ² / HZ 43 G rms
Shocks	TIA/EIA 455-14A	300G – 3 ms
Mating / unmating	MIL-DTL-38999 TIA/EIA 455-21A	500 Cycles
Maintenance aging	SAE-AS-13441 met 2002-1	10 Cycles
Salt Spray	SAE-AS-13441 met 1001.1 cond C	500 h
Cable retention (1.8 mm)	SAE-AS-13441 met 2009-1	68N
Cable retention (900 µm)	SAE-AS-13441 met 2009-1	7N
Humidity	TIA/EIA 455-5 met B 7A	10 cycles / 24h, 90% RH, -25°C/+65°C
Altitude immersion	TIA/EIA 455-15	75,000 feet (3.39 kPa)
Fluid test	-	MIL-STD-1344 method 1016



3 types of LuxCis® termini are available depending on cable structure :
(Refer to the bottom of this page for cable structure details)

ML for **loose** or **tight** cable structure from
1.5 to 2.2mm diameter

MT for **ultra tight** cable structure from
1.5 to 2.2mm diameter



A simplified version is compatible with 0.9mm buffer types (see below).



Cable Dia.	Cable structure type ML (loose) MT (tight)	Singlemode fiber		Multimode fiber		
		optical ceramic 125.3 µm for PC/UPC termination	optical ceramic 125.3 µm for APC termination	optical ceramic 128 µm for PC termination	optical ceramic 140 µm for PC termination	optical ceramic 230 µm for PC termination
0.9mm buffer	-	F725 000 118	F725 050 118	F725 003 118	F725 004 118	-
1.2mm	ML	-	-	F725 003 319	-	-
1.5 to 2.2mm	ML	F725 000 419 <i>(LS=Arinc 801 spec)</i>	F725 050 419 <i>(LSA=Arinc 801 spec)</i>	F725 003 419 <i>(LM=Arinc 801 spec)</i>	F725 004 419	F725 005 419
1.5 to 2.2mm	MT	F725 000 519 <i>(TS=Arinc 801 spec)</i>	F725 050 519 <i>(TSA=Arinc 801 spec)</i>	F725 003 519 <i>(TM=Arinc 801 spec)</i>	F725 004 519	F725 005 519

Consult with Radiall for all other cable dimensions and types.

CABLE STRUCTURE

Cable structure	Arinc 802 specification and description
Loose	"MGL cable is general purpose multimode cable having a modified loose structure that allows slight movement between the inner jacket and the outer strength members."
Tight	"MGT cable is general purpose multimode cable having a tight structure that allows no movement between the inner jacket and the outer strength members."

TOOLS

Description / function	Part number	
Hexagonal key 5/64 inch(2mm)/flats for sleeve holder removal	F780 855 000	
Plastic Insertion/extraction tool for LuxCis® termini (MIL M81 969/14-03)	282 515	



Radiall.com

- Sales & production subsidiary
- ▲ Industrial site
- Sales subsidiary

RADIALL WORLDWIDE LOCATIONS

EUROPE

France - RADIALL HEADQUARTERS

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
 Regional office : Munich

Italy - RADIALL Elettronica SRL

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 BV

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

Sweden - RADIALL AB

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

AMERICA

North America

RADIALL

6825 West Galveston Street Suite 11
 CHANDLER, Arizona 85226, USA
 Tel. : +1 480 682 9400 Fax : +1 480 682 9403
 E-Mail : infousa@radiall.com

RADIALL-AEP

104 John W. Murphy Drive
 NEW HAVEN, Connecticut 06513
 Tel. : +1 203 776 2813 Fax : +1 203 776 8294
 E-Mail : aepsales@aep.us

Brazil

RADIALL do Brasil

Largo do Machado, 54 sala 706 - Catete
 22221-020 RIO DE JANEIRO
 Tel. : +55 21 2558 05 76 Fax : +55 21 2245 97 63
 E-Mail : infobr@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

HongKong - RADIALL Electronics Ltd

Elite Industrial Centre, Room 212, 2/F
 N° 883 Cheung Sha Wan Road - KOWLOON HONG KONG
 Tel. : +852 29 59 38 33 Fax : +852 29 59 26 36
 E-Mail : infohk@radiall.com

India - RADIALL PROTECTRON pvt Ltd

25 D, II Phase, Peenya Industrial Area - BANGALORE 560058
 Tel. : +91 80 23 72 09 89 Fax : +91 80 28 39 72 28
 E-Mail : infoin@radiall.com

REPRESENTED IN

Africa	Greece	Russia	Thailand
Australia	Israel	Singapore	Taiwan
Belgium	Malaysia	Spain	Turkey
China	Philippines	South Africa	USA
Denmark	Poland	South Korea	
France	Portugal	Switzerland	

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

D7F001CE - 2008 May Edition

RADIALL
 The next connexion



Printed in France

This information is intended as a guide only. To ensure a continuing policy of product improvement, Radiall reserves the right to modify its specifications without prior notification.