

DIAMOND

Fiber Optic Components

CABLE ASSEMBLIES AND ADAPTERS

AVIO/AVIM are multipurpose, Commercial Off-The-Shelf fiber optic connectors offering high optical performance and qualified for the dynamic environments of mobile platforms, including avionics and space flight.

Multi-purpose in that these connectors are compatible with the widest range of optical fibers, including singlemode (SM), multimode (MM) fibers of all core/cladding sizes.

Commercial Off-The-Shelf (COTS) availability and economy backed by component availability from stock and quick turnaround of terminations and assemblies.

High performance in the form of lowest insertion loss provided by Diamond SA's unique Active Core Alignment termination process as well as Ultra PC/Angled PC high return loss for the most demanding, high bandwidth transmission systems.

Qualified to the highly dynamic vibration and shock environments of military and commercial mobile platforms, including land transportation, avionics, shipboard, downhole, weapon systems, missiles and space launch.

Avionics-grade AVIO connector and aerospace-qualified AVIM.

By design, the AVIO/AVIM is the sum of several engineering achievements:

- ▶ Compact, low profile and lightweight
- ▶ Typical 0.2dB loss for most common SM/MM applications
- ▶ 45+dB Ultra PC or 65+dB Angled PC SM return loss performance
- ▶ Miniaturized MIL-style ratchet system with vibration/shock tolerance to 46 G's
- ▶ Unique AVIM 2-piece cleanable adapter for mounting on aerospace "black" boxes offers external access for cleaning and maintenance of internal connector without compromising tamper seals
- ▶ Right angle boot available for facilitating unique installation and routing requirements

STANDARDS

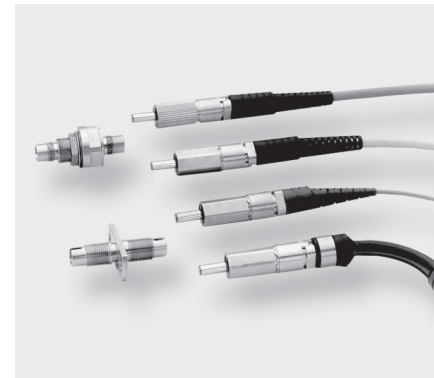
- ▶ CECC 86 130 „Selectional specification-connector sets for optical fiber and cables - Type LSA“

AVAILABLE AS

- ▶ Terminated connector
- ▶ Connector set, (to be terminated with Diamond special equipment)

AVIO / AVIM

SINGLE MODE PC/APC
MULTIMODE PC

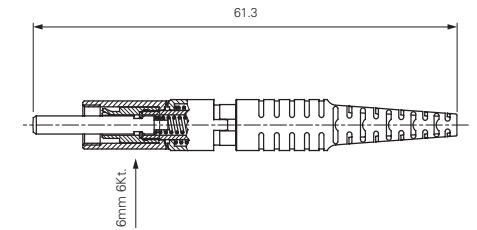


AVIM CONNECTOR TYPES AND DIMENSIONS

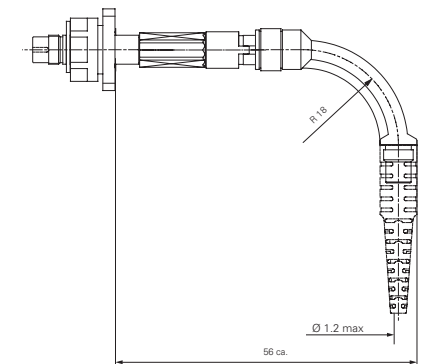
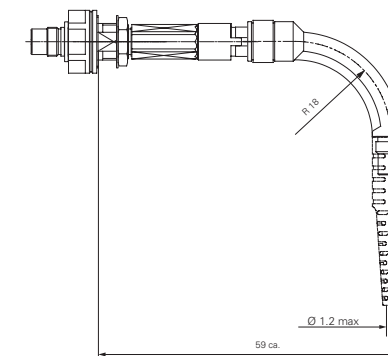
Connectors 900 μm - 3 mm boot style

Available types: **AVIM PC**
AVIM APC

Ferrule material: Zirconia/metal insert
External parts: Copper-nickel alloy



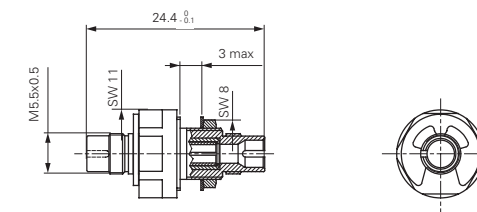
Connectors 900 μm - 1.2 mm 90° boot style



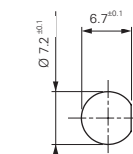
AVIM ADAPTER TYPES AND DIMENSIONS

External parts: Copper-nickel alloy
Mating sleeve: Zirconia

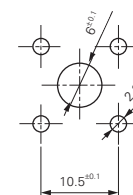
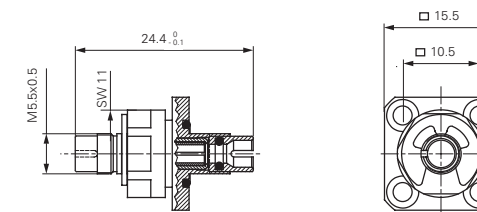
AVIM mating adapter hexagonal flange



CUTOUT DIMENSIONS



AVIM mating adapter square flange



NOTE Diamond's standard boot colors are as follows: Black for MM and SM PC, and green for SM APC.

ORDER INFORMATION

Please refer to the part numbers provided in the separate P/N list. For assemblies or other configurations, please contact your nearest local Diamond representative or fill in the contact form available on the www.diamond-fo.com website.



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Specifications subject to change without notice

BDD 1950099 05_14

SPECIFICATIONS

PARAMETER	SINGLE MODE* (Corning SMF-28 9/125)		MULTIMODE*
	PC	APC	PC
Insertion Loss	<0.5dB (0.2dB, typ.)	<0.5dB (0.2dB, typ.)	<0.5dB (0.2dB, typ.)
Return Loss	>40dB (50dB, typ.)	>60dB (68dB, typ.)	>30dB (50dB, typ.)
Concentricity	≤0.5µm (0.25µm, typ.)	≤0.5µm (0.25µm, typ.)	≤3µm (2µm, typ.)
Change in optical transmittance	Per EIA/TIA -455-20, ≤0.4 dB (Insertion Loss not to exceed the maximum of 0.7dB when applied to any mechanical or environmental test, as specified herein)		
Mating durability	Per EIA/TIA -455-21A, 500 mating cycles		
Operating temperature***	Thermal Cycling per EIA/TIA -455-3A, Test Cond. C, -55/+ 125°C Temp Life per EIA/TIA -455-4B, Test Cond. 240 hrs @ 125° C		
Vibration	Per EIA/TIA 455-11A, Test Cond. IV Random Vibration Power Spectral Density Table: 20 Hz 9.06E-03g ² /Hz 300 Hz 2.00E+00g ² /Hz 800 Hz 2.00E+00g ² /Hz 2000 Hz 3.22E-01g ² /Hz G _{RMS} = 46.4		
Shock (G'S Peak, Q = 10)	Shock Power Spectral Density Table: 11G at 100Hz 0.58G/Hz to 3550 Hz 2000 G over 3550 - 10.000 Hz		
Weight: AVIM-C AVIM/S Square flange Adapter 0624 Cable Strain Relief	6.20g (max) 5.90g (max) 7.80g (max) 900 um fiber, 5N / 3 mm cable, 100 N		

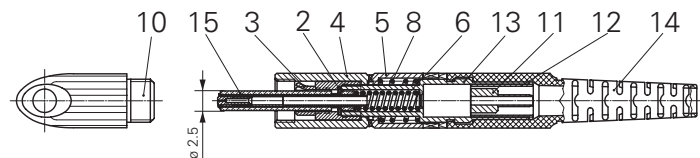
* Singlemode optical performance measured with SMF-28 9/125 at 1310nm and 1550nm.

** Multimode optical performance measured with 50/125 GI at 1300nm.

*** Temperature Test issued with appropriate cable/fibre.

Temperature, Vibration and Shock Acceptance Testing has been performed by our Customer as part of a DoD Classified Space Program. The test results are not available for distribution. Specifications subject to change without notice.

MATERIAL



POS.	DESCRIPTION	FIBER VERSION	CABLE VERSION	MATERIAL
2	Fork	Y	Y	X ₁₀ CrNiS ₁₈₋₉
3	Key Nut	Y	Y	X ₁₀ CrNiS ₁₈₋₉
4	Hex Nut	Y	Y	CuNi ₁₂ Zn ₃₀ Pb Hard
5	Stop ring	Y	Y	CuNi ₁₂ Zn ₃₀ Pb Hard
6	Ferrule Spring	Y	Y	X ₁₂ CrNi ₁₇₋₇
8	Antirotation Spring	Y	Y	X ₁₂ CrNi ₁₇₋₇
10	Dust Cap	Y	Y	NORYL 604 (PPO)
11	Support Bushing	N	Y	CuZn ₃₉ Pb ₃
12	Crimp Sleeve	N	Y	Cu-DHP (Sulfate Nickel Plate 0.005)
13	Connector Body	Y	Y	CuNi ₁₂ Zn ₃₀ Pb Hard
14	Boot	Y	Y	Hytrel 8068 (Green = HRL, Black = PC)
15	Ferrule	Y	Y	Zirconia/metal insert

NOTES - Spring Force at 12 mm position: 10-20N
- Torque Value for position 3 and 13 is 0.5 Nm

AVIO CONNECTOR TYPES AND DIMENSIONS

Connectors 900 µm - 3 mm boot style

Available types:

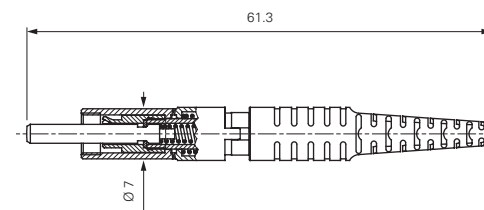
AVIO PC
AVIO APC

Ferrule material:

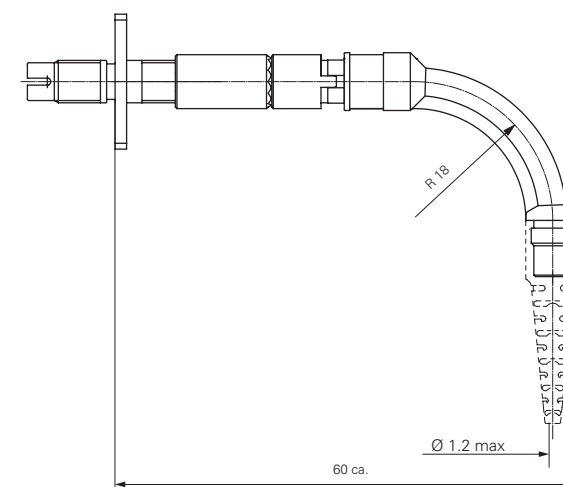
Zirconia/metal insert

External parts:

Copper-nickel alloy



Connectors 900 µm - 1.2 mm 90° boot style



AVIO ADAPTER TYPE AND DIMENSIONS

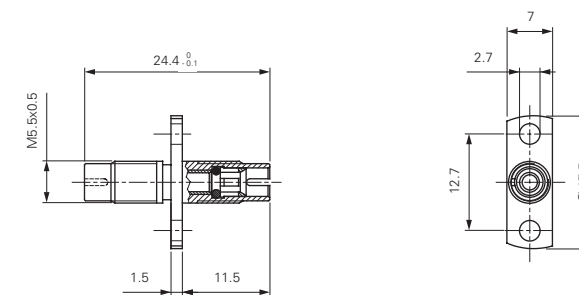
AVIO mating adapters

External parts:

Copper-nickel alloy, incl. "O-Ring" seal

Mating sleeve:

Hard metal



CUTOUT DIMENSIONS

