

Subminiature, Combining Optical and Electrical Waterproof Connectors

MF13 Series



Applications

Outdoor optical transmission systems: Surveillance cameras and monitors, mobile base stations, railway, transportation, survey, geological and exploration equipment.

Features

- 1. Fiber optic and electric hybrid connection**
3 electrical contacts rated at 1.5A max. current at 85 °C 2 fiber optic connections (single or multi-mode fibers)
- 2. Subminiature and light weight**
58% savings in weight when compared to the MF25 hybrid connector.
16% shorter plug length than the MF25 hybrid connector.
- 3. Used in harsh outdoor environments**
Constructed with high grade materials and components to ensure a reliable connection when used in outdoor applications.
IP67 Rated (Complete protection against dust, no water penetration when submerged in water at a depth of 1m for 0.5 hours.
- 4. Variety of cables**
Capable of using cable with an outside diameter of up to 10.5 mm (electrical and optical combined).
Wires with the diameter of 0.9mm can be used for the solder termination of the electrical conductors (equivalent of AWG#22)
- 5. Low insertion loss**
Ferrule can be tuned to guarantee insertion loss of less than 0.4dB.

Product Specifications

Ratings	Operating temperature range: -40°C to +75°C	Storage temperature range: -40°C to +75°C
	Current rating: 1.5A (with AWG#22 cable)	Voltage rating: 100V AC, 140V DC

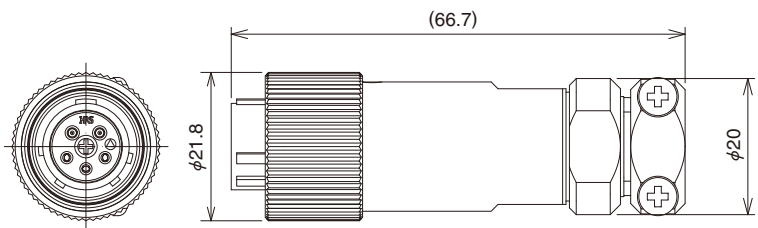
Item		Test Method	Specifications
Optical/Electrical Characteristics	Insertion Loss	Wavelength 1310±30nm(LD)	SM: 0.4 dB max. , GI: 0.3 dB max. (Note)
	Return Loss	Wavelength 1310±30nm(LD)	SM: 40 dB min. , GI: 22 dB min.
	Insulation resistance	500 V DC	1000 M ohms min.
	Withstanding voltage	800 V AC / 1 minute	No flashover or insulation breakdown
Mechanical characteristics	Durability (cycles, mating/un-mating)	500 times	-After test, Insertion loss: 0.4dB max. (SM), 0.3dB max.(GI)
	Vibration	Frequency: 10 to 500 Hz, single amplitude of 0.75mm, 3 hours in each of the 3 axis.	-After test, Return loss : 40dB min. (SM), 22dB min.(GI)
	Shock	Acceleration of 490m/s ² , 11ms duration, half sine shock pulse, 3 cycles in each of the 3 axis.	-No visible damage or dislocation of any component or cable.
Environmental characteristics	Dump Heat	71±2 °C, humidity:95±5 %, 336 hours.	-After test, Insertion loss: 0.4dB max. (SM), 0.3dB max.(GI)
	Temperature cycle	-40 °C to +75°C, 336 hours(8H/cycle×42 cycles)	-After test, Return loss : 40dB min. (SM), 22dB min.(GI)
	Dry heat	for 240 hours at 85 °C	-No visible damage or dislocation of any component or cable.
	Cold	for 240 hours at -40 °C	-No visible damage or dislocation of any component or cable.
	Salt spray	5% salt solutions for 500 hours	No corrosions
	Water resistance(mating)	Air pressure: 4.9 kPa, Submerged for 1 minute.	No air bubble leakage

Note: Measured with a 1.5dB mode scrambler.

Materials

Part	Material	Finish	Remarks
Housing	Zinc die-casting	Chrome plating (Black)	——
	Brass	Chrome plating (Black)	——
Electrical contacts	Copper alloy	Silver plating	——
Insulator, Retainer plate	PBT	——	UL94V-0
O-ring, Gasket, Bushing	Silicone rubber	——	——
Screw	Stainless steel	——	——
Spring	Stainless steel	——	——
Split sleeve	Zirconia	——	——
Internal part	Brass	Nickel plating	——
	Copper alloy	Nickel plating	——
Boot	TPEE	——	UL94V-0
Heat shrink tubing	Polyolefin	——	UL224 VW-1

Plug housing

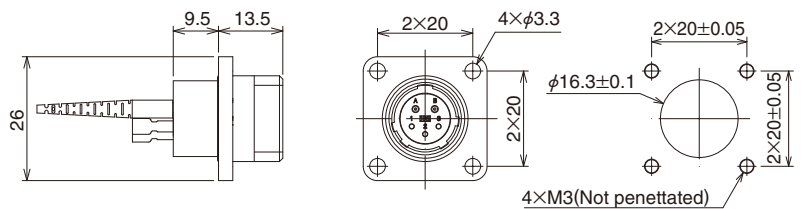


Part Number	CL No.	No of positions	Notice
MF13S-WP09C01-0203	709-0304-0-00	3 pos. (Electrical) 2 pos. (Optical)	for Hybrid Cable (outer dia. $\phi 9$)

Receptacle housing



Recommended panel cutouts



Part Number	CL No.	No of positions	Notice
MF13S-WRF01-0203	709-0300-9-00	3 pos. (Electrical)	for Optical Fiber Cable($\phi 2$)
MF13S-WRFB01-0203	709-0305-2-00	2 pos. (Optical)	for Buffered Optical Fiber($\phi 0.9$)