Performance Specifications

Built to meet or exceed MIL-DTL-38999 specifications
Guaranteed fully compatible and interchangeable with respect to physical and performance characteristics with all existing MIL-DTL-38999 Series II commercial, military, NASA, ESA (European Space Agency) derivatives

Environmental Characteristics

Temperature Range
-67° to +392°F (-55° to +200°C)
Service life varies with the maximum internal hot spot temperature resulting from any combination of electrical load or ambient temperature:
77°F (25°C): Continuous
221°F (105°C): 45,000 hours
392°F (200°C): 1,000 hours

Water Pressure
IP67 rating (environmental sealing) when used in conjunction with proper sealing accessories
Fully submersible to 3.3 ft (1m) for minimum of 30 min

Air Leakage Rate

Environmental
Air leakage not to exceed 1 $inch^3$/hr (4.55 $x10^{-3}$ cm^3/sec) at 30 psi (2.11 kg/cm^2) pressure differential with all contact cavities filled

Hermetic
Helium leakage not to exceed 0.01 micron per ft^3/hr (1.0 x 10^{-6} cc^3/sec) at 15 psi (1.1 kg/cm^2)
Hermetic inserts rated up to 14,000 psi (984 kg/cm^2) when precision welded or solder mounted

Thermal Vacuum Outgassing
Outgassed at high vacuum (5 x 10^{-5} torr) for 48 hours at 350°F (176°C); components shall not release greater than 1.0% total mass loss (TML) and 0.1% collected volatile condensable material (CVCM)

Salt Spray Rating
See Materials & Finishes, p. R-13

Humidity
Mated connectors shall maintain an insulation resistance of 100 megohms or greater at 77°F (25°C) with 95% humidity for duration of 20 days

Chemical Resistance to Fluids
20-hour full immersion (unmated) in hydraulic fluid and lubricating oil without damage or material degradation

Lightning Strike Resistance
Per EIA/ECA-364-75, mated connectors with full wire braid shield assembly will show resistance to indirect lightning strike with the following peak currents (amps):
Aluminum & Stainless Steel Shells: 10,000A

Physical Characteristics

Coupling
3-point bayonet, stainless steel bayonet pins spaced at 120° on receptacle shells, corresponding ramps on plug coupling ring with locking detent
1/3 turn to couple and uncouple

Coupling Torque
Engagement & Disengagement Force (max / min)
Shell Size 8: .67 ft-lb_f (.904 N-m) / .08 ft-lb_f (.113 N-m)
Shell Size 10: .83 ft-lb_f (1.13 N-m) / .08 ft-lb_f (.113 N-m)
Shell Size 12: 1.17 ft-lb_f (1.58 N-m) / .17 ft-lb_f (.226 N-m)
Shell Size 14: 1.42 ft-lb_f (1.92 N-m) / .33 ft-lb_f (.452 N-m)
Shell Size 16: 1.92 ft-lb_f (2.60 N-m) / .33 ft-lb_f (.452N-m)
Shell Size 18: 2.17 ft-lb_f (2.94 N-m) / .33 ft-lb_f (.452 N-m)
Shell Size 20: 2.58 ft-lb_f (3.50 N-m) / .50 ft-lb_f (.678 N-m)
Shell Size 22: 3.16 ft-lb_f (4.29 N-m) / .58 ft-lb_f (.791N-m)
Shell Size 24: 3.16 ft-lb_f (4.29 N-m) / .58 ft-lb_f (.791 N-m)

Polarization
Single master key and keyway on top position of shell
Four minor keys and keyways on shell

Insert Arrangements
70 standard, custom inserts available

Alternate Keying
Normal polarization (N), plus 5 alternate shell keying polarizations (A, B, C, D, E)

Endurance Characteristics

Coupling Cycles
500 coupling cycles (minimum)

Shock
Half-sine wave with 300g's (±15%) magnitude with duration of 3 milliseconds with less than 1 microsecond maximum discontinuity with no cracking, loosening of parts, or other failures

High-Impact Shock
Per MIL-S-901, a 400 lbs (181 kg) hammer dropped onto assembly from height of 1 ft (30 cm), 3 ft (91 cm), and 5 ft (152 cm) applied to connector assembly in 3 axes, totaling 9 impacts, connector assembly experienced less than 1 microsecond maximum discontinuity with no cracking, loosening of parts, or other failures

Sine Vibration
Random vibration at 10 to 2,000 Hz (15 g's) experienced less than 1 microsecond maximum discontinuity with no cracking, loosening of parts, or other failures

Random Vibration
Per MIL-STD-1344, method 205, V & VI or EIA-364-28

Material Characteristics

Shell

Environmental

Aluminum, solid, one piece, seamless construction

Hermetic

Stainless Steel, solid, one piece, seamless construction

Shell Plating (Standard Finishes)

W Finish

Electrically conductive cadmium plate finish with an olive drab chromate after-treat for additional corrosion resistance (500 hr salt spray rating)

N Finish

Electrically conductive electroless nickel plating (48 hr salt spray rating)

G Finish

Electrically conductive electroless nickel plating (48 hr salt spray rating)

RFI Grounding Fingers

Beryllium copper alloy or stainless steel

Shell Conductivity (Standard Finishes)

Per MIL-STD-1344, method 3008, maximum conductivity potential drop shall not exceed the following:

W Finish

2.5 millivolts across assembly shell-to-shell
5.0 millivolts across assembly shell-to-braid

N Finish

1.0 millivolts across assembly shell-to-shell
3.5 millivolts across assembly shell-to-braid

G Finish

1.0 millivolts across assembly shell-to-shell
3.5 millivolts across assembly shell-to-braid

HA, HB, HG Finishes

10.0 millivolts across assembly shell-to-shell
15.0 millivolts across assembly shell-to-braid

Magnetic Permeability

Less than 2.0 mu when measured to EIA-364-54

Insert

Glass filled liquid crystal polymer (LCP)
Non-removable and mechanically bonded to shell

Hermetic Insert

Vitreous (glass compression)
Non-removable and mechanically bonded to shell

Protective Cover Chain

Passivated stainless steel, wire rope able to withstand a 25 lb (11.3 kg) tensile force without damage

Adhesives

RTV and epoxies

Grommet, Peripheral Seal, O-Ring, & Interfacial Seal

Blended fluorosilicone (70%) and silicone (30%) elastomer

Contact Characteristics

Contact Design

Environmental

Removable, rear-release crimp contacts

Hermetic

Solder style, permanently bonded to insert

Contact Sizes

#12, #16, #20, #22, #22M, #22D

Contacts Crimp

Beryllium copper alloy, per ASTM B197

Contacts Hermetic

Nickel-iron (Type 52 alloy), per ASTM F30

Contact Plating

Standard Crimp

Gold plate over nickel, 50 µinches (1.27 µm) minimum

Hermetic

Gold plate over nickel, 50 µinches (1.27 µm) minimum

Socket Contact Hood

Stainless steel, passivated

Max Number of Contacts

128 x #22D contacts standard, custom inserts available

Max Contact Resistance

Size #22D: 14.6 milliohm maximum
Size #20: 7.3 milliohm maximum
Size #16: 3.8 milliohm maximum
Size #12: 1.7 milliohm maximum

Max Voltage Drop

Crimp Contacts

<73 millivolt maximum drop (initial)

Hermetic Contacts

<85 millivolt maximum drop (initial)

Contact Retention

Pin and socket contacts are designed to resist severe vibration and repeated connection and disconnection

Electrical Characteristics

Current Rating

23 amps (test current) at 68°F (20°C)

Max Operating Voltage

900 VAC (RMS) at sea level

Insulation Resistance

>5,000 megohms at 77°F (25°C)

Wire Size

12 to 28 (AWG)

Wire Sealing Range

Designed for individual wire sealing
Sealing is only guaranteed if wires meet MIL-W-5086 or within permitted ranges