

MIL-Circular Connectors

Mil-Circular connectors are a family of electrical connectors which adhere to military specifications (MIL-SPEC). Mil-Circular connectors are cylindrical, indestructible, high performance, and rugged, and are often used in extreme environmental conditions due to their reliability. These connectors are widely used in applications that need to be protected from vibration, shock, moisture, dust, and temperature to provide secure, environmentally sealed mating.



KEY FEATURES & BENEFITS

- **Rugged & Reliable:** Withstands extreme temperatures, shock, vibration, and corrosive environments
- **Environmental Sealing:** Rated up to IP67/IP68 or hermetic for protection against moisture and contaminants
- **EMI/RFI Shielding:** Maintains signal integrity in high-interference environments
- **Flexible Coupling Options:** Threaded, bayonet, and push-pull styles for secure, quick connections
- **Mixed Contact Types:** Supports signal, power, coax, fiber optic, and Ethernet in one connector
- **Space-Efficient:** High-density layouts in compact circular designs
- **Keyed for Accuracy:** Prevents mis-mating with polarization and alignment features
- **Wide Temp Range:** Operates reliably from -55°C to $+200^{\circ}\text{C}$
- **High Mating Cycles:** Durable for repeated use without performance loss

MIL-CIRCULAR CONNECTORS

PRODUCT SPECIFICATIONS

Electrical Properties		
Current Rating	3A to 100A (dependent on contact size)	Per contact, application-specific
Voltage Rating	200 VAC to 1000 VAC (sea level)	Dependent on contact spacing and altitude
Insulation Resistance	5000 MΩ min	At 500 VDC, after environmental exposure
Dielectric Withstanding Voltage (DWV)	1000 VAC to 2500 VAC (sea level)	Between contacts, between contacts and shell
Contact Resistance	5 mΩ to 15 mΩ max	Initial, per contact
Shielding Effectiveness	60 dB to 85 dB	At 100 MHz to 1 GHz, dependent on series
Environmental Properties		
Operating Temperature	-65°C to +200°C	
Thermal Shock	MIL-STD-202, Method 107, Condition B	
Humidity	MIL-STD-202, Method 103, Condition B	
Salt Spray / Corrosion	MIL-STD-202, Method 101, Condition B/C	
Altitude	Up to 70,000 feet (21,336 meters)	
Fluid Resistance	Resistant to fuels, oils, hydraulic fluids, cleaning solvents	
Immersion	MIL-STD-202, Method 104, Condition B	

PRODUCT SPECIFICATIONS CONTD.

Mechanical Properties		
Mating Cycles	500 to 2000 cycles	Minimum, without degradation
Contact Retention (Axial)	6 lbs (27 N) min	Per contact
Vibration	MIL-STD-202, Method 204, Condition D	20 G, 10–2000 Hz, 12 hours per axis
Shock	MIL-STD-202, Method 213, Condition I	50 G, 11 ms duration, 3 axes
Materials (Shell)	Aluminum Alloy, Stainless Steel, Composite	Various platings (Cadmium, Nickel, Zinc–Nickel)
Materials (Contacts)	Copper Alloy	Gold plating over Nickel underplate
Materials (Insulator)	Thermoset, Thermoplastic	High dielectric and mechanical strength
Coupling Torque	1.5 Nm to 10 Nm	Dependent on shell size and coupling type