DEUTSCH

38999 CONNECTORS

SERIES I, III, AND IV

Rugged Circular Connectors in Mil-Spec and Derivative Configurations to Meet the Widest Range of Harsh Environments and Applications
Subminiature Circular Connectors Built for Harsh Environments

TE Connectivity (TE) is your one-stop source for MIL-DTL-38999 and 38999-style connectors. We offer mil-qualified Series I, III, and IV connectors in a wide array of configurations, materials and finishes to help meet the needs of ground, aerospace, and marine applications. The subminiature circular connectors are time tested for reliability in harsh environments. Our 38999 connectors include support for:

- Signals
- Power
- RF
- Optical
- Hermetic sealing
- EMI filtering

Beyond Mil Specs

Because of the widespread popularity of 38999 Series III connectors, we have also used this form factor for designs to meet a variety of configurations beyond those of MIL-DTL-38999. This gives you a familiar, reliable connector and access to the full range of backshells and other accessories.

Get your product to market faster with a smarter, better solution.
Recent 38999 Highlights

RoHS-Compatible Finishes
Our 38999-qualified connectors are available with cadmium-free, environment-resisting plating options offering 500-hour salt spray resistance and a -65°C to +175°C temperature range.

**Class T:** Nickel-PTFE

**Class Z:** Black zinc nickel

PC Board-Mount Connectors
TE offers hundreds of different sizes and types of standard and extended-tail contacts. Direct board mounting not only saves weight and space, it enhances system reliability and performance by replacing a separable interface with a more reliable soldered interconnection.

MC801 Connectors
Expanding your options from our already broad fiber-optic portfolio, MC801 connectors combine a 38999 shell with the capability to use industry-standard 801 optical termini. We support a full range of interface styles to help allow you to achieve the full benefits of fiber’s bandwidth, reach, and noise immunity.

CeeLok FAS-X Connectors
Take control of high-speed networking with connectors that support up to four 10G Ethernet channels with excellent signal integrity. Using standard 39029 contacts, the connectors can be field terminated using standard tools.
### MIL-DTL-38999 Connectors

<table>
<thead>
<tr>
<th></th>
<th>Series I</th>
<th>Series III</th>
<th>Series IV</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Coupling Mechanism</strong></td>
<td>Bayonet 1/3 turn</td>
<td>Threaded 360° turn</td>
<td>Breech lock 1/4 turn</td>
</tr>
<tr>
<td><strong>Shell Materials</strong></td>
<td>Aluminum</td>
<td>Stainless steel</td>
<td>Aluminum</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Aluminum Composite</td>
<td></td>
</tr>
<tr>
<td><strong>Features</strong></td>
<td>Scoop proof</td>
<td>Environmentally sealed</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hermetic versions</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Filter versions</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Spring fingers for EMI control</td>
<td></td>
</tr>
<tr>
<td><strong>Shell Platings</strong></td>
<td>Olive drab cadmium</td>
<td>Passivated</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Electroless nickel</td>
<td>Electrodeposited nickel</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nickel PTFE (Series III)</td>
<td>Black zinc-nickel (Series III)</td>
<td></td>
</tr>
<tr>
<td><strong>Contact Sizes, Std</strong></td>
<td>23, 22, 20, 16, 12, 8</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Shell Sizes</strong></td>
<td>9, 11, 13, 15, 17, 19, 21, 23, 25</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>No. of Signal Contacts, Max.</strong></td>
<td>187</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Contact Type</strong></td>
<td>MIL-C-39029</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Contact Styles</strong></td>
<td>Crimp</td>
<td>Solder cup or eyelet</td>
<td>PCB tail</td>
</tr>
<tr>
<td><strong>Operating Temperatures</strong></td>
<td>-65°C to +200°C</td>
<td>-65°C to +175°C</td>
<td>-65°C to +150°C</td>
</tr>
<tr>
<td></td>
<td>(Depends on shell finish)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Durability (Mating Cycles)</strong></td>
<td>500</td>
<td>(High-durability versions available)</td>
<td></td>
</tr>
<tr>
<td>Plugs</td>
<td>Straight, with or without EMI spring fingers</td>
<td>Lanyard release</td>
<td></td>
</tr>
<tr>
<td>Receptacles</td>
<td>Box mounting, both front and rear panel mounting</td>
<td>Wall mounting, both front and rear panel mounting</td>
<td>Jam nut, rear panel mounting</td>
</tr>
<tr>
<td></td>
<td>Solder mounting</td>
<td>Through-bulkhead</td>
<td></td>
</tr>
</tbody>
</table>
DEUTSCH 38999 Connectors

MIL-DTL-38999 CONNECTORS

Bayonet coupling ring with constant mating torque
- Quick connect/disconnect: 1/3 turn

Corrosion Resistant
- 500-hour salt spray resistance
- Thermoplastic clips molded directly with insert
- RFI fingers for EMI protection

Typical Applications
- Ground vehicles

Triple-start, self-locking threaded coupling
- Disconnect: 360° turn

Capable
- Light weight
- VG 95319 qualified
- EN3645 qualified

Versatile
- More choice in shell sizes, materials, inserts, filtering and EMI protection, and environmental sealing

Typical Applications
- Ground, aerospace, and marine
- Most widely used 38999 style

Extreme Environments
- -65°C to +200°C operating temperature
- Withstands high vibration and shock
- Corrosion-resistant stainless steel shell
- Fire tested to +1093°C

Typical Applications
- Engines in ground vehicles, aerospace, and UAVs
- High-temperature, high-vibration areas

Breech lock coupling
- Quick connect/disconnect: Quarter turn

High Performance
- Optimized for SWAMP area applications
- Visual, audible and tactile full-mate indicators

Typical Applications
- Missiles
- Aircraft
- Ground vehicles

Weight Saving
- Lightweight composite shell

Rugged
- -65°C to +200°C operating temperature
- Excellent corrosion resistance: withstands 2000-hour salt spray
- Up to 1500-mating-cycle durability

Typical Applications
- Commercial and military aerospace
- UAVs

Instant Disconnection
- Designed for munitions stores
- MIL-DTL-38999/31 qualified

MIL-DTL-1760 Types 1 and 2
- Type 1 available in aluminum and composite versions for drop launch
- Type 2 incorporates a replaceable buffer system for rail launch

Typical Applications
- Ground and air-launched missiles
- Smart bombs

High Density
- Nearly double the contact density of standard M38999 connectors
- Four shell sizes, 11 to 64 contacts
- 3 amps per contact

Lightweight and Space Saving
- Aerospace grade aluminium
- Rear removable crimp and PCB contacts
- -65°C to +175°C / +200°C (plating dependent)

Typical Applications
- Universal soldier
- UAV
- Communications

Reduced Profile
- Based on 38999 Series I coupling interface lengths and Series II diameters
- Meets LN29729 standard
- Meets J 62.017 and DIN 65002 standards
- -55°C to +175°C operating temperature

Typical Applications
- Military aerospace

38999-DERIVED CONNECTORS
### 38999-DERIVED CONNECTORS

**Designed for Marine Application**
- Marine bronze shell for marine applications
- Excellent corrosion resistance
- Dry mate sealing down to 4 m immersion
- -65°C to +175°C operating temperature

**Compliant**
- STD CECC 75201-002
- RoHS compliant

**Typical Applications**
- Shipboard
- Ground vehicles

**MC3**
- 5, 8, or 12 fibers (shell size 19, 23, or 25)
- Aluminum shell
- 2.5 mm termini

**MC4**
- 2 fibers (shell size 9)
- Aluminum shell
- 2.5 mm termini

**MC5**
- 1, 2, 4, 6, 8, 10, 18, 30 fibers (shell sizes 11 through 25)
- Composite shell
- 1.25 mm termini

**MC6**
- 12 or 24 fibers
- Composite shell
- MT ferrules

**MC801 Optical Connectors**
- Uses industry-standard ARINC 801 termini
- 1.25 mm ferrules for high contact density
- Multimode and single mode
- PC and APC finishes

**MC3 and MC4 Optical Connectors**
- 2.5 mm termini

**MC5 and MC6 Optical Connectors**
- 2.5 mm termini

**MC3 shown**

**MC4 shown**

**MC5 shown**

**MC6 shown**

**MC3 and MC4 shown**

**Capable**
- Up to 36 fibers
- MIL-PRF-29504/4 and 5/5 termini

**Rugged**
- Aluminum or composite shells
- Shock and vibration resistant
- Moisture and corrosion resistant

**Versatile**
- Expanded beam for size 11 and 15 shells
- 1, 2, 4, or 8 fibers

**Durable**
- No wear on fiber optic interface
- Vibration resistant
- Highly resistant to dirt and debris

**Convenient**
- Compatible with LC termination processes and tooling

**Lightweight**
- Aluminum shell

**High Performance**
- Compatible with LC termination processes and tooling

**Convenient**
- Drop-in replacement for M29504/4 and /5 physical contact termini

**High Current Capacity**
- Up to 1000 A in a size 25 shell
- Single and multicontact configurations

**Space Saving**
- Hybrid configurations with signal and power contacts
- Variety of shell sizes

**Rugged**
- Rear removable crimp contacts
- Dedicated sealed backfitting and cable support grommet
- Excellent contact retention under severe vibration

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**DTB Series Connectors**
**38999 Series III Bronze Shells**

**MC3 and MC4 Optical Connectors**

**PRO BEAM EB16 Termini**

**PRO BEAM Inserts**

**High Power 38999-Style Connectors**

**D38999 Series III QPL Fiber-Optic Connectors**

**MC801 Optical Connectors**

**MC3 shown**

**MC4 shown**

**MC5 shown**

**MC6 shown**

**MC3 and MC4 shown**
### DEUTSCH 38999 Connectors

#### 38999-DERIVED CONNECTORS

<table>
<thead>
<tr>
<th>Simple, Reliable Wire Bussing</th>
<th>Versatile</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Internal pc board connects contacts for grounding distribution, power distribution, and similar needs</td>
<td>• RJ45, with Cat 5e, 6, or 6A performance</td>
</tr>
<tr>
<td>• Range of standard and custom bussing configurations</td>
<td>• USB 2.1, up to 480 Mb/s</td>
</tr>
<tr>
<td></td>
<td>• USB 3.0, up to 5 Gb/s</td>
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<tr>
<td></td>
<td>• SIM card receptacle</td>
</tr>
<tr>
<td></td>
<td>• Micro SD card receptacle</td>
</tr>
<tr>
<td></td>
<td>• LC, for multimode and single-mode fiber</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Weight and Space Saving</th>
<th>Rugged</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Composite and aluminum shells</td>
<td>• Shell options include aluminum, bronze, stainless steel, titanium, and composite</td>
</tr>
<tr>
<td>• Eliminates external bussing components</td>
<td>• Sealed up to IP68 for fluid and dust-laden environments</td>
</tr>
<tr>
<td>• Shell sizes 9 through 25</td>
<td></td>
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<table>
<thead>
<tr>
<th>High Performance</th>
<th>EMI Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Glass-to-metal sealing</td>
<td>• PI, LC, CL, C configurations</td>
</tr>
<tr>
<td>• Airtight under high pressures, vibration, and temperatures</td>
<td>• Mixed capacitance, grounded or feedthrough lines</td>
</tr>
<tr>
<td></td>
<td>• Filter values from 100 pF to 1 μF, subject to specific requirements</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rugged</th>
<th>EMP Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Resists extreme changes in temperature or pressure</td>
<td>• Transient voltage suppression</td>
</tr>
<tr>
<td>• -65°C to 200°C</td>
<td>• Resists EMP, NEMP, lightning strike, or ESD</td>
</tr>
<tr>
<td>• Wide range of special configurations</td>
<td>• Fast transient clamping</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Typical Applications</th>
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</thead>
<tbody>
<tr>
<td>• Pressurized systems</td>
<td>• Pressurized systems</td>
</tr>
<tr>
<td>• Fuel tanks and other hazardous materials</td>
<td>• Fuel tanks and other hazardous materials</td>
</tr>
<tr>
<td>• Harsh environments</td>
<td>• Harsh environments</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>High Speed, High Density</th>
<th>High Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Up to 8 Quadrax contacts in a size 25 shell</td>
<td>• Supports 10G Ethernet and beyond</td>
</tr>
<tr>
<td>• One Quadrax contact in a size 9 shell</td>
<td>• One 10G Ethernet channel in size 11 shell</td>
</tr>
<tr>
<td>• Integral ground plane</td>
<td>• Four channels in size 25 shell</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rugged</th>
<th>Compatible</th>
</tr>
</thead>
<tbody>
<tr>
<td>• High-strength aluminum alloy shell</td>
<td>• AS39029 contacts</td>
</tr>
<tr>
<td>• Nickel, zinc cobalt, or olive drab cadmium plating</td>
<td>• Fast field termination and repair, using standard tools</td>
</tr>
<tr>
<td>• 360° shielding</td>
<td>• Available with aluminum or composite shells with a variety of finishes</td>
</tr>
<tr>
<td>• -65°C to +175°C</td>
<td></td>
</tr>
<tr>
<td><strong>Typical Applications</strong></td>
<td><strong>Typical Applications</strong></td>
</tr>
<tr>
<td>• High-speed networking</td>
<td>• High-speed networking</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Convenient</th>
<th>Wide Backshell Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Suited to bulkhead pass-through and connector-saver applications</td>
<td>• AS85049-compliant band straps and adapters</td>
</tr>
<tr>
<td>• Wide range of gender matching, materials, and sizes</td>
<td>• Available in all materials and finishes</td>
</tr>
<tr>
<td></td>
<td>• Straight, 45°, or 90°</td>
</tr>
<tr>
<td></td>
<td>• Options on low profile, extended length and alternative angles</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Shielded or Unshielded</th>
<th>Compatible</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Shielded for individual or overall 360° screening options</td>
<td>• Compatible with Mil-Spec dimensions and performance</td>
</tr>
</tbody>
</table>

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**CBC Series Bussed Connectors**

**Hermetic Connectors**

**Quadrax Connectors**

**Feedthrough Connectors**

**Ruggedized Commercial Connectors**

**Filter Connectors**

**Backshells and Accessories**

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**High Speed**

- Supports 10G Ethernet and beyond
- One 10G Ethernet channel in size 11 shell
- Four channels in size 25 shell

**Compatible**

- AS39029 contacts
- Fast field termination and repair, using standard tools
- Available with aluminum or composite shells with a variety of finishes

**Typical Applications**

- High-speed networking
For More Information

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