MIGHTY MOUSE
THE NEW HIGH-PERFORMANCE STANDARD
MIGHTY MOUSE

The New High-Performance Standard

Glenair has recognized a growing need in tactical military, aerospace and specialty industrial markets for a connector series that mimics the electrical and mechanical performance of popular mil-standard connectors, such as MIL-DTL-38999, but in a smaller and lighter package. The Series 80 Mighty Mouse Connector is perfectly suited for the wide range of power and signal applications that depend on reliable environmental and mechanical performance and electromagnetic compatibility as well as high-speed applications such as gigabit Ethernet. Six different coupling styles are offered. Size #23 crimp contacts are standard, set on 76/1000 inch centers. At just half the size and weight of D38999, the high-performance Mighty Mouse is now specified on hundreds of mission-critical interconnect applications worldwide and has become the de facto high-performance connector solution for many former users of D38999.

Glenair developed the Series 80 Mighty Mouse over a dozen years ago as a smaller and lighter version of D38999. Our goal was to radically reduce the size and weight of this flight-critical connector while maintaining its core performance features. Our miniaturization work took place in three key areas beginning with reduction of the shell package size and the integration of banding and shrink boot accessory functions. The integration of the backshell not only saves size and weight, it reduces cost and complexity.

Next, we designed and qualified our own SAE-AS39029 contacts based on the shorter “Series II” family of signal, data and specialty contacts. We also developed an extensive range of innovative short contacts including fiber optic and pneumatic applications. The development of our own range of shorter, Series II type contacts was a key step in gearing Mighty Mouse to meet any and all interconnection challenges. The graphic below shows just some of these high-performance contacts—from standard 39029 crimp signal and power contacts to our own unique shielded differential Twinax contact, miniaturized fiber optic contacts and highly specialized gas and pneumatic contact solutions.

Finally, we re-designed the sub-miniature D38999 insert arrangements to a higher density, ultra-miniature standard. Legacy circular connectors can be grouped into standard, miniature and subminiature families. These groupings reflect the packaging density and the contact size, and also represent the evolution of the connectors over the past 70 years. The standard group includes the venerable 5015’s (including Glenair IT/ITS connectors) as well as the 28840 shipboard connector (which we also supply). Miniature circulars include the 26482 (Glenair IPT series), and the 26500 and 83723 which are still popularly specified in both military and commercial aerospace applications. The D38999 series, the only significant subminiature circular, has been a standard choice for high-performance systems for decades and Glenair supplies these connectors in every class including QPL hermetic versions, as well as environmental filters, fiber optics and more.

Mighty Mouse vs. 38999:
Half the Size and Weight

Mighty Mouse is on board the Mars Curiosity Rover

Mighty Mouse contacts sampler
The Series 80 Mighty Mouse represents the evolution of circular technology beyond the 38999 sub-miniature format—a technology which is absolutely unmatched in today’s interconnect industry. Glenair is the unchallenged design and market leader for reduced package size and weight connectors of this type and style. All Series 80 Mighty Mouse versions use #3 contacts on .075 inch (1.9 mm) spacing as core contact technology, and we have extended this model with special-purpose rectangular, modular (and even) higher-density connectors.

This then is the benchmark we have established with Mighty Mouse: Interconnect systems that are so small and light that they are weighed in tenths of grams while still meeting the performance specifications of even the most mission-critical applications. But the benefits of connector package size reduction are not limited to the connector itself, as we will discuss in the following paragraphs.

Large format connectors: The hidden costs

Let’s look at some of the hidden costs of large format/weight connectors, starting at the board. Obviously, large form factor reduction are not limited to the connector itself, as we will discuss in the following paragraphs.

Large connectors lead to larger boards, boxes, panels and enclosures...

lower density contact arrangements lead to fatter and heavier interconnecting cables, including increases in accessory hardware size, and the amount of shielding and jacketing material required.

The final result is that electronic systems pay a huge penalty in size and weight. Obviously this is not a problem in every application. But with the lower power and signal voltage requirements of today’s electronic systems, the opportunity is ripe to design systems with reduced size circuits and connectors.

The graphic says it all. Small connectors, small wires and contacts, higher density contact arrangements, integrated accessory functions and the many other design advancements of the Series 80 Mighty Mouse translate to smaller and lighter board, boxes, cables and systems.

Mighty Mouse Performance: Equal to D38999

Mechanical

Nothing illustrates the performance potential of the Series 80 Mighty Mouse better than a cross-sectional view of the ultraminiature connector’s architecture. Note that this plug and receptacle pair on the opposite page share many of the same design features as D38999. Shells are precision machined and are designed for keyed mating and shell-to-shell bottoming. Sealing features include cork-and-bottle interfacial seals, O-ring seals and robust grommet wire seals. In the mated condition, the connectors are sealed IAW MIL-STD-810, method 512, 1 meter for 1 hour, and pass rigorous altitude immersion requirements IAW MIL-DTL-38999. Two piece dielectric and copper contact retention clips are modeled after D38999 and, together with the shell-to-shell bottoming, provide for equal levels of grounding and shell-to-shell resistance as D38999. Contacts, as we mentioned before, are either OPL AS39029 signal contacts, such as the size 23 pin and socket contacts shown here, or enhanced durability contacts designed IAW AS39029 requirements (in the case of our fiber optic solutions and proprietary shielded contacts). Note that Mighty Mouse offers either an integrated band or Optional Accessory Thread.

The accompanying table lists some of the core mechanical features of the Mighty Mouse, again in lock-step with D38999. Note that all the desirable features of the 38999 are duplicated in the Mighty Mouse; from a full-mate visual indicator, to its adequate mass in resistance to lightning strike.

Service Class

You will see the term Service Class still used in many connector catalogs. This pertains to the environmental parameters in which the connector will operate successfully.

For example, service class defines the level of environmental sealing, or chemical resistance, or the ability to withstand vibration, or corrosion resistance or operating temperature. Some examples from 38999 Series III: class G for space grade, class H for hermetic, class K for firewall. These class grades are all fully supported and qualified in the Series 80 Mighty Mouse. For a detailed report on all these benchmarks, please see the Series 80 Mighty Mouse catalog where a complete performance specification is supplied. In addition, we are pleased to offer our Mighty Mouse customers detailed test reports on any aspect of the connector’s performance. As we like to point out, Mighty Mouse is a mature connector series with over twelve years of successful deployment in high-reliability applications. And we have the testing to prove it.

See the table above for a little more detail on connector classes. Note that Mighty Mouse again stacks up well against D38999 and even surpasses thirty-nine-eighty-nine in the category of high-pressure submersible interconnects. From standard environmental to space-grade versions, hermetics, EMI filters, ground plane designs and more, Mighty Mouse delivers every class of connector offered in D38999. And these are not just special capabilities available with long-lead times. These products are all available as standard catalog offerings, with thousands of popular part numbers available for immediate same-day shipment.

Mechanical Performance Features/Connector Class

<table>
<thead>
<tr>
<th>MIL-DTL-38999 (Standard and Special)</th>
<th>Series 80 Mighty Mouse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Mate Visual Indicator</td>
<td>Yes</td>
</tr>
<tr>
<td>Integrated Contact Retention System</td>
<td>Yes</td>
</tr>
<tr>
<td>Interfacial and Grommet Seals</td>
<td>Yes</td>
</tr>
<tr>
<td>Fully Shielded</td>
<td>Yes</td>
</tr>
<tr>
<td>Lightning Strike</td>
<td>Yes</td>
</tr>
<tr>
<td>Gold-Plated Pin Contacts</td>
<td>Yes</td>
</tr>
<tr>
<td>Copper Alloy Retention Clip</td>
<td>Yes</td>
</tr>
<tr>
<td>Fully Range of Assembly Tools</td>
<td>Yes</td>
</tr>
<tr>
<td>Environmental</td>
<td>Yes</td>
</tr>
<tr>
<td>Space Grade</td>
<td>Yes</td>
</tr>
<tr>
<td>Hermetic</td>
<td>Yes</td>
</tr>
<tr>
<td>EMI Filter</td>
<td>Yes</td>
</tr>
<tr>
<td>RoHS-Compliant</td>
<td>Yes</td>
</tr>
<tr>
<td>Ground Plane</td>
<td>Yes</td>
</tr>
<tr>
<td>Lanyard Release</td>
<td>Yes</td>
</tr>
<tr>
<td>Backshell/Feed-Thru</td>
<td>Yes</td>
</tr>
<tr>
<td>Sav-Con® Connector Saver</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Plating

Glenair is a major innovator in material and plating technologies, particularly for conductive and RoHS (cadmium-free) applications. Some of the more popular Glenair material and plating solutions include plated composites, RoHS compliant Nickel-PFTE and electrolysis nickel—all available for Mighty Mouse. Glenair has mastered the difficult challenges of fielding plated specialty metal parts in harsh and corrosive applications and can offer standard Mil-qualified formulas as well as unique solutions for special applications. All our materials are sourced in accordance with DFARS 252.225-7014 Preference for domestic specialty metals requirements.

Mighty Mouse Performance: Superior to D38999

We’ve already offered quite a few facts demonstrating how Mighty Mouse, even with its smaller size and weight, is equal to the performance standards set by MIL-DTL-38999. So next we’ll take a look at some of the ways this ultraminiature connector actually outperforms 38999.

More Shell Sizes & Contact Arrangements

First off, Mighty Mouse offers a greater range of shell sizes and contact counts for more efficient matching of circuit requirements to available shell sizes and insert arrangements. This, combined with the broader range of coupling styles offered by Mighty Mouse, makes the connector series far more even including high-speed variants, shielded and overmolded versions), solder cup, and of course crisp. We even offer flex terminations and back-to-back jumpers.
versatile than 38999. In other words, users can standardize on Mighty Mouse more readily than 38999—throughout their entire range of application requirements—without having to turn to a different series with new contact termination tooling, assembly procedures, quality standards and so on to meet unique or unanticipated circuit requirements.

More Wire Sizes Supported
Mighty Mouse also offers broader wire support, from size 22 to 28; turnkey cords—right out of the catalog with short leadtimes and guaranteed quality; integrated band porch or accessory thread interface; Split shell Cobra connectors (more on this later) for ultra-low-profile wire routing; high-speed PFA Teflon inserts for optimized high-speed performance; a compatible rectangular series—Micro-Crimp—that features the exact same contacts, density and performance as Mighty Mouse; and last but not least, the performance benefits of lower harmonic shock susceptibility that comes from the reduced mass of Mighty Mouse compared to 38999.

Six Mating Styles
Turning to mating technology, MIL-DTL-38999 offers four mating styles: two bayonets, the popular triple start threaded and the rarely used breach-lock series IV version. Mighty Mouse offers six mating technologies: The series 800 UNF thread version designed for use in small instruments; the Series 801—our most popular style—that combines small size with rapid double-start stub acme mating; The threaded-coupling Aqua Mouse with its high-pressure piston seal for 3500 PSI applications; the quarter-turn-to-full-mate series 803 bayonet; the Quick disconnect series 804 push-pull; and the Series 805 with triple-start coupling and ratcheting anti-decoupling mechanism—an exact work-alike to the series 38999—of course with reduced size and weight as the principle differentiator.

A Broader Range of Contacts
Both 38999 and Mighty Mouse offer an incredibly broad range of signal, data, power and specialty contacts. But Mighty Mouse once again outstrips 38999 with a broader range of contact sizes and types including layouts with size 23, 20, 20HD, 16, 12, and size 8 contacts and cavities. Mighty Mouse also toss offers a broader range of hybrid layouts and more sizes and types of fiber optic termini, pneumatic termini and, opto-electric contacts, low-insertion force contacts and more. In fact, no other connector series in our industry supports as diverse a range of contact technologies as Mighty Mouse.

Mighty Mouse Rectangular Version

The Series 79 Micro-Crimp takes all the attributes of the Mighty Mouse and packages them up in a high-performance rectangular...

Like the Mighty Mouse, the Micro-Crimp connector features crimp, rear-release size #23 contacts on .075 inch (1.9 mm) spacing, as well as size #12 and #16 power and coaxial crimp contacts in a range of hybrid layouts. Available in 29 insert arrangements, Micro-Crimp provides superior EMI shielding and improved environmental sealing compared to M24308 D-sub connectors. Micro-Crimp plugs include an EMI spring made of gold plated stainless steel or copper alloy. Right angle PCB receptacles feature an aluminum alloy EMI shroud.

Micro-Crimp meets the shielding effectiveness requirements of EIA 364-46, and Fluorosilicone interfacial seals and grommets, and watertight EMI gaskets for panel mounts ensure adherence to MIL-STD-810F for 1 meter immersion for 1 hour. The Series 79 Micro-Crimp is ideally suited for blind-mate rack and panel and/or module-to-chassis applications and is a perfect complement to Mighty Mouse in systems that require both high-density, stackable connectors as well as circulars for ease of mating.

Constant, Relentless Innovation
Another strength of Mighty Mouse compared to D38999 is the relentless innovation that has brought the series to a point where it now outstrips the series in versatility and application. In addition to standard environmental, hermetic and filter class connectors, Glenair now offers a range of series extention including high-speed, high-density, USB equipped, and fiber-optic variants. High-quality documentation, including performance specifications and comprehensive test reports are available for every solution. The full range of this offerings is spelled out in detail in the following pages of this special Mighty Mouse edition of QwikConnect. For complete information see www.glenair.com, or better yet visit our factory in Glendale to judge our capabilities for yourself. Can’t make it to California? Glenair is pleased to offer our Mighty Mouse customers free application engineering and application support backed by the largest field organization in the business. Call to schedule an on-site visit. We’ll bring our best engineers, samples and solutions right to your door.

Series 80 Mighty Mouse: The new industry standard for high-performance, ultraminiature connectors

Introducing the new Mighty Mouse Series 824 Locking Push-Pull Connector: All the familiar size, weight and performance advantages of the industry-standard Mighty Mouse with revolutionary low-profile locking push pull mating. Finally, mil-spec caliber performance comes to locking push-pull applications.

Series 80 Mighty Mouse Hermetic Receptacles

<table>
<thead>
<tr>
<th>Series 800</th>
<th>Series 801</th>
<th>Series 802</th>
<th>Series 803</th>
<th>Series 804</th>
<th>Series 805</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light-Duty UNF Thread</td>
<td>Rugged Double-Start ACME Thread</td>
<td>3500 PSI AquaMouse</td>
<td>Fast-Mate Bayonet Coupling</td>
<td>Quick-Disconnect Push-Pull</td>
<td>Ratcheted Triple-Start</td>
</tr>
</tbody>
</table>

- Vitreous glass sealing
- <1X10^-7 cc/sec maximum helium leak rate
- Solder-cup and PC tail terminations
- >304L stainless steel shells
- Alloy 52 iron alloy contacts
- Solder-mount, square flange or jam nut
**Series 80 Mighty Mouse Contact Arrangements**

<table>
<thead>
<tr>
<th>Contact Size</th>
<th>Contact Quantity</th>
<th>Contact Arrangement</th>
</tr>
</thead>
<tbody>
<tr>
<td>#23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#20HD</td>
<td></td>
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<tr>
<td>#16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#12</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Series 80 Mighty Mouse Contact Arrangements**

<table>
<thead>
<tr>
<th>$\text{Size} \ #8 \text{ Contacts}$</th>
<th>$\text{5 Amp. Max.}$</th>
<th>$\text{Current}$</th>
<th>$\text{500 VAC}$</th>
<th>$\text{22-28 AWG}$</th>
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<tbody>
<tr>
<td>#23</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#20</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#20HD</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#16</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#12</td>
<td></td>
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</tr>
</tbody>
</table>

**Series 80 Mighty Mouse New Size #8 Contact Arrangements**

New Mighty Mouse connectors have size #8 snap-in, rear-release contacts for power and data applications. Available with 1, 2, 3, 4 or 5 contacts, these connectors meet the need for a low-profile, lightweight connector compatible with size #8 twinax, quadrax and coax contacts used in MIL-DTL-38999 connectors. Quadrax contacts are 100 ohm impedance for Ethernet networks. Concentric twinax contacts accept M17/176-000 cable for MIL-STD-1553 databus. 75 ohm coaxial contacts accept aerospace-grade SMPTE 424M high bit rate digital video cable. Power contacts accept size #8 AWG wire for up to 46 amps continuous duty.

**Contact Arrangements**

<table>
<thead>
<tr>
<th>Series 801</th>
<th>8-1</th>
<th>16-2</th>
<th>17-3</th>
<th>19-4</th>
<th>21-5</th>
<th>25-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Series 805</td>
<td>8-1</td>
<td>16-2</td>
<td>17-3</td>
<td>19-4</td>
<td>21-5</td>
<td>25-1</td>
</tr>
</tbody>
</table>
Mighty Mouse High-Speed, Ultra-Twinax and Size #8 Quadrax/Twinax connectors: high-speed performance and signal integrity in an ultraminiature package

Glenair has expanded the Mighty Mouse line to include connectors optimized for high-speed digital applications. A wide range of interconnect technologies are available, including:

- High-Speed series 80 with DuPont™ Teflon® insulators for superior electrical performance in protocol-specific applications like eSATA and USB 2.0/3.0.
- Mighty Mouse Ultra-Twinax connectors utilizing size #12 Twinax contacts for differential pair applications such as LVDS and CML.
- Size #8 Quadrax and differential Twinax technologies for high-speed 100BASE-T Ethernet applications.

**MIGHTY MOUSE HIGH-SPEED**

- For high-speed protocols: eSATA, 10GBase-T, USB 2.0 / 3.0
- DuPont™ Teflon® PFA insulators for superior insertion loss and balanced impedance
- Series 801 double-start ACME thread and Series 804 push-pull quick disconnect connectors available
- Discrete components or overmolded cordsets

**MIGHTY MOUSE ULTRA-TWINAX**

- For ultra-high-speed differential pair applications: LVDS, CML
- Size #12 Twinax and hybrid contact arrangements
- Series 801 double-start ACME thread connectors
- Discrete components or overmolded cordsets

**MIGHTY MOUSE WITH SIZE #8 QUADRAX AND DIFFERENTIAL TWINAX CONTACTS**

- Differential Twinax contacts for 100 Ohm serial data transmission
- Quadrax contacts for 100BASE-T Ethernet
- Arrangements for 1, 2, 3, 4 or 5 snap-in, rear-release contacts
- Lightweight, low profile
- Comprehensive range of assembly tooling
- Available for Series 801 (double-start) and 805 (triplex-start) Mighty Mouse connectors

The table compares contact and wire spacing and bandwidth performance in miniature interconnect applications. As contact density increases, the performance of the interconnect improves. Note the position of the High Speed PFA and Size #8 Mighty Mouse compared to standard Mighty Mouse, and the position of the Ultra-Twinax Mighty Mouse with performance up to 10 GHz. The Series 808 Mighty Mouse High Density (HD) connector also performs exceptionally well in bandwidths up to 5 GHz, by virtue of its high-density TwiPhn contact insert arrangements.

**Series 80 Mighty Mouse High-Speed Contact and Wire Spacing**

This table compares contact and wire spacing and bandwidth performance in miniature interconnect applications. As contact density increases, the performance of the interconnect improves. Note the position of the High Speed PFA and Size #8 Mighty Mouse compared to standard Mighty Mouse, and the position of the Ultra-Twinax Mighty Mouse with performance up to 10 GHz. The Series 808 Mighty Mouse High Density (HD) connector also performs exceptionally well in bandwidths up to 5 GHz, by virtue of its high-density TwiPhn contact insert arrangements.

**Series 80 Mighty Mouse High-Speed Contact and Wire Spacing**
**Series 80 Mighty Mouse**

**High Speed**

### MIGHTY MOUSE HIGH-SPEED PLUG AND RECEPTACLE CUTAWAY

- Integral Shield Attachment Platform or Accessory Thread
- Machined Aluminum or Stainless Steel Shells
- Fluorosilicone O-Ring
- Crimp or PC Tail termination
- Gold-Plated Copper Alloy Pin and Socket Contacts
- DuPont™ Teflon® PFA Insulators
- Red Full-Mate Indicator

### MIGHTY MOUSE ULTRA-TWINAX PLUG AND RECEPTACLE CUTAWAY

- Integral Shield Attachment Platform or Accessory Thread
- Machined Aluminum or Stainless Steel Shells
- Fluorosilicone O-Ring
- 100-Ohm Parallel Cable
- Fluorosilicone Interfacial Seal
- Ultra Twin Size #12 Pin and Socket Twinax Contacts
- Red Full-Mate Indicator

### MIGHTY MOUSE WITH SIZE 8 CONTACTS PLUG AND RECEPTACLE CUTAWAY

- Aluminum or Stainless Steel Shell & Coupling Nut
- Copper Alloy Retention Clip, Rear-Release
- Size #8 Quadrax or Differential Twinax Contact
- O-ring
- Fluorosilicone Rear Grommet
- Integral Platform for Attaching Braid Shield, Heatshrink Boot or Overmolding
- Fluorosilicone Seals
- Copper Alloy Retention Clip, Rear-Release
- Integral Attachment Platform
- Sealing Boot

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**General Purpose Guidance for Selection of Series 79 and 80 Connectors for Use in High-Speed Applications**

<table>
<thead>
<tr>
<th>Series 79 Compact</th>
<th>Series 80 Mighty Mouse</th>
<th>Series 81 Mighty Mouse</th>
<th>Series 79 MicroCrimp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to: Cat 5e (1000BASE-T)</td>
<td>7-10</td>
<td>7-10</td>
<td>6-12</td>
</tr>
<tr>
<td>Usable</td>
<td>7-10</td>
<td>6-12</td>
<td>Not suitable</td>
</tr>
<tr>
<td>USB 2.0</td>
<td>6-4</td>
<td>6-4</td>
<td>5-7</td>
</tr>
<tr>
<td>USB 3.0</td>
<td>Not suitable</td>
<td>Not suitable</td>
<td>Not suitable</td>
</tr>
<tr>
<td>eSATA/SATA</td>
<td>Not suitable</td>
<td>Not suitable</td>
<td>Not suitable</td>
</tr>
<tr>
<td>Display Port</td>
<td>Not suitable</td>
<td>Not suitable</td>
<td>Not suitable</td>
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<tr>
<td>HDMI</td>
<td>7-22</td>
<td>7-22</td>
<td>E-19</td>
</tr>
<tr>
<td>DVI-D</td>
<td>Not suitable</td>
<td>8-30</td>
<td>G-33</td>
</tr>
<tr>
<td>Cat 5e (1000BASE-T)</td>
<td>Not suitable</td>
<td>Not suitable</td>
<td>Not suitable</td>
</tr>
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<td>Cat 6A (10GBASE-T)</td>
<td>Not suitable</td>
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<tr>
<td>Cat 6 (1GBASE-T)</td>
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</table>

* Actual performance dependent on wire selection and termination
### Series 80 Mighty Mouse Rectangular Version

- **Mighty Mouse rectangular series connector**
- **Crimp, PCB, fiber optic, coax, power and pitot**
- **Precision machined aluminum shells sealed to IP67**
- **High-density #23 contact contact arrangements set on .076 centers**
- **Blind mating for rack and panel applications**
- **Over 30 tool contact arrangements**
- **Integrated ground spring for improved EMI shielding**

### Series 79 Micro-Crimp: The advanced high-performance rectangular with Mighty Mouse caliber size and weight reduction.

#### Inside a Series 79 Micro-Crimp Connector

- **BeCu Insert Retention Clips**
- **Three Contact Sizes: 12, 16 and 23**
- **Fluorosilicone Grommet**
- **Riveting Sealing**
- **Machined Aluminum Shell**
- **30% Glass-Filled LCP Insulators**

#### Selected Contact Types

- **Standard Signal**
- **Power**
- **Coaxial**
- **Differential Twinax**
- **Fiber Optic**
- **Pilot Tube**

### Basic Specifications

<table>
<thead>
<tr>
<th>Shell Size</th>
<th>Contact Arrangement</th>
<th>Contact Quantity</th>
<th>Contact Size</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>A-5</td>
<td>5</td>
<td>23</td>
</tr>
<tr>
<td>B</td>
<td>B-9P2</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>C</td>
<td>C-13</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>D</td>
<td>D-7P2</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>E</td>
<td>E-3P3</td>
<td>3</td>
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### Materials and Finishes

<table>
<thead>
<tr>
<th>Size</th>
<th>Contact Arrangement</th>
<th>Contact Quantity</th>
<th>Contact Size</th>
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<tbody>
<tr>
<td>#23</td>
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<td>5</td>
<td>23</td>
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<tr>
<td>#16</td>
<td>B-9P2</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>#12</td>
<td>C-13</td>
<td>13</td>
<td>13</td>
</tr>
</tbody>
</table>

### Current Rating

- Contact size #23 5 Amps, size #16 13 Amps, size #12 23 Amps maximum

### Voltage Rating (DWV)

- Contact size #23 500 VAC rms., size #16 and #12 1800 VAC rms.

### Insulation Resistance

- 5000 megohms minimum

### Operating Temperature

- -65°C to +150°C

### Contact Resistance

- 5 milliohms maximum

### Water Ingress Protection

- IP67

### Shielding Effectiveness

- >75 dB attenuation from 100 MHz to 1000 MHz, >60 dB 1 GHz to 4 GHz, >40 dB 4 GHz to 10 GHz.
Glenair’s filtered Series 80 Mighty Mouse connectors provide significant size and weight savings compared to larger military standard connectors such as MIL-DTL-38999. The high density #23 contacts provide almost double the density of this much larger aerospace connector. Designed to meet the most stringent performance requirements, these connectors are offered with standard low pass Pi or C circuit filter arrays, or with customized filters to meet specific requirements. Thermally conductive epoxy protects the filter package from mechanical and heat stress and also provides a waterproof seal. These filtered receptacles are designed for use with, and mate to Series 801, 804, and 805 Mighty Mouse connectors, and are available in jam nut or square flange versions.

**Specifications**

- **Contact Rating**: #23 5 AMPS, #20HD 7.5 A., #16 10 A., #12 15 A.
- **Dielectric Withstanding Voltage**: 2000 VDC
- **Insulation Resistance**: 5000 megohms minimum @ 200 VDC
- **Operating Temperature**: -55° C. to +125° C.
- **Shock**: 300 g.
- **Vibration**: 37 g.
- **Dielectric Withstanding Voltage**: 300 VDC
- **Insulation Resistance**: 5000 megohms minimum @ 200 VDC.
- **Current Rating**: #23 5 AMPS, #20HD 7.5 A., #16 10 A., #12 15 A.
- **Insulation Resistance**: 5000 megohms minimum @ 200 VDC
- **Operating Temperature**: -55° C. to +125° C.
- **Shock**: 300 g.
- **Vibration**: 37 g.
- **Dielectric Withstanding Voltage**: 300 VDC
- **Insulation Resistance**: 5000 megohms minimum @ 200 VDC.

**Materials and Finishes**

- **Shells, Jam Nuts**: Aluminum alloy or stainless steel
- **Contacts**: Beryllium copper alloy, 50 µInch gold plated
- **Insulators**: Liquid crystal polymer (LCP)
- **Shell Insulator**: Double-start ACME threaded
- **Twistpin**: Sur-Con® Filter Adapter available for Series 801, 804, and 805
- **Ground pins and other special options available**

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- **Ground pins and other special options available**

** ULTRA SMALL AND LIGHTWEIGHT EMI/EMP FILTER CONNECTORS**

- **Series 801 Double-start ACME thread push-pull**
- **Series 804 Quick-disconnect push-pull**
- **Series 805 Ratcheted triple-start**
- **Sav-Con® Filter Adapter available for series 801, 804, and 805**
- **Ground pins and other special options available**

**Capacitors Code/ Capacitance Range**

<table>
<thead>
<tr>
<th>Class</th>
<th>Pi - Circuit (pF)</th>
<th>C - Circuit (pF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>10,000 - 50,000</td>
<td>19,000 - 28,000</td>
</tr>
<tr>
<td>B</td>
<td>10,000 - 45,000</td>
<td>16,000 - 22,500</td>
</tr>
<tr>
<td>C</td>
<td>16,000 - 33,000</td>
<td>9,000 - 16,500</td>
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<tr>
<td>D</td>
<td>8,000 - 12,000</td>
<td>4,000 - 6,000</td>
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<tr>
<td>E</td>
<td>3,300 - 5,000</td>
<td>1,650 - 2,500</td>
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<tr>
<td>F</td>
<td>600 - 1,500</td>
<td>400 - 450</td>
</tr>
<tr>
<td>G</td>
<td>500 - 500</td>
<td>200 - 300</td>
</tr>
</tbody>
</table>

**Mighty Mouse high density connector delivers size and weight savings and outstanding performance**

High Density Micro TwistPin Contacts deliver over twice the density of standard Series 80 Mighty Mouse

- 7 to 42 Contacts
- Water Resistant to 1 meter
- Double-start ACME threaded coupling
Significant size and weight reduction compared to MIL-DTL-38999 type USB/RJ-45 solutions

Rear-release crimp contact termination as well as USB/RJ-45 jumper accommodation

Superior sealing, IP67, in unmated condition compared to other available environmental circulars

Superior grounding for electrostatic discharge and EMC

Superior cable shield termination with integrated bonding platform

Optional spring-loaded protective covers for environmental protection of junction boxes and switches

Wide range of high speed Ethernet/network protocols supported, including USB 2.0, USB 3.0, and RJ45

High-capacity, high-speed memory sticks
### Series 80 Mighty Mouse Fiber Optics

- Three snap-in, rear release fiber optic termini sizes: #23, #20HD, and #16 for use in any Series 80 Mighty Mouse connector
- The smallest mil-aero caliber fiber optic connection system available
- Singlemode and multimode
- Precision ceramic ferrules
- 0.5 dB typical attenuation
- 1 to 130 channels

The perfect marriage of high bandwidth fiber optics with ultra-miniature packaging—half the size of D38999

#### Series 80 Contact Arrangements For Use With #16 Fiber Optic Termini

<table>
<thead>
<tr>
<th>1</th>
<th>#16</th>
<th>2</th>
<th>#16</th>
<th>3</th>
<th>#16</th>
<th>4</th>
<th>#16</th>
<th>5</th>
<th>#16</th>
<th>6</th>
<th>#16</th>
<th>7</th>
<th>#16</th>
<th>12</th>
<th>#16</th>
<th>14</th>
<th>#16</th>
<th>16</th>
<th>#16</th>
<th>22</th>
<th>#16</th>
</tr>
</thead>
</table>

#### Series 80 Contact Arrangements For Use With Size #20HD Fiber Optic Termini

<table>
<thead>
<tr>
<th>1</th>
<th>#20HD</th>
<th>2</th>
<th>#20HD</th>
<th>3</th>
<th>#20HD</th>
<th>4</th>
<th>#20HD</th>
<th>5</th>
<th>#20HD</th>
<th>6</th>
<th>#20HD</th>
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<th>20</th>
<th>#20HD</th>
<th>30</th>
<th>#20HD</th>
<th>41</th>
<th>#20HD</th>
<th>60</th>
<th>#20HD</th>
</tr>
</thead>
</table>

#### Series 80 Contact Arrangements For Use With #23 Fiber Optic Termini

<table>
<thead>
<tr>
<th>1</th>
<th>#23</th>
<th>2</th>
<th>#23</th>
<th>3</th>
<th>#23</th>
<th>5</th>
<th>#23</th>
<th>6</th>
<th>#23</th>
<th>7</th>
<th>#23</th>
<th>8</th>
<th>#23</th>
<th>9</th>
<th>#23</th>
<th>10</th>
<th>#23</th>
<th>11</th>
<th>#23</th>
<th>12</th>
<th>#23</th>
</tr>
</thead>
</table>

See Series 80 Mighty Mouse catalog for connector ordering information. Order connectors less contacts and order fiber optic termini separately. Caution numbers are mating face view of pin connectors.

---

**SIZE #16 FIBER OPTIC TERMINI**

<table>
<thead>
<tr>
<th>Termi Type</th>
<th>Optical Fiber Type</th>
<th>Part Number</th>
<th>A Ferrule I.D.</th>
<th>Fiber Size Core/Cladding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pin</td>
<td>Multi Mode</td>
<td>181-057-126</td>
<td>126.0 microns 50/125, 62.5/125</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Single Mode</td>
<td>181-057-125</td>
<td>125.5 microns 9/125</td>
<td></td>
</tr>
<tr>
<td>Socket</td>
<td>Multi Mode</td>
<td>181-075-126</td>
<td>126.0 microns 50/125, 62.5/125</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Single Mode</td>
<td>181-075-125</td>
<td>125.5 microns 9/125</td>
<td></td>
</tr>
</tbody>
</table>

*Consult factory for additional sizes

---

**SIZE #20HD FIBER OPTIC TERMINI**

<table>
<thead>
<tr>
<th>Termi Type</th>
<th>Optical Fiber Type</th>
<th>Part Number</th>
<th>A Ferrule I.D.*</th>
<th>Fiber Size Core/Cladding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pin</td>
<td>Multi Mode</td>
<td>181-084-126</td>
<td>126.0 microns 50/125, 62.5/125</td>
<td></td>
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<tr>
<td></td>
<td>Single Mode</td>
<td>181-084-125</td>
<td>125.5 microns 9/125</td>
<td></td>
</tr>
<tr>
<td>Socket</td>
<td>Multi Mode</td>
<td>181-085-126</td>
<td>126.0 microns 50/125, 62.5/125</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Single Mode</td>
<td>181-085-125</td>
<td>125.5 microns 9/125</td>
<td></td>
</tr>
</tbody>
</table>

*Consult factory for additional sizes

---

**SIZE #23 FIBER OPTIC TERMINI**

<table>
<thead>
<tr>
<th>Termi Type</th>
<th>Optical Fiber Type</th>
<th>Part Number</th>
<th>A Ferrule I.D.</th>
<th>Fiber Size Core/Cladding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pin</td>
<td>Multi Mode</td>
<td>181-063-126</td>
<td>126.0 microns 50/125, 62.5/125</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Single Mode</td>
<td>181-063-125</td>
<td>125.5 microns 9/125</td>
<td></td>
</tr>
<tr>
<td>Socket</td>
<td>Multi Mode</td>
<td>181-064-126</td>
<td>126.0 microns 50/125, 62.5/125</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Single Mode</td>
<td>181-064-125</td>
<td>125.5 microns 9/125</td>
<td></td>
</tr>
</tbody>
</table>

*Consult factory for additional sizes

---

**SIZE 801 9-4 with size #16 fiber optic termini vs. equivalent functionality D38999**

<table>
<thead>
<tr>
<th>Series 801</th>
<th>Shell size 9, 4 channel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shell size 8, 8 channel</td>
<td></td>
</tr>
<tr>
<td>6 Grams (less contacts)</td>
<td></td>
</tr>
<tr>
<td>27 Grams (less contacts)</td>
<td></td>
</tr>
</tbody>
</table>

**SIZE 801 8-8 with size #20 HD fiber optic termini vs. equivalent functionality D38999**

<table>
<thead>
<tr>
<th>Series 801</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shell size 8, 8 channel</td>
</tr>
<tr>
<td>8 Grams (less contacts)</td>
</tr>
<tr>
<td>40 Grams (less contacts)</td>
</tr>
</tbody>
</table>

**SIZE 801 6-4 with size #23 fiber optic termini vs. equivalent functionality D38999**

<table>
<thead>
<tr>
<th>Series 801</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shell size 6, 4 channel</td>
</tr>
<tr>
<td>5 Grams (less contacts)</td>
</tr>
<tr>
<td>21 Grams (less contacts)</td>
</tr>
</tbody>
</table>

---

*U.S. CAGE Code 06324

**Glenair**, Inc. • 1211 Air Way • Glendale, CA 91201-2497 • 818-247-6000 • Fax 818-500-9912

www.glenair.com

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*E-Mail: sales@glenair.com

Printed in U.S.A.
Opto-electronic media converters and active components for Ethernet, high-speed digital data, video media, and signal aggregation

Fiber optic interconnect systems offer significant performance advantages over electrical copper including expanded bandwidth, reduced size and weight, increased distance, and improved electromagnetic compatibility. Fiber optic media is, however, difficult to terminate, requires optical-to-electrical conversion, and can suffer in harsh application environments. Opto-electronic solutions take advantage of fiber optic virtues, while reducing complexity and maintenance of fiber optic systems. Opto-electronic solutions incorporate fiber optic interfaces, electrical signals, power supply functions, and necessary opto-electronic conversion into rugged environmental packages more readily installed and maintained in flight applications and other harsh environments.

**Series 80 Mighty Mouse Opto-Electronic Performance Specifications**

- **Operating temperature**: -40°C to 85°C
- **Shock and vibration**: MIL-STD 810, MIL-STD 885, MIL-STD 810G, MIL-STD 810F
- **Immersion resistance**: MIL-STD 810, MIL-STD 810G, MIL-STD 810F
- **Environmental sealing**: IP67, MIL-STD 810, MIL-STD 885
- **Applications**: Military tactical communications, harsh-environment telemetry, JATCOM systems, geophysical

**SIZE #8 CAVITY OPTO-ELECTRONIC CONTACTS AND ACTIVE CONNECTORS**

- Fast and Gigabit Ethernet, DVI, HDMI capable transmitter and receiver-equipped contacts
- ARINC 664, 801, 803, 804 and 818 standard compliant
- Link distances up to 550 meters, multimode
- Single, 3.3 V power supply
- Wave-solderable termination with RoHS-compliant solders

**MIGHTY MOUSE SEVEN PORT UNMANAGED ETHERNET SWITCH**

- Seven copper (10/100/100 Mbps) Ethernet ports IAW IEEE 802.3-2005
- Cable distances up to 100 meters
- Unmanaged Ethernet switch, no configuration required
- Non-blocking switch fabric allows 1000 Mbps datarate on all seven ports simultaneously

**MIGHTY MOUSE ACTIVE/OPTICAL CABLE WITH MEDIA CONVERTER**

- 10/100/1000BASE-T to 1000BASE-SX/LX10 active cable
- IEEE 802.3-2005 Gigabit Ethernet standard compliant
- Up to 550 meters, multimode
- Up to 10 kilometers, singlemode

**MIGHTY MOUSE MEDIA CONVERTER**

- 10/100/1000BASE-T to 1000BASE-SX/LX10 media converter
- Up to 550 meters, multimode
- Up to 10 kilometers, singlmode
- IEEE 802-3-2005 Gigabit Ethernet standard compliant

**Series 80 Mighty Mouse Opto-Electronic Solutions**

- Ethernet media converters 10/100/1000 and 10G
- Video media converters DVI, SDI, ARINC 818
- High-Speed digital data to 12.5 GB/sec
- Signal aggregation media converters
- Custom solutions with ruggedized, ultraminiature packaging to suit any application

**Table I: Signal Protocol**

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Medium</th>
</tr>
</thead>
<tbody>
<tr>
<td>SX</td>
<td>1000BASE-SX</td>
<td>Multimode Fiber</td>
</tr>
<tr>
<td>LX10</td>
<td>1000BASE-LX</td>
<td>Singlemode Fiber</td>
</tr>
</tbody>
</table>

Optical fiber interfaces and signal aggregation media converters.
MIGHTY MOUSE Cobra

The Ultra-Low Profile EMI/RFI Plug and Backshell Assembly

Innovative shielded low profile right angle connector plug and backshell assemblies reduce clearance requirements without compromising ruggedness or shielding performance. Available in Series 801 double-start, Series 804 QDC push-pull, and Series 805 triple-start, Cobra assemblies provide optimal low-profile cable routing and legendary Mighty Mouse connector performance in a single package. Each Cobra assembly is equipped with a removable rear cover and gasket for easy crimp or solder contact termination of the connector. Both pin and socket versions are available for both crimp and solder terminated versions. Integrated low-profile backshell is equipped with an EMI/RFI shield termination platform and a shrink boot lip. The ultra-lightweight assembly may be clocked in eight different angle orientations for additional flexibility in cable routing. Connectors are equipped with polarization keying to prevent mismating. Glenair Mighty Mouse Cobra connector and backshell assemblies mate with available square flange and jam nut receptacles from each respective connector series. Fourteen contact arrangements are available, all with size #23 contacts from shell size 5 to shell size 21 with 1-130 contacts respectively. Connector shells are aluminum alloy or stainless steel.

Space-saving design features one-piece machined and brazed connector shell and right angle backshell for minimum height and optimal EMI performance.

Master key clocking enables easy cable entry/exit routing in eight angles.

Removable rear cover and gasket provides easy access to end of connector for crimp or solder contact termination.

For more information contact Glenair at 818-247-6000 or visit our website at www.glenair.com

Specifications
- Current Rating: 23 Amps
- Test Voltage (DDW): 230 VAC, 500 VAC Sea Level
- Insulation Resistance: 5000 megohms minimum
- Contact Resistance: 73 millivolt drop at 5 Amp test current
- Mating Cycles Series 801 and 804: 2000, Series 805: 500
- Operating Temperature: -55° C to +150° C
- Shielding Effectiveness: 50 dB min from 100 MHz to 1000 MHz
- Magnetic Permeability: 2 μμ
- Vibration: 37 g / Shock: 300 g
- Immersion: mated: 1 meter water immersion for 1 hour
- Current Rating: #23 5 Amps
- Insulation Resistance: 5000 megohms minimum
- Contact Resistance: 73 millivolt drop at 5 Amp test current
- Mating Cycles Series 801 and 804: 2000, Series 805: 500
- Operating Temperature: -55° C to +150° C
- Shielding Effectiveness: 50 dB min from 100 MHz to 1000 MHz
- Magnetic Permeability: 2 μμ
- Vibration: 37 g / Shock: 300 g
- Immersion: mated: 1 meter water immersion for 1 hour

Materials/finish
- Contacts: Copper alloy, gold plated
- Backshell Housing and Lid: Aluminum or Stainless Steel
- Backshell Sealing Gasket and Interfacial Seal: Fluorosilicone rubber
- Screws: 300 Series Stainless Steel
- Insulator: LCP

For more information contact Glenair at 818-247-6000 or visit our website at www.glenair.com
Glenair’s Series 802 “Aqua Mouse” Delivers High-Pressure Sealing and Rugged Design in a Miniature Package

Originally developed for petroleum pipeline inspection equipment, Series 802 connectors withstand exposure to corrosive environments and high pressure. These connectors feature high density crimp Mighty Mouse inserts, 316 stainless steel or marine bronze shells and a “piston” O-ring for hydrostatic sealing. Gold-plated contacts accept #12-30 AWG wire. Printed circuit board receptacles are available, along with hermetic receptacles.

Series 802 Receptacles

- Available in ten sizes from 1 to 130 contacts
- Viton® O-rings resist high temperature and corrosive chemicals.
- Withstand up to 3500 PSI hydrostatic pressure in mated condition
- Hermetic versions withstand 1000 PSI open face pressure

Series 802 Protective Covers

- 316 Stainless steel or marine bronze shells
- Available in ten sizes from 1 to 130 contacts
- Viton® O-rings resist high temperature and corrosive chemicals.
- Withstand up to 3500 PSI hydrostatic pressure in mated condition
- Hermetic versions withstand 1000 PSI open face pressure

The easiest and fastest way to incorporate flexible circuit cabling in your high-performance application

Glenair AlphaFlex I/O-to-board jumper assemblies are cataloged according to I/O connector type. Glenair currently offers four families of AlphaFlex jumpers for MIL-DTL-38999, Series 801 and 804 Mighty Mouse, and MIL-DTL-83513 Micro-D I/O connectors. Flex to board solutions available in each family are designed to optimize weight and package reduction as well as maintain electrical performance. Board mount connector solutions include ruggedized Micro-D and Nano PCB connectors as well as Glenair-designed AlphaLink (55362 type) board mount headers.

AlphaFlex Assemblies with Series 801 Mighty Mouse Double-Start I/O receptacles

801-060 Series 801 Mighty Mouse to MIL-DTL-83513 Micro-D
801-061 Series 801 Mighty Mouse to MIL-DTL-38999 Nanominiature
801-062 Series 801 Mighty Mouse to AlphaLink

Triple-start wall mount or jam nut receptacles, in five different Contact Arrangements.
The Ultraminiature 10 Gigabit+ Ethernet connector for high-speed/rugged Cat 5, 6, and 7 networks

El Ochito™ is a drop-in solution for Series 80 Mighty Mouse, as well as D38999, EN4165, and ARINC connectors

How-To-Order El Ochito™ Contacts

- **858-003** Size 8 Ochito 26-AWG crimp or solder Pin
- **858-004** Size 8 Ochito 26-AWG crimp or solder Socket
- **858-007** PC-Tail Ochito Pin
- **858-008** PC-Tail Ochito Socket

El Ochito™ utilizes Stinger™ contact technology. These durable, low insertion force, front release contacts feature integrated retention clips and o-ring sealing for optimized performance in El Ochito™ (“The Little Eight”)

Dramatic size and weight reduction in 1G/10G Ethernet networks—available now with the Series 80 Mighty Mouse **El Ochito™**

El Ochito™ (“The Little Eight”): Eight miniaturized contacts in a size #8 shielded module

- With low-insertion-force Stinger contact technology
- One Full Ethernet channel per cavity
- 100% drop-in solution to installed connectors—no redesign or reinstallation of interfaces
- Full inter- and intra-pair shielding—all cable shielding virtues preserved through contact cavity
- Dramatic cable weight reduction compared to Quadax links
- Ideal high-speed copper interface for IFE video and other high datarate applications

**CAT-MASTER™**

- 10 Gigabit+ Ethernet CAT-MASTER™ connector is designed for optimum signal integrity and termination to Cat 5, 6, and 7 cable.
- **CAT-MASTER™** offers improved signal integrity, reduced crosstalk, and enhanced attenuation performance compared to standard shielded contacts.
- The unique design of four twin contact inserts in a common ground plane delivers optimized impedance control and crosstalk performance for such applications as 10+ Gigabit Ethernet, HDMI/DVI video, FibreChannel, eSAT and PCI Express
- **CAT-MASTER™** is designed for rugged and extreme aerospace, defense and naval applications. The twin axial inserts exactly match the dimensions and impedance of the selected cable

**Mighty Mouse CAT-MASTER™ Specifications**

**Electrical**

- 1 Gbit-Ethernet to 10 Gbit-Ethernet when used with Cat5e, 6A or 7 cables
- Insulation 5000 mega-ohms ambient
- **TIV**: 500 VAC sea level, 100 VAC @ 70,000 ft.
- Shielding Effectiveness IAW MIL-STD-38999
- Shell-to-Shell Conductivity – 5mV initial, 10mV final

**Mechanical**

- Vibration, Sine (60G), 4 hrs per axis, no elevated temperature
- Vibration, Random EIA-364-28 Condition VI Letter J (43.92G)
- Durability 500 mating cycles
- Contact Retention 10 lb. min.
- Coupling Torque 8 in-lb. max.

**Environmental Properties**

- Operating Temperature: ‐65°C to +150°C
- Altitude Immersion: 70,000 ft. (mated condition)
- Sealing IP67: Mated condition
- Corrosion Resistance 500 hr. Salt Mist - Black Zinc Nickel

**Dramatic size and weight reduction in 1G/10G Ethernet networks—available now with the Series 80 Mighty Mouse **El Ochito™**

**Designed for rapid termination without the need for highly specialized tools, the CAT-MASTER™ Twinax contact system is optimized for use with off-the-shelf Cat 6a and Cat 7 cable.**

**El Ochito™** utilizes Stinger™ contact technology. These durable, low insertion force, front release contacts feature integrated retention clips and o-ring sealing for optimized performance in El Ochito™ (“The Little Eight”)

**Segregated Twinax contacts deliver optimized performance**

**El Ochito™ (“The Little Eight”): Eight miniaturized contacts in a size #8 shielded module**

**El Ochito™** is a drop-in solution for Series 80 Mighty Mouse, as well as D38999, EN4165, and ARINC connectors

**Exploded View**

**Segregated Twinax contacts deliver optimized performance**

**10 Gigabit+ Ethernet CAT-MASTER™ connector is designed for optimum signal integrity and termination to Cat 5, 6, and 7 cable.**

**CAT-MASTER™** offers improved signal integrity, reduced crosstalk, and enhanced attenuation performance compared to standard shielded contacts.

The unique design of four twin contact inserts in a common ground plane delivers optimized impedance control and crosstalk performance for such applications as 10+ Gigabit Ethernet, HDMI/DVI video, FibreChannel, eSAT and PCI Express

**CAT-MASTER™** is designed for rugged and extreme aerospace, defense and naval applications. The twin axial inserts exactly match the dimensions and impedance of the selected cable

**Designated for rapid termination without the need for highly specialized tools, the CAT-MASTER™ Twinax contact system is optimized for use with off-the-shelf Cat 6a and Cat 7 cable. Contact materials and plating are IAW AS39029**

**WASHER/RETAINER**

**CONTACT RETAINER/SHIELD TERMINATION FERRULE**

**FRONT INSULATOR, TWINAX CONTACT**

**BEAD INSULATOR, TWINAX CONTACT**

**CONNECT TUBE/ TWINAX TERMINATION TUBE**

**BRAIN INSULATOR, TWINAX CONTACT**

**TWINAX PIN CONTACT**

**Expelled View**

**Dramatic size and weight reduction in 1G/10G Ethernet networks—available now with the Series 80 Mighty Mouse **El Ochito™**

**Twinax contact system is optimized for use with off-the-shelf Cat 6a and Cat 7 cable. Contact materials and plating are IAW AS39029**

**Segregated Twinax contacts deliver optimized performance**

**El Ochito™** utilizes Stinger™ contact technology. These durable, low insertion force, front release contacts feature integrated retention clips and o-ring sealing for optimized performance in El Ochito™ (“The Little Eight”)

**Near End Crosstalk - Cat 6a - 500 MHz**

**Return Loss - Cat 6a - 500 MHz**

**El Ochito™ is a drop-in solution for Series 80 Mighty Mouse, as well as D38999, EN4165, and ARINC connectors**

**How-To-Order El Ochito™ Contacts**

- **858-003** Size 8 Ochito 26-AWG crimp or solder Pin
- **858-004** Size 8 Ochito 26-AWG crimp or solder Socket
- **858-007** PC-Tail Ochito Pin
- **858-008** PC-Tail Ochito Socket
### Series 80 Mighty Mouse Backshells, Boots and Accessories

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat-Shrink Boots</td>
<td>Live heat-shrink boots for strain relief and environmental protection. These boots fit all Series 80 connectors. Available in straight or 90° versions.</td>
</tr>
<tr>
<td>Hex Nuts</td>
<td>Mighty Mouse jam nut receptacles are supplied with low profile spanner nuts. Optional hex nuts are available with safety wire holes.</td>
</tr>
<tr>
<td>Flange Gaskets</td>
<td>Die-cut flange gaskets provide panel sealing for flange mount receptacles. Available in fluorosilicone, Viton® and conductive fluorosilicone.</td>
</tr>
<tr>
<td>Replacement O-rings</td>
<td>Replace lost or damaged O-rings. Available in fluorosilicone, EPDM and conductive fluorosilicone, these O-rings fit Mighty Mouse jam nut receptacles.</td>
</tr>
<tr>
<td>Strain Relief Clamps</td>
<td>These low profile clamps provide strain relief for wire bundles. These clamps are specially designed to minimize size and weight.</td>
</tr>
<tr>
<td>Thread-on EMI Adapters for BAND-IT® Shield Termination</td>
<td>Available with spin coupling or direct coupling, these adaptors can be ordered in various diameters and lengths. Right angle and 45° versions are available.</td>
</tr>
<tr>
<td>Backshell for Shorting or Switching Applications</td>
<td>These direct coupled “shorting caps” are used to enclose jumper wires, resistors, or bussed wires.</td>
</tr>
<tr>
<td>Environmental Backshells</td>
<td>These backshells are reduced in size compared to standard Glenair Series 37 environmental backshells. Choose saddle clamp or compression nut.</td>
</tr>
<tr>
<td>EMI Backshells</td>
<td>These backshells are reduced in size compared to standard Glenair Series 38 backshells. Choose saddle clamp or compression nut for strain relief.</td>
</tr>
<tr>
<td>Environmental/EMI Backshells</td>
<td>These backshells are reduced in size compared to standard Glenair Series 39 backshells. Cable shields are terminated with EMI rings.</td>
</tr>
<tr>
<td>Heat-Shrink Boots</td>
<td>Live heat-shrink boots for strain relief and environmental protection. These boots fit all Series 80 connectors. Available in straight or 90° versions.</td>
</tr>
<tr>
<td>EMI Backshells</td>
<td>These backshells are reduced in size compared to standard Glenair Series 38 backshells. Choose saddle clamp or compression nut for strain relief.</td>
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Glenair, Inc. 1211 Air Way Glendale, CA 91201-2497 818-247-6000 sales@glenair.com www.glenair.com
Mighty Mouse: Offering the industry’s broadest range of shell materials and platings

Glenair is a major innovator in material and plating technologies, particularly for conductive and RoHS (cadmium-free) applications. This page presents a selection of some of the more popular Glenair material and plating solutions including RoHS compliant Nickel-PTEF and Black Zinc Nickel (ZR) available for Mighty Mouse. Glenair has mastered all the difficult challenges of fielding plated specialty metal parts in harsh and corrosive applications and can offer standard mil-qualified formulas as well as unique solutions for special applications. All our materials are sourced in accordance with FARs 225.225-7014 Preference for domestic specialty metals requirements. Please note that our Nickel-PTEF, Zinc-Nickel (ZR), and Electroless Nickel platings, as well as many others, are RoHS compatible.

<table>
<thead>
<tr>
<th>Connector Material and Finish Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black Anodize</td>
</tr>
<tr>
<td>Electroless Nickel</td>
</tr>
<tr>
<td>Cadmium</td>
</tr>
<tr>
<td>Black Zinc Nickel</td>
</tr>
<tr>
<td>Zinc-Nickel</td>
</tr>
<tr>
<td>Nickel-PTEF</td>
</tr>
<tr>
<td>Stainless Steel</td>
</tr>
<tr>
<td>Marine Bronze</td>
</tr>
</tbody>
</table>

### Mighty Mouse Connectors for Space Flight

Space flight equipment requires low-outgassing components in order to prevent degradation to optics and other sensitive instruments. The space industry has adopted a standardized test procedure, ASTM E595, to evaluate outgassing properties. In the ASTM test, material samples are heated to 125°C at a vacuum of 5 x 10⁻⁵ torr for 24 hours. The test sample is then weighed to calculate the Total Mass Loss (TML), which may not exceed 0.5% of the total initial mass. A collector plate is used to determine the Collected Volatile Condensable Material (CVCM), which may not exceed 0.1% of the total original specimen mass. Mighty Mouse connectors contain nonmetallic materials such as rubber, plastic, adhesives and potting compounds which can give off gases when subjected to a vacuum or high heat. Unless the connector is specially processed, the TML and CVCM can exceed allowable limits. Glenair is able to offer two bakeout processes which assure all materials comply with ASTM E595: an 8 hour oven bakeout at 400°F or a 24 hour thermal vacuum outgassing at 125°C. The table below shows suffix codes which specify outgassing processing.

### Glendar TML and CVCM Processing

- **NASA Level 1**: Highest reliability, level 2 for high reliability and level 3 for standard reliability. Glenairsuffix codes are available to invoke NASA screening. The table below shows these “Mod” codes which can also include outgassing processing.

### NASA Screening Levels and Modification Codes

<table>
<thead>
<tr>
<th>NASA Screening Level</th>
<th>Special Screening Only</th>
<th>Special Screening Plus Outgassing Processing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1 High Reliability</td>
<td>Mod-09H</td>
<td>Mod-09U</td>
</tr>
<tr>
<td>Level 2 High Reliability</td>
<td>Mod-29</td>
<td>Mod-29K</td>
</tr>
<tr>
<td>Level 3 Standard Reliability</td>
<td>(Use standard part number)</td>
<td>Mod-186</td>
</tr>
</tbody>
</table>

### Outgassing

- **Standard connectors must be baked out to meet outgassing requirements.**
- **Modification codes are a convenient way to specify special outgassing bakeout.**

### Modification codes are available to invoke special screening.

White Bronze is nonmagnetic, very smooth, and virtually nonporous. Applied over brass base material, it is highly resistant to corrosion and break down. White bronze—like our gold over beryllium copper solution—is a preferred and safe alternative to nickel for medical applications, and for space or geophysical applications that demand the lowest possible residual magnetism.

**Glenair White Bronze plating for low residual magnetism and high frequency applications: Now available for Mighty Mouse connectors**

White Bronze is nonmagnetic, very smooth, and virtually nonporous. Applied over brass base material, it is highly resistant to corrosion and breakdown. White bronze—like our gold over beryllium copper solution—is a preferred and safe alternative to nickel for medical applications, and for space or geophysical applications that demand the lowest possible residual magnetism.

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www.glenair.com
High Performance, Protocol-Compliant Cable for Series 80 Mighty Mouse High-Speed Applications

Glenair is pleased to offer our Mighty Mouse customers discrete bulk cable for on-site termination. All of the cables have been selected for protocol compliance (AV standard Ethernet, USB, and SATA/eSATA specifications) and the harsh mission-critical application environments where the Series 80 Mighty Mouse excels. Without exception, cables have been designed and fabricated to optimize flexibility, weight reduction, ruggedness, and insulator quality. Each cable is offered with specific guidance as to shielding properties, impedance performance, attenuation, temperature rating, bend radius, weight, and maximum practical distance. All of the cable part numbers detailed here are in stock and ready for immediate, same-day shipment with no length or dollar minimums.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>963-001</td>
<td>100 Ohm Differential Parallel Pair Data Cable</td>
</tr>
<tr>
<td>963-002</td>
<td>Tactical Cat 5e Ethernet Cable with Polyurethane Jacket</td>
</tr>
<tr>
<td>963-003</td>
<td>Avionic Cat 6a Ethernet Cable with FEP Jacket</td>
</tr>
<tr>
<td>963-004</td>
<td>Cat 7 Ethernet Cable with PVC Jacket</td>
</tr>
<tr>
<td>963-005</td>
<td>USB 2.0 Cable with FEP or Polyurethane Jacket</td>
</tr>
<tr>
<td>963-012</td>
<td>USB 3.0 Cable with Polyurethane Jacket</td>
</tr>
<tr>
<td>963-006</td>
<td>IEEE 1394 110 Ohm Quad Cable with FEP or Polyurethane Jacket</td>
</tr>
<tr>
<td>963-013</td>
<td>100 Ohm SATA/eSATA Cable with Polyurethane Jacket</td>
</tr>
</tbody>
</table>

Glenair’s vertically integrated connector, hardware and cable facilities are perfectly positioned to supply catalog and custom short cable runs for the broad range of interconnect applications from non-impedance controlled transmission wire to high-speed, protocol specific cabling.

Series 80 Mighty Mouse uses both SAE-AS39029 QPL and Glenair commercial contacts to meet every application requirement.

Glenair Series 80 Mighty Mouse connectors are designed to fit our own qualified SAE-AS39029 contacts based on the shorter “Series II” family of signal, data and specialty contacts. Glenair has also developed an extensive range of innovative short contacts including fiber optic and pneumatic applications. The development of our own range of shorter, Series II type contacts was a key step in gearing Mighty Mouse to meet any interconnection challenge. This page shows just some of these short, high-performance contacts, from standard 39029 crimp signal and power contacts to our own unique shielded differential Twinax contact, miniaturized fiber optic contacts and highly specialized gas and pneumatic contact solutions. All our contacts are supported with appropriate extraction and crimp tools.

Contact tools in-stock and ready for immediate shipment

Contact tools in-stock and ready for immediate shipment

Series 80 Mighty Mouse Contacts

<table>
<thead>
<tr>
<th>Contacts Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#23 Contacts</td>
<td></td>
</tr>
<tr>
<td>#20HD Contacts</td>
<td></td>
</tr>
<tr>
<td>#20 Contacts</td>
<td></td>
</tr>
<tr>
<td>#16 and #12 Contacts</td>
<td></td>
</tr>
</tbody>
</table>

#12 50 Ohm Matched Impedance Coaxial Contacts

#12 Pneumatic Contacts

#23-#20 Wire Adapter

Thermocouple

Size #12 Differential Twinax

100 Ohm Quadax

100 Ohm Differential Twinax

Size #8 Power

Concentric Twinax

Printed Circuit Board

Opto-Electronic

Size #16, #20, #23 Fiber Optic

Engineered wire and cable solutions

Glenair's vertically integrated connector, hardware and cable facilities are perfectly positioned to supply catalog and custom short cable runs for the broad range of interconnect applications from non-impedance controlled transmission wire to high-speed, protocol specific cabling.
Series 80 Mighty Mouse Catalog Cordsets

Glenair Mighty Mouse Series overmolded cordsets are available for every application requirement including the integration of commercial connectors such as RJ45 Ethernet. Glenair fast-turnaround (ASAP) cables withstand abrasion and chemical exposure. Low-smoke zero-halogen jacket reduces the amount of toxic and corrosive gases emitted during combustion. Cable construction features silver coated stranded conductors with TFE insulation, tinned copper braid shield and extruded polyurethane jacket. Choose single-ended pigtails or double-ended “back-to-back” versions. Braid shield is attached directly to connector with Band-Master™ ATS straps. Semi-rigid polyamide overmold provides strain relief and environmental sealing. All standard cordsets are available with size #20HD, #16 and #12 contacts. High-speed versions (opposite page) are available with standard signal as well as shielded contacts.

A broad range of turnkey factory-terminated cordsets are available for every Mighty Mouse series and every application requirement, from standard signal databus protocols to high-speed Ethernet.

How To Order Right Angle Cordsets
Insert the letter “R” after the End A or End B Connector letter designator.

Example
Straight cable 801-026-AC4Z16-4PA-72
Right Angle 801-026-ARC4Z16-4PA-72

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www.glenair.com
E-Mail: sales@glenair.com
Series 80 Mighty Mouse
Complex Cables and Integrated Systems

Turnkey interconnect cabling and electronic subsystem assemblies

Glenair has built more lightweight/ultramiiniature interconnect subsystems than anyone else in our industry—from ground vehicle systems to turnkey air vehicle, future soldier, power management, and robotics. Designing for the effective protection of cabling and box interconnections is a complex assignment that includes intelligent material selection and controlled assembly processes guaranteed to protect signal integrity and electronic subsystems. Many of these subsystems incorporate electronic and fiber optic circuit board technologies engineered by Glenair, including:

- Advanced FPGA designs for mixed-signal aggregation
- Digital/video conversion and switching
- USB-based hubs and converters, including RS-232 and USB to Ethernet
- Power management and switching functions

Glenair is ideally positioned to become the industry’s design and fabrication partner of choice for complex cabling and integrated electronic systems.

High-production injection molding expertise

Precision factory termination

The industry’s most experienced EMI/RFI braided shielding specialists

Every assembly is tested and certified prior to shipment

Integrated Mighty Mouse can assemblies incorporate power modules and electronic circuitry with I/O connectors welded directly to the housing.

Glenair offers numerous alternatives to standard jacketing materials. This GhostWire cable assembly provides optimum strength to the system with superior flexibility.

The integration of balanced impedance and high speed serial data components into high-reliability systems has become a standard requirement of military and defense applications.

Complex systems that include customer-supplied electronics and rigorous attention to assembly procedures and requirements are now routinely built by the Glenair complex cable and integrated system group.

The fabrication of multi-branch cable assemblies and integrated electronic systems and enclosures are Glenair specialties.

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THE MOST ADVANCED AND MATURE HIGH-PERFORMANCE ULTRAMINIATURE CONNECTOR

Constant, relentless innovation

A monster range of standard product offerings

A constantly expanding product line
Word-of-Mouth

I don’t go out to a lot of movies. I never seem to be able to make the time. But over the last few months I had no less than half a dozen people tell me I should see the movie *Argo*; they said it was simply fantastic. My brother Dick said it was the best movie he’d seen since *The Godfather*. So did I go see it? Of course I did. I suppose there are some people who can resist extremely positive word-of-mouth (from people they trust), but I’m not one of them.

So how did *Argo* do it? Great direction? A compelling story? It certainly had those, but I don’t believe that would have been enough. No, the fountainhead for all the positive word-of-mouth was that every element came together to create a movie masterpiece—script, cinematography, direction, editing, cast, wardrobe, music—everything. Every contributor, in every department, in every task they performed, made critical contributions to a group effort that was so compellingly good that movie-goers couldn’t help but remember it and recommend it to others.

I think the key to executing at this high level is to understand how different the world looks through the eyes of customers as opposed to sellers. Sellers tend to divide themselves into departments: marketing, sales, administration, management, facilities, HR, IT, and so on. Over time, these divisions become more and more “natural” to them, as if the world really worked that way.

It doesn’t. To customers, everything they touch during a buying experience is linked to everything else, rather than chopped up into segments. And because of this holistic viewpoint, a single disappointment can change a thumbs up review into a thumbs down. Imagine a restaurant where the setting is beautiful, the food is delicious, the service attentive, but the bathrooms are filthy. Would you rush out to recommend the place to others?

Institutions are attention-seeking entities, and Glenair is no different. It’s the way the game is played. And whoever gets the most positive attention wins. We build positive attention by effectively and consistently exceeding our customers’ expectations; both in terms of what they get from us, but also what they get (or don’t get) from our competitors. This is what creates word-of-mouth. The greater the contrast between expected and received, the greater the word of mouth (positive and negative).

This issue of QwikConnect highlights an area of contrast in our industry. On the one hand, we have the excellent performance our Series 80 Mighty Mouse team in designing, making, selling and supporting this revolutionary connector family. On the other, we have the performance of the makers of the many knock-offs now available in the market. Speaking candidly, I have nothing but confidence that, given our track-record, Team Mighty Mouse will continue to perform at such a high level that, like *Argo*, people will be lined up to see our “movie” for many years to come.

Chris Toomey