



# Series 80 Mighty Mouse Technical Reference 809-009 Complete Product Specification

## Summary Performance Specifications

**Current Rating (Maximum):** Size #23 Contact: 5 A., Size #20 contact: 7.5 A., Size #16 contact: 13 A., Size #12 contact: 23 A.

### Test Voltage (Dielectric Withstanding Voltage) Mated Connectors:

Size #23 contacts: 750 VAC RMS sea level, 400 VAC RMS 40,000 feet  
 Size #20HD contacts: 1000 VAC RMS sea level, 400 VAC RMS 40,000 feet  
 Size #20 contacts: 1800 VAC RMS sea level, 400 VAC RMS 40,000 feet  
 Size #16 contacts: 1800 VAC RMS sea level, 1000 VAC RMS 40,000 feet  
 Size #12 contacts: 1800 VAC RMS sea level, 1000 VAC RMS 40,000 feet

**Insulation Resistance:** 5000 megohms minimum

### Contact Resistance:

Size #23 Contact: 70 millivolt drop at 5 A. test current  
 Size #20 contact: 55 millivolt drop at 7.5 A. test current  
 Size #16 contact: 49 millivolt drop at 13 A. test current  
 Size #12 contact: 42 millivolt drop at 23 A. test current

**Operating Temperature:** -65° C. to +175° C.

**Immersion, Mated:** 1 meter water immersion for 1 hour (Series 803 splashproof only)

**Shock:** 300 g      **Vibration:** 37 g      **Magnetic Permeability:** 2.0 μ maximum

Please refer to the comprehensive Series 80 Product Specification for additional parameters and test methods. Filter and hermetic versions have performance specifications which differ from this information.

## 1 SCOPE

**1.1 Scope.** This specification covers performance requirements for Glenair Series 80 Mighty Mouse miniature environment resistant circular connectors.

**1.2 Description.** Series 80 connectors with crimp, rear-release or non-removable printed circuit board contacts, environmental sealing, aluminum and corrosion resistant steel, threaded, bayonet and quick-disconnect coupling. Series 80 connectors with M39029 type contacts are intended for applications where standard MS circular connectors may be too large or too heavy. Interfacial seal and rear grommet provide environmental protection. Beryllium copper contact retention clips. Integral shield termination platform provides direct termination of cable shield to connector without the need for adapters.

Series 800	Threaded coupling, UNF fine threads, shell sizes 5 through 12
Series 801	Double-start stub ACME threaded coupling, shell sizes 5 through 21
Series 802	Threaded coupling, severe environment, dynamic o-ring seal, 316L stainless steel, shell sizes 5 through 21. Rated for continuous immersion at up to 3500 PSI.
Series 803	Bayonet coupling, light to medium duty, shell sizes 5 through 14.
Series 804	Quick-disconnect, shell sizes 5 through 15.
Series 805	Triple-start stub ACME threaded coupling, EMI spring, ratchet anti de-coupling mechanism, shell sizes 8 through 23.

## 2 APPLICABLE DOCUMENTS

### 2.1 Industrial Standards.

EIA-364 Electrical Connector/Socket Test Procedures Including Environmental Classifications

IEC-60512	Electromechanical Components for Electronic Equipment; Basic Testing Procedures and Measuring Methods Part 1: General
IEC-60529	Degrees of protection Provided By Enclosures (IP Code)
IEC 60068	Environmental Testing Part 1: General and Guidance

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## 2.2 Military Standards and Specifications

MIL-STD-810	Test Method Standard for Environmental Engineering Considerations and Laboratory Tests
MIL-DTL-38999	Connectors, Electrical, Circular, Miniature, High Density, Quick Disconnect (Bayonet, Threaded, AND breech Coupling), Environment Resistant, Removable Crimp and Hermetic Solder Contacts, General Specification For

## 2.3 Aerospace Standards

SAE AS39029	Contacts, Electrical Connector, General Specification For
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## 3 REQUIREMENTS

### 3.1 Materials

#### Materials and Finishes

Aluminum Shell, Barrel, Jam Nut and Coupling Nut	Aluminum Alloy 6061-T6 Code C: black anodize per MIL-A-8625 Code M: electroless nickel per ASTM B-733 Code MT: Nickel fluorocarbon polymer Code NF: Olive drab cadmium per SAE-AMS-QQ-P-416 over electroless nickel Code ZNU: Black zinc nickel over electroless nickel
Stainless Steel Shell, Barrel Coupling and Jam Nut	Stainless steel per AMS-QQ-S-763, passivated per SAE-AMS-QQ-P-35
Insulators	High Grade Rigid Dielectric
Contact Retention Clip	Beryllium copper, heat-treated, unplated
Grommet, Peripheral Seal and Interfacial Seal	High performance silicone/fluorosilicone elastomer
Contacts	Copper alloy, 50 microinches gold plated per MIL-DTL-45204 over nickel underplating
Socket Contact Hood	Stainless steel, passivated per AMS-QQ-P-35
Adhesives	Silicone and epoxy
Potting Compound, PCB and Solder Cup Versions	Environmental Connectors: epoxy Waterblocked connectors (Glenair modification code 518): RTV silicone

### 3.2 Performance requirements.

DESCRIPTION	REQUIREMENT	PROCEDURE	
Contact resistance, copper alloy contacts	SAE AS39029 Table 5		
	Wire Size	Test Current	EIA-364-06 IEC 60512-2-1  Test current in Amperes. Voltage drop in millivolts. Silver-coated copper wire, +25°C.
	8	46	
	10	33	
	12	23	
	14	17	
	16	13	
	20	7.5	
	22	5	
	24	3	
	26	2	
28	1.5		

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DESCRIPTION	REQUIREMENT	PROCEDURE														
Low level contact resistance	SAE AS39029 Table 4	EIA-364-23  25° C														
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Wire Size</th> <th style="width: 50%;">Max. Milliohms</th> </tr> </thead> <tbody> <tr><td style="text-align: center;">16</td><td style="text-align: center;">5</td></tr> <tr><td style="text-align: center;">20</td><td style="text-align: center;">9</td></tr> <tr><td style="text-align: center;">22</td><td style="text-align: center;">15</td></tr> <tr><td style="text-align: center;">24</td><td style="text-align: center;">20</td></tr> <tr><td style="text-align: center;">26</td><td style="text-align: center;">31</td></tr> <tr><td style="text-align: center;">28</td><td style="text-align: center;">50</td></tr> </tbody> </table>		Wire Size	Max. Milliohms	16	5	20	9	22	15	24	20	26	31	28	50
	Wire Size		Max. Milliohms													
	16		5													
	20		9													
	22		15													
	24		20													
26	31															
28	50															
Insulation resistance	5000 megohms minimum	EIA-364-21 IEC-60512-3-1 500 volts DC ± 50 volts. Test between adjacent contacts and contacts to shell.														
Dielectric withstanding voltage, sea level  (See 809-099 for combo insert test voltages)	No breakdown or flashover #23 contacts 750 volts #20HD contacts 1000 volts #16 contacts 1800 volts #12 contacts 1800 volts	EIA-364-20 IEC-60512-4-1 AC rms 60 Hz. 2 Sec min. dwell.  Unmated or mated														
Dielectric withstanding voltage, 40,000 feet altitude  (See 809-099 for combo insert test voltages)	No breakdown or flashover #23 contacts 400 volts #20HD contacts 400 volts #16 contacts 1000 volts #12 contacts 1000 volts	EIA-364-20 IEC-60512-4-1 AC rms 60 Hz. 2 Sec min. dwell.  mated condition														
Current carrying capacity	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Contact Size</th> <th style="width: 50%;">Current (Amps)</th> </tr> </thead> <tbody> <tr><td style="text-align: center;">12</td><td style="text-align: center;">23</td></tr> <tr><td style="text-align: center;">16</td><td style="text-align: center;">13</td></tr> <tr><td style="text-align: center;">20</td><td style="text-align: center;">7.5</td></tr> <tr><td style="text-align: center;">23</td><td style="text-align: center;">5</td></tr> </tbody> </table>	Contact Size	Current (Amps)	12	23	16	13	20	7.5	23	5	EIA-364-70 Method 1 IEC-60512-5 Test 9b				
Contact Size	Current (Amps)															
12	23															
16	13															
20	7.5															
23	5															
Shell-to-shell conductivity, Initial	The maximum voltage drop across a mated pair shall not exceed the values shown.  <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Series</th> <th style="width: 50%;">Voltage Drop (mV)</th> </tr> </thead> <tbody> <tr><td style="text-align: center;">800</td><td style="text-align: center;">5</td></tr> <tr><td style="text-align: center;">801</td><td style="text-align: center;">5</td></tr> <tr><td style="text-align: center;">802</td><td style="text-align: center;">5</td></tr> <tr><td style="text-align: center;">804</td><td style="text-align: center;">2.5</td></tr> <tr><td style="text-align: center;">805</td><td style="text-align: center;">2.5</td></tr> </tbody> </table>	Series	Voltage Drop (mV)	800	5	801	5	802	5	804	2.5	805	2.5	EIA-364-83 IEC-60512-2-6  Electroless nickel plated connectors.		
Series	Voltage Drop (mV)															
800	5															
801	5															
802	5															
804	2.5															
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DESCRIPTION	REQUIREMENT	PROCEDURE																				
Shell-to-shell conductivity, after conditioning (48 hours salt spray)	The maximum voltage drop across a mated pair shall not exceed the values shown. <table border="1"> <thead> <tr> <th>Series</th> <th>Voltage Drop (mV)</th> </tr> </thead> <tbody> <tr> <td>800</td> <td>10</td> </tr> <tr> <td>801</td> <td>10</td> </tr> <tr> <td>802</td> <td>10</td> </tr> <tr> <td>804</td> <td>5</td> </tr> <tr> <td>805</td> <td>5</td> </tr> </tbody> </table>	Series	Voltage Drop (mV)	800	10	801	10	802	10	804	5	805	5	EIA-364-83 IEC-60512-2-6  Electroless nickel plated connectors.								
Series	Voltage Drop (mV)																					
800	10																					
801	10																					
802	10																					
804	5																					
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Shielding effectiveness, low frequency (100MHz-1000 MHz)	<b>Series 800, 801, 804, 805</b> <table border="1"> <thead> <tr> <th>Frequency</th> <th>Min. dB Attenuation</th> </tr> </thead> <tbody> <tr> <td>100 MHz</td> <td>75</td> </tr> <tr> <td>200 MHz</td> <td>70</td> </tr> <tr> <td>300 MHz</td> <td>65</td> </tr> <tr> <td>400 MHz</td> <td>63</td> </tr> <tr> <td>800 MHz</td> <td>58</td> </tr> <tr> <td>1000 MHz</td> <td>55</td> </tr> </tbody> </table>	Frequency	Min. dB Attenuation	100 MHz	75	200 MHz	70	300 MHz	65	400 MHz	63	800 MHz	58	1000 MHz	55	MIL-DTL-38999 para. 4.5.28.1  Electroless nickel plated connectors						
Frequency	Min. dB Attenuation																					
100 MHz	75																					
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300 MHz	65																					
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1000 MHz	55																					
Shielding effectiveness, high frequency (1Ghz-10GHz)	<b>Series 800, 801, 804</b> <table border="1"> <thead> <tr> <th>Frequency</th> <th>Min. dB Attenuation</th> </tr> </thead> <tbody> <tr> <td>1 GHz</td> <td>55</td> </tr> <tr> <td>3 GHz</td> <td>50</td> </tr> <tr> <td>6 GHz</td> <td>45</td> </tr> <tr> <td>10 GHz</td> <td>40</td> </tr> </tbody> </table> <b>Series 805</b> <table border="1"> <thead> <tr> <th>Frequency</th> <th>Min. dB Attenuation</th> </tr> </thead> <tbody> <tr> <td>1 GHz</td> <td>85</td> </tr> <tr> <td>3 GHz</td> <td>69</td> </tr> <tr> <td>6 GHz</td> <td>66</td> </tr> <tr> <td>10 GHz</td> <td>65</td> </tr> </tbody> </table>	Frequency	Min. dB Attenuation	1 GHz	55	3 GHz	50	6 GHz	45	10 GHz	40	Frequency	Min. dB Attenuation	1 GHz	85	3 GHz	69	6 GHz	66	10 GHz	65	EIA-364-66 IEC-60512-23-3  Electroless nickel plated connectors
Frequency	Min. dB Attenuation																					
1 GHz	55																					
3 GHz	50																					
6 GHz	45																					
10 GHz	40																					
Frequency	Min. dB Attenuation																					
1 GHz	85																					
3 GHz	69																					
6 GHz	66																					
10 GHz	65																					
Vibration, sine Series 800, 801, 803, 804, 805	No discontinuity of greater than 1 microseconds, no cracking, breaking or loosening of parts, plug shall not become disengaged from receptacle.	MIL-DTL-38999  30 g's, 3 axes, 4 hours per axis																				
Vibration, random Series 800, 801, 803, 804, 805	No discontinuity of greater than 1 microseconds, no cracking, breaking or loosening of parts, plug shall not become disengaged from receptacle.	EIA-364-28 Test Condition V Letter I IEC-60512-6-4 100 milliamp test current 50- 2,000 Hz 37.80 g rms																				

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DESCRIPTION	REQUIREMENT	PROCEDURE																		
Gunfire vibration Series 800, 801, 803, 804, 805	No discontinuity of greater than 1 microsecond, no cracking, breaking or loosening of parts, plug shall not become disengaged from receptacle.	MIL-STD-810 Method 519																		
Mechanical shock Series 800, 801, 803, 804, 805	No discontinuity of greater than 1 microsecond, no cracking, breaking or loosening of parts, plug shall not become disengaged from receptacle.	EIA-364-27 Condition D IEC-60512-6-3 3 shocks X 3 axes X 2 directions = 18 shocks 2941 m/s <sup>2</sup> (300 g's), 3 ms, half-sine																		
Mechanical durability, at ambient temperature	No mechanical or electrical defects detrimental to the operation of the connector after the specified number of cycles of mating and unmating.  <b>Series 800, 801, 804</b> 2000 Cycles  <b>805</b> 500 cycles  <b>Series 803</b> Aluminum alloy 100 cycles Stainless steel 250 cycles	EIA-364-09 IEC-60512-5 Test 9a																		
Solderability, PC tail contacts	95% solder coverage. Smooth, bright and even finish.	EIA-364-52 Category 3 IEC-60512-12-1 IEC-68-2-20																		
Contact retention	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Contact Size</th> <th>Min.Pounds</th> <th>Min.Newtons</th> </tr> </thead> <tbody> <tr> <td>23</td> <td>6</td> <td>27</td> </tr> <tr> <td>20</td> <td>15</td> <td>67</td> </tr> <tr> <td>20HD</td> <td>9</td> <td>40</td> </tr> <tr> <td>16</td> <td>25</td> <td>111</td> </tr> <tr> <td>12</td> <td>25</td> <td>111</td> </tr> </tbody> </table>	Contact Size	Min.Pounds	Min.Newtons	23	6	27	20	15	67	20HD	9	40	16	25	111	12	25	111	EIA-364-29
Contact Size	Min.Pounds	Min.Newtons																		
23	6	27																		
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20HD	9	40																		
16	25	111																		
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Contact engaging and separation force	SAE AS39029 Table 9	EIA-364-37																		
Demating force (Series 804)	Series 804 quick-disconnect connectors <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Contact Arrangement</th> <th>Pounds</th> </tr> </thead> <tbody> <tr> <td>5-3</td> <td>11</td> </tr> <tr> <td>6-4</td> <td>11</td> </tr> <tr> <td>6-7</td> <td>12</td> </tr> <tr> <td>7-10</td> <td>12</td> </tr> <tr> <td>8-13</td> <td>13</td> </tr> <tr> <td>9-19</td> <td>14</td> </tr> <tr> <td>10-26</td> <td>16</td> </tr> </tbody> </table>	Contact Arrangement	Pounds	5-3	11	6-4	11	6-7	12	7-10	12	8-13	13	9-19	14	10-26	16			
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DESCRIPTION	REQUIREMENT	PROCEDURE																																													
Insert retention	Unmated connectors shall retain their inserts in their proper location in the shell and there shall be no evidence of cracking, breaking, separation from the shell, or loosening of parts.	EIA-364-35																																													
	<b>Shell Size</b>																																														
	<table border="1"> <thead> <tr> <th>Series 800 803 804</th> <th>Series 801</th> <th>Series 805</th> <th>Minimum Force in Pounds</th> </tr> </thead> <tbody> <tr> <td>5</td> <td>5</td> <td></td> <td>25</td> </tr> <tr> <td>6</td> <td>6</td> <td>8</td> <td>25</td> </tr> <tr> <td>7</td> <td>7</td> <td>9</td> <td>25</td> </tr> <tr> <td>8</td> <td>8</td> <td>10</td> <td>25</td> </tr> <tr> <td>9</td> <td>9</td> <td>11</td> <td>25</td> </tr> <tr> <td>10</td> <td>10</td> <td>12</td> <td>25</td> </tr> <tr> <td>12</td> <td>13</td> <td>15</td> <td>25</td> </tr> <tr> <td>14</td> <td>16</td> <td>18</td> <td>40</td> </tr> <tr> <td>15</td> <td>17</td> <td>19</td> <td>50</td> </tr> <tr> <td>21</td> <td>23</td> <td>80</td> <td></td> </tr> </tbody> </table>		Series 800 803 804	Series 801	Series 805	Minimum Force in Pounds	5	5		25	6	6	8	25	7	7	9	25	8	8	10	25	9	9	11	25	10	10	12	25	12	13	15	25	14	16	18	40	15	17	19	50	21	23	80		
	Series 800 803 804		Series 801	Series 805	Minimum Force in Pounds																																										
	5		5		25																																										
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12	13	15	25																																												
14	16	18	40																																												
15	17	19	50																																												
21	23	80																																													
Residual magnetism	2 $\mu$ maximum.	EIA-364-54																																													

## ENVIRONMENTAL

Operating temperature	-65° to +175°C -65° to +200°C Hermetic	
Water immersion, mated	No evidence of water penetration into mated connectors.	MIL-STD-810F Method 512.4  1 meter immersion  1 hour
Ingress protection, open face panel mount receptacles with non-removable printed circuit board or solder cup contacts, with Glenair Modification Code 518 sealing process	IP67	IEC 60529
Humidity	No deterioration which will adversely affect the connector.	MIL-DTL-38999 4.5.26

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DESCRIPTION	REQUIREMENT	PROCEDURE
Temperature cycling	No mechanical damage or loosening of parts. Following thermal shock, connector shall meet contact resistance, DWV, insulation resistance and shell-to-shell resistance requirements.	EIA-364-32 Test Condition IV IEC-60512-11-4. 5 cycles consisting of -65° C 30 minutes, +25° C 5 minutes max., +150° C 30 minutes, +25° C 5 minutes max.
Salt Spray	No exposure of base metal.	EIA-364-26 IEC 60512-11-6 Code M: 48 hours Code MT: 500 hours Code NF: 500 hours Code ZN: 500 hours Code ZNU: 500 hours
Sand and dust	Mated connectors shall withstand the effects of blowing sand and dust	MIL-STD-810, Method 510
Fungus	Connector materials shall be fungus inert.	MIL-STD-810, Method 508
Fluid immersion	No visible damage from immersion in various fuels and oils. Connector shall meet coupling torque and dielectric withstanding voltage requirements.	EIA-364-10
Altitude immersion	No evidence of moisture on connector interface or contacts. Connector shall meet dielectric withstanding voltage and insulation resistance	EIA-364-03 40,000 feet simulated altitude with additional supplemental potting for all series except 805
Outgassing	ASTM E595  1.0% maximum Total Mass Loss 0.1% maximum Total Collected Volatile Material  (Special oven bake or thermal vacuum outgassing is required)	ASTM-E595

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