SuperNine® Environmental Series

MIL-DTL-38999 Series III Type

Performance specification summary

GENERAL SUMMARY OF SUPERNINE® PERFORMANCE

SuperNine® is a high-performance connector family designed for cable-to-panel, I/O and inline, applications in military aerospace and other demanding situations. Environmental class versions—with high-density insert arrangements (up to 187 contacts)—are available with crimp removable contacts, PC tails, and solid contact feed-thrus and connector savers. Glenair SuperNine® is a broad product family of MIL-DTL-38999 Series III type connectors including Class G space-grade designs, lanyard-release connectors and specialty metal cable plugs and receptacles, as well as metal-insert (ground plane) configurations for shielded contact equipped products. This table describes the most basic attributes for environmental class products supplied by Glenair.

Series Description	Scoop-Proof, Triple Start, Self-Locking
Supported Contact Types and Gauges	8, 12, 16, 20, and 22D gauge contacts, standard density and 23 gauge high density arrangements; 1 to 187 contacts. Crimp, solder and PCB tails
Coupling/Mating Design	Triple-start threaded coupling design, rapid advance, self-locking and full-mate indicator, keyed
EMI Shielding	Shell to shell bottoming, grounding fingers, conductive finish and thick shell wall cross-sections provide effective EMI shielding to 65 dB minimum up to 10 GHz
Vibration and Shock	Excellent resistance to vibration and shock with no electrical discontinuity and no disengagement of the mated connectors per MIL-DTL-38999 (paragraph 3.27 & 3.28); Qualification to Bell 299-100-829 vibration and mating durability (Glenair Test Report GT-18-106)
Mating Speed	360 ° or one full turn to full mate
Materials	Aluminum, CRES and Titanium Shells, Fluorosilicone/Silicone Blend Seals, Beryllium Copper Alloy, Gold Plated Contacts
Durability	500 to 1500 mating cycles, see individual data sheets for appropriate value
IP Rating	Receptacles with non-removable PC tail contacts IP67; Removable contacts in mated condition, IP68
Outgassing	See space-grade guide in this section

Performance Specifications, IAW MIL-DTL-38999 Series III REV. L

<table>
<tr><th>Test</th><th>Test Requirement</th></tr>
<tr><td>Dielectric Withstanding Voltage</td><td>
<table>
<tr><th rowspan="2">Altitude</th><th colspan="2">Service Rating M</th><th colspan="2">Service Rating N</th><th colspan="2">Service Rating I</th><th colspan="2">Service Rating II</th></tr>
<tr><th>Mated</th><th>Unmated</th><th>Mated</th><th>Unmated</th><th>Mated</th><th>Unmated</th><th>Mated</th><th>Unmated</th></tr>
<tr><td>Sea level</td><td>1300</td><td>1300</td><td>1000</td><td>1000</td><td>1800</td><td>1800</td><td>2300</td><td>2300</td></tr>
<tr><td>50,000 feet</td><td>800</td><td>550</td><td>600</td><td>400</td><td>1000</td><td>600</td><td>1000</td><td>800</td></tr>
<tr><td>70,000 feet</td><td>800</td><td>350</td><td>600</td><td>260</td><td>1000</td><td>400</td><td>1000</td><td>500</td></tr>
<tr><td>100,000 feet</td><td>800</td><td>200</td><td>600</td><td>200</td><td>1000</td><td>200</td><td>1000</td><td>200</td></tr>
</table>
Note: The establishment of electrical safety factors is left entirely to the designer, as they are in the position to know exactly what peak voltages, switching currents, transients, etc. can be expected in a particular circuit.
</td></tr>
<tr><td>Insulation Resistance</td><td>Unmated connectors shall be tested as specified in test method EIA-364-21
5000 megohms min. at 25° C</td></tr>
</table>

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Test	Test Requirement

Shielding Effectiveness

Frequency (MHz)	Leakage Attenuation Minimum (dB)	
	Finishes L, F	Finishes T, W, Z
100	90	90
200	88	88
300	88	88
400	87	87
800	85	85
1,000	85	85

Frequency (MHz)	Leakage Attenuation Minimum (dB)	
	Finishes L, F	Finishes T, W, Z
1,500	76	69
2,000	70	65
3,000	69	61
4,000	68	58
6,000	66	55
10,000	65	50

Supported Wire Size

Contact Size	Wire Gauge
23	#22 - #28
22D	#22 - #28
20	#20 - #24

Contact Size	Wire Gauge
16	#16 - #20
12	#12 - #14
8	#8 - #10

Mating / Unmating Forces

Coupling torque for mating and unmating of the counterpart connectors and protective covers

Shell size	Maximum engagement and disengagement		Minimum disengagement	
	Pound inch	Newton meters	Pound inch	Newton meters
9	8	0.9	2	0.2
11	12	1.4	2	0.2
13	16	1.8	2	0.2
15	20	2.3	3	0.3
17	24	2.7	3	0.3
19	28	3.2	3	0.3
21	32	3.6	5	0.6
23	36	4.1	5	0.6
25	40	4.6	5	0.6

Physical Shock	No loosening of parts, cracking or other deleterious results hindering further part operation after 300 G's in each of 3 mutually perpendicular planes.
Fluid Compatibility	Designed to function in all fluids encountered in any modern military or aerospace environment.
High Impact Shock	Mated connectors, wired with MIL-C-915/60 or /63 cable and equipped with straight environmentally sealed backshells, withstand high impact shock per MIL-S-901.
Vibration	No electrical discontinuity and no disengagement of the mated connectors, backing off of the coupling mechanism, evidence of cracking, breaking, or loosening of parts. See Glenair Test Report GT-18-106 for vibration profiles IAW Bell 299-100-829.
Fungus	Materials used in the construction of these connectors shall be fungus inert per certification of method 508.4 of MIL-STD-810.
Corrosion	When tested in accordance with EIA-364-26, meets appropriate electrical and mechanical requirements and shows no exposure of base metal.

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Test	Test Requirement
Durability	No electrical or mechanical defects after 1500 cycles of engagement and disengagement with appropriate finish, unless otherwise specified.
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. 100 ±5 psi, 25 lb min force.
Crimp Contact Retention	The axial displacement of the contact shall not exceed .012 inch (0.30 mm). No damage to contacts or inserts shall result.

Current Rating

Contact Size	Maximum Amps Crimp Contact Environmental	Contact Size	Maximum Amps Crimp Contact Environmental
23	5	16	13
22D	5	12	23
20	7.5	8	46

Finish/Plating

Finish/Plating	Operating Temperature Range	Corrosion Resistance	Shell to Shell Conductivity
Electroless Nickel (ME)	-65°C to +200°C	48 hrs	1.0 mv max.
PTFE/Nickel (MT)	-65°C to +175°C	500 hrs	2.5 mv max.
OD Cadnium (NF)	-65°C to +175°C	500 hrs	2.5 mv max.
Black Zink-Nickel (ZR)	-65°C to +175°C	500 hrs	2.5 mv max.