INCH-POUND

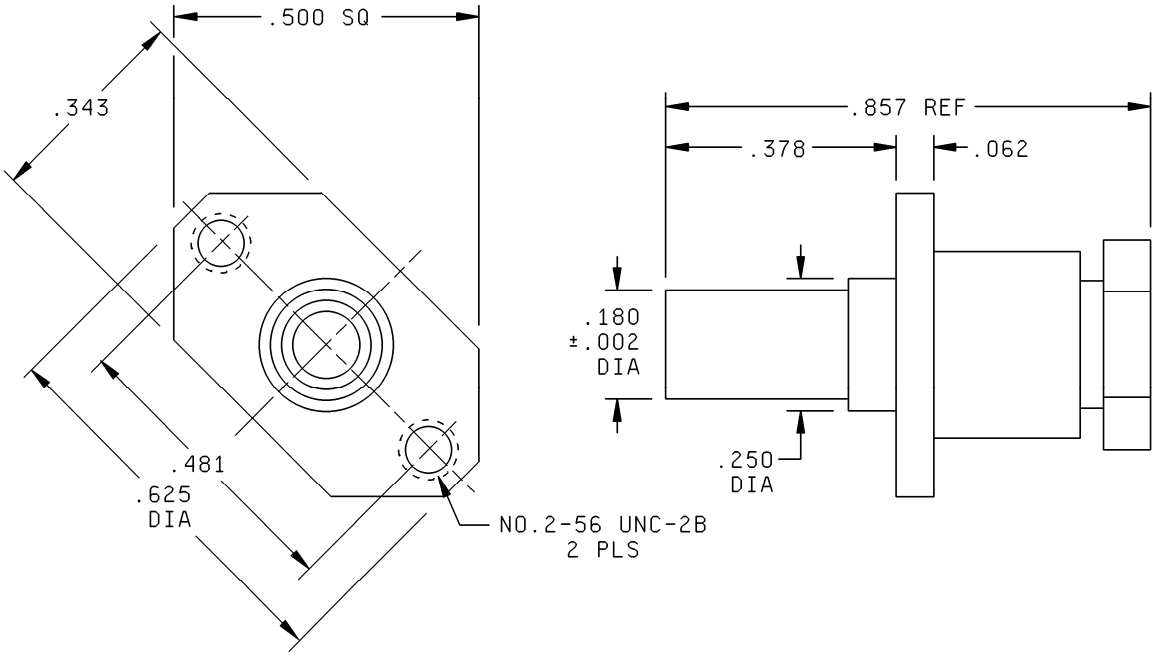
MIL-PRF-31031/40
10 March 2008

PERFORMANCE SPECIFICATION SHEET

CONNECTOR, ELECTRICAL, RECEPTACLE, RADIO FREQUENCY, HIGH RELIABILITY, COAXIAL, SERIES BMZ, SOCKET CONTACT, FOR FLEXIBLE CABLE

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist of this specification sheet and MIL-PRF-31031.



Inches	mm	Inches	mm
.002	0.05	.378	9.60
.062	1.57	.481	12.22
.180	4.57	.500	12.70
.250	6.35	.625	15.88
.343	8.71	.857	21.77

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for information only.
3. All undimensioned pictorial configurations are for reference purposes only.
4. Unless otherwise specified all tolerances shall be ±.005 inch (0.03 mm)
5. Interface series BMZ, socket contact, in accordance with MIL-STD-348.

FIGURE 1. General configuration.

TABLE I. Part or Identifying Number (PIN) to cable cross-reference.

PIN M31031/40	Cable accommodation M17/
A3N01	113-RG316 119-RG174 94-RG179 172-00001 173-00001
A3N02	60-RG142 84-RG223 128-RG400 158-00001 167-00001 175-00001
A3N03	152-00001

ENGINEERING DATA:

Nominal impedance: 50 ohms.

Frequency range: DC to 18 GHz.

Voltage rating: See table II.

Temperature rating: -65ºC to +165ºC.

REQUIREMENTS:

Dimensions and configurations: See figure 1.

Interface dimensions: In accordance with MIL-STD-348.

Force to engage:

Longitudinal force: 12 ounces.

Torque: Not applicable.

Coupling proof torque: Not applicable.

Mating characteristics:

Center contact (socket): Using hardened steel gage pins with a 4-8 micro surface finish and an insertion depth of .070 min (1.79 mm) the following forces shall be maintained:

Withdrawal force: 2 oz. min. with a .0195 (0.495 mm) +.0001/-.0000 dia. (+0.002 mm/-0.000 mm) pin.

Insertion force: 12 oz. max, with a .0210 (0.533 mm) +.0000/-.0001 (+0.000 mm/-0.002 mm) dia. pin.

Hermetic seal: Not applicable.

Leakage (pressurized connectors): Not applicable.

Center contact retention: 6 pounds minimum axial force.

Radial torque: Not applicable.

Voltage standing wave ratio (VSWR): From .5 to 18 GHz. Or approximately 80 percent of the upper cutoff frequency of the cable, whichever is lower, see table III.

Moisture resistance: MIL-STD-202, method 106. No measurements shall be taken at high humidity. Insulation resistance shall be 200 megohms within 5 minutes after removal from humidity.

Contact resistance (in milliohms, maximum):

	Initial	After environmental
Center contact:	3.0	4.0
Outer contact:	2.0	N/A
Outer cable conductor to body:	0.5	N/A

Dielectric withstanding voltage: See table III.

Vibration, high frequency: MIL-STD-202, method 204 test condition E, except the method of mounting shall be approved by the qualifying activity. No discontinuity shall be permitted.

Corona level: See table III.

Insulation resistance: MIL-STD-202, method 302, 5,000 megohms minimum.

Shock (specified pulse, socket contact only): MIL-STD-202, method 213 test condition I.

Thermal shock: MIL-STD-202, method 107 test condition B (except high temperature to be +115°C).

Corrosion (salt spray): MIL-STD-202, method 101 test condition B.

RF high potential withstanding voltage: See table III.

Frequency: 5 to 7 MHz.

Leakage current: Not applicable.

RF leakage: See table III.

RF insertion loss: See table III.

Cable retention: Shall be specified in table IV.

Coupling mechanism retention force: Not applicable.

Durability: 500 cycles minimum at 12 cycles per minute maximum. The connector shall meet the mating characteristics and force to engage and disengage requirements.

TABLE II. Connector voltage rating.

PIN M31031/40	Voltage max. at sea level (V rms)	Voltage max. at 70,000 ft. (V rms)
A3N01	250	65
A3N02	335	85
A3N03	250	60

TABLE III. Electrical performance characteristics.

Parameter	PIN M31031/40		
	A3N01	A3N02	A3N03
VSWR	1.15 +.01F (F in GHz)	1.15 +.01F (F in GHz)	1.15 +.02F (F in GHz)
Insertion loss in dB	.06 √F (F in GHz)	.06 √F (F in GHz)	.06 √F (F in GHz)
DWV V rms At sea level	750	1000	750
Corona V rms at 70,000 ft.	190	250	190
RF high pot. V rms	500	670	500
RF leakage in dB	-60	-60	-60

TABLE IV. Cable retention forces.

PIN M31031/40	Axial force (minimum, lbs.)		Torque (minimum, inch-ounces)
	Flexible		
	Single braid	Double braid	
A3N01	20	N/A	N/A
A3N02	40	45	N/A
A3N03	25	25	N/A

PIN: See table I

Referenced documents. In addition to MIL-PRF-31031, this document references the following:

MIL-STD-202
MIL-STD-348

CONCLUDING MATERIAL

Custodians:
Army - CR
Navy - EC
Air Force - 11
NASA - NA
DLA – CC

Review activities:
Army - AT, AV, EA, MI
Navy - AS, MC, OS, SH
Air Force - 19, 99

Preparing activity:
DLA - CC

(Project 5935-2006-226)

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at http://assist.daps.dla.mil.