

INCH-POUND

MIL-DTL-17/203A
w/AMENDMENT 1
23 February 2023
SUPERSEDING
MIL-DTL-17/203A
09 May 2019

DETAIL SPECIFICATION SHEET

CABLES, RADIO FREQUENCY, FLEXIBLE, TWINAXIAL, EMP HARDENED, DOUBLE SHIELD, DATA
BUS, 77 OHMS

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

The requirements for acquiring the cable described herein shall consist of this specification sheet
and MIL-DTL-17.

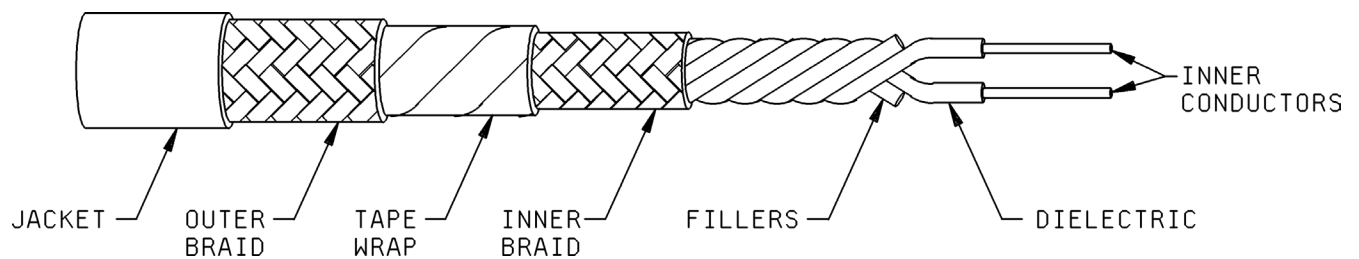


FIGURE 1. Configuration for Part or Identifying Number (PIN) M17/203-00001.

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TABLE I. Description.

Components	Construction
Inner conductors <u>1/</u> <u>2/</u>	M17/202-00001
	AWG. 24 19 strands AWG 36 silver-coated, high strength copper alloy. O.D.: .025 ±.0001 inch.
Dielectrics <u>3/</u>	Radiation cross-linked modified ETFE, one light blue, one white. Permittivity: 2.7 nominal. O.D.: .048 ±.002 inch each.
Fillers	Radiation crosslinked modified ETFE. O.D. .032 ±.002 inch.
Inner braid <u>4/</u>	AWG 38 tin-coated copper. Coverage: 90% minimum. Braid angle: 18°-40°. O.D.: .114 ±.006 inch.
Tape wrap	Mumetal tape, .002 inch thick nominal; 25% overlap maximum. O.D. .130 inch maximum.
Outer braid <u>4/</u>	AWG 38 tin-coated copper. Coverage: 90% minimum. Braid angle: 18°-40° O.D. .147 inch maximum.
Jacket	Radiation cross-linked Modified ETFE, white. O.D.: .161 ±.001 inch.

1/ Lay length shall be 1.00 ±.25 inch.

2/ High strength copper alloy in accordance with SAE-AS22759/35.

3/ Radiation crosslinked modified ETFE copolymer in accordance with SAE-AS22759/35.

4/ Minimum coverage of 90% in accordance with NEMA-WC27500 (shield type I, tin-coated copper).

ENGINEERING INFORMATION:

Continuous working voltage: 600 V rms, maximum, at sea level.

Operating frequency: 10 MHz, maximum.

Velocity of propagation: 61 percent, nominal.

Operating temperature range: -65°C to +150°C.

Inner conductor properties:

DC resistance (maximum, at 20°C): 28.4 ohms/100 feet.

Elongation: 6% minimum.

Tensile strength: 22.4 pounds minimum.

Jacket properties:

Elongation: 50% minimum.

Tensile strength: 5k lbf/inch², minimum.

Engineering note: Cables shall be suitable for use in MIL-STD-1553 data bus systems for use as main bus or stub cable.

REQUIREMENTS:

Dimensions, configuration and description: See figure 1 and table I.

Environmental and mechanical:

Visual and mechanical examination:

Diameter: Applicable.

Out-of-roundness: Applicable.

Eccentricity: 10 percent, maximum.

Adhesion of conductors: Dielectrics shall be free stripping, using conventional stripping tools, without breaking of conductor strands and without bunching of the dielectric.

Electrical and mechanical:

Continuity: Applicable.

Spark test: 1,000 V rms, minimum.

Voltage withstanding: 1,000 V rms, +10%, -0%.

Insulation resistance: 5,000 megohms minimum per 1,000 feet.

Corona extinction voltage: Not applicable.

Characteristic impedance: 77 ± 5 ohms at 1 MHz.

Surface transfer impedance: In accordance with SAE AS85485;
1.0 milliohms/meter maximum at 1 MHz.

RF transmission loss (attenuation): 1.4 dB/100 feet maximum at 1 MHz.

Standing wave ratio (return loss): Not applicable.

Capacitance: 30 pF per foot, maximum at 1 MHz.

Capacitance stability: Not applicable.

Capacitance unbalance: 5% maximum.

Transmission unbalance: Not applicable.

Inductance: Applicable

Mechanically induced noise: Not applicable.

Time delay: Not applicable.

Aging stability: Not applicable.

Stress crack resistance: Not applicable.

Outer conductor integrity: Not applicable.

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Cold bend: -65°C (6 inch mandrel). Jacket shall pass spark test.

Dimensional stability: Not applicable.
Contamination: Not applicable.
Bendability: Not applicable.

Flammability: Cable shall be tested in accordance with the flammability procedure of SAE-AS22759/35 and shall meet the requirements specified in MIL-DTL 17.

Flame propagation: Not applicable.
Acid gas generation: Not applicable.
Halogen: Not applicable.

Fluid immersion: Cable shall be tested in accordance with SAE-AS22759/35 (using a 6 inch diameter mandrel) There shall be no cracking of the jackets or evidence of breakdown. The increase in diameter shall be 5% maximum.

Smoke index: Not applicable.
Toxicity index: Not applicable.
Durometer hardness: Not applicable.
Weathering: Not applicable.
Abrasion resistance: Not applicable.
Tear strength: Not applicable.
Heat distortion: Not applicable.

Impulse dielectric: Shall be in accordance with SAE-AS22759/35; 8.0 kilovolts (peak), 100 percent test.

Physicals: Applicable

Air oven accelerated aging: Shall be in accordance with SAE-AS22759/35.
(.5 inch mandrel, .375 pound load)

Hot-oil immersion accelerated aging: Not applicable.

Tensile strength and elongation: Applicable

Air oven : Applicable

Hot-oil immersion : Applicable

Weight: 29.1 pounds/1,000 feet maximum.

Marking: Applicable.

Marking durability: 125 cycles (250 strokes), 1 pound.

Workmanship: Applicable.

PINs: M17/203-00001.

Supersession: This specification shall supersede Air Force drawing 8421528 when a QPL source becomes available.

TABLE II. Qualification and Group A, B, and C Table.

Group	Qualification inspection	Requirement paragraph	Test paragraph	Qual- # of Specimens	Conf - # of Specimens	Conformance inspection
I	In-process inspection:		4.5	Entire sample		
	Continuity	3.7.1	4.8.2	Entire sample		
	Spark test	3.7.2	4.8.3	Entire sample		
	Voltage withstanding	3.7.3	4.8.4	Entire sample		
	Insulation resistance	3.7.4	4.8.5	Entire sample		
	Visual and mechanical inspection	3.6	4.8.1	Entire sample	Per Table VIII	A
	Diameter measurements.	3.6.1	4.8.1.1	Entire sample	Per Table VIII	A
	Out-of-roundness	3.6.2	4.8.1.2	Entire sample	Per Table VIII	A
	Eccentricity of inner conductor	3.6.3	4.8.1.3	2	Per Table VIII	A
	Adhesion of conductors	See this Specification	See this Specification	4	Per Table VIII	A
	Marking	3.8	4.8.1	Entire sample	Per Table VIII	A
	Marking Durability	3.8.2	4.8.39	3	Per Table VIII	A
	Workmanship	3.10	4.8.1	Entire sample	Per Table VIII	A
II	Corona extinction voltage	N/A				
	Characteristic impedance	3.7.6	4.8.7	1	Per Table VIII	A
	Surface transfer impedance	See this Specification sheet	See this Specification sheet	1		
	RF transmission loss (attenuation)	3.7.7	4.8.8	2	Per Table VIII	A
	Standing wave ratio (return loss)	N/A				
	Capacitance	3.7.9	4.8.10	1	Per Table VIII	B
	Capacitance stability	N/A				
	Capacitance unbalance	3.7.11	4.8.12	1	Per Table VIII	B
	Transmission unbalance	N/A				
	Inductance	3.7.36	4.8.38	1	Per Table VIII	B
	Mechanically induced noise voltage	N/A				
	Time delay	N/A				
	Aging stability	N/A				

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TABLE II. Qualification and Group A, B, and C Table - Continued.

Group	Qualification inspection	Requirement paragraph	Test paragraph	Qual- # of Specimens	Conf - # of Specimens	Conformance inspection
II	Cold bend	3.7.18	4.8.19	3	Per Table VIII	B
	Dimensional stability	N/A				
	Contamination	N/A				
	Bendability	N/A				
	Flammability	See this Specification sheet	See this Specification sheet	1	Per Table VIII	C
	Flame propagation	N/A				
	Acid gas generation	N/A				
	Halogen content	N/A				
	Immersion tests	See this Specification sheet	See this Specification sheet	1		
	Smoke index	N/A				
	Toxicity Index	N/A				
	Durometer hardness	N/A				
	Weathering	N/A				
	Abrasion resistance	N/A				
	Tear strength	N/A				
	Heat distortion	N/A				
	Impulse dielectric	See this Specification sheet	See this Specification sheet	1		
	Physicals (aged)	See this Specification sheet	See this Specification sheet	1	Per Table VIII	C
	Tensile strength and elongation	N/A				
	Weight	3.9	4.8.24	1	Per Table VIII	B

Amendment notations. The margins of this specification are marked with vertical lines to indicate modifications generated by this amendment. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations.

Referenced documents. In addition to MIL-DTL-17, this document references the following:

MIL-STD-1553 SAE-AS22759/35 NEMA-WC2700 SAE AS85485

CONCLUDING MATERIAL

Custodians:

Army – CR
Navy – EC
Air Force – 85
DLA – CC

Preparing activity:

DLA – CC

(Project 6145-2024-010)

Review activities:

Army – AR, AT, CR4
Navy – AS, MC, OS
Air Force – 19

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 <https://assist.dla.mil>.