MIL-DTL-17 Coaxial Cables

- including M17/176-00002 Twinaxial Data Bus Cable

Harbour Industries is a QPL approved manufacturer of high temperature, high performance coaxial cables supplied in exact accordance with the MIL-DTL-17 specification. The information referenced has been taken from the MIL-DTL-17 "slant sheets" which define complete physical and electrical characteristics for each MIL-DTL-17 part number including dimensional parameters, dielectric materials, shield constructions, VSWR, and maximum attenuation over various frequency ranges. For complete individual slant sheets, see the Defense Supply Center Columbus (DSCC) link in the Industry Links section of Harbour's website.

The Importance of VSWR Sweep Testing

When selecting a 50 ohm coaxial cable, constructions with VSWR requirements are highly recommended. Manufacturing and sweep testing cables with concern for VSWR ensures a quality cable free of spikes over the frequency range referenced on the slant sheet.

Precision PTFE Dielectrics Used

All of the PTFE dielectric coax cables listed are high temperature, high performance constructions exhibiting high dielectric strength and low capacitance in proportion to the cable's dielectric constant. Harbour manufactures all PTFE dielectric cable constructions with tolerances tighter than the MIL-DTL-17 specification to ensure uniformity of electrical characteristics, especially impedance, attenuation, and VSWR.

Constructions with PTFE Tape Wrapped Jackets

Harbour manufactures PTFE tape wrapped cables - specifically RG187 A/U, RG188 A/U, RG195 A/U, and RG196 A/U - in accordance with a previous revision of the MIL-DTL-17 specification. These constructions can withstand operating temperatures up to 250 ° versus 200° C for FEP jacketed cables. PTFE tape wrapped cables are generally more flexible than their FEP jacketed counterpart. Alternative 250° constructions are also available with PFA jackets.

M17 Part	Center Conductor	Dielectric Diameter	Shield	Shield Diameter	Jacket	Overall Diameter	Bend Radius	Weight (lbs/mft)	Comments
M17/60-RG142	.037" SCCS	.116"	SPC (2)	.160"	FEP	.195"	1.0"	43.0	
M17/93-RG178	.0120" (7/.004")SCCS	.033"	SPC	.051"	FEP	.071"	0.4"	6.3	
M17/94-RG179	.0120" (7/.004")SCCS	.063"	SPC	.080"	FEP	.100"	0.4"	10.8	
M17/95-RG180	.0120" (7/.004")SCCS	.102"	SPC	.118"	FEP	.141"	0.7"	19.8	
M17/111-RG303	.037" SCCS	.116"	SPC	.136"	FEP	.170"	0.9"	31.0	
M17/112-RG304	.059" SCCS	.185"	SPC (2)	.240"	FEP	.280"	1.4"	94.0	
M17/113-RG316	.0201" (7/.0067")SCCS	.060"	SPC	.075"	FEP	.098"	0.5"	12.2	
M17/127-RG393	.094" (7/.0312") SPC	.285"	SPC (2)	.314"	FEP	.390"	2.0"	165.0	
M17/128-RG400	.0384" (19/.008") SPC	.116"	SPC (2)	.156"	FEP	.195"	1.0"	50.0	
M17/131-RG403	.0120" (7/.004")SCCS	.033"	SPC (2)	.090"	FEP (2)	.116"	0.6"	15.0	Triaxial RG-178
M17/152-00001	.0201" (7/.0067")SCCS	.060"	SPC (2)	.091"	FEP	.114"	0.6"	18.5	Double Shield RG-316
M17/176-00002	.0235" (19/.005")SPA(2)	.042"	SPA	.100"	PFA	.129"	0.6"	18.0	Twinax
RG187 A/U	.0120" (7/.004")SCCS	.063"	SPC	.079"	PTFE	.100"	0.5"	10.0	Tape Wrapped Jacket
RG188 A/U	.0201" (7/.0067")SCCS	.060"	SPC	.080"	PTFE	.100"	0.5"	11.0	Tape Wrapped Jacket
RG195 A/U	.0129" (7/.004")SCCS	.102"	SPC	.117"	PTFE	.141"	0.7"	18.0	Tape Wrapped Jacket
RG196 A/U	.0120" (7/.004")SCCS	.034"	SPC	.050"	PTFE	.067"	0.4"	6.0	Tape Wrapped Jacket

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				Attenuation (dB/100 ft)						
M17 Part	Impedance (ohms)	Capacitance (pF/ft)	Max Voltage	100 MHz Typ/Max	400 MHz Typ/Max	1 GHz Typ/Max	2.4 GHz Typ/Max	5 GHz Typ/Max	10 GHz Typ/Max	Max Frequency (GHz)
M17/60-RG142	50 +/-2	29.4	1900	3.8 / 4.4	8.1 / 9.3	13.7 / 15.3	23.3 / 25.0	37.4 / 41.8	60.0 / 70.7	12.4
M17/93-RG178	50 +/-2	29.4	1000	14.7 / 16.0	30.2 / 33.0	48.9 / 52.0	78.7 / 83.3			
M17/94-RG179	75 +/-3	19.4	1200		15.8 / 21.0					
M17/95-RG180	95 +/-5	17.4	1500	5.7 / 6.6	11.7 / 17.4	19.2 / 23.0				
M17/111-RG303	50 +/-2	29.4	1900	4.0 / 4.4	8.1 / 9.3	13.4 / 15.3				
M17/112-RG304	50 +/-2	29.4	3000	2.4 / 2.7	5.8 / 6.4	10.0 / 11.1	17.6 / 19.6	25.4 / 28.2		8.0
M17/113-RG316	50 +/-2	29.4	1200	7.8 / 11.0	16.0 / 21.0	26.3 / 38.0	43.0 / 55.4			3.0
M17/127-RG393	50 +/-2	29.4	1500	2.2 / 2.5	4.6 / 5.0	7.9 / 9.2	13.5 / 14.2	21.9 / 26.8	35.5 / 37.9	11.0
M17/128-RG400	50 +/-2	29.4	1900	4.1 / 4.5	8.6 / 10.5	14.2 / 18.1	23.6 / 30.2	37.0 / 52.1	57.8 / 78.0	12.4
M17/131-RG403	50 +/-2	29.4	1000		33.3 / 37.0					
M17/152-00001	50 +/-2	29.4	1200	7.6 / 11.0	16.0 / 21.0	26.2 / 38.0	41.2 / 55.4	61.3 / 110.0	90.0 / 170.0	12.4
M17/176-00002	77 +/-7	19.0	1000							
RG187 A/U	75 +/-3	19.4	1200		15.5 / 21.0					
RG188 A/U	50 +/-2	29.4	1200	7.6 / 11.0	16.0 / 21.0	26.2 / 38.0	41.2 / 55.4			3.0
RG195 A/U	95 +/-5	17.4	1500		11.7 / 17.4					
RG196 A/U	50 +/-2	29.4	1000	13.0 / 16.0	27.2 / 33.0	41.7 / 52.0	64.0 / 80.0			3.0

° UL approvals for many of the MIL-DTL-17 cables listed are available upon request.

° Maximum frequencies are those referenced on individual slant sheets of the MIL-DTL-17 specification. No values are given above 400MHz for unswept constructions because MIL-DTL-17 specification recommends these cables should not be used above this frequency.

° The MIL-DTL-17 specification references maximum attenuation values as shown in the above chart, however typical values are substantially lower. For the more popular constructions, the following K factors may be used to calculate typical attenuation at any specific frequency.

	M17/60-RG142	M17/93-RG178	M17/94-RG179	M17/113-RG316	M17/128-RG400	M17/127-RG393
K1	.355	1.420	.766	.750	.390	.200
K2	0.00245	0.0034	0.00119	0.0026	0.00188	0.00155