

M27500 Cable (NEMA WC27500)

This specification covers the requirements for electronic control cables used in aircraft and missile applications. These cables may be constructed from a variety of insulating materials having different characteristics. These cables can be obtained in configurations up to 15 conductors with just a shield, or just a jacket, or both single and double shields and jackets. Conductor colors are specified and the cable must be identified by methods described in the body of M27500.

Cable Designation

Specification Number	ID method of cable wire & shield coverage	Conductor Size	Basic wire specification	Numbers of wires in cable	Shield style & materials	Jacket Material
M27500	-	22	SD	3	T	23

Identification Method

Color Code for Shield Coverage		M27500 Terminology	Component Wire Identification Method
85%	90%		
-	C	Preferred method, Table A	White wires with colored stripes –stripe color per Table A
F	G	Preferred method, Table B	White wires with colored stripes –stripe color per Table B
A	D	Optional method A, Table A	Solid colored wire – colors per Table A
G	J	Optional method A, Table B	Solid colored wire – colors per Table B
B	E	Optional method B, Table C	Wires are the same color, based on AWG size (per Table C). Bands of contrasting color denotes wire number (per Table D)
K	M	Optional method C, Table C	Wires are the same color, based on AWG size (per Table C). Numbers of contrasting color printed to denote wire number
L	N	Optional method B, Table D	White wires with numbers of contrasting color printed on each wire to denote wire number

Table A: Color Coding

- For “**preferred method**” color coding, colors are stripes on white insulation (wire #1 has no stripe). Wires 11 -15 have double stripes as indicated.
- For “**optional method**” color coding, colors are solid insulation color. Wires 11 -15 have a stripe in lighter shade of base color.

Wire Number	Color	Wire Number	Color	Wire Number	Color
1	White	6	Black	11	Blue/Blue
2	Blue	7	Yellow	12	Orange/Orange
3	Orange	8	Violet	13	Green/Green
4	Green	9	Gray	14	Red/Red
5	Red	10	Brown	15	Black/Black

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Table B: Color Coding

- For “**preferred method**” color coding, colors are stripes on white insulation (wire #5 has no stripe), for wire 1 – 10. For wires 11 - 15 color pairs indicate insulation of the first color, with a stripe of second color.
- For “**optional method**” color coding, colors are solid insulation color for wires 1 - 10. For wires 11 -15, color pairs indicate insulation of the first color, with a stripe of second color.
- For either method, the color of the wire in one conductor is white.

Wire Number	Color	Wire Number	Color	Wire Number	Color
1	Red	6	Black	11	Red/White
2	Blue	7	Brown	12	Blue/White
3	Yellow	8	Orange	13	Yellow/White
4	Green	9	Violet	14	Green/White
5	White	10	Gray	15	Black/White

Table C: Color Coding

- For “**optional method B**” color coding, wire insulation color is based on AWG size, with color bands per Table D to indicate wire number (circuit ID).
- For “**optional method C**” color coding, wire insulation color is based on AWG size, with numbers printed on each wire to indicate wire number (circuit ID).

AWG Size	Color	AWG Size	Color	AWG Size	Color	AWG Size	Color
26	Black	18	White	10	Brown	2	Red
24	Blue	16	Blue	8	Red	1	White
22	Green	14	Green	6	Blue	1/0	Blue
20	Red	12	Yellow	4	Yellow	2/0	Green

Table D: Color Coding

- For “**optional method B**” color coding band groups are printed on wires to indicate wire number (circuit ID).

Band Configuration	Wire Number	Band Configuration	Wire Number	Band Configuration	Wire Number
None	1	6 Narrow	6	1 Wide, 4 Narrow	11
2 Narrow	2	7 Narrow	7	1 Wide, 5 Narrow	12
3 Narrow	3	1 Wide, 1 Narrow	8	2 Wide, 1 Narrow	13
4 Narrow	4	1 Wide, 2 Narrow	9	2 Wide, 2 Narrow	14
5 Narrow	5	1 Wide, 3 Narrow	10	2 Wide, 3 Narrow	15

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Basic Wire Specification

Symbol	Specification	Symbol	Specification	Symbol	Specification
CA	AS22759/13	ML	AS81044/12	ST	AS22759/46
CB	AS22759/14	MM	AS81044/13	SV	AS22759/47
CC	AS22759/15	MR	MIL-DTL-81381/7	SW	AS22759/48
DB*	AS22759/180	MS	MIL-DTL-81381/8	SX	AS22759/49
DC*	AS22759/181	MT	MIL-DTL-81381/9	SY	AS22759/50
DE*	AS22759/182	MV	MIL-DTL-81381/10	TA	AS22759/8
DF*	AS22759/183	MW	MIL-DTL-81381/11	TE	AS22759/16
DG*	AS22759/184	MY	MIL-DTL-81381/12	TF	AS22759/17
DH*	AS22759/185	NA	MIL-DTL-81381/13	TG	AS22759/18
DJ*	AS22759/186	NB	MIL-DTL-81381/14	TH	AS22759/19
DK*	AS22759/187	NE	MIL-DTL-81381/17	TK	AS22759/20
DL*	AS22759/188	NF	MIL-DTL-81381/18	TL	AS22759/21
DM*	AS22759/188	NG	MIL-DTL-81381/19	TM	AS22759/22
DN*	AS22759/190	NH	MIL-DTL-81381/20	TN	AS22759/23
DP*	AS22759/191	NK	MIL-DTL-81381/21	VA	AS22759/5
DR*	AS22759/192	NL	MIL-DTL-81381/22	WA	AS22759/6
E	AS22759/2	RA	AS22759/3	WB	AS22759/80
EA	AS22759/1	RB	AS22759/4	WC	AS22759/81
JA	MIL-DTL-81381/1	RC	AS22759/11	WE	AS22759/82
JB	AS22759/28	RE	AS22759/12	WF	AS22759/83
JC	AS22759/29	SA	AS22759/7	WG	AS22759/84
JD	AS22759/30	SB	AS22759/32	WH	AS22759/85
JE	AS22759/31	SC	AS22759/33	WJ	AS22759/86
JF	AS25038/3	SD	AS22759/34	WK	AS22759/87
LE	AS22759/9	SE	AS22759/35	WL	AS22759/88
LH	AS22759/10	SM	AS22759/41	WM	AS22759/89
ME	AS81044/6	SN	AS22759/42	WN	AS22759/90
MF	AS81044/7	SP	AS22759/43	WP	AS22759/91
MH	AS81044/9	SR	AS22759/44	WR	AS22759/92
MJ	AS81044/10	SS	AS22759/45		

*Proposed for WC27500-2011 revision

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Shield Style and Material

Single Shield Style	Double Shield Style	Shield Material	Maximum Temperature Limit for Shield Material
U		No Shield	-
T	V	Tin-coated copper, round	150°C
S	W	Silver-coated copper, round	200°C
N	Y	Nickel-coated copper, round	260°C
F	Z	Stainless Steel, Round	400°C
C	R	Nickel-coated copper 27% round	400°C
M	K	Silver-coated high strength copper alloy, round	200°C
P	L	Nickel-coated high strength copper alloy, round	260°C
G	A	Silver-coated copper, flat	200°C
H	B	Silver-coated high strength copper alloy, flat	200°C
*	#	Nickel-coated copper, flat	260°C
J	D	Tin-coated copper, flat	150°C
E	X	Nickel-coated high strength copper alloy, flat	260°C
I	Q	Nickel-Chromium alloy flat	400°C

Jacket Style and Material

Single Jacket Style	Double Jacket Style	Jacket Material	Temperature Limit for Jacket Material
00	00	No jacket	-
01	51	Extruded white polyvinyl chloride (PVC)	90°C
02	52	Extruded clear polyamide	105°C
03	53	White polyamide braid impregnated with clear polyamide finisher over a polyester tape	105°C
04	54	Polyester braid impregnated with high temperature finisher over polyester tape	150°C
05	55	Extruded clear fluorinated ethylene propylene (FEP)	200°C
06	56	Extruded or taped and heat sealed white polytetrafluoroethylene (PTFE)	260°C
07	57	White polytetrafluoroethylene (PTFE) treated glass braid impregnated and coated with polytetrafluoroethylene finisher over pre-inserted polytetrafluoroethylene tape	260°C
08	58	Cross-linked white extruded polyvinylidene fluoride (PVDF)	150°C
09	59	Extruded white fluorinated ethylene propylene (FEP)	200°C
10	60	Extruded clear polyvinylidene fluoride (PVDF)	125°C
11	61	Tape or natural polyimide combined with clear fluorinated ethylene propylene (FEP) wrapped and heat sealed with polyimide outer surface	200°C
12	62	Tape or natural polyimide combined with fluorinated ethylene propylene (FEP) wrapped and heat sealed with polyimide outer surface	200°C
14	64	Extruded white ethylene-tetrafluoroethylene co-polymer (ETFE)	150°C
15	65	Extruded clear ethylene-tetrafluoroethylene co-polymer (ETFE)	150°C
16	66	Braid of aromatic polyamide with high temperature finisher over pre-inserted polytetrafluoroethylene (PTFE) tape	200°C
17	67	White extruded ethylene chlorotrifluoro-ethylene (ECTFE)	150°C
18	68	Clear extruded ethylene chlorotrifluoro-ethylene (ECTFE)	150°C
20	70	Extruded white perfluoroalkoxy (PFA)	260°C
21	71	Extruded clear perfluoroalkoxy (PFA)	260°C
22	72	Taped of polyimide combined with clear fluorinated ethylene propylene (FEP) wrapped and heat sealed with opaque polyimide outer surface	200°C
23	73	White cross-linked, extruded, modified, ethylene tetrafluoroethylene copolymer (XLETFE)	200°C
24	74	Taped layer of white polytetrafluoroethylene (PTFE) wrapped over a tape layer of natural polyimide combined with fluoropolymer heated and fused	200°C
25	75	Smooth surface tape layer of white polytetrafluoroethylene (PTFE) wrapped over a tape layer of natural polyimide combined with fluoropolymer heated and fused	260°C
26	76	Extruded, white, low fluoride, cross-linked modified, ethylene-tetrafluoroethylene co-polymer (XLETFE)	200°C