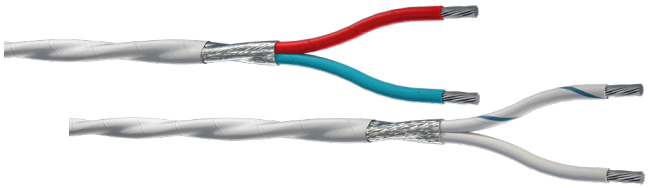
M27500 Cables

Cable specification: NEMA WC 27500 (MIL-DTL-27500)

Special purpose and power electrical cables designed for Aerospace, Commercial, Military applications and high performances vehicles



Cable characteristics

Excellent

FAR25

Environmental

- Operating temperature: -65°C to +150°C, +200°C or +260°C* (ambient temperature + current heating)

*Depending on the type of basic wires, shield or jacket requested - see table B, C and D for more information

- Number of wires in cable: from 1 to 15 conductors for shielded and jacketed cables

Specifications

Cable Specification

NEMA WC 27500

Technical Specification

SAE AS22759/80 to /92 and AS22759/180 to /192

Cable design

Cable Designation

Types of cables shall be identified by a combination of digits and letters in accordance with the following

eg: M27500 - 22 WK 2 N 24
1 2 3 4 5 6 7

1. Identification number
2. Identification method of cable wire and shield coverage : see table A
3. Conductor size
4. Basic wire specification : See table B
5. Number of wires in cable
6. Shield style and material : See table C
7. Jacket material : See table D

Marking (example)

eg: M27500-22WK2N24 F1868 REV x
1 2 3

1. Cable designation
2. Manufacturer's identification
3. Revision of specification

Table A: Identification method of Cable Wire (with Shield Coverage)

Identification method of Cable Wire (with 85% shield coverage)	Identification method of Cable Wire (with 90% shield coverage)	Description
-	C	White wires with Spiral Stripes (color of the stripes in accordance with Table 3-1 of NEMA WC 27500 specification)
F	H	White wires with Spiral Stripes (color of the stripes in accordance with Table 3-2 of NEMA WC 27500 specification)
A	D	Solid color in accordance with Table 3-1.1 of NEMA WC 27500 specification
G	J	Solid color in accordance with Table 3-2 of NEMA WC 27500 specification
B	E	Solid color in accordance with Table 3-3 of NEMA WC 27500 specification and color bands (for identification of wire number in the cable. In accordance with Table 3-4 of NEMA WC 27500 specification)
K	M	Solid color in accordance with Table 3-3 of NEMA WC 27500 specification (Numbers are printed on the insulation for identification of wire number in the cable)
L	N	White wires (Numbers are printed on the insulation for identification of wire number in the cable)
P	R	White wires with Spiral Stripes (color of the stripes in accordance with Table 3-3 of NEMA WC 27500 specification) and color bands (for identification of wire number in the cable. In accordance with Table 3-4 of NEMA WC 27500 specification)
S	T	White wires and color bands (for identification of wire number in the cable. In accordance with Table 3-4 of NEMA WC 27500 specification)
U	V	Color codes specified by the procuring activity

Table B: Basic Wire Specification

Symbol	Basic wire specification	Maximum Operating temperature
WB	AS22759/80	150°C
WC	AS22759/81	200°C
WE	AS22759/82	260°C
WF	AS22759/83	200°C
WG	AS22759/84	260°C
WH	AS22759/85	150°C
WJ	AS22759/86	200°C
WK	AS22759/87	260°C
WL	AS22759/88	150°C
WM	AS22759/89	200°C
WN	AS22759/90	260°C
WP	AS22759/91	200°C
WR	AS22759/92	260°C

Symbol	Basic wire specification	Maximum Operating temperature
DB	AS22759/180	150°C
DC	AS22759/181	200°C
DE	AS22759/182	260°C
DF	AS22759/183	200°C
DG	AS22759/184	260°C
DH	AS22759/185	150°C
DJ	AS22759/186	200°C
DK	AS22759/187	260°C
DL	AS22759/188	150°C
DM	AS22759/189	200°C
DN	AS22759/190	260°C
DP	AS22759/191	200°C
DR	AS22759/192	260°C

Extracts of Tables 3-1, 3-2, 3-3 and 3-4 of NEMA WC 27500 for Identification Colors

Table 3-1 of NEMA WC 27500	
Wire N°1	White
Wire N°2	Blue
Wire N°3	Orange
Wire N°4	Green
Wire N°5	Red
Wire N°6	Black
Wire N°7	Yellow
Wire N°8	Violet
Wire N°9	Gray
Wire N°10	Brown
Wire N°11	Blue/Blue[1]
Wire N°12	Orange/Orange[1]
Wire N°13	Green/Green[1]
Wire N°14	Red/Red[1]
Wire N°15	Black/Black[1]

[1]For cables having more than 10 wires, the wires shall be identified by double tracers. (Blue/Blue indicates a white wire with double blue tracers)

Table 3-2 of NEMA WC 27500	
Wire N°1	Red[2]
Wire N°2	Blue
Wire N°3	Yellow
Wire N°4	Green
Wire N°5	Basic (White)
Wire N°6	Black
Wire N°7	Brown
Wire N°8	Orange
Wire N°9	Violet
Wire N°10	Gray
Wire N°11[3]	Red/White
Wire N°12[3]	Blue/White
Wire N°13[3]	Yellow/White
Wire N°14[3]	Green/White
Wire N°15[3]	Black/White

[2]For a single core cable, the color of the wire is basic (White)
[3]Color designation indicates a solid color with stripe (red/white =solid red insulation with a white stripe)

Table 3-3 of NEMA WC 27500	
Wire Size	Insulation Color (Solid)
26	Black
24	Blue
22	Green
20	Red
18	White (or purple)[4]
16	Blue
14	Green
12	Yellow
10	Brown
8	Red
6	Blue
4	Yellow
2	Red
1	White
0	Blue
00	Green

[4]Violet may be used if specified in the purchase order

Table 3-4 of NEMA WC 27500			
Wire Number	Band Group Configuration		Number of Bands
1	No marking		None
2	■ ■	■ ■	2 Narrow
3	■ ■ ■	■ ■ ■	3 Narrow
4	■ ■ ■ ■	■ ■ ■ ■	4 Narrow
5	■ ■ ■ ■ ■	■ ■ ■ ■ ■	5 Narrow
6	■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	6 Narrow
7	■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■	7 Narrow
8	■■■ ■	■■■ ■	1 Wide 1 Narrow
9	■■■ ■ ■	■■■ ■ ■	1 Wide 2 Narrow
10	■■■ ■ ■ ■	■■■ ■ ■ ■	1 Wide 3 Narrow
11	■■■ ■ ■ ■ ■	■■■ ■ ■ ■ ■	1 Wide 4 Narrow
12	■■■ ■ ■ ■ ■ ■	■■■ ■ ■ ■ ■ ■	1 Wide 5 Narrow
13	■■■ ■■■ ■	■■■ ■■■ ■	2 Wide 1 Narrow
14	■■■ ■■■ ■ ■	■■■ ■■■ ■ ■	2 Wide 2 Narrow
15	■■■ ■■■ ■ ■ ■	■■■ ■■■ ■ ■ ■	2 Wide 3 Narrow

Table C: Shield style and material

Symbol Single-Shield Style	Symbol Double-Shield Style	Description	Maximum Temperature Limit for Shield material (Information Only)
U	-	No shield	-
T	V	Tin-coated copper, round	150°C (302°F)
S	W	Silver-coated copper, round	200°C (392°F)
N	Y	Nickel-coated copper, round	260°C (500°F)
F	Z	Stainless Steel, round	400°C (752°F)
C	R	Nickel-coated Copper 27%, round	400°C (752°F)
M	K	Silver-coated high-strength copper alloy, round	200°C (392°F)
P	L	Nickel coated high-strength copper alloy, round	260°C (500°F)
G	A	Silver-coated copper, flat	200°C (392°F)
H	B	Silver-coated high strength copper alloy, flat	200°C (392°F)
NF	ND	Nickel-coated copper, flat	260°C (500°F)
J	D	Tin-coated copper, flat	150°C (302°C)
E	X	Nickel-coated high-strength copper alloy, flat	260°C (500°F)
I	Q	Nickel-chromium alloy, flat	400°C (752°F)
HS	HD	Heavy Silver-coated copper, round	200°C (392°F)

Table D: Jacket material

Single Jacket Symbol	Double Jacket Symbol	Jacket Material	Maximum Temperature Rating for Jacket material (Information Only)
00	00	No jacket	
06	56	Extruded or taped and heat sealed White polytetrafluoroethylene (PTFE)	260°C (500°F)
11	61	Tape of natural polyimide combined with clear fluorinated ethylene propylene (FEP) wrapped and heat sealed with (FEP) outer surface	200°C (392°F)
12	62	Tape of natural polyimide combined with fluorinated ethylene propylene (FEP) wrapped and heat-sealed with polyimide outer surface	200°C (392°F)
22	72	Tape of polyimide combined with clear fluorinated ethylene propylene (FEP) wrapped and heat-sealed with opaque polyimide outer surface	200°C (392°F)
24	74	Tape layer of White polytetrafluoroethylene (PTFE) wrapped over a tape layer of natural polyimide combined with fluoropolymer, heated and fused	260°C (500°F)
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 (500°F)

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