

ESCC 3901-002 Series

Wires and Cables specification:

ESA/SCC N° 3901 and ESA/SCC N° 3901/002



Light weight hook-up wires for use in launch vehicles, satellites and general space applications.



Cable characteristics



-100 +200°C



Excellent



FAR25_
ABD0031

Environmental

- Operating temperature: -100°C to 200°C (ambient temperature + current heating)
- Non-flammable
- Very good solderability
- Current Rating: The currents shown in the tables for single wire generate a temperature in a vacuum environment.

According to ESA/SCC specifications, those current values may be considered up to an ambient temperature of 150°C.

- Derating factors must be applied for cables and wires in bundles
- High resistance to chemical agents, fluids and space radiations
- The 2 µm thick layer of silver-plating on the conductor and the shield provide the best protection against the Red Plague phenomenon

Electrical

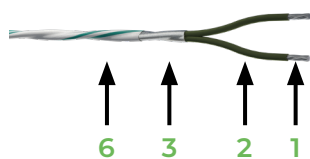
- Maximum operating Voltage: 600 Vac
- Insulation Resistance of Core: > 750 MΩ km at 20°C (after 500V-1min)

Mechanical

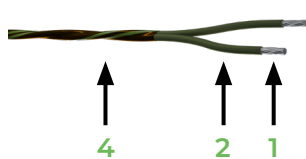
- The wrapped construction technology allows very thin wall insulation yielding weight and space savings as well as higher performances
- Superior mechanical resistance eliminating handling and installation damage
- Good strippability

Cable design

Multi-Cores Shielded and Jacketed



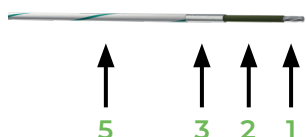
Multi-Cores Jacketed



Single core



Single core Shielded and Jacketed



1. Conductor(s): Silver-plated Copper or Silver-plated Copper Alloy
2. Polyimide tape + Polyimide Top Coat
3. Spiral Shield – Silver-plated copper
4. Polyimide Tape
5. Polyimide Tape + Top Coat
6. Polyimide Tape + PTFE Tape

Identification

Color Coding according to ESCC specification

Wire Size (AWG)	Core* color	Jacket assemblies	Color shielded	Stripe color on jacket
28 & 16	Brown	Amber	White	Brown
26	Black	Amber	White	Black
24	Khaki-Beige	Amber	Light blue	White
22	Red	Amber	White	Red
20	Green	Amber	White	Green
18	Yellow	Amber	White	Yellow

*Other core colours are available on request.

Identification of a cable for a given wire size is achieved by combining the color of the jacket with the color of the stripes. The number of stripes determines the number of cores.

Option/ Inspection level

The ESA Generic Specification prescribes 3 levels of lot acceptance which, in order of decreasing testing requirements, are designated «B1», «B2», «B3» Should the lowest «standard» level be considered insufficient, then add «B2» or «B1» to Draka Fileca references

Example: F A3901-2-1-20-B2

Ordering code

F A3901-X-X-XX-XX-XX
1 2 3 4 5

Example: F A3901-2-2-28G-B2

1. Space Family
2. Number of Conductors
3. AWG
4. G: Jacketed
HG: Shielded & Jacketed
5. Control Level:
B1 - Optional
B2 - Optional
B3 - By Default

Specifications

- ESA/SCC N° 3901 and ESA/SCC N° 3901/002
- ESA Certificate of Qualification since 1979

Dimensional

Light weight wires & cables

Table I - Wires

Draka Part Number	AWG*	ESA/ESCC	Conductor Silver-plated Copper		Outer Diameter		Current Rating	Max. Weight
			Stranding	Nom. Cross Section	Min.	Max.		
			nb x mm	mm ²	mm	mm		
F A3901-2-1-28	28	3901/002-61	19x0.08 ⁽¹⁾	0.10	0.56	0.68	1.50	1.23
F A3901-2-1-26	26	3901/002-56	19x0.10 ⁽¹⁾	0.15	0.66	0.78	2.50	1.93
F A3901-2-1-24	24	3901/002-57	19x0.12 ⁽¹⁾	0.21	0.76	0.88	3.50	2.64
F A3901-2-1-22	22	3901/002-58	19x0.16	0.38	0.96	1.08	5.00	4.25
F A3901-2-1-20	20	3901/002-59	19x0.20	0.60	1.14	1.28	7.50	6.49
F A3901-2-1-18	18	3901/002-60	19x0.25	0.93	1.39	1.53	10.00	9.79

Table II - Unshielded & Jacketed Cables

Draka Part Number	AWG*	Number of Cores	ESA/ESCC	Conductor Silver-plated Copper		Nom. Core Diameter	Max. Outer Diameter	Max. Weight
				Stranding	Nom. Cross Section			
				nb x mm	mm ²			
F A3901-2-2-28G	28	2	3901/002-62	19x0.08 ⁽¹⁾	0.10	0.63	1.43	2.70
F A3901-2-2-26G	26	2	3901/002-31	19x0.10 ⁽¹⁾	0.15	0.73	1.64	4.42
F A3901-2-2-24G	24	2	3901/002-32	19x0.12 ⁽¹⁾	0.21	0.83	1.84	5.91
F A3901-2-2-22G	22	2	3901/002-33	19x0.16	0.38	1.03	2.24	9.41
F A3901-2-2-20G	20	2	3901/002-34	19x0.20	0.60	1.23	2.64	14.20
F A3901-2-2-18G	18	2	3901/002-35	19x0.25	0.93	1.48	3.15	21.30
F A3901-2-3-28G	28	3	3901/002-63	19x0.08 ⁽¹⁾	0.10	0.63	1.53	3.95
F A3901-2-3-26G	26	3	3901/002-36	19x0.10 ⁽¹⁾	0.15	0.73	1.76	6.45
F A3901-2-3-24G	24	3	3901/002-37	19x0.12 ⁽¹⁾	0.21	0.83	1.97	8.81
F A3901-2-3-22G	22	3	3901/002-38	19x0.16	0.38	1.03	2.40	14.30
F A3901-2-3-20G	20	3	3901/002-39	19x0.20	0.60	1.23	2.84	21.10
F A3901-2-3-18G	18	3	3901/002-40	19x0.25	0.93	1.48	3.40	31.60

*Closest American Wire Gauge

⁽¹⁾Silver-plated Copper Alloy

Table III - Shielded and Jacketed Cables

Draka Part Number	AWG*	Number of Cores	ESA/ESCC	Conductor Silver-plated Copper		Nom. Core Diameter	Shield Strand Diameter	Max. Outer Diameter	Max. Weight
				Stranding	Nom. Cross Section				
				nb x mm	mm ²				
F A3901-2-1-28HG	28	1	3901/002-64	19x0.08 ⁽¹⁾	0.10	0.63	0.08	1.07	3.05
F A3901-2-1-26HG	26	1	3901/002-41	19x0.10 ⁽¹⁾	0.15	0.73	0.08	1.13	3.85
F A3901-2-1-24HG	24	1	3901/002-42	19x0.12 ⁽¹⁾	0.21	0.83	0.08	1.23	4.75
F A3901-2-1-22HG	22	1	3901/002-43	19x0.16	0.38	1.03	0.08	1.43	6.86
F A3901-2-1-20HG	20	1	3901/002-44	19x0.20	0.60	1.23	0.08	1.63	9.43
F A3901-2-1-18HG	18	1	3901/002-45	19x0.25	0.93	1.48	0.10	1.92	13.80
F A3901-2-2-28HG	28	2	3901/002-65	19x0.08 ⁽¹⁾	0.10	0.63	0.08	1.80	5.70
F A3901-2-2-26HG	26	2	3901/002-46	19x0.10 ⁽¹⁾	0.15	0.73	0.08	2.01	8.00
F A3901-2-2-24HG	24	2	3901/002-47	19x0.12 ⁽¹⁾	0.21	0.83	0.10	2.24	10.50
F A3901-2-2-22HG	22	2	3901/002-48	19x0.16	0.38	1.03	0.10	2.65	14.80
F A3901-2-2-20HG	20	2	3901/002-49	19x0.20	0.60	1.23	0.10	3.03	20.20
F A3901-2-2-18HG	18	2	3901/002-50	19x0.25	0.93	1.48	0.12	3.58	29.60
F A3901-2-3-28HG	28	3	3901/002-66	19x0.08 ⁽¹⁾	0.10	0.63	0.10	1.92	8.10
F A3901-2-3-26HG	26	3	3901/002-51	19x0.10 ⁽¹⁾	0.15	0.73	0.10	2.15	11.20
F A3901-2-3-24HG	24	3	3901/002-52	19x0.12 ⁽¹⁾	0.21	0.83	0.10	2.36	14.00
F A3901-2-3-22HG	22	3	3901/002-53	19x0.16	0.38	1.03	0.10	2.82	20.20
F A3901-2-3-20HG	20	3	3901/002-54	19x0.20	0.60	1.23	0.12	3.26	29.40
F A3901-2-3-18HG	18	3	3901/002-55	19x0.25	0.93	1.48	0.15	3.86	44.10
F A3901-2-4-28HG	28	4	3901/002-67	19x0.08 ⁽¹⁾	0.10	0.63	0.10	2.15	10.15
F A3901-2-4-26HG	26	4	3901/002-68	19x0.10 ⁽¹⁾	0.15	0.73	0.10	2.40	13.30
F A3901-2-4-24HG	24	4	3901/002-69	19x0.12 ⁽¹⁾	0.21	0.83	0.10	2.65	16.50
F A3901-2-4-22HG	22	4	3901/002-70	19x0.16	0.38	1.03	0.12	3.17	26.40
F A3901-2-4-20HG	20	4	3901/002-71	19x0.20	0.60	1.23	0.15	3.70	38.80
F A3901-2-5-28HG	28	4	3901/002-72	19x0.08 ⁽¹⁾	0.10	0.63	0.10	2.27	12.10
F A3901-2-5-26HG	26	4	3901/002-73	19x0.10 ⁽¹⁾	0.15	0.73	0.10	2.56	15.80

*Closest American Wire Gauge
⁽¹⁾Silver-plated Copper Alloy



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