

WIRES & CABLES FOR SPACE APPLICATIONS





Prysmian is the world leader in the cable systems industry. With a global presence and a long-term industrial experience, the group is strongly positioned in high-technology markets and offers the widest possible range of products, services, technologies and know-how.

Guided by a spirit of conquest and innovation, Prysmian supports major aeronautic and space players worldwide with their most ambitious projects. For over 60 years, the company has been continuously developing and manufacturing wiring solutions through technological excellence.

Prysmian offers a wide portfolio of products and the core competencies of its highly skilled and experienced specialists focus on improving all aspects of cable performance, such as high-temperature resistance, reducing weight and enhancing the communication data rates.

To ensure the highest quality levels, the whole organization is certified under ISO 9001, EN 9100, ISO 14001, as well as ISO 45001.

Prysmian is a proud member of the following organizations:



For detailed technical information refer to the product data sheet. Also available online with the QR-Code.

SPACE APPLICATIONS OVERVIEW



	1 SCC 3901-001 SERIES (normal weight) Application examples: - Launch vehicles - Satellites Construction examples: - Single core, multi-core jacketed, single core Shielded & jacketed, multi-core shielded & jacketed
	2 SCC 3901-002 SERIES (light weight) Application examples: - Launch vehicles - Satellites Construction examples: - Single core, multi-core jacketed, single core Shielded & jacketed, multi-core shielded & jacketed
	3 F A 3901-002-P Application examples: - Satellites - Miscellaneous space applications Construction examples: - Single core shielded & jacketed, multi-core Shielded & jacketed
	4 A3903 SERIES (WP & WY) Application examples: - Wires for terminations requiring solder-free wrapped connections. Cable families: - WY = insulation: Kynar - WP = insulation: PFA
	5 E-ESP SERIES Application examples: - Space applications - Printed circuits board power supply - Test benches Construction examples: - Single core
	6 OPTICAL FIBER Cable families: Rad hard single mode and multi-mode cables



ESCC 3901-001 SERIES

CHARACTERISTICS

Environmental:

- Operating temperatures: -100°C to +200°C (ambient temperature + current heating)
- Non-flammable
- Very good solderability
- Current rating: the currents shown in the tables for single wires 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 2µm thick layer of silver-plating on the conductor and the shield provide the best protection against the Red Plague phenomenon

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

Electrical:

- Maximum operating voltage: 600 V AC
- Insulation resistance of core: > 750 MΩ km at 20°C (after 500V-1 min.)

APPLICATIONS

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

STANDARDS/SPECIFICATIONS

- ESA/SCC N° 3901 and ESA/SCC N° 3901/001.
- ESA certificate of qualification since 1979

PACKAGING

- On plastic spools (flange diameter: 180 or 280mm). Spools are heat sealed into polyethylene bags with humidity indicator inside



COMPOSITION

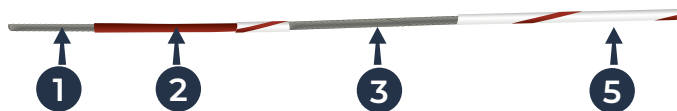
Single core:



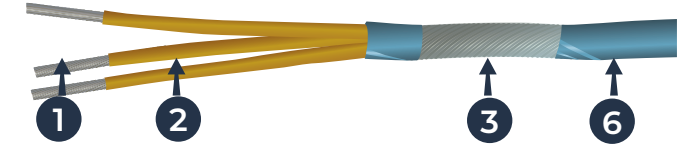
Multi-core jacketed:



Single core shielded & jacketed:



Multi-core shielded & jacketed:



- 1 Conductor(s): silver-plated copper or silver-plated copper alloy
- 2 Polyimide top coat
- 3 Spiral shield – silver-plated copper
- 4 Polyimide tape
- 5 Polyimide tape + top coat
- 6 Polyimide tape + PTFE tape

Color coding: Refer to page 12

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 Prysmian references. Example: F A3901-1-20-B2

ORDERING CODE

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

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

Example: F A3901-1-3-16G-B2

NORMAL WEIGHT WIRES & CABLES

Table I - Wires

Prysmian part number	AWG ⁽²⁾	ESA/ESCC	Conductor silver-plated copper		Outer diameter		Current rating (amp.)	Max. weight (g/m)
			Stranding (n x mm)	Nom. cross section (mm ²)	Min. (mm)	Max. (mm)		
F A3901-1-1-28	28	3901/001-47	19x0.08 ⁽¹⁾	0.10	0.60	0.73	1.50	1.37
F A3901-1-1-26	26	3901/001-24	19x0.10 ⁽¹⁾	0.15	0.71	0.84	2.50	2.05
F A3901-1-1-24	24	3901/001-25	19x0.12 ⁽¹⁾	0.21	0.81	0.95	3.50	2.75
F A3901-1-1-22	22	3901/001-26	19x0.16	0.38	1.01	1.15	5.00	4.40
F A3901-1-1-20	20	3901/001-27	19x0.20	0.60	1.20	1.35	7.50	6.65
F A3901-1-1-18	18	3901/001-28	19x0.25	0.93	1.45	1.60	10.00	9.98
F A3901-1-1-16	16	3901/001-29	19x0.30	1.30	1.70	1.85	13.00	14.00

Table II - UnShielded and jacketed cables

Prysmian part number	AWG ⁽²⁾	Number of cores	ESA/ESCC	Conductor silver-plated copper		Nom. core diameter (mm)	Max. outer diameter (mm)	Max. weight (g/m)
				Stranding (n x mm)	Nom. cross section (mm ²)			
F A3901-1-2-16G	16	2	3901/001-32	19x0.30	1.30	1.79	3.80	30.70
F A3901-1-3-16G	16	3	3901/001-35	19x0.30	1.30	1.79	4.08	46.10

Table III - Shielded and jacketed cables

Prysmian part number	AWG ⁽²⁾	Number of cores	ESA/ESCC	Conductor silver-plated copper		Nom. core diameter (mm)	Shield strand diameter (mm)	Max. outer diameter (mm)	Max. weight (g/m)
				Stranding (n x mm)	Nom. cross section (mm ²)				
F A3901-1-1-16HG	16	1	3901/001-38	19x0.30	1.30	1.79	0.10	2.23	18.80
F A3901-1-2-16HG	16	2	3901/001-41	19x0.30	0.38	1.79	0.15	4.26	41.80
F A3901-1-3-16HG	16	3	3901/001-44	19x0.30	1.30	1.79	0.15	4.54	58.20

⁽¹⁾ Silver-plated copper alloy ⁽²⁾ Closest American wire gauge

ESCC 3901-002 SERIES

CHARACTERISTICS

- Environmental:**
- Operating temperatures: -100°C to +200°C (ambient temperature + current heating)
 - Non-flammable
 - Very good solderability
 - Current rating: the currents shown in the tables for single wires 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 2µm thick layer of silver-plating on the conductor and the shield provide the best protection against the Red Plague phenomenon

- 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

- Electrical:**
- Maximum operating voltage: 600 V AC
 - Insulation resistance of core: > 750 MΩ km at 20°C (after 500V-1 min.)

APPLICATIONS

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

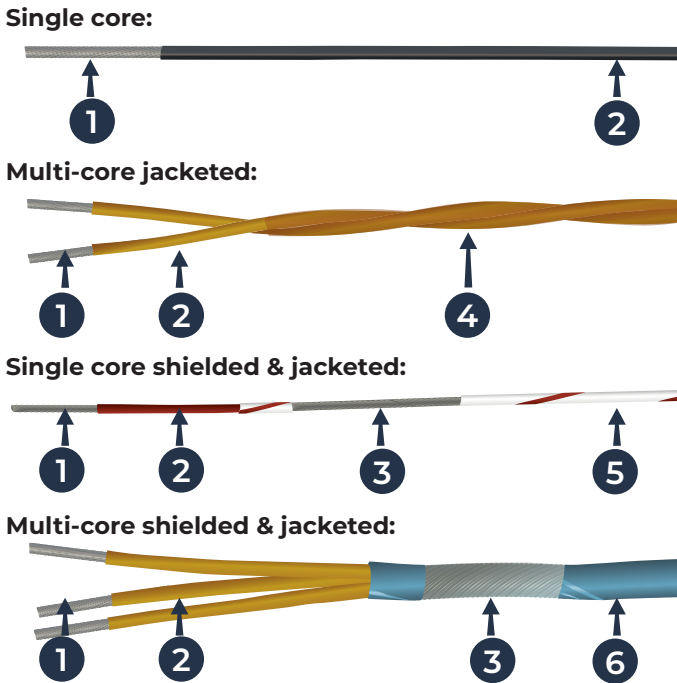
STANDARDS/SPECIFICATIONS

- ESA/SCC N° 3901 and ESA/SCC N° 3901/001.
- ESA certificate of qualification since 1979

PACKAGING

- On plastic spools (flange diameter: 180 or 280mm). Spools are heat sealed into polyethylene bags with humidity indicator inside

COMPOSITION



- 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

Color coding: Refer to page 12

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 Prysmian references. Example: F A3901-2-1-20-B2

ORDERING CODE

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

- 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

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

LIGHT WEIGHT WIRES & CABLES

Table I - Wires

Prysmian part number	AWG ⁽²⁾	ESA/ESCC	Conductor silver-plated copper		Outer diameter		Current rating (Amp.)	Max. weight (g/m)
			Stranding (n x mm)	Nom. cross section (mm²)	Min. (mm)	Max. (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 and jacketed cables

Prysmian part number	AWG ⁽²⁾	Number of cores	ESA/ESCC	Conductor silver-plated copper		Nom. core diameter (mm)	Max. outer diameter (mm)	Max. weight (g/m)
				Stranding (n x mm)	Nom. cross section (mm²)			
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	31.6

⁽¹⁾ Silver-plated copper alloy ⁽²⁾ Closest American wire gauge



ESCC 3901-002 SERIES

Table III - Shielded and jacketed cables

Prysmian part number	AWG ⁽²⁾	Number of cores	ESA/ESCC	Conductor silver-plated copper		Nom. core diameter (mm)	Shield strand diameter (mm)	Max. outer diameter (mm)	Max. weight (g/m)
				Stranding (n x mm)	Nom. cross section (mm²)				
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

Table III - Shielded and jacketed cables

Prysmian part number	AWG ⁽²⁾	Number of cores	ESA/ESCC	Conductor silver-plated copper		Nom. core diameter (mm)	Shield strand diameter (mm)	Max. outer diameter (mm)	Max. weight (g/m)
				Stranding (n x mm)	Nom. cross section (mm²)				
F A3901-2-3-28HG	28	3	3901/005-66	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	0.73	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 3901-2-4-26HG	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	5	3901/002-72	19x0.08 ⁽¹⁾	0.10	0.63	0.10	2.27	12.10
F A3901-2-5-26HG	26	5	3901/002-73	19x0.10 ⁽¹⁾	0.15	0.73	0.10	2.56	15.80

⁽¹⁾ Silver-plated copper alloy ⁽²⁾ Closest American wire gauge



Notre engagement vers une croissance plus durable

Chez Prysmian, l'innovation est la clé de voûte de notre démarche RSE*, propulsant cet engagement vers des solutions durables et ambitieuses.

Chaque jour, nous nous investissons pour garantir la santé, la sécurité et le bien-être au travail tout en promouvant l'égalité et l'inclusion. Notre démarche vise à atteindre la neutralité carbone, préserver l'environnement tout en offrant des produits et solutions durables et innovants.



www.prysmian.com

*Responsabilité Sociétale de l'Entreprise



The planet's pathways

ESCC 3901-002-P SERIES

CHARACTERISTICS

- Environmental:**
- Operating temperatures: -100°C to +200°C (ambient temperature + current heating)
 - Non-flammable
 - Very good solderability
 - High resistance to chemical agents, fluids and space radiations
 - The 2µm thick layer of silver-plating on the conductor and the shield provide the best protection against the Red Plague phenomenon
- 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
 - The polyimide jacket insures a good mechanical and electrical protection of the helical screen
 - Bending radius: 10 times outer diameter

- Electrical:**
- Maximum operating voltage: 600 V AC
 - Insulation resistance of core: > 750 MΩ km at 20°C (after 500V-1 min.)

APPLICATIONS

- Wires and cables for use in satellites and other space applications

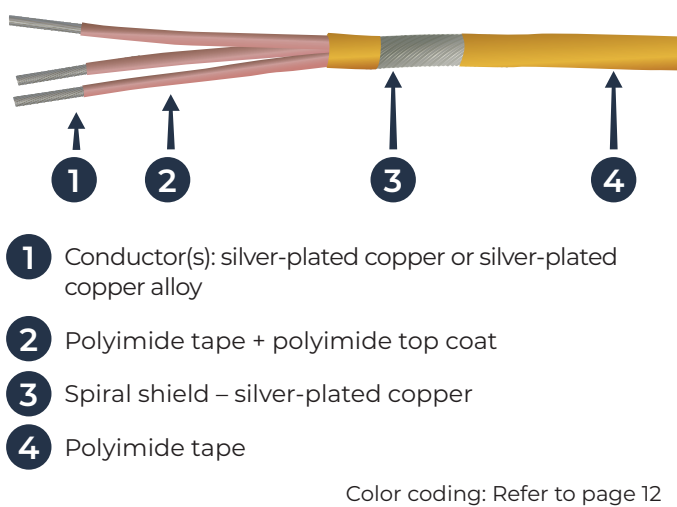
STANDARDS/SPECIFICATIONS

- ESA/SCC N° 3901 and ESA/ESCC N° 3901/002.
- ESA certificate of qualification since 1979

PACKAGING

- On plastic spools (flange diameter: 180 or 280mm). Spools are heat sealed into polyethylene bags with humidity indicator inside

COMPOSITION



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 Prysman references. Example: F A3901-2-P-2-28HG-B2

ORDERING CODE

F A3901-X-P-X-XX-XX-XX

1 2 3 4 5

1. Space family
2. Number of conductors
3. AWG
4. HG: Shielded & jacketed
5. Control level:
B1 - Optional
B2 - Optional

Example: F A3901-2-P-1-26HG

LIGHT WEIGHT, RADIATION RESISTANT, SHIELDED CABLES

Prysman part number	AWG ⁽²⁾	Number of cores	ESA/ESCC	Conductor silver-plated copper		Nom. core diameter (mm)	Shield strand diameter (mm)	Max. linear resistance at 20°C (Ω/Km)	Max. O. D. (mm)	Max. weight (g/m)
				Stranding (n x mm)	Nom. cross section (mm²)					
F A3901-2-P-1-28HG	28	1	3901/002-74-B3	19x0.08 ⁽¹⁾	0.10	0.63	0.08	242.0	1.02	2.95
F A3901-2-P-1-26HG	26	1	3901/002-75-B3	19x0.10 ⁽¹⁾	0.15	0.73	0.08	148.0	1.09	3.75
F A3901-2-P-1-24HG	24	1	3901/002-76-B3	19x0.12 ⁽¹⁾	0.21	0.83	0.08	105.0	1.19	4.65
F A3901-2-P-1-22HG	22	1	3901/002-77-B3	19x0.16	0.38	1.03	0.08	50.9	1.39	6.75
F A3901-2-P-1-20HG	20	1	3901/002-78-B3	19x0.20	0.60	1.23	0.08	32.2	1.59	9.30
F A3901-2-P-1-18HG	18	1	3901/002-79-B3	19x0.25	0.93	1.48	0.10	20.6	1.87	13.65
F A3901-2-P-2-28HG	28	2	3901/002-80-B3	19x0.08 ⁽¹⁾	0.10	0.63	0.08	254.0	1.67	5.50
F A3901-2-P-2-26HG	26	2	3901/002-81-B3	19x0.10 ⁽¹⁾	0.15	0.73	0.08	155.0	1.87	7.40
F A3901-2-P-2-24HG	24	2	3901/002-82-B3	19x0.12 ⁽¹⁾	0.21	0.83	0.10	110.0	2.10	9.80
F A3901-2-P-2-22HG	22	2	3901/002-83-B3	19x0.16	0.38	1.03	0.10	53.5	2.50	14.00
F A3901-2-P-2-20HG	20	2	3901/002-84-B3	19x0.20	0.60	1.23	0.10	33.8	2.90	19.40
F A3901-2-P-2-18HG	18	2	3901/002-85-B3	19x0.25	0.93	1.48	0.12	21.6	3.40	28.20
F A3901-2-P-3-28HG	28	3	3901/002-86-B3	19x0.08 ⁽¹⁾	0.10	0.63	0.10	254.0	1.81	7.90
F A3901-2-P-3-26HG	26	3	3901/002-87-B3	19x0.10 ⁽¹⁾	0.15	0.73	0.10	155.0	2.02	10.60
F A3901-2-P-3-24HG	24	3	3901/002-88-B3	19x0.12 ⁽¹⁾	0.21	0.83	0.10	110.0	2.24	13.30
F A3901-2-P-3-22HG	22	3	3901/002-89-B3	19x0.16	0.38	1.03	0.10	53.5	2.67	19.20
F A3901-2-P-3-20HG	20	3	3901/002-90-B3	19x0.20	0.60	1.23	0.12	33.8	3.14	28.40
F A3901-2-P-3-18HG	18	3	3901/002-91-B3	19x0.25	0.93	1.48	0.15	21.6	3.67	42.00

⁽¹⁾ Silver-plated copper alloy ⁽²⁾ Closest American wire gauge



COLOR CODING A3901

Color coding according to ESCC specification:

Wire size (AWG)	Core* color	Jacket assemblies	Color shielded	Stripe color on jacket
28 & 16		Amber	White	
26		Amber	White	
24		Amber	Light blue	
22		Amber	White	
20		Amber	White	
18		Amber	White	

* Other core colours are available on request.

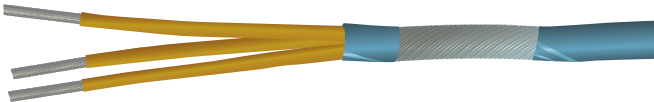
Identification of a cable for a given wire size is achieved by combining the color of the jacket with the color of the stripes. The number of stripes determines the number of cores.

For example:



Corresponds to:

2 Cores, gauge AWG 24, jacketed



3 Cores, gauge AWG 24, shielded and jacketed

COLOR CODING RA6

Color of wires:

Number of wires	Color of wires
1	
2	
3	
4	
5	

Color of jacket:

Wires size (AWG)	Color of jacket
12	
4	
16	
18	
20	
22	
24	

ESCC 3903 SERIES: INSULATED WIRES FOR WRAPPED CONNECTIONS

CHARACTERISTICS

Environmental:
These wires are designed for 2 temperatures classes:

Operating temperatures:
· -100°C to + 200°C Ref F A3903WP
· -60°C to + 100°C Ref F A3903WY

References and applicable documents
· Technical specifications approved by the CNES on January 20, 1987

Prysmian part number	AWG*	Conductor		Insulation
		Area (mm²)	Diameter (mm)	Diameter (mm)
F A3903WY-1-30 F A3903WP-1-30	30	0.05	0.254	0.53 ± 0.03
F A3903WY-1-28 F A3903WP-1-28	28	0.08	0.320	0.62 ± 0.03
F A3903WY-1-26 F A3903WP-1-26	26	0.13	0.400	0.74 ± 0.03

APPLICATIONS

· Wires for use on terminations requiring solder less wrapped connections.

STANDARDS/SPECIFICATIONS

· Tested according to technical specifications approved by the CNES on January 20, 1987.

OPTIONS

· Twisted pairs available on request.



COMPOSITION



- 1** Solid conductor:
AWG 30 and 28: silver plated copper alloy
AWG 26: Silver plated copper
- 2** Insulation:
Kynar F A3903WY
PFA F A3903WP

IDENTIFICATION

Colour code:

AWG 30
AWG 28
AWG 26

ORDERING CODE

F A3903-XX-1-XX
1 2 3

- 1.** Insulation: WP or WY
2. Number of conductors
3. Wire gauge: 30, 28, 26

E-ESP SERIES

CHARACTERISTICS

- Environmental:**
- Operating temperature: - 100°C to + 200°C (ambient temperature + current heating).
 - High resistance to chemical agents.
 - High resistance to radiation in a vacuum environment.
 - Non-flammable.
 - Very good solderability.
 - Excellent behavior in out-gassing.
 - The 2µm thick layer of silver plating on the conductor provides the best protection against the Red Plague phenomenon.
- Mechanical:**
- High flexibility
 - Reinforced mechanical resistance.
- Electrical:**
- Maximum operating voltage: 600 V AC

APPLICATIONS

- Space applications
- Printed circuits board power supply.
- Test benches.

STANDARDS/SPECIFICATIONS

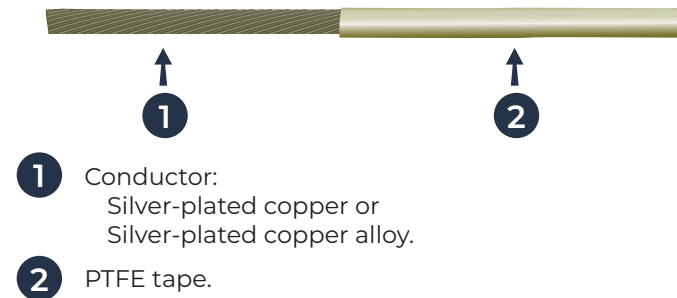
- Conductors in accordance with ESCC 3901
- Dimensional: ANSI/NEMA HP3 (formerly MIL-W-16878).
- Inspection level references: ESCC 3901
- According to customer specifications: STAND-ST-DAD024924-V-ASTR.

IDENTIFICATION

- Standard version: white.
- Others colors available on request.



COMPOSITION



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 Prysmian references.

Example: F E20-19-ESP-B2

ORDERING CODE

F E20-19-ESP-B1

1 2 3

1. AWG and strands number
2. Space requirements
3. Control level



FLEXIBLE PTFE WIRES

Prysmian part number	Conductors according to ESCC 3901 standard			Max. linear resistance at 20°C (Ω/km)	Outer diameter according to ANSI/NEMA HP3		Max. weight (g/m)
	AWG ⁽²⁾	Stranding (n x mm)	Nom. cross section (mm²)		Min. (mm)	Max. (mm)	
F E32-07-ESP	32	7x0.080 ⁽¹⁾	0.035	653.00	0.66	0.86	1.20
F E30-07-ESP	30	7X0.100 ⁽¹⁾	0.055	388.00	0.71	0.91	1.50
F E28-07-ESP	28	7x0.127 ⁽¹⁾	0.090	242.00	0.79	0.99	2.20
F E28-19-ESP	28	19x0.080 ⁽¹⁾	0.100	242.00	0.79	0.99	2.20
F E26-19-ESP	26	19x0.100 ⁽¹⁾	0.150	148.00	0.89	1.12	2.80
F E24-19-ESP	24	19x0.120 ⁽¹⁾	0.210	105.00	1.02	1.24	3.80
F E22-19-ESP	22	19x0.160	0.380	50.90	1.17	1.42	5.80
F E20-19-ESP	20	19x0.200	0.600	32.20	1.37	1.57	8.80
F E18-19-ESP	18	19x0.250	0.930	20.60	1.63	1.88	13.00
F E16-19-ESP	16	19x0.300	1.300	14.30	1.85	2.25	18.40
F E14-27-ESP	14	27x0.300	1.900	10.10	2.15	2.55	25.40
F E12-45-ESP	12	45x0.300	3.200	6.03	2.68	3.08	39.50

⁽¹⁾ Silver-plated copper alloy ⁽²⁾ Closest American wire gauge

OPTICAL FIBER

High-speed fiber networks are increasingly required in numerous aerospace applications, such as avionics and inflight-entertainment, to transmit high volumes of data while gaining weight-savings.

Responding to that demand, Prysmian is producing its own optical fibers to ensure the best performance levels in these harsh and demanding environments:

- Interference-free solutions,
- Space-savings due to smaller size and bending radius,
- Easy plugging and installation.

THE PORTFOLIO OF FIBERS WITHIN PRYSMIAN CURRENTLY COMPRISES:

MULTI-MODE FIBERS

- OM-1
- OM-2
- OM-3
- OM-4 (WideCap and MaxCap-BB)

SINGLE-MODE FIBERS

- G.652 Series
- G.654 Series
- G.655-G.656 Series
- G.657 Series

SPECIALTY FIBERS Draka Elite™

- Bend bright™
- High-temperature resistant (acrylate, silicone)
- Rad hard (MIL-PRF-49291)

CROSS-REFERENCE TABLE

Table of corresponding ESA/ESCC and Prysmian references:

Light weight construction				Medium weight construction	
ESA/ESCC	Prysmian	ESA/ESCC	Prysmian	ESA/ESCC	Prysmian
3901/002-31-B3	F A3901-2-2-26G	3901/002-62-B3	F A3901-2-2-28G	3901/001-24-B3	F A3901-1-1-26
3901/002-32-B3	F A3901-2-2-24G	3901/002-63-B3	F A3901-2-3-28G	3901/001-25-B3	F A3901-1-1-24
3901/002-33-B3	F A3901-2-2-22G	3901/002-64-B3	F A3901-2-1-28HG	3901/001-26-B3	F A3901-1-1-22
3901/002-34-B3	F A3901-2-2-20G	3901/002-65-B3	F A3901-2-2-28HG	3901/001-27-B3	F A3901-1-1-20
3901/002-35-B3	F A3901-2-2-18G	3901/002-66-B3	F A3901-2-3-28HG	3901/001-28-B3	F A3901-1-1-18
3901/002-36-B3	F A3901-2-3-26G	3901/002-67-B3	F A3901-2-4-28HG	3901/001-29-B3	F A3901-1-1-16
3901/002-37-B3	F A3901-2-3-24G	3901/002-68-B3	F A3901-2-4-26HG	3901/001-32-B3	F A3901-1-2-16G
3901/002-38-B3	F A3901-2-3-22G	3901/002-69-B3	F A3901-2-4-24HG	3901/001-35-B3	F A3901-1-3-16G
3901/002-39-B3	F A3901-2-3-20G	3901/002-70-B3	F A3901-2-4-22HG	3901/001-38-B3	F A3901-1-1-16HG
3901/002-40-B3	F A3901-2-3-18G	3901/002-71-B3	F A3901-2-4-20HG	3901/001-41-B3	F A3901-1-2-16HG
3901/002-41-B3	F A3901-2-1-26HG	3901/002-72-B3	F A3901-2-5-28HG	3901/001-44-B3	F A3901-1-3-16HG
3901/002-42-B3	F A3901-2-1-24HG	3901/002-73-B3	F A3901-2-5-26HG	3901/001-47-B3	F A3901-1-28
3901/002-43-B3	F A3901-2-1-22HG	3901/002-74-B3	F A3901-2-P-1-28HG		
3901/002-44-B3	F A3901-2-1-20HG	3901/002-75-B3	F A3901-2-P-1-26HG		
3901/002-45-B3	F A3901-2-1-18HG	3901/002-76-B3	F A3901-2-P-1-24HG		
3901/002-46-B3	F A3901-2-2-26HG	3901/002-77-B3	F A3901-2-P-1-22HG		
3901/002-47-B3	F A3901-2-2-24HG	3901/002-78-B3	F 3901-2-P-1-20HG		
3901/002-48-B3	F A3901-2-2-22HG	3901/002-79-B3	F 3901-2-P-1-18HG		
3901/002-49-B3	F A3901-2-2-20HG	3901/002-80-B3	F 3901-2-P-2-28HG		
3901/002-50-B3	F A3901-2-2-18HG	3901/002-81-B3	F A3901-2-P-2-26HG		
3901/002-51-B3	F A3901-2-3-26HG	3901/002-82-B3	F A3901-2-P-2-24HG		
3901/002-52-B3	F A3901-2-3-24HG	3901/002-83-B3	F A3901-2-P-2-22HG		
3901/002-53-B3	F A3901-2-3-22HG	3901/002-84-B3	F A3901-2-P-2-20HG		
3901/002-54-B3	F A3901-2-3-20HG	3901/002-85-B3	F A3901-2-P-2-18HG		
3901/002-55-B3	F A3901-2-3-18HG	3901/002-86-B3	F A3901-2-P-3-28HG		
3901/002-56-B3	F A3901-2-1-26	3901/002-87-B3	F A3901-2-P-3-26HG		
3901/002-57-B3	F A3901-2-1-24	3901/002-88-B3	F A3901-2-P-3-24HG		
3901/002-58-B3	F A3901-2-1-22	3901/002-89-B3	F A3901-2-P-3-22HG		
3901/002-59-B3	F A3901-2-1-20	3901/002-90-B3	F A3901-2-P-3-20HG		
3901/002-60-B3	F A3901-2-1-18	3901/002-91-B3	F A3901-2-P-3-18HG		
3901/002-61-B3	F A3901-2-1-28				

LOT ACCEPTANCE LEVELS

Depending on the customer required lot acceptance levels increased controls can be performed on request.
The ESA/SCC generic specification N°3901 defines the level of testing severity designated by the letter B and 3 levels of lot acceptance testing.

Lot acceptance levels are designated as follows:

ESA/ESCC		Prysmian designation
Designation	Description of tests	
Level 3 (LA3)	None	B3
Level 2 (LA2)	Electrical and environmental subgroup	B2
Level 1 (LA1)	Endurance subgroup + electrical and environmental subgroup	B1

Unless mentioned otherwise space cables according to ESA/SCC 3901 will be supplied under B3 testing and lot acceptance levels.

PACKAGING

- Cables for space applications are typically packaged following the guidelines outlined below:
- All finished wires are packaged on plastic spools as defined in enclosed table.
 - Each spool will only carry wire or cable from a unique production lot.
 - Each spool will have a maximum of 3 lengths of wire with each length not being inferior to 30 meters.
 - A spool shall not contain more than 400 meters of finished wire or cable.
 - Wire or cable ends will be sealed against possible ingress of moisture under the insulation.
 - Wire spools are sealed in heat sealed polyethylene bags containing humidity indicators and a desiccant.

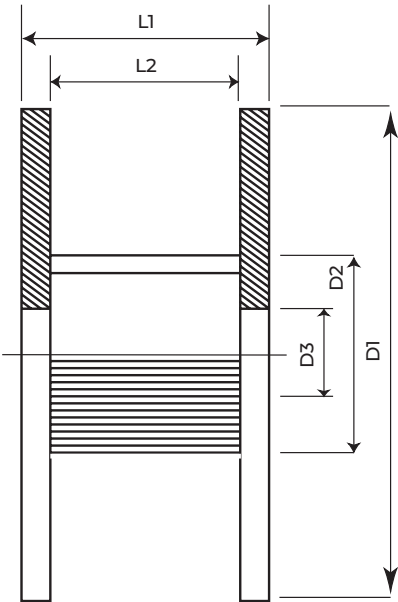
TYPES AND DIMENSIONS OF SPOOLS AND REELS

Spools (plastic)

Type of spool	Dimensions (in millimeters)					Prysmian ref.
	L1	L2	D1	D2	D3	
B2	105 (+2, -0)	90 (+2, -2)	276 (+2, -2)	160 (+2, -2)	26 (+1, -1)	LP 280
B3	185 (+5, -5)	165 (+2, -4)	290 (+10, -15)	155 (+5, -5)	26 (+1, -1)	LPD 280

Reels (plastic (LP400) - Wood (LB600 LB750))

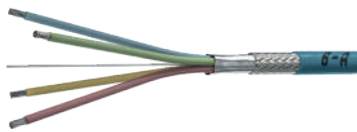
Type of spool	Dimensions (in millimeters)					Prysmian ref.
	L1	L2	D1	D2	D3	
T1	220 (+20, -20)	200 (+20, -40)	380 (+20, -30)	225 (+25, -25)	35 (+5, -3)	LP 400
T2	320 (+30, -30)	280 (+20, -20)	600 (+20, -20)	330 (+20, -30)	40 (+5, -0)	LB 600
T3	380 (+30, -30)	350 (+20, -20)	750 (+20, -20)	350 (+20, -30)	80 (+5, -0)	LB 750



SPACE APPLICATIONS OVERVIEW



ARIANE 6 - RA6S-A24-C4 TTE-BUS



Application examples:
Data cable for satellite launchers

Construction examples:
Shielded & jacketed quad cable

ARIANE 6 - RA6



Application examples:
Satellite launchers

Construction examples:
RA6U: Single core, multi-core
RA6S: Single core shielded & jacketed,
Multi-core shielded & jacketed

ARIANE 6: RA6S-A24-C4-TTE BUS

CHARACTERISTICS

- Environmental:**
- Operating temperature: -200°C to 200°C
 - Non-flammable
 - These temperatures are defined according to the criteria, tests and requirements mentioned in the specification A6-TS-1380100-X-0001
 - Any more severe uses or stresses, such as bending radius or mechanical shocks that can be inflicted on this cable at these temperatures, are not taken in account in particular for FEP insulation
 - High resistance to chemical agents, fluids and space radiations
- Mechanical:**
- Good strippability
- Electrical:**
- Insulation resistance $\geq 1500\text{M}\Omega \text{ km}$ at 20°C (about 5000M Ω .1000ft)
 - Maximal loop resistance: 192 Ω (58,5 Ω /1000ft)
 - Characteristic impedance Zc RMS: 100 $\pm$ 15 Ω [1-100 MHz] at 20°C
 - Velocity of propagation: 0,79% nominal (1 pf max / ft)
 - Maximum capacity unbalance pair to ground: 330 pF/100m (1 pF/ft)

APPLICATIONS

- Data cable for satellite launchers

STANDARDS/SPECIFICATIONS

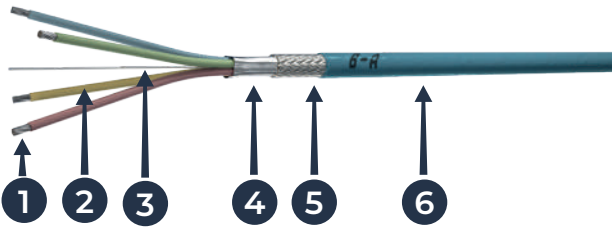
- A6-TS-1380100-X-0001- AG
- EN3375-011

PACKAGING

- On plastic spools: flange diameter: 280 mm (LPD)
- Spools are heat sealed into polyethylene bags with humidity indicator inside

Packaging detail page 17

COMPOSITION



- 1 Conductor(s): Silver plated copper
- 2 Fluoropolymer insulation
- 3 Fluoropolymer filler
- 4 Aluminum/polyimide tape
- 5 Silver plated copper braid
- 6 PFA jacket

Color coding: Refer to page 12

ORDERING CODE

RA6S-A24-C4-TTE BUS

1 2 3

1. S: Shielded
2. AWG 24
3. 4 cores



Conductor diameter	Loop resistance Max. at 20°C	Insulation diameter	Braid strand diameter	Cable outer diameter		Weight
Nominal mm	Ω /km	Nominal mm	Nominal mm	Min. mm	Max. mm	Max. kg/km
0.62	192	1.35	0,08	4.1	4.5	36.5

ARIANE 6: RA6S - AXX - CX / RA6U - AXX – CX

CHARACTERISTICS

- Environmental:**
- Operating temperature: -200°C to 200°C
 - Non-flammable
 - 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
- 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

- Electrical:**
- Maximum operating voltage: 600 V AC
 - Insulation resistance of core: > 750MΩ km at 20°C (after 500V-1min)
 - Transfer impedance: 0.030 Ohm/m from 1 kHz to 5 MHz (RA6S) excepted RA6S-A24-C1

APPLICATIONS

- Cables for satellite launchers and general space applications

STANDARDS/SPECIFICATIONS

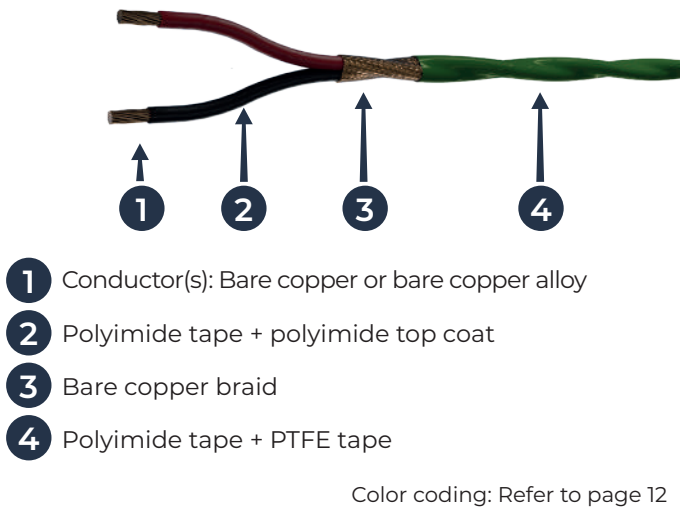
- A6-TS-1380100-X-0001- AG
- ESA/SCC N° 3901 and ESA/SCC N° 3901/002

PACKAGING

- On plastic spools (flange diameter: 180 or 280 mm or 400 mm). Spools are heat sealed into polyethylene bags with humidity indicator inside
- Packaging detail page 17



COMPOSITION



ORDERING CODE

RA6X-AXX-CX

1. U: Unshielded
S: Shielded
2. AWG
3. Numbers of wires

NORMAL WEIGHT WIRES & CABLES

Table I - Single core & multi-core

Reference	Shield	Wire size AWG	No. of wires	Nb x diameter of strands	Conductor diameter	Conductor section	Conductor linear resistance	Current rating	Wire diam.	Cable diam.	Cable weight
				mm	Max. mm	Nominal mm ²	Max. Ω/km	Amp.	Max. mm	Max. mm	Max. kg/km
RA6U-A12-C1	No	12	1	45 x 0.30	2.6	3.2	6.6	-	2.8	2.8	33
RA6U-A16-C1		16	1	19 x 0.30	1.7	1.3	15.8	13.00	1.9	1.9	14
RA6U-A18-C1		18	1	19 x 0.25	1.4	0.9	23	10.00	1.6	1.6	11
RA6U-A18-C2			2	19 x 0.25	1.4	0.9	23	-	1.6	3.2	22
RA6U-A20-C1		20	1	19 x 0.20	1.1	0.6	35	7.50	1.3	1.3	7.5
RA6U-A20-C2			2	19 x 0.20	1.1	0.6	35	-	1.3	2.6	15
RA6U-A22-C1		22	1	19 x 0.16	0.9	0.4	51	5.00	1.1	1.1	5
RA6U-A24-C1		24	1	19 x 0.12	0.7	0.2	110.0	3.50	0.9	0.9	3

Table II - Single core shielded & jacketed - multi-core shielded & jacketed

Reference	Shield	Wire size AWG	No. of wires	Nb x diameter of strands	Conductor diameter	Conductor section	Conductor linear resistance	Diameter of shield strand	Wire diam.	Cable diam.	Cable weight
				mm	Max. mm	Nominal mm ²	Max. Ω/km	Max. mm	Max. mm	Max. mm	Max. kg/km
RA6S-A12-C2	Yes	12	2	45 x 0.30	2.6	3.2	6.6	0.10 ± 0.01	2.8	6.60	83.90
RA6S-A12-C5			5	45 x 0.30	2.6	3.2	6.6	0.10 ± 0.01	2.8	8.70	209.91
RA6S-A14-C2		14	2	27 x 0.30	2.0	1.9	10.1	0.10 ± 0.01	2.2	5.20	53.33
RA6S-A16-C2		16	2	19 x 0.30	1.7	1.3	15.8	0.10 ± 0.01	1.9	4.50	42.06
RA6S-A18-C2		18	2	19 x 0.25	1.4	0.9	23.0	0.10 ± 0.01	1.6	3.90	32.21
RA6S-A20-C2		20	2	19 x 0.20	1.1	0.6	35.0	0.10 ± 0.01	1.3	3.40	23.01
RA6S-A22-C1		22	1	19 x 0.16	0.9	0.4	51.0	0.10 ± 0.01	1.1	2.83	11.00
RA6S-A22-C2			2	19 x 0.16	0.9	0.4	51.0	0.10 ± 0.01	1.1	3.00	22.00
RA6S-A22-C3			3	19 x 0.16	0.9	0.4	51.0	0.10 ± 0.01	1.1	3.20	29.00
RA6S-A22-C4			4	19 x 0.16	0.9	0.4	51.0	0.10 ± 0.01	1.1	3.40	34.00
RA6S-A24-C2		24	2	19 x 0.12	0.7	0.2	110.0	0.10 ± 0.01	0.9	2.60	17.00
RA6S-A24-C3			3	19 x 0.12	0.7	0.2	110.0	0.10 ± 0.01	0.9	2.70	20.00
RA6S-A24-C4			4	19 x 0.12	0.7	0.2	110.0	0.10 ± 0.01	0.9	2.90	25.00

Prysmian is the world leader in power and telecommunication cables and systems.

33 000
EMPLOYEES

With more than 150 years' experience, the group operates in high-tech markets, and offers the widest possible range of products, services, technologies and knowhow.

27
R&D CENTRES
WORLDWIDE

AT PRYSMIAN, INNOVATION IS THE BACKBONE OF OUR CSR APPROACH, DRIVING THIS COMMITMENT TOWARDS SUSTAINABLE AND AMBITIOUS SOLUTIONS.

The 4 core commitments of Prysmian's CSR policy

- 1. Carbon neutrality**
- 2. Environmental protection**
- 3. Solidarity, engagement and impact**
- 4. Innovation and sustainable growth**



**Prysmian Câbles et Systèmes France
Head Office**

23 avenue Aristide Briand - BP 801 - PARON - 89108 SENS Cedex / France
Tel: +33 (0)3 86 95 76 00 - infocables.fr@prysmian.com

Draka Fileca SAS

D 1001 - 60730 Sainte-Geneviève / France
fileca-office@prysmian.com



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