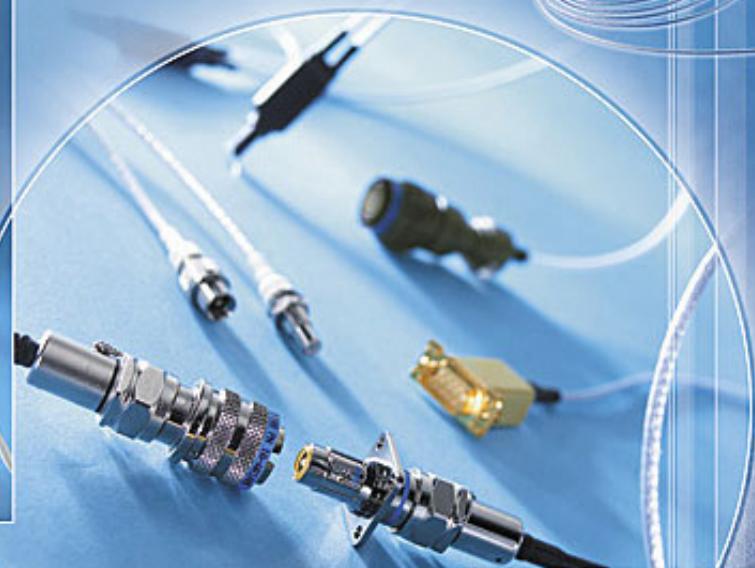




axon'
CABLE & INTERCONNECT



Cables & Harnesses

FOR SPACE APPLICATIONS





SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABUS
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



SUMMARY

Introduction	I
ESA wires and cables	II
AXALU® aluminium cables	II
Databus systems	II
SpaceWire	III
Power distribution system	IV
Accessories	IV
Special products	V

► ESA WIRES AND CABLES

ESA/SCC 3901 001	1
ESA/SCC 3901 002	7
ESA/SCC 3901 012	15
ESA/SCC 3901 019	23

► AXALU®, ALUMINIUM WIRES

Single wires	37
Twisted pairs	38
Shielded jacketed single wires	39
Shielded jacketed twisted pairs	40
Shielded jacketed twisted triples	41

► MIL-STD-1553B DATABUS HARNESSES

INTRODUCTION	43
AXOBUS® HARNESS	44
AXOBUS® CABLE	46
MICROCOUPLER	48
TERMINATOR	56
SPICE	58

► SPACEWIRE

61

► POWER DISTRIBUTION SYSTEMS

63

► ACCESSORIES

Backshells	65
D-Sub and Micro-D sub haloring	66
AXOCLAMP®	68

► ANNEXES

69

► THE AXON' GROUP CONTACTS

77

[SUMMARY](#)[ESA
WIRES AND
CABLES](#)[AXALU®
ALUMINIUM
WIRES](#)[MIL-STD-1553
DATABUS
HARNESS](#)[SPACEWIRE](#)[POWER
DISTRIBUTION
SYSTEM](#)[ACCESSORIES](#)[ANNEXES](#)

AXON'CABLE,
*manufacturer of wires,
cables and harnesses for
advanced technologies,
offer complete interconnect
solutions for a wide range
of applications :
general industry,
consumer,
automotive,
aeronautics,
space,
military,
telecommunications,
medical,
research centres
and oil industry.*

This document gives you an overview of our expertise in space approved products. AXON' has been involved in many space projects such as :

- the International Space Station for manned flights,
- many satellites (leo & geo),
- rocket launchers such as Ariane 5, etc.

The group has been approved by several companies involved in space programmes and by space agencies from different countries.

AXON' is able to offer various types of products for space applications :

- ESA/SCC wires and cables,
- Aluminium wires,
- Databus systems,
- Power distribution system,
- Different accessories such as halorings, backshells, etc.
- Custom designed products.





SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABUS
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



WIRES AND CABLES

AXON' supply wires and cables in compliance with ESA standards such as :



ESA wires and cables

ESA wires and cables

ESA/SCC 3901 001

Our polyimide insulated wires are supplied, for example, to EADS ASTRUM, LATELEC, SODITEC, NEXANS HARNESS, CAMERIN, AERO STANREW ...

ESA/SCC 3901 002

AXON' supply these lightweight polyimide insulated wires to ASTRUM, MECANEX, CASA, CAMERIN, SODITECH, LATELEC, CESR, NSE INTEGRATION, etc. They are used, for example, for cabling in EUROSTAR3000.

ESA/SCC 3901 012

Our ETFE cross-linked insulated cables are supplied, for example, to ASTRUM, LATELEC, CAMERIN, ALCATEL ETCA, EREMS, TESAT etc.

ESA/SCC 3901 019

Our Celloflon®/polyimide insulated wires are used by several companies including ASTRUM.

AXALU® aluminium cables

AXON' has developed, together with Alcatel Space, AXALU® aluminium round cables for power distribution in satellites based on SPACEBUS 2000 and 4000 platforms.

AXALU® cables are also used to connect cells of nickel/hydrogen batteries.

DATABUS SYSTEMS

MIL-STD-1553 systems

AXON' has manufactured MIL-STD-1553 systems and harnesses since 1989. The design and manufacture of our space approved products come from our expertise gained in aeronautics and military applications. Technologies and materials have been modified to reach space level quality and then qualified in compliance with ESA standards.

AXON' databus systems were qualified in 1994 on the Ariane 5 programme which was our first step in the space industry. After this success, we were qualified by NASA and Boeing in 1998 for the International Space Station and by ESA for the Columbus Orbital Module.



Databus harness



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



Proteus



Stentor

Our databus cables and couplers are listed in the NASA "MAPTIS" database which is available on the internet. AXON' is also the only bus system supplier qualified for the Automatic Transfer Vehicle (ATV). Moreover, we have worked together with the French Centre for Space Studies - CNES (Centre National d'Etudes Spatiales), Astrium and Alcatel Space for the technology demonstrator Stentor.

A Part Identification Document "PID" was initialised for this project with the objective to get a CNES approval called ASF (Agrément de savoir faire, Know how approval).

We obtained the ASF from the CNES in March 2000 after 18 months of intensive work. The ASF covers the production of databus systems : cabling, crimping and soldering. The agreement has to be renewed every two year.

AXON' has been approved for various space vehicles including Eurostar3000, Rocsat, Cryosat (Astrium), Spacebus 4000, Proteus, Jason, AM11, AM22, AM2 and 3 (Alcatel Space), Alos, Long March and many other programmes ... We have been qualified by NEC in Japan for satellites and manned flights programmes.

AXON' databus system is fully qualified for space use. Complete qualification data packages can be offered on request. For instance, all materials used have been vacuum tested ; their TML*, RML*, CVCM*, toxicity and flammability is available.

The document 96012-TN-01 summarizes all the outgassing and offgassing tests performed either on all raw materials that constitute the databus product or on the finished products including cable and couplers.

More complete documents including DML*, DPL*, and DCL* may be issued if required. Included in all the tests performed on bus harnesses, there is an irradiation test up to 350 Mrads for static applications, thermal vacuum test from -110°C to 135°C, 2000 hours at 150°C with an operating voltage of 27 Vpp, heat shocks of 1000 cycles with an operating voltage of 27Vpp ...

AXON' has a full qualification data pack that can be consulted in our factory. A Compliance matrix can be issued to check whether our product meets a technical specification.



SpaceWire

SpaceWire

AXON' SpaceWire has been approved to ESA/ECSS-E-50-12A. Our next objective is to obtain an approval from the CNES (ASF : agrément de savoir-faire).

The assemblies which have been developed with ASTRIUM are used for very high data rate transmission. They can work at 400 Mbit/s.

AXON' can determine and measure Bit Error Rate, jitter and eye diagram. They are complimentary to MIL-STD-1553B networks.





SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



POWER DISTRIBUTION SYSTEM

The system which is used, for example, for Eurostar3000

(Astrium) is made with aluminium bars which permits mass reduction and voltage drop improvement compared to standard round cables.

AXON' has developed and qualified the "**PIDS**" **Power Interface Distribution System** to transport and distribute power all over the satellite. The technology enables the transportation of very high current levels up to 260A under 100V. If more than one potential is needed, several layers pasted together can be used. Moreover, the flat shape allows for better heat dissipation. This system is planned to be used for Alphabus.

ACCESSORIES

AXON' propose several types of accessories to help or improve cabling.

Connector backshells

AXON' produce custom designed backshells for rectangular or circular connectors, for example, D-Sub connectors or other rectangular connectors such as Micro-D connectors. Backshells protect the assembly from EMI problems or mechanical damage.

D-Sub or Micro-D halorings

Halorings are accessories used to facilitate ease of termination of the shields of wires, pairs or multi-stranded wires that constitute a cable to the connector body potential. They are available for D-Sub or Micro-D connectors. There are 2 versions : halorings that can be mounted inside a backshell and halorings that can be mounted without backshell just behind the connector (backshell body).

Shield band termination : AXOCLAMP®

AXON' has developed different stainless steel bands to connect braid to backshell. The type used depends on the tunnel diameter of the backshell and on the diameter of the cable. AXOCLAMP® Axcl01 is recommended for backshell diameters from 10 to 40 mm. AXOCLAMP® Axcl03 is for backshell diameters from 5 to 15 mm. The bands are clamped with manual or automatic tools.



Accessories

Shielding braid : AXOTRESSE®

AXON' offers copper and/or silver plated aluminium braids (2µ silver plating) with guaranteed transfer impedance. Two versions are available : single braid and double braid.



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABUS
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



SPECIAL PRODUCTS

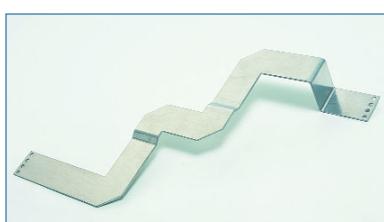
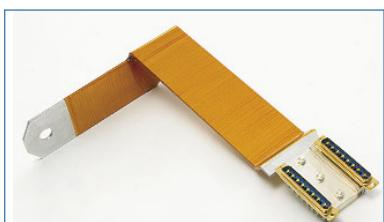
AXON' can offer custom designed products including :

- Complete assemblies for heat control (temperature sensors, heaters) made with heat resisting wires connected to D-Sub connectors.
- Hybrid cable with low electrostatic output made with ESA3901/002 primary components for cabling stellar sensors.
- Anti-static cabling wire able to resist radiation for connecting solar panels.
- Thermocouple and compensation cables.
- Electro-optical hybrid cables.
- Optical harnesses for Biolab.
- Etc.

EXPERTISE

AXON' offers a full range of cables and assemblies approved for space applications including polyimide, cross-linked ETFE or CELLOFLON®/ polyimide insulated cables.

Our assemblies can be manufactured in our two class 100000 clean rooms. The first one is 33m² for small volume or small products. The second one is bigger with about 120m². Our clean rooms guarantee a clean production with a temperature of 22°C +/-3°C and a humidity rate of 55% +/- 10%. The working stations are lit with 1000 lux minimum.



Power distribution system

Do not hesitate to contact our engineers who will advise on individual applications and requirements.

CELLOFLON® : expanded PTFE with low dielectric constant
CELLOFLON®, AXALU®, AXOCLAMP®, AXOTRESSE® : AXON' CABLE SAS registered trademarks





SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



ESA WIRES AND CABLES

► ESA/SCC 3901 001

Single wires	1
Twisted pairs	2
Twisted triples	3
Shielded jacketed single core cables ..	4
Shielded jacketed twisted pairs	5
Shielded jacketed twisted triples	6

► ESA/SCC 3901 002

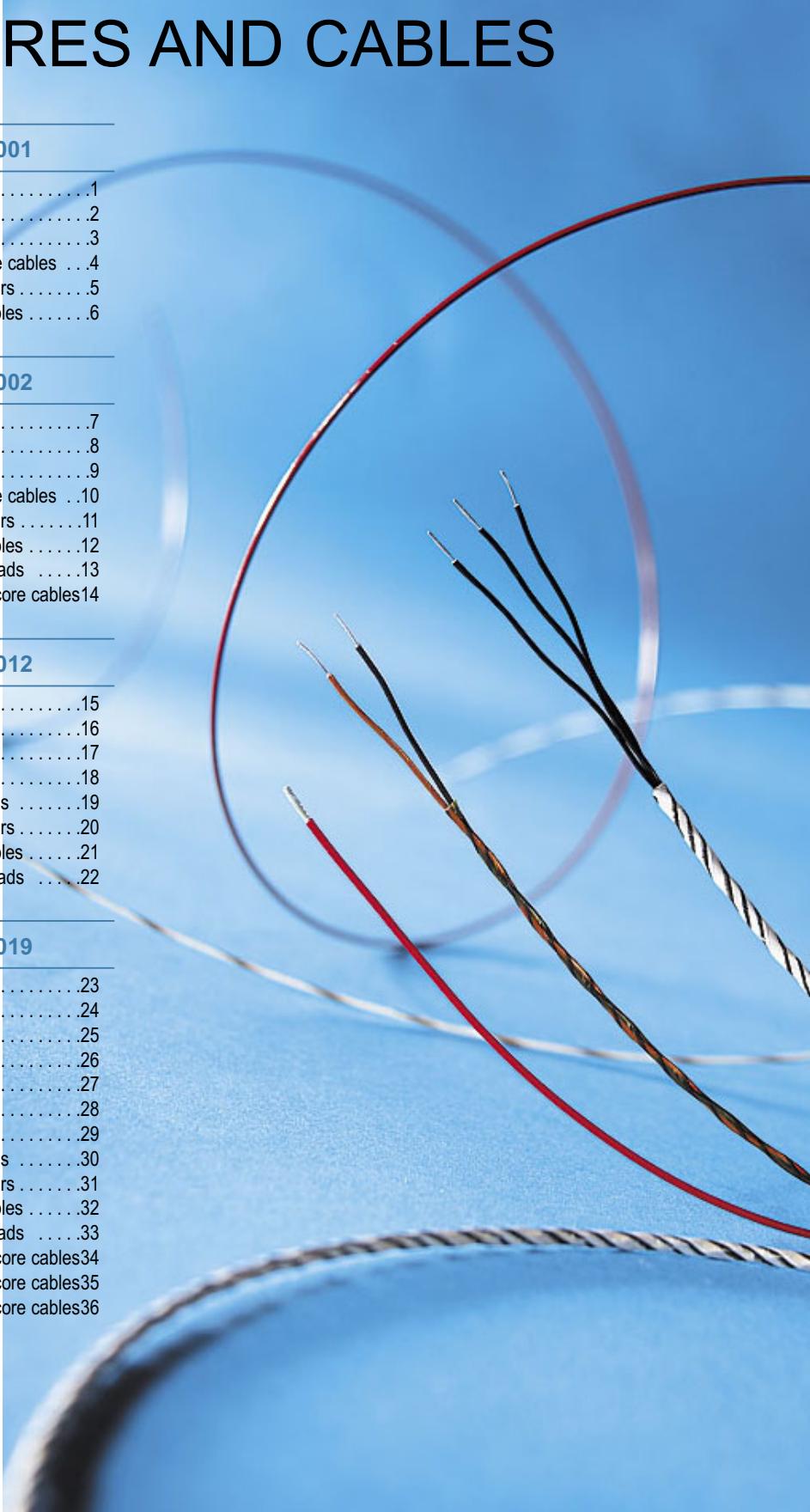
Single wires	7
Twisted pairs	8
Twisted triples	9
Shielded jacketed single core cables ..	10
Shielded jacketed twisted pairs	11
Shielded jacketed twisted triples	12
Shielded jacketed twisted quads	13
Shielded jacketed twisted 5-core cables	14

► ESA/SCC 3901 012

Single wires	15
Twisted pairs	16
Twisted triples	17
Twisted quads	18
Shielded jacketed single wires	19
Shielded jacketed twisted pairs	20
Shielded jacketed twisted triples	21
Shielded jacketed twisted quads	22

► ESA/SCC 3901 019

Single wires	23
Twisted pairs	24
Twisted triples	25
Twisted quads	26
Twisted 5-core cables	27
Twisted 6 core cables	28
Twisted 7 core cables	29
Shielded jacketed single wires	30
Shielded jacketed twisted pairs	31
Shielded jacketed twisted triples	32
Shielded jacketed twisted quads	33
Shielded jacketed twisted 5-core cables	34
Shielded jacketed twisted 6-core cables	35
Shielded jacketed twisted 7-core cables	36





SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

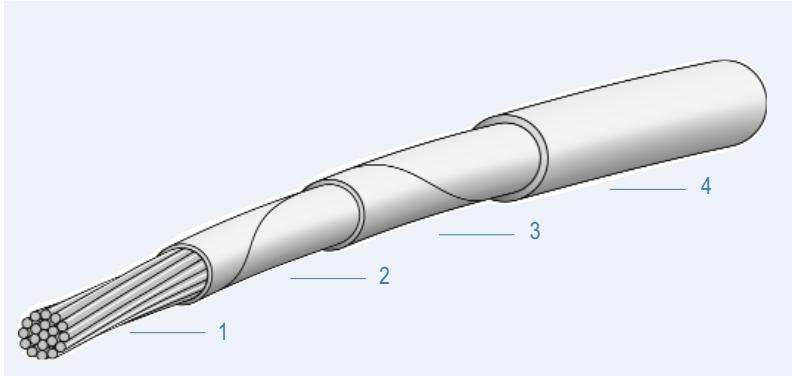
POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



Single wires

**ESA/SCC
3901 001****Polyimide insulation,****Operating temperature, -100°C up to +200°C****Voltage rating, 600 V AC max.**

Construction

- 1 - Stranded silver plated copper or copper alloy conductor
- 2 - Polyimide tape
- 3 - Polyimide tape
- 4 - Polyimide coating

Main characteristics

Excellent physical, chemical and electrical properties :

- excellent penetration resistance under pressure,
- excellent radiation resistance,
- resist large overloads with no fire risk,
- non-flammable,
- resistant to most chemicals,
- specially designed for thermal stripping to avoid damage.

AXON' REFERENCE	AWG	CONDUCTOR				MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	NOM. CROSS SECTION mm²	DC RESISTANCE AT 20°C MAX. Ω/Km		
ESA/SCC 3901 001 47	28	19x0.08 SPCA	0.43	0.10	242	0.73	1.37
ESA/SCC 3901 001 24	26	19x0.10 SPCA	0.53	0.15	148	0.84	2.05
ESA/SCC 3901 001 25	24	19x0.12 SPCA	0.64	0.21	105	0.95	2.75
ESA/SCC 3901 001 26	22	19x0.16 SPC	0.85	0.38	50.9	1.15	4.40
ESA/SCC 3901 001 27	20	19x0.20 SPC	1.04	0.60	32.2	1.35	6.65
ESA/SCC 3901 001 28	18	19x0.25 SPC	1.29	0.93	20.6	1.60	9.98
ESA/SCC 3901 001 29	16	19x0.30 SPC	1.53	1.30	14.3	1.85	14.0
ESA/SCC 3901 001 30	14	27x0.30 SPC	1.87	1.90	10.1	2.19	19.6
ESA/SCC 3901 001 31	12	45x0.30 SPC	2.40	3.20	6.03	2.80	32.1

SPC : silver plated copper - SPCA : silver plated copper alloy



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



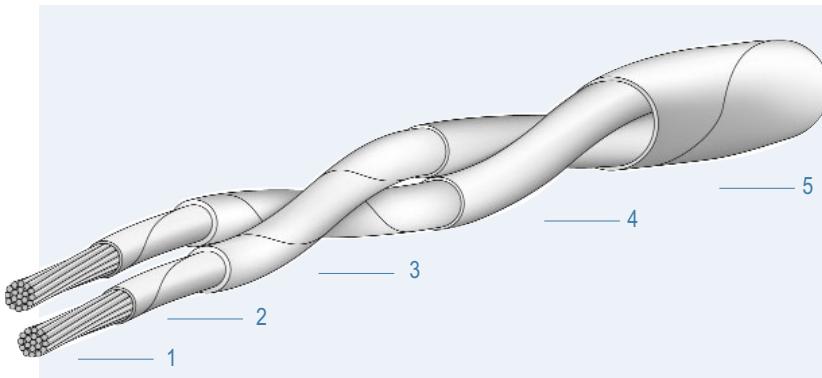
Twisted pairs

**ESA/SCC
3901 001**

Polyimide insulation,

Operating temperature, -100°C up to +200°C

Voltage rating, 600 V AC max.



Construction

- 1 - Stranded silver plated copper or copper alloy conductor
- 2 - Polyimide tape
- 3 - Polyimide tape
- 4 - Polyimide coating
- 5 - Polyimide tape

Main characteristics

Excellent physical, chemical and electrical properties :

- excellent penetration resistance under pressure,
- excellent radiation resistance,
- resist large overloads with no fire risk,
- non-flammable,
- resistant to most chemicals,
- specially designed for thermal stripping to avoid damage.

AXON' REFERENCE	AWG	CONDUCTOR				SINGLE WIRE MAX Ø mm	BUNDLE MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	NOM. CROSS SECTION mm ²	DC RESISTANCE AT 20°C MAX. Ω/Km			
ESA/SCC 3901 001 32	16	19x0.30 SPC	1.53	1.3	15.0	1.85	3.8	30.7
ESA/SCC 3901 001 33	14	27x0.30 SPC	1.87	1.9	10.6	2.19	4.48	43.1
ESA/SCC 3901 001 34	12	45x0.30 SPC	2.40	3.20	6.33	2.80	5.70	70.6

SPC : silver plated copper



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

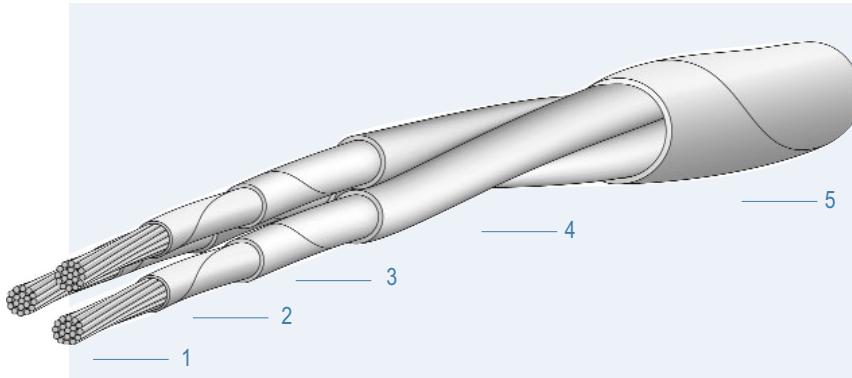
POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES

**ESA/SCC
3901 001**

Twisted triples

Polyimide insulation,**Operating temperature, -100°C up to +200°C****Voltage rating, 600 V AC max.**

Construction

- 1 - Stranded silver plated copper or copper alloy conductor
- 2 - Polyimide tape
- 3 - Polyimide tape
- 4 - Polyimide coating
- 5 - Polyimide tape

Main characteristics

Excellent physical, chemical and electrical properties :

- excellent penetration resistance under pressure,
- excellent radiation resistance,
- resist large overloads with no fire risk,
- non-flammable,
- resistant to most chemicals,
- specially designed for thermal stripping to avoid damage.

AXON' REFERENCE	AWG	CONDUCTOR				SINGLE WIRE MAX Ø mm	BUNDLE MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	NOM.CROSS SECTION mm ²	DC RESISTANCE AT 20°C MAX. Ω/Km			
ESA/SCC 3901 001 35	16	19x0.30 SPC	1.53	1.30	15.0	1.85	4.08	46.1
ESA/SCC 3901 001 36	14	27x0.30 SPC	1.87	1.90	10.6	2.19	4.82	64.6
ESA/SCC 3901 001 37	12	45x0.30 SPC	2.40	3.20	6.33	2.8	6.15	106

SPC : silver plated copper



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



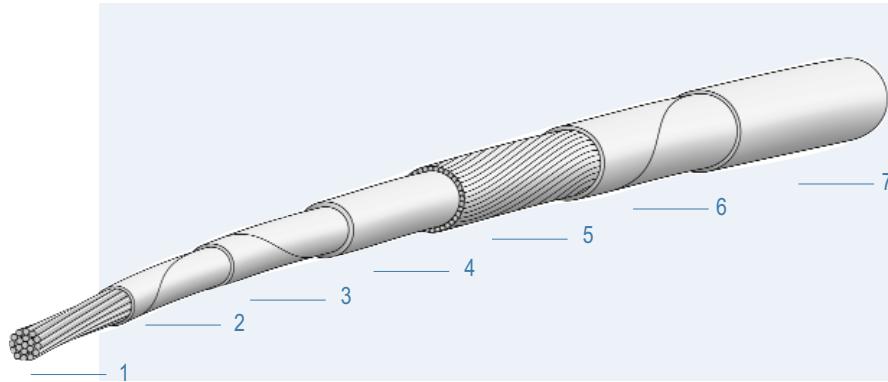
Shielded jacketed single core cables

**ESA/SCC
3901 001**

Polyimide insulation,

Operating temperature, -100°C up to +200°C

Voltage rating, 600 V AC max.



Construction

- 1 - Stranded silver plated copper or copper alloy conductor
- 2 - Polyimide tape
- 3 - Polyimide tape
- 4 - Polyimide coating
- 5 - Silver plated copper helicoidal shield
- 6 - Polyimide tape
- 7 - FEP coating

Main characteristics

Excellent physical, chemical and electrical properties :

- excellent penetration resistance under pressure,
- excellent radiation resistance,
- resist large overloads with no fire risk,
- non-flammable,
- resistant to most chemicals,
- specially designed for thermal stripping to avoid damage.

AXON' REFERENCE	AWG	CONDUCTOR				SHIELD STRAND Ø mm	SINGLE WIRE MAX Ø mm	BUNDLE MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	NOM. CROSS SECTION mm ²	DC RESISTANCE AT 20°C MAX. Ω/Km				
ESA/SCC 3901 001 38	16	19x0.30 SPC	1.53	1.30	14.3	0.10	1.85	2.23	18.8
ESA/SCC 3901 001 39	14	27x0.30 SPC	1.87	1.90	10.1	0.12	2.19	2.63	27
ESA/SCC 3901 001 40	12	45x0.30 SPC	2.40	3.20	6.03	0.15	2.80	3.30	43.3

SPC : silver plated copper



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

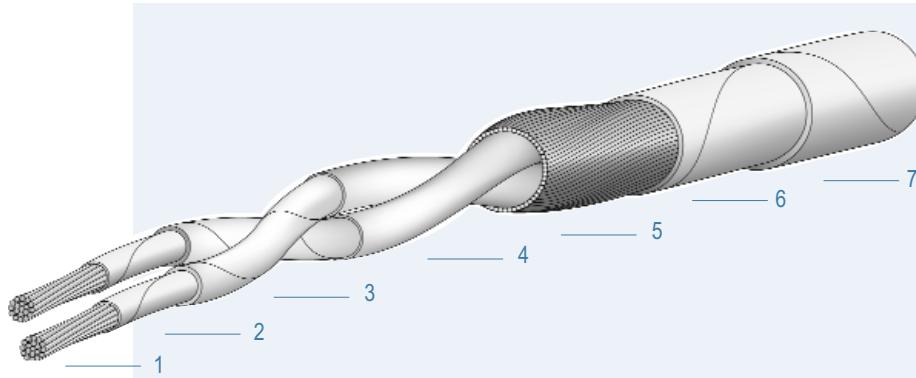
POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



Shielded jacketed twisted pairs

**ESA/SCC
3901 001****Polyimide insulation,****Operating temperature, -100°C up to +200°C****Voltage rating, 600 V AC max.**

Construction

- 1 - Stranded silver plated copper or copper alloy conductor
- 2 - Polyimide tape
- 3 - Polyimide tape
- 4 - Polyimide coating
- 5 - Silver plated copper helicoidal shield
- 6 - Polyimide tape
- 7 - PTFE tape

Main characteristics

Excellent physical, chemical and electrical properties :

- excellent penetration resistance under pressure,
- excellent radiation resistance,
- resist large overloads with no fire risk,
- non-flammable,
- resistant to most chemicals,
- specially designed for thermal stripping to avoid damage.

AXON' REFERENCE	AWG	CONDUCTOR				SHIELD STRAND Ø mm	SINGLE WIRE MAX Ø mm	BUNDLE MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	NOM.CROSS SECTION mm ²	DC RESISTANCE AT 20°C MAX. Ω/Km				
ESA/SCC 3901 001 41	16	19x0.30 SPC	1.53	1.3	15	0.15	1.85	4.26	41.8
ESA/SCC 3901 001 42	14	27x0.30 SPC	1.87	1.9	10.6	0.15	2.19	5.07	55.6
ESA/SCC 3901 001 43	12	45x0.30 SPC	2.40	3.2	6.33	0.20	2.80	6.30	90.5

SPC : silver plated copper



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



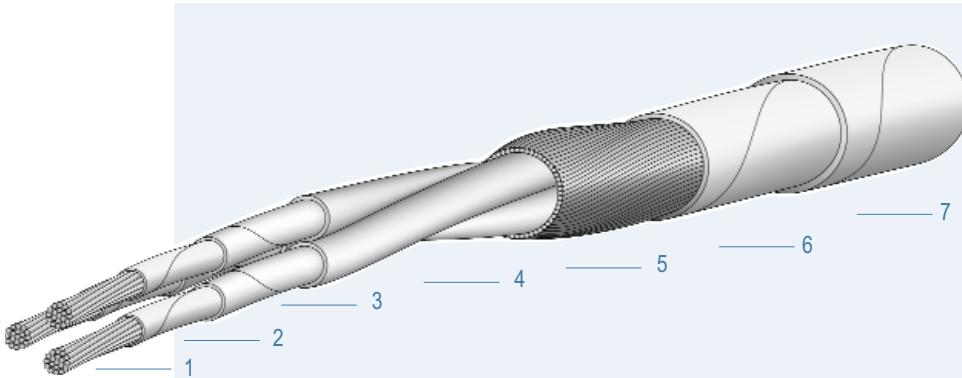
Shielded jacketed twisted triples

**ESA/SCC
3901 001**

Polyimide insulation,

Operating temperature, -100°C up to +200°C

Voltage rating, 600 V AC max.



Construction

- 1 - Stranded silver plated copper or copper alloy conductor
- 2 - Polyimide tape
- 3 - Polyimide tape
- 4 - Polyimide coating
- 5 - Silver plated copper helicoidal shield
- 6 - Polyimide tape
- 7 - PTFE tape

Main characteristics

Excellent physical, chemical and electrical properties :

- excellent penetration resistance under pressure,
- excellent radiation resistance,
- resist large overloads with no fire risk,
- non-flammable,
- resistant to most chemicals,
- specially designed for thermal stripping to avoid damage.

AXON' REFERENCE	AWG	CONDUCTOR				SHIELD STRAND Ø mm	SINGLE WIRE MAX Ø mm	BUNDLE MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	CROSS SECTION mm²	DC RESISTANCE AT 20°C MAX. Ω/Km				
ESA/SCC 3901 001 44	16	19x0.30 SPC	1.53	1.30	15	0.15	1.85	4.54	58.2
ESA/SCC 3901 001 45	14	27x0.30 SPC	1.87	1.90	10.6	0.20	2.19	5.40	83.3
ESA/SCC 3901 001 46	12	45x0.30 SPC	2.40	3.20	6.33	0.20	2.80	6.72	127.3

SPC : silver plated copper



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



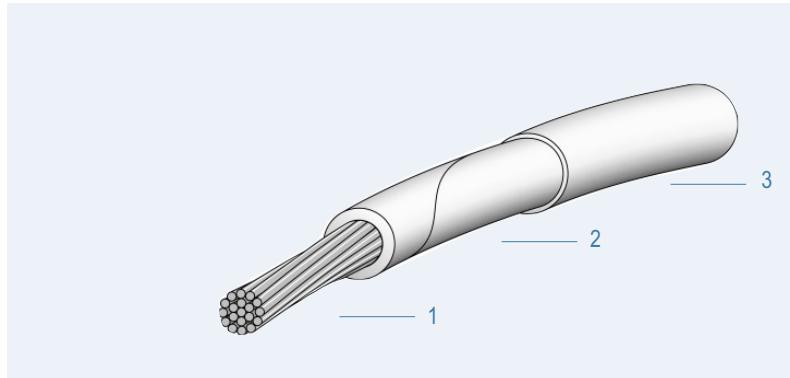
Single wires

**ESA/SCC
3901 002**

Polyimide insulation, light version

Operating temperature, -100°C up to +200°C

Voltage rating, 600 V AC max.



Construction

- 1 - Stranded silver plated copper or copper alloy conductor
- 2 - Polyimide tape
- 3 - Polyimide coating

Main characteristics

Excellent physical, chemical and electrical properties :

- excellent penetration resistance under pressure,
- excellent radiation resistance,
- resist large overloads with no fire risk,
- non-flammable,
- resistant to most chemicals,
- specially designed for thermal stripping to avoid damage.

AXON' REFERENCE	AWG	CONDUCTOR				MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	NOM. CROSS SECTION mm ²	DC RESISTANCE AT 20°C MAX. Ω/Km		
ESA/SCC 3901 002 61	28	19x0.08 SPCA	0.43	0.10	242	0.68	1.23
ESA/SCC 3901 002 56	26	19x0.10 SPCA	0.53	0.15	148	0.78	1.93
ESA/SCC 3901 002 57	24	19x0.12 SPCA	0.64	0.21	105	0.88	2.64
ESA/SCC 3901 002 58	22	19x0.16 SPC	0.85	0.38	50.9	1.08	4.25
ESA/SCC 3901 002 59	20	19x0.20 SPC	1.04	0.60	32.2	1.28	6.49
ESA/SCC 3901 002 60	18	19x0.25 SPC	1.29	0.93	20.6	1.53	9.79

SPC : silver plated copper - SPCA : silver plated copper alloy



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



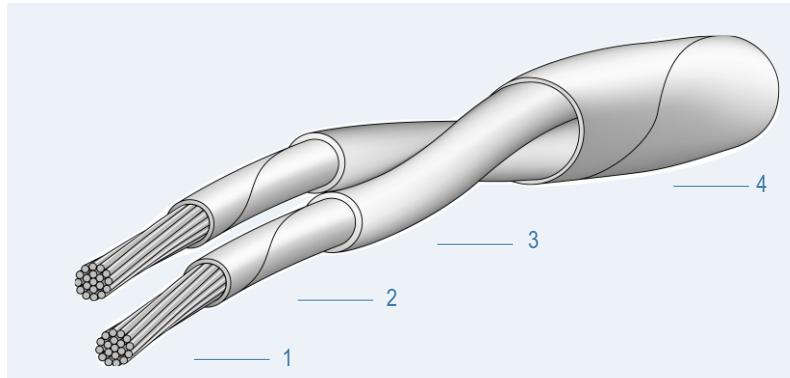
Twisted pairs

**ESA/SCC
3901 002**

Polyimide insulation, light version

Operating temperature, -100°C up to +200°C

Voltage rating, 600 V AC max.



Construction

- 1 - Stranded silver plated copper or copper alloy conductor
- 2 - Polyimide tape
- 3 - Polyimide coating
- 4 - Polyimide tape

Main characteristics

Excellent physical, chemical and electrical properties :

- excellent penetration resistance under pressure,
- excellent radiation resistance,
- resist large overloads with no fire risk,
- non-flammable,
- resistant to most chemicals,
- specially designed for thermal stripping to avoid damage.

AXON' REFERENCE	AWG	CONDUCTOR				SINGLE WIRE MAX Ø mm	BUNDLE MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	NOM. CROSS SECTION mm ²	DC RESISTANCE AT 20°C MAX. Ω/Km			
ESA/SCC 3901 002 62	28	19x0.08 SPCA	0.43	0.10	254	0.68	1.43	2.70
ESA/SCC 3901 002 31	26	19x0.10 SPCA	0.53	0.15	155	0.78	1.64	4.42
ESA/SCC 3901 002 32	24	19x0.12 SPCA	0.64	0.21	110	0.88	1.84	5.91
ESA/SCC 3901 002 33	22	19x0.16 SPC	0.85	0.38	53.5	1.08	2.24	9.41
ESA/SCC 3901 002 34	20	19x0.20 SPC	1.04	0.60	33.8	1.28	2.64	14.20
ESA/SCC 3901 002 35	18	19x0.25 SPC	1.29	0.93	21.6	1.53	3.15	21.30

SPC : silver plated copper - SPCA : silver plated copper alloy



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



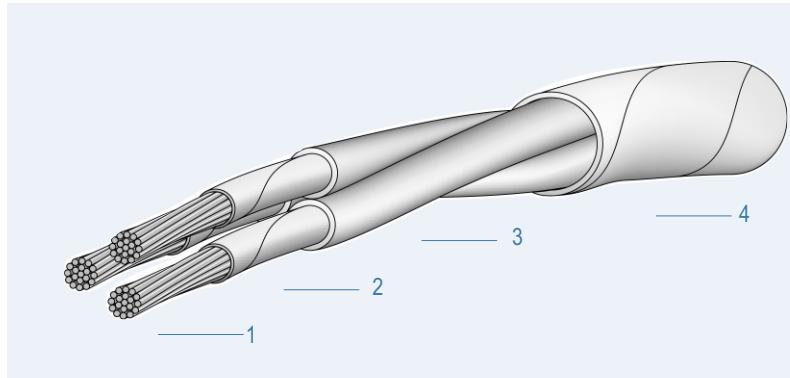
Twisted triples

**ESA/SCC
3901 002**

Polyimide insulation, light version

Operating temperature, -100°C up to +200°C

Voltage rating, 600 V AC max.



Construction

- 1 - Stranded silver plated copper or copper alloy conductor
- 2 - Polyimide tape
- 3 - Polyimide coating
- 4 - Polyimide tape

Main characteristics

Excellent physical, chemical and electrical properties :

- excellent penetration resistance under pressure,
- excellent radiation resistance,
- resist large overloads with no fire risk,
- non-flammable,
- resistant to most chemicals,
- specially designed for thermal stripping to avoid damage.

AXON' REFERENCE	AWG	CONDUCTOR				SINGLE WIRE MAX Ø mm	BUNDLE MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	NOM.CROSS SECTION mm ²	DC RESISTANCE AT 20°C MAX. Ω/Km			
ESA/SCC 3901 002 63	28	19x0.08 SPCA	0.43	0.10	254	0.68	1.53	3.95
ESA/SCC 3901 002 36	26	19x0.10 SPCA	0.53	0.15	155	0.78	1.76	6.45
ESA/SCC 3901 002 37	24	19x0.12 SPCA	0.64	0.21	110	0.88	1.97	8.81
ESA/SCC 3901 002 38	22	19x0.16 SPC	0.85	0.38	53.5	1.08	2.40	14.30
ESA/SCC 3901 002 39	20	19x0.20 SPC	1.04	0.60	33.8	1.28	2.84	21.10
ESA/SCC 3901 002 40	18	19x0.25 SPC	1.29	0.93	21.6	1.53	3.40	31.60

SPC : silver plated copper - SPCA : silver plated copper alloy



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



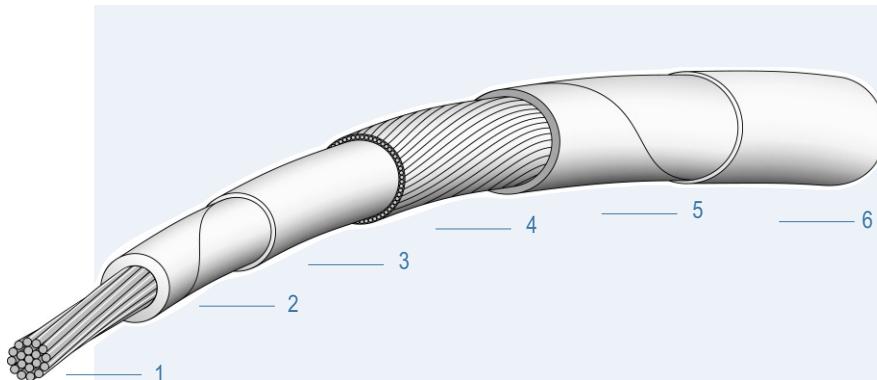
Shielded jacketed single core cables

**ESA/SCC
3901 002**

Polyimide insulation, light version

Operating temperature, -100°C up to +200°C

Voltage rating, 600 V AC max.



Construction

- 1 - Stranded silver plated copper or copper alloy conductor
- 2 - Polyimide tape
- 3 - Polyimide coating
- 4 - Silver plated copper helicoidal shield
- 5 - Polyimide tape
- 6 - FEP coating

Main characteristics

Excellent physical, chemical and electrical properties :

- excellent penetration resistance under pressure,
- excellent radiation resistance,
- resist large overloads with no fire risk,
- non-flammable,
- resistant to most chemicals,
- specially designed for thermal stripping to avoid damage.

AXON' REFERENCE	AWG	CONDUCTOR				SHIELD STRAND Ø mm	SINGLE WIRE MAX Ø mm	BUNDLE MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	NOM. CROSS SECTION mm²	DC RESISTANCE AT 20°C MAX. Ω/Km				
ESA/SCC 3901 002 64	28	19x0.08 SPCA	0.43	0.10	242	0.08	0.68	1.07	3.05
ESA/SCC 3901 002 41	26	19x0.10 SPCA	0.53	0.15	148	0.08	0.78	1.13	3.85
ESA/SCC 3901 002 42	24	19x0.12 SPCA	0.64	0.21	105	0.08	0.88	1.23	4.75
ESA/SCC 3901 002 43	22	19x0.16 SPC	0.85	0.38	50.9	0.08	1.08	1.43	6.86
ESA/SCC 3901 002 44	20	19x0.20 SPC	1.04	0.60	32.2	0.08	1.28	1.63	9.43
ESA/SCC 3901 002 45	18	19x0.25 SPC	1.29	0.93	20.6	0.10	1.53	1.92	13.8

SPC : silver plated copper - SPCA : silver plated copper alloy



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



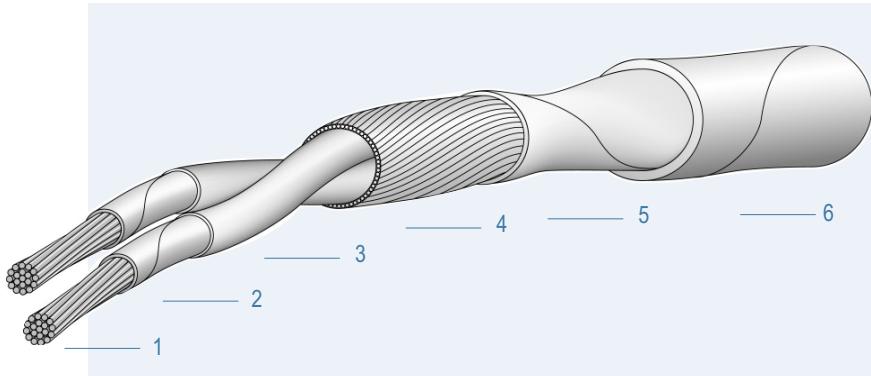
Shielded jacketed twisted pairs

**ESA/SCC
3901 002**

Polyimide insulation, light version

Operating temperature, -100°C up to +200°C

Voltage rating, 600 V AC max.



Construction

- 1 - Stranded silver plated copper or copper alloy conductor
- 2 - Polyimide tape
- 3 - Polyimide coating
- 4 - Silver plated copper helicoidal shield
- 5 - Polyimide tape
- 6 - PTFE tape

Main characteristics

Excellent physical, chemical and electrical properties :

- excellent penetration resistance under pressure,
- excellent radiation resistance,
- resist large overloads with no fire risk,
- non-flammable,
- resistant to most chemicals,
- specially designed for thermal stripping to avoid damage.

AXON' REFERENCE	AWG	CONDUCTOR				SHIELD STRAND Ø mm	SINGLE WIRE MAX Ø mm	BUNDLE MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	NOM.CROSS SECTION mm²	DC RESISTANCE AT 20°C MAX. Ω/Km				
ESA/SCC 3901 002 65	28	19x0.08 SPCA	0.43	0.10	254	0.08	0.68	1.80	5.70
ESA/SCC 3901 002 46	26	19x0.10 SPCA	0.53	0.15	155	0.08	0.78	2.01	8.00
ESA/SCC 3901 002 47	24	19x0.12 SPCA	0.64	0.21	110	0.10	0.88	2.24	10.50
ESA/SCC 3901 002 48	22	19x0.16 SPC	0.85	0.38	53.5	0.10	1.08	2.65	14.80
ESA/SCC 3901 002 49	20	19x0.20 SPC	1.04	0.60	33.8	0.10	1.28	3.03	20.20
ESA/SCC 3901 002 50	18	19x0.25 SPC	1.29	0.93	21.6	0.12	1.53	3.58	29.60

SPC : silver plated copper - SPCA : silver plated copper alloy



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



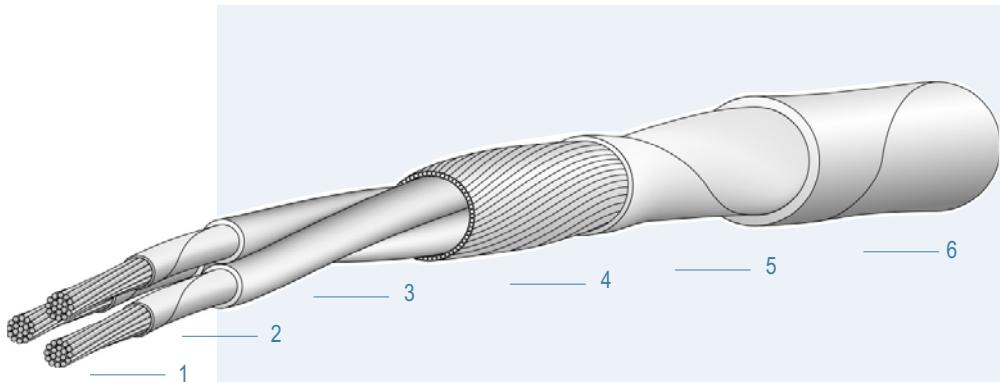
Shielded jacketed twisted triples

**ESA/SCC
3901 002**

Polyimide insulation, light version

Operating temperature, -100°C up to +200°C

Voltage rating, 600 V AC max.



Construction

- 1 - Stranded silver plated copper or copper alloy conductor
- 2 - Polyimide tape
- 3 - Polyimide coating
- 4 - Silver plated copper helicoidal shield
- 5 - Polyimide tape
- 6 - PTFE tape

Main characteristics

Excellent physical, chemical and electrical properties :

- excellent penetration resistance under pressure,
- excellent radiation resistance,
- resist large overloads with no fire risk,
- non-flammable,
- resistant to most chemicals,
- specially designed for thermal stripping to avoid damage.

AXON' REFERENCE	AWG	CONDUCTOR				SHIELD STRAND Ø mm	SINGLE WIRE MAX Ø mm	BUNDLE MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	CROSS SECTION mm²	DC RESISTANCE AT 20°C MAX. Ω/Km				
ESA/SCC 3901 002 66	28	19x0.08 SPCA	0.43	0.10	254	0.10	0.68	1.92	8.10
ESA/SCC 3901 002 51	26	19x0.10 SPCA	0.53	0.15	155	0.10	0.78	2.15	11.20
ESA/SCC 3901 002 52	24	19x0.12 SPCA	0.64	0.21	110	0.10	0.88	2.36	14.00
ESA/SCC 3901 002 53	22	19x0.16 SPC	0.85	0.38	53.5	0.10	1.08	2.82	20.20
ESA/SCC 3901 002 54	20	19x0.20 SPC	1.04	0.60	33.8	0.12	1.28	3.26	29.40
ESA/SCC 3901 002 55	18	19x0.25 SPC	1.29	0.93	21.6	0.15	1.53	3.86	44.10

SPC : silver plated copper - SPCA : silver plated copper alloy



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

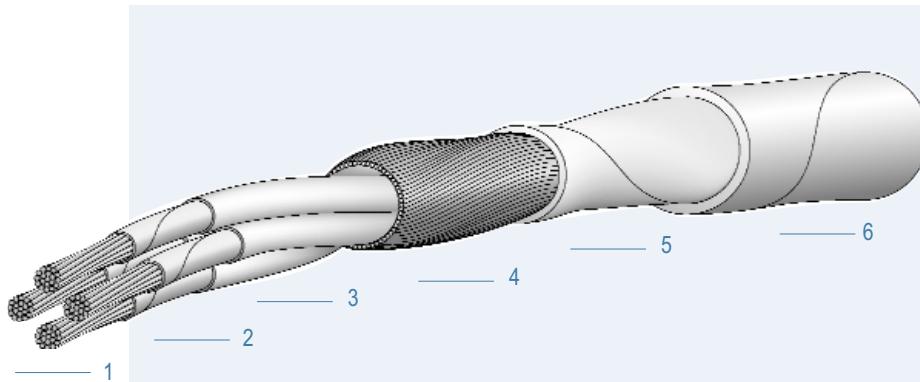
POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



Shielded jacketed twisted quads

**ESA/SCC
3901 002****Polyimide insulation, light version****Operating temperature, -100°C up to +200°C****Voltage rating, 600 V AC max.**

Construction

- 1 - Stranded silver plated copper or copper alloy conductor
- 2 - Polyimide tape
- 3 - Polyimide coating
- 4 - Silver plated copper helicoidal shield
- 5 - Polyimide tape
- 6 - PTFE tape

Main characteristics

Excellent physical, chemical and electrical properties :

- excellent penetration resistance under pressure,
- excellent radiation resistance,
- resist large overloads with no fire risk,
- non-flammable,
- resistant to most chemicals,
- specially designed for thermal stripping to avoid damage.

AXON' REFERENCE	AWG	CONDUCTOR				SHIELD STRAND Ø mm	SINGLE WIRE MAX Ø mm	BUNDLE MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	NOM. CROSS SECTION mm²	DC RESISTANCE AT 20°C MAX. Ω/Km				
ESA/SCC 3901 002 67	28	19x0.08 SPCA	0.43	0.10	254	0.10	0.68	2.15	10.15
ESA/SCC 3901 002 68	26	19x0.10 SPCA	0.53	0.15	155	0.10	0.78	2.40	13.30
ESA/SCC 3901 002 69	24	19x0.12 SPCA	0.64	0.21	110	0.10	0.88	2.65	16.50
ESA/SCC 3901 002 70	22	19x0.16 SPC	0.85	0.38	53.5	0.12	1.08	3.17	26.40
ESA/SCC 3901 002 71	20	19x0.20 SPC	1.04	0.60	33.8	0.15	1.28	3.70	38.80

SPC : silver plated copper - SPCA : silver plated copper alloy



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



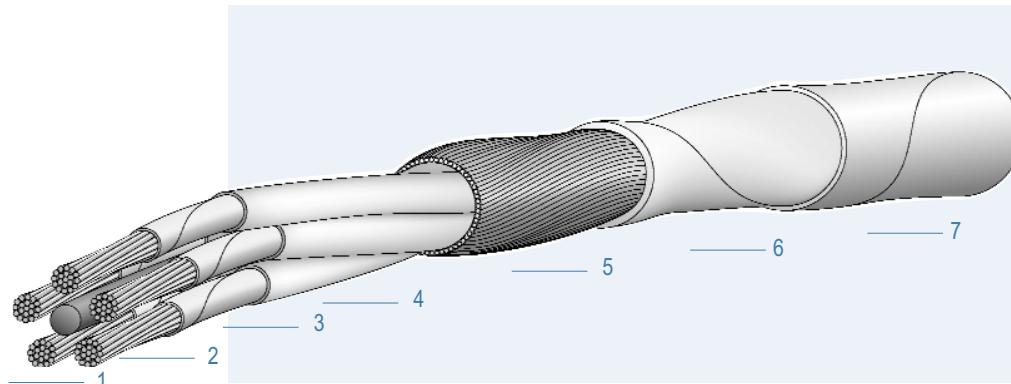
Shielded jacketed twisted 5-core cables

**ESA/SCC
3901 002**

Polyimide insulation, light version

Operating temperature, -100°C up to +200°C

Voltage rating, 600 V AC max.



Construction

- 1 - PTFE filler
- 2 - Stranded silver plated copper or copper alloy conductor
- 3 - Polyimide tape
- 4 - Polyimide coating
- 5 - Silver plated copper helicoidal shield
- 6 - Polyimide tape
- 7 - PTFE tape

Main characteristics

Excellent physical, chemical and electrical properties :

- excellent penetration resistance under pressure,
- excellent radiation resistance,
- resist large overloads with no fire risk,
- non-flammable,
- resistant to most chemicals,
- specially designed for thermal stripping to avoid damage.

AXON' REFERENCE	AWG	CONDUCTOR				SHIELD STRAND Ø mm	SINGLE WIRE MAX Ø mm	BUNDLE MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	NOM.CROSS SECTION mm²	DC RESISTANCE AT 20°C MAX. Ω/Km				
ESA/SCC 3901 002 72	28	19x0.08 SPCA	0.43	0.10	254	0.10	0.68	2.27	12.10
ESA/SCC 3901 002 73	26	19x0.10 SPCA	0.53	0.15	155	0.10	0.78	2.56	15.80

SPCA : silver plated copper alloy



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

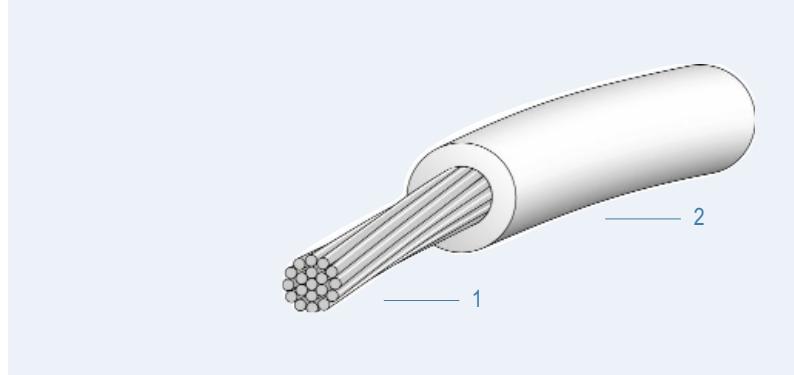
POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



Single wires

**ESA/SCC
3901 012****Cross-linked ETFE insulation, standard version****Operating temperature, -100°C up to +200°C****Voltage rating, 600 V AC max.**

Construction

- 1 - Stranded silver plated copper or copper alloy conductor
- 2 - Extruded crosslinked ETFE insulation.

Main characteristics

Good physical, chemical and electrical properties :

- good penetration resistance under pressure,
- good radiation resistance,
- resist large overloads with no fire risk,
- resistant to most chemicals.

AXON' REFERENCE	AWG	CONDUCTOR				MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	NOM.CROSS SECTION mm ²	DC RESISTANCE AT 20°C MAX. Ω/Km		
ESA/SCC 3901 012 1	30	7x0.10 SPCA	0.30	0.06	385.1	0.63	0.98
ESA/SCC 3901 012 2	28	7x0.12 SPCA	0.38	0.08	244	0.69	1.35
ESA/SCC 3901 012 3	26	19x0.10 SPCA	0.53	0.15	149	0.86	2.10
ESA/SCC 3901 012 4	24	19x0.12 SPCA	0.66	0.25	106.2	0.99	2.97
ESA/SCC 3901 012 5	22	19x0.15 SPC	0.79	0.40	54.3	1.14	4.30
ESA/SCC 3901 012 6	20	19x0.20 SPC	1.04	0.60	32.3	1.37	6.63
ESA/SCC 3901 012 7	18	19x0.25 SPC	1.29	1.00	20.3	1.63	9.89
ESA/SCC 3901 012 8	16	19x0.30 SPC	1.55	1.20	14.8	1.90	13.29
ESA/SCC 3901 012 9	14	37x0.25 SPC	1.82	2.00	10.2	2.29	19.60
ESA/SCC 3901 012 10	12	37x0.32 SPC	2.28	3.00	6.51	2.74	30.30

SPC : silver plated copper - SPCA : silver plated copper alloy



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



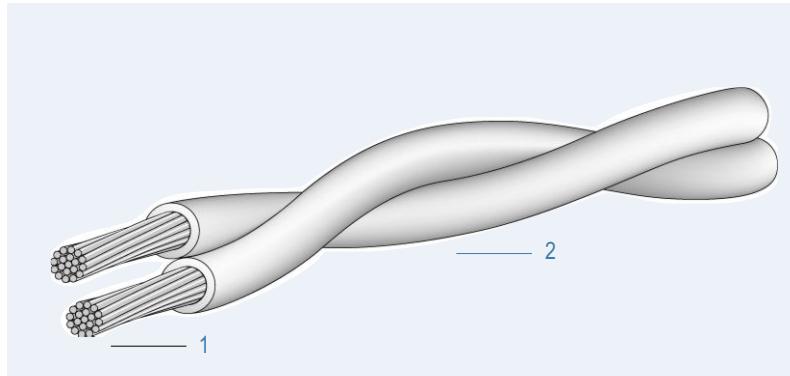
Twisted pairs

**ESA/SCC
3901 012**

Cross-linked ETFE insulation, standard version

Operating temperature, -100°C up to +200°C

Voltage rating, 600 V AC max.



Construction

- 1 - Stranded silver plated copper or copper alloy conductor
- 2 - Extruded crosslinked ETFE insulation.

Main characteristics

Good physical, chemical and electrical properties :

- good penetration resistance under pressure,
- good radiation resistance,
- resist large overloads with no fire risk,
- resistant to most chemicals.

AXON' REFERENCE	AWG	CONDUCTOR				SINGLE WIRE MAX Ø mm	BUNDLE MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	NOM.CROSS SECTION mm²	DC RESISTANCE AT 20°C MAX. Ω/Km			
ESA/SCC 3901 012 11	30	7x0.10 SPCA	0.30	0.06	385.1	0.63	1.26	2.02
ESA/SCC 3901 012 12	28	7x0.12 SPCA	0.38	0.08	244	0.69	1.38	2.78
ESA/SCC 3901 012 13	26	19x0.10 SPCA	0.53	0.15	149	0.86	1.78	4.33
ESA/SCC 3901 012 14	24	19x0.12 SPCA	0.66	0.25	106.2	0.99	1.98	6.12
ESA/SCC 3901 012 15	22	19x0.15 SPC	0.79	0.40	54.3	1.14	2.28	8.86
ESA/SCC 3901 012 16	20	19x0.20 SPC	1.04	0.60	32.3	1.37	2.74	13.66
ESA/SCC 3901 012 17	18	19x0.25 SPC	1.29	1.00	20.3	1.63	3.26	20.37
ESA/SCC 3901 012 18	16	19x0.30 SPC	1.55	1.20	14.8	1.90	3.80	27.38
ESA/SCC 3901 012 19	14	37x0.25 SPC	1.82	2.00	10.2	2.29	4.58	40.38
ESA/SCC 3901 012 20	12	37x0.32 SPC	2.28	3.00	6.51	2.74	5.48	62.42

SPC : silver plated copper - SPCA : silver plated copper alloy



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

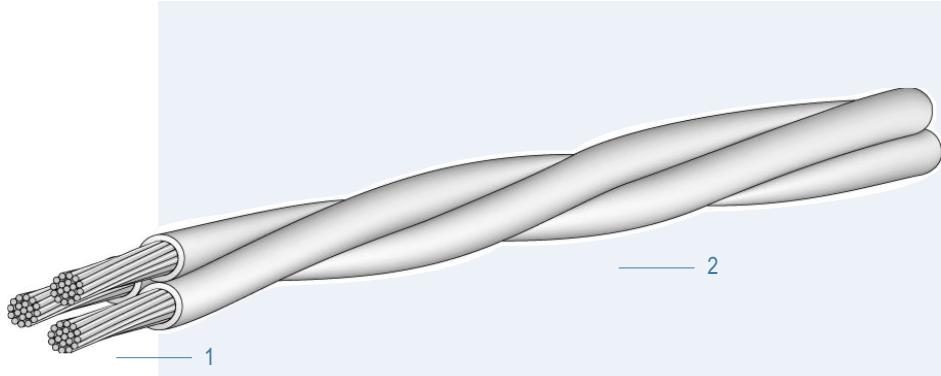
POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



Twisted triples

**ESA/SCC
3901 012****Cross-linked ETFE insulation, standard version****Operating temperature, -100°C up to +200°C****Voltage rating, 600 V AC max.**

Construction

- 1 - Stranded silver plated copper or copper alloy conductor
- 2 - Extruded crosslinked ETFE insulation.

Main characteristics

Good physical, chemical and electrical properties :

- good penetration resistance under pressure,
- good radiation resistance,
- resist large overloads with no fire risk,
- resistant to most chemicals.

AXON' REFERENCE	AWG	CONDUCTOR				SINGLE WIRE MAX Ø mm	BUNDLE MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	NOM.CROSS SECTION mm ²	DC RESISTANCE AT 20°C MAX. Ω/Km			
ESA/SCC 3901 012 21	30	7x0.10 SPCA	0.30	0.06	385.1	0.63	1.36	3.03
ESA/SCC 3901 012 22	28	7x0.12 SPCA	0.38	0.08	244	0.69	1.49	4.17
ESA/SCC 3901 012 23	26	19x0.10 SPCA	0.53	0.15	149	0.86	1.86	6.49
ESA/SCC 3901 012 24	24	19x0.12 SPCA	0.66	0.25	106.2	0.99	2.14	9.18
ESA/SCC 3901 012 25	22	19x0.15 SPC	0.79	0.40	54.3	1.14	2.46	13.29
ESA/SCC 3901 012 26	20	19x0.20 SPC	1.04	0.60	32.3	1.37	2.95	20.49
ESA/SCC 3901 012 27	18	19x0.25 SPC	1.29	1.00	20.3	1.63	3.52	30.56
ESA/SCC 3901 012 28	16	19x0.30 SPC	1.55	1.20	14.8	1.90	4.10	41.07
ESA/SCC 3901 012 29	14	37x0.25 SPC	1.82	2.00	10.2	2.29	4.95	60.56
ESA/SCC 3901 012 30	12	37x0.32 SPC	2.28	3.00	6.51	2.74	5.92	93.63

SPC : silver plated copper - SPCA : silver plated copper alloy



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



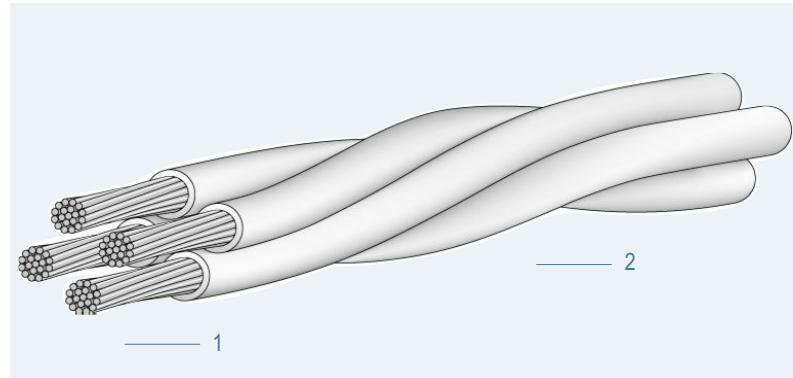
Twisted quads

**ESA/SCC
3901 012**

Cross-linked ETFE insulation, standard version

Operating temperature, -100°C up to +200°C

Voltage rating, 600 V AC max.



Construction

- 1 - Stranded silver plated copper or copper alloy conductor
- 2 - Extruded crosslinked ETFE insulation.

Main characteristics

Good physical, chemical and electrical properties :

- good penetration resistance under pressure,
- good radiation resistance,
- resist large overloads with no fire risk,
- resistant to most chemicals.

AXON' REFERENCE	AWG	CONDUCTOR				SINGLE WIRE MAX Ø mm	BUNDLE MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	NOM.CROSS SECTION mm ²	DC RESISTANCE AT 20°C MAX. Ω/Km			
ESA/SCC 3901 012 31	30	7x0.10 SPCA	0.30	0.06	385.1	0.63	1.51	4.04
ESA/SCC 3901 012 32	28	7x0.12 SPCA	0.38	0.08	244	0.69	1.66	5.56
ESA/SCC 3901 012 33	26	19x0.10 SPCA	0.53	0.15	149	0.86	2.07	8.65
ESA/SCC 3901 012 34	24	19x0.12 SPCA	0.66	0.25	106.2	0.99	2.39	12.24
ESA/SCC 3901 012 35	22	19x0.15 SPC	0.30	0.40	54.3	1.14	2.75	17.72
ESA/SCC 3901 012 36	20	19x0.20 SPC	0.38	0.60	32.3	1.37	3.30	27.32
ESA/SCC 3901 012 37	18	19x0.25 SPC	0.53	1.00	20.3	1.63	3.93	40.75
ESA/SCC 3901 012 38	16	19x0.30 SPC	0.66	1.20	14.8	1.90	4.55	54.75
ESA/SCC 3901 012 39	14	37x0.25 SPC	0.79	2.00	10.2	2.29	5.52	80.75
ESA/SCC 3901 012 40	12	37x0.32 SPC	1.04	3.00	6.51	2.74	6.60	124.84

SPC : silver plated copper - SPCA : silver plated copper alloy



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



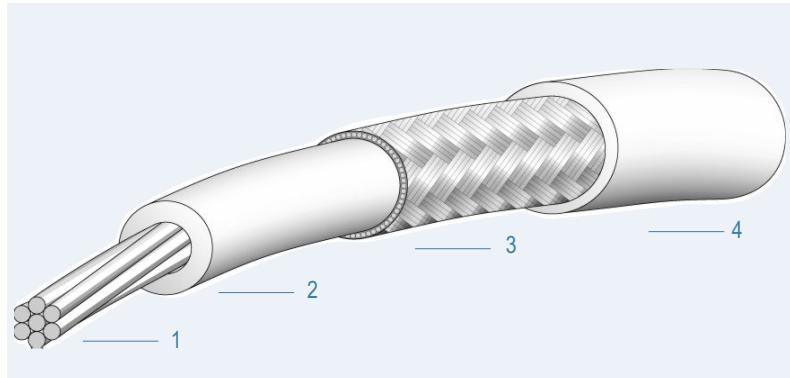
Shielded jacketed single wires

**ESA/SCC
3901 012**

Cross-linked ETFE insulation, standard version

Operating temperature, -100°C up to +200°C

Voltage rating, 600 V AC max.



Construction

- 1 - Stranded silver plated copper or copper alloy conductor
- 2 - Extruded ETFE insulation
- 3 - Silver plated copper shield
- 4 - Extruded crosslinked ETFE insulation.

Main characteristics

Good physical, chemical and electrical properties :

- good penetration resistance under pressure,
- good radiation resistance,
- resist large overloads with no fire risk,
- resistant to most chemicals.

AXON' REFERENCE	AWG	CONDUCTOR				SHIELD STRAND Ø mm	SINGLE WIRE MAX Ø mm	BUNDLE MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	NOM.CROSS SECTION mm ²	DC RESISTANCE AT 20°C MAX. Ω/Km				
ESA/SCC 3901 012 41	30	7x0.10 SPCA	1.29	0.06	385.1	0.1	0.63	1.57	5.02
ESA/SCC 3901 012 42	28	7x0.12 SPCA	1.55	0.08	244	0.1	0.69	1.65	5.91
ESA/SCC 3901 012 43	26	19x0.10 SPCA	1.82	0.15	149	0.1	0.86	1.76	6.85
ESA/SCC 3901 012 44	24	19x0.12 SPCA	2.28	0.25	106.2	0.1	0.99	1.89	8.18
ESA/SCC 3901 012 45	22	19x0.15 SPC	0.30	0.40	54.3	0.1	1.14	2.03	10.27
ESA/SCC 3901 012 46	20	19x0.20 SPC	0.38	0.60	32.3	0.1	1.37	2.26	13.62
ESA/SCC 3901 012 47	18	19x0.25 SPC	0.53	1.00	20.3	0.1	1.63	2.52	18.17
ESA/SCC 3901 012 48	16	19x0.30 SPC	0.66	1.20	14.8	0.1	1.90	2.73	22.63
ESA/SCC 3901 012 49	14	37x0.25 SPC	0.79	2.00	10.2	0.1	2.29	3.17	30.43
ESA/SCC 3901 012 50	12	37x0.32 SPC	1.04	3.00	6.51	0.1	2.74	3.65	43.30

SPC : silver plated copper - SPCA : silver plated copper alloy



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



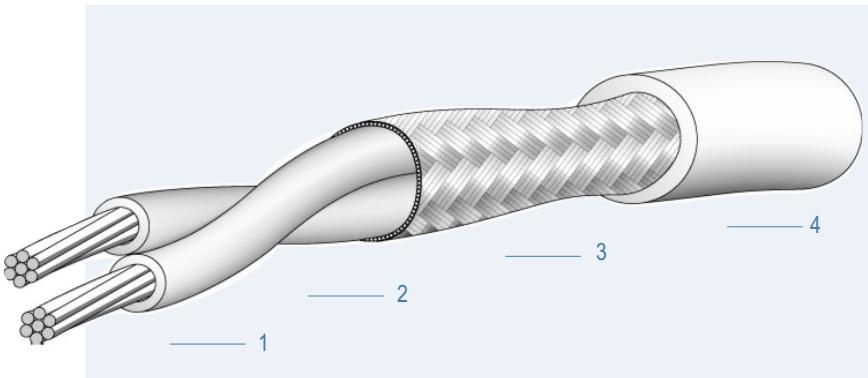
Shielded jacketed twisted pairs

**ESA/SCC
3901 012**

Cross-linked ETFE insulation, standard version

Operating temperature, -100°C up to +200°C

Voltage rating, 600 V AC max.



Construction

- 1 - Stranded silver plated copper or copper alloy conductor
- 2 - Extruded ETFE insulation
- 3 - Silver plated copper shield
- 4 - Extruded crosslinked ETFE insulation.

Main characteristics

Good physical, chemical and electrical properties :

- good penetration resistance under pressure,
- good radiation resistance,
- resist large overloads with no fire risk,
- resistant to most chemicals.

AXON' REFERENCE	AWG	CONDUCTOR				SHIELD STRAND Ø mm	SINGLE WIRE MAX Ø mm	BUNDLE MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	NOM.CROSS SECTION mm ²	DC RESISTANCE AT 20°C MAX. Ω/Km				
ESA/SCC 3901 012 51	30	7x0.10 SPCA	1.29	0.06	385.1	0.10	0.63	2.18	7.80
ESA/SCC 3901 012 52	28	7x0.12 SPCA	1.55	0.08	244	0.10	0.69	2.34	9.15
ESA/SCC 3901 012 53	26	19x0.10 SPCA	1.82	0.15	149	0.10	0.86	2.59	11.33
ESA/SCC 3901 012 54	24	19x0.12 SPCA	2.28	0.25	106.2	0.10	0.99	2.87	13.80
ESA/SCC 3901 012 55	22	19x0.15 SPC	0.30	0.40	54.3	0.10	1.14	3.17	17.71
ESA/SCC 3901 012 56	20	19x0.20 SPC	0.38	0.60	32.3	0.10	1.37	3.59	24.11
ESA/SCC 3901 012 57	18	19x0.25 SPC	0.53	1.00	20.3	0.10	1.63	4.14	32.80
ESA/SCC 3901 012 58	16	19x0.30 SPC	0.66	1.20	14.8	0.10	1.90	4.56	41.40
ESA/SCC 3901 012 59	14	37x0.25 SPC	0.79	2.00	10.2	0.10	2.29	5.46	56.25
ESA/SCC 3901 012 60	12	37x0.32 SPC	1.04	3.00	6.51	0.10	2.74	6.43	81.00

SPC : silver plated copper - SPCA : silver plated copper alloy



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

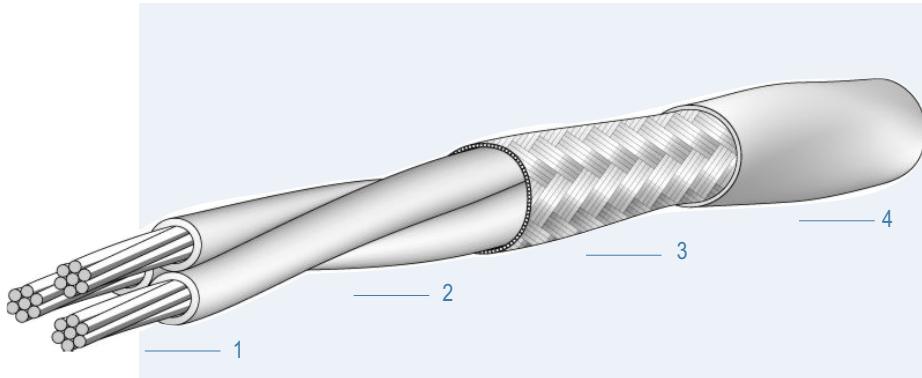
POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



Shielded jacketed twisted triples

**ESA/SCC
3901 012****Cross-linked ETFE insulation, standard version****Operating temperature, -100°C up to +200°C****Voltage rating, 600 V AC max.**

Construction

- 1 - Stranded silver plated copper or copper alloy conductor
- 2 - Extruded ETFE insulation
- 3 - Silver plated copper shield
- 4 - Extruded crosslinked ETFE insulation.

Main characteristics

Good physical, chemical and electrical properties :

- good penetration resistance under pressure,
- good radiation resistance,
- resist large overloads with no fire risk,
- resistant to most chemicals.

AXON' REFERENCE	AWG	CONDUCTOR				SHIELD STRAND Ø mm	SINGLE WIRE MAX Ø mm	BUNDLE MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	NOM.CROSS SECTION mm ²	DC RESISTANCE AT 20°C MAX. Ω/Km				
ESA/SCC 3901 012 61	30	7x0.10 SPCA	1.29	0.06	385.1	0.10	0.63	2.28	9.64
ESA/SCC 3901 012 62	28	7x0.12 SPCA	1.55	0.08	244	0.10	0.69	2.43	10.93
ESA/SCC 3901 012 63	26	19x0.10 SPCA	1.82	0.15	149	0.10	0.86	2.72	15.18
ESA/SCC 3901 012 64	24	19x0.12 SPCA	2.28	0.25	106.2	0.10	0.99	3.01	18.39
ESA/SCC 3901 012 65	22	19x0.15 SPC	0.30	0.40	54.3	0.10	1.14	3.35	23.86
ESA/SCC 3901 012 66	20	19x0.20 SPC	0.38	0.60	32.3	0.10	1.37	3.81	33.15
ESA/SCC 3901 012 67	18	19x0.25 SPC	0.53	1.00	20.3	0.10	1.63	4.40	45.63
ESA/SCC 3901 012 68	16	19x0.30 SPC	0.66	1.20	14.8	0.10	1.90	4.85	58.06
ESA/SCC 3901 012 69	14	37x0.25 SPC	0.79	2.00	10.2	0.10	2.29	5.82	79.70
ESA/SCC 3901 012 70	12	37x0.32 SPC	1.04	3.00	6.51	0.10	2.74	6.86	116.31

SPC : silver plated copper - SPCA : silver plated copper alloy



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



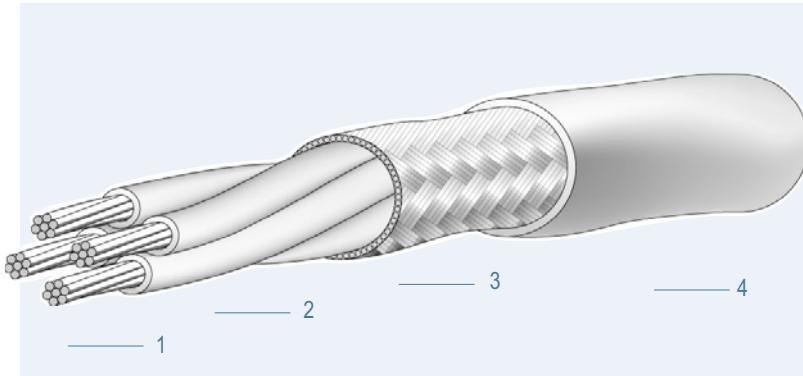
Shielded jacketed twisted quads

**ESA/SCC
3901 012**

Cross-linked ETFE insulation, standard version

Operating temperature, -100°C up to +200°C

Voltage rating, 600 V AC max.



Construction

- 1 - Stranded silver plated copper or copper alloy conductor
- 2 - Extruded ETFE insulation
- 3 - Silver plated copper shield
- 4 - Extruded crosslinked ETFE insulation.

Main characteristics

Good physical, chemical and electrical properties :

- good penetration resistance under pressure,
- good radiation resistance,
- resist large overloads with no fire risk,
- resistant to most chemicals.

AXON' REFERENCE	AWG	CONDUCTOR				SHIELD STRAND Ø mm	SINGLE WIRE MAX Ø mm	BUNDLE MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	NOM. CROSS SECTION mm ²	DC RESISTANCE AT 20°C MAX. Ω/Km				
ESA/SCC 3901 012 71	30	7x0.10 SPCA	1.29	0.06	385.1	0.10	0.63	2.46	11.30
ESA/SCC 3901 012 72	28	7x0.12 SPCA	1.55	0.08	244	0.10	0.69	2.64	13.40
ESA/SCC 3901 012 73	26	19x0.10 SPCA	1.82	0.15	149	0.10	0.86	2.95	17.30
ESA/SCC 3901 012 74	24	19x0.12 SPCA	2.28	0.25	106.2	0.10	0.99	3.27	22.32
ESA/SCC 3901 012 75	22	19x0.15 SPC	0.30	0.40	54.3	0.10	1.14	3.65	29.14
ESA/SCC 3901 012 76	20	19x0.20 SPC	0.38	0.60	32.3	0.10	1.37	4.16	40.60
ESA/SCC 3901 012 77	18	19x0.25 SPC	0.53	1.00	20.3	0.10	1.63	4.80	56.70
ESA/SCC 3901 012 78	16	19x0.30 SPC	0.66	1.20	14.8	0.10	1.90	5.31	78.50
ESA/SCC 3901 012 79	14	37x0.25 SPC	0.79	2.00	10.2	0.10	2.29	6.40	100
ESA/SCC 3901 012 80	12	37x0.32 SPC	1.04	3.00	6.51	0.10	2.74	7.57	147

SPC : silver plated copper - SPCA : silver plated copper alloy



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

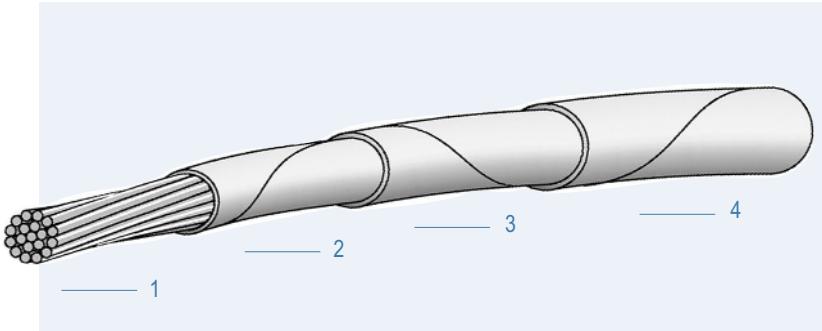
POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



Single wires

**ESA/SCC
3901 019****Polyimide insulation,****Operating temperature, -200°C up to +200°C****Voltage rating, 600 V AC max.**

Construction

- 1 - Stranded silver plated copper or copper alloy conductor
- 2 - Expanded PTFE tape
- 3 - Polyimide tape
- 4 - Polyimide tape

Main characteristics

Excellent physical, chemical and electrical properties :

- excellent penetration resistance under pressure,
- excellent radiation resistance,
- resist large overloads with no fire risk,
- non-flammable,
- good flexibility,
- resistant to most chemicals,
- specially designed for thermal stripping to avoid damage,
- easy to strip with thermal tools or mechanical tools.

AXON' REFERENCE	AWG	CONDUCTOR				MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	NOM.CROSS SECTION mm²	DC RESISTANCE AT 20°C MAX. Ω/Km		
ESA/SCC 3901 019 1	30	7x0.102 SPCA	0.32	0.057	375	0.78	0.98
ESA/SCC 3901 019 2	28	7x0.127 SPCA	0.47	0.09	253	0.87	1.40
ESA/SCC 3901 019 3	26	19x0.10 SPCA	0.57	0.15	157	0.96	1.90
ESA/SCC 3901 019 4	24	19x0.12 SPCA	0.58	0.25	111	1.13	2.60
ESA/SCC 3901 019 5	22	19x0.15 SPC	0.76	0.40	58	1.25	3.90
ESA/SCC 3901 019 6	20	19x0.20 SPC	0.99	0.60	32	1.48	6.40
ESA/SCC 3901 019 7	16	19x0.30 SPC	1.49	1.20	14	1.98	13
ESA/SCC 3901 019 8	12	37x0.32 SPC	2.18	3.00	7	2.73	27

SPC : silver plated copper - SPCA : silver plated copper alloy



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



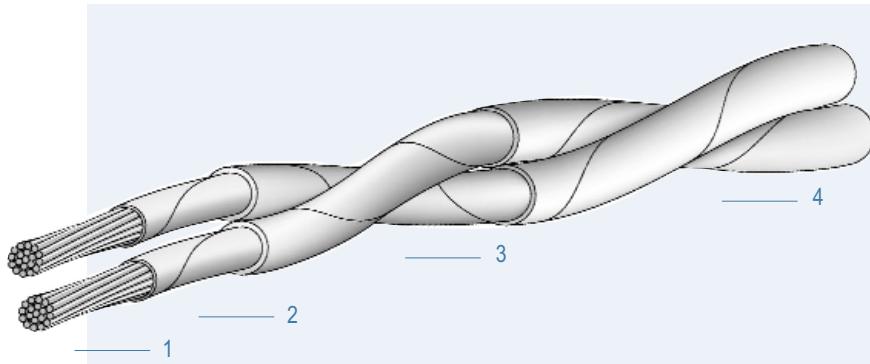
Twisted pairs

**ESA/SCC
3901 019**

Polyimide insulation,

Operating temperature, -200°C up to +200°C

Voltage rating, 600 V AC max.



Construction

- 1 - Stranded silver plated copper or copper alloy conductor
- 2 - Expanded PTFE tape
- 3 - Polyimide tape
- 4 - Polyimide tape

Main characteristics

Excellent physical, chemical and electrical properties :

- excellent penetration resistance under pressure,
- excellent radiation resistance,
- resist large overloads with no fire risk,
- non-flammable,
- good flexibility,
- resistant to most chemicals,
- specially designed for thermal stripping to avoid damage,
- easy to strip with thermal tools or mechanical tools.

AXON' REFERENCE	AWG	CONDUCTOR				SINGLE WIRE MAX Ø mm	BUNDLE MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	NOM. CROSS SECTION mm²	DC RESISTANCE AT 20°C MAX. Ω/Km			
ESA/SCC 3901 019 9	30	7x0.102 SPCA	0.32	0.057	383	0.78	1.50	2.10
ESA/SCC 3901 019 10	28	7x0.127 SPCA	0.47	0.09	258	0.87	1.70	2.80
ESA/SCC 3901 019 11	26	19x0.10 SPCA	0.57	0.15	170	0.96	1.90	3.80
ESA/SCC 3901 019 12	24	19x0.12 SPCA	0.58	0.25	120	1.13	2.30	5.20
ESA/SCC 3901 019 13	22	19x0.15 SPC	0.76	0.40	63	1.25	2.50	8.20
ESA/SCC 3901 019 14	20	19x0.20 SPC	0.99	0.60	35	1.48	3.00	13.50
ESA/SCC 3901 019 15	16	19x0.30 SPC	1.49	1.20	15	1.98	4.00	27
ESA/SCC 3901 019 16	12	37x0.32 SPC	2.18	3.00	7.5	2.73	5.50	55

SPC : silver plated copper - SPCA : silver plated copper alloy



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



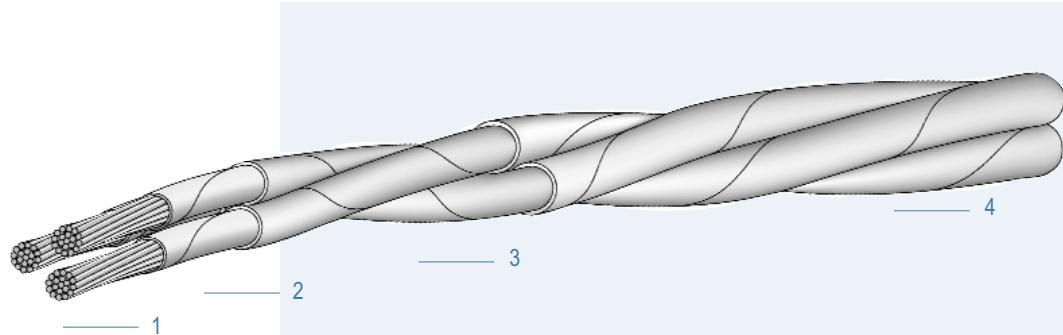
Twisted triples

**ESA/SCC
3901 019**

Polyimide insulation,

Operating temperature, -200°C up to +200°C

Voltage rating, 600 V AC max.



Construction

- 1 - Stranded silver plated copper or copper alloy conductor
- 2 - Expanded PTFE tape
- 3 - Polyimide tape
- 4 - Polyimide tape

Main characteristics

Excellent physical, chemical and electrical properties :

- excellent penetration resistance under pressure,
- excellent radiation resistance,
- resist large overloads with no fire risk,
- non-flammable,
- good flexibility,
- resistant to most chemicals,
- specially designed for thermal stripping to avoid damage,
- easy to strip with thermal tools or mechanical tools.

AXON' REFERENCE	AWG	CONDUCTOR				SINGLE WIRE MAX Ø mm	BUNDLE MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	NOM.CROSS SECTION mm²	DC RESISTANCE AT 20°C MAX. Ω/Km			
ESA/SCC 3901 019 17	30	7x0.102 SPCA	0.32	0.057	384	0.78	1.70	3.30
ESA/SCC 3901 019 18	28	7x0.127 SPCA	0.47	0.09	259	0.87	1.90	4.50
ESA/SCC 3901 019 19	26	19x0.10 SPCA	0.57	0.15	171	0.96	2.10	6.20
ESA/SCC 3901 019 20	24	19x0.12 SPCA	0.58	0.25	121	1.13	2.50	8.30
ESA/SCC 3901 019 21	22	19x0.15 SPC	0.76	0.40	64	1.25	2.70	12.70
ESA/SCC 3901 019 22	20	19x0.20 SPC	0.99	0.60	37	1.48	3.20	20.60
ESA/SCC 3901 019 23	16	19x0.30 SPC	1.49	1.20	15	1.98	4.30	43
ESA/SCC 3901 019 24	12	37x0.32 SPC	2.18	3.00	7.5	2.73	05.9	88

SPC : silver plated copper - SPCA : silver plated copper alloy



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



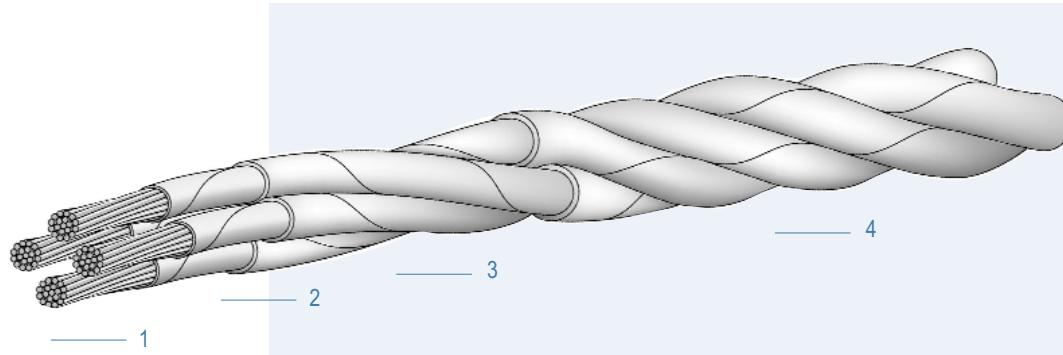
Twisted quads

**ESA/SCC
3901 019**

Polyimide insulation,

Operating temperature, -200°C up to +200°C

Voltage rating, 600 V AC max.



Construction

- 1 - Stranded silver plated copper or copper alloy conductor
- 2 - Expanded PTFE tape
- 3 - Polyimide tape
- 4 - Polyimide tape

Main characteristics

Excellent physical, chemical and electrical properties :

- excellent penetration resistance under pressure,
- excellent radiation resistance,
- resist large overloads with no fire risk,
- non-flammable,
- good flexibility,
- resistant to most chemicals,
- specially designed for thermal stripping to avoid damage,
- easy to strip with thermal tools or mechanical tools.

AXON' REFERENCE	AWG	CONDUCTOR				SINGLE WIRE MAX Ø mm	BUNDLE MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	NOM.CROSS SECTION mm ²	DC RESISTANCE AT 20°C MAX. Ω/Km			
ESA/SCC 3901 019 25	30	7x0.102 SPCA	0.32	0.057	385	0.78	1.90	4.40
ESA/SCC 3901 019 26	28	7x0.127 SPCA	0.47	0.09	260	0.87	2.10	6
ESA/SCC 3901 019 27	26	19x0.10 SPCA	0.57	0.15	171	0.96	2.30	8.20
ESA/SCC 3901 019 28	24	19x0.12 SPCA	0.58	0.25	122	1.13	2.70	11
ESA/SCC 3901 019 29	22	19x0.15 SPC	0.76	0.40	64	1.25	3.00	16.90
ESA/SCC 3901 019 30	20	19x0.20 SPC	0.99	0.60	37	1.48	3.60	27.30
ESA/SCC 3901 019 31	16	19x0.30 SPC	1.49	1.20	16	1.98	4.80	57
ESA/SCC 3901 019 32	12	37x0.32 SPC	2.18	3.00	7.9	2.73	6.50	118

SPC : silver plated copper - SPCA : silver plated copper alloy



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

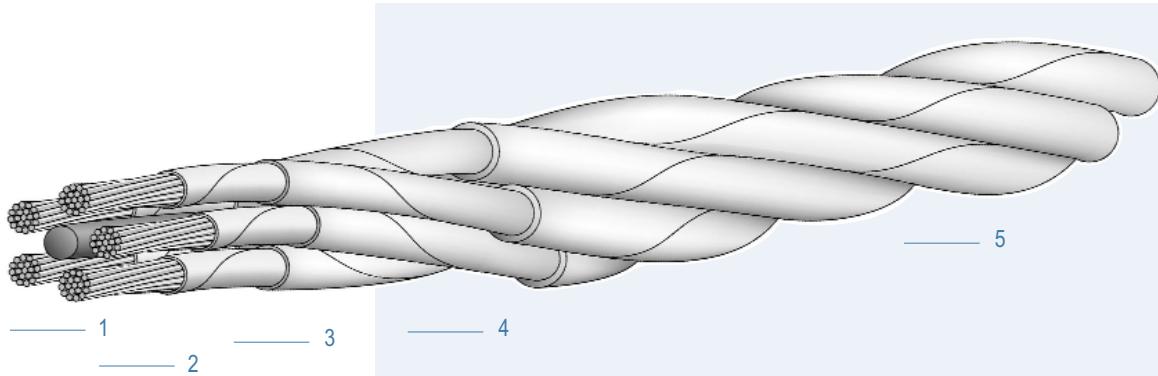
POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES

**ESA/SCC
3901 019**

Twisted 5-core cables

Polyimide insulation,**Operating temperature, -200°C up to +200°C****Voltage rating, 600 V AC max.**

Construction

- 1 - PTFE filler
- 2 - Stranded silver plated copper or copper alloy conductor
- 3 - Expanded PTFE tape
- 4 - Polyimide tape
- 5 - Polyimide tape

Main characteristics

Excellent physical, chemical and electrical properties :

- excellent penetration resistance under pressure,
- excellent radiation resistance,
- resist large overloads with no fire risk,
- non-flammable,
- good flexibility,
- resistant to most chemicals,
- specially designed for thermal stripping to avoid damage,
- easy to strip with thermal tools or mechanical tools.

AXON' REFERENCE	AWG	CONDUCTOR				SINGLE WIRE MAX Ø mm	BUNDLE MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	NOM.CROSS SECTION mm²	DC RESISTANCE AT 20°C MAX. Ω/Km			
ESA/SCC 3901 019 33	28	7x0.127 SPCA	0.47	0.09	260	0.87	2.40	7.80
ESA/SCC 3901 019 34	26	19x0.10 SPCA	0.57	0.15	172	0.96	2.60	10.70
ESA/SCC 3901 019 35	24	19x0.12 SPCA	0.58	0.25	123	1.13	3.10	14.30
ESA/SCC 3901 019 36	22	19x0.15 SPC	0.76	0.40	64	1.25	3.40	21.80
ESA/SCC 3901 019 37	20	19x0.20 SPC	0.99	0.60	37	1.48	4.00	35.00

SPC : silver plated copper - SPCA : silver plated copper alloy



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



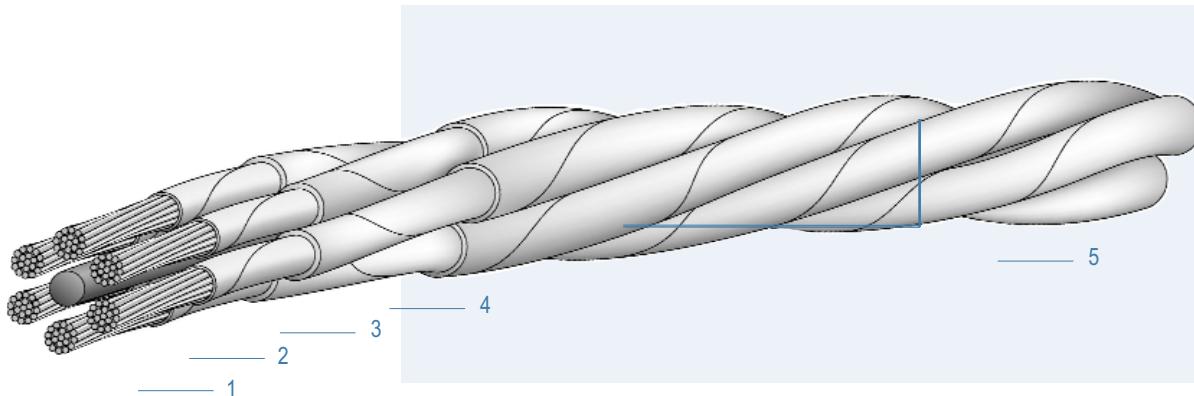
Twisted 6-core cables

**ESA/SCC
3901 019**

Polyimide insulation,

Operating temperature, -200°C up to +200°C

Voltage rating, 600 V AC max.



Construction

- 1 - PTFE filler
- 2 - Stranded silver plated copper or copper alloy conductor
- 3 - Expanded PTFE tape
- 4 - Polyimide tape
- 5 - Polyimide tape

Main characteristics

Excellent physical, chemical and electrical properties :

- excellent penetration resistance under pressure,
- excellent radiation resistance,
- resist large overloads with no fire risk,
- non-flammable,
- good flexibility,
- resistant to most chemicals,
- specially designed for thermal stripping to avoid damage,
- easy to strip with thermal tools or mechanical tools.

AXON' REFERENCE	AWG	CONDUCTOR				SINGLE WIRE MAX Ø mm	BUNDLE MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	NOM.CROSS SECTION mm²	DC RESISTANCE AT 20°C MAX. Ω/Km			
ESA/SCC 3901 019 38	28	7x0.127 SPCA	0.47	0.09	261	0.87	2.60	9.60
ESA/SCC 3901 019 39	26	19x0.10 SPCA	0.57	0.15	172	0.96	2.90	13.10
ESA/SCC 3901 019 40	24	19x0.12 SPCA	0.58	0.25	124	1.13	3.40	17.60
ESA/SCC 3901 019 41	22	19x0.15 SPC	0.76	0.40	65	1.25	3.70	26.60
ESA/SCC 3901 019 42	20	19x0.20 SPC	0.99	0.60	38	1.48	4.40	48.20

SPC : silver plated copper - SPCA : silver plated copper alloy



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

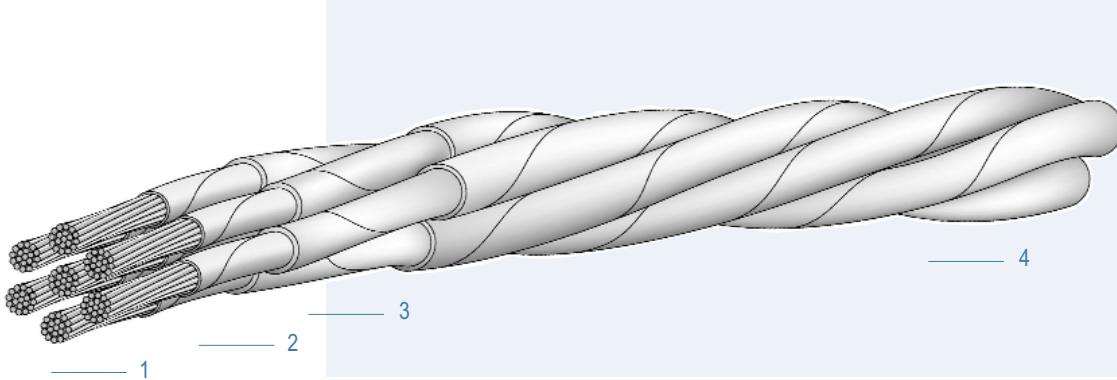
POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



Twisted 7-core cables

**ESA/SCC
3901 019****Polyimide insulation,****Operating temperature, -200°C up to +200°C****Voltage rating, 600 V AC max.**

Construction

- 1 - Stranded silver plated copper or copper alloy conductor
- 2 - Expanded PTFE tape
- 3 - Polyimide tape
- 4 - Polyimide tape

Main characteristics

Excellent physical, chemical and electrical properties :

- excellent penetration resistance under pressure,
- excellent radiation resistance,
- resist large overloads with no fire risk,
- non-flammable,
- good flexibility,
- resistant to most chemicals,
- specially designed for thermal stripping to avoid damage,
- easy to strip with thermal tools or mechanical tools.

AXON' REFERENCE	AWG	CONDUCTOR				SINGLE WIRE MAX Ø mm	BUNDLE MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	NOM.CROSS SECTION mm²	DC RESISTANCE AT 20°C MAX. Ω/Km			
ESA/SCC 3901 019 43	28	7x0.127 SPCA	0.47	0.09	261	0.87	2.60	10.50
ESA/SCC 3901 019 44	26	19x0.10 SPCA	0.57	0.15	172	0.96	2.90	14.40
ESA/SCC 3901 019 45	24	19x0.12 SPCA	0.58	0.25	124	1.13	3.40	19.30
ESA/SCC 3901 019 46	22	19x0.15 SPC	0.76	0.40	65	1.25	3.70	29.60
ESA/SCC 3901 019 47	20	19x0.20 SPC	0.99	0.60	38	1.48	4.40	47.80



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



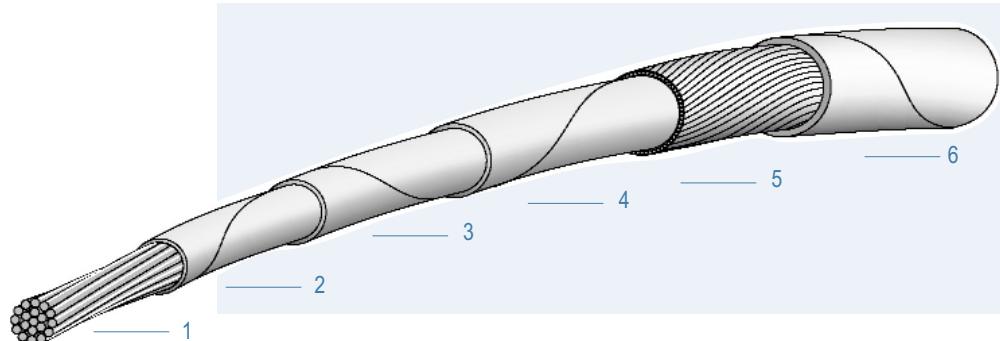
Shielded jacketed single wires

**ESA/SCC
3901 019**

Polyimide insulation,

Operating temperature, -200°C up to +200°C

Voltage rating, 600 V AC max.



Construction

- 1 - Stranded silver plated copper or copper alloy conductor
- 2 - PTFE tape
- 3 - Polyimide tape
- 4 - Polyimide tape
- 5 - Silver plated copper helicoidal shield
- 6 - 2 Polyimide tapes

Main characteristics

Excellent physical, chemical and electrical properties :

- excellent penetration resistance under pressure,
- excellent radiation resistance,
- resist large overloads with no fire risk,
- non-flammable,
- good flexibility,
- resistant to most chemicals,
- specially designed for thermal stripping to avoid damage,
- easy to strip with thermal tools or mechanical tools.

AXON' REFERENCE	AWG	CONDUCTOR				SHIELD STRAND Ø mm	SINGLE WIRE MAX Ø mm	BUNDLE MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	NOM.CROSS SECTION mm²	DC RESISTANCE AT 20°C MAX. Ω/Km				
ESA/SCC 3901 019 48	30	7x0.102 SPCA	0.32	0.057	375	0.063	0.78	1.10	2.60
ESA/SCC 3901 019 49	28	7x0.127 SPCA	0.47	0.09	253	0.079	0.87	1.20	3.30
ESA/SCC 3901 019 50	26	19x0.10 SPCA	0.57	0.15	157	0.079	0.96	1.30	4.10
ESA/SCC 3901 019 51	24	19x0.12 SPCA	0.58	0.25	111	0.079	1.13	1.50	4.80
ESA/SCC 3901 019 52	22	19x0.15 SPC	0.76	0.40	58	0.079	1.25	1.60	6.30
ESA/SCC 3901 019 53	20	19x0.20 SPC	0.99	0.60	32	0.079	1.48	1.90	9.10
ESA/SCC 3901 019 54	16	19x0.30 SPC	1.49	1.20	14	0.079	1.98	2.40	16.80
ESA/SCC 3901 019 55	12	37x0.32 SPC	2.18	3.00	7	0.079	2.73	3.10	31.70

SPC : silver plated copper - SPCA : silver plated copper alloy



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



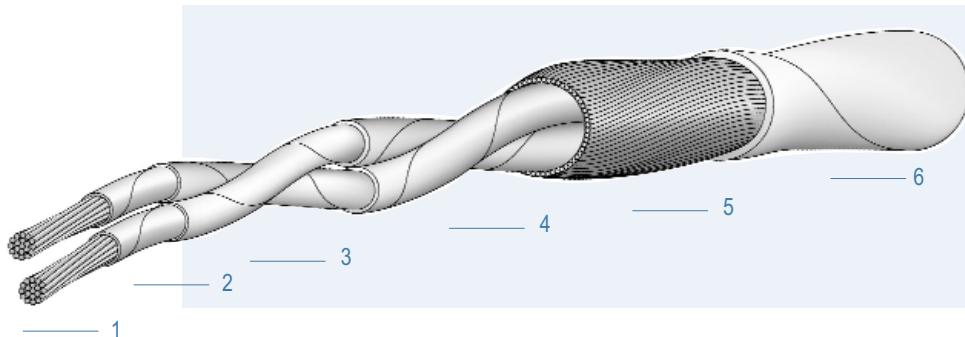
Shielded jacketed twisted pairs

**ESA/SCC
3901 019**

Polyimide insulation,

Operating temperature, -200°C up to +200°C

Voltage rating, 600 V AC max.



Construction

- 1 - Stranded silver plated copper or copper alloy conductor
- 2 - PTFE tape
- 3 - Polyimide tape
- 4 - Polyimide tape
- 5 - Silver plated copper helicoidal shield
- 6 - 2 Polyimide tapes

Main characteristics

Excellent physical, chemical and electrical properties :

- excellent penetration resistance under pressure,
- excellent radiation resistance,
- resist large overloads with no fire risk,
- non-flammable,
- good flexibility,
- resistant to most chemicals,
- specially designed for thermal stripping to avoid damage,
- easy to strip with thermal tools or mechanical tools.

AXON' REFERENCE	AWG	CONDUCTOR				SHIELD STRAND Ø mm	SINGLE WIRE MAX Ø mm	BUNDLE MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	NOM.CROSS SECTION mm²	DC RESISTANCE AT 20°C MAX. Ω/Km				
ESA/SCC 3901 019 56	30	7x0.102 SPCA	0.32	0.057	383	0.063	0.78	1.90	5.10
ESA/SCC 3901 019 57	28	7x0.127 SPCA	0.47	0.09	258	0.079	0.87	2.10	6.10
ESA/SCC 3901 019 58	26	19x0.10 SPCA	0.57	0.15	170	0.079	0.96	2.30	7.70
ESA/SCC 3901 019 59	24	19x0.12 SPCA	0.58	0.25	120	0.079	1.13	2.70	9.50
ESA/SCC 3901 019 60	22	19x0.15 SPC	0.76	0.40	63	0.079	1.25	2.90	13.40
ESA/SCC 3901 019 61	20	19x0.20 SPC	0.99	0.60	35	0.079	1.48	3.30	19.60
ESA/SCC 3901 019 62	16	19x0.30 SPC	1.49	1.20	15	0.079	1.98	4.30	35.00
ESA/SCC 3901 019 63	12	37x0.32 SPC	2.18	3.00	7.50	0.079	2.73	5.80	67.00

SPC : silver plated copper - SPCA : silver plated copper alloy



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



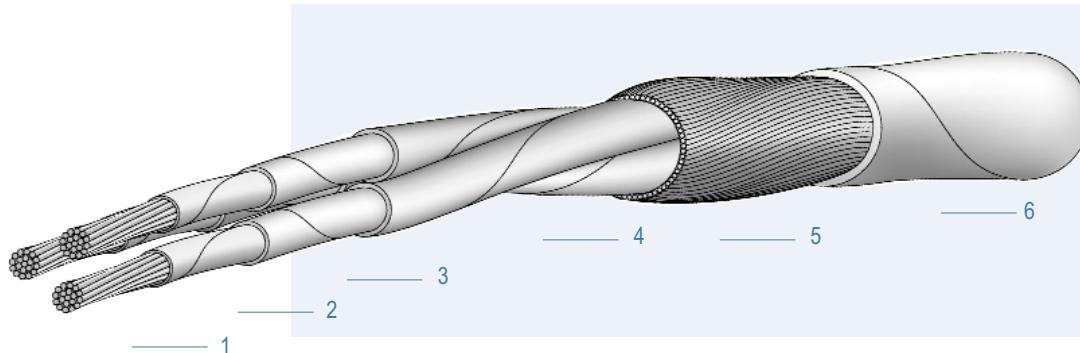
Shielded jacketed twisted triples

**ESA/SCC
3901 019**

Polyimide insulation

Operating temperature -200°C up to +200°C

Voltage rating 600 V AC max.



Construction

- 1 - Stranded silver plated copper or copper alloy conductor
- 2 - PTFE tape
- 3 - Polyimide tape
- 4 - Polyimide tape
- 5 - Silver plated copper helicoidal shield
- 6 - 2 Polyimide tapes

Main characteristics

Excellent physical, chemical and electrical properties :

- excellent penetration resistance under pressure,
- excellent radiation resistance,
- resist large overloads with no fire risk,
- non-flammable,
- good flexibility,
- resistant to most chemicals,
- specially designed for thermal stripping to avoid damage,
- easy to strip with thermal tools or mechanical tools.

AXON' REFERENCE	AWG	CONDUCTOR				SHIELD STRAND Ø mm	SINGLE WIRE MAX Ø mm	BUNDLE MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	NOM.CROSS SECTION mm²	DC RESISTANCE AT 20°C MAX. Ω/Km				
ESA/SCC 3901 019 64	30	7x0.102 SPCA	0.32	0.057	385	0.063	0.78	2.00	6.10
ESA/SCC 3901 019 65	28	7x0.127 SPCA	0.47	0.09	259	0.079	0.87	2.30	8.30
ESA/SCC 3901 019 66	26	19x0.10 SPCA	0.57	0.15	171	0.079	0.96	2.40	10.30
ESA/SCC 3901 019 67	24	19x0.12 SPCA	0.58	0.25	121	0.079	1.13	2.80	13.20
ESA/SCC 3901 019 68	22	19x0.15 SPC	0.76	0.40	64	0.079	1.25	3.10	18
ESA/SCC 3901 019 69	20	19x0.20 SPC	0.99	0.60	37	0.079	1.48	3.60	26.80
ESA/SCC 3901 019 70	16	19x0.30 SPC	1.49	1.20	15	0.079	1.98	4.60	51
ESA/SCC 3901 019 71	12	37x0.32 SPC	2.18	3.00	7.50	0.079	2.73	6.20	99

SPC : silver plated copper - SPCA : silver plated copper alloy



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



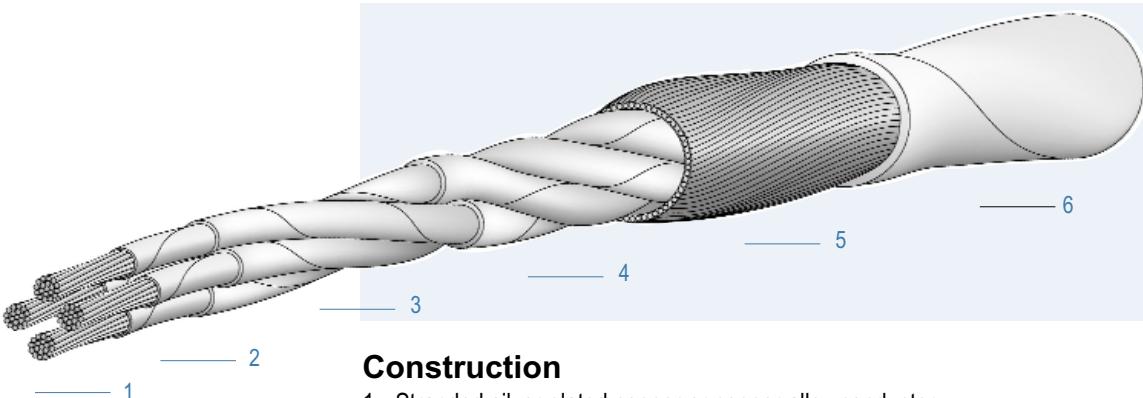
Shielded jacketed twisted quads

**ESA/SCC
3901 019**

Polyimide insulation,

Operating temperature, -200°C up to +200°C

Voltage rating, 600 V AC max.



Construction

- 1 - Stranded silver plated copper or copper alloy conductor
- 2 - PTFE tape
- 3 - Polyimide tape
- 4 - Polyimide tape
- 5 - Silver plated copper helicoidal shield
- 6 - 2 Polyimide tapes

Main characteristics

Excellent physical, chemical and electrical properties :

- excellent penetration resistance under pressure,
- excellent radiation resistance,
- resist large overloads with no fire risk,
- non-flammable,
- good flexibility,
- resistant to most chemicals,
- specially designed for thermal stripping to avoid damage,
- easy to strip with thermal tools or mechanical tools.

AXON' REFERENCE	AWG	CONDUCTOR				SHIELD STRAND Ø mm	SINGLE WIRE MAX Ø mm	BUNDLE MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	NOM.CROSS SECTION mm²	DC RESISTANCE AT 20°C MAX. Ω/Km				
ESA/SCC 3901 019 72	30	7x0.102 SPCA	0.32	0.057	386	0.063	0.78	2.20	7.60
ESA/SCC 3901 019 73	28	7x0.127 SPCA	0.47	0.09	260	0.079	0.87	2.50	10.40
ESA/SCC 3901 019 74	26	19x0.10 SPCA	0.57	0.15	171	0.079	0.96	2.70	12.20
ESA/SCC 3901 019 75	24	19x0.12 SPCA	0.58	0.25	122	0.079	1.13	3.10	16.40
ESA/SCC 3901 019 76	22	19x0.15 SPC	0.76	0.40	64	0.079	1.25	3.40	22.90
ESA/SCC 3901 019 77	20	19x0.20 SPC	0.99	0.60	37	0.079	1.48	3.90	34.40
ESA/SCC 3901 019 78	16	19x0.30 SPC	1.49	1.20	16	0.079	1.98	5.10	63
ESA/SCC 3901 019 79	12	37x0.32 SPC	2.18	3.00	7.90	0.079	2.73	6.90	124

SPC : silver plated copper - SPCA : silver plated copper alloy



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



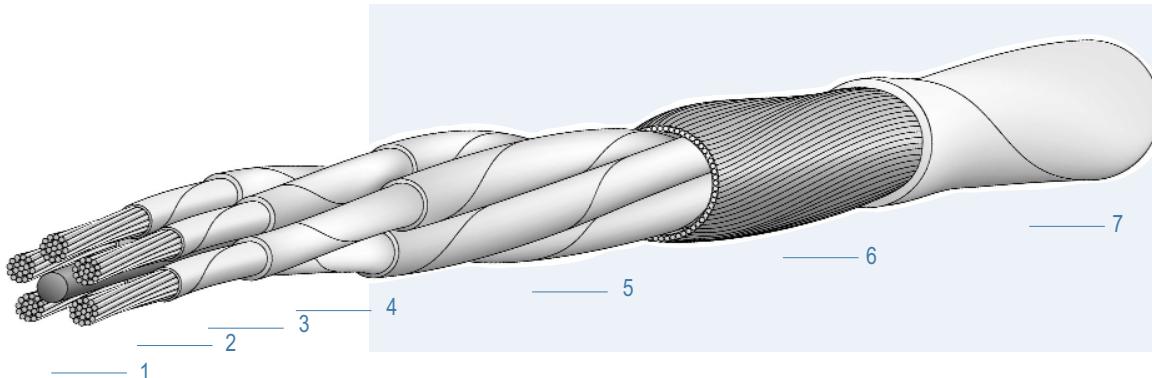
Shielded jacketed twisted 5-core cables

**ESA/SCC
3901 019**

Polyimide insulation

Operating temperature, -200°C up to +200°C

Voltage rating, 600 V AC max.



Construction

- 1 - PTFE filler
- 2 - Stranded silver plated copper or copper alloy conductor
- 3 - PTFE tape
- 4 - Polyimide tape
- 5 - Polyimide tape
- 6 - Silver plated copper helicoidal shield
- 7 - 2 Polyimide tapes

Main characteristics

Excellent physical, chemical and electrical properties :

- excellent penetration resistance under pressure,
- excellent radiation resistance,
- resist large overloads with no fire risk,
- non-flammable,
- good flexibility,
- resistant to most chemicals,
- specially designed for thermal stripping to avoid damage,
- easy to strip with thermal tools or mechanical tools.

AXON' REFERENCE	AWG	CONDUCTOR				SHIELD STRAND Ø mm	SINGLE WIRE MAX Ø mm	BUNDLE MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	NOM.CROSS SECTION mm ²	DC RESISTANCE AT 20°C MAX. Ω/Km				
ESA/SCC 3901 019 80	28	7x0.127 SPCA	0.47	0.09	260	0.079	0.87	2.70	12.50
ESA/SCC 3901 019 81	26	19x0.10 SPCA	0.57	0.15	172	0.079	0.96	2.90	15.80
ESA/SCC 3901 019 82	24	19x0.12 SPCA	0.58	0.25	123	0.079	1.13	3.40	20.40
ESA/SCC 3901 019 83	22	19x0.15 SPC	0.76	0.40	64	0.079	1.25	3.70	28.40
ESA/SCC 3901 019 84	20	19x0.20 SPC	0.99	0.60	37	0.079	1.48	4.40	43.00

SPC : silver plated copper - SPCA : silver plated copper alloy



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

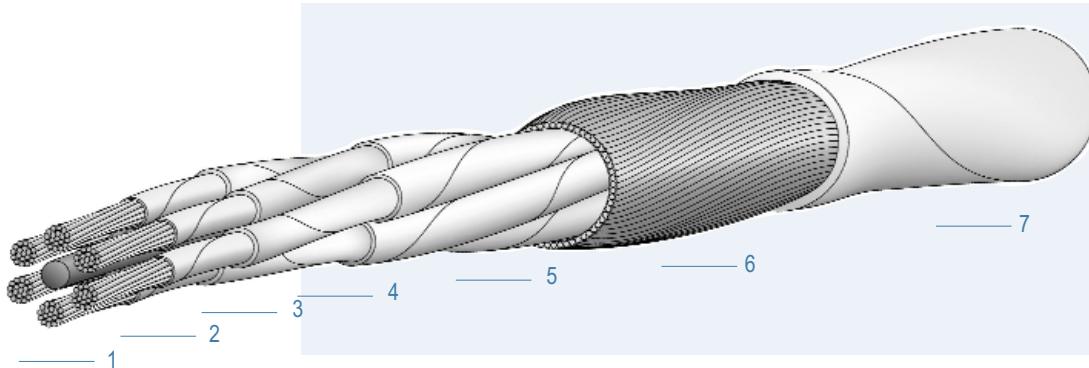
POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



Shielded jacketed twisted 6-core cables

**ESA/SCC
3901 019****Polyimide insulation****Operating temperature, -200°C up to +200°C****Voltage rating, 600 V AC max.**

Construction

- 1 - PTFE filler
- 2 - Stranded silver plated copper or copper alloy conductor
- 3 - PTFE tape
- 4 - Polyimide tape
- 5 - Polyimide tape
- 6 - Silver plated copper helicoidal shield
- 7 - 2 Polyimide tapes

Main characteristics

Excellent physical, chemical and electrical properties :

- excellent penetration resistance under pressure,
- excellent radiation resistance,
- resist large overloads with no fire risk,
- non-flammable,
- good flexibility,
- resistant to most chemicals,
- specially designed for thermal stripping to avoid damage,
- easy to strip with thermal tools or mechanical tools.

AXON' REFERENCE	AWG	CONDUCTOR				SHIELD STRAND Ø mm	SINGLE WIRE MAX Ø mm	BUNDLE MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	NOM.CROSS SECTION mm²	DC RESISTANCE AT 20°C MAX. Ω/Km				
ESA/SCC 3901 019 85	28	7x0.127 SPCA	0.47	0.09	261	0.079	0.87	3.00	14.80
ESA/SCC 3901 019 86	26	19x0.10 SPCA	0.57	0.15	172	0.079	0.96	3.20	18.80
ESA/SCC 3901 019 87	24	19x0.12 SPCA	0.58	0.25	124	0.079	1.13	3.80	24.30
ESA/SCC 3901 019 88	22	19x0.15 SPC	0.76	0.40	65	0.079	1.25	4.10	34.00
ESA/SCC 3901 019 89	20	19x0.20 SPC	0.99	0.60	38	0.079	1.48	4.80	58.20

SPC : silver plated copper - SPCA : silver plated copper alloy



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



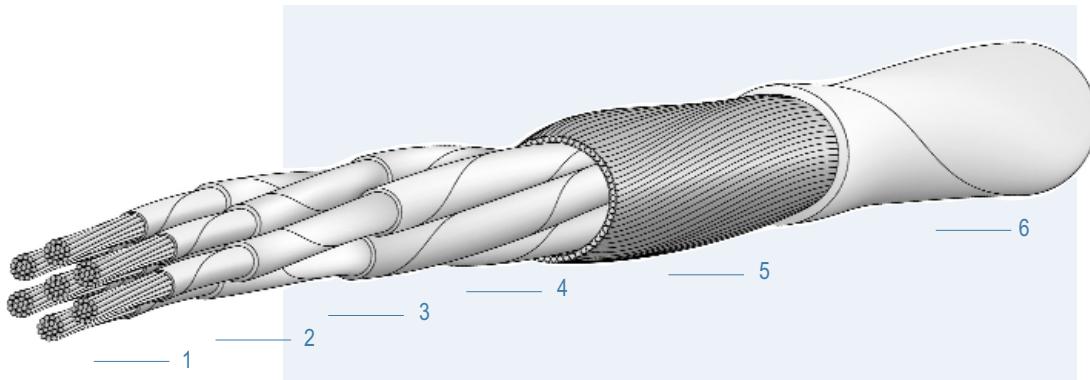
Shielded jacketed twisted 7-core cables

**ESA/SCC
3901 019**

Polyimide insulation

Operating temperature, -200°C up to +200°C

Voltage rating, 600 V AC max.



Construction

- 1 - Stranded silver plated copper or copper alloy conductor
- 2 - PTFE tape
- 3 - Polyimide tape
- 4 - Polyimide tape
- 5 - Silver plated copper helicoidal shield
- 6 - 2 Polyimide tapes

Main characteristics

Excellent physical, chemical and electrical properties :

- excellent penetration resistance under pressure,
- excellent radiation resistance,
- resist large overloads with no fire risk,
- non-flammable,
- good flexibility,
- resistant to most chemicals,
- specially designed for thermal stripping to avoid damage,
- easy to strip with thermal tools or mechanical tools.

AXON' REFERENCE	AWG	CONDUCTOR				SHIELD STRAND Ø mm	SINGLE WIRE MAX Ø mm	BUNDLE MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	NOM.CROSS SECTION mm²	DC RESISTANCE AT 20°C MAX. Ω/Km				
ESA/SCC 3901 019 90	28	7x0.127 SPCA	0.47	0.09	261	0.079	0.87	3.0	15.7
ESA/SCC 3901 019 91	26	19x0.10 SPCA	0.57	0.15	172	0.079	0.96	3.2	20.1
ESA/SCC 3901 019 92	24	19x0.12 SPCA	0.58	0.25	124	0.079	1.13	3.8	26
ESA/SCC 3901 019 93	22	19x0.15 SPC	0.76	0.40	65	0.079	1.25	4.1	37
ESA/SCC 3901 019 94	20	19x0.20 SPC	0.99	0.60	38	0.079	1.48	4.8	57

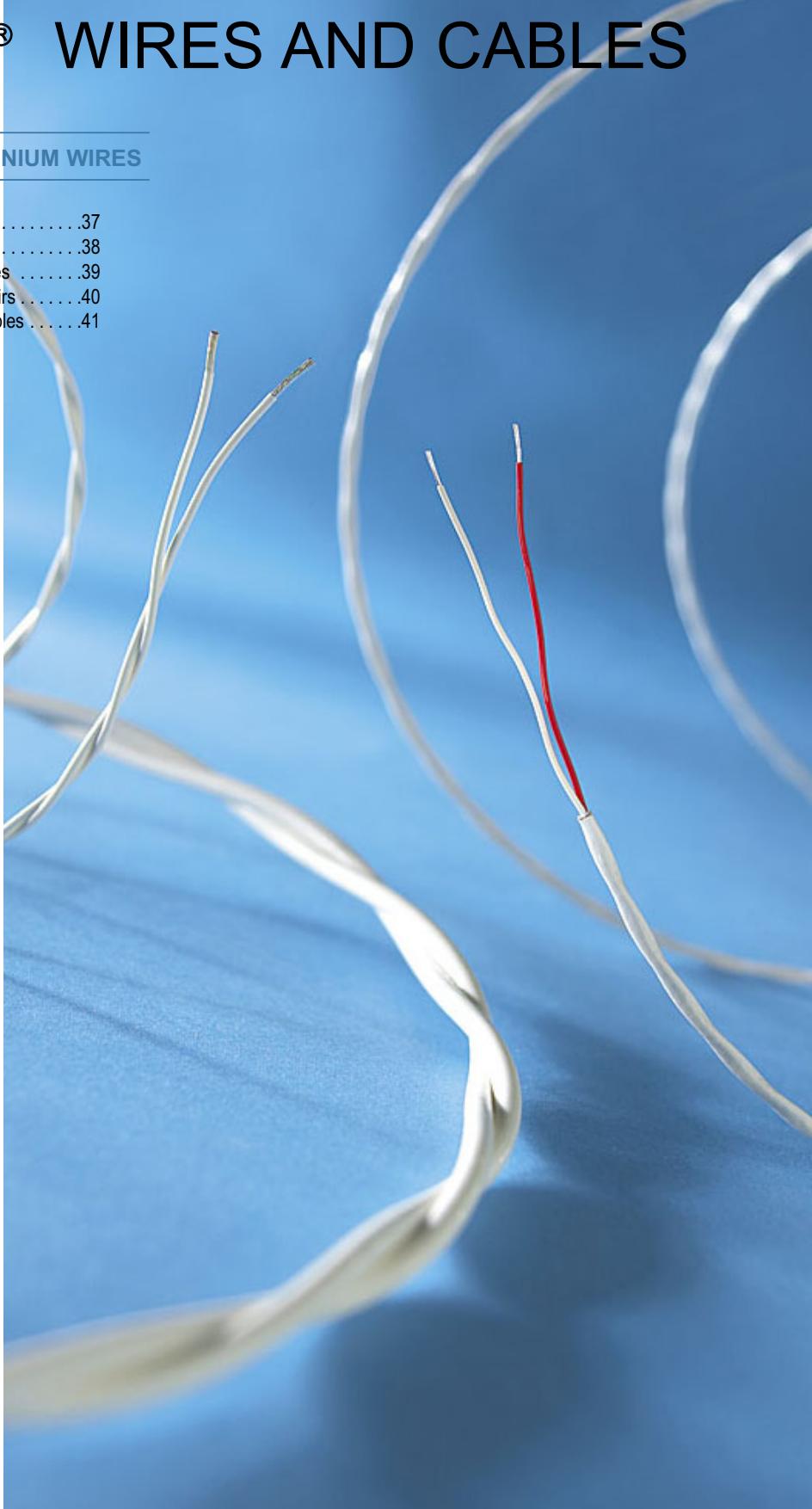
SPC : silver plated copper - SPCA : silver plated copper alloy

[SUMMARY](#)[ESA
WIRES AND
CABLES](#)[AXALU®
ALUMINIUM
WIRES](#)[MIL-STD-1553
DATABUS
HARNESS](#)[SPACEWIRE](#)[POWER
DISTRIBUTION
SYSTEM](#)[ACCESSORIES](#)[ANNEXES](#)

AXALU® WIRES AND CABLES

► AXALU®, ALUMINIUM WIRES

Single wires	37
Twisted pairs	38
Shielded jacketed single wires	39
Shielded jacketed twisted pairs	40
Shielded jacketed twisted triples	41





SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



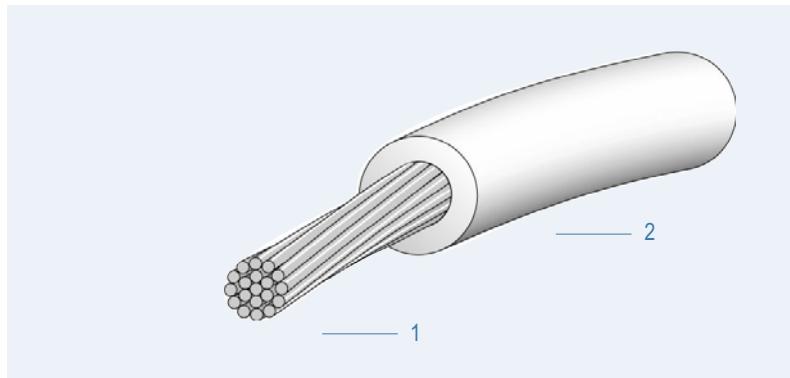
Single wires

axalu®
aluminium wires

Cross-linked ETFE insulation

Operating temperature, -100°C up to +150°C

Voltage rating, 600 V AC max.



Construction

- 1 - Stranded silver plated aluminium conductor
- 2 - Extruded crosslinked ETFE insulation.

Main characteristics

- 30 to 40% weight saving compared to equivalent copper wires,
- good cut-through resistance,
- good resistance to radiation,
- good X-Ray response.

AXON' REFERENCE	AWG	CONDUCTOR				MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	CROSS SECTION mm²	DC RESISTANCE AT 20°C MAX. Ω/Km		
AXL 1 M 2419 AS1	24	19x0.12	0.62	0.215	145	0.83	1.22
AXL 1 M 2219 AS1	22	19x0.15	0.77	0.336	92	1.00	1.70
AXL 1 M 2019 AS1	20	19x0.20	1.02	0.597	52	1.25	2.65
AXL 1 M 1819 AS1	18	19x0.25	1.27	0.933	33	1.50	3.83
AXL 1 M 1619 AS1	16	19x0.30	1.52	1.343	23	1.85	5.63
AXL 1 M 1437 AS1	14	37x0.25	1.77	1.816	17	2.22	8.08
AXL 1 M 1237 AS1	12	37x0.32	2.26	2.98	10.30	2.82	12.88
AXL 1 M 1037 AS1	10	37x0.405	2.86	4.77	6.40	3.57	20.41
AXL 1 M 8133 AS1	8	133x0.287	4.34	8.6	3.60	4.97	34.27



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



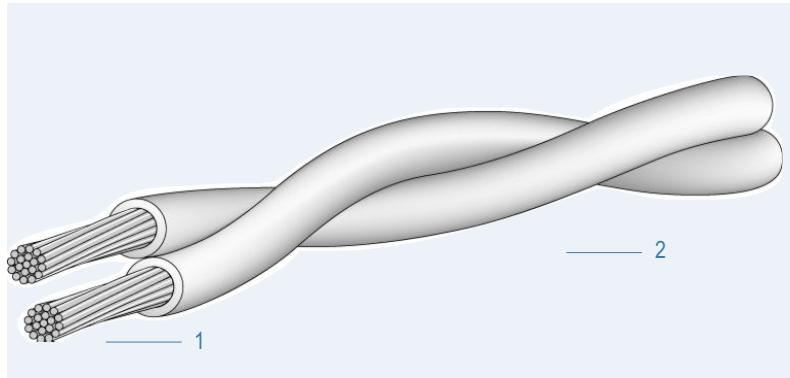
Twisted pairs

axalu®
aluminium wires

Cross-linked ETFE insulation

Operating temperature, -100°C up to +150°C

Voltage rating, 600 V AC max.



Construction

- 1 - Stranded silver plated aluminium conductor
- 2 - Extruded crosslinked ETFE insulation.

Main characteristics

- 30 to 40% weight saving compared to equivalent copper wires,
- good cut-through resistance,
- good resistance to radiation,
- good X-Ray response.

AXON' REFERENCE	AWG	CONDUCTOR				SINGLE WIRE MAX Ø mm	BUNDLE MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	CROSS SECTION mm²	DC RESISTANCE AT 20°C MAX. Ω/Km			
AXL 1 M 2419 AS2	24	19x0.12	0.62	0.215	150	0.83	1.66	2.56
AXL 1 M 2219 AS2	22	19x0.15	0.77	0.336	95	1.00	2.00	3.51
AXL 1 M 2019 AS2	20	19x0.20	1.02	0.597	53	1.25	2.50	5.45
AXL 1 M 1819 AS2	18	19x0.25	1.27	0.933	34	1.50	3.00	7.89
AXL 1 M 1619 AS2	16	19x0.30	1.52	1.343	23.5	1.85	3.70	11.6
AXL 1 M 1437 AS2	14	37x0.25	1.77	1.816	17.4	2.22	4.50	16.65
AXL 1 M 1237 AS2	12	37x0.32	2.26	2.98	10.6	2.82	5.70	26.54
AXL 1 M 1037 AS2	10	37x0.405	2.86	4.77	6.6	3.57	7.20	42.05
AXL 1 M 8133 AS2	8	133x0.287	4.34	8.6	3.7	4.97	10.00	71.00



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



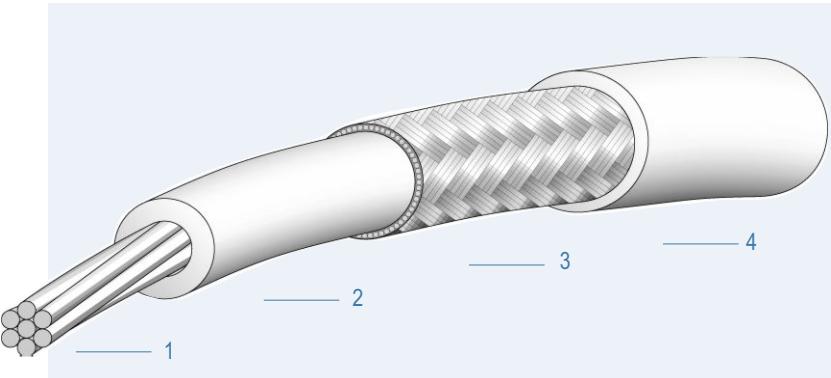
Shielded jacketed single wires

axalu®
aluminium wires

Cross-linked ETFE insulation

Operating temperature, -100°C up to +150°C

Voltage rating, 600 V AC max.



Construction

- 1 - Stranded silver plated aluminium conductor
- 2 - Extruded crosslinked ETFE insulation
- 3 - Silver plated aluminium braided shield
- 4 - Extruded crosslinked ETFE insulation outer jacket

Main characteristics

- 30 to 40% weight saving compared to equivalent copper wires,
- good cut-through resistance,
- good resistance to radiation,
- good EMI protection,
- good X-Ray response.

AXON' REFERENCE	AWG	CONDUCTOR				SHIELD STRAND Ø mm	SINGLE WIRE MAX Ø mm	BUNDLE MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	CROSS SECTION mm²	DC RESISTANCE AT 20°C MAX. Ω/Km				
AXL 1 M 2419 AS1C	24	19x0.12	0.62	0.215	145	0.1	0.83	1.60	3.86
AXL 1 M 2219 AS1C	22	19x0.15	0.77	0.336	92	0.1	1	1.77	4.55
AXL 1 M 2019 AS1C	20	19x0.20	1.02	0.597	52	0.1	1.25	2.02	6.15
AXL 1 M 1819 AS1C	18	19x0.25	1.27	0.933	33	0.1	1.5	2.26	8.02



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



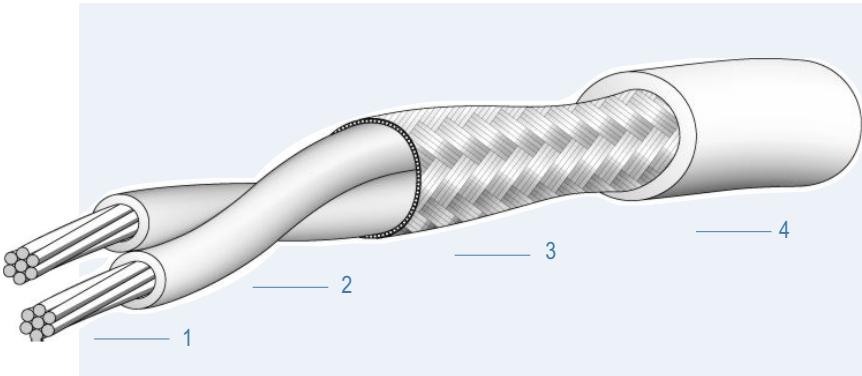
Shielded jacketed twisted pairs

axalu®
aluminium wires

Cross-linked ETFE insulation

Operating temperature, -100°C up to +150°C

Voltage rating, 600 V AC max.



Construction

- 1 - Stranded silver plated aluminium conductor
- 2 - Extruded crosslinked ETFE insulation
- 3 - Silver plated aluminium braided shield
- 4 - Extruded crosslinked ETFE insulation outer jacket

Main characteristics

- 30 to 40% weight saving compared to equivalent copper wires,
- good cut-through resistance,
- good resistance to radiation,
- good EMI protection,
- good X-Ray response.

AXON' REFERENCE	AWG	CONDUCTOR				SHIELD STRAND Ø mm	SINGLE WIRE MAX Ø mm	BUNDLE MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	CROSS SECTION mm²	DC RESISTANCE AT 20°C MAX. Ω/Km				
AXL 1 M 2419 AS2C	24	19x0.12	0.62	0.215	150	0.1	0.83	2.48	7.20
AXL 1 M 2219 AS2C	22	19x0.15	0.77	0.336	95	0.1	1.00	2.82	8.93
AXL 1 M 2019 AS2C	20	19x0.20	1.02	0.597	53	0.1	1.25	3.32	11.86
AXL 1 M 1819 AS2C	18	19x0.25	1.27	0.933	34	0.1	1.50	3.82	15.31



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



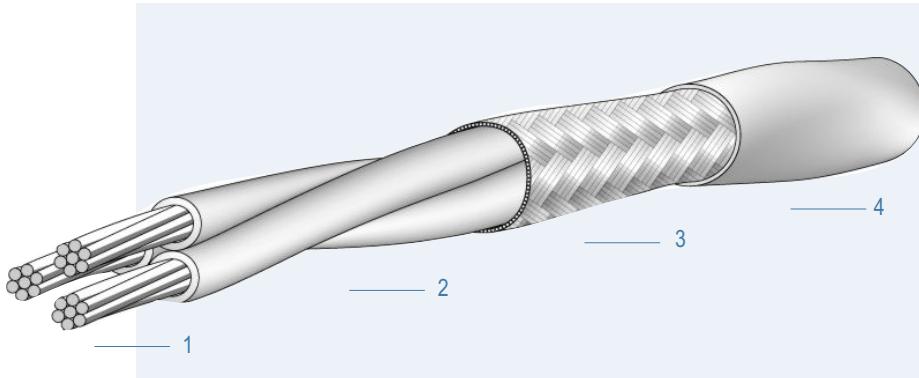
Shielded jacketed twisted triples

axalu®
aluminium wires

Cross-linked ETFE insulation

Operating temperature, -100°C up to +150°C

Voltage rating, 600 V AC max.



Construction

- 1 - Stranded silver plated aluminium conductor
- 2 - Extruded crosslinked ETFE insulation
- 3 - Silver plated aluminium braided shield
- 4 - Extruded crosslinked ETFE insulation outer jacket

Main characteristics

- 30 to 40% weight saving compared to equivalent copper wires,
- good cut-through resistance,
- good resistance to radiation,
- good EMI protection,
- good X-Ray response.

AXON' REFERENCE	AWG	CONDUCTOR				SHIELD STRAND Ø mm	SINGLE WIRE MAX Ø mm	BUNDLE MAX Ø mm	MAX WEIGHT g/m
		STRANDING Nb x Ø mm	MAX Ø mm	CROSS SECTION mm²	DC RESISTANCE AT 20°C MAX. Ω/Km				
AXL 1 M 2419 AS3C	24	19x0.12	0.62	0.215	150	0.10	0.83	2.65	9.00
AXL 1 M 2219 AS3C	22	19x0.15	0.77	0.336	95	0.10	1.00	3.02	11.32
AXL 1 M 2019 AS3C	20	19x0.20	1.02	0.597	53	0.10	1.25	3.55	15.48
AXL 1 M 1819 AS3C	18	19x0.25	1.27	0.933	34	0.10	1.50	4.09	20.58

[SUMMARY](#)[ESA
WIRES AND
CABLES](#)[AXALU®
ALUMINIUM
WIRES](#)[MIL-STD-1553
DATABUS
HARNESS](#)[SPACEWIRE](#)[POWER
DISTRIBUTION
SYSTEM](#)[ACCESSORIES](#)[ANNEXES](#)

MIL-STD-1553B DATABUS HARNESES

► AXOBUS® HARNESS

Introduction	43
Identification code	44
Terminator identification code	45

► AXOBUS® CABLE

AXOBUS® cable types	46
Cable construction	47

► MICROCOUPLER

Single inline microcoupler	48
Double inline microcoupler	50
3 ways inline microcoupler	52
4 ways inline microcoupler	54

► TERMINATOR

Inline bus terminator	56
Dismountable bus terminator	57

► SPLICE

Inline splice crimp	58
---------------------------	----





SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABUS
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



AXON' databus harnesses and components

- The general identification code shows our commercial part numbers and the way in which to order in-line couplers with cable length (page 44) & terminators with cable length (page 45).

Note

- You must choose AMB/S for space use but all the versions are identified.
- You should consult us if you need a harness design. Axon' will allocate a study number and, when ready to manufacture, a plan number for ordering for each harness.

- Following on the different versions of databus cables are on pages 46 & 47. Those which are currently used for space are identified with "S" in the table.

Note

- There are different gauge available - AWG 2219, AWG 2419 (the most commonly used) and AWG 2619. The conductor area might be critical to the program. We have a light version of the cables.
- you can have several versions of shields giving different level of electromagnetic efficiency.

- The coupler and terminator specifications give a lot of technical data to help characterise the products. All of them are for space use. Please study carefully to ensure the best solution for your routing (number of stubs, PCB routing, integrated terminators...).

- To finish, some accessories such as removable terminators (77 Ohms in a space approved connector with or without ESD protection) and splices.

- For aeronautic programs we have developed many different products which are not included in this brochure (such as couplers with relays, box couplers, databus connectors, etc) Please don't hesitate to contact us if you have a specific need.

We have also specific product developed for the International Space Station (ISS) under SSQ specification.



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASE
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



AXOBUS® HARNESS

Identification code for space & aeronautics applications

AMB / S - Cx - XX - XX ^ XX-XX

AXON' MICROBUS

AERONAUTICS VERSION **A**
 EUROFIGHER VERSION **E**
 SPACE VERSION **S**

- C1** : SINGLE MICROCOUPLER with bus lines on opposite sides of the coupler
- C11** : SINGLE MICROCOUPLER with bus lines on same side of the coupler
- C2** : DOUBLE MICROCOUPLER with bus lines on opposite sides of the coupler
- C21** : DOUBLE MICROCOUPLER with bus lines on same side of the coupler
- C3** : 3 STUB MICROCOUPLER with bus lines on opposite sides of the coupler
- C31** : 3 STUB MICROCOUPLER with bus lines on same side of the coupler
- C4** : 4 STUB MICROCOUPLER with bus lines on opposite sides of the coupler
- C41** : 4 STUB MICROCOUPLER with bus lines on same side of the coupler

CABLE REFERENCES

(See cable construction page 47)

- 10** = TWINAX BUS 10 AWG24 SB [SINGLE BRAID] according to MIL-C17/176-00002 **A**
- 20** = TWINAX BUS 20 AWG24 SB [SINGLE BRAID] accord. to pr EN 3375-003 **A**
- 21** = TWINAX BUS 21 AWG24 DB [DOUBLE BRAID] accord. to pr EN 3375-004 **A**
- 22** = TWINAX BUS 22 AWG24 HI [HIGH IMMUNITY] accord. to pr EN 3375-005 **A**
- 31** = TWINAX BUS 31 AWG24 DB [DOUBLE BRAID] according to PAN6421 **E**
- 40** = TWINAX BUS 40 AWG24 SB [SINGLE BRAID] according to SSQ 21655 Rev. E **S**
- 41** = TWINAX BUS 41 AWG 24 DB [DOUBLE BRAID] **S**
- 43** = TWINAX BUS 43 AWG 26 SB [SINGLE BRAID] **S**
- 44** = TWINAX BUS 44 AWG26 DB [DOUBLE BRAID] **S**
- 45** = TWINAX BUS 45 AWG22 SB [SINGLE BRAID] according to SSQ 21655 Rev. E **S**
- 60** = TWINAX BUS 60 AWG24 SB [SINGLE BRAID] **A**
- 61** = TWINAX BUS 61 AWG24 DB [DOUBLE BRAID] **A**
- 70** = TWINAX BUS 70 AWG26 SB [SINGLE BRAID] **A**
- 71** = TWINAX BUS 71 AWG26 DB [DOUBLE BRAID] according to ECS 0700 **A**
- 72** = TWINAX BUS 72 AWG26 HI [HIGH IMMUNITY] **A**

CABLE LENGTH (in meters)

COLOUR OF THE BUS LINE

H = blue
 L = white

COLOUR OF THE STUB LINE

H = blue
 L = white

HS = blue with black stripes

LS = white with blue stripes

INTEGRATED TERMINATOR

TL = Terminator on left side of coupler

TR = Terminator on right side of coupler

= No terminator

TT = Terminator on both sides

ATTENTION : please see the technical data sheets to verify the compatibility between the coupler version, cable type and cable colour. Also, verify the existence of the coupler and the colour of the cable.



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASE
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

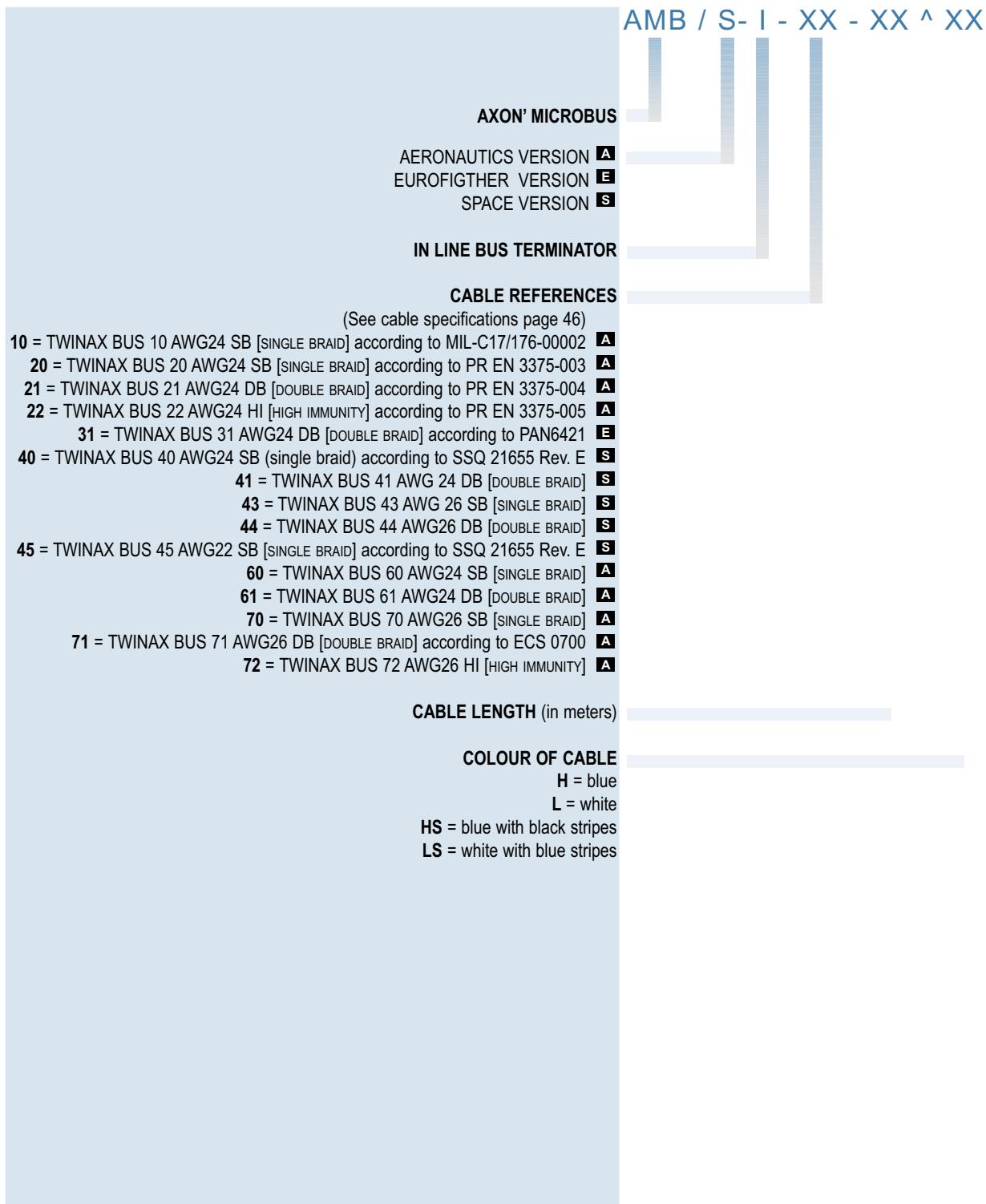
ACCESSORIES

ANNEXES



AXOBUS® HARNESS

Terminator identification code for space & aeronautics applications





SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABUS
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



AXOBUS® CABLE

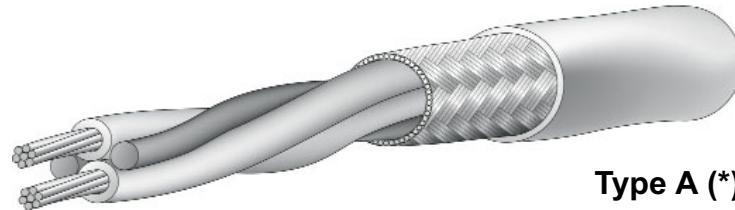
SPECIFICATIONS

MIL-STD-1553B
MIL-C-17/176-00002
pr EN 3375
PANAVIA 6421
ECS 0700
SSQ 21655

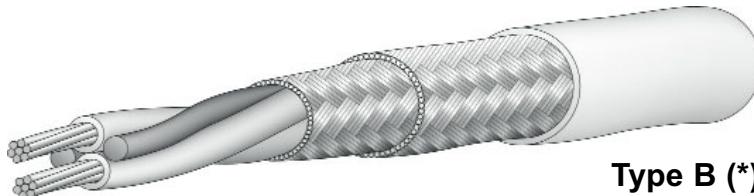
Operating temperature : -90°C to +200°C
(ambient and peak temperature)

Characteristic impedance : $77 \pm 7 \Omega$ at 1 MHz
($77 \pm 3 \Omega$ at 1 MHz for TWINAX BUS cable 31).

Linear capacitance between wires : see table on next page.



Type A (*)



Type B (*)



Type C (*)

(*) : See cable type in the chart on the next page

Special cable versions

- Supplementary jacket or protection on the jacket.
- Insertion of the Bus cables inside a complex round construction.
- In some cases possibility to differentiate Bus and Stub cable with a striped colour tape under the transparent jacket or the extrusion of a colour jacket.

Transfer impedance standard values mΩ/m max.

TYPE OF CABLE	CONSTRUCTION	FREQUENCY			
		0 Hz	1 MHz	10 MHz	30 MHz
TWINAX BUS 10	A	30	40	100	200
TWINAX BUS 20	A	45	45	45	100
TWINAX BUS 21	B	15	5	5	10
TWINAX BUS 22	C	15	2.5	2.5	0.1
TWINAX BUS 31 or 61	B	20	10	10	10
TWINAX BUS 40	A	30	40	100	200
TWINAX BUS 41	B	15	5	5	10
TWINAX BUS 43 or 70	A	100	100	100	100
TWINAX BUS 44 or 71	B	30	30	15	15

Note : The transfer impedance values of the TWINAX BUS 20, 21, 22 and 31 cables are specified in the corresponding standards.
The values of the other cable types are guaranteed by AXON'.



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



Cable construction

PRODUCT DESIGNATION	VERSIONS	SPECIFICATION	CABLE TYPE	AWG	PRIMARY WIRE		SHIELD NOM. Ø	BRAID & TAPE MATERIAL	OUTER JACKET	INSULATED CABLE		CAPACI- TY pF/m
					CONDUCTOR MATERIALS AND CONSTRUCTION	DIELECTRIC AND FILLER MATERIALS				OUTER DIAM. (mm)	WEIGHT (g/m)	
TWINAX BUS 10 P 502810	A	MIL-STD-1553B MIL-C-17/176-00002	A	24	SPC alloy 19 x 0.127 mm	Extruded PTFE	2.60	Single braid : SPC alloy	PFA	3.15 to 3.40	26.80 nom.	< 78.75
TWINAX BUS 20 P 502805	A	MIL-STD-1553B NF-L-52161-1 pr EN 3375-003	A	24	SPC alloy 19 x 0.120 mm	Extruded PTFE	2.58	Single braid : SPC	FEP	3.10 to 3.30	24.00 nom.	< 78.75
TWINAX BUS 21 P 512806	A	MIL-STD-1553B NF-L-52161-2 pr EN 3375-004	B	24	SPC alloy 19 x 0.120 mm	Extruded PTFE	3.00	Double braid : SPC	FEP	3.60 to 3.80	37.00 nom.	< 78.75
TWINAX BUS 22 P 512807	A	MIL-STD-1553B NF-L-52161-3 pr EN 3375-005	C	24	SPC alloy 19 x 0.120 mm	Extruded PTFE	3.10	Double braid : SPC - High magnetic per- meability tape	FEP	3.70 to 3.90	43.30 nom.	< 78.75
TWINAX BUS 31 PANAVIA BUS P 507991	E	MIL-STD-1553B PAN 6421	B	24	SPC alloy 19 x 0.118 mm	Polyimide tape and PTFE filler	3.14	Double braid : SPC	FEP	3.50 to 3.80	29.00 max.	< 98.40
TWINAX BUS 40 BUS BOEING/NASA NDBC-TFE-24S2SJ-75 P 512296	S	MIL-STD-1553B SSQ 21655 Rev. E	A	24	SPC alloy 19 x 0.127 mm Silver plating 2mm	Extruded PTFE	2.58	Single braid : SPC alloy Silver plating 2mm	FEP	3.175 to 3.37	21.50 nom.	< 80
TWINAX BUS 41	S	MIL-STD-1553B	B	24	SPC alloy 19 x 0.120 mm Silver plating 2mm	Extruded PTFE	3.00	Double braid : SPC Silver plating 2mm	FEP	3.60 to 3.80	37.00 nom.	< 78.75
TWINAX BUS 43	S	MIL-STD-1553B	A	26*	SPC 19 x 0.102 mm Silver plating 2mm	Extruded PTFE	2.05	Single braid : SPC Silver plating 2mm	FEP	2.40 to 2.60	14.60 nom.	< 78.75
TWINAX BUS 44 P530781	S	MIL-STD-1553B	B	26*	SPC 19 x 0.102 mm Silver plating 2mm	Extruded PTFE	2.40	Double braid : SPC Silver plating 2mm	FEP	2.80 to 3.00	21.00 max.	< 80
TWINAX BUS 45 BUS BOEING/NASA NDBC-TFE-22S2SJ-75 P 812302	S	MIL-STD-1553B SSQ 21655 Rev. E	A	22*	SPC alloy 19 x 0.16 mm Silver plating 2mm	CELLOFLON® expanded PTFE	3.09	Single braid : SPC alloy Silver plating 2mm	FEP	3.76 to 4.06	27.70 nom.	< 80
TWINAX BUS 60 P 819845	A	MIL-STD-1553B	A	24	SPC 19 x 0.127 mm	CELLOFLON® expanded PTFE	2.41	Single braid : SPC	FEP	2.90 to 3.10	18.00 nom.	< 70.00
TWINAX BUS 61 P 815721	A	MIL-STD-1553B	B	24	SPC 19 x 0.127 mm	CELLOFLON® expanded PTFE	2.76	Double braid : SPC	FEP	3.10 to 3.30	24.00 nom.	< 70.00
TWINAX BUS 70 P 504621	A	MIL-STD-1553B	A	26*	SPC 19 x 0.102 mm	Extruded PTFE	2.05	Single braid : SPC	FEP	2.40 to 2.60	14.60 nom.	< 78.75
TWINAX BUS 71 P 517417	A	MIL-STD-1553B ECS 0700	B	26*	SPC 19 x 0.102 mm	Extruded PTFE	2.40	Double braid : SPC	FEP	2.80 to 3.00	21.00 max.	< 80
TWINAX BUS 72 P511981	A	MIL-STD-1553B	C	26	SPC 19 x 0.102 mm	Extruded PTFE	2.45	Double braid : SPC -High magnetic per- meability tape	FEP	2.90 to 3.10	25.00 nom.	< 80

Other cables on request.

SPC : Silver Plated Copper - * In case of AWG26 or AWG22 cable, please ask AXON' for compatibility with crimp connectors.



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



Single inline microcoupler

SPECIFICATIONS

Microcoupler

MIL-STD-1553B (STANAG 3838)
 SSQ 21676 (NASA-BOEING)
 PID (CNES), SPE-J-403-A-0070

Testing

AS-SAE-4115

Resistor

ESA-ESCC-4002/005,
 or MIL-R-39007

Solder

ESA-ECSS-Q-70-08,
 MIL-STD-2000, NHB 5300.4.

Derating

ESA PSS-01-301

Potting material

ESA-ECSS-Q-70-02, ASTM E595,
 and ESA-ECSS-Q-70-29
 or NHB 8060.1.

Connector assemblies

ESA-ECSS-Q-70-26
 or NHB 5300.4.

Transformer

JN1081 approved
 DDP-J-403-A-022

ESA approved (COF-BCS-PAD01)

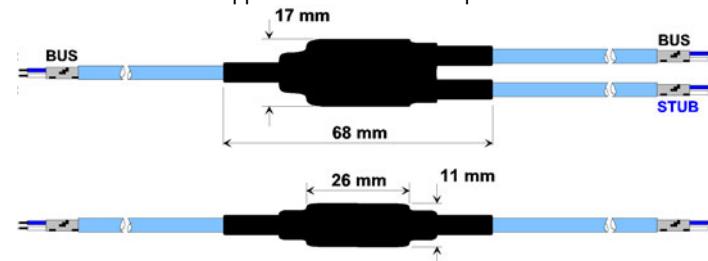
All processes, materials and
 components are approved
 by CNES (see CNES-PID-01-
 AXON') and BOEING/NASA.

AMB / S - C1 - XX

AMB / S - C11 - XX

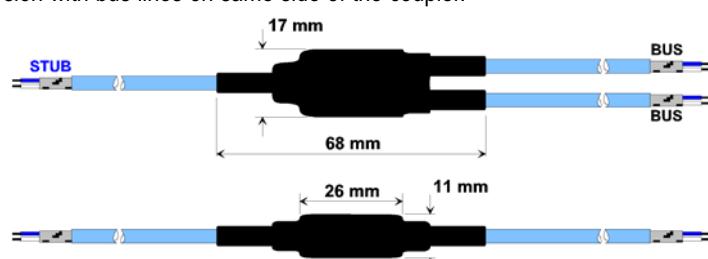
AMB / S - C1 - XX

Version with bus lines on opposite sides of the coupler.



AMB / S - C11 - XX

Version with bus lines on same side of the coupler.

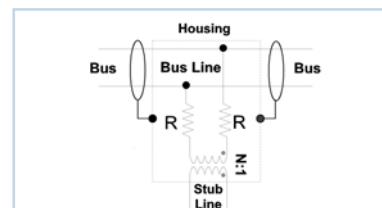


Electrical scheme

$$N = 1,41 \pm 3\%$$

R = fault Protection Resistance

$$R = 0.75 \quad Z_0 = 57,6 \Omega \pm 1\%$$



Identification code

AMB /	S	CX	XX
AXON' MICROBUS (see complete reference of the coupler on Bus Standard sheet).	S : SPACE VERSION	1 : SINGLE MICROCOUPLER Version with bus lines on opposite sides of the coupler. 11 : SINGLE MICROCOUPLER Version with bus lines on same side of the coupler.	CABLE REFERENCES 40 = TWINAX BUS AWG 24 SB (single braid) according to SSQ 21655 (NASA qualified). 41 = TWINAX BUS AWG 24 DB (DOUBLE braid) 43 = TWINAX BUS AWG 26 SB (single braid) 44 = TWINAX BUS AWG 26 DB (double braid) 45 = TWINAX BUS AWG 22 SB (double braid) according to SSQ 21655 (NASA qualified).

Note : CABLE LENGTH AND CABLE COLOUR TO BE DEFINED WHEN ORDERING
 (possibility to differentiate Bus and Stub cable with a striped colour tape under the transparent jacket or the extrusion of a colour jacket).
 Possibility to integrate terminator in the couplers.



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABUS
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



AMB / S - C1 - XX

AMB / S - C11 - XX

Electrical characteristics

PARAMETERS	REQUIRED	ACTUAL
Nominal line impedance *	70 to 84	77
Turns ratio	1.41 ± 3 %	1.41 ± 3 %
CMR	< -45 dB at 1 MHz	< -50 dB at 1 MHz
Input impedance	> 3000 Ω in the frequency range (75 KHz to 1 MHz) and in the indicated temp. range (-65°C to 150°C)	> 3000 Ω
Fault protection insulation resistors in series on each bus winding connection	0.75 Z ₀ ± 2 %	57.6 Ω +/- 1 %
Insulation resistance between :		
bus / stub	100 MΩ	> 1 000 MΩ at 250 VDC
inner wires / shield	100 MΩ	> 1 000 MΩ at 500 VDC
Transfer impedance	-	plot available
Shield continuity	-	10 mΩ max.
Shield coverage	Cable 90 % Connection 75 %	Cable 90 % min. Connection 100 %
Dielectric withstanding strength :		
between shield and inner wires	-	500 Vrms
between outer insulation and shield	-	500 Vrms

* Impedance : seen from the stub when the Bus line is loaded with Z₀ at both sides of the coupler.

Environmental characteristics

PARAMETERS	REQUIRED	ACTUAL
Operating temperature	-	-65° to + 150°C
Out-gassing	SP-R-0022 - TML < 1 % ASTM-E-595 - CVCM < 0.1 % ESA-ECSS-Q-70-02	TML = 0.0005 %, CVCM = 0 % WVR = 0.00023 % and RML = 0.00027 %
Off-gassing	NHB 8060.1 Test 7 ESA-ECSS-Q-70-29	T = 0.00024 for 65 m ³ volume per coupler MLW (#) = 2112 for 65 m ³ volume
MTBF according to MIL HDBK-217	-	7.20 x 10 ⁷ hrs at 25°C and SF environment

Out and Off-gassing results, flammability available for all materials used.

Mechanical characteristics

PARAMETERS	REQUIRED	ACTUAL
Weight	-	10 g
Life test	-	1 000 hrs. at 120°C
Shocks	-	15g's in all directions
Acceleration	-	20 g's in all directions
Random vibrations	-	Wo = 0.2 g ² / Hz (functional at 120°) Wo = 0.83 g ² / Hz (endurance)

OTHER MECHANICAL AND ENVIRONMENTAL TESTS AVAILABLE ON REQUEST.

Transformer characteristics

PARAMETERS	REQUIRED VALUES BY MIL-STD-1553 STANDARD or SAE AS 4117	NOMINAL VALUE OR AXON' REQUIRED VALUE	
		NOMINAL	REQUIRED BY AXON' / QUALITY PLAN
The Curie point	-	-	Over 195° C
Primary DC resistance	-	R _p = 3 Ω	R _p < 3.5 Ω
Secondary C resistance	Rs < 5 Ω	Rs = 2 Ω	Rs < 2.5 Ω
Insulation resistance (winding to winding)	R _i > 100 MΩ	-	R _i > 1 000 MΩ with 250 VDC test
Transformer open circuit impedance	[Z] > 3 kΩ from 75KHz to 1MHz (tested with a 1 Vrms sine wave)	at T = 25° C [Z]>10 kΩ from 75KHz to 1 MHz at T = -65° C [Z]> 4.8 kΩ from 75KHz to 1 MHz at T = -85° C [Z] > 4 kΩ from 75 kHz to 1 MHz	[Z] > 10 kΩ from 75 KHz to 1 MHz @ = 25° C*** > 20 mH
Primary parallel inductance	-	22 mH	< 12 pF
Primary parallel capacitance	-	10 pF	-
Inter-winding capacitance	-	45 pF	< 6.0 μH
Primary leakage inductance	-	-	< 20 % **
Droop *	< 20 %	4.5 % **	< 20 % **
Overshoot and ringing *	± 1 V	0.30 V**	< ± 1 V**

* Tested with a 250 KHz square wave of 27 Vpp with 100ns rise and fall times through a 360 ± 5 % Ω resistor.

** Average values taken during the JN 1081N qualification.

*** 10 kΩ @ T = 25°C guarantees 3 KΩ from T = -65°C to T = 150°C



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABUS
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



SPECIFICATIONS

Microcoupler

MIL-STD-1553B (STANAG 3838)
 SSQ 21676 (NASA-BOEING)
 PID (CNES), SPE-J-403-A-0070

Testing

AS-SAE-4115

Resistor

ESA ESCC-4002/005,
 or MIL-R-39007

Solder

ESA-ECSS-Q-70-08,
 MIL-STD-2000, NHB 5300.4.

Derating

ESA PSS-01-301

Potting material

ESA-ECSS-Q-70-02, ASTM E595,
 and ESA-ECSS-Q-70-29
 or NHB 8060.1.

Connector assemblies

ESA-ECSS-Q-70-26
 or NHB 5300.4.

Transformer

JN1081 approved
 DDP-J-403-A-022

ESA approved (COF-BCS-PAD01)

All processes, materials and components are approved by CNES (see CNES-PID-01-'AXON') and BOEING/NASA.

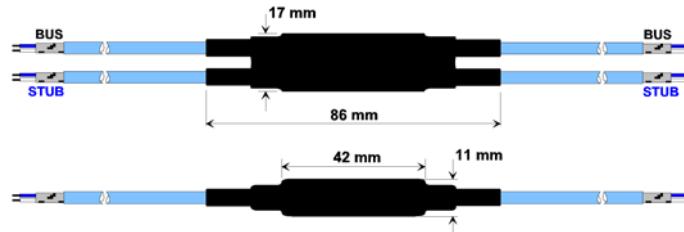
Double inline microcoupler

AMB / S - C2 - XX

AMB / S - C21 - XX

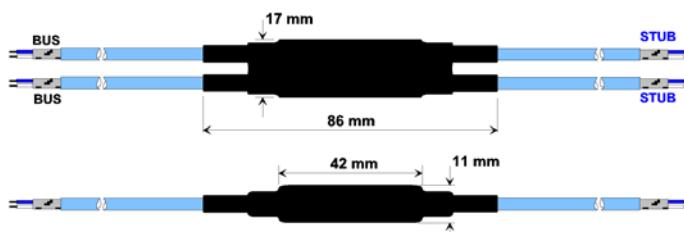
AMB / S - C2 - XX

Version with bus lines on opposite sides of the coupler



AMB / S - C21 - XX

Version with bus lines on same side of the coupler

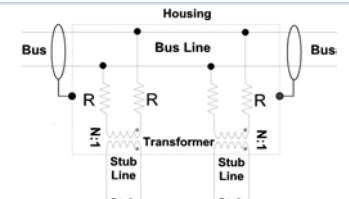


Electrical scheme

$$N = 1,41 \pm 3\%$$

R = fault Protection Resistance

$$R = 0.75 \quad Z_0 = 57,6 \Omega \pm 1\%$$



Identification code

AMB /	S	CX	XX	...
AXON' MICROBUS (see complete reference of the coupler on Bus Standard sheet).	S : SPACE VERSION	2 : DOUBLE MICROCOUPLER Version with bus lines on opposite sides of the coupler. 21 : DOUBLE MICROCOUPLER Version with bus lines on same side of the coupler.	CABLE REFERENCES 40 = TWINAX BUS AWG 24 SB (single braid) according to SSQ 21655 (NASA qualified). 41 = TWINAX BUS AWG 24 DB (DOUBLE braid) 43 = TWINAX BUS AWG 26 SB (single braid) 44 = TWINAX BUS AWG 26 DB (double braid) 45 = TWINAX BUS AWG 22 SB (double braid) according to SSQ 21655 (NASA qualified).	

Note : CABLE LENGTH AND CABLE COLOUR TO BE DEFINED WHEN ORDERING
 (possibility to differentiate Bus and Stub cable with a striped colour tape under the transparent jacket or the extrusion of a colour jacket).
 Possibility to integrate terminator in the couplers.



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABUS
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



AMB / S - C2 - XX

AMB / S - C21 - XX

Electrical characteristics

PARAMETERS	REQUIRED	ACTUAL
Nominal line impedance *	70 to 84	77
Turns ratio	1.41 ± 3 %	1.41 ± 3 %
CMR	< -45 dB at 1 MHz	< -50 dB at 1 MHz
Input impedance	> 1500 Ω in the frequency range (75 KHz to 1 MHz) and in the indicated temp. range (-65°C to 150°C)	> 1500 Ω
Fault protection insulation resistors in series on each bus winding connection	0.75 Z ₀ ± 2 %	57.6 Ω +/- 1 %
Insulation resistance between :		
bus / stub	100 MΩ	> 1 000 MΩ at 250 VDC
inner wires / shield	100 MΩ	> 1 000 MΩ at 500 VDC
Transfer impedance	-	plot available
Shield continuity	-	10 mΩ max.
Shield coverage	Cable 90 % Connection 75 %	Cable 90 % min. Connection 100 %
Dielectric withstanding strength :		
between shield and inner wires	-	500 Vrms
between outer insulation and shield	-	500 Vrms

* Impedance : seen from the stub when the Bus line is loaded with Z₀ at both sides of the coupler.

Environmental characteristics

PARAMETERS	REQUIRED	ACTUAL
Operating temperature	-	-65° to + 150°C
Out-gassing	SP-R-0022 - TML < 1 % ASTM-E-595 - CVCM < 0.1 % ESA-ECSS-Q-70-02	TML = 0.0005 %, CVCM = 0 % WVR = 0.00023 % and RML = 0.00027 %
Off-gassing	NHB 8060.1 Test 7 ESA-ECSS-Q-70-29	T = 0.00024 for 65 m ³ volume per coupler MLW (#) = 2112 for 65 m ³ volume
MTBF according to MIL HDBK-217	-	4.37 x 10 ⁷ hrs at 25°C and SF environment

Out and Off-gassing results, flammability available for all materials used.

Mechanical characteristics

PARAMETERS	REQUIRED	ACTUAL
Weight	-	16 g
Life test	-	1 000 hrs. at 120°C
Shocks	-	15g's in all directions
Acceleration	-	20 g's in all directions
Random vibrations	-	Wo = 0.2 g ² / Hz (functional at 120°) Wo = 0.83 g ² / Hz (endurance)

OTHER MECHANICAL AND ENVIRONMENTAL TESTS AVAILABLE ON REQUEST.

Transformer characteristics

PARAMETERS	REQUIRED VALUES BY MIL-STD-1553 STANDARD or SAE AS 4115	NOMINAL VALUE OR AXON' REQUIRED VALUE	
		NOMINAL	REQUIRED BY AXON' / QUALITY PLAN
The Curie point	-	-	Over 195° C
Primary DC resistance	-	R _P = 3 Ω	R _P < 3.5 Ω
Secondary C resistance	R _S < 5 Ω	R _S = 2 Ω	R _S < 2.5 Ω
Insulation resistance (winding to winding)	R _i > 100 MΩ	-	R _i > 1 000 MΩ with 250 VDC test
Transformer open circuit impedance	[Z] > 3 kΩ from 75KHz to 1MHz (tested with a 1 Vrms sine wave)	at T = 25° C [Z]>10 kΩ from 75KHz to 1MHz at T = -65° C [Z]> 4.8 kΩ from 75KHz to 1MHz at T = -85° C [Z] > 4 kΩ from 75 kHz to 1 MHz 22 mH	[Z] > 10 kΩ from 75 KHz to 1 MHz @ = 25° C*** > 20 mH
Primary parynce		10 pF	< 12 pF
Primary parallel capacitance	-	45 pF	-
Inter-winding capacitance	-	-	< 6.0 μH
Primary leakage inductance	-	-	< 20 % **
Droop *	< 20 %	4.5 % **	< 20 % **
Overshoot and ringing *	± 1 V	0.30 V**	< ± 1 V**

* Tested with a 250 KHz square wave of 27 Vpp with 100ns rise and fall times through a 360 ± 5 % Ω resistor.

** Average values taken during the JN 1081N qualification.

*** 10 kΩ @ T = 25°C guarantees 3 KΩ from T = -65°C to T = 150°C



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



3 ways inline microcoupler

SPECIFICATIONS

Microcoupler

MIL-STD-1553B (STANAG 3838)
SSQ 21676 (NASA-BOEING)
PID (CNES)

Testing

AS-SAE-4115

Resistor

ESA ESCC-4002/005,
or MIL-R-39007

Solder

ESA-ECSS-Q-70-08,
MIL-STD-2000, NHB 5300.4.

Derating

ESA PSS-01-301

Potting material

ESA-ECSS-Q-70-02, ASTM E595,
and ESA-ECSS-Q-70-29
or NHB 8060.1.

Connector assemblies

ESA-ECSS-Q-70-26
or NHB 5300.4.

Transformer

JN1081 approved
DDP-J-403-A-022

ESA approved (COF-BCS-PAD01)

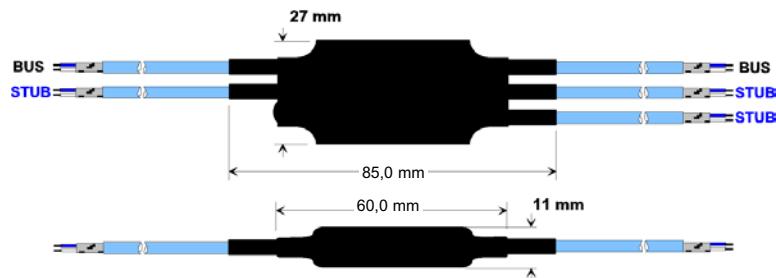
All processes, materials and components are approved by CNES (see CNES-PID-01-'AXON') and BOEING/NASA.

AMB / S - C3 - XX

AMB / S - C31 - XX

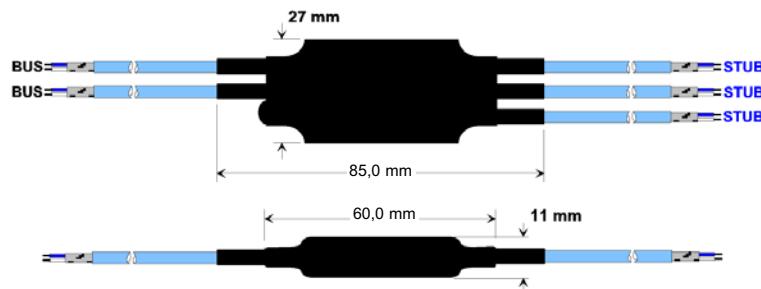
AMB / S - C3 - XX

Version with bus lines on opposite sides of the coupler



AMB / S - C31 - XX

Version with bus lines on same side of the coupler

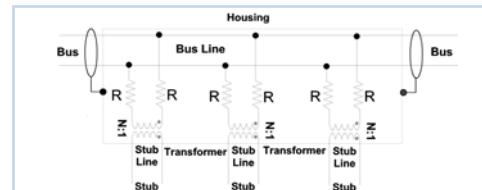


Electrical scheme

$$N = 1,41 \pm 3\%$$

R = Fault Protection Resistance

$$R = 0.75 \quad Z_0 = 57,6 \Omega \pm 1\%$$



Identification code

AMB /	S	CX	XX	...
AXON' MICROBUS (see complete reference of the coupler on Bus Standard sheet).	S : SPACE VERSION	3 : 3 STUB MICROCOUPLER Version with bus lines on opposite sides of the coupler 31 : 3 STUB MICROCOUPLER Version with bus lines on same side of the coupler	CABLE REFERENCES 40 = TWINAX BUS AWG 24 SB (SINGLE BRAID) according to SSQ 21655 (NASA qualified). 41 = TWINAX BUS AWG 24 DB (DOUBLE BRAID) 43 = TWINAX BUS AWG 26 SB (SINGLE BRAID) 44 = TWINAX BUS AWG 26 DB (DOUBLE BRAID) 45 = TWINAX BUS AWG 22 SB (DOUBLE BRAID) according to SSQ 21655 (NASA qualified).	

Note : CABLE LENGTH AND CABLE COLOUR TO BE DEFINED WHEN ORDERING
(possibility to differentiate Bus and Stub cable with a striped colour tape under the transparent jacket or the extrusion of a colour jacket).
Possibility to integrate terminator in the couplers.



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABUS
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



AMB / S - C3 - XX

AMB / S - C31 - XX

Electrical characteristics

PARAMETERS	REQUIRED	ACTUAL
Nominal line impedance *	70 to 84	77
Turns ratio	1.41 ± 3 %	1.41 ± 3 %
CMR	< -45 dB at 1 MHz	< -50 dB at 1 MHz
Input impedance	> 1000 Ω in the frequency range (75 KHz to 1 MHz) and in the indicated temp. range (-65°C to 150°C)	> 1000 Ω
Fault protection insulation resistors in series on each bus winding connection	0.75 Z _o ± 2 %	57.6 Ω +/- 1 %
Insulation resistance between :		
bus / stub	100 MΩ	> 1 000 MΩ at 250 VDC
inner wires / shield	100 MΩ	> 1 000 MΩ at 500 VDC
Transfer impedance	-	plot available
Shield continuity	-	10 mΩ max.
Shield coverage	Cable 90 % Connection 75 %	Cable 90 % min. Connection 100 %
Dielectric withstanding strength :		
between shield and inner wires	-	500 Vrms
between outer insulation and shield	-	500 Vrms

* Impedance : seen from the stub when the Bus line is loaded with Z_o at both sides of the coupler.

Environmental characteristics

PARAMETERS	REQUIRED	ACTUAL
Operating temperature	-	-65° to + 150°C
Out-gassing	SP-R-0022 - TML < 1 % ASTM-E-595 - CVCM < 0.1 % ESA-ECSS-Q-70-02	TML = 0.0005 %, CVCM = 0 % WVR = 0.00023 % and RML = 0.00027 %
Off-gassing	NHB 8060.1 Test 7 ESA-ECSS-Q-70-29	T = 0.00024 for 65 m³ volume per coupler MLW (#) = 2112 for 65 m³ volume
MTBF according to MIL HDBK-217	-	3.20 x 10 ⁷ hrs at 25°C and SF environment

Out and Off-gassing results, flammability available for all materials used.

Mechanical characteristics

PARAMETERS	REQUIRED	ACTUAL
Weight	-	< 25 g
Life test	-	1 000 hrs. at 120°C
Shocks	-	15g's in all directions
Acceleration	-	20 g's in all directions
Random vibrations	-	W _o = 0.2 g ² / Hz (functional at 120°) W _o = 0.83 g ² / Hz (endurance)

OTHER MECHANICAL AND ENVIRONMENTAL TESTS AVAILABLE ON REQUEST.

Transformer characteristics

PARAMETERS	REQUIRED VALUES BY MIL-STD-1553 STANDARD or SAE AS 4115	NOMINAL VALUE OR AXON' REQUIRED VALUE	
		NOMINAL	REQUIRED BY AXON' / QUALITY PLAN
The Curie point	-	-	Over 195° C
Primary DC resistance	-	R _p = 3 Ω	R _p < 3.5 Ω
Secondary C resistance	R _s < 5 Ω	R _s = 2 Ω	R _s < 2.5 Ω
Insulation resistance (winding to winding)	R _i > 100 MΩ	-	R _i > 1 000 MΩ with 250 VDC test
Transformer open circuit impedance	[Z] > 3 kΩ from 75KHz to 1MHz (tested with a 1 Vrms sine wave)	at T = 25° C [Z]>10 kΩ from 75KHz to 1MHz at T = -65° C [Z]> 4.8 kΩ from 75KHz to 1MHz at T = -85° C [Z] > 4 kΩ from 75 kHz to 1 MHz 22 mH	[Z] > 10 kΩ from 75 KHz to 1 MHz @ = 25° C*** > 20 mH < 12 pF
Primary parallel inductance	-	10 pF	< 20 pF
Primary parallel capacitance	-	45 pF	-
Inter-winding capacitance	-	-	< 6.0 μH
Primary leakage inductance	-	-	< 20 % **
Droop *	< 20 %	4.5 % **	< 20 % **
Overshoot and ringing *	± 1 V	0.30 V**	± 1 V**

* Tested with a 250 KHz square wave of 27 Vpp with 100ns rise and fall times through a 360 ± 5 % Ω resistor.

** Average values taken during the JN 1081N qualification.

*** 10 kΩ @ T = 25° C guarantees 3 KΩ from T = -65° C to T = 150° C



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



SPECIFICATIONS

Microcoupler

MIL-STD-1553B (STANAG 3838)
SSQ 21676 (NASA-BOEING)
PID (CNES),

Testing

AS-SAE-4115

Resistor

ESA ESAC-4002/005,
or MIL-R-39007

Solder

ESA-ECSS-Q-70-08,
MIL-STD-2000, NHB 5300.4.

Derating

ESA PSS-01-301

Potting material

ESA-ECSS-Q-70-02, ASTM E595,
and ESA-ECSS-Q-70-29
or NHB 8060.1.

Connector assemblies

ESA-ECSS-Q-70-26
or NHB 5300.4.

Transformer

JN1081 approved
DDP-J-403-A-022

ESA approved (COF-BCS-PAD01)

All processes, materials and
components are approved
by CNES (see CNES-PID-01-
AXON') and BOEING/NASA.

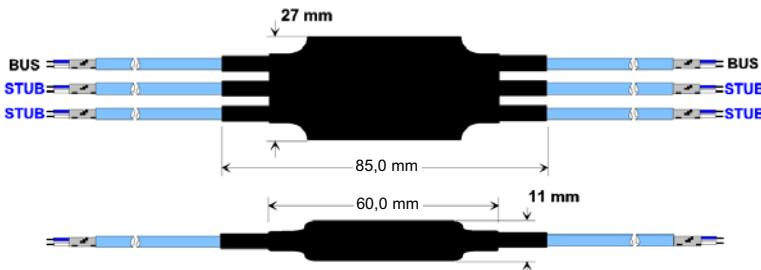
4 ways inline microcoupler

AMB / S - C4 - XX

AMB / S - C41 - XX

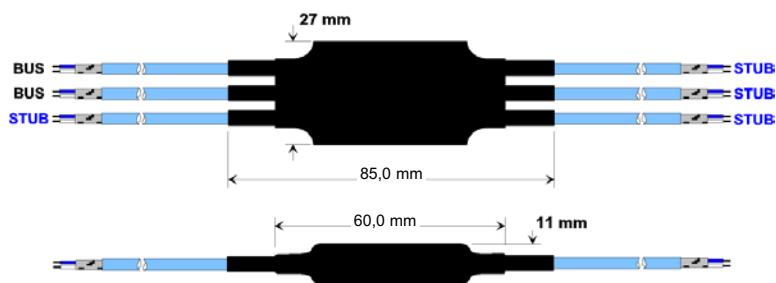
AMB / S - C4 - XX

Version with bus lines on opposite sides of the coupler.



AMB / S - C41 - XX

Version with bus lines on same side of the coupler.



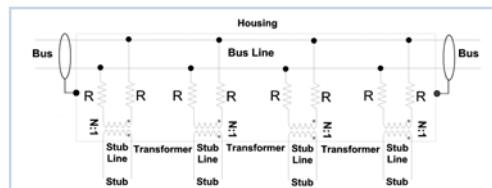
Electrical scheme

$N = 1,41 \pm 3\%$

R = Fault Protection

Resistance

$R = 0.75 \text{ Zo} = 57,6 \Omega \pm 1\%$



Identification code

AMB /	S	CX	XX	...
AXON' MICROBUS (see complete reference of the coupler on Bus Standard sheet).	S : SPACE VERSION	4 : 4 STUB MICROCOUPLER Version with bus lines on opposite sides of the coupler. 41 : 4 STUB MICROCOUPLER Version with bus lines on same side of the coupler.	CABLE REFERENCES 40 = TWINAX BUS AWG 24 SB (SINGLE BRAID) according to SSQ 21655 (NASA qualified). 41 = TWINAX BUS AWG 24 DB (DOUBLE BRAID) 43 = TWINAX BUS AWG 26 SB (SINGLE BRAID) 44 = TWINAX BUS AWG 26 DB (DOUBLE BRAID) 45 = TWINAX BUS AWG 22 SB (DOUBLE BRAID) according to SSQ 21655 (NASA qualified).	

Note : CABLE LENGTH AND CABLE COLOUR TO BE DEFINED WHEN ORDERING
(possibility to differentiate Bus and Stub cable with a striped colour tape under the transparent jacket or the extrusion of a colour jacket).
Possibility to integrate terminator in the couplers.

ESA : European Space Agency - CNES : French Space Agency - P.I.D. : Part Identification Document.



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABUS
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



AMB / S - C4 - XX

AMB / S - C41 - XX

Electrical characteristics

PARAMETERS	REQUIRED	ACTUAL
Nominal line impedance *	70 to 84	77
Turns ratio	1.41 ± 3 %	1.41 ± 3 %
CMR	< -45 dB at 1 MHz	< -50 dB at 1 MHz
Input impedance	> 750 Ω in the frequency range (75 KHz to 1 MHz) and in the indicated temp. range (-65°C to 150°C)	> 750 Ω
Fault protection insulation resistors in series on each bus winding connection	0.75 Zo ± 2 %	57.6 Ω +/- 1 %
Insulation resistance between :		
bus / stub	100 MΩ	> 1 000 MΩ at 250 VDC
inner wires / shield	100 MΩ	> 1 000 MΩ at 500 VDC
Transfer impedance	-	plot available
Shield continuity	-	10 mΩ max.
Shield coverage	Cable 90 % Connection 75 %	Cable 90 % min. Connection 100 %
Dielectric withstanding strength :		
between shield and inner wires	-	500 Vrms
between outer insulation and shield	-	500 Vrms

* Impedance : seen from the stub when the Bus line is loaded with Zo at both sides of the coupler.

Environmental characteristics

PARAMETERS	REQUIRED	ACTUAL
Operating temperature	-	-65° to + 150°C
Out-gassing	SP-R-0222 - TML < 1 % ASTM-E-595 - CVCM < 0.1 % ESA-ECSS-Q-70-02	TML = 0.0005 %, CVCM = 0 % WVR = 0.00023 % and RML = 0.00027 %
Off-gassing	NHB 8060.1 Test 7 ESA-ECSS-Q-70-29	T = 0.00024 for 65 m³ volume per coupler MLW (#) = 2112 for 65 m³ volume
MTBF according to MIL HDBK-217	-	2.45 x 10⁷ hrs at 25°C and SF environment

Out and Off-gassing results, flammability available for all materials used.

Mechanical characteristics

PARAMETERS	REQUIRED	ACTUAL
Weight	-	< 25 g
Life test	-	1 000 hrs. at 120°C
Shocks	-	15g's in all directions
Acceleration	-	20 g's in all directions
Random vibrations	-	Wo = 0.2 g²/ Hz (functional at 120°) Wo = 0.83 g²/ Hz (endurance)

OTHER MECHANICAL AND ENVIRONMENTAL TESTS AVAILABLE ON REQUEST.

Transformer characteristics

PARAMETERS	REQUIRED VALUES BY MIL-STD-1553 STANDARD or SAE AS 4115	NOMINAL VALUE OR AXON' REQUIRED VALUE	
		NOMINAL	REQUIRED BY AXON' / QUALITY PLAN
The Curie point	-	-	Over 195° C
Primary DC resistance	-	Rp = 3 Ω	Rp < 3.5 Ω
Secondary C resistance	Rs = 5 Ω	Rs = 2 Ω	Rs < 2.5 Ω
Insulation resistance (winding to winding)	Ri > 100 MΩ	-	Ri > 1 000 MΩ with 250 VDC test
Transformer open circuit impedance	[Z] > 3 kΩ from 75KHz to 1MHz (tested with a 1 Vrms sine wave)	at T = 25° C [Z]>10 kΩ from 75KHz to 1MHz at T = -65° C [Z]> 4.8 kΩ from 75KHz to 1MHz at T = -85° C [Z] > 4 kΩ from 75 kHz to 1 MHz 22 mH	[Z] > 10 kΩ from 75 KHz to 1 MHz @ = 25° C*** > 20 mH < 12 pF
Primary parallel inductance	-	10 pF	> 20 mH
Primary parallel capacitance	-	45 pF	< 12 pF
Inter-winding capacitance	-	-	-
Primary leakage inductance	-	-	< 6.0 µH
Droop *	< 20 %	4.5 % **	< 20 % **
Overshoot and ringing *	± 1 V	0.30 V**	< ± 1 V**

* Tested with a 250 KHz square wave of 27 Vpp with 100ns rise and fall times through a $360 \pm 5\% \Omega$ resistor.

** Average values taken during the JN 1081N qualification.

*** 10 kΩ @ T = 25° C guarantees 3 KΩ from T = -65° C to T = 150° C



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABUS
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

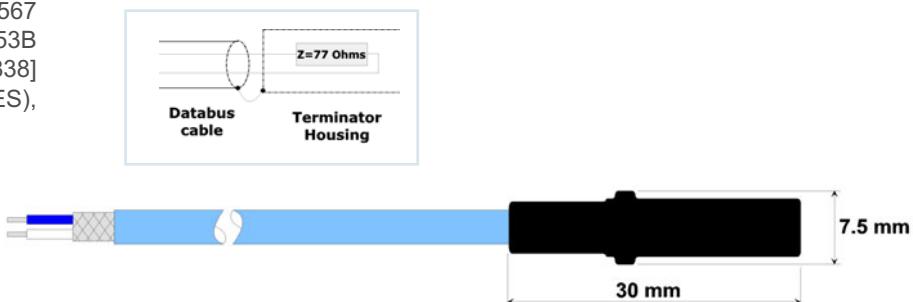
ANNEXES



Inline bus terminator

SPECIFICATIONS

PR EN 3567
MIL-STD-1553B
[STANAG 3838]
JN 1101, PID (CNES),



Electrical characteristics

- Impedance : $Z = 77 \Omega \pm 1\%$
- Insulation resistance (500 Vdc) :
 - . Outer jacket / conductor : $> 1000 M\Omega$ min.,
 - . Between shield / conductors : $> 1000 M\Omega$ min.
- Dielectric withstand strength :
 - . outer jacket / shield : 500 Vrms
 - . Between shield / conductors : 500 Vrms.
- Shield connection resistance : 10 m Ω max.
- MTBF available following MIL-HDBK 217 (environment and operating temperature to be specified).

Mechanical characteristics

- Weight : < 3 g (without harnessing accessories).
- Traction resistance : 100 N.
- Excellent vibration and shock resistance.
- Crush resistance : 500 N

Environmental characteristics

- Operating temperature : -65°C to +150°C

Identification code

AMB /	S	I	XX
AXON' MICROBUS (see complete reference of the coupler on Bus Standard sheet).	S : SPACE VERSION	INLINE BUS TERMINATOR	CABLE REFERENCES 40 = TWINAX BUS AWG 24 SB (SINGLE BRAID) according to SSQ 21655 (NASA qualified). 41 = TWINAX BUS AWG 24 DB (DOUBLE BRAID) 43 = TWINAX BUS AWG 26 SB (SINGLE BRAID) 44 = TWINAX BUS AWG 26 DB (DOUBLE BRAID) 45 = TWINAX BUS AWG 22 SB (DOUBLE BRAID) according to SSQ 21655 (NASA qualified).

Note : cable length and cable colour to be defined when ordering
These impedances can be integrated in the couplers - See complete reference of the coupler on Bus Standard sheet.



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABUS
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES

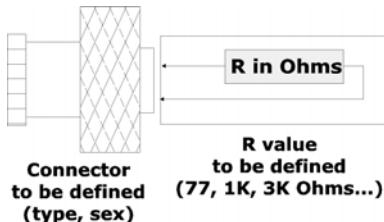


Dismountable bus terminator or stub impedance

SPECIFICATIONS

MIL-STD-1553B
[STANAG 3838], PID (CNES),

AMB / S - R or AMB / S - D



Use

To match the bus line (AMB / X - D) or to load a stub line by high impedance value, the type of connector must be specified.

Electrical characteristics

- Impedance : . AMB / S - D = bus terminator (77Ω)
. AMB / S - R = sub impedance ($1 \text{ k}\Omega$ or $3 \text{ k}\Omega$ *)
- Insulation resistance (under 500 V_{dc}) :
 - . Outer jacket / conductor : $> 1000 \text{ M}\Omega$ min.,
 - . Between shield / conductors : $> 1000 \text{ M}\Omega$ min.
- Shield connection resistance : $10 \text{ m}\Omega$ max.
- MTBF available following MIL-HDBK 217 (environment and operating temperature to be specified).

Mechanical characteristics

- Weight : according to connector type.
- Robust, light, compact construction (maximum reduction of space requirement).

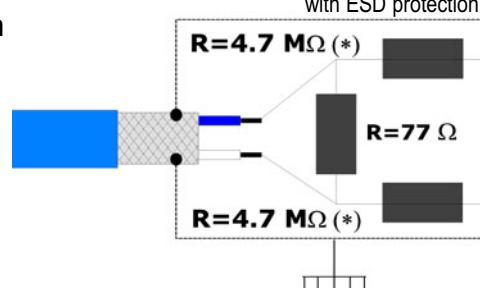
Environmental characteristics

- Operating temperature : -65°C to $+150^\circ\text{C}$.

ESD* protection

on request when possible.
A protective passive
resistance can be added
to evacuate ESD

77 Ohms Terminator
with ESD protection



*(could be modified)

Identification code

AMB /	S	X	CONNECTOR IDENTIFICATION
-------	---	---	--------------------------

AXON' MICROBUS
CONNECTOR SERIES
TO BE SPECIFIED

S : SPACE VERSION

R = DISMOUNTABLE STUB IMPEDANCE SPECIFIED ON REQUEST.
(VALUE TO BE SPECIFIED).
D= Dismountable bus terminator

ESD : electrical static discharge - * : other values of resistance can be specified





SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



SPECIFICATIONS

MIL-STD-1553 B

Digital time division command / response multiplex data bus

MIL-C-39029

Contact specification for MIL-C-38999 connectors

ESA-ECSS-Q-70-26

Crimping of high-reliability electrical connections

Databus inline splice crimp

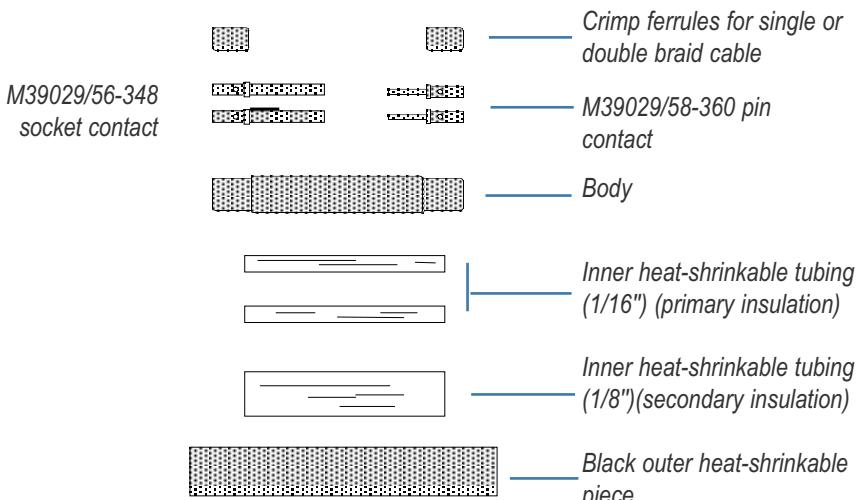
AMB / S - S - XX



AXON's AMB/A-S-xx splices are designed specifically to interconnect two MIL-STD-1553B data bus cables for space industry. These splices are designed to comply with MIL-STD-1553-B. These splices are crimp terminated, can be fitted to AWG 24 & 26 data bus cables. Crimp tools according to MIL-C-22520.

Composition

The splice is composed of 11 pieces as follow :



Identification code

AMB /	S	S	XX
AXON' MICROBUS (see complete reference of the coupler on Bus Standard sheet).	S : SPACE VERSION (for aeronautic application please consult us)	SPICE	TYPE OF FERRULE SB: for single braid cable DB: for double braid cable



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABUS
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES

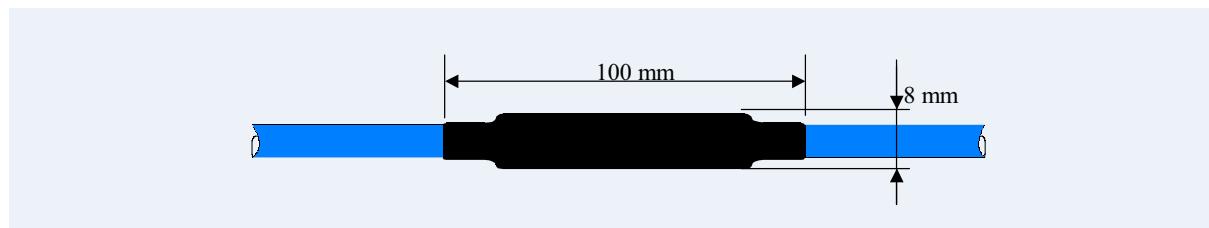


AMB / S - S - XX

AMB / S - S - XX

Dimensions

Length end to end with the shrinkable sleeve



Mechanical characteristics

PARAMETERS	VALUE	UNITS	min / max
Weight	6 g maxi		min
Type of cable	All type of AWG 26 to 24 (outer diameter < 3.8 mm)		max

Electrical characteristics

PARAMETERS	VALUE	UNITS	min / max
Insulation resistance (under 500 DC)	5000	M ohms	min
Contact resistance	8	m ohms	max
Characteristics impedance	77	ohms	nominal

Mechanical and environmental characteristics

PARAMETERS	VALUE	UNITS	min / max
Temperature range	-65°+150°		
TML	<1%		
CVCM	<0.1%		
Irradiation exposure	up to 20 Mrads		

Material used for crimping the connector on the cable

AXON' CABLING INSTRUCTION : 95021-PM_SPLICE-01-A
(respect the crimping rules for MIL-C-39029 contacts or ESA-ECSS-Q-70-26 for space application)

TYPE OF CRIMPING	CRIMPING TOOL	DIE / POSITIONING
Pin contact	M22520/2-01	M22520/2-09 Setting 2 for AWG 26 setting 4 for AWG 24
Socket contact	M22520/2-01	M22520/2-07 Setting 2 for AWG 26 setting 4 for AWG 24
Body	M22520/10-01	M22520/10-23

[SUMMARY](#)[ESA
WIRES AND
CABLES](#)[AXALU®
ALUMINIUM
WIRES](#)[MIL-STD-1553
DATABUS
HARNESS](#)[SPACEWIRE](#)[POWER
DISTRIBUTION
SYSTEM](#)[ACCESSORIES](#)[ANNEXES](#)

SPACEWIRE

► Integrity of signals





SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASE
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



SpaceWire Integrity of signals

AXON' digital data transmission bus assemblies which meet the MIL-STD-1553 standard are used for military and aeronautics applications.

They have also been integrated in the space environment for over 10 years. In addition to bus harnesses which ensure the connection between on-board devices, SpaceWire links allow the transfer of up to 480Mb/s while maintaining a wide working margin because of the use of CELLOFLON®, expanded PTFE developed by AXON'.

The ESA ECSS 3902/003 cable and ESA ECSS 3401/71 connectors and accessories manufactured by AXON' protect the integrity of LVDS signals (Low Voltage Differential Signalling) provided by the devices. The cabling has been optimised in order not to electrically mismatch the links and reduce the effects of crosstalk between lines at the maximum.

The use of the reflectometer with very short rise time pulse permits a very detailed characteristic impedance analysis of the connected zone and the cable regularity.

A test report validates every link. The electrical performance which depends on the transmission speed can be shown with an eye pattern which includes characteristics such as signal jitter. AXON' is equipped with analysis means and tests for high speed signals up to 3.4 Gb/s.



Our system allows

- Eye opening measurements,
- Jitter measurements,
- TDR analysis,
- BER,
- Output timing jitter (Bath-tub),
- Output level,
- Spectral jitter,
- Open Eye,
- PRBS generation.



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

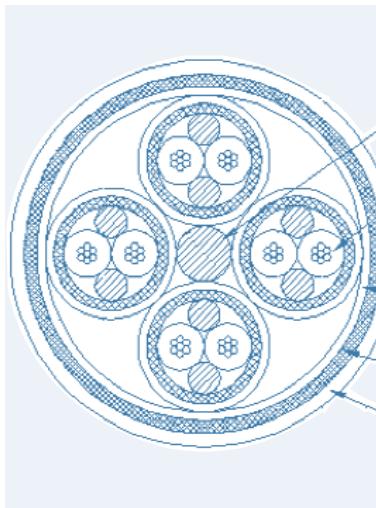
POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



Composition



Our SpaceWire cable (P532242) is composed of 4 shielded twisted pair wires as shown in the specification. The cable has an overall shield.

1 - Expanded PTFE filler (CELLOFLON®)

- diameter : 1.00 mm nom.

2 - 4 BUS AWG 28 - 100 Ω constituted as follows :

CONDUCTOR AWG 28/07

- Multistrands of silver plated copper alloy 2 microns
- 7 x 0.127 mm strands
- Diameter : 0.38 mm nom.
- Section : 0.088 mm² nom.
- Resistance : 23 Ω/m nom.

DIELECTRIC : CELLOFLON® (PTFE expanded)

- Color : Blue/White

SHIELDING BRAID

- Material : silver plated copper 2.5 microns
- Diameter of strands : 0.079 mm

PFA jacket

- Jacket color : white

- Diameter : 2.37 mm nom.

3 - Expanded PTFE tape

4 - Shielding braid

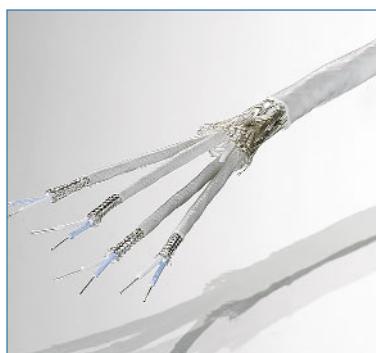
- Material : silver plated copper : 2.5 microns
- Diameter of strands : 0.102 mm

5 - Outer jacket : PFA

- Color : white

MAIN CHARACTERISTICS

- Outer Diameter : 7.00 mm max.
- Weight : 80 g/m max.
- Operating temperature : -200°C / +180°C
- Impedance (between wires) : 100 Ω +/- 6 Ω at 400 MHz



Connection

The connection is made with a 9 way micro-D connector.

A backshell allows shield termination.

AXON' can offer different constructions to meet our customers' requirements.



Electrical and environmental characteristics

RADIATION

20 Mrad

Jitter

< 0.35 nS

Skew on DATA & Strobe lines

< 0.1 nS

[SUMMARY](#)[ESA
WIRES AND
CABLES](#)[AXALU®
ALUMINIUM
WIRES](#)[MIL-STD-1553
DATABUS
HARNESS](#)[SPACEWIRE](#)[POWER
DISTRIBUTION
SYSTEM](#)[ACCESSORIES](#)[ANNEXES](#)

POWER DISTRIBUTION SYSTEM





SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABUS
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



Power Distribution System

Bus bars / bar batteries provide reliable and constant energy.

As vital components for electrical power distribution in telecommunication satellites and land-based arms systems, the bus bars and bar batteries developed by AXON[®] ensure the distribution of reliable and constant energy.

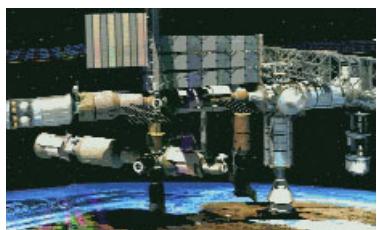


Our solutions which have been approved in laboratories and tested in flight are characterised by their flat shape and the use of aluminium which has the following advantages :

- mass reduction,
- improved heat dissipation,
- gain on voltage drop of the power distribution chain.

Our bars can distribute energy in a satellite in :

- different components of a battery (cells, bypass, shunt, connectors, ...)
- solar panels to the voltage regulation unit,
- batteries to the voltage regulation unit,
- voltage regulation unit to different equipment in the satellite.



Construction can be mono-layer or multi-layer, soft or rigid. The assembling of these links allows the connection of one or more electrical potentials whilst reducing the contact and line resistances at the maximum.

The high electrical conductivity of pure aluminium conductor integrated in the links gives on-board weight reduction and maximum electrical performance.



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABUS
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



A double electrical insulation is made between each conductor with different types of insulating materials in order to guarantee an excellent insulation of potentials for all flight configurations.

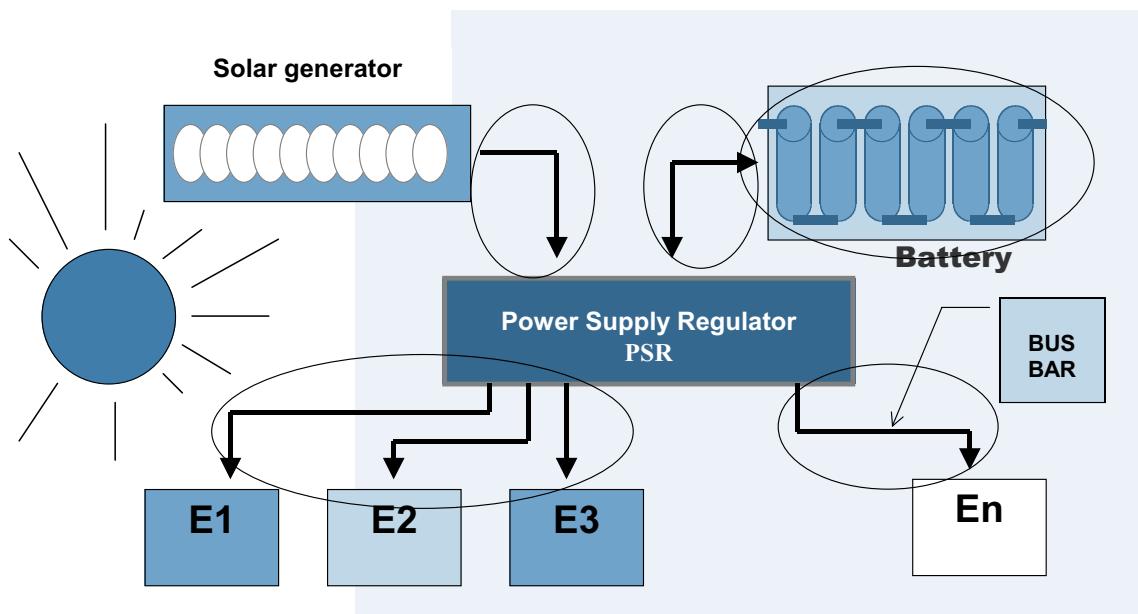


Heat resistance of the system is optimised to evacuate heat at a maximum with a minimum of heat gradient between conductors, especially in a space environment where only conduction and radiation characteristics exist.

Interconnection of bars is made with dismountable flexible or rigid links (ESA wires or aluminium bars).

Different links to the equipment require direct connection of the standard connectors to the conductors or soft wiring links soldered to traditional contacts. The fixing of the bars has been designed to allow for either heat dissipation from the bar to the support, or a flexible or rigid link from the bar to the support, or an electrical insulation from the bar to the support.

AXON® provide after-sales service for the whole assembly and can assist on-site to help with integration and updating. Various installation documents can be supplied on request.



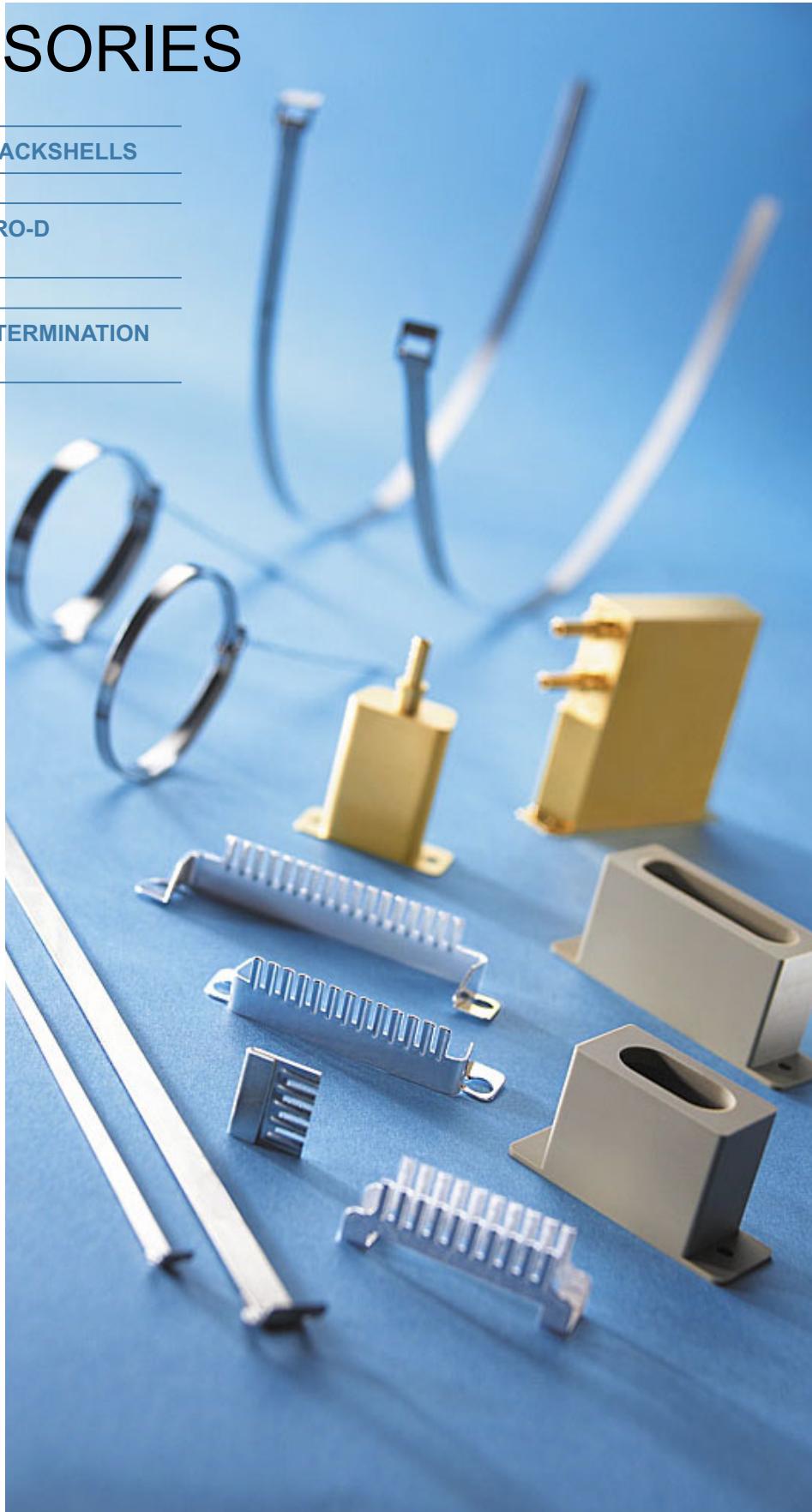
[SUMMARY](#)[ESA
WIRES AND
CABLES](#)[AXALU®
ALUMINIUM
WIRES](#)[MIL-STD-1553
DATABUS
HARNESS](#)[SPACEWIRE](#)[POWER
DISTRIBUTION
SYSTEM](#)[ACCESSORIES](#)[ANNEXES](#)

ACCESSORIES

► CONNECTOR BACKSHELLS

► D-SUB OR MICRO-D
HALORINGS

► SHIELD BAND TERMINATION
AXOCLAMP®





SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABUS
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



Accessories

They have been qualified on the Ariane 5, Automatic Transfer Vehicle programmes and several satellites (Spacebus 4000, Eurostar3000...).



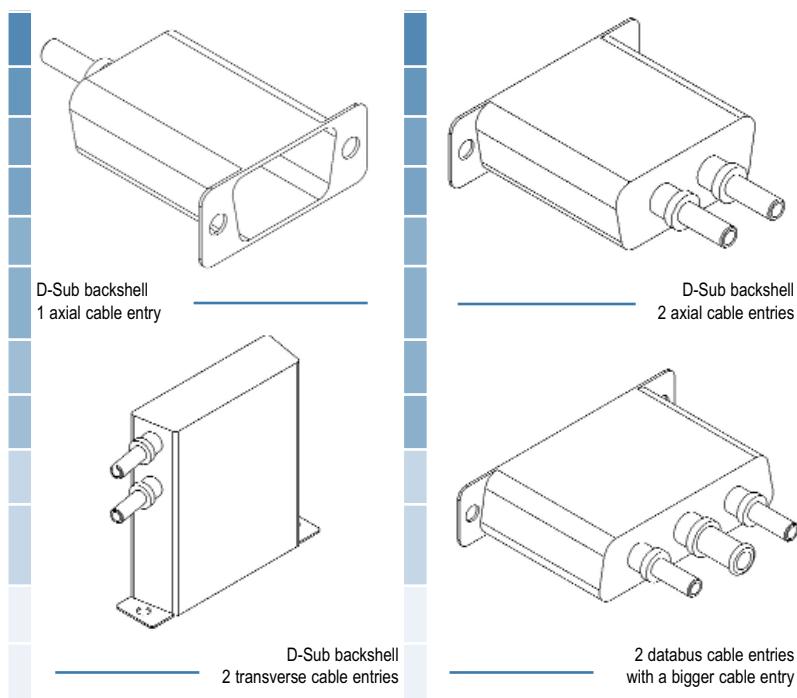
rheology laboratory

Connector backshells

Backshells are used to protect the EMI performance of the assembly which could decrease with a poor quality EMI link. They also bring mechanical protection to the terminations. AXON' backshells can be placed behind circular connectors including MIL-C-38999 connectors or behind rectangular connectors including D-Sub connectors.

AXON' designs backshells not only for its own cables but also for your specific requirements. Some of our D-Sub backshells, specially adapted to databus cables entry, have been designed to be mounted inside MIL-STD-1553 networks. Different shell sizes are available : from 9 ways (size E) to 50 ways (size D) with one or two cable entries or with a more complex construction if required. The tunnel allows different shield terminations including hexagonal crimping or AXOCLAMP® band. The use of backshells is strongly recommended to have good shield coverage as requested by the MIL-STD-1553 standard.

For your specific requirements, AXON' can adapt, for example, the size of the tunnel, the orientation of the tunnel and the cabling room length. The cable entry can be axial or have a transverse angle of 90° or 45°. The diameter of the cable entry can be adapted to the cable to be used.





SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES

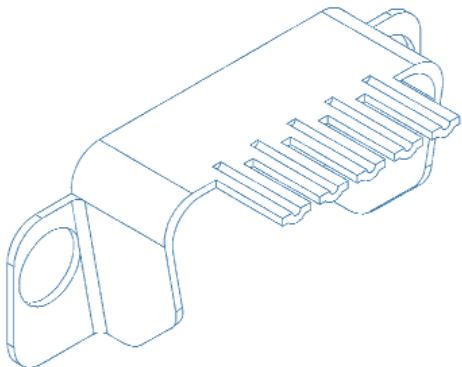


AXON' light weight backshells are made with solid fully machined aluminum alloy with gold plating over nickel in compliance with MIL-G-45204 or other relevant plating requirements. They are non magnetic. Some Micro-D backshells have also been designed by our engineers. Axon' has a complete range of Micro-D connectors with standard or custom designed versions. Please, ask for our brochure.

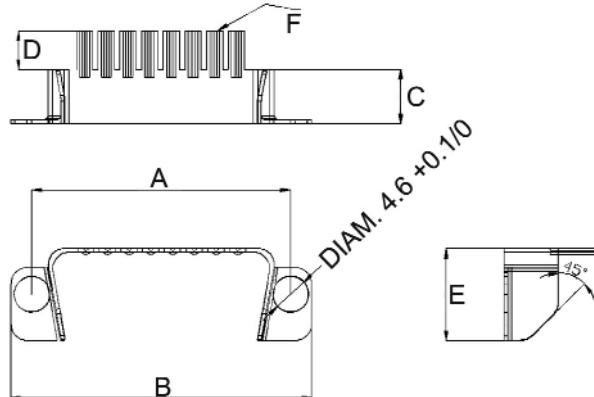
D-Sub or Micro-D Halorings

In order to facilitate the shield grounding of a cable made with several shielded wires, pairs or wires, axon' recommends the use of halorings. These accessories are directly connected between the D-Sub connector and the backshell. The braid of the shielded wires is soldered on the silver comb (F). This technology gives a very good electrical contact and saves time.

The halorings are made of copper alloy (Brass) with silver plating in compliance with MIL-G-45204.



**Haloring
for D-Sub connector**



Dimensions are in mm

SIZE OF CONNECTOR	SINGLE HALORING PART NUMBER	DIMENSIONS					
		A	B	C	D	E	F (*)
E	040475	25.1	31.26	7	5	11.91	5
A	040476	33.4	39.55	7	5	11.91	8
B	040477	47.1	53.51	7	5	11.91	13
C	040478	63.5	69.7	7	5	11.91	17
D	040479	61	67.31	7	5	14.45	17
F	040679	63.5	69.71	7	5	14.45	17

(*) number of dies that corresponds to the number of braids that can be soldered



SUMMARY

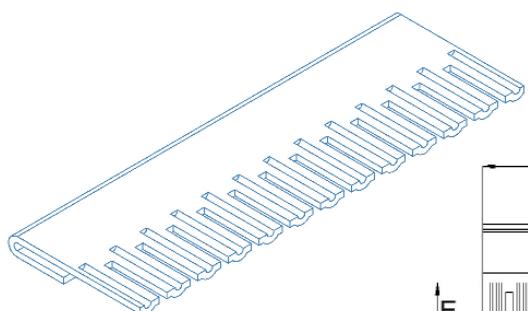
ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

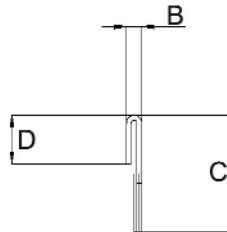
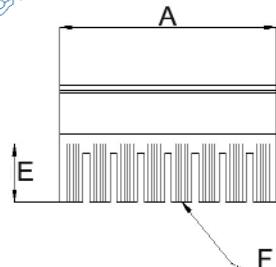
POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



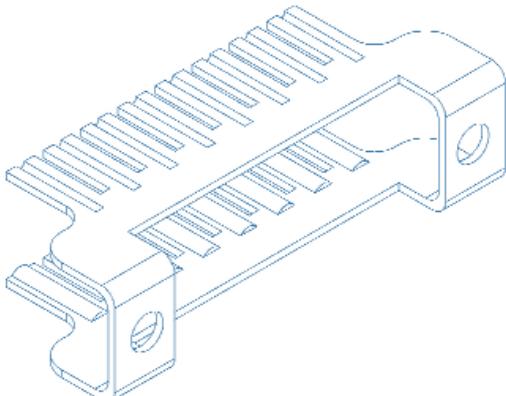
Backshell haloring for D-Sub connector



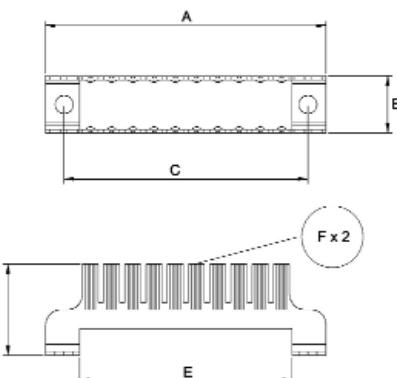
Dimensions are in mm

SIZE OF CONNECTOR	SINGLE HALORING PART NUMBER	DIMENSIONS					
		A	B	C	D	E	F (*)
E	040486	14.64	1.6	12	5	6	5
A	040487	22.26	1.6	12	5	6	8
B	040488	34.96	1.6	12	5	6	13
C	040489	47.46	1.6	12	5	6	17
D	040489	47.46	1.6	12	5	6	17

(*) number of dies that corresponds to the number of braids that can be soldered



Haloring for Micro-D connector



Dimensions are in mm

SIZE OF CONNECTOR	SINGLE HALORING PART NUMBER	DIMENSIONS					
		A	B	C	D	E	F (*)
9	040773	19.22	7.5	14.35	12	10.22	4
15	040774	23.03	7.5	18.16	12	14.03	5
21	040771	26.84	7.5	21.97	12	17.84	6
25	040775	29.38	7.5	24.51	12	20.38	8
31	040776	33.19	7.5	28.32	12	24.19	10
37	040633	37	7.5	32.13	12	28	10
51	040777	35.8	8.5	30.86	12	27	10

(*) number of dies that corresponds to the number of braids that can be soldered



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

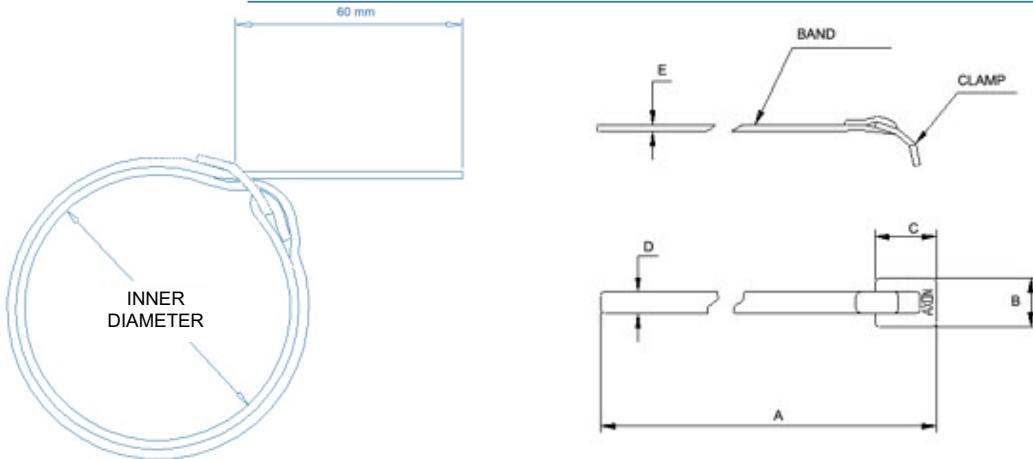
ANNEXES



AXOCLAMP® SHIELD TERMINATION

BAND : TYPE FT AX CL

Material : STAINLESS STEEL AISI 316



Reference system

AX CL	01
AXOCLAMP®	BAND TYPES 01 : standard 02 : microband 03 : microband 04 : microband

Minimum quantity

100 pieces per reference

Programmes

Skynet, Gaia, Stentor, Eurostar 3000 skynet, Eurostar 3000 H B8, etc.

SPECIFICATIONS	AXOCLAMP® STANDARD	AXOCLAMP® MICROBAND	AXOCLAMP® MICROBAND	AXOCLAMP® MICROBAND
REFERENCE	AX CL 01	AX CL 02	AX CL 03	AX CL 04
Dimension A	375 mm	375 mm	200 mm	200 mm
Dimension B	9 mm	5.5 mm	5.2 mm	5.2 mm
Dimension C	10 mm	8 mm	5.5 mm	5.5 mm
Dimension D	5.9 mm	3.5 mm	3 mm	3 mm
Dimension E	0.5 mm	0.5 mm	0.35 mm	0.35 mm
Minimum diameter*	10	5	5	5
Maximum diameter*	40	15	15	15

* Minimum and maximum diameter of the backshell tunnel in which the AXOCLAMP® can be mounted.
For manual or pneumatic tooling, please consult us for the exact part number.

[SUMMARY](#)[ESA
WIRES AND
CABLES](#)[AXALU®
ALUMINIUM
WIRES](#)[MIL-STD-1553
DATABUS
HARNESS](#)[SPACEWIRE](#)[POWER
DISTRIBUTION
SYSTEM](#)[ACCESSORIES](#)[ANNEXES](#)

ANNEXES

► CERTIFICATES

CNES ASF N°13-18 Certificate	69
ISO 9001 : 2000 Certificate	70
SSQ21676 Qualification	71
ESA Certificate 132 H	72
ESA Certificate 267 B	73
ESA Certificate 268 A	74
TDA Certificate	75
ARIANE 5 Qualification	76





SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABUS
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



CNES ASF 13-18 CERTIFICATE





SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABUS
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



ISO 9001 : 2000 CERTIFICATE

15 DEC. 2004

CERTIFICATION



N° QUAL/1993/1444f

AXON'CABLE SAS METAL CABLE - AXORAL - AXOPOLE - AXO.COM - SOFIM

**CONCEPTION, PRODUCTION ET VENTE DE CONDUCTEURS, FILS ET CABLES
POUR L'ELECTRONIQUE, DE COMPOSANTS PASSIFS, DE CORDONS
ET FAISCEAUX AVEC LEUR CONNECTIQUE.**

**CONCEPTION, PRODUCTION ET COMMERCIALISATION DE CONNECTEURS,
DE COMPOSANTS D'INTERCONNEXIONS SPECIFIQUES
ET D'ACCESSOIRES ASSOCIES.**

***DESIGN, PRODUCTION AND SALES OF CONDUCTORS, WIRES AND CABLES
FOR ELECTRONICS, PASSIVE COMPONENTS, ASSEMBLIES
AND HARNESES WITH THEIR CONNECTIONS.***

***DESIGN, PRODUCTION, MARKETING AND SALES OF CONNECTORS, SPECIFIC
INTERCONNECTION COMPONENTS AND ASSOCIATED ACCESSORIES.***

Route de Châlons-en-Champagne F-51210 MONTMIRAIL
Site de Mécringes (AXORAL) : Route de Châlons BP 1 F-51210 MONTMIRAIL
Site d'Orbais (AXOPOLE) : Route de Châlons BP 1 F-51210 MONTMIRAIL
Site de Montcoupot (AXO.COM) : ZI de Montcoupot BP 1 F-51210 MONTMIRAIL

AFAQ certifie que pour les activités et les sites référencés ci-dessus toutes les dispositions mises en oeuvre pour répondre aux exigences requises par la norme internationale :

AFAQ certifies that all the arrangements covering the above mentioned activities and locations are established to meet the requirements of the international standard:

ISO 9001 : 2000

ont été examinées et jugées conformes.
have been examined and found conform.

2004-12-09

(année/mois/jour)

Il est valable jusqu'au*
*It is valid until**

2005-09-15

(year/month/day)

Le Président du Comité de Certification
*The President of the Certification Committee*Le Directeur Général d'AFAQ
*The Managing Director of AFAQ*Le Représentant de l'Entreprise
On Behalf of the Firm

A. YOUNAN

J.F. SORRO

P. CASTETS

*Sauf suspension notifiée entre temps par AFAQ à l'entreprise détenue la présente document n'a donc valeur valeur définitive. Seule fait la force des documents d'origine AFAQ accessible à l'adresse Internet : <http://www.afaq.org>.
(l'organisation AFAQ est détentrice des marques internationales en vigueur (spécie ISO/IEC 9001 et EN 9001). AFAQ se réserve le droit de modifier, à tout moment et sans préavis, la forme de ce document de certification).

*Excepting notification by AFAQ to the above-mentioned company of its suspension. This document is for information purposes only. For up-to-date information, the only official source is the AFAQ certificate database at <http://www.afaq.org>. The AFAQ organization complies with the international standards in force (IEC ISO/IEC Guide 24 – IEC 60068-2 standard). AFAQ reserves the right to modify, at anytime and without any notice, the presentation of this certification document. This document and most specifically the logo featuring on this document can only be used by its holder in the frame respecting the legal requirements and a clear and sincere communication.

AFAQ - 116, AVENUE ARISTIDE BRANDI - BP 40 / F-92224 BAGNEUX CEDEX FRANCE - SIRET : 35195828500022

Les accreditations délivrées par AFAQ et ses filiales sont disponibles à l'adresse Internet : <http://www.afaq.org>.
L'organisation AFAQ est détentrice des marques internationales en vigueur (spécie ISO/IEC 9001 et EN 9001). AFAQ se réserve le droit de modifier, à tout moment et sans préavis, la forme de ce document de certification.
Ce document, et notamment le logo y figurant, ne peut être utilisé par son titulaire que dans le respect des obligations légales et d'une communication claire et sincère.

Droits réservés à l'ordre du jour. ©AFAQ 2004. Tous droits réservés.

[SUMMARY](#)[ESA
WIRES AND
CABLES](#)[AXALU®
ALUMINIUM
WIRES](#)[MIL-STD-1553
DATABUS
HARNESS](#)[SPACEWIRE](#)[POWER
DISTRIBUTION
SYSTEM](#)[ACCESSORIES](#)[ANNEXES](#)

SSQ 21676 QUALIFICATION

The Boeing Company
13100 Space Center Blvd.
Houston, TX 77059-3556

March 11, 1999
2-4430-CWS99-03



Axon' Cable SA
51210 Route De Chalons-En-Champagne
Montmirail, France

Subject: Qualification of SSQ21676 Data Bus Coupler

The Boeing Company is please to announce that Axon'Data Bus Coupler MIL-STD-1553B meets all the requirements of SSQ 21676 and has passed the Qualification test procedure SSQ-96012-QTR-01-AXON #1039 and Acceptance Test GC-8181.

Boeing recommends that all Data and Documentation show that the Axon'Data Bus Coupler MIL-STD-1553B is qualified.

We look forward in working with Axon' in the near future.

If you have any questions, please contact the undersigned at 281-244-4344.

Sincerely,

Charles Scott
Subcontract Administrator
International Space Station
281-244-4344
281-244-4849 Fax

cc: Christian Roux



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABUS
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



CERTIFICATE N°132H

ESA SCC 3901 001 and 3901 002

European space agency
agence spatiale européenne



Certificate of Qualification No. 132 H

This is to certify that AXON' CABLE, Montmirail, France has been qualified by ESA for the supply of Wires and Cables, Low Frequency, Polyimide Insulation, Based on Types 3901001**B and 3901002**B for use in ESA space programmes, according to ESCC Generic Specification 3901 and associated Detail Specifications 3901/001 and 3901/002 as recommended by the Space Components Steering Board.

This certificate is valid until October 2006.

Acting Head of Product Assurance
and Safety Department

Date
21 October 2004



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



European space agency
agence spatiale européenne

Certificate of Qualification No. 267 B

This is to certify that AXON' CABLE, Montmirail, France has been qualified by ESA for the supply of Wires and Cables, Low Frequency, 600V, Silver-Plated Copper, Extruded Crosslinked Fluoropolymer Insulation, Based on Type P515643A for use in ESA space programmes, according to ESCC Generic Specification 3901 and associated Detail Specification 3901/012 as recommended by the Space Components Steering Board.

This certificate is valid until September 2006.

Acting Head of Product Assurance
and Safety Department

Date
7th September 2004



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



CERTIFICATE N°268A

ESA SCC 3901 019

European space agency
agence spatiale européenne



Certificate of Qualification No. 268A

This is to certify that AXON' CABLE, Montmirail, France remains qualified by ESA for the supply of Wires and Cables, Low Frequency, Polyimide Insulation, Based on Type 3901019**B for use in ESA space programmes, according to ESCC Generic Specification 3901 and associated Detail Specification 3901/019 as recommended by the Space Components Steering Board.

This certificate is valid until September 2006.

Acting Head of Product Assurance
and Safety Department

Date
7th September 2004

[SUMMARY](#)[ESA
WIRES AND
CABLES](#)[AXALU®
ALUMINIUM
WIRES](#)[MIL-STD-1553
DATABUS
HARNESS](#)[SPACEWIRE](#)[POWER
DISTRIBUTION
SYSTEM](#)[ACCESSORIES](#)[ANNEXES](#)

TDA, CERTIFICATE

PRINT QUIT

JOINT VENTURE THALES / EADS DEUTSCHLAND GmbH

TDA

**Certificat
d'Assurance
Qualité Fournisseurs**

Année 2003

Par le présent certificat,
TDA Armements S.A.S atteste que la société
AXON-CABLE
répond aux critères d'évaluation
qualité fournisseur TDA

La classification obtenue est de niveau A

Département Assurance Qualité
B. RIMOUX

Le Responsable des achats
R. VALIN

[Handwritten signatures]



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABUS
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



Ariane 5 QUALIFICATION



Direction Technique

66, Route de Verneuil
78130 Les Mureaux France
Tél : 33 (1) 34 9212 34
Adresse postale : B.P. 2 - 78133 Les Mureaux Cedex
Télex : AISPA 695988F
Télégramme : Aerospatiale - Les Mureaux
N° Siret 572 094 514 00385
APE 3304 - R.C.S. Versailles B 572 094 514

AXON'CABLE
Route de Chalon S/Marne
B.P. n° 1

51210 MONTMIRAIL

A l'attention de M. L. PAPONV correspondant : G. PUCCINI - TY/IP

N/Réf. : LE12 - JCM/MH

009073 - 6 SEP. 94

Objet : Qualification bus de communication 1553

Monsieur le Directeur,

La qualification du bus de communication 1553 pour le lanceur ARIANE 5 a été prononcée sans réserve le 20 Juillet 1994. Elle marque la fin des travaux d'études et de développement et permet de commencer la phase de production de série.

Nous avons noté, tout au long de notre étroite collaboration, la détermination d'AXON pour effectuer une prestation de haute qualité et particulièrement apprécié votre assistance efficace lors des récentes difficultés apparues au Centre Spatial de Guyane.

Nous vous faisons part de notre grande satisfaction et vous demandons de transmettre nos félicitations à chaque membre de votre équipe ayant participé à ces travaux pour leur compétence et leur motivation.

Nous abordons la phase de production de série des bus ARIANE 5 avec la conviction qu'AXON continuera à fournir une prestation à la mesure de celle qui vient de se conclure.

Nous vous prions de croire, Monsieur le Directeur, à l'assurance de notre considération distinguée.

Le Directeur Technique

J. de CORDEMOY

J. de CORDEMOY

Aerospatiale
Société Nationale Industrielle
SA au capital de 3 747 070 000 F
RCS Paris B 572 094 514

Siège Social
37, boulevard de Montmorency
75781 Paris Cedex 16 France
Tél. : 33 (1) 42 24 24 24

Ce document est la propriété d'AEROSPATIALE. Il ne peut être communiqué à des tiers et/ou reproduit sans son autorisation écrite. Son contenu ne peut être divulgué.

MU 8038921916



SUMMARY

ESA
WIRES AND
CABLESAXALU®
ALUMINIUM
WIRESMIL-STD-1553
DATABASES
HARNESS

SPACEWIRE

POWER
DISTRIBUTION
SYSTEM

ACCESSORIES

ANNEXES



FRANCE

● AXON' CABLE S.A.S.
ROUTE DE CHALONS EN CHAMPAGNE
F - 51210 MONTMIRAIL
TEL. : +33 3 26 81 70 00
FAX : +33 3 26 81 28 83
VIDEOCONF. : +33 3 26 42 50 44
e-mail : sales@axon-cable.com
http : //www.axon-cable.com

GERMANY

● AXON' KABEL GmbH
HERTICHSTR. 10 - D 71229 LEONBERG
POSTFACH 1131 - D 71201 LEONBERG
TEL. : +49 7152 97992-0
FAX : +49 7152 97992-7
VIDEOCONF. : +49 7152 97992-6
e-mail : sales@axon-cable.de

UNITED KINGDOM

● AXON' CABLE Ltd
RIDGE WAY
DONIBRISTLE INDUSTRIAL PARK
HILLEND - DUNFERMLINE
FIFE - KY11 9JN - UK
TEL. : +44 1383 821081
FAX : +44 8700 517257
e-mail : sales@axon-cable.co.uk

SPAIN

● AXON' CABLE SPANISH OFFICE
C/CAPITÁN HAYA, N° 1, PLANTA 15
28020 MADRID - SPAIN
TEL. : +34 91 555 13 80
FAX : +34 91 556 28 80
e-mail : g.hannequin@dillers.es

USA

● AXON' CABLE INC.
1314 PLUM GROVE ROAD
SCHAUMBURG, IL. 60173 - USA
TEL. : +1 847 230 7800
FAX : +1 847 230 7849
e-mail : sales@axoncable.com
http : //www.axoncable.com

CHINA

● AXON' INTERCONNECT LIMITED
HIGH TECH INDUSTRIAL PARK,
CHANG BAO XI ROAD
RONGGUI, 528306
SHUNDE, GUANGDONG - CHINA
TEL. : +86 757 2838 7200
FAX : +86 757 2838 7212
e-mail : l-lim@axon-interconnect.com

JAPAN

● AXON' CABLE JAPAN OFFICE
GOTANDA N-BUILDING, 3F
2-24-9, NISHI GOTANDA
SHINAGAWA-KU - TOKYO 141-0031 JAPAN
TEL. : +81 3 3493 4736
FAX : +81 3 3493 4897
e-mail : axon-jap@muse.ocn.ne.jp

HUNGARY

● AXON' KÁBELGYÁRTÓ Kft.
H-6000 KECSKEMÉT,
WÉBER EDE U. 10/A
TEL. : +36 76 508 195
FAX : +36 76 508 196
e-mail : i.szakolczai@axon-cable.hu

LATVIA

● AXON' CABLE SIA
VIŠKU IELA, 21
DAUGAVPILS - LV-5410
TEL. : +371 540 78 91
FAX : +371 787 11 68
e-mail : axon@axoncable.lv

