Nexans

Space cables

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C O N T E N T

ESCC Qualified Products

Nexans P/N	ESCC	SP	Pages
1871 - 871	3901/001	359	3/8
1872 - 872	3901/002	358	9/14
MTV - BTV	3901/013	199	15/19
50 CIS	3902/001.01	189	21/24
50 CIS DTR	3902/001.02	781	25/28
50 CIS BLG	3902/001.03	727	29/32

CNES Project Approval

Nexans P/N	BEP	SP	Pages
1995 - 995	5691	773	33/36
1996	5685	776	37/40

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ABOUT US

Nexans
Nexans is the worldwide leader in the cable industry.
The Group brings an extensive range of advanced copper and optical fiber cable solutions to the infrastructure, industry and building markets.
Nexans cables and systems can be found in every area of people's lives, from telecommunications and energy networks, to aeronautics, aerospace, automobile, building, petrochemical, medical applications, etc.
Operating in more than 20 countries, Nexans employs 19,000 people and had sales in 2000 of euros 4.8 billion.

Experts in Electronics Cabling Solutions
From telecommunication, commercial and military electronics to aerospace applications, Nexans strives towards the same objective:
to design, manufacture and distribute high performance data transmission cables vital to high technology industries.
The performance synergies between theses industries keep Nexans at the leading edge providing products and solutions that best meet your interconnections requirements.

Space Cables
Nexans' experience in space cables has been developed over decades in designing "high technology" wires and cables to answer technical requirements for reliability, performance and weight saving.
Working hand in hand with the space industry enabled Nexans to acquire a dedicated know- how: from screened single core hook-up wire to miniaturized coaxial cable, Nexans offers solutions for the utmost demanding space applications, using special conductor alloy and insulation material to comply with any international space approvals.

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SP 359

Filotex®

Type : 1871 - 871

SPACE CABLES POLYIMIDE INSULATED
NORMAL WEIGHT

These cables are intended for space use and could be manufactured with different control levels :

-AQ, AQR or AQS for Space use or
-P for standard use, out of space field

Electrical Characteristics

- Voltage Rating : 600 V. RMS.
- Voltage Test : 100 % Impulse test
  Immersion test on sample
- Insulation resistance (500 V = 1 mn)
  > 750 MΩ x Km. at 20°C
- Insulation resistance (25 mm between Electrodes)
  > 125 MΩ x mm
- Spiral shield with OFHC SPC-Coverage Factor : > 92%

LINE OF PRODUCTS

1871 / 871
1872 / 872

CONSTRUCTION

Cores :

① Stranded conductors OFHC Silver Plated Copper or Copper Alloy (28 to 24 AWG) Silver thickness ≥ 2 µm.

② Wrapped polyimide insulation

③ Mechanical polyimide coating protection.

Above cores could be :

④ Twisted with an overall polyimide jacket.

Shielded and jacketed with one or more cores :

⑤ Spiral shield.

Overall jacket :

Single conductors :

⑥ FEP coated polyimide tape.

⑦ FEP colored topcoat.

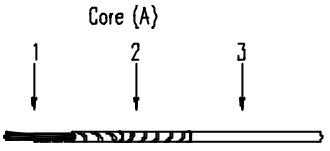
Multiconductors :

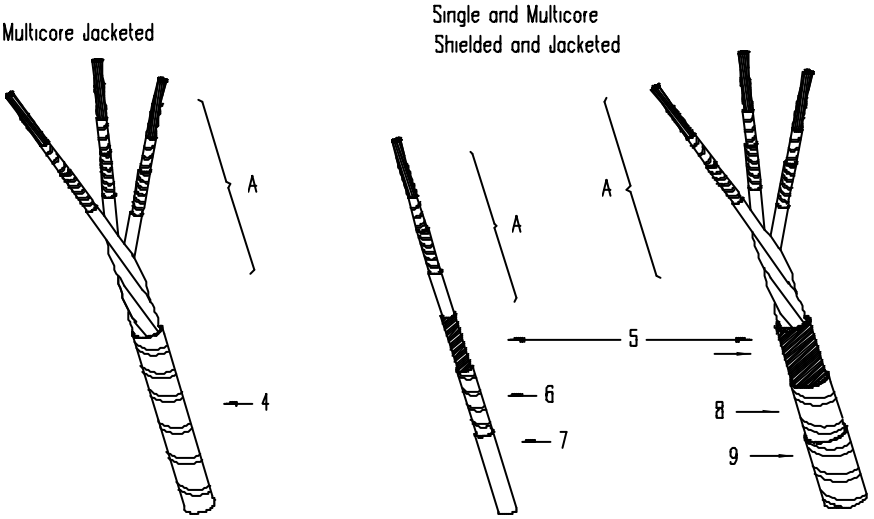
⑧ FEP coated polyimide tape.

⑨ Sintered PTFE tape.

(See details on next page)

Type : 1871 / 871





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Details of Construction

Cores :

① *Stranded conductors OFHC Silver Plated Copper or Copper Alloy (28 to 24 AWG) Silver thickness ³ 2 µm.*

② *Wrapped polyimide insulation : FEP coated polyimide tape (2.5 µm FEP / 25 µm polyimide / 2.5 µm FEP) 2 tapes Overlap > 50%*

③ *Mechanical polyimide coating protection,nominal wall thickness 25 µm.*

Above cores could be :

④ *Twisted with an overall polyimide jacket :*
FEP coated polyimide tape, (2.5 µm FEP / 25 µm polyimide / 2.5 µm FEP) with 15% min. overlap

Shielded and jacketed with one or more cores :

⑤ *Spiral shield with OFHC SPC Silver thickness ³ 2 µm. Coverage ³ 92 %.*

Overall jacket :

Single conductors :

⑥ *FEP coated polyimide tape (2.5 µm FEP / 25 µm polyimide / 2.5 µm FEP) Overlap > 50%*

⑦ *FEP Colored topcoat*

Multiconductors :

⑧ *FEP coated polyimide tape (2.5 µm FEP / 25 µm polyimide / 2.5 µm FEP)*

⑨ *Sintered PTFE Tapes.*
(The two tapes are wrapped in reverse direction with a 20% minimun overlap)

* *The shield could also be braided (See SP 457.)*

Thermal Characteristics

▪ Temperature rating	: -100°C at +200°C (Peak at +260°C)
▪ Shrinkage	: After 6 Hour at 230°C, Shrinkage < 2 mm.
▪ Blocking	: After 6 Hour at 200°C, No blocking.
▪ Smoke test (1 Hour at 230°C)	: No smoke.
▪ Cold bend	: 4 Hour at - 80°C (On 10 times O.D.)
▪ Heat ageing	: 120 Hour at 230°C.

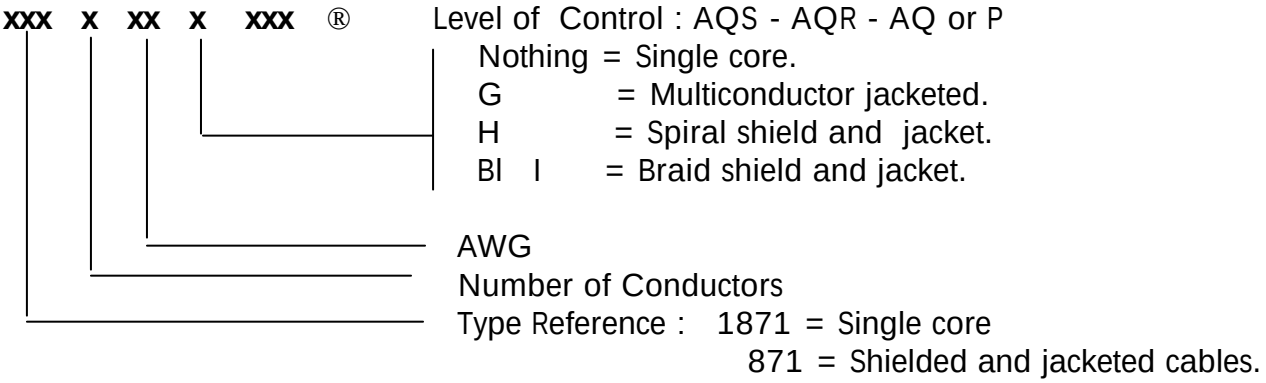
Physical and Chemical characteristics

▪ Wall thickness of insulation	: 0.14 mm
▪ Concentricity	: Good with a wrapped construction.
▪ Cut-through resistance	: > 15 daN for AWG 26, > 66 daN for AWG 12
▪ Radiation resistance	: No crack, no breakdown under 2 kV after a 1 Mrad radiation dosage.
▪ Vacuum mass loss	: At 200°C on core, Loss < 0.2%.
▪ Fluids resistance	: Solvants, Oils, Hydrocarbons, Skydrol Propellant, Dimethylhydrazine (UDMH)

▪ Non Flammable

These cables are Specially designed to be stripped with thermal device in order to avoid any damage on conductor.

Identification Code :



Exemple : 871 - 1 - 22 - H AQS : Single core 22 AWG Shielded and jacketed with an AQS level of control.

Color Coding

According to ESCC Specification

Wire size (AWG)	Core Color	Jacket Color		Color of Stripes on Jacket
		Single	Shielded	
28	Brown	Amber	White	Brown
26	Black	Amber	White	Black
24	Beige	Amber	Light Blue	White
22	Red	Amber	White	Red
20	Green	Amber	White	Green
18	Yellow	Amber	White	Yellow
16	Brown	Amber	White	Brown
14	Beige	Amber	Light Blue	White
12	Beige	Amber	Light Blue	White

Color and number of colored stripes are linked to the cross section and the number of cores.
For other Color coding, contact our sales departement.
See Page 1 for the ESCC corresponding control level.

Packaging : (For AQS, AQR and AQ Only)

- Minimum length : 30 m
- Cable cleaned, wound on reels with spool hub at least 70 times the maximum external diameter for single wire and 30 times for multiconductor cable.
- The wires spools are heat-sealed into polyethylene bags with a humidity indicator inside Ends are sealed with caps and accesible over a length of 10 cm.

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AWG	Number of Cond.	CHARACTERISTICS OF CONDUCTORS					SINGLE CORES				JACKETED CABLES				SHIELDED AND JACKETED CABLES				
		Cross Section (mm^2)	Construction n x mm	Nom. Dia. (mm)	Max. Dia. (mm)	Ohmic Résist. at 20°C (Ω/Km)	Nexans Reference *	Nom. Dia. (mm)	Max. Dia. (mm)	Max. Weight (g/m)	Nexans Reference *	Nom. Dia. (mm)	Max. Dia. (mm)	Max. Weight (g/m)	Nexans Reference *	Screen strands Dia (mm)	Nom. Dia. (mm)	Max. Dia. (mm)	Max. Weight (g/m)
28		0.10	19 X 0.08 S.P.All	0.40	0.43	242	1871-1-28	0.71	0.73	1.37									
26		0.15	19 X 0.10 S.P.All	0.50	0.53	148	1871-1-26	0.82	0.84	2.05									
24		0.21	19 X 0.12 S.P.All	0.60	0.64	105	1871-1-24	0.92	0.95	2.75									
22		0.38	19 X 0.16 S.P.C.	0.80	0.85	50.9	1871-1-22	1.12	1.15	4.40									
20		0.60	19 X 0.20 S.P.C.	1.00	1.04	32.2	1871-1-20	1.32	1.35	6.65									
18		0.93	19 X 0.25 S.P.C.	1.25	1.29	20.6	1871-1-18	1.57	1.60	9.98									
16	1	1.30	19 X 0.30 S.P.C.	1.50	1.53	14.3	1871-1-16	1.82	1.85	14.0					871-1-16 H	0.10	2.20	2.23	18.8
16	2	1.30	"	"	"	15					1871-2-16 G	3.73	3.80	30.7	871-2-16 H	0.15	4.19	4.26	41.8
16	3	1.30	"	"	"	15					1871-3-16 G	4.00	4.08	46.1	871-3-16 H	0.15	4.46	4.54	58.2
14	1	1.90	27 X 0.30 S.P.C.	1.77	1.87	10.1	1871-1-14	2.09	2.19	19.6					871-1-14 H	0.12	2.52	2.63	27.0
14	2	1.90	"	"	"	10.6					1871-2-14 G	4.27	4.48	43.1	871-2-14 H	0.15	4.83	5.07	55.6
14	3	1.90	"	"	"	10.6					1871-3-14 G	4.58	4.82	64.6	871-3-14 H	0.20	5.25	5.40	83.3
12	1	3.20	45 X 0.30 S.P.C.	2.30	2.50	6.03	1871-1-12	2.62	2.80	32.1					871-1-12 H	0.15	3.11	3.30	43.3
12	2	3.20	"	"	"	6.33					1871-2-12 G	5.33	5.70	70.6	871-2-12 H	0.20	5.99	6.30	90.5
12	3	3.20	"	"	"	6.33					1871-3-12 G	5.73	6.15	106	871-3-12 H	0.20	6.39	6.72	127.3

S.P.All. = Silver Plated Copper Alloy -- S.P.C. = Silver Plated Copper

Final Production Control : According to ESCC. 3901/001*

* Add the control level symbol (AQS - AQR - AQ or P).

NEXANS and ESCC CROSS REFERENCES

NEXANS P/N	ESCC COMPONENT/NUMBER
1871 - 1 - 28 *	3901 . 001 . 47 *
1871 - 1 - 26 *	3901 . 001 . 24 *
1871 - 1 - 24 *	3901 . 001 . 25 *
1871 - 1 - 22 *	3901 . 001 . 26 *
1871 - 1 - 20 *	3901 . 001 . 27 *
1871 - 1 - 18 *	3901 . 001 . 28 *
1871 - 1 - 16 *	3901 . 001 . 29 *
1871 - 1 - 14 *	3901 . 001 . 30 *
1871 - 1 - 12 *	3901 . 001 . 31 *
1871 - 2 - 16 G *	3901 . 001 . 32 *
1871 - 2 - 14 G *	3901 . 001 . 33 *
1871 - 2 - 12 G *	3901 . 001 . 34 *
1871 - 3 - 16 G *	3901 . 001 . 35 *
1871 - 3 - 14 G *	3901 . 001 . 36 *
1871 - 3 - 12 G *	3901 . 001 . 37 *
871 - 1 - 16 H *	3901 . 001 . 38 *
871 - 1 - 14 H *	3901 . 001 . 39 *
871 - 1 - 12 H *	3901 . 001 . 40 *
871 - 2 - 16 H *	3901 . 001 . 41 *
871 - 2 - 14 H *	3901 . 001 . 42 *
871 - 2 - 12 H *	3901 . 001 . 43 *
871 - 3 - 16 H *	3901 . 001 . 44 *
871 - 3 - 14 H *	3901 . 001 . 45 *
871 - 3 - 12 H *	3901 . 001 . 46 *

* = The reference shall be completed with a letter or a group of letters indicating the control level

NEXANS	ESCC
AQS	B1
AQR	B2
AQ	B3
P	For orders without any reference to ESCC specification .

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ISSUE	DATE	PAGE	CHANGE
Origin	March/75		
A	June/78	1-2-4 3 5	Gathering of single,multiconductors and shielded jacketed Performances added ESA/SCC references added
B	August/78	1 2 2 3	Braided shield possibility added Packaging for AQS and AQ added Brown 16 AWG instead of Orange Change in temperature rating -100 to +200°C instead of -80 to +200°C
C	June/79	2-4-5	AQR level added
D	July/79	3	Nitrogen tetroxide cancelled
E	July/86	1	Silver thickness 2µm instead of 1.5µm AWG 28 added
F	March/89	1 2 5	Change nature of polyimide tape on jackets AWG 28 color added Variants number 24 to 47 instead of 01 to 24
G	Jan./98	ALL	New presentation - English version.
H	Jan./00	ALL	Typing correction.
I	Sep/03	3 to 5	Transfer of the ESA/SCC System to the ESCC System Ref : QCS/AJG/030508 dated 2003-05-12

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SP 358

Filotex®

Type : 1872 - 872

SPACE CABLES POLYIMIDE INSULATED LIGHT WEIGHT

These cables are intended for space use and could be manufactured with different control levels :

-AQ, AQR or AQS for Space use or
-P for standard use, out of space field

Electrical Characteristics

- Voltage Rating : 600 V. RMS.
- Voltage Test : 100 % Impulse test
  Immersion test on sample
- Insulation resistance (500 V = 1 mn)
  > 750 MΩ x Km. at 20°C
- Insulation resistance (25 mm between Electrodes)
  > 125 MΩ x mm
- Spiral shield with OFHC SPC-Coverage Factor : > 92%

LINE OF PRODUCTS

1872 / 872
1871 / 871

CONSTRUCTION

Cores :

① Stranded conductors OFHC Silver Plated Copper or Copper Alloy (28 to 24 AWG) Silver thickness ≥ 2 µm.

② Wrapped polyimide insulation

③ Mechanical polyimide coating protection.

Above cores could be :

④ Twisted with an overall polyimide jacket.

Shielded and jacketed with one or more cores :

⑤ Spiral shield.

Overall jacket :

Single conductors :

⑥ FEP coated polyimide tape.

⑦ FEP colored topcoat.

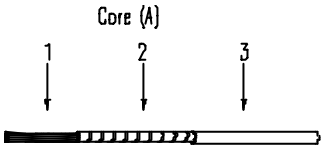
Multiconductors :

⑧ FEP coated polyimide tape.

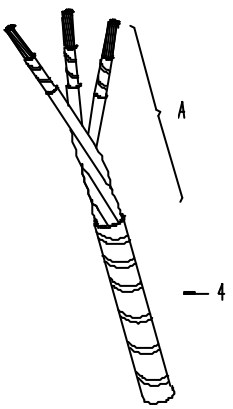
⑨ Sintered PTFE tape.

(See details on next page)

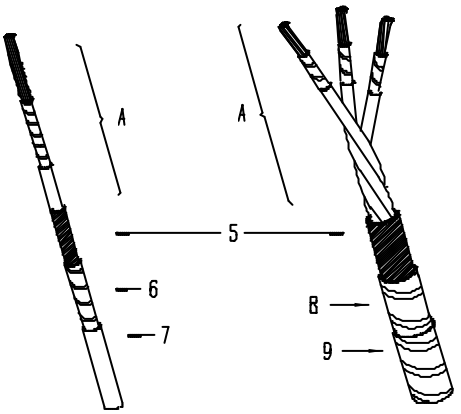
Type : 1872 / 872



Multicore Jocketed



Single and Multicore Shielded and Jocketed



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Details of Construction

Cores :

① *Stranded conductors OFHC Silver Plated Copper or Copper Alloy (28 to 24 AWG) Silver thickness ³ 2 µm.*

② *Wrapped polyimide insulation : FEP coated polyimide tape (2.5 µm FEP / 25 µm polyimide / 2.5 µm FEP)*

Overlap > 67%

③ *Mechanical polyimide coating protection,nominal wall thickness 25 µm.*

Above cores could be :

④ *Twisted with an overall polyimide jacket :*

FEP coated polyimide tape, (2.5 µm FEP / 25 µm polyimide / 2.5 µm FEP) with 15% min. overlap

Shielded and jacketed with one or more cores :

⑤ *Spiral shield with OFHC SPC Silver thickness ³ 2 µm. Coverage ³ 92 %.*

Overall jacket :

Single conductors :

⑥ *FEP coated polyimide tape (2.5 µm FEP / 25 µm polyimide / 2.5 µm FEP) Overlap > 50%*

⑦ *FEP Colored topcoat*

Multiconductors :

⑧ *FEP coated polyimide tape (2.5 µm FEP / 25 µm polyimide / 2.5 µm FEP)*

⑨ *Sintered PTFE Tapes.*
(The two tapes are wrapped in reverse direction with a 20% minimun overlap)

* *The shield could also be braided (See SP 458.)*

Thermal Characteristics

▪ Temperature rating	: -100°C at +200°C (Peak at +260°C)
▪ Shrinkage	: After 6 Hour at 230°C, Shrinkage < 2 mm.
▪ Blocking	: After 6 Hour at 200°C, No blocking.
▪ Smoke test (1 Hour at 230°C)	: No smoke.
▪ Cold bend	: 4 Hour at - 80°C (On 10 times O.D.)
▪ Heat ageing	: 120 Hour at 230°C.

Physical and Chemical characteristics

▪ Wall thickness of insulation	: 0.11 mm
▪ Concentricity	: Good with a wrapped construction.
▪ Cut-through resistance	: > 12 daN for AWG 26, > 31 daN for AWG 18
▪ Radiation resistance	: No crack, no breakdown under 2 kV after a 1 Mrad radiation dosage.
▪ Vacuum mass loss	: At 200°C on core, Loss < 0.2%.
▪ Fluids resistance	: Solvants, Oils, Hydrocarbons, Skydrol Propellant, Dimethylhydrazine (UDMH)

▪ Non Flammable

These cables are Specially designed to be stripped with thermal device in order to avoid any damage on conductor.

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Identification Code :

xxx x xx x xxx ®

Level of Control : AQS - AQR - AQ or P

Nothing = Single core.
G = Multiconductor jacketed.
H = Spiral shield and jacket.
Bl I = Braid shield and jacket.

AWG

Number of Conductors

Type Reference : 1872 = Single core
872 = Shielded and jacketed cables.

Exemple : 872 - 1 - 22 - H AQS : Single core 22 AWG Shielded and jacketed with an AQS level of control.

Color Coding

According to ESCC Specification

Wire size (AWG)	Core Color	Jacket Color		Color of Stripes on Jacket
		Single	Shielded	
28	Brown	Amber	White	Brown
26	Black	Amber	White	Black
24	Beige	Amber	Light Blue	White
22	Red	Amber	White	Red
20	Green	Amber	White	Green
18	Yellow	Amber	White	Yellow
16	Brown	Amber	White	Brown
14	Beige	Amber	Light Blue	White
12	Beige	Amber	Light Blue	White

Color and number of colored stripes are linked to the cross section and the number of cores.
For other Color coding, contact our sales departement.
See Page 1 for the ESCC corresponding control level.

Packaging : (For AQS, AQR and AQ Only)

- Minimum length : 30 m
- Cable cleaned, wound on reels with spool hub at least 70 times the maximum external diameter for single wire and 30 times for multiconductor cable.
- The wires spools are heat-sealed into polyethylene bags with a humidity indicator inside Ends are sealed with caps and accesible over a length of 10 cm.

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AWG	Number of Cond.	CHARACTERISTICS OF CONDUCTORS					SINGLE CORES				JACKETED CABLES				SHIELDED AND JACKETED CABLES				
		Cross Section (mm²)	Construction n x mm	Nom. Dia. (mm)	Max. Dia. (mm)	Ohmic Résist. at 20°C (Ω/Km)	Nexans Reference *	Nom. Dia. (mm)	Max. Dia. (mm)	Max. Weight (g/m)	Nexans Reference *	Nom. Dia. (mm)	Max. Dia. (mm)	Max. Weight (g/m)	Nexans Reference *	Screen strands Dia. (mm)	Nom. Dia. (mm)	Max. Dia. (mm)	Max. Weight (g/m)
28	1	0.10	19 X 0.08 S.P.All	0.40	0.43	242	1872-1-28	0.63	0.68	1.23					872-1-28 H	0.08	0.97	1.07	3.05
28	2	0.10	"	"	"	254					1872-2-28 G	1.34	1.43	2.70	872-2-28 H	0.08	1.70	1.80	5.70
28	3	0.10	"	"	"	"					1872-3-28 G	1.43	1.53	3.95	872-3-28 H	0.10	1.82	1.92	8.10
28	4	0.10	"	"	"	"									872-4-28 H	0.10	2.00	2.15	10.15
28	5	0.10	"	"	"	"									872-5-28 H	0.10	2.17	2.27	12.10
26	1	0.15	19 X 0.10 S.P.All	0.50	0.53	148	1872-1-26	0.73	0.78	1.93					872-1-26 H	0.08	1.03	1.13	3.85
26	2	0.15	"	"	"	155					1872-2-26 G	1.54	1.64	4.42	872-2-26 H	0.08	1.89	2.01	8.00
26	3	0.15	"	"	"	"					1872-3-26 G	1.66	1.76	6.45	872-3-26 H	0.10	2.08	2.15	11.20
26	4	0.15	"	"	"	"					1872-4-26 G	1.84	1.94	8.31	872-4-26 H	0.10	2.30	2.40	13.30
26	5	0.15	"	"	"	"					1872-5-26 G	2.04	2.14	10.60	872-5-26 H	0.10	2.50	2.56	17.00
24	1	0.21	19 X 0.12 S.P.All	0.60	0.64	105	1872-1-24	0.83	0.88	2.64					872-1-24 H	0.08	1.13	1.23	4.75
24	2	0.21	"	"	"	110					1872-2-24 G	1.74	1.84	5.91	872-2-24 H	0.10	2.12	2.24	10.50
24	3	0.21	"	"	"	"					1872-3-24 G	1.87	1.97	8.81	872-3-24 H	0.10	2.30	2.36	14.00
24	4	0.21	"	"	"	"					1872-4-24 G	2.08	2.20	11.50	872-4-24 H	0.10	2.59	2.65	16.50
24	5	0.21	"	"	"	"					1872-5-24 G	2.31	2.44	15.20					
22	1	0.38	19 X 0.16 S.P.C.	0.80	0.85	50.9	1872-1-22	1.03	1.08	4.25					872-1-22 H	0.08	1.33	1.43	6.86
22	2	0.38	"	"	"	53.5					1872-2-22 G	2.14	2.24	9.41	872-2-22 H	0.10	2.53	2.65	14.80
22	3	0.38	"	"	"	"					1872-3-22 G	2.30	2.40	14.30	872-3-22 H	0.10	2.73	2.82	20.20
22	4	0.38	"	"	"	"									872-4-22 H	0.12	3.10	3.17	26.40
20	1	0.60	19 x 0.20 S.P.C.	1.00	1.04	32.2	1872-1-20	1.23	1.28	6.49					872-1-20 H	0.08	1.53	1.63	9.43
20	2	0.60	"	"	"	33.8					1872-2-20 G	2.54	2.64	14.20	872-2-20 H	0.10	2.91	3.03	20.20
20	3	0.60	"	"	"	"					1872-3-20 G	2..74	2.84	21.10	872-3-20 H	0.12	3.20	3.26	29.40
20	4	0.60	"	"	"	"									872-4-20 H	0.15	3.60	3.70	38.80
18	1	0.93	19 x 0.25 S.P.C.	1.25	1.29	20.6	1872-1-18	1.48	1.53	9.79					872-1-18 H	0.10	1.82	1.92	13.80
18	2	0.93	"	"	"	21.6					1872-2-18 G	3.05	3.15	21.30	872-2-18 H	0.12	3.46	3.58	29.60
18	3	0.93	"	"	"	"					1872-3-18 G	3.27	3.40	31.60	872-3-18 H	0.15	3.79	3.86	44.10
16	1	1.3	19 x 0.30 S.P.C.	1.50	1.53	14.3	1872-1-16	1.73	1.80	13.80					872-1-16 H	0.10	2.06	2.21	18.40
16	2	1.3	"	"	"	15					1872-2-16 G	3.55	3.70	30.30	872-2-16 H	0.15	4.03	4.20	39.90
16	3	1.3	"	"	"	"					1872-3-16 G	3.81	3.96	45.50	872-3-16 H	0.15	4.33	4.50	57.60
14	1	1.9	27 x 0.30 S.P.C.	1.77	1.87	10.1	1872-1-14	2.00	2.10	19.4					872-1-14 H	0.12	2.37	2.55	26.50
14	2	1.9	"	"	"	10.6					1872-2-14 G	4.09	4.24	42.90	872-2-14 H	0.15	4.55	4.75	55.20
14	3	1.9	"	"	"	"					1872-3-14 G	4.39	4.54	64.00	872-3-14 H	0.15	4.91	5.10	82.70
12	1	3.2	45 x 0.30 S.P.C.	2.30	2.40	6.03	1872-1-12	2.53	2.70	31.80					872-1-12 H	0.15	2.96	3.16	43.00
12	2	3.2	"	"	"	6.33					1872-2-12 G	5.15	5.50	70.00	872-2-12 H	0.20	5.71	5.95	90.00
12	3	3.2	"	"	"	"					1872-3-12 G	5.53	5.90	105.00	872-3-12 H	0.20	6.15	6.40	126.40

S.P.All. = Silver Plated Copper Alloy -- S.P.C. = Silver Plated Copper

Final Production Control : According to ESCC. 3901/002*

* Add the control level symbol (AQS - AQR - AQ or P).

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NEXANS and ESCC CROSS REFERENCES

NEXANS P/N	ESCC COMPONENT/NUMBER
1872 - 1 - 28 *	3901 . 002 . 61 *
1872 - 1 - 26 *	3901 . 002 . 56 *
1872 - 1 - 24 *	3901 . 002 . 57 *
1872 - 1 - 22 *	3901 . 002 . 58 *
1872 - 1 - 20 *	3901 . 002 . 59 *
1872 - 1 - 18 *	3901 . 002 . 60 *
1872 - 1 - 16 *	
1872 - 1 - 14 *	
1872 - 1 - 12 *	

NEXANS P/N	ESCC COMPONENT/NUMBER
872 - 1 - 28 H *	3901 . 002 . 64 *
872 - 1 - 26 H *	3901 . 002 . 41 *
872 - 1 - 24 H *	3901 . 002 . 42 *
872 - 1 - 22 H *	3901 . 002 . 43 *
872 - 1 - 20 H *	3901 . 002 . 44 *
872 - 1 - 18 H *	3901 . 002 . 45 *
872 - 1 - 16 H *	
872 - 1 - 14 H *	
872 - 1 - 12 H *	

1872 - 2 - 28 G *	3901 . 002 . 62 *
1872 - 2 - 26 G *	3901 . 002 . 31 *
1872 - 2 - 24 G *	3901 . 002 . 32 *
1872 - 2 - 22 G *	3901 . 002 . 33 *
1872 - 2 - 20 G *	3901 . 002 . 34 *
1872 - 2 - 18 G *	3901 . 002 . 35 *
1872 - 2 - 16 G *	
1872 - 2 - 14 G *	
1872 - 2 - 12 G *	

872 - 2 - 28 H *	3901 . 002 . 65 *
872 - 2 - 26 H *	3901 . 002 . 46 *
872 - 2 - 24 H *	3901 . 002 . 47 *
872 - 2 - 22 H *	3901 . 002 . 48 *
872 - 2 - 20 H *	3901 . 002 . 49 *
872 - 2 - 18 H *	3901 . 002 . 50 *
872 - 2 - 16 H *	
872 - 2 - 14 H *	
872 - 2 - 12 H *	

1872 - 3 - 28 G *	3901 . 002 . 63 *
1872 - 3 - 26 G *	3901 . 002 . 36 *
1872 - 3 - 24 G *	3901 . 002 . 37 *
1872 - 3 - 22 G *	3901 . 002 . 38 *
1872 - 3 - 20 G *	3901 . 002 . 39 *
1872 - 3 - 18 G *	3901 . 002 . 40 *
1872 - 3 - 16 G *	
1872 - 3 - 14 G *	
1872 - 3 - 12 G *	

872 - 3 - 28 H *	3901 . 002 . 66 *
872 - 3 - 26 H *	3901 . 002 . 51 *
872 - 3 - 24 H *	3901 . 002 . 52 *
872 - 3 - 22 H *	3901 . 002 . 53 *
872 - 3 - 20 H *	3901 . 002 . 54 *
872 - 3 - 18 H *	3901 . 002 . 55 *
872 - 3 - 16 H *	
872 - 3 - 14 H *	
872 - 3 - 12 H *	

1872 - 4 - 26 G *	
1872 - 4 - 24 G *	
1872 - 4 - 20 G *	

872 - 4 - 28 H *	3901 . 002 . 67 *
872 - 4 - 26 H *	3901 . 002 . 68 *
872 - 4 - 24 H *	3901 . 002 . 69 *
872 - 4 - 22 H *	3901 . 002 . 70 *
872 - 4 - 20 H *	3901 . 002 . 71 *

1872 - 5 - 26 G *	
1872 - 5 - 24 G *	

872 - 5 - 28 H *	3901 . 002 . 72 *
872 - 5 - 26 H *	3901 . 002 . 73 *

* = The reference shall be completed with a letter or a group of letters indicating the control level

NEXANS	ESCC
AQS	B1
AQR	B2
AQ	B3
P	For orders without any reference to ESCC specification .

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ISSUE	DATE	PAGE	CHANGE
Origin	March/75		
A	June/78	1-2-4 3 5	Gathering of single,multiconductors and shielded jacketed Performances added ESA/SCC references added
B	August/78	1 2 2 3	Braided shield possibility added Packaging for AQS and AQ added Brown 16 AWG instead of Orange Change in temperature rating -100 to +200°C instead of -80 to +200°C
C	June/79	2-4-5	AQR level added
D	July/79	3	Nitrogen tetroxide cancelled
E	July/86	1 4-5	Silver thickness 2µm instead of 1.5µm Variants 26 to 43 added
F	March/89	1 2 4 5	Change nature of polyimide tape on jackets AWG 28 color added AWG 28 nominal diameter changed (0.63 instead of 0.40) Variants number 31 to 73 instead of 01 to 43
G	Jan./98	ALL	New presentation - English version.
H	Jan./00	2 to 5	Typing correction 4 new Variants added.
I	Sep/03	3 to 5	Transfer of the ESA/SCC System to the ESCC System Ref : QCS/AJG/030508 dated 2003-05-12

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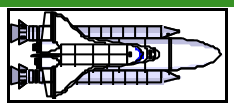


SP 199

Filotex®

Type : MTV - BTV

FLEXIBLE SPACE CABLES PTFE INSULATED

These cables are intended for space use and could be manufactured with different control levels :

-AQ, AQR or AQS for Space use or
-P for standard use, out of space field

LINE OF PRODUCTS

MTV/BTV
MTV BFG
BTV BFG

Electrical Characteristics

- Voltage Rating : 600 V. RMS.
- Voltage Test : - 100 % Impulse test
  - Immersion test on sample
- Insulation resistance (500 V = 1 mn) > 5000 MΩ x Km. from 20°C to 150°C
- Surface resistance (25 mm between Electrodes) >125 MΩ x mm
- Braided shield with OFHC SPC - Coverage Factor : > 90%

CONSTRUCTION

Cores :

① Stranded conductors OFHC Silver Plated Copper or Copper Alloy (30 to 26 AWG) Silver thickness ≥ 2 µm.
② Extruded PTFE insulation
③ Mechanical polyimide coating Protection wall thickness 25 µm.

Above cores could be :

④ Twisted with or without an overall polyimide jacket. (2.5 µm FEP/25 µm polyimide/ 2.5 µm FEP) Overlap > 50%

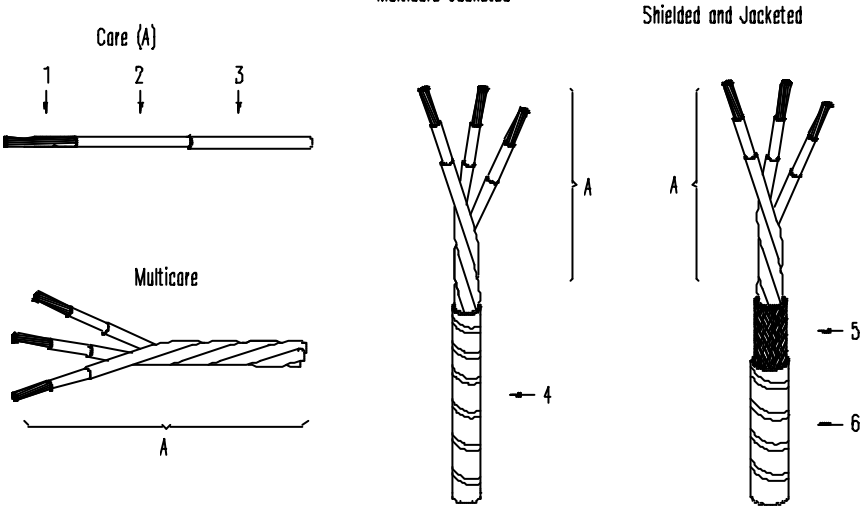
Shielded and jacketed with one or more cores :

⑤ Braided shield with OFHC SPC Silver thickness ≥ 2 µm Coverage ≥ 90%

Overall jacket :

⑥ FEP coated polyimide tape. (2.5 µm FEP/25 µm polyimide/ 2.5 µm FEP) Overlap > 50%

Type : MTV /BTV



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Nexans

Thermal Characteristics

- Temperature rating : -100°C at +200°C (Peak at +260°C)
- Shrinkage : After 6 Hour at 260°C, Shrinkage < 2 mm.
- Blocking : After 6 Hour at 260°C, No blocking.
- Smoke test (1 Hour at 230°C) : No smoke.
- Cold bend : 4 Hour at - 80°C (On 10 times O.D.)
- Heat ageing : 120 Hour at 250°C.

Physical and Chemical characteristics

- Wall thickness of insulation : 0.18 mm
- Concentricity : > 70%
- Cut-through resistance : > 20 N
- Radiation resistance : No crack, no breakdown under 2 kV after a 1 Mrad radiation dosage.
- Vacuum mass loss : At 200°C on core, Loss < 0.2%.
- Fluids resistance : Solvants, Oils, Hydrocarbons, Skydrol, concentrated acid, Propellant, Dimethylhydrazine (UDMH)
- Non Flammable

These cables are Specially designed to be stripped with thermal device in order to avoid any damage on conductor.

Identification Code :

X TV X / XX / XX / X / XX ® Level of Control : AQS - AQR - AQ or P

- A = Single core.
- G = Jacket on shield or assembly
- BF = Braided shield.
- AWG
- Number of Conductors
- Type Reference
- Conductor : B = Silver plated copper Alloy
  M = Silver plated copper

Exemple : BTV / 1 / 26 / BF/ G AQS: Single core 26 AWG Shielded and jacketed with an AQS level of control.

Packaging : (For AQS, AQR and AQ Only)

- Minimum length : 30 m
- Cable cleaned, wound on reels with spool hub at least 70 times the maximum external diameter for single wire and 30 times for multiconductor cable.
- The wires spools are heat-sealed into polyethylene bags with a humidity indicator inside Ends are sealed with caps and accesible over a length of 10 cm.

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AWG	Number of Cond.	CHARACTERISTICS OF CONDUCTORS					SINGLE CORES				JACKETED CABLES				SHIELDED AND JACKETED CABLES				
		Cross Section (mm²)	Construction n x mm	Nom. Dia. (mm)	Max. Dia. (mm)	Ohmic Résist. at 20°C (Ω/Km)	Nexans Reference *	Nom. Dia. (mm)	Max. Dia. (mm)	Max. Weight (g/m)	Nexans Reference *	Nom. Dia. (mm)	Max. Dia. (mm)	Max. Weight (g/m)	Nexans Reference *	Screen strands Dia (mm)	Nom. Dia. (mm)	Max. Dia. (mm)	Max. Weight (g/m)
30	1	0.055	7 X 0.10 S.P.All	0.30	0.32	375	BTV 1/30/A	0.68	0.71	1.2									
28	1	0.10	7 X 0.127 S.P.All	0.38	0.42	215	BTV 1/28/A	0.79	0.82	1.80					BTV 1/28/BF/G	0.055	1.19	1.22	3.77
28	2	"	"	"	"	225	BTV 2/28/A	1.58	1.64	3.80	BTV 2/28/G	1.71	1.92	4.32	BTV 2/28/BF/G	0.07	2.05	2.12	7.62
28	3	"	"	"	"	"	BTV 3/28/A	1.70	1.76	5.70	BTV 3/28/G	1.83	2.04	6.26	BTV 3/28/BF/G	0.07	2.17	2.24	10.7
28	4	"	"	"	"	"	BTV 4/28/A	1.90	1.97	7.55	BTV 4/28/G	2.03	2.25	8.17	BTV 4/28/BF/G	0.07	2.36	2.45	12.8
26	1	0.14	7 X 0.16 S.P.All	0.48	0.50	146	BTV 1/26/A	0.86	0.89	2.30					BTV 1/26/BF/G	0.055	1.27	1.29	4.63
26	2	"	"	"	"	153	BTV 2/26/A	1.72	1.78	4.84	BTV 2/26/G	1.85	2.06	5.28	BTV 2/26/BF/G	0.07	2.20	2.26	9.24
26	3	"	"	"	"	"	BTV 3/26/A	1.85	1.92	7.28	BTV 3/26/G	1.98	2.20	7.80	BTV 3/26/BF/G	0.07	2.33	2.39	12.5
26	4	"	"	"	"	"	BTV 4/26/A	2.06	2.14	9.71	BTV 4/26/G	2.19	2.42	10.3	BTV 4/26/BF/G	0.07	2.55	2.62	15.6
24	1	0.22	7 X 0.20 S.P.C.	0.60	0.62	87.2	MTV 1/24/A	0.98	1.04	3.34					MTV 1/24/BF/G	0.07	1.47	1.52	6.38
24	2	"	"	"	"	91.6	MTV 2/24/A	1.96	2.08	6.90	MTV 2/24/G	2.09	2.36	7.54	MTV 2/24/BF/G	0.07	2.45	2.56	11.7
24	3	"	"	"	"	"	MTV 3/24/A	2.11	2.24	10.3	MTV 3/24/G	2.24	2.52	11.0	MTV 3/24/BF/G	0.07	2.60	2.72	16.0
24	4	"	"	"	"	"	MTV 4/24/A	2.35	2.50	14.0	MTV 4/24/G	2.48	2.78	14.8	MTV 4/24/BF/G	0.07	2.85	2.98	20.5
22	1	0.34	7 X 0.25 S.P.C.	0.75	0.77	55.8	MTV 1/22/A	1.14	1.19	4.84					MTV 1/22/BF/G	0.07	1.62	1.67	8.26
22	2	"	"	"	"	58.7	MTV 2/22/A	2.28	2.38	10.0	MTV 2/22/G	2.41	2.66	10.7	MTV 2/22/BF/G	0.07	2.76	2.86	15.5
22	3	"	"	"	"	"	MTV 3/22/A	2.45	2.56	15.0	MTV 3/22/G	2.58	2.84	15.8	MTV 3/22/BF/G	0.07	2.93	3.04	21.2
22	4	"	"	"	"	"	MTV 4/22/A	2.74	2.86	20.3	MTV 4/22/G	2.87	3.14	21.2	MTV 4/22/BF/G	0.10	3.37	3.49	30.5
20	1	0.60	19 X 0.20 S.P.C.	1.00	1.03	32.2	MTV 1/20/A	1.38	1.44	7.40					MTV 1/20/BF/G	0.07	1.86	1.92	11.4
20	2	"	"	"	"	33.8	MTV 2/20/A	2.76	2.88	15.3	MTV 2/20/G	2.89	3.16	16.2	MTV 2/20/BF/G	0.07	3.24	3.36	21.7
20	3	"	"	"	"	"	MTV 3/20/A	2.97	3.12	23.0	MTV 3/20/G	3.10	3.40	24.0	MTV 3/20/BF/G	0.10	3.60	3.73	33.7
20	4	"	"	"	"	"	MTV 4/20/A	3.31	3.46	31.1	MTV 4/20/G	3.44	3.74	32.2	MTV 4/20/BF/G	0.10	3.94	4.09	43.2
18	1	0.93	19 X 0.25 S.P.C.	1.21	1.29	20.6	MTV 1/18/A	1.77	1.85	12.0					MTV 1/18/BF/G	0.07	2.18	2.26	17.0
18	2	"	"	"	"	21.6	MTV 2/18/A	3.54	3.70	24.9	MTV 2/18/G	3.62	3.83	26.0	MTV 2/18/BF/G	0.10	4.07	4.23	35.5
18	3	"	"	"	"	"	MTV 3/18/A	3.81	3.98	37.3	MTV 3/18/G	3.88	4.13	38.6	MTV 3/18/BF/G	0.10	4.34	4.60	51.0
18	4	"	"	"	"	"	MTV 4/18/A	4.25	4.46	49.7	MTV 4/18/G	4.40	4.59	51.2	MTV 4/18/BF/G	0.10	4.80	5.07	65.9
16	1	1.23	19 X 0.285 S.P.C.	1.38	1.44	16.5	MTV 1/16/A	2.16	2.23	17.0					MTV 1/16/BF/G	0.07	2.57	2.60	22.9
16	2	"	"	"	"	17.3	MTV 2/16/A	4.32	4.46	34.6	MTV 2/16/G	4.4	4.63	35.8	MTV 2/16/BF/G	0.10	4.85	4.98	47.8
16	3	"	"	"	"	"	MTV 3/16/A	4.64	4.80	51.8	MTV 3/16/G	4.72	4.93	53.3	MTV 3/16/BF/G	0.10	5.17	5.41	67.9
16	4	"	"	"	"	"	MTV 4/16/A	5.18	5.37	69.1	MTV 4/16/G	5.34	5.5	70.9	MTV 4/16/BF/G	0.10	5.74	5.97	91.5

S.P.All. = Silver Plated Copper Alloy -- S.P.C. = Silver Plated Copper

Final Production Control : According to ESCC 3901/013

* Add the control level symbol (AQS - AQR - AQ or P).

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NEXANS and ESCC CROSS REFERENCES

NEXANS P/N	ESCC COMPONENT/NUMBER
BTV 1 / 30 / A *	3901 . 013 . 78 *
BTV 1 / 28 / A *	3901 . 013 . 01 *
BTV 1 / 26 / A *	3901 . 013 . 02 *
MTV 1 / 24 / A *	3901 . 013 . 03 *
MTV 1 / 22 / A *	3901 . 013 . 04 *
MTV 1 / 20 / A *	3901 . 013 . 05 *
MTV 1 / 18 / A *	3901 . 013 . 56 *
MTV 1 / 16 / A *	3901 . 013 . 57 *

BTV 2 / 28 / A *	3901 . 013 . 06 *
BTV 2 / 26 / A *	3901 . 013 . 07 *
MTV 2 / 24 / A *	3901 . 013 . 08 *
MTV 2 / 22 / A *	3901 . 013 . 09 *
MTV 2 / 20 / A *	3901 . 013 . 10 *
MTV 2 / 18 / A *	3901 . 013 . 58 *
MTV 2 / 16 / A *	3901 . 013 . 59 *

BTV 3 / 28 / A *	3901 . 013 . 11 *
BTV 3 / 26 / A *	3901 . 013 . 12 *
MTV 3 / 24 / A *	3901 . 013 . 13 *
MTV 3 / 22 / A *	3901 . 013 . 14 *
MTV 3 / 20 / A *	3901 . 013 . 15 *
MTV 3 / 18 / A *	3901 . 013 . 60 *
MTV 3 / 16 / A *	3901 . 013 . 61 *

BTV 4 / 28 / A *	3901 . 013 . 16 *
BTV 4 / 26 / A *	3901 . 013 . 17 *
MTV 4 / 24 / A *	3901 . 013 . 18 *
MTV 4 / 22 / A *	3901 . 013 . 19 *
MTV 4 / 20 / A *	3901 . 013 . 20 *
MTV 4 / 18 / A *	3901 . 013 . 62 *
MTV 4 / 16 / A *	3901 . 013 . 63 *

BTV 2 / 28 / G *	3901 . 013 . 21 *
BTV 2 / 26 / G *	3901 . 013 . 22 *
MTV 2 / 24 / G *	3901 . 013 . 23 *
MTV 2 / 22 / G *	3901 . 013 . 24 *
MTV 2 / 20 / G *	3901 . 013 . 25 *
MTV 2 / 18 / G *	3901 . 013 . 64 *
MTV 2 / 16 / G *	3901 . 013 . 65 *

BTV 3 / 28 / G *	3901 . 013 . 26 *
BTV 3 / 26 / G *	3901 . 013 . 27 *
MTV 3 / 24 / G *	3901 . 013 . 28 *
MTV 3 / 22 / G *	3901 . 013 . 29 *
MTV 3 / 20 / G *	3901 . 013 . 30 *
MTV 3 / 18 / G *	3901 . 013 . 66 *
MTV 3 / 16 / G *	3901 . 013 . 67 *

NEXANS P/N	ESCC COMPONENT/NUMBER
BTV 4 / 28 / G *	3901 . 013 . 31 *
BTV 4 / 26 / G *	3901 . 013 . 32 *
MTV 4 / 24 / G *	3901 . 013 . 33 *
MTV 4 / 22 / G *	3901 . 013 . 34 *
MTV 4 / 20 / G *	3901 . 013 . 35 *
MTV 4 / 18 / G *	3901 . 013 . 68 *
MTV 4 / 16 / G *	3901 . 013 . 69 *

BTV 1 / 28 / BF / G *	3901 . 013 . 36 *
BTV 1 / 26 / BF / G *	3901 . 013 . 37 *
MTV 1 / 24 / BF / G *	3901 . 013 . 38 *
MTV 1 / 22 / BF / G *	3901 . 013 . 39 *
MTV 1 / 20 / BF / G *	3901 . 013 . 40 *
MTV 1 / 18 / BF / G *	3901 . 013 . 70 *
MTV 1 / 16 / BF / G *	3901 . 013 . 71 *

BTV 2 / 28 / BF / G *	3901 . 013 . 41 *
BTV 2 / 26 / BF / G *	3901 . 013 . 42 *
MTV 2 / 24 / BF / G *	3901 . 013 . 43 *
MTV 2 / 22 / BF / G *	3901 . 013 . 44 *
MTV 2 / 20 / BF / G *	3901 . 013 . 45 *
MTV 2 / 18 / BF / G *	3901 . 013 . 72 *
MTV 2 / 16 / BF / G *	3901 . 013 . 73 *

BTV 3 / 28 / BF / G *	3901 . 013 . 46 *
BTV 3 / 26 / BF / G *	3901 . 013 . 47 *
MTV 3 / 24 / BF / G *	3901 . 013 . 48 *
MTV 3 / 22 / BF / G *	3901 . 013 . 49 *
MTV 3 / 20 / BF / G *	3901 . 013 . 50 *
MTV 3 / 18 / BF / G *	3901 . 013 . 74 *
MTV 3 / 16 / BF / G *	3901 . 013 . 75 *

BTV 4 / 28 / BF / G *	3901 . 013 . 51 *
BTV 4 / 26 / BF / G *	3901 . 013 . 52 *
MTV 4 / 24 / BF / G *	3901 . 013 . 53 *
MTV 4 / 22 / BF / G *	3901 . 013 . 54 *
MTV 4 / 20 / BF / G *	3901 . 013 . 55 *
MTV 4 / 18 / BF / G *	3901 . 013 . 76 *
MTV 4 / 16 / BF / G *	3901 . 013 . 77 *

* = The reference shall be completed with a letter or a group of letters indicating the control level

NEXANS	ESCC
AQS	B1
AQR	B2
AQ	B3
P	For orders without any reference to ESCC specification.

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ISSUE	DATE	PAGE	CHANGE
Origin	Nov./71		
A			Page setting change
B	March/75	Title 2-3 4	"D2B" application cancelled 4 conductors added S.P.C. shield added
C	June/78	Title 1-4 4	"Programme Concerto" cancelled Jacketed type added Ribbon shield cancelled
D	June/78	1 1-2 2 2 2 4	OFHC S.P.C.added Quality control levels added Temperature heat ageing changed Thermal life 20 000 h. at 275°C Thermal life 50 000 h. cancelled References added
E	August/78	4 4-5	Single wires characteristics added Pages renumbered
F	June/79	1 5 5	Polyimide tape changed Quality control level ammended AQR level added
H	August/81	2	Previsional thermal life cancelled
I	Sept./83	4-5	16 and 18 AWG added
J	July/86	1	Silver tickness 2.0 µm
K	March/89	4 5	Table ammended 30, 18, and 16 AWG added ESA/SCC Ref. number changed
L	Nov.90	4	28 AWG conductor construction changed 7 x 0.127 instead of 7 x 0.135
M	Jan./98	ALL	New presentation - English version.
N	Jan/00	2	Typing correction
O	Sep/03	3-4	Transfer of the ESA/SCC System to the ESCC System Ref : QCS/AJG/030508 dated 2003-05-12

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Filotex®

SP 189

Type 50 CIS

Application

Flexible space coaxial cable

LINE OF PRODUCTS

50 CIS
50 CIS DTR
50 CIS BLG

Electrical Characteristics

- Impedance at 200 Mhz : 50 ± 2 Ω
- Nominal capacitance : 95 ± 4 pF/m
- Nominal attenuation : See page 3/4
- Return loss : See page 3/4
- Power rating : See page 3/4
- Maximum Operating frequency : 3 Ghz
- Voltage rating : 900 Volts RMS.
- Maximum current : 2.5 A.
- Corona extinction voltage : > 1200 V.

Thermal Characteristics

- Temperature rating : -100°C at +200°C (Peak at +260°C)
- Heat ageing :
- after 168 h.at 230°C : shrinkage < 1 mm.
- after 168 h.at 200°C : capacitance change < 4%
- : attenuation change < 8%
- : return loss : see curve on page 3
- Cold bend on 20 mm mandrel : 4 Hours at -80°C.

CONSTRUCTION

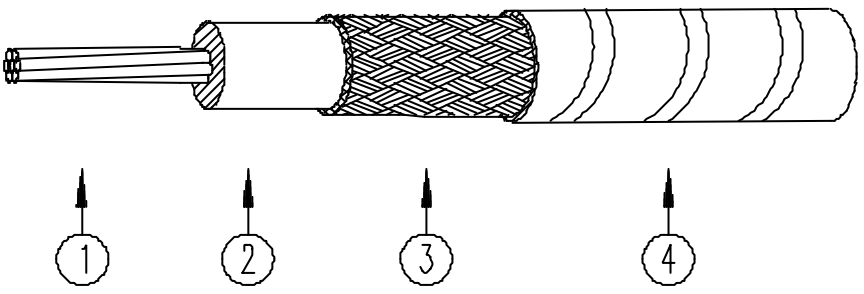
Core :
① Stranded conductors
Silver Plated Coated Copper Alloy
Silver thickness = 4 µm.

Insulation :
② Extruded PTFE dielectric

Screen :
③ Braided shield with
OFHC Silver Plated copper
Silver thickness = 2 µm.
Coverage ≥ 85%

Overall jacket :
④ FEP coated polyimide tape.
(2.5 µm FEP/25 µm polyimide/ 2.5 µm FEP)
wrapped jacket with an
Overlap > 50%

Type : 50 CIS



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Physical and Chemical characteristics

- Polyimide wall thickness : > 0.05 mm
- Concentricity : > 76%
- Radiation resistance : No loss of insulation Resistance after a 4.10^{14} e/cm^2 radiation dosage.
- Vacuum mass loss :
  - At 200°C : Loss < 0.4%.
  - Gas nature : No hydrocarbons detected.
- Fluids resistance : Solvants, Oils, Hydrocarbons, Skydrol, concentrated acid, Propellant, Dimethylhydrazine (UDMH)
- Non Flammable

NEXANS and ESCC CROSS REFERENCES

NEXANS P/N	ESCC COMPONENT/NUMBER
50 CIS *	**3902 . 001 . 01 ***

* = The reference shall be completed with a letter on a group of letters indicating the control level :

NEXANS	ESCC
AQS	B1
AQR	B2
AQ	B3
P	For orders without any reference to ESCC specification.

Packaging : (For AQS, AQR and AQ Only)

- Minimum length : 30 m
- Cable cleaned, wound on reels with spool hub at least 50 times the maximum external diameter.
- The wires spools are heat-sealed into polyethylene bags with a humidity indicator inside Ends are sealed with caps and accesible over a length of 10 cm.

Nexans Reference *	CONDUCTOR		CORE	SCREEN	FINISH CABLE			
	Construction n x mm	Nom. Dia. (mm)	Dielectric Dia. (mm)	Strands Dia. (mm)	Nom. Dia. (mm)	Max. Dia. (mm)	Nom. Weight. (g/m)	Max. Weight. (g/m)
50 CIS	7 x 0.175 S.P.C.A.	0.52	1.52± 0.03	0.07	1.92	2.05	8.8	9.5

S.P.C.A. = Silver Plated copper Alloy

Final Production Control : According to ESCC. 3902/001

* Add the control level symbol (AQS - AQR - AQ or P).

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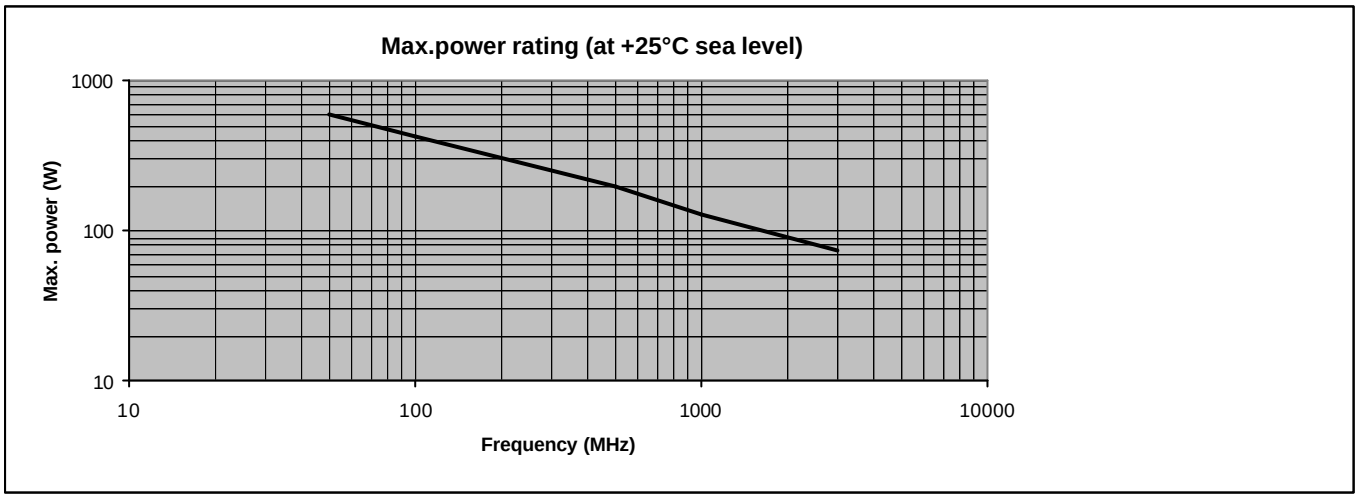

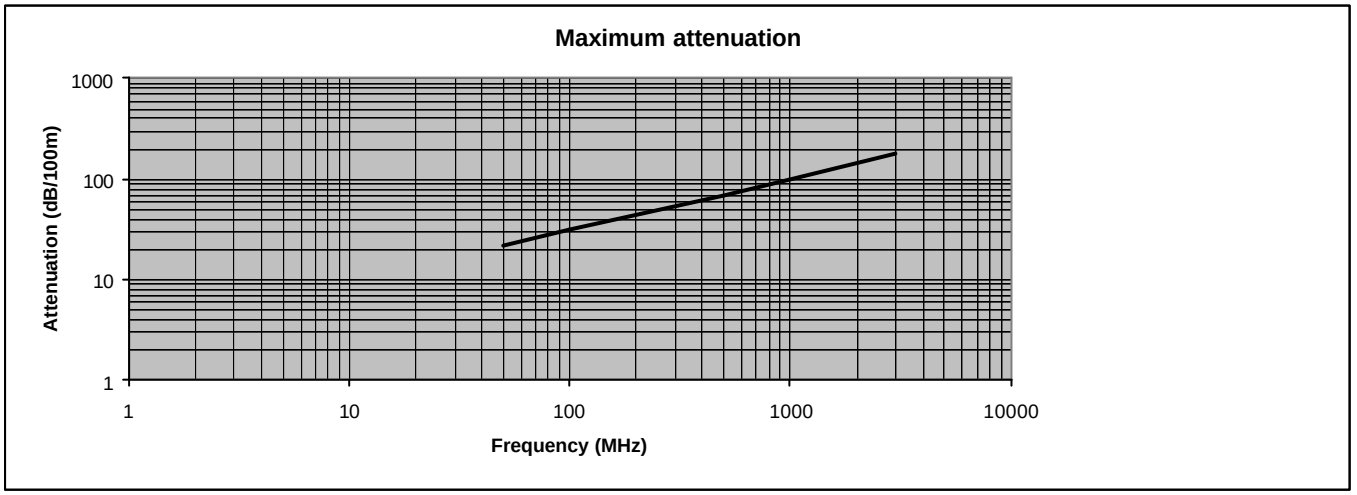

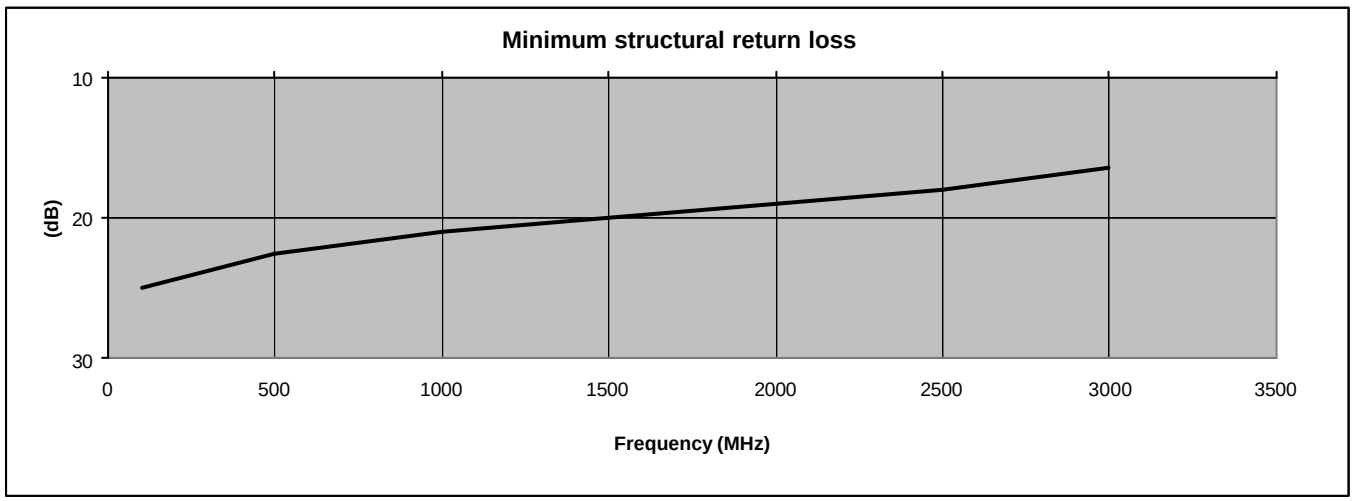

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ISSUE	DATE	PAGE	CHANGE
Origin	Jan./71		
A	Nov./71		Page setting change
B	March/73		Dielectric diameter changed
C	June/77		Nature of conductor changed Silver Plated copper Alloy (Silver tickness = 4 µm) instead of Silver Plated Steel (Silver thickness = 5 µm) Dielectric diameter changed Shield strands Silver plated copper 1.5 µm
D	Sept./79		Quality control levels added and curves added.
E	July/86	1	Silver thickness on shield strands = 2.0 µm
F	April/93		Frequency range up to 3 Ghz.
G	Jan./98	ALL	New presentation - English version.
H	Jan./00	ALL	Typing correction
I	Sep/03	2	Transfer of the ESA/SCC System to the ESCC System Ref : QCS/AJG/030508 dated 2003-05-12

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Filotex®

SP 781

Type 50 CIS DTR

Application

Flexible, double braid, space coaxial cable

LINE OF PRODUCTS

50 CIS DTR
50 CIS
50 CIS BLG

Electrical Characteristics

- Impedance at 200 Mhz : 50 ± 2 Ω
- Nominal capacitance : 95 ± 4 pF/m
- Nominal attenuation : See page 3/4
- Return loss : See page 3/4
- Power rating : See page 3/4
- Maximum Operating frequency : 3 Ghz
- Voltage rating : 900 Volts RMS.
- Maximum current : 2.5 A.
- Corona extinction voltage : > 1200 V.
- Transfer impedance : see page 3/4

Thermal Characteristics

- Temperature rating : -100°C at +200°C (Peak at +260°C)
- Heat ageing :
- after 168 h.at 230°C : shrinkage < 1 mm.
- after 168 h.at 200°C : capacitance change < 4%
- : attenuation change < 8%
- : return loss : see curve on page 3
- Cold bend on 20 mm mandrel : 4 Hours at -80°C.

CONSTRUCTION

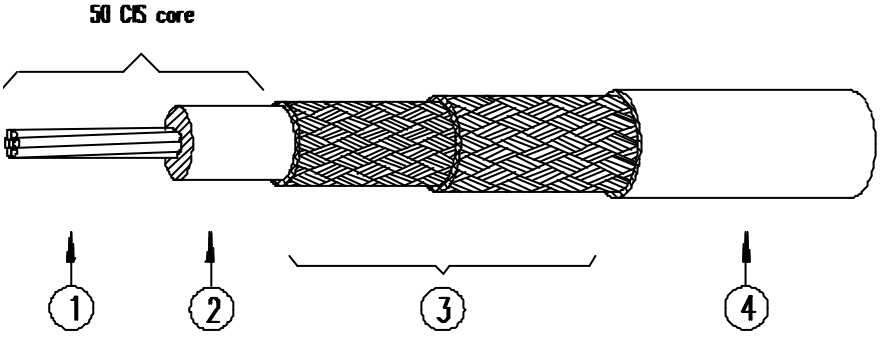
Core :
① Stranded conductors
Silver Plated Coated Copper Alloy
Silver thickness = 4 µm.

Insulation :
② Extruded PTFE dielectric

Screen :
③ Double Braided shield
OFHC Silver Plated copper
Silver thickness = 2 µm.
Coverage ≥ 85%

Overall jacket :
④ Green PFA jacket

Type : 50 CIS DTR



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Fax : + 33 1 69 42 05 70

Physical and Chemical characteristics

- Nominal PFA wall thickness : 0.24 mm
- Concentricity : > 76%
- Radiation resistance : No loss of insulation Resistance after a 4.10^{14} e/cm^2 radiation dosage.
- Vacuum mass loss :
  - At 200°C : Loss < 0.4%.
  - Gas nature : No hydrocarbons detected.
- Fluids resistance : Solvants, Oils, Hydrocarbons, Skydrol, concentrated acid, Propellant, Dimethylhydrazine (UDMH)
- Non Flammable

NEXANS and ESCC CROSS REFERENCES

NEXANS P/N	ESCC COMPONENT/NUMBER
50 CIS DTR *	**3902 . 001 . 02 ***

* = The reference shall be completed with a letter on a group of letters indicating the control level :

NEXANS	ESCC
AQS	B1
AQR	B2
AQ	B3
P	For orders without any reference to ESCC specification.

Packaging : (For AQS, AQR and AQ Only)

- Minimum length : 30 m
- Cable cleaned, wound on reels with spool hub at least 50 times the maximum external diameter.
- The wires spools are heat-sealed into polyethylene bags with a humidity indicator inside Ends are sealed with caps and accesible over a length of 10 cm.

	CONDUCTOR		CORE	SCREEN			FINISH CABLE			
Nexans Reference *	Construction n x mm	Nom. Dia. (mm)	Dielectric Dia. (mm)	Strands dia. (mm)	1 st braid dia. (mm)	2 nd braid dia. (mm)	Nom. Dia. (mm)	Max. Dia. (mm)	Nom. Weight. (g/m)	Max. Weight. (g/m)
50 CIS DTR	7 x 0.175 S.P.C.A.	0.52	1.52± 0.03	0.07	1.80	2.10	2.60	2.70	16	20

S.P.C.A. = Silver Plated copper Alloy

Final Production Control : According to ESCC. 3902/001

* Add the control level symbol (AQS - AQR - AQ or P).

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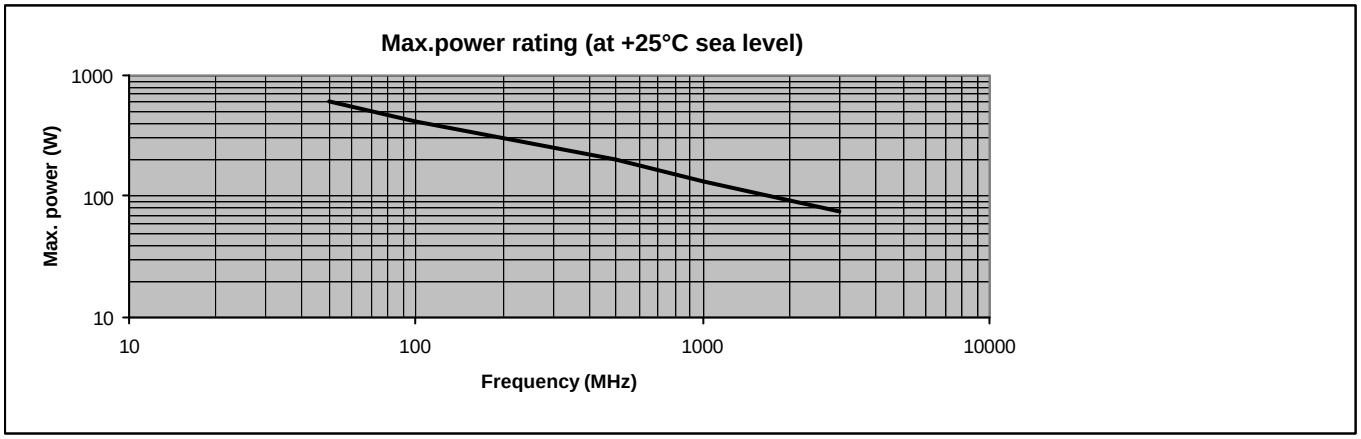

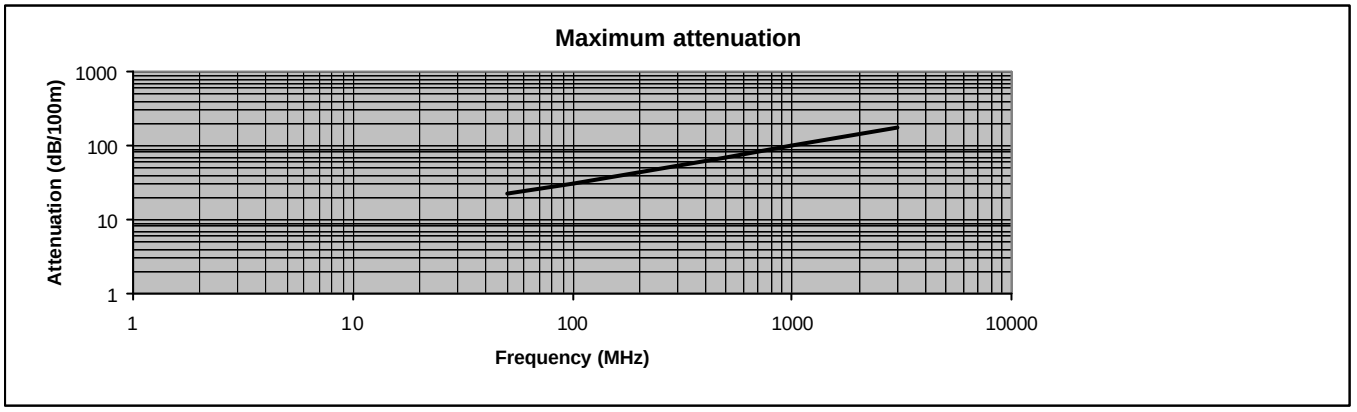

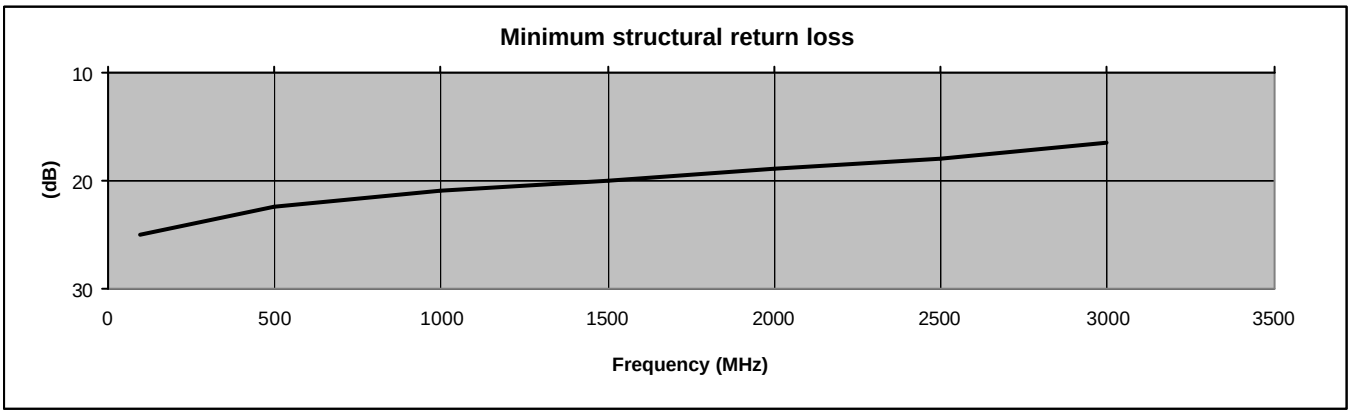

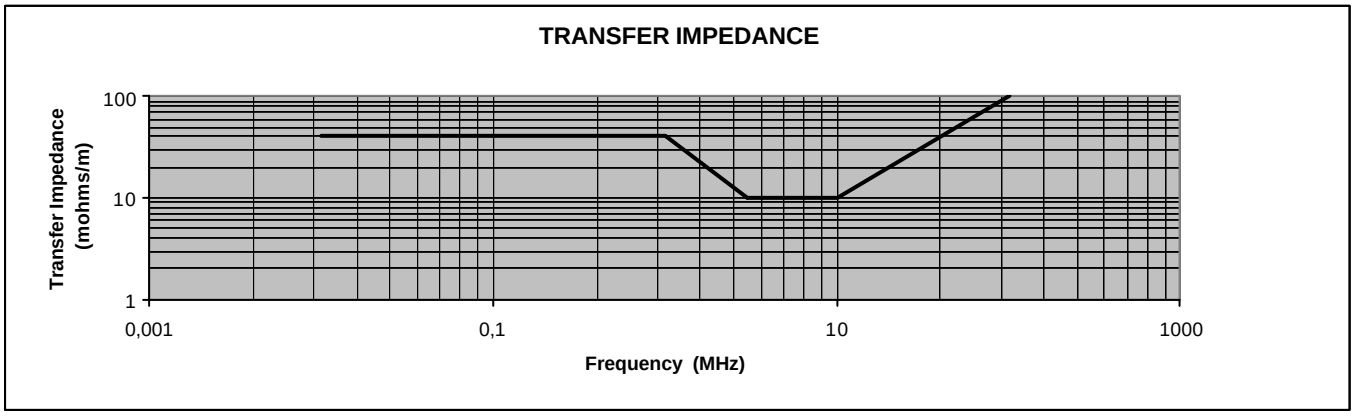

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ISSUE	DATE	PAGE	CHANGE
Origin	Jan./71		
A	June / 95	1 3	Title changed + 50 CIS core added Bend radius added and shield diameter. Paging changed
B	Jan./98	ALL	New presentation - English version.
C	Jan./00	ALL	Typing correction.
D	Sep/03	2	Transfer of the ESA/SCC System to the ESCC System Ref : QCS/AJG/030508 dated 2003-05-12

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Filotex®

SP 727

Type 50 CIS BLG

Application

Flexible, space coaxial cable, shielded and jacketed

LINE OF PRODUCTS

50 CIS BLG
50 CIS
50 CIS DTR

Electrical Characteristics

- Impedance at 200 Mhz : 50 ± 2 Ω
- Nominal capacitance : 95 ± 4 pF/m
- Nominal attenuation : See page 3/4
- Return loss : See page 3/4
- Power rating : See page 3/4
- Maximum Operating frequency : 3 Ghz
- Voltage rating : 900 Volts RMS.
- Maximum current : 2.5 A.
- Corona extinction voltage : > 1200 V.
- Voltage whistand between shields : 1000 V RMS
- Capacitance between shiels : 400 pF/m nom.

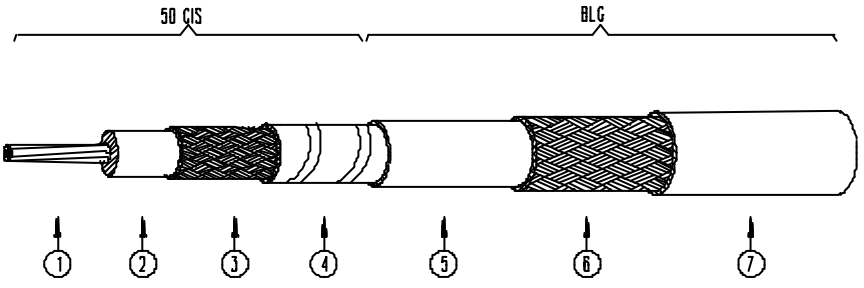
Thermal Characteristics

- Temperature rating : -100°C at +200°C (Peak at +260°C)
- Heat ageing :
- after 168 h.at 230°C : shrinkage < 1 mm.
- after 168 h.at 200°C : capacitance change < 4%
- : attenuation change < 8%
- : return loss : see curve on page 3
- Cold bend on 20 mm mandrel : 4 Hours at -80°C.
- Bend radius : 15 mm

CONSTRUCTION

Core :
① Stranded conductors
Silver Plated Coated Copper Alloy
Silver thickness = 4 µm.
Insulation :
② Extruded PTFE dielectric
Screen :
③ Braided shield
OFHC Silver Plated copper
Silver thickness = 2 µm.
Coverage ≥ 85%
1st. jacket :
④ FEP coated polyimide tape.
(2.5 µm FEP/25 µm polyimide/ 2.5 µm FEP)
wrapped jacket with an Overlap > 50%
2nd. jacket :
⑤ White PFA jacket.
Screen :
⑥ Braided shield with
OFHC Silver Plated copper
Silver thickness = 2 µm.
Coverage ≥ 85%
Overall jacket :
⑦ White PFA jacket

Type : 50 CIS BLG



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Nexans

Physical and Chemical characteristics

- Polyimide wall thickness : > 0.05 mm
- Concentricity : > 76%
- Radiation resistance : No loss of insulation Resistance after a 4.10^{14} e/cm^2 radiation dosage.
- Vacuum mass loss :
  - At 200°C : Loss < 0.4%.
  - Gas nature : No hydrocarbons detected.
- Fluids resistance : Solvants, Oils, Hydrocarbons, Skydrol, concentrated acid, Propellant, Dimethylhydrazine (UDMH)
- Non Flammable

NEXANS and ESCC CROSS REFERENCES

NEXANS P/N	ESCC COMPONENT/NUMBER
50 CIS BLG *	**3902 . 001 . 03 ***

* = The reference shall be completed with a letter on a group of letters indicating the control level :

NEXANS	ESCC
AQS	B1
AQR	B2
AQ	B3
P	For orders without any reference to ESCC specification.

Packaging : (For AQS, AQR and AQ Only)

- Minimum length : 30 m
- Cable cleaned, wound on reels with spool hub at least 50 times the maximum external diameter.
- The wires spools are heat-sealed into polyethylene bags with a humidity indicator inside Ends are sealed with caps and accesible over a length of 10 cm.

	CONDUCTOR		CORE	SCREEN	POLYIMIDE Jacket		PFA Jacket	SCREEN	FINISHED CABLE			
Nexans Reference *	Construction n x mm	Nom. Dia. (mm)	Dielectric Dia. (mm)	Strands dia. (mm)	Nom. Dia. (mm)	Max. Dia. (mm)	Nom. Dia. (mm)	Strands dia. (mm)	Nom. Dia. (mm)	Max. Dia. (mm)	Nom. Weight. (g/m)	Max. Weight. (g/m)
50 CIS BLG	7 x 0.175 S.P.C.A.	0.52	1.52± 0.03	0.07	1.92	2.05	2.25	0.10	3.15	3.30	22.5	24

S.P.C.A. = Silver Plated copper Alloy

Final Production Control : According to ESCC. 3902/001

* Add the control level symbol (AQS - AQR - AQ or P).

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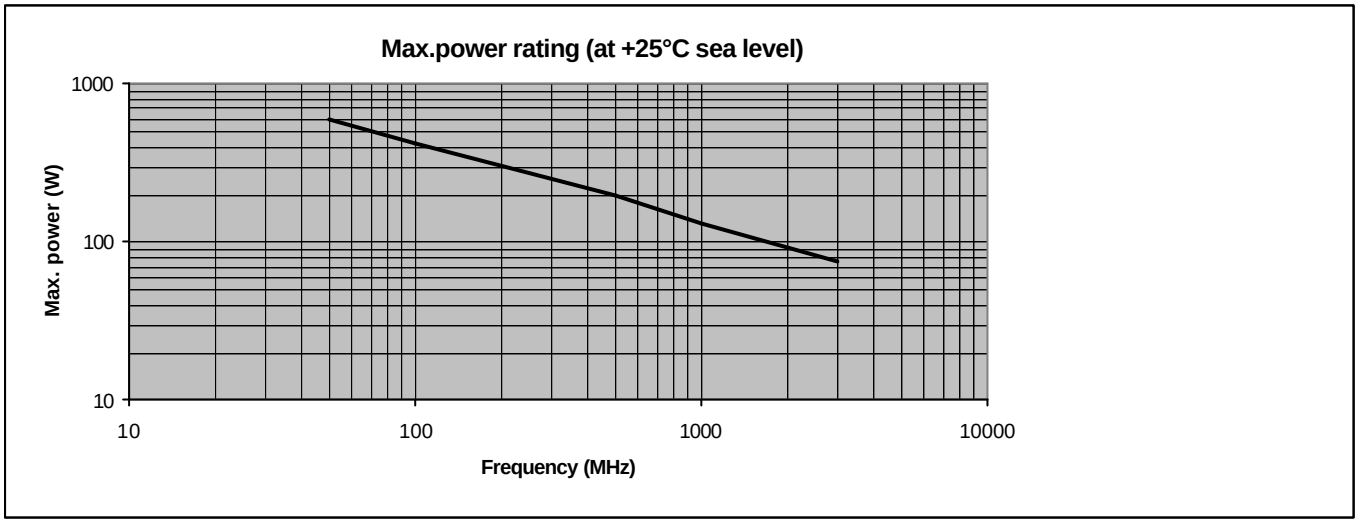

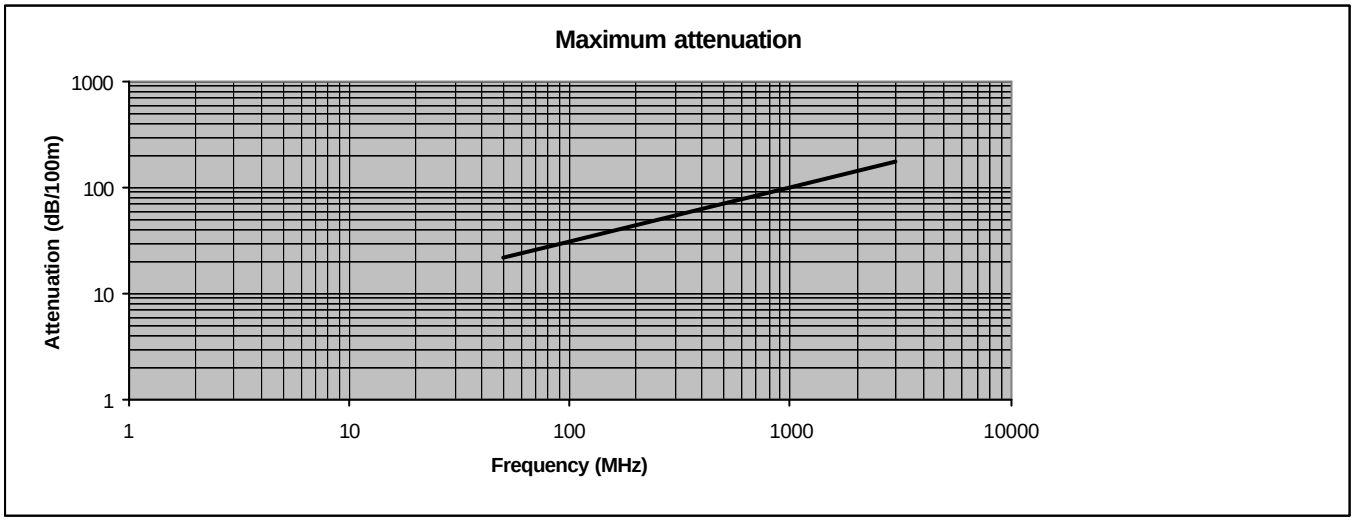

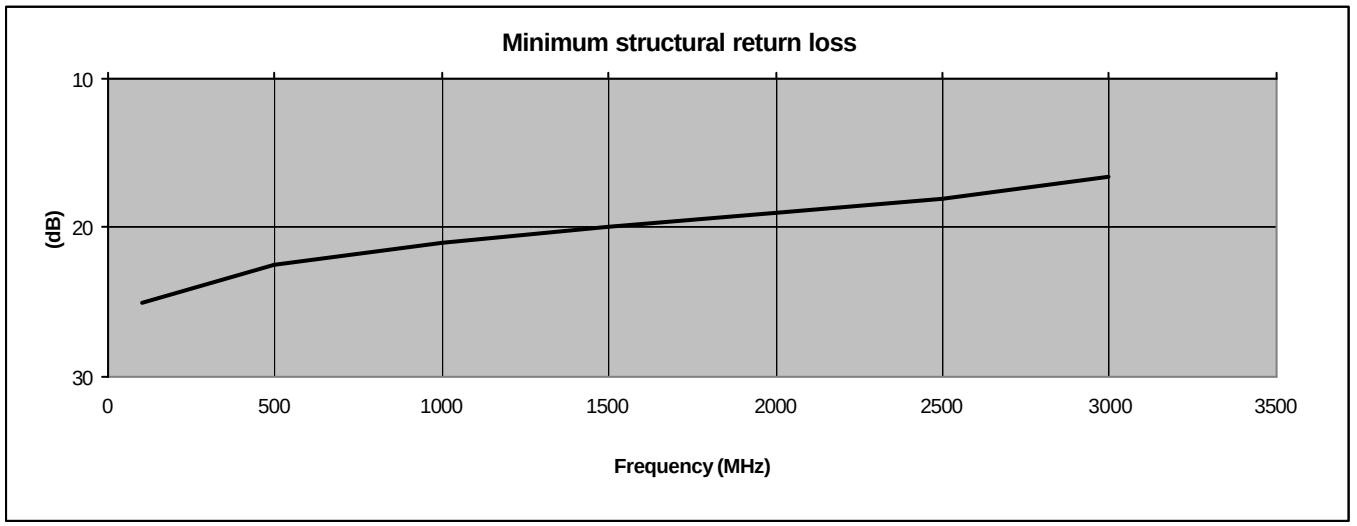

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ISSUE	DATE	PAGE	CHANGE
Origin	Jan./ 89		
A	July / 89	All	Page setting change
B	Dec. / 89	2	Jacket color added. Outgazing added LERD reference added.
C	Jan./95	All 4 - 5	New presentation Frequency range up to 3 GHz.
D	Jan./98	All	New presentation – English version
E	Jan./00	All	Typing corrections
F	Sep/03	2	Transfer of the ESA/SCC System to the ESCC System Ref : QCS/AJG/030508 dated 2003-05-12

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Filotex®

SP 773

Type 1995 - 995

SPACE PTFE INSULATED CABLES

These cables are intended for space use and could be manufactured
with different control level :
-AQ, AQR or AQS for Space use or

LINE OF PRODUCTS

1995 / 995

Electrical Characteristics

- Voltage Rating : 600 V. RMS.
- Voltage Test : 100 % Impulse test
  : Immersion test on sample
- Insulation resistance (500 V = 1 mn)
  : > 5000 MΩ x Km. at 20°C
- Surface resistance (25 mm between Electrodes)
  : > 125 MΩ x mm
- Spiral shield with OFHC SPC - Coverage Factor
  : > 92%

CONSTRUCTION

Cores :

① Stranded conductors OFHC Silver Plated Copper
2 µm. Silver thickness

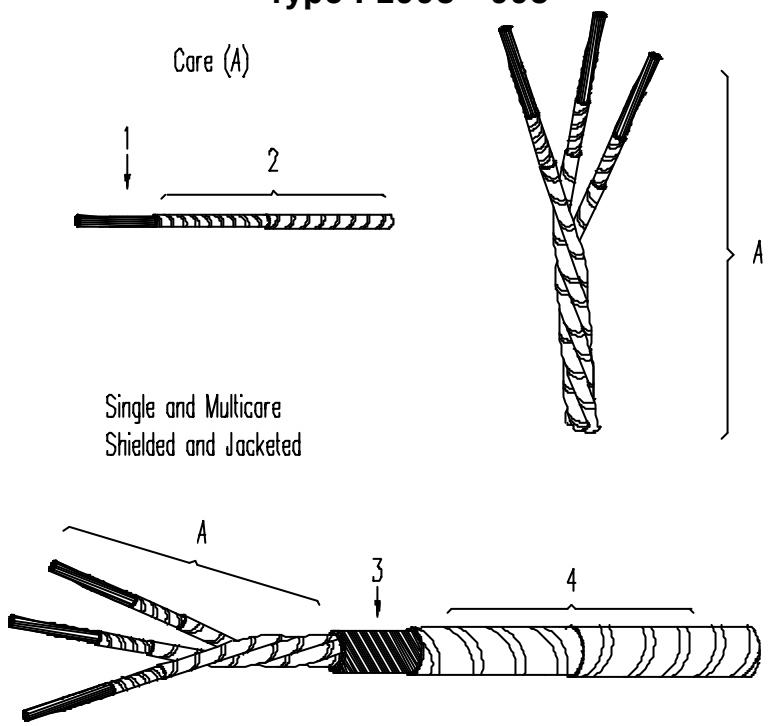
② 2 PTFE tapes wrapped in reverse direction with 50% mini overlap

Above cores could be :
- Twisted
- Twisted, shielded and jacketed

③ Spiral shield with OFHC SPC
Silver thickness ≥ 2 µm
Coverage ≥ 92%

④ FEP coated polyimide tape. and a PTFE tape with an overlap of 20% min.

Type : 1995 - 995



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Fax : + 33 1 69 42 05 70

Thermal Characteristics

- Temperature rating : -100°C at +200°C (Peak at +260°C)
- Shrinkage : After 6 Hour at 230°C, Shrinkage < 2 mm.
- Cold bend : 4 Hour at - 80°C (On 10 times O.D.)
- Heat ageing : 120 Hour at 230°C.

Physical and Chemical characteristics

- Wall thickness of insulation : 0.24 mm
- Concentricity : Good with a wrapped construction.
- Fluids resistance : Solvants, Oils, Hydrocarbons, Skydrol, concentrated acid, Propellant, Dimethylhydrazine (UDMH)
- Non Flammable
- Good radiation resistance

These cables are Specially designed to be stripped with thermal device in order to avoid any damage on conductor.

Identification Code :

xxxx x xx xxx ® Level of Control : AQS - AQR - AQ

AWG

Number of Conductors

Type Reference : 1995 = Unshielded cable

995 = Shielded cable

Exemple : 995 - 1 - 20 AQS: Single core 20 AWG Shielded and jacketed with an AQS level of control.

Packaging :

- Minimum length : 30 m
- Cable cleaned, wound on reels with spool hub at least 70 times the maximum external diameter for single wire and 30 times for multiconductor cable.
- The wires spools are heat-sealed into polyethylene bags with a humidity indicator inside Ends are sealed with caps and accesible over a length of 10 cm.

Color coding :

Single wire :

- Standard color is white for all gages

On request we can propose the followings colors :

Brown Red Yellow Green Blue Grey Orange Green

Multiconductors :

- Standard color is white for all gages

On request we can propose the followings colors :

2 cores : White – Blue

3 cores : White - Blue - Orange

- In any case, jacket color will be pink with helical colored stripes.

The number of stripes corresponds to the number of conductors. Red stripe for 22 AWG. Green stripe for 20 AWG

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AWG	Number of Cond.	CHARACTERISTICS OF CONDUCTORS					SINGLE CORES				SHIELDED AND JACKETED CABLES				
		Cross Section (mm^2)	Construction n x mm	Nom. Dia. (mm)	Max. Dia. (mm)	Ohmic Résist. at 20°C (Ω/Km)	Nexans Reference*	Nom. Dia. (mm)	Max. Dia. (mm)	Max. Weight (g/m)	Nexans Reference*	Screen strands Dia (mm)	Nom. Dia. (mm)	Max. Dia. (mm)	Max. Weight (g/m)
22	1	0.38	19 X 0.16 S.P.C.	0.78	0.85	50.9	1995-1-22	1.27	1.37	5.38	995-1-22	0.10	1.72	1.77	9.57
22	2	"	"	"	"	53.5	1995-2-22	2.54	2.67	10.91	995-2-22	0.10	2.99	3.08	17.53
22	3	"	"	"	"	"	1995-3-22	2.73	2.87	16.37	995-3-22	0.12	3.22	3.32	25.55
20	1	0.60	19 X 0.20 S.P.C.	0.98	1.04	32.2	1995-1-20	1.46	1.57	7.93	995-1-20	0.10	1.91	1.97	12.43
20	2	"	"	"	"	33.8	1995-2-20	2.92	3.07	15.73	995-2-20	0.10	3.37	3.47	23.14
20	3	"	"	"	"	"	1995-3-20	3.14	3.30	23.60	995-3-20	0.12	3.63	3.74	33.88

S.P.C. = Silver Plated Copper

Final Production Control : According to ESCC. 3901 and BEP 5691.

- *Add the control level symbol (AQS - AQR – AQ)

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ISSUE	DATE	PAGE	CHANGE
Origin	Nov./91		
A	Octob./92	1 to 5	Document ammended
B	Sept./93	1 to 5 2 3 4 5	New presentation Coverage changed Jacket color changed Coverage changed. Test temperature and insulation resistance changed. Maximum weight changed
C	Jan./98	ALL	New presentation - English version.
D	Jan./00	ALL	Typing correction.
E	Sept/03	3	Transfer of the ESA/SCC System to the ESCC System Ref : QCS/AJG/030508 dated 2003-05-12

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Filotex®

SP 776

Type 1996

SPACE PTFE INSULATED CABLES

These cables are intended for space use and could be manufactured
with different control level :
-AQ, AQR or AQS for Space use or

LINE OF PRODUCTS

1996

Electrical Characteristics

- Voltage Rating : 600 V. RMS.
- Voltage Test : 100 % Impulse test
  : Immersion test on sample
- Insulation resistance (500 V = 1 mn)
  : > 5000 MΩ x Km. at 20°C
- Surface resistance (25 mm between Electrodes)
  : > 125 MΩ x mm

Thermal Characteristics

- Temperature rating : -100°C at +200°C (Peak at 260°C)
- Shrinkage : After 6 Hours at 260°C,
  Shrinkage < 2 mm.
- Cold bend : 4 Hour at - 80°C (On 10 times O.D.)
- Heat ageing : 120 Hour at 250°C.

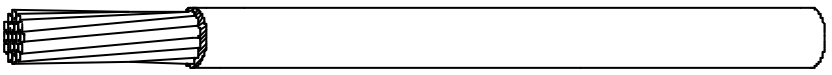
CONSTRUCTION

Type : 1996

Cores :

① Stranded conductors OFHC
Silver Plated Copper
2 µm. Silver thickness

② Extruded PTFE insulation



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Physical and Chemical characteristics

- Wall thickness of insulation : 0.20 mm
- Concentricity : ≥ 70%.
- Fluids resistance : Solvants, Oils, Hydrocarbons, Skydrol, concentrated acid, Propellant, Dimethylhydrazine (UDMH)
- Non Flammable
- Good radiation resistance

These cables are Specially designed to be stripped with thermal device in order to avoid any damage on conductor.

Identification Code :

1996 x xx xxx / xxx® Color coding

- xxx : Level of Control : AQS - AQR or AQ
- xx : AWG
- x : Number of Conductors
- 1996 : Type Reference

Exemple : 1996 - 1 - 26 AQS/RXX: Single core 20 AWG , Red with an AQS level of control.

Packaging :

- Minimum length : 30 m
- Cable cleaned, wound on reels with spool hub at least 70 times the maximum external diameter for single wire and 30 times for multiconductor cable.
- The wires spools are heat-sealed into polyethylene bags with a humidity indicator inside Ends are sealed with caps and accesible over a length of 10 cm.

Color coding :

Plain colors :	**Coding color :**
Brown	MXX
Red	RXX
Yellow	JXX
Green	VXX
Blue	BXX
Black	NXX
White	WXX

Colored stripes :	**Coding color :**
Red with White stripe	RWX
Black with White stripe	NWX
Yellow with White stripe	JWX
Blue with White stripe	BWX

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AWG	Number of Cond.	CHARACTERISTICS OF CONDUCTORS					SINGLE CORES			
		Cross Section (mm^2)	Construction n x mm	Nom. Dia. (mm)	Max. Dia. (mm)	Ohmic Résist. at 20°C (Ω/Km)	Nexans Reference *	Nom. Dia. (mm)	Max. Dia. (mm)	Max. Weight (g/m)
28	1	0.096	19 X 0.08 S.P.C.	0.39	0.42	196.87	1996-1-28	0.79	0.82	1.77
26	1	0.149	19 X 0.10 S.P.C.	0.49	0.53	126	1996-1-26	0.86	0.89	2.34
24	1	0.215	19 X 0.12 S.P.C.	0.59	0.64	87.50	1996-1-24	0.98	1.03	3.20

S.P.C. = Silver Plated Copper

Final Production Control : According to ESCC. 3901 and BEP 5685.

* Add the control level symbol (AQS - AQR or AQ).

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ISSUE	DATE	PAGE	CHANGE
Origin	April/92		
A	Nov./92	2	Color codes added
B	Jan./98	ALL	New presentation - English version.
C	Jan./00	ALL	Typing correction.
D	Sep/03	3	Tranfer of the ESA/SCC System to the ESCC System Ref : QCS/AJG/030508 dated 2003-05-12

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