SUPRA® Cables

MADE IN SWEDEN

2003-2004

Loudspeaker Cables /// Interconnect Cables /// Connectors /// Interconnects ///

SUPRA | Sword

SUPRA® LoRad

English Edition

www.jenving.se

Cable Manufacturing

The Supra Cables are manufactured in our own in-house production.
Made in Sweden.

Cable Termination

All of our soldering team are holders of soldering certification to Military Quality Standards.

The SUPRA Story

Prior to 1976 loudspeaker cables had no identity. They were simply cables.
2 x 0.5 mm² was the most usual size, while for high specifications the only alternative was 2 x 0.75 mm².
And then there was SUPRA.

It began when we introduced SUPRA 2.5 and shook up the entire market with a whole new concept. All this happened in Sweden 1976. Since then the whole world has followed after us. But then the adjustable spanner, the propeller, the safety pin and Dynamite have also come from Sweden, so perhaps it is not so surprising.

Since SUPRA 2.5 was introduced, other original ideas have come from SUPRA. The Nylon screen, the Swift connector, the stretch-proof multicore cable, the Ply conductor concept, the Assurance of Cable Directionality and the LoRad are all examples of our forward thinking technology.

Mini 1.6
2x1.6 mm²

An economic version of Classic 1.6 of fewer wires.

Application examples: Low power such as rear speakers of home theatres.

1:1

Classic 1.6
2x1.6 mm²

Application examples: Tweeters in bi-wiring, low power systems or shorter lengths of medium power systems.

1:1

Classic 2.5
2x2.5 mm²

Application examples: Medium power systems, or shorter lengths in high power systems.
Available in both Ice Blue and Anthracite Grey.

1:1

Classic 2.5/H Halogen Free
2x2.5 mm²

Similar to Classic 2.5 but using fire retardant PE insulation. This makes it slightly stiffer and with a lower surface friction, which is good for installation.

1:1

Classic 4.0
2x4.0 mm²

Application examples: High power systems, or longer lengths in low/medium power systems.

1:1

Classic 6.0
2x6.0 mm²

Application example: High power systems, even longer lengths.

1:1

The Classic Series
The SUPRA Classic Series comprises highly flexible cables containing tin plated multi-stranded OFC copper of purity degree 5N, which means >99.999% pure, i.e. purer than five nines. The insulation is a special ion stable PVC which minimises corrosion of the sonically benign tin surface. The tin contributes to a better sound quality by minimising the skin-effect and making less current jumps between the wire surfaces.

This series covers all Hi-Fi applications from low power speakers, such as rear speakers of home theatre systems, to high power systems with long cable lengths.

Tips and Tricks:
For bi-wiring, Nylon Braid and Heat Shrink are available in kit-form on page 9.

Tests and Reviews

Classic 2.5:

Sweden	Hifi & Musik	May '98
Greece	HXOS	#353 '02

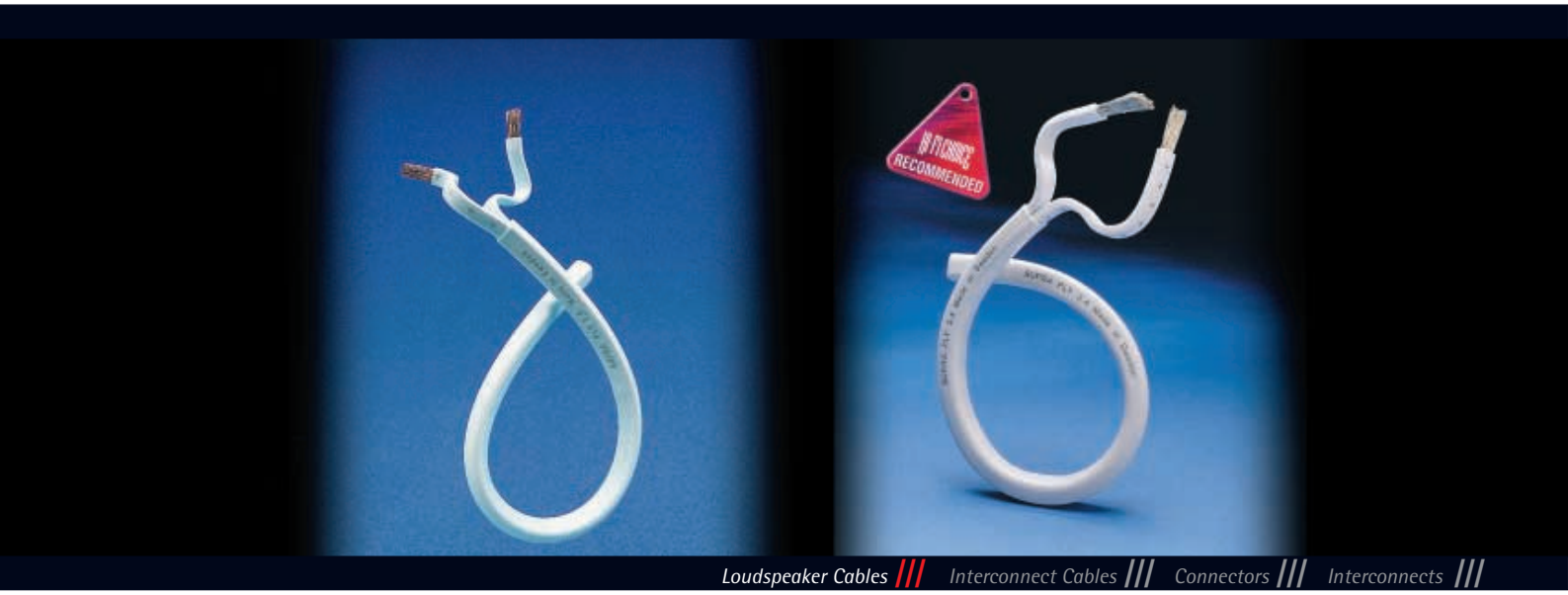
Classic 4.0:

UK	What Video,	Mar '00 "Best Buy"

Item	Mechanical Specifications										Elec. Spec	
	Colour	Cross Sec. Area (mm²=AWG)	Number of Conductors	Number of Wires	Wire Dia. (mm)	Wire Material	Insulation	Ext. Size (mm)	Weight (g/m)	Length/Bobbin (m = ft)	R (Ω/km)	L (µH/m)
Cl. Mini 1.6	White	1.6 = 15		90	0.15			2.8x5.9	44	300 = 984	10.8	0.40
Classic 1.6	Ice Blue			204			Chloride Ion-	2.8x5.9	44	300 = 984	10.5	0.40
Classic 2.5						Tin	Stabilized PVC					
Classic 2.5	Anthracite	2.5 = 13	2	320	0.10	Plated		3.5x7.3	65	200 = 656	6.8	0.45
Classic 2.5/H						OFC	Halogen Free PE					
Classic 4.0	Ice Blue	4.0 = 11		511			Chloride Ion-	4.7x9.6	108	100 = 328	4.3	0.55
Classic 6.0		6.0 = 9		756			Stabilized PVC	5.5x11.2	154		2.9	0.59

Connect the loudspeaker cables for signal direction = direction of the legend (text) printed on the cable. Explanation on page 30.

Ply Loudspeaker Cables



Ply 2.0 1:1 **Ply 3.4** 1:1

Item	Mechanical Specifications										Elec. Spec.	
	Colour	Cross Sec. Area (mm^2=AWG)	Number of Conductors	Number of Wires	Wire Dia. (mm)	Wire Material	Insulation & Jacket	Ext. Size (mm)	Weight (g/m)	Length/Bobbin (m = ft)	R (Ω/km)	L (µH/m)
Ply 2.0	Ice Blue	2.0 = 14	2	120	0.15	Tin Plated	Chloride Ion-	5.8x6.0	74	100 = 328	8.1	0.30
Ply 3.4		3.4 = 12		192		OFC	Stabilized PVC	7.0x7.0	97		5.1	0.20

Connect the loudspeaker cables for signal direction = direction of the legend (text) printed on the cable. Explanation on page 30

Supra Ply, a Logical and Scientific Design

Before considering more special 'esoteric' 2nd and 3rd-order effects, such as conductor metallurgy, the performance of audio cables is principally determined by their series loop resistance (R), their series loop inductance (L) and their shunt capacitance (C). Both the absolute and the relative values of R, L & C matter. For speaker cables connecting high performance amplifiers to every day electrodynamic (moving coil or ribbon) speaker drive-units that are desired to operate with fidelity across the audio band, the R & L (cable resistance & inductance) must both be low, while the value of C (capacitance) does not matter much [1,2]. This is so because current flow into conventional speaker drive-units is relatively so much larger than in line-level connections, and also absolutely large, ranging to over 100 Amperes in some instances. This is especially true of auto (12 volt) installations. But simply using a fat wire gauge makes R low at the expense of increasing L. This is musically unacceptable for high sonic quality.

'Squaring the circle' techniques to make this loop inductance, L, low, simultaneous with low resistance, include tapes, either stacked in parallel pairs, or several arranged side-by-side in ribbons, where the ends are X-connected. But of course, these types are (i) impractical to fit to nearly every known speaker connector (at least without introducing discontinuities), (ii) are stressed and may be unsightly when right angle surface bends are required in domestic installation, and (iii) are unsuited to for mobile use by professionals. Litz techniques, i.e. multiple, parallel, insulated conductors are more practical in use and laying out, but when properly executed, they are expensive.

They are also awkward to terminate and must be soldered. Other types are grossly large, like industrial pneumatic pipes, making them unsuited to smaller domestic dwellings.

Conventionally, fat conductors' high loop inductance (which raises impedance at +6dB/octave) is further raised due to internal eddy currents causing 'Skin effect'. This acts like 'the square root of an inductor', i.e. progressively adds a +3dB/octave component to the cable's series inductance. With typical speaker cable runs of a few metres, the combined inductive effect is that performance in moderately heavy, plain conductors is measurably affected with steady signals at or a little above 1kHz. Whereas for music transients, even low bass qualities are affected.

Conventional stranded cables with copper, silver or related conductors suffer from complex oxidation. The surface becomes a semiconductor. The diodes so formed between the strands are not seen by steady-state signals, but look like the plates of a high value capacitor to transient signals. This causes low-level energy storage and release after transients, that is invisible to steady state testing yet nonetheless perfectly audible with many music recordings. This 'transversal distortion' may also be described in terms of the TEM (Transverse Electro-Magnetic) Wave, which takes a direct route, whereas electron flow is 'trapped' inside individual, particular strands that are commonly twisted away from the most direct route, at each of the inevitable bends in a stranded cable, when laid-out.

Supra Ply is able to be a large-section, low resistance cable, while also overcoming skin effect and transversal distortion, by using a proprietary, pure tin plating. This has the double benefit that tin and copper meld without forming a diodic barrier (as with many silver-plated copper 'audiograde' conductors) and that tin strongly resists most common causes of metal corrosion, and hermetically protects the copper, making Supra Ply ideal for outdoor use.

By contrast, most audiograde cables claiming highly pure copper or silver conductors are either wholly unprotected from contamination, initially by the out-gassing of the plastic covering (even if PTFE/Teflon), and eventually from the impure atmosphere - and even from accidental immersion in liquids! Some very expensive cables are protected only by a very thin, initially good lacquer, that must eventually crack, invisibly, with handling and age.

Even if oxidation should form on the outside of Supra Ply, it will be sonically benign, as in audiograde 'metal oxide' resistors - which are really tin oxide.

Other Advantages

For wiring-up, Supra Ply is easily formed. Unlike ribbons, tapes and Litzes, the rectangular conductor section is instantly made circular, for insertion into the circular-shaped receptacles of binding posts, 4mm ('Banana'), Speakon, XLR and most other speaker connectors.

Supra Ply's overall square X-section allows it to readily enter most connector housings, too.

Supra Ply is also readily coiled up, like ordinary, inferior-sounding 'mains power type' speaker cables. It is therefore easy for professionals to use. Sound producers can easily take Supra Ply to the mixing venue along with their favourite mini-monitor speakers.

Demonstrating the Difference

Unlike some audiograde products, the benefits of Supra Ply (and other cables employing similarly logically progressive philosophies) are readily shown by comparative and repeatable measurements. These differences may be portrayed in a number of realms.

Fig.1, in the swept frequency domain shows progressively increasing losses above 1kHz for all cables, caused by inductance + skin effect - ranging up to 10dB at 20kHz or so, where ultrasonic sound from vinyl discs in particular, can stimulate pleasure centres in the brain [3]. Here, Supra Ply's healthy, low-loss behaviour at the higher audio frequencies (and, by implication, the transient parts of lower frequency music fundamentals) is made evident with a basic 'steady-state' sine-wave sweep.

Fig. 2 & 3 are 'scope pictures, in the steady-state time domain. They show typical damping (dynamic) differences, using a classic square wave. After a transient event, Supra Ply both restrains the peaking and accelerates the return of the signal voltage to zero volts, at the speaker end of the line. The peaking of the wide-spaced cable demonstrates both bad damping, and hf loss. These effects occur because spaced cable has high inductance and low capacitance - the diametric opposite of what is required to drive ordinary loudspeakers.

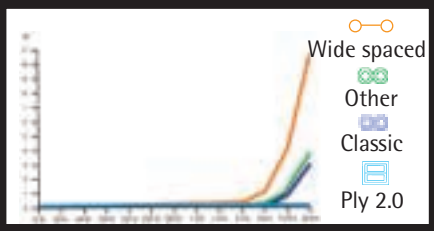


Fig. 1 Steady-state cable losses

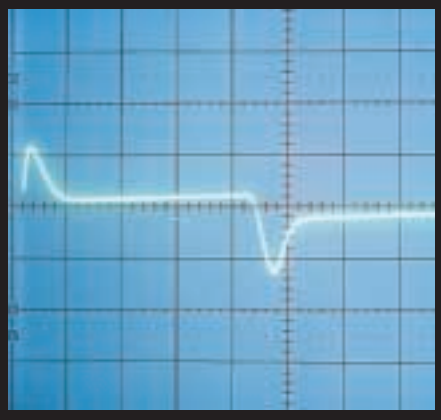


Fig. 2 Oscilloscope graph of losses for Ply 2.0

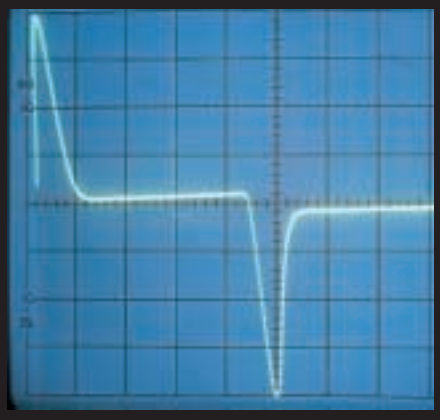


Fig. 3 Typical wide-spaced type of cable

Bi-wired Ply in Nylon Braid

See page 9 for bi-wiring accessories!

Research References

Ben Duncan, Loudspeaker Cables, Case Proven, Proc. The Institute of Acoustics, UK, Nov '95.
Also published in Studio Sound & Broadcast Engineering (UK); and Stereophile (USA) - both Dec '95.
Ben Duncan, Modelling Cable, Electronics World (UK), Feb '96.
Ben Duncan, Measuring Speaker Cable Differences, Electronics World (UK), June/July '96.
Ben Duncan, Black Box (column), Hi-Fi News & Record Review (UK), June & July '96.

Other References

[1] Malcolm Omar, Mawksford, The Essex Echo, Hi-Fi News, Aug '85; Aug & Oct '86 & Feb '87.
[2] Fred E. Davis, Effects of Cable, Loudspeakers & Amplifier Interactions, J. AES, June, '91.
[3] T. Ohasi, E. Nishina, N. Kawai, Y. Fuwamoto & H. Imai, High Frequency Sound Above the Audio Range Affects Brain Electric Activity & Sound Perception, '91.

Worldwide Reviews/Reports

Finland	Hifi-lehto	Jun/Jul '96
Germany	Hörerlebnis	#32 '00
Holland	Hi-Fi Video Test	Mar '95
Hong Kong	Absolute Hi-Fi	#22 '95
Hong Kong	Audio Technique	May '95
Hong Kong	Hi-Fi Review	Jul '95
Hong Kong	Hi-Fi Review	Sep '98
Hong Kong	Hi-Fi Review	May '99
Norway	Audio	#2 '96
Norway	Lyd & Bilde	#8 '97
Norway	Audio	'97 Product of the year
Singapore	Newspaper HiFi Column	#02 Jan '99
Singapore	Sound & Sight Journal	Mar/Apr '99
Spain	Alta Fidelidad	#87 '98
Spain	Stereofonia	Nov '98
Spain	Stereofonia	#195, Oct '99
Sweden	High Fidelity	Jan '97
Sweden	HiFi & Musik	Oct '96
Taiwan	Audio Art	Oct '94
UK	Hi-Fi and News RR	Dec '96
UK	Hi-Fi and News	Feb '97
UK	Hi-Fi Choice	Dec '98, "Recommended"

Round/Twisted Loudspeaker Cables

Rondo 2x2.5
2x2.5 mm². Tin plated.
Application example: Hi-Fi or stage use in medium or shorter lengths in high power systems.

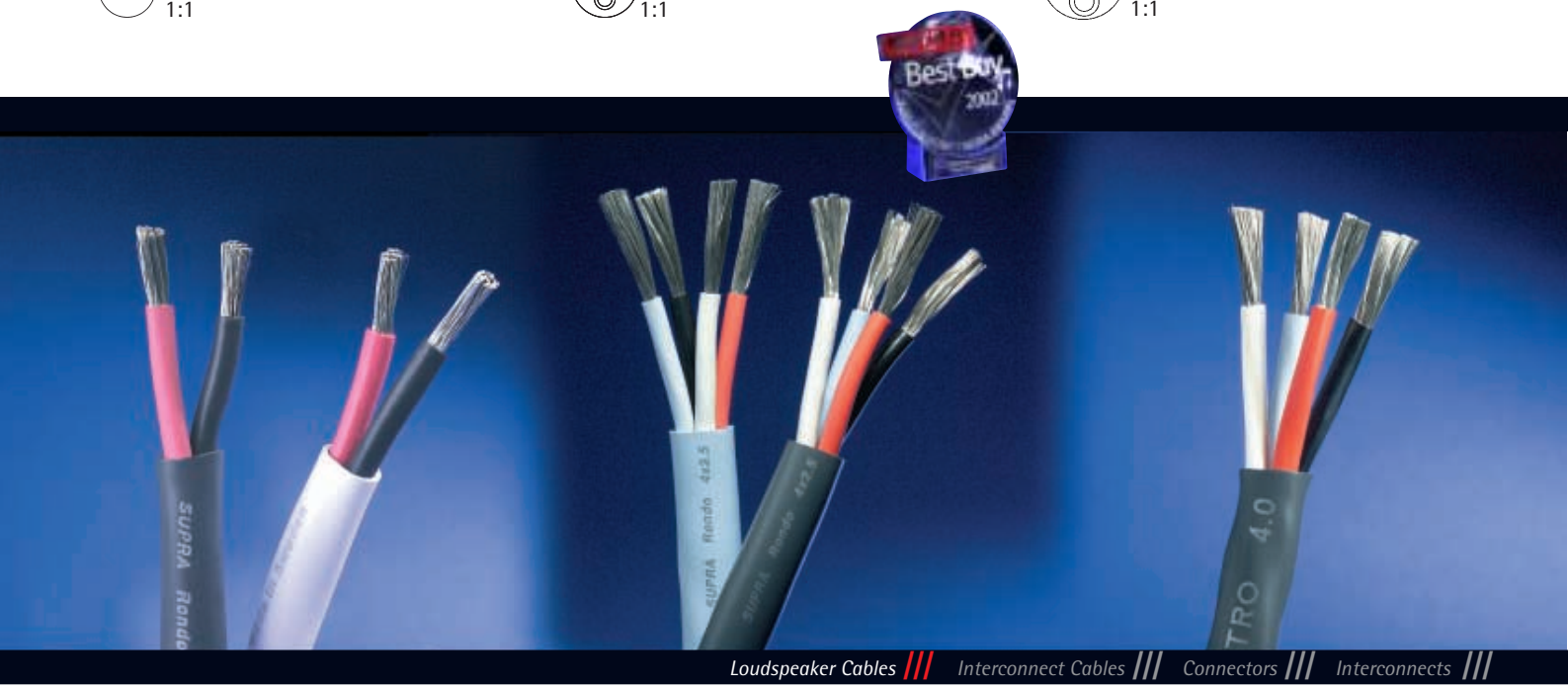

1:1

Rondo 4x2.5
4x2.5 mm². Tin plated.
Application examples: Bi-wiring, pair channel cable for medium power systems or single channel connected for high power systems. For Hi-Fi or stage use.

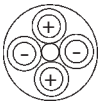

1:1

Rondo 4x4.0
4x4.0 mm². Tin plated.
Application examples: Bi-wiring, pair channel cable or single channel connected for high power systems. For Hi-Fi or stage use.


1:1



Tips and Tricks:
How to connect Supra Rondo 4x2.5 and Rondo 4x4.0 for lowest inductance
Connecting Rondo as shown in the figure below will make a lower inductance of 0.25 and 0.35 µH/m, respectively, which in turn makes them top class high-end loudspeaker cables.



SUPRA Concentric Cables are highly flexible and of short pitch twisting for low inductance and low radiation as well as a high tolerance to frequent bendings and vibrations before bending fatique.

This short pitch twisting takes special machines and is a slower and more expensive production which you do not often find in other than the Supra portfolio.

Test and Reviews

Rondo 4x2.5

Italy	www.tnt-audio.com/accessories/sword-rondo_e.html	
UK	What Hi-Fi	5 stars Sept '02
UK	What Hi-Fi	Best Buy Award 2002

Item	Mechanical Specifications										Elec. Spec.	
	Colour	Cross Sec. Area (mm²=AWG)	Number of Conductors	Number of Wires	Wire Dia. (mm)	Wire Material	Insulation & Jacket	Ext. Size (mm)	Weight (g/m)	Length/Bobbin (m = ft)	R (Ω/km)	L (µH/m)
Rondo 2x2.5	Anthracite	2.5 = 13	2	320	0.10	Tin Plated OFC	Chloride Ion-stabilized PVC	Ø7.5	110	100 = 328	6.8	0.40
Rondo 2x2.5	Ice Blue											
Rondo 4x2.5	Anthracite							Ø9.5	170	75 = 246		0.35
Rondo 4x2.5	Ice Blue		4									
Rondo 4x4.0	Anthracite	4.0 = 11		511				Ø11	236	50 = 164	4.3	0.40

Connect the loudspeaker cables for signal direction = direction of the legend (text) printed on the cable. Explanation on page 30.

Screened Loudspeaker Cables

The screened Ply
The screened Supra Ply 3.4/S combines low inductance and tin plating with the shielding concept, making it our top high-end loudspeaker cable.

Read more about the Ply on pages 4-5.

Ply 3.4/S
2x3.4 mm². Tin plated, sandwich design.
Application examples: High power systems, or longer lengths in low to medium power systems or where RF levels warrant it or where runs must be next to mains or lower level signal cables.


1:1

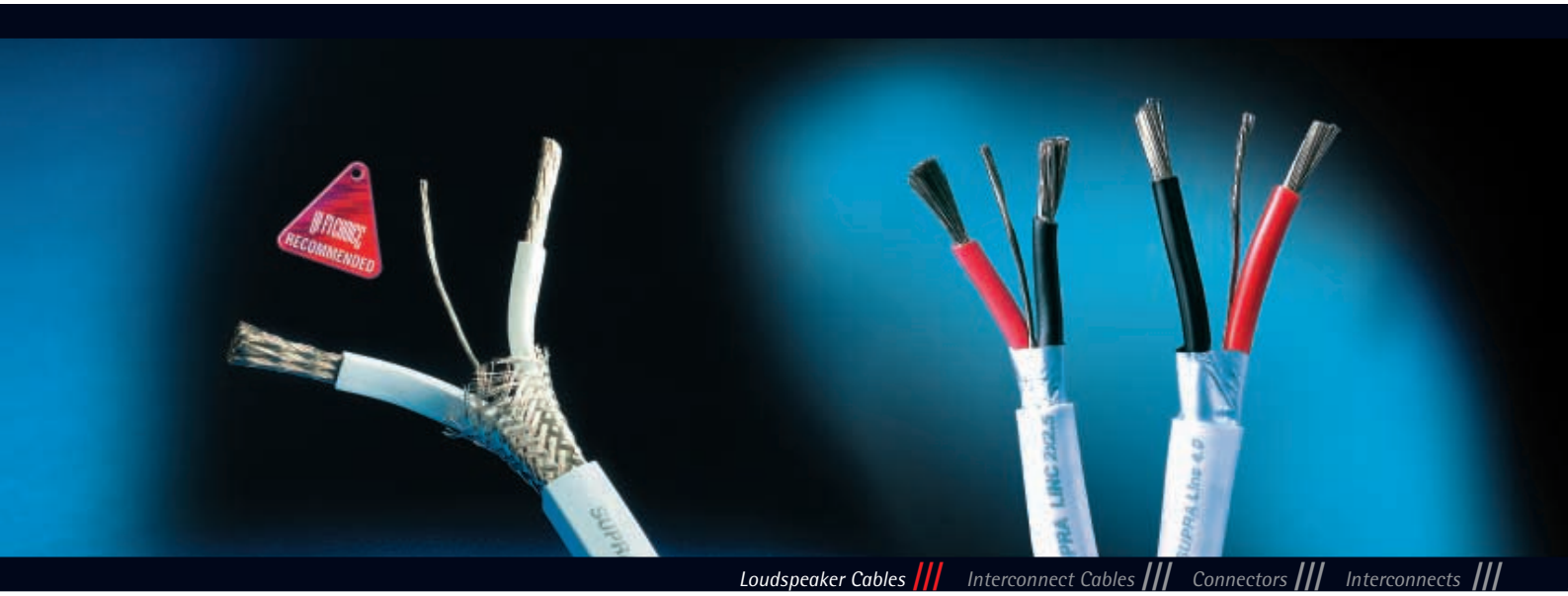
Linc
Supra LINC is designed with an Alu/PET shield which reduces effects from stray electric fields, and a short pitch twisting which minimises the magnetic field as well as giving the cable low inductance.
LINC stands for Low INteraction Concept.

Linc 2.5
2x2.5 mm². Tin plated.
Application examples:
Medium power systems or shorter lengths in high power systems.


1:1

Linc 4.0
2x4.0 mm². Tin plated.
Application examples:
Fix installations. High power systems or longer lengths in low/medium power systems.


1:1



The radiation from unshielded loudspeaker cables is often stronger than that from ordinary mains cables.

SUPRA screened loudspeaker cables radiate less interference to low level circuits, inputs and interconnects.

The shielding is also highly effective in rejecting high frequency interference, by minimising aerial pick-up.

The minimising of interference fields is recommended in all fixed installations, with computers playing an increasing part in everyday life. Sensitive networks of low level information control all kinds of operations.

Meanwhile, multi room installations often require audio, video, data and loudspeaker lines to run through ceilings and walls in very close proximity.

The biological effects of electric and magnetic fields should also be considered.

Tips and Tricks
For bi-wiring, Nylon Braid and Heat Shrink are available in kit form on page 9!

Tests and Reviews

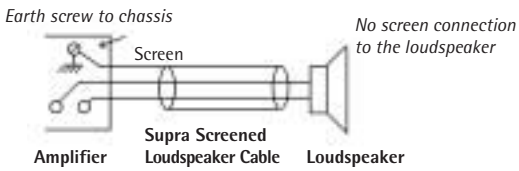
Supra Ply 3.4/S
TNT Audio non-commercial internet magazine
www.tnt-audio.com/accessories/ply34s_e.html

Czech Rep.	AMP www.gmx.cz	
Spain	Alta Fidelidad	#100 '99
Spain	Stereofonia	#195, '99
Sweden	Hifi & Musik	Sep '99
UK	Hi-Fi Choice	#203 '00 "Recommended"
USA	StereoTimes www.stereotimes.com	

Supra Linc

Spain	Alta Fidelidad	#95 '98

Connection of screened loudspeaker cables:



Item	Mechanical Specifications													Elec. Spec.	
	Colour	Cross Sec. Area (mm²=AWG)	Number of Conductors	Number of Wires	Wire Dia. (mm)	Wire Material	Insulation	Shield Material	Shield Coverage	Jacket	Ext. Size (mm)	Weight (g/m)	Length/Bobbin (m = ft)	R (Ω/km)	L (µH/m)
Ply 3.4/S		3.4 = 12	2	192	0.15	Tin	Chloride	Braid 120x0,15	> 95%	Chloride	7.5x7.5	156		5.1	0.20
Linc 2.5	Ice Blue	2.5 = 13	+	320	0.10	Plated	Ion-Stabilized	Aluminum/	100%	Ion-Stabilized	Ø7.8	94	100 = 328	6.8	0.42
Linc 4.0		4.0 = 11	Drain Wire	50	0.30	OFC	PVC	PET Foil		PVC	Ø9.0	135		4.9	0,44

Connect the loudspeaker cables for signal direction = direction of the legend (text) printed on the cable. Explanation on page 30.

NEW!

Loudspeaker Cables

Sword 3m(10ft) pair

Supra's flagship. Sword is a patented cable. The secret is the bifilar wound litz conductors, each comprising 24 individually insulated wires.
The bifilar winding is built with 12 of these wires helically wound in one direction and 12 in the opposite direction. This divides the magnetic field into opposing directions resulting in self-cancellation. Because Sword's conductors comprise a number of insulated wires, dynamic skin effect is cancelled.
Therefore Sword behaves as a non-inductive and phase stable cable.

What does it sound like?

Supra Sword passes the most complex music transients without any deformations. Signal delay is suddely the same at all musical frequencies. Therefore it vanishes, giving a clear 3-dimensional presence, a sure sign of the highest fidelity.

Patent holder: Johnny Svärd.

Sword is available only as a terminated set

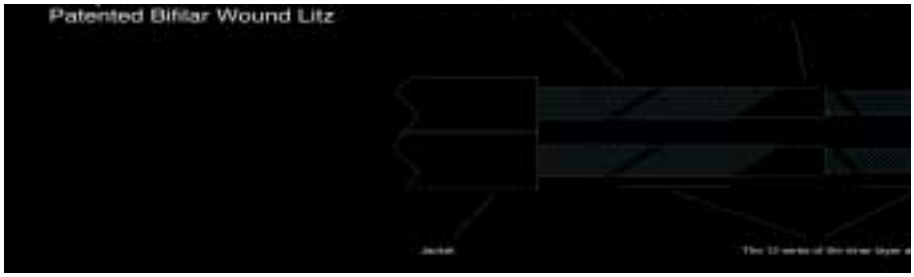
Owing to the special construction with two opposite wound wire groups which cancel each other's fields, the termination quality is very critical.

The termination is done with strong, gas tight crimping, so the joined metals are fused into one unit. This is more pure and secure than any soldering.

Sword is available in standard length of 3m pair, delivered in a Mahogany wood case.

Termination: Spade/Banana/BFA combination connector.

Customized lengths available on order.



The Sword Combi Connector

Sword comes with crimp-fastened screw adaptors, and a set of connectors that can be screwed onto these. The left and the middle pictures show Spades and the right hand picture shows banana/BFA connectors, as well as the Spade replaced with Banana/BFA directly screwed onto the adaptor.

Tests and Reviews

Denmark:	Danska High Fidelity	No 3 2003
Internet:	www.tnt-audio.com/accessories/sword-rondo_e.html	
Japan:	Audio Accessory	No 108 2003
Germany:	Stereo	No 3/2003
Germany:	Stereo	No7/2003
Spain:	Alta Fidelidad	No 137/02
Sweden:	Svenska High Fidelity	No 3 2003
Other editorials:		
Russia	AV Saloon	No 05 '03

Item	Mechanical Specifications														Elec. Spec	
	Colour	Cr. Sec. Area (mm^2=AWG)	Number of Conductors	Number of Wires	Wire Dia. (mm)	Wire Material	Insulation	Jacket	Ext. Cable Size (mm)	tached Connector Typ Banana	Spade	BFA	Cable Conn.	Solder Tin (Only for Disenamelling)	R (Ω/km)	L (µH/m)
Sword 2x3m			2x2			Enamelled		Chloride		x	x	x	Crimp	Almit KR-19SHrma		
Sword 1x3m	Ice Blue	3 = 12	1x2	12 + 12	0.4	OFC	PE	Ion-Stabilized	9.5x18.5	x	x	x		Sn 96.6%, Ag 2.9%	5,2	0.25
Additional Length						Wire		PVC					.	Cu 0.5%, Rosin Free		

Octopower 8
Tin plated, 8 mm².

Octopower 16
Tin plated, 16 mm².

Octopower 25
Tin plated, 25 mm².


1:1


1:1


1:1

Accessories for Bi-Wiring

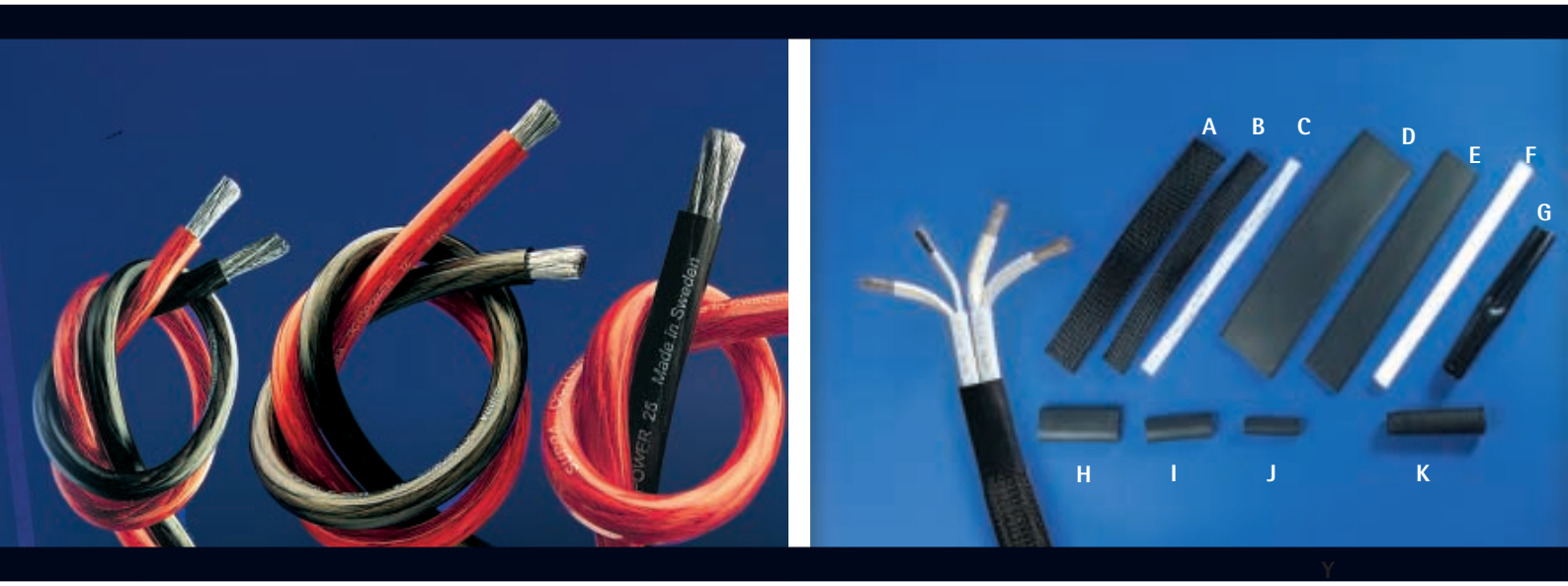
Bi-wiring is a separation of the music signal current between power amplifer and loudspeaker drive-units into two cables; one for the bass and one for the midrange/tweeter.
Bi-wire speakers are therefore equipped with separate inputs to the crossover networks.
Bi-wiring makes an audible enhancement. The best combination is a pair of Ply 3.4 or 3.4/S.

Nylon Braid

A 'hose' for sleeving over the cables to gather them into a more convenient single bi-wire cable pair.

Nylon Braid Kits

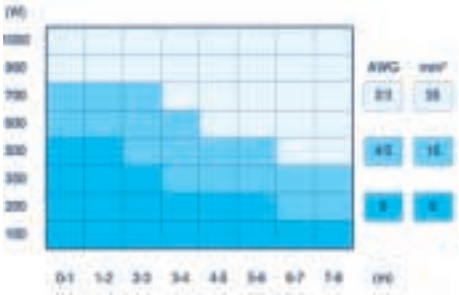
The Nylon Braids are available in Kits with suitable Heat Shrink sleeving.



Octopower

SUPRA's power supply cables for car audio and marine are tin plated to withstand outdoor use in cars and boats and to prevent poor connections and power loss caused by corrosion.
Octopower is immune to a salty coastal or marine climate.

Cable Choice Chart



You do it like this:

The braid sleeve widens when it is pushed together longitudinally, which makes it very easy to push the cable pair into it. A Heat Shrink sleeve at each end fixes the stretched braid sleeve, and completes the work.
Please be aware: A very tense stretching creates a neat result, but also a less flexible cable.

Item	Mechanical Specifications							
	Pict. ref.	Q'ty/ Pack	Application Examples	Colour	Fit Diam. (mm)	Inner Size (mm)	Ext. Size (mm)	Temp. Range (°C)
Bending Protection 7	K	100 pcs	Bend. Prot. Scart/AV-2	Black	Ø5-Ø7.0	Ø7.2	Ø8.5	-30 to +130
Rubber Sleeve 5	J	100 pcs	Bending Protection		Ø5.0-Ø8.0	Ø5.0	Ø6.8	
Rubber Sleeve 7.5	I		AV Series or		Ø7.5-Ø13	Ø7.5	Ø9.2x30	
Rubber Sleeve 10	H		Fixing Nylon Braid		Ø10-Ø16	Ø10	Ø12x35	
Termination Trousers	G	100 pcs	Y-Joint Protection		Ø7.5-Ø9.0	Ø8.5	Ø9.5	-30 to +70
Termination Trousers Set		2 pcs	for Biline					
Heat Shrink Hose 10	F	75 m	Fixing	White	Ø5-Ø10	Ø10 (Ø5)	Ø13.5	-55 to +135
Heat Shrink Hose 12	E	100 m	of	Black	Ø6.4-Ø12.5	Ø12.7 (Ø6.4)	Ø14	
Heat Shrink Hose 19	D		Nylon Braid		Ø9.5-Ø19.0	Ø19.1 (Ø9.5)	Ø20.5	
Nylon Braid 8	C		Fit Interconnect Cables	White	Ø5-Ø8	Ø8	Ø9	-70 to +125
Nylon Braid 10	B		Bunching of Bi-Wired	Black	Ø7-Ø15	Ø10	Ø11	
Nylon Braid 15	A	50 m	Loudspeaker Cable		Ø10-Ø21	Ø15	Ø16	
Nylon Braid 8 Kit	C+F	5 m	Fit Interconnect Cables	White	Ø5-Ø8	Ø8	Ø9	
Nylon Braid 10 Kit	B+E	10 m	Bunching of Bi-Wired	Black	Ø7-Ø15	Ø10	Ø11	
Nylon Braid 15 Kit	A+D		Loudspeaker Cable		Ø10-Ø21	Ø15	Ø16	

Item	Mechanical Specifications										El. Spec
	Colour	Cross Sec. Area (mm²=AWG)	Number of Wires	Wire Dia. (mm)	Wire Material	Insulation	Temp.- Range (°C)	Ext. Size Dia. (mm)	Weight (g/m)	Length/Bobbin (m / ft)	Resistance (Ω/km)
Octopower 8B	Black	8.0 = 8	252	0.19	Tin Plated OFC	Oil Resistive PVC	-35 to +75	Ø7.0	92	100 = 328	2.4
Octopower 8R	Red										
Octopower 16B	Black	16 = 5	476					Ø8.5	172	50 = 164	1.3
Octopower 16R	Red										
Octopower 25B	Black	25 = 3	735					Ø10	244		0.8
Octopower 25R	Red										

NEW!

LoRad Mains Flex

LoRad Screened Mains Flex

2.5 mm², highly flexible, specification 05VA7V-H 3G2.5.

LoRad stands for Low Radiation of electric and magnetic alternating fields.

Protects your equipment from radiated mains noise as well as from RF pick-up.

The screen protects from the electric field and a short pitch twisting protects from and cancels the magnetic fields.

This will typically result in a cleaner sound and more accurate transients, which in turn give you a tighter bass, better 3-D presence and stereo definition. Closer to the truth.

Supra's screening concept is patented worldwide by Tommy Jenving.

Supra LoRad is the sole audio grade mains cable in the world with full European safety approval

Safety spproved in compliance with HD 21.5 S3

Tips and Tricks:
A simple way to check the cable radiation is to use an AC field sensor.

Hold the AC sensor against a cable and if it lights up it means the cable is radiating noise fields. Of course, the cable must be connected to the wall socket that is switched on.

Check LoRad in the same way and you will find that it does not indicate any noise radiation.

AC sensors are available at Supra dealers or electrical stores.

LoRad Screened Mains Flex
The one and only approved for flex applications.
A Swedish world patent.

Applications:
- Hi-Fi and studio systems
- Medical equipment
- Measurement and laboratory equipment
- For people sensitive to electric/magnetic radiation
- In any application where electric/magnetic interference is critical

Tests and Reviews

Japan	Audio Accessories	No 108 '03
Spain	Alta Fidelidad	No 139/02
Spain	Pro Audio	No 203
Spain	On Off	No 124
Sweden	Hifi & Musik	
UK	Hi-Fi World	No 9 '03
Other editorials:		
Russia	AV Saloon	No 05 '03

Item	Mechanical Specifications												Electrical Specifications		
	Colour	Cross Sec. Area (mm^2=AWG)	No. of Cond.	Number of Wires	Wire Dia. (mm)	Wire Material	Insulation	Shield Coverage	Jacket	Ext. Size (mm)	Weight (g/m)	Length/Bob. (m = ft)	R (Ω/km)	Voltage Nom. (V)	Current Nom. (A)
LoRad 3x2,5	Ice Blue	2.5 = 13	3	320	0.10	Tinned OFC	PE	Al/PET Foil, 100%	Chlor. Ion-Stab. PVC	Ø11	172	50 = 164	6.8	250	16

LoRad Cord Sets & Connectors

NEW!

LoRad 2.5 CS-EU

The EU version cord set, called Schuko, the most common throughout Mainland Europe.

Exceptions are Denmark, Italy, Belgium, France, UK and Ireland.

The cord set is available in 1.5m and 2m.

LoRad 2.5 CS-BS

The BS version suits the British standard. (BS1363)

It does not fit the EU sockets.

LoRad 2.5 CS-FR

The FR version is of French and Belgian standard.

It fits also the EU sockets.

IEC-320 Female Connector

The most common for equipment up to 10A consumption.

Cable OD up to 11mm.

MC Mains Connector Male

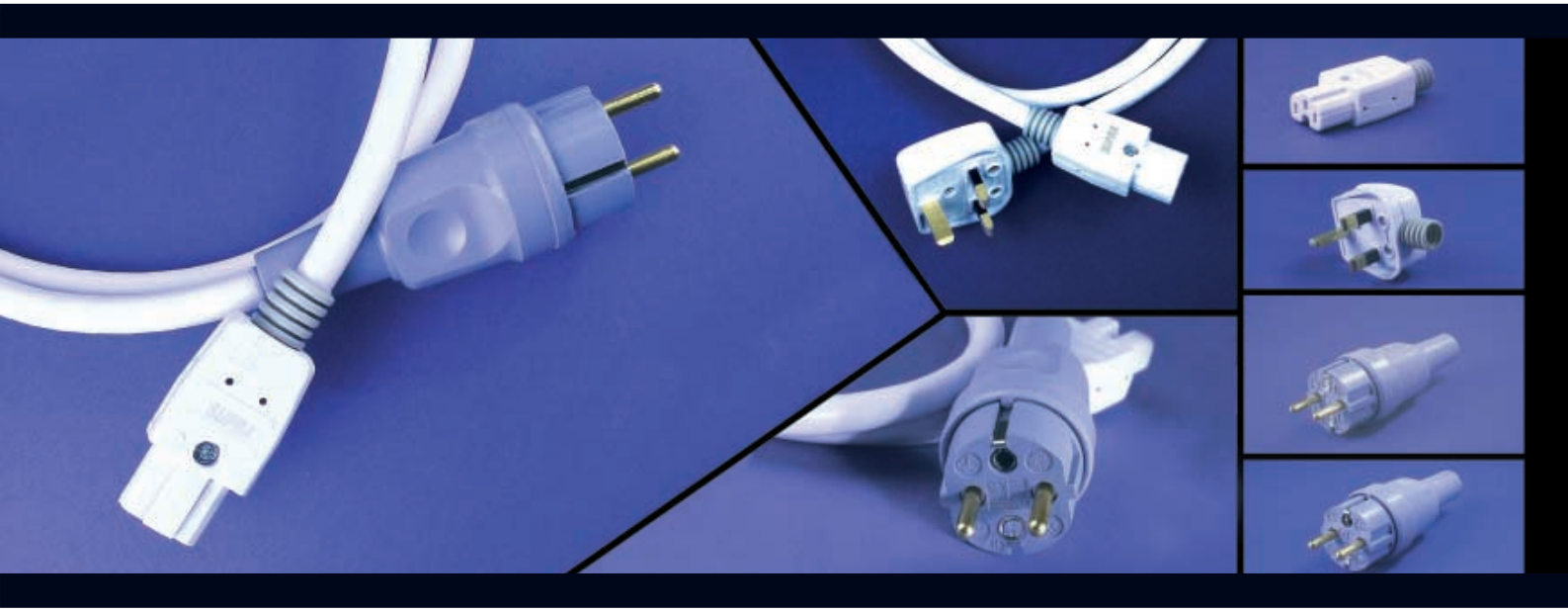
Gold plated pins. Takes cable dia up to 11mm.

MC stands for Mains Connector. Avalable for different standards:

MC-BS for British standard.

MC-EU for Schuko, for most Mainland European outlets.

MC-FR for French/Belgian outlets.



Supra AC Sensor EU

Supra AC Sensor US

Supra AC Sensor pen

The pen lits up in proximity to an electric alternating field.

Available for 230v (EU) and 110v (US)

Item	Mechanical Specifications									Elec. Spec.		Standard Lengths	
	Application	Standard	Conn. Type < Direction > Conn. Type			Shield	Conductor	Cable	Colour	Voltage	Current	(1m = 3.28Ft)	
			Wall Socket		Equipment	Connection	Connection	Clamping		Nom. (V)	Nom (A)	(1 .5m)	(2 m)
LoRad 2.5 CS-EU	Shielded	European	MC-EU	♂	IEC-320	Automatic Screen		Strain Relief				x	x
LoRad 2.5 CS- BS	Mains Flex	British	MC-BS	♂	IEC-320	Connection. The Earth	Screw	with Bending	Ice Blue	250	10	x	x
LoRad 2.5 CS-FR	110-250 V	French	MC-FR	♂	IEC-320	insulation is Semi-Cond.		Protection				x	x

Item	Mechanical Specifications										Electrical Spec.	
	Q'ty/ pack	Male/ Female	Connector Type	Standard	Pin Material	Connector Connection	Cable Clamping	Max Cable Dia. (mm)	Cable Inlet	Colour	Voltage Nom. (V)	Current Nom. (A)
IEC 320	1 pc	Female	Earthed Mains Conn.	International	24K	Screw	Strain	Ø11	Straight	Ice Blue	250	10
MC-BS				British	Gold		Relief			Ice Blue		
MC-EU		Male	Earthed Main Plug	European	Plated		with Bending			Blue		16
MC-FR				French	Cu		Protection			Blue		

Analogue Interconnect Cables

Sublink
A two-core screened interconnect for semi-balanced connection. Low capacitance and efficient noise rejection maintain signal integrity in the long run interconnects, which are often required for subwoofer links. It can be connected balanced or semi-balanced.

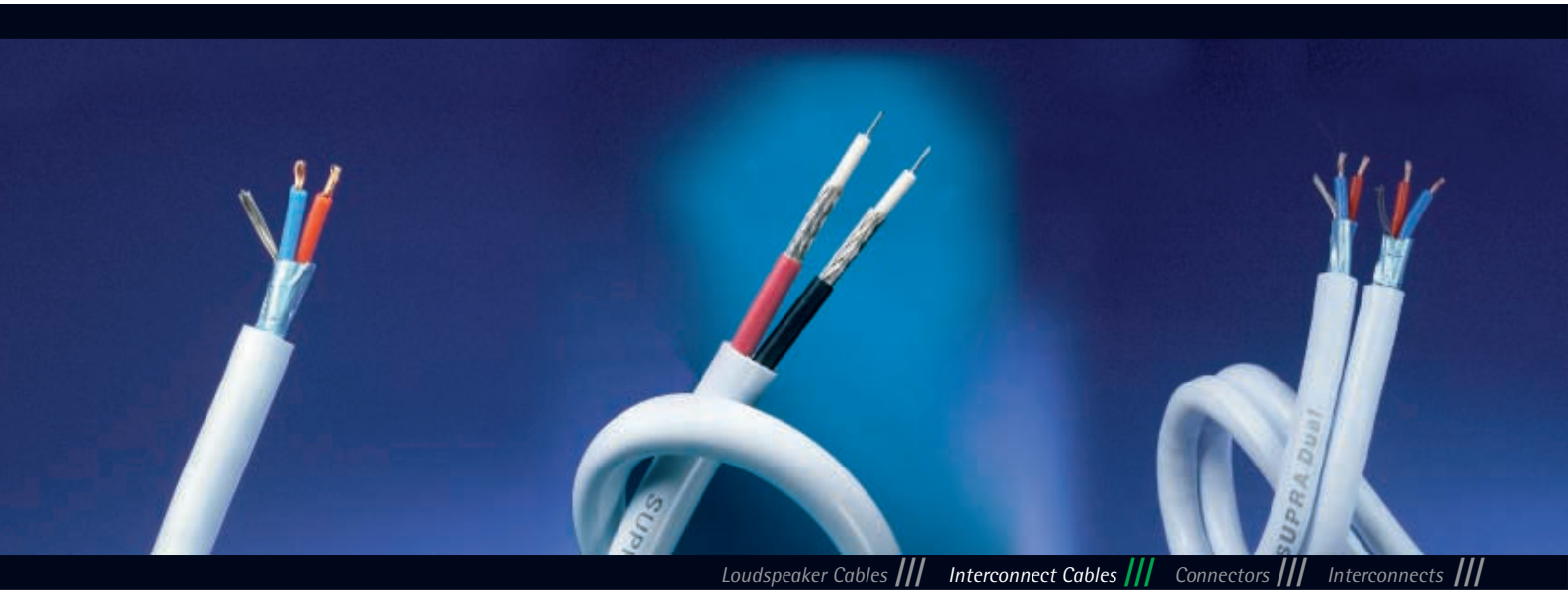
 1:1

Biline
A concentric twin-coax interconnect cable. Each pair is screened and jacketed to make complete cables. Application examples: Y-Links from AV amps with 1 output to sub-woofer with 2 inputs or corresponding with mini plug Supra MP-8 from computer to amp. For balanced or semi-balanced connection.

 1:1

Dual
A dual-in-line interconnect cable for semi-balanced connection and with screens of aluminum foil. Low capacitance. Application example: Analogue audio.
For balanced or semi-balanced connection.

 1:1



SUPRA Cable/Connector Combination Chart

	BNC-3	BNC-8	DB25M/F	MP-8	PPSL RCA	PPX RCA	RCA-3	RCA-6	RCA-6SC	Scart	SVHS-7	Swift XLR 3M/3F	VGA-M8	VGA-M11
AV-2	x						x			x	x			
AV-3	x						x			x			x	
AV-6	x		x				x			x				x
Biline				x	x	x	x	x	x					
DAC					x	x		x	x			x		
Dual					x	x		x	x			x		
EFF-I					x	x						x		
MB-01					x	x		x	x			x		
MBS					x	x		x	x			x		
SubLink					x	x		x	x			x		
Trico		x				x				x				

Item	Mechanical Specifications													Electrcal Spec.		
	Colour	Application Examples	Number of Channels	Cross Sec. Area (mm^2=AWG)	Number of Wires	Wire Dia. (mm)	Wire Material	Insulation	Shield	Jacket	Ext. Size (mm)	Weight (g/m)	Length/Bobbin (m = ft)	R (Ω/km)	C (pF/m)	Velo. Factor
SubLink		Analog Mono	1	0.24 = 23	19	0,127	Tin	PE	Alu/PET Foil	Chloride	Ø6.0	48		72	52	0.66c
Biline	Ice Blue	Analog Audio	2	0,20 = 24	1	0,4	Plated	PE Foam	Braid 120x0.10	Ion-stab.	Ø7.0	53	100 = 328	87.5	45	0.78c
Dual		Stereo		0.24 = 23	19	0,127	OFC	PE	Alu/PET Foil	PVC	2 x Ø5.5	70		72	52	0.66c

DAC
Digital/Analogue Interconnect
Application examples: Digital audio with XLR-interface 110 Ohm AES/EBU, or as a common analogue interconnect with RCA or XLR plugs.
Available in both Ice Blue and Anthracite Grey.

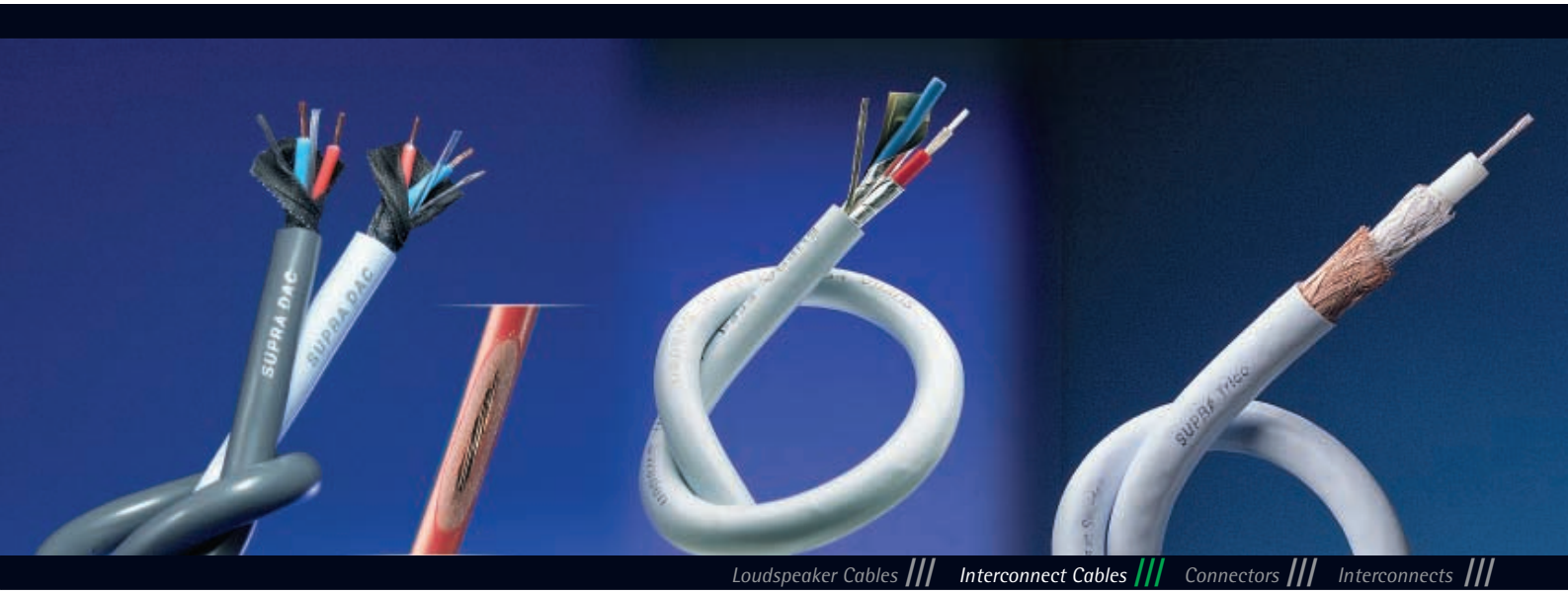

1:1

EFF-I
Analogue Interconnect cable
The multi test winner. Our best interconnect for analogue audio, for example: CD to amp. As well as being one of the world´s best for analogue applications, it can also be used for digital audio as a 75 Ohm RCA interface or video interconnect.


1:1

Trico
Digital/Video Composite Cable
Our best video/digital cable.
Application examples: Composite video such as, DVD to TV/projector and digital surround sound from DVD to AV amp or all other digital applications where true 75 Ohm impedance is critical. For signal measurements, see page 29.


1:1



DAC Digital/Analogue Interconnect Cable, AES/EBU Harmonised

A 'fast' interconnect of extremely low capacitance. In accordance with our design concepts, the inductance is to be low for a loudspaker cable whereas for an interconnect the capacitance is to be low. Supra DAC is insulated with PE foam skin which exhibits only 45 pF/m. It is screened with our very efficient and strong semi-conductive nylon ribbon. Supra DAC is also designed for digital audio and is harmonised with the AES/EBU standard. (Square wave of 60 MHz, impedance 110 Ohms, balanced.)

The very high frequency properties of Supra DAC are outstandingly good, owing to its high velocity factor.

The velocity factor of Supra DAC is as high as 78% of the speed of light, owing to the low dielectricity of the gas blown foam skin insulation. With PTFE/Teflon it would have been only 71%.

The velocity factor can be calculated with the simplified formula:

$$v = \sqrt{1/K}$$

where K is the dielectricity factor of the insulation material. (See page 27.)

More clean transients and thus improved space dimension comes with the high velocity.

EFF-I Interconnect Cable Analogue/Digital 75 Ohm

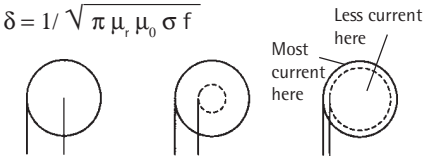
The dynamic influence of the skin effect is of great sonic influence as music and also video signals are nothing but variations. By means of the Equalized Frequency Flow technique (EFF) Supra takes skin effect into account. The EFF-I cable consists of two tube-shaped conductors with a wall thickness of 0.20 mm which is well below the smallest skin depth within the audio range. This makes a wide range of the music (or video) frequencies pass through under the same conditions.

EFF-I Interconnect Cable Construction

Silver plated OFC copper 0.5 mm²/conductor. Tube-shaped flexible conductors with a center core of PE. Two conductors, individually screened, for balanced or semi-balanced connection.

Effective penetration depth (skin effect)

$$\delta = 1/\sqrt{\pi \mu_r \mu_0 \sigma f}$$



14.7 mm Skin depth at 20 Hz
0.91 mm Skin depth at 5 kHz
0.46 mm Skin depth at 20 kHz

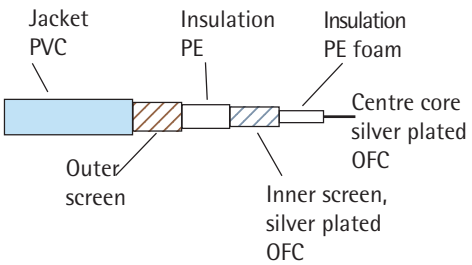
Trico Digital/Video Composite Cable 75 Ohm, Co-axial

Supra Trico is an interconnect cable of very low capacitance, insulated with PE foam which produces only 58 pF/m and makes the cable's propagation velocity as haigh as 78% of the speed of light.

Trico is double-shielded with a braided inner screen of silver plated oxygen-free copper and an outer of bare OFC-braid. The screens provide efficient noise protection. The centre conductors are made of silver plated OFC copper. The silver plating of the conductor and screen enhances the cohesive properties of the cable, at high frequencies.

The high technology design of Trico produces an extremely low attenuation: -0.6dB/100m at 1MHz and -7.1dB/100m at 100MHz.

True 75 Ohm: The characteristic impedance is very stable: +/- 1.5 Ohms from 1MHz up to 100MHz.



Item	Mechanical Specifications														Electrical Spec.		
	Colour	Application Examples	Cross Sec. Area (mm^2=AWG)	Number of Wires	Wire Dia. (mm)	Wire Material	Wire Insulation	Inner Shield Coverage	In. Shield Insulation	Outer Shield Coverage	Jacket	Ext. Size (mm)	Weight (g/m)	Length/Bob. (m = ft)	C (pF/m)	Imp. Z (Ω)	Velo. Factor
DAC	Ice Blue	Analog audio/ digit. AES/EBU	0.54 =20	19	0.19	OFC	PE Foam	Semi-Conductive Nylon, 100%	-	-	Chloride Ion- Stabilized	Ø6.1	43	50 = 164	45	110	0.78c
DAC	Anthracite																
EFF-I	Ice Blue	Analog audio	0.46 = 21	12	0.22	Silver Plated OFC	PE	Al/PET. Foil, 100%				Ø7.2	68		75	75	0.66c
Trico		Video/digital	0.71 = 19	7	0.36		PE skum	Braid OFC Ag, >95%	PE	Braid OFC, >90%	PVC	Ø8.2	105		58	75	0.78c

Audio/Video Interconnect Cables

AV-2 Audio/Video Cable 2-core Coax
Application examples: S-video. Suitable connectors are Supra SVHS-7 and/or Supra Scart plugs.

S-video = Y/C


1:1

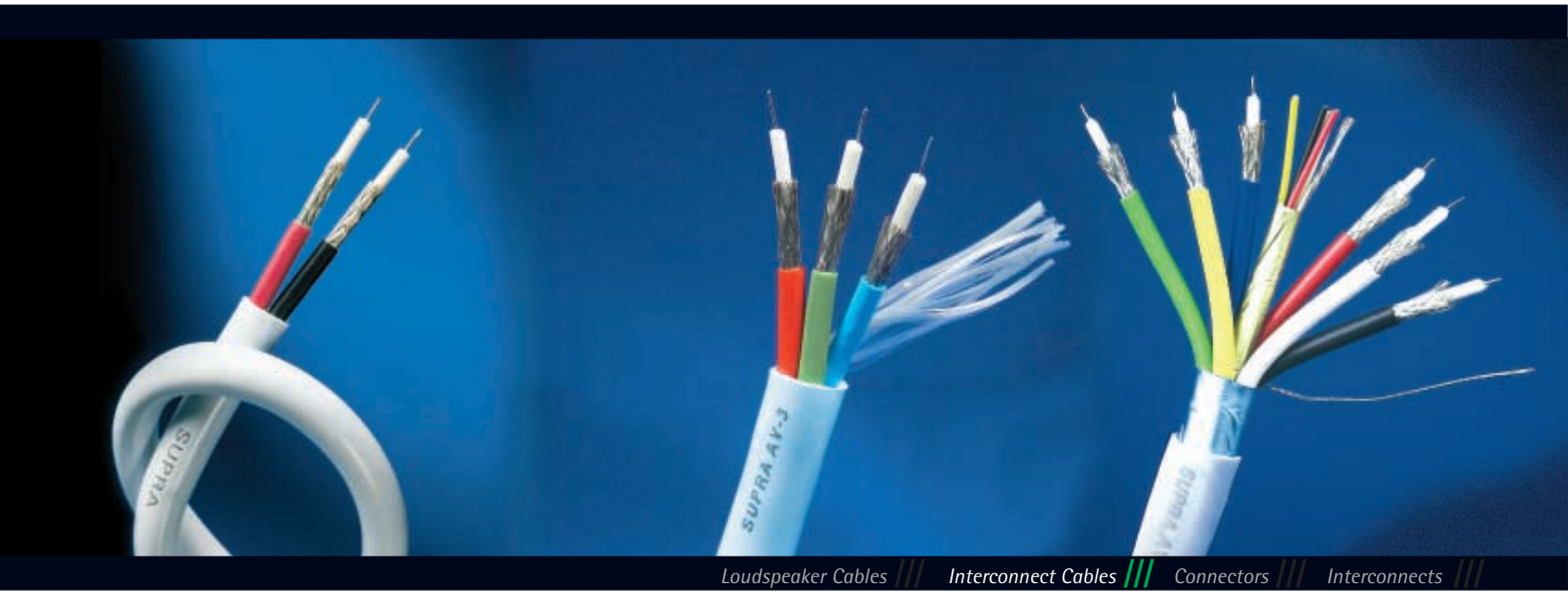
AV-3 Audio/Video Cable 3-core Coax
Application examples: Component video, Audio/Video. Suitable connectors are Supra Scart, RCA-3, BNC-3 and VGA plugs.

Component video = Y/Cb/Cr


1:1

AV-6.4 Audio/Video Cable 6-core Coax
AV-6 comprises 6 coax, surrounded by a common foil screen which further minimises RF breakthrough. The center core is a screened 2-pair audio cable.
Application examples: RGB/S-video/Composite video/Component video. Suitable connectors are Scart, VGA, SVHS-7, BNC-3 and RCA-3.


1:1



AV Series Audio/Video Multi Core Co-ax 75 Ohm
The Supra AV cables are multi-core coaxes of individual 75 Ohm rated coax cores.

Each core has a braided screen of tin plated OFC.

The Supra AV series is of very low capacitance owing to the PE foam insulation.

The construction is especially developed for Home Theatre use, and suits several applications with DB25, Scart, RCA, S-VHS and BNC connectors.

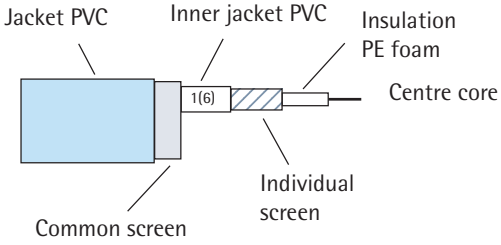
The timing error is less than 2.2 ns which enables accurate RGB transmission.

Applications:

- Home Theatre
- Video walls
- High resolution video projection
- CG workstations
- Studio tie lines

The AV-6.4 comprises a screened 2-pair audio cable as a center core.

Construction of the AV Series



AV -6.4 is an upgraded version of the "Best Buy" awarded AV-6.
It remains the same 6-core coax cable, unchanged except for the added 2-pair center core for audio,

For signal measurements, see page 29.

Item	Mechanical Specifications															Electrical Specifications				
	Colour	Application Examples	No. Coax	Cross Sec. Area (mm^2=AWG)	Number of Wires	Wire Material	Wire Insulation	Inner Shield Coverage	In. Shield Insulation	Outer Shield Coverage	Jacket	Ext. Size (mm)	Weight (g/m)	Length/Bob. (m = ft)	R (Ω/km)	C (pF/m)	Imp. Z (Ω)	Attenuation 1/5/50MHz	Velo. Factor
AV-2		Svideo or AV	2			Tin		Braid 120 x	Chloride	-	Chloride	Ø7.0	53	100 = 328				1.4dB/100m	
AV-3	Ice Blue	Komponent.or AV	3	0,20 = 24	1	Plated	PE Foam	0.10 OFC Sn	Ion-Stab.		Ion-Stab.	Ø8.0	68		87,8	45	75	3.1dB/100m	0.78c
AV-6.4		RGB or AV	6 (+4)			OFC		>95%	PVC	Al/PET. Foil, 100%	PVC	Ø11.0	147	50 = 164				9.8dB/100m	

MBS Microphone Cable, Balanced
A non-compromise design, both mechanically and electrically. Negligable microphony, high noise rejection, low capacitance, high flexibility, high bending strength. The best mic and instrument cable.

Application examples: Microphone, guitar.

 1:1

MB-01 Installation Mic/Line Cable, Balanced
Single pair balanced line cable.

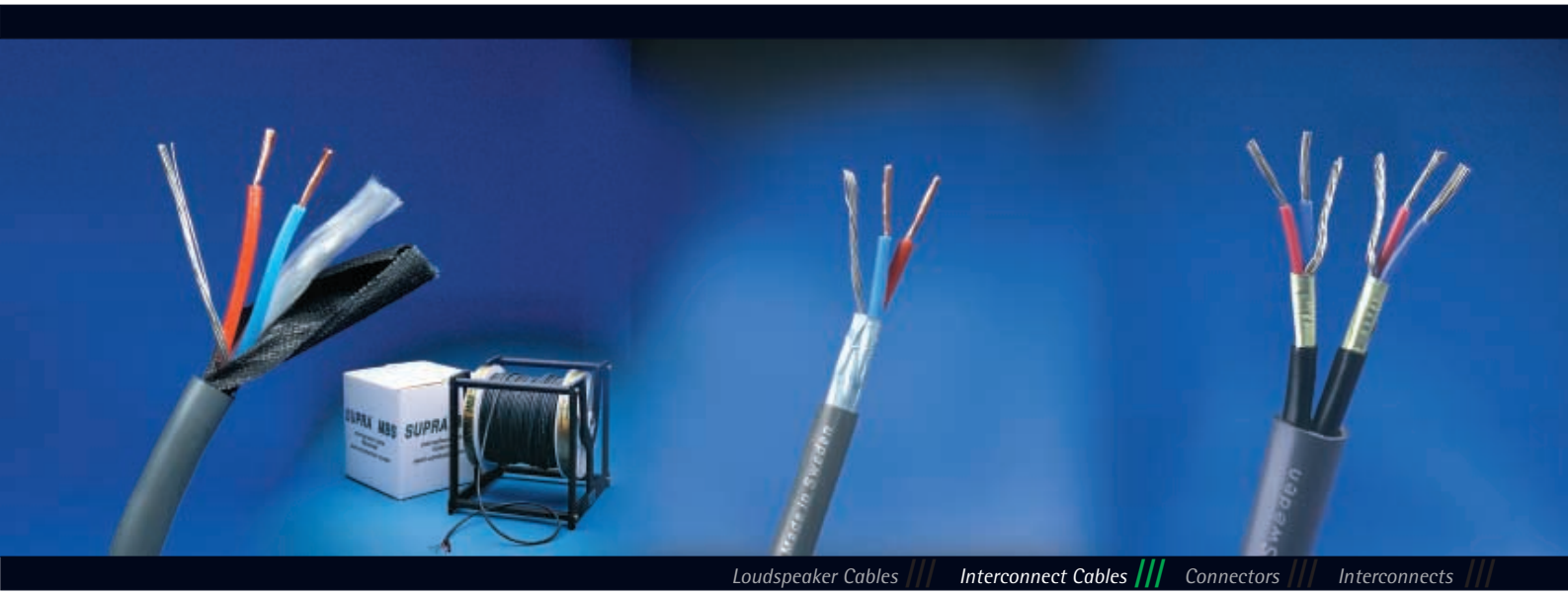
Application example: Installations.

 1:1

MB-02 Installation Mic/Line Cable, Balanced
2-pair cable, similar to MB-01, with individual pair screening and pair jacketing.

Application example: Installations.

 1:1



MBS is based on Supra's unique Nylon braid concept.
The advantages of Supra nylon screened cables over ordinary braided cables are:

- **High Tensile Strength**
  The tensile strength is 500N/50mm.
- **Bending Fatique**
  In accordance with a military flex test a cable must pass 30,000 bending cycles without damage. After 90,000 cycles the test was concluded without any damage to the MBS cable.
- **Environmental Immunity**
  Air humidity does not influnce the cable's electrical properties.
- **Microphony**
  The softness of the Nylon screen in combination with other design features make MBS a quiet cable, free from microphony.

More about the concept on page 16!

MB series for fixed installations
The conductors are of the same design as of the MBS microphone cable but the jacketing is thinner and the shielding is of polyester based aluminium to better suit installation applications.

Tips and Tricks:
You can easily test the microphony of a cable:
Plug the cable into the mixer with the other end of the cable open, without anything connected. Turn up the volume and listen to how sensitive the cable is when you touch it, tap it and move it, or slap it against a baase floor, as occurs with Mic/Guitarr Cables

Item	Mechanical Specifications																	Elec. Spec.	
	Colour	Application Examples	Application Range	No. Channels	Number of Conductors	Cr. Sec. Area (mm^2=AWG)	No. of Wires	Wire Dia. (mm)	Wire Material	Insul-ation	Tensile Rein-forcement	Shield	Jacket	Temp.-Range (°C)	Ext. Size (mm)	Weight (g/m)	Length/ Bob. (m=ft)	R (Ω/km)	C (pF/m)
MBS	Anthra-	Analog	Flex/Install.	1	2				Tin		Poly/Silk	Cond. Nylon	Chloride	-30	Ø5.5	34	150 = 492		
MB-01	cite	Audio	Installation		+	0.24 = 23	19	0,127	Plated	PE	-	Aluminum/	Ion-Stab.	to	Ø4.8	32	200 = 656	72	52
MB-02	Grey	Mic./Line		2	Drain Wire				OFC			PET	PVC	+75	Ø7.0	61	300 = 984		

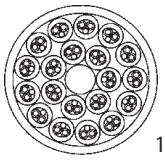
Flex Multicore Cables

MS04-JP
4 jacketed and screened pairs x 0.22 mm².

MS20-JP
20 jacketed and screened pairs x 0.22 mm².

MS32-JP
32 jacketed and screened pairs x 0.22 mm².


1:1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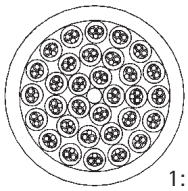
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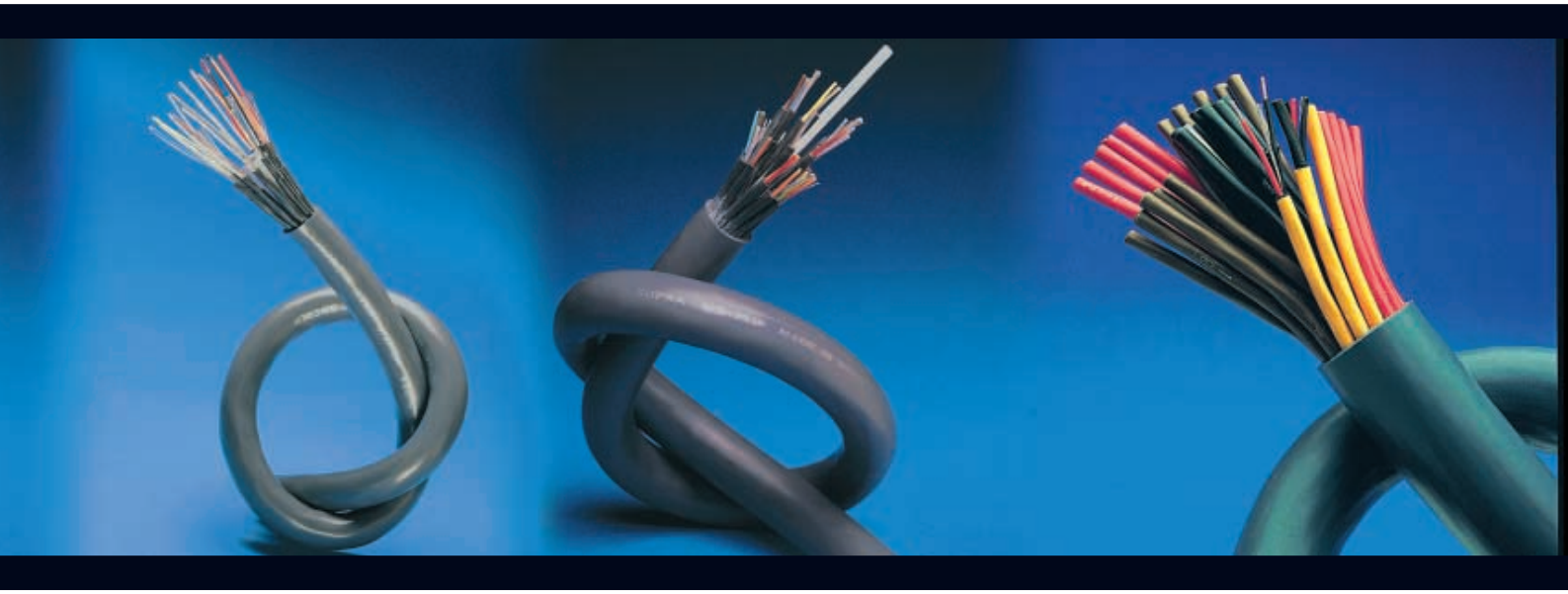


Multicore Cables for Stage Use, Pair Jacketed and Stretch-Proof

SUPRA has developed a flexible multi-core cable for use on stage and in heavy and rough handling situations. Every pair is individually jacketed and is a complete cable. Simply solder on a contact - you don't even need to use Heat Shrink. Perfect when you need to make up a line to a stage box. The screen is of semi-conductive nylon which is extremely strong with regard to bend-fatigue and which at the same time is highly resistant to electro-magnetic interference. A usual problem with multicore cables which are used on stage and in other non-permanent applications, is that the pairs in the middle of the cable have less stretch tolerance than the outer layers, owing to the spiralized configuration of the cable. Consequently the inner cables are often stretched so much that the solder joints give way or the conductors break when forced to take the whole strain. Supra has solved this through increasing spiralization of the pairs towards the centre, plus the omission of a pair at the exact centre, this being replaced with a flexible plastic core.

The pairs are identified with jacket colours as well as with numbers. See identification chart below.

SUPRA Multicore Cables are Designed for Professionals

The advantages of Supra Nylon screened cables over ordinary braided cables are:

- **Tensile Strength**
  The tensile strength is 500N/50mm.
- **Bending Fatique**
  In accordance with a military flex test a cable must pass 30,000 bending cycles without damage. After 90,000 bending cycles the test of the Nylon screened Supra MBS was concluded without any damage to the cable.
- **Environmental Immunity**
  Air humidity does not influnce the cable's electrical properties.
- **Microphony**
  The softness of the Nylon screen in combination with other design parameters makes a quiet cable, free from auto microphonics.

MS-JP Colour and Number Codes

Pair	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Colour	Black									Brown										Red										Orange		
Conductor	Red/Black and with a Drain Wire for the Nylon Screen Connection																															

Item	Mechanical Specifications															Electrical Spec.		
	Number of Channels	Application Examples	Cross Sec. Area (mm²=AWG)	Number of Cond../Channel	Number of wires	Wire Dia. (mm)	Insulation	Shield	Pair- /Outer Jacket	Tensile Reinforcement	Ext. Dia. (mm)	Temp.-Range (°C)	Colour	Weight (g/m)	Length/Bobbin (m = ft)	R (Ω/km)	C (pF/m)	Velo. Factor
MS04-JP	4	Analog		2 pc				Semi-	Chloride	Poly/Silk Wire	Ø9.7	-30		126				
MS20-JP	20	Audio,	0.22	+	7	0.20 OFC	PE	Conductive	Ion-Stab.	Flexibel	Ø18.7	to	Anthracite	263	100 = 328	180	90	0.66c
MS32-JP	32	Mic./Line		Drain Wire				Nylon	PVC	plastkärna	Ø23.5	+75		427				

XLR-C3F and XLR-C3M
3-pole Female and Male chassis connectors.

Swift 3F XLR Light and Swift 3M XLR Light
3-pole Female and Male.

Patented by Tommy Jenving.

Also available with gold plated pins, in set, on page 20.

SB 16/4 Kit Stage Box
Stage box for 16 channels and 4 returns. Countersunk panel for best protection. XLR Chassis connectors are fitted. The Kit comprises XLR Swift cable connectors and cable strain relief.

Multicore cable MS20-JP to be added as per choice of length.

SB 16/4M Ready Made
Cable length to be advised when placing the order.

Swift XLR Connectors
The patented Supra Swift has several advantages over other XLR connectors:

- Totally shielded.
- No looseable screws. Only one retained screw. Nothing to slip on to the cable before soldering.
- Strain relief: The screw serves also as a clamp screw and since it is placed at a considerable distance from the apperture there will be no bending forces on the cable at the clamping point.

Item	Mechanical Specifications											
	Q'ty/ Pack	Connector Type	Pin Material	Insulation	Housing	Wire Connection	Connector Fixing	Cable Clamping	Max Cable Dia. (mm)	Ext. Size WxHxL (mm)	Mounting Hole (mm)	Colour Identification
XLR-C3F	1 pc	XLR Female Chassis	Silver Plated Cu	Noryl	Shielded	Soldering	Quick Lock	Screw	Ø7.7	27x37x31	Ø23.5	-
XLR-C3M		XLR Male Chassis								22x37x21	Ø19.0	
Swift XLR 3M Light		XLR Male			Shielded Front Mounted					Ø19x70	-	Red/Black
Swift XLR 3F Light		XLR Female								Ø19x75		Extra
Swift XLR 3M Light Au		XLR Male	Gold Plated Cu							Ø19x70		Colour Rings
Swift XLR 3F Light Au		XLR Female								Ø19x75		Are available

Item	Mechanical Specifications												
	Application Examples	Connector Types Box	Connector Types Cable	Cable	Splitt Length	Ext. Size, Box WxHxL (cm)	Weight Box (kg)	Screen Connection	Solder Tin	Wire Connection	Connector Fixing	Cable Clamping Box	Cable Colour
SB-16/4 Kit	Analog	16 pcs XLR Female Chassis	16 pcs Swift XLR 3M Light	MS20-JP	50cm	18x30x8	2,7	Balanced	Almit KR-19SHrma	Soldering	Quick Lock	Squeeze Lock, Spring	Anthracite
SB-16/4 Ready Made	Audio	4 pcs XLR Male Chassis	4 pcs Swift XLR 3F Light										

Loudspeaker Connectors

CombiCon Banana
24K gold plated loudspeaker connector for cables up to 6 $mm^{2.}$ The banana pin fits also BFA plugs or connectors. The cable can be attached straight on axis or at a 90 degree angle. A spade can be attached to the connector body.

2 pairs/blister pack
50 pairs of connector bodies/bulk
50 pcs of Banana pins/bulk

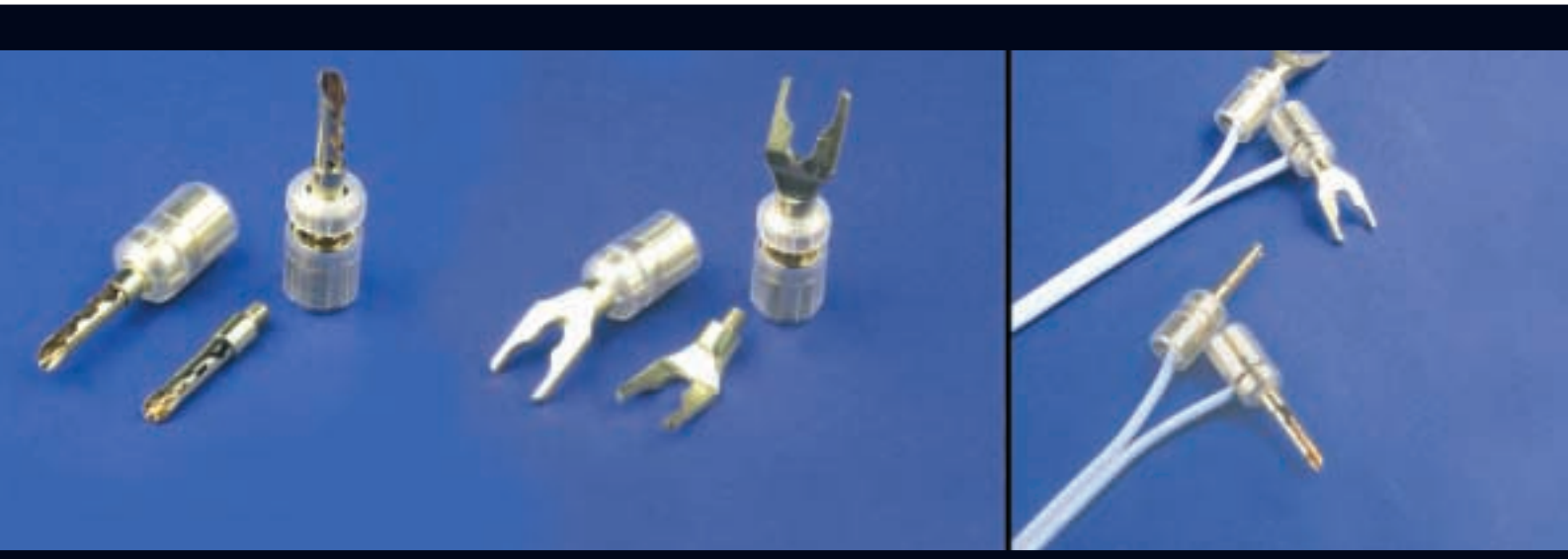
CombiCon Spade
24K gold plated loudspeaker connector for cables up to 6 $mm^{2.}$ The cable can be attached straight on axis or at a 90 degree angle. Another spade can be attached to the connector body.

2 pairs/blister pack
50 pairs of connector bodies/bulk
50 pcs of Banana pins/bulk

CombiCon Kit
A set of 2 pairs of connector bodies, 4 pcs of Spades and 4 pcs of Banana/BFA.

CombiCon Assortment
An assortment set of 50 pairs of connector bodies, 50 pcs of Banana/ BFA and 50 pcs of Spades.

For dealers.



The picture shows both Banana/BFA and Spade connectors, and also how the cable can be connected straight or angled.

CombiCon
This combination connector comprises two parts: a termination part to be screwed onto a connector body. The connector part is of two types ; Spade and Banana pin, which in turn also fits BFA plugs.

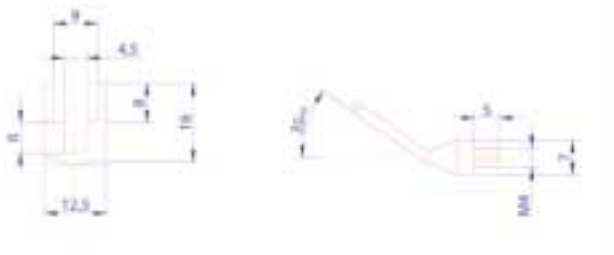
The Connector Body

The connector body can be attached to the cable either on axis or in a 90 degree angle. See the R.H. picture above. Also a spade terminated cable can be attached to the connector body. Printing in red and black, respectively, for polarity identification.

The Termination Parts

The Banana pin also fits BFA connectors.

The Spade is angled for easier mounting in tight spaces. It has a two step, wide opening, see drawing to the right.



Drawing of the Spade

Item	Mechanical Specifications									
	Q'ty/	Connector Type			Material	Connector	Cable	Max Cable Area	Ext. Size Body	Colour
	Pack	Banana	Fork	BFA		Fixing	Connection	(mm^2=AWG)	DxL (mm)	Indentification
CombiCon Banana	2 pairs	x		x	24K	Expansion Pin	Nut	6 = 9	Ø13x20.5	Red/ Black
CombiCon Spade			x		Gold	-	Locking			
CombiCon Kit	2+2 pairs	x	x	x	Plated	Expansion	with Sliding			
CombiCon Assortment	50+50 pcs	x	x	x	Cu	Pin/-	Ring			

Boxcon
24K gold plated speaker cabinet connector.
For cables up to 10 mm² or Banana/Fork. For cabinet wall thickness up to 29 mm.

1 pair/pack
Also available in bulk of 50 pairs.

Fork
24K gold plated spade.
The width of the fork grip is 5.5 mm. The cable can be connected either on axis or on a 90° angle. Fits up to 10 mm² cables. Adapter screw for 4 mm Banana plug is included. Fork is the most copied Supra connector worldwide.

2 pairs/pack
Also available in bulk of 200 pcs.

Fork XL
A larger variation of the Fork.
The size of the fork width is 6.5 mm. The adapter screws for Banana plugs are not included in this product.

2 pairs/pack
Also available in bulk of 200 pcs.

Banana
24K gold plated.
4 mm Banana plug for up to 10 mm² cables. Can be connected either on axis or at a 90° angle. Red and Black housings.

2 pairs/pack
Also available in bulk of 50 pairs.

Item	Mechanical Specifications										
	Q'ty/ Pack	Connector Type	Mounting	Male/ Female	Material	Connector Fixing	Cable Connection	Max Cable Area (mm²=AWG)	Mount.- Hole	Ext. Size WxHxL (mm)	Colour Identification
Boxcon	1 pair	Banana/Fork/Cable Direct	Chassis	Female	24K	Screw/Clamp	Screw/Sold.	10 = 7	M8	Ø19x35-64	Red/Black
Fork	4 pcs	Fork, 5.5mm	Cord	Male	Gold Plated	-	Screw		-	8x20x21	-
Fork XL		Fork, 6.5mm								10x12.5x26	
Banana	2 pairs	Banana Plug			Cu	Expansion Pin				10x18x42	Red/Black

Line Connectors

BNC
BNC-plug for solde-ring. 24K gold plating with Teflon insulation. For cable diameters of 7-8.5 mm.

2 pcs/pack
Bulk pack: 50 pcs

PPSL
RCA plug in 24K gold plating with squeeze clamping of both front part and cable aperture. Shielding housing, front mounted. Teflon insulation. Lathe turned in one piece. Max cable dia 7.7 mm.

PPX
Similar design as the above, without squeeze clampings.
Max cable dia 8.5 mm.

1 pair/pack
Bulk pack: 50 pairs

RCA-6SC
24K gold plated RCA plug with squeeze clamping, only for cable diameters of 5-6 mm.

RCA-6
Similar to the above but with standard clamping, not squeeze clamping.

1 pair/pack
Bulk pack: 50 pairs

MP-8 Mini Jack Plug Stereo
For large diameter cables up to 8 mm.
24K gold plated mini plug 3.5 mm
The plug is countersunk in order to fit countersunk chassis connectors.

2 pcs/pack
Bulk pack: 50 pcs

Swift XLR Au Set
Patented
XLR connector with 24K gold plated pins.
Fully shielded for noise rejection.
Easy assembly. No loosable screws.
Nothing to slip on the cable before soldering.

Set of male/female per pack.
Bulk pack: 10 pcs male or female (no set).

Gold plated XLR pins
(Supra Swift)

Item	Mechanical Specifications									
	Q'ty/ Pack	Connector Type	Material	Insulation	Housing	Connector Fixing	Cable Clamping	Max Cable Dia. (mm)	External Size ØxL (mm)	Colour Identification
BNC-8	1 pair	BNC Male			Shielded	Bayonet	Crimp	Ø8.0	Ø13x52	Blue
PPSL		RCA Male	24K		Shielded,	Squeeze Lock	Squeeze Lock	Ø7.7	Ø13x53	Red/White
PPX			Gold	PTFE	Front Mounted		Screw	Ø8.5	Ø13x43	Red/White
RCA-6 SC			Plated	(Teflon)		Expansion	Squeeze Lock	Ø6.5	Ø11x35	Red/
RCA-6			Cu		Shielded		Crimp	Ø6.5		White
MP-8	2 pcs	Jack Plug Stereo 3.5mm				-		Ø8.5	Ø13x52	White
Swift XLR Au Set	1 set F/M	XLR Female/Male		Noryl	Shield.,Fr. Mounted	Quick Lock	Screw	Ø7.4	Ø19x83 / Ø19x77	Red/Black

SCART
24K gold-plated Scart connector with shielding housing of metal. The plate around the pins is formed to make a strong grip by means of friction locking. Squeeze clamping of the cable. Fits cable diameters 8-11 mm.

For thinner cables use the bending protection: see page 9.

1 pc/pack
Bulk pack: 50 pcs.

RCA-3
24K gold-plated RCA (Phono) plug with Teflon insulation and metal housing. Fits 3 mm cable diameter, e.g. the Supra AV-6 core. Provided with Colour rings of different Colours.

BNC-3
24K gold plated BNC plug for crimping. Crimping tool: see below. Fits 3mm cable dia, e.g. the AV-series.

1 pair/pack
Bulk pack: 50 pairs.

SVHS-7
24K gold-plated S-Video connectors with shielding metal housing and Teflon insulation.
Fits cable diameters up to 7 mm.

2 pcs/pack
Bulk pack: 50 pcs.

DB25-F and DB25-M
24K-gold plated DB25 plugs with metalised shielding housing. Male and female. Fits cable diameter 5-11 mm.

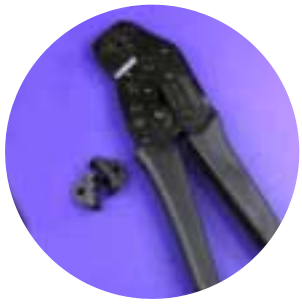
1 pc/pack.
Bulk pack: 50 pcs male or female.

VGA-8
DB-15 connector with 24K gold-plated pins. For cable dia up to 8mm. Fits AV-3.

VGA-11
Similar to the above but with large aperture for cable dia up to 11 mm. Fits AV-6.

1 pc/pack
Bulk pack: 50 pcs.

Crimping bosses for 4mm size
Specially made for BNC-3
Fit Abiko Crimper DCC 0908



Abiko Crimper DCC 0908

Item	Mechanical Specifications										
	Q'ty/ pack	Connector Type	Male/ Female	Pin Material	Insulation	Housing	Connector Fixing	Cable Clamping	Max Cable Dia. (mm)	Ext. Size WxHxL (mm)	Colour Identification
Scart	1 pc	Scart			Noryl		Friction Grip	Squeeze Lock	Ø11.0	48x20x60	White
RCA-3	1 pair	RCA					Expansion		Ø3.2	Ø12x50	Red/White
RCA-3 RGB	3 pcs			24K	PTFE	Shielded		Crimp			Red/Green/Blue
BNC-3	2 pcs	BNC		Gold	(Teflon)		Bayonet		Ø3.2	Ø15x25	-
SVHS-7		S-video	Male	Plated			-		Ø7.0	Ø13x42	Yellow
DB25-F	1 pc	DB25/		Cu	Noryl		Screw		Ø11.0	55x17x51	White
DB25-M		D-sub 25				Shielded		Screw/			
DB15-M8		VGA/			PTFE	Front Mounted		Clamp	Ø8.0	32x41x14	-
DB15-M11		DB15 (HD)			(Teflon)				Ø11.0	31x44x15	

Analogue Interconnects

All SUPRA connectors have shielding housings and the cables are provided with Supra's efficient screens which helps ensure noise rejective interlinking.

The cables are developed with the focus on low capacitance, high velocity factor and correct and stable characteristic impedance.

The results are improved definition and dynamics.

Tommy Jenving recommends:

B. Supra EFF-ISL, our best analogue interconnect. Multi test winner and our most sold interconnect.

C. For balanced with XLR, we recommend the same cable but with the *Swift* connectors: **EFF-IXLR**

D. Supra DAC-X, our fastest cable, for precise transients. A high-end cable at a mid-end price.

G. Supra Dual-RCA, if you want a high value for money.

For product information, see the table below.

Tests and Articles

EFF-I

TNT-Audio, non-commercial internet magazine
www.tnt-audio.com/clinica/eff1e.html

England	Hi-Fi Choice	Mar '99 Best Buy
Czech Rep.	AMP www.gmx.cz	
Germany	Stereo	#7 '03
Hong Kong	Hi-Fi Review	#148 Sep '98
Hong Kong	Hi-Fi Review	#155 Apr '99
Norway	Lyd & Bilde	#8 '97
Spain	Alta Fidelidad	Dec '98
Spain	Stereofonia	#203 '00
Sweden	Hifi & Musik	#5 '01
Sweden	Hifi & Musik	#1 '99
Sweden	Hifi & Musik	#5 '99
USA	Stereo Times www.stereotimes.com	

Articles about applying EFF-I

Ben Duncan, Pure Transfer,
Hi-Fi News & Record Review (UK), Nov '97
Ben Duncan, Black Box (technical column),
Hi-Fi News & Record Review (UK), Dec '96 and Nov '97
See page 30, ref [1]

DAC

Singapore	Sound & Sight J.	Mar/Apr '99
Spain	Stereofonia	#203 '00
Sweden	High Fidelity	#1 '97
Sweden	Hifi & Musik	#5 '99

Dual-RCA

England	Monthly DVD	May '03

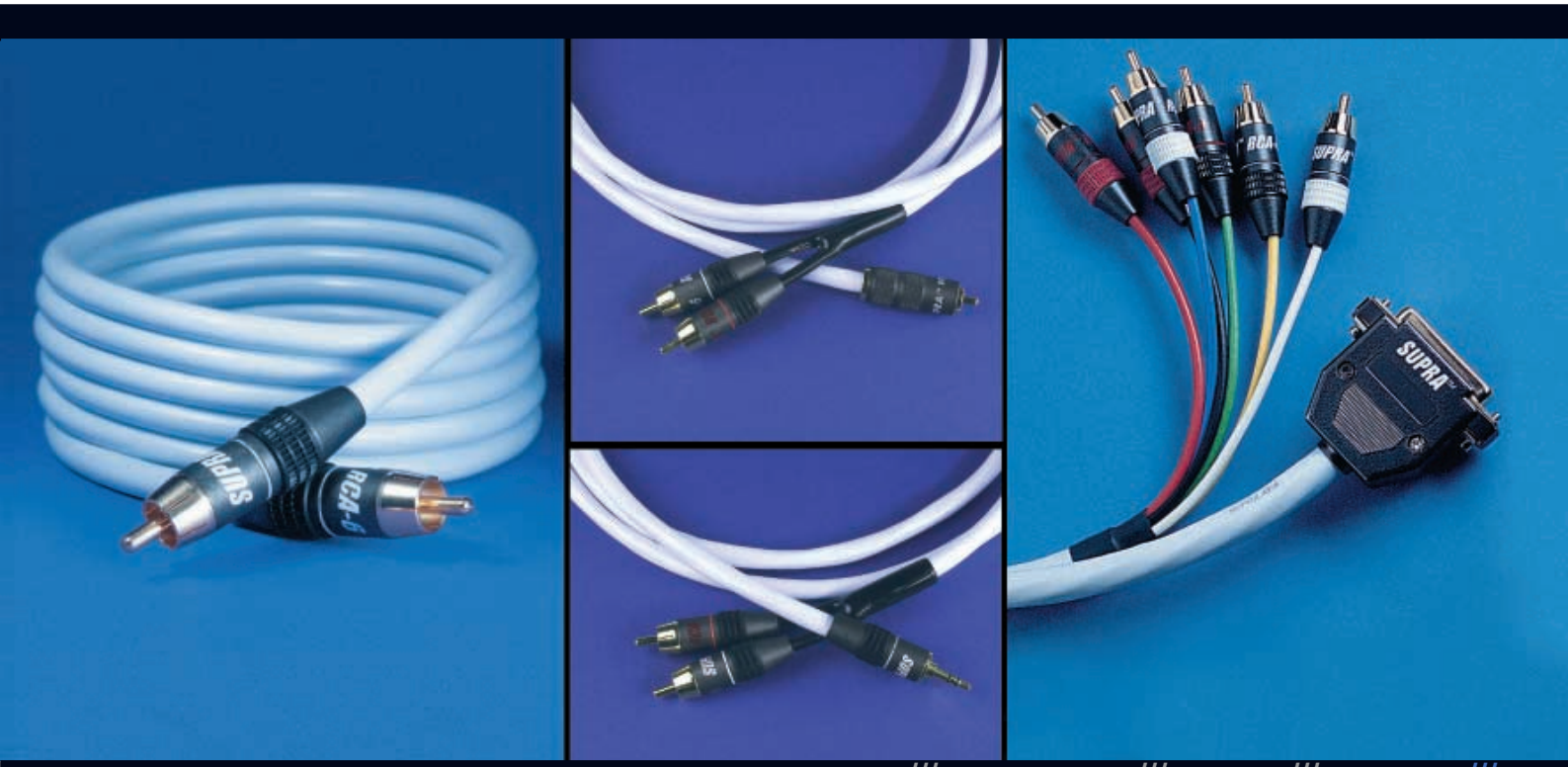
Item	Mechanical Specifications											Standard Lengths	
	Pict. Ref.	Q'ty/ pack	Application Examples	Connector Type From	<<< Direction >>>	Connector Type To	Cable	Screen Connection	Solder Tin	Connector Fixing	Cable Clamping	Cable Colour	(1m = 3.28Ft) (1 m)	(2 m)
DAC-SL	E	1 Pair		PPSL RCA		PPSL RCA	DAC	Semi-Balanced	Almit KR-19SHrma	Squeeze lock	Squeeze Lock	Ice Blue	x	x
DAC-X	D			PPX RCA		PPX RCA				Expansion	Screw	/	x	x
DAC-XLR	F		Analog	SWIFT XLR 3F LIGHT AU		SWIFT XLR 3M LIGHT AU		Balanced	Sn 96.6%	Quick-lock		Anthracite	x	x
Dual-RCA	G		Audio	RCA-6		RCA-6	Dual	Semi-Balanced	Ag 2.9% Cu 0.5%	Expansion	Crimp	Ice Blue	x	x
EFF-ISL	B			PPSL RCA		PPSL RCA	EFF-I			Squeeze lock	Squeeze Lock		x	x
EFF-IX	A			PPX RCA		PPX RCA			Rosin	Expansion	Screw		x	x
EFF-IXLR	C			SWIFT XLR 3F LIGHT AU		SWIFT XLR 3M LIGHT AU		Balanced	Free	Quick-lock			x	x

SubLink-RCA
Sublink-RCA is a semi-balanced interconnect from one RCA connector to one RCA connector. Application example: From the mono output of the AVR amp to an active mono subwoofer.

Y-link
Y-Link is a Y-connected semi-balanced interconnect from one RCA connector to two RCA connectors.
Application example: From the mono output of the AVR amp to an active stereo subwoofer.

BiLine-MP/RCA
Biline-MP is a semi-balanced interconnect from one mini jack plug to two RCA connectors. Application example: From computer audio output to amp.

AV-6.4 Interconnect for AC-3
The DB25 interconnects come in different variations: DB25F-DB25M, DB25F-6RCA and 6RCA-DB25M. These are specially made for 5.1 channel sound. Application examples: DVD to AVR amp or AVR amp to 5.1 channel power amplifier.



SubLink-RCA
For Supra Sublink-RCA, the Sublink cable and the RCA-6 connectors are used.

Y-link
Supra Y-Link comprises the Biline cable with one PPX connector at one end and two RCA-6 connectors at the other.
For good bending protection the Termination Trousers are applied.

BiLine-MP/RCA
Supra Biline-MP comprises the Biline cable with a MP-8 mini jack plug at one end and a pair of RCA-6 at the other.
For good bending protection the Termination Trousers are applied.

AV-6.4 Interlink for AC-3
AV-6.4 is a multi-coax construction of high performance with low capacitance 75 Ohm coax cores, especially developed for 5.1 channel systems. (Dolby digital/ DTS). All connectors are fully shielded.

The cores are used for:

- Right front
- Left front
- Centre
- Sub-woofer
- Right surround
- Left surround

All cores are differently coloured for easy installation.

Item	Mechanical Specifications										Standard Lengths				
	Application	Conn. Type	< Direction >	Conn. Type	Cable	Screen	Solder	Connector	Cable	Colour	(1m = 3.28Ft)				
	Examples	From		To		Connection	Tin	Fixing	Clamping		1m	2m	4m	8m	15
SubLink-RCA	Active Mono Subwoofer	RCA-6	⑩♂	RCA-6	SubLink		Almit KR-19SHrma	Expansion	Crimp	Ice Blue		x	x	x	x
Y-Link	Active Stereo Subwoofer	PPX RCA	⑩♂	RCA-6	Biline				Screw/Crimp			x	x	x	x
Biline-MP/RCA	Computer/MD/CD	MP-8 3.5mm	⑩♂	RCA-6		Semi-Balanced	Sn 96.6%	- / Expansion	Clamp		x	x	x	x	x
DB25F ♂ DB25M	AC-3, 5.1 Channels	DB-25F	♂	DB-25M	AV-6.4		Ag 2.9%	Screw			x	x			
6 RCA ♂ DB25M		RCA-3	♂	DB-25M			Cu 0.5%	Screw			x	x			
DB25F ♂ 6 RCA		DB-25M	♂	RCA-3			Rosin Free	Expansion			x	x			

Optic/Digital Interconnects

X-ZAC Toslink
An exact mechanical fit is important in order to avoid divergence losses. Therefore X-ZAC is provided with a high precision metal connector. The fibre optic is principally the same as ZAC but the X-ZAC is machine polished in further 3 stages. Available in 1m (3ft).

ZAC Toslink
Our most popular Toslink. ZAC Toslink is available in 1m (3ft), 2m (6ft), 4m (13ft), 8m (26ft), 15m (49 ft).

ZAC MinTos
The same concept but fitted with Mini Toslink at one end and a Toslink at the other. Often used between Mini discs and CD players. Available in 1m (3ft).

ZAC Mini
The same concept but fitted with Mini Toslink connectors. Available in 1m (3ft).

75 Ohm Interconnects: Trico-RCA, Trico-BNC
The 75 Ohm digital interconnects are designed for RCA (Phono connectors) interfaced transmission between CD transport and digital to analogue converter. They have the capability to transfer the full digital spectrum and can be used with a number of 75 Ohm applications.

110 Ohm AES/EBU Interconnect: DAC-XLR
DAC-XLR is a balanced interconnect for digital transfer, mostly in professional equipment.
DAC stands for Digital/Analogue Cable, not to be mixed up with DAC converters.

From left: X-ZAC, ZAC Toslink, ZAC MinTos and ZAC Mini *DAC-XLR Gold Trico-BNC Trico-RCA*

ZAC Fibre Optic Interconnect
ZAC stands for Zero Attenuation Concept.
The innovative curving of the fibre core tip to get a zero divergence loss enables plastic fibre optic to be used, and achieve the same transmission quality as that of a glass fibre core in combination with the strength and flexibility of the plastic core.
Properties and advantages of the fibre optic cable are:
- Low weight
- Wide band width
- Interference immune
- No radiation
- Independent of voltage

Digital Interconnects
General:
Always, in digital applications, the use of a cable with the correct characteristic impedance is very important. There are two standard impedances:
- 75 Ohm S/PDIF interface which uses RCA connectors. This is most common in Hi-Fi applications from CD transport to DAC, as well as home recording.
- 110 Ohm AES/EBU interface which is balanced and has XLR connectors. This is mostly used in professional applications. For example Supra DAC-XLR.

Tests and Reviews

ZAC

Spain	Alta Fidelidad	#100 '99
Spain	Alta Fidelidad	#115
Spain	'Alta Fidelidad	#123 '01
Sweden	Hifi & Musik	#1 '99
UK	What Hi-Fi	Sep '02 Best Buy Award 2002

Trico

Germany	Stereo	# 7 '03
Sweden	Hifi & Musik	# 11 '01
UK	Hi-Fi Choice	May '03

Item	Mechanical Specifications									Standard Lengths				
	Application	Connector Type <<< Direction >>> Connector Type			Cable	Screen	Solder	Connector	Cable	Coulour	(1m = 3.28Ft)				
	Examples	From		To		Conection	Tin	Fixing	Clamping		1m	2m	4m	8m	15m
X-ZAC TosLink	Optic Digital	Toslink, Metal		TosLink, Metal	ZAC	-	-	Quick Lock	Molded	Ice Blue	x				
ZAC TosLink		Toslink		TosLink	Fibre			Quick Lock	/		x	x	x	x	x
ZAC MinTos		Mini Plug 3.5mm		TosLink	Optic			Quick Lock / -	Bending		x				
ZAC Mini		Mini Plug 3.5mm		Mini Plug 3.5mm	Cable			-	Protection		x				
DAC-XLR Gold	Digit. AES/EBU 110 Ω	Swift XLR 3F light Au		Swift XLR 3M light Au	DAC	Balanced	Almit KR-	Quick Lock	Screw	Ice Blue/Anthracite	x	x			
Trico-BNC	Coaxial Digital / Video 75 Ohm	BNC		BNC	Trico	Semi-Balanced	19SHrma	Bayonet	Crimp	Ice Blue	x	x	x	x	x
Trico-RCA		PPX RCA		PPX RCA			Sn 96.6%	Expansion	Screw		x	x	x	x	x
Trico-MP/RCA		MP-8 Mini Plug 3.5mm		PPX RCA			Ag 2.9%	- / Expansion	Crimp/		x	x	x	x	x
Trico-RCA/BNC		PPX RCA		PPX RCA			Cu 0.5%	Exp./Bayonet	Screw		x	x	x	x	x

FS Full Scart
FS stands for Fully-connected Scart cable. FS is a high performance Scart cable designed for home theatre.
Application example: DVD to TV.

Composite Video Interconnects
The composite interlinks come in different variations with Scart/RCA/BNC connectors.
Application examples: DVD/Satelite decoder to TV/Projector.

Composite video = CVBS

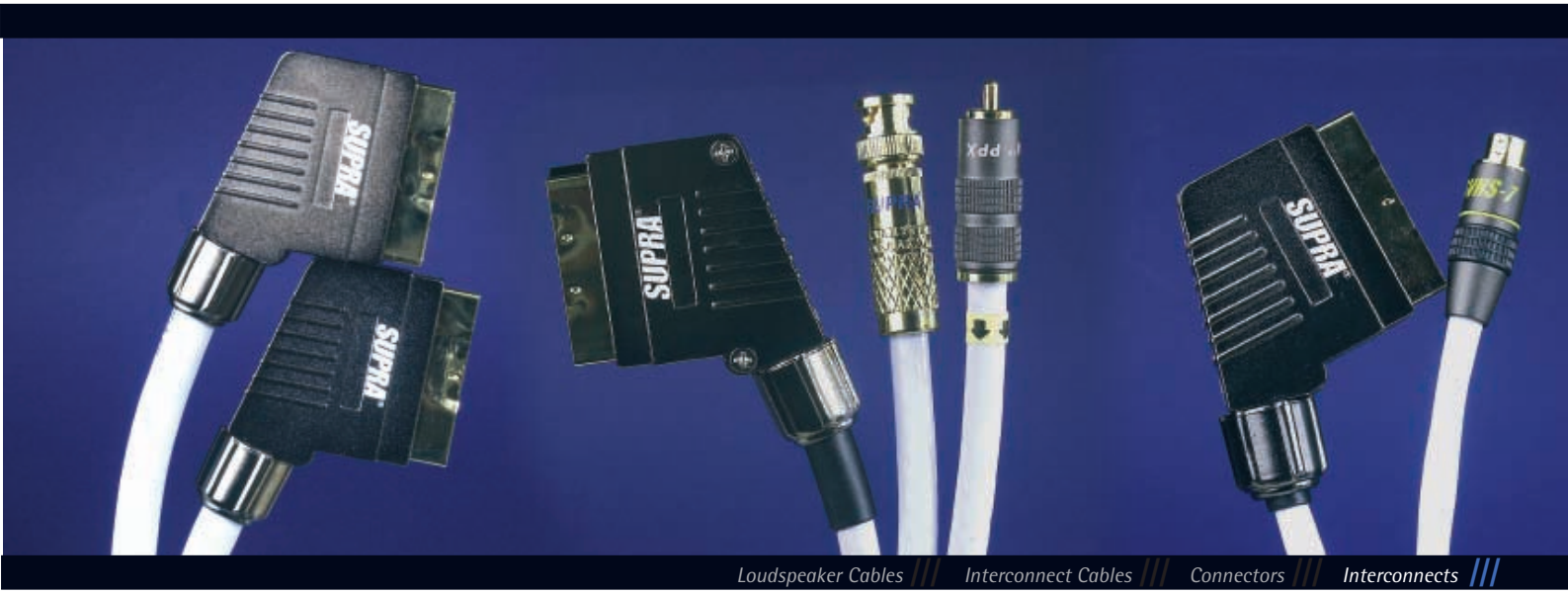
S-video Interconnects
The S-video interlinks come in different varaiations with Scart/S-video/RCA connectors.
Application examples: DVD/SVHS to TV/ Projector.

S-video = Y/C

Test and Review
Sweden, www.minhembio.com '01

Test and Review
UK, Hi-Fi Choice May '03 "Best Buy"

Test and Review
Greece, NXOS Home Cinema #335 '01 "Best in Test"



The Advantages of the Supra FS Design:
- All video cores are of 75 Ohm coax type, individually screened.
- Audio cores are separately screened to avoid cross-talk interference.
- All coductors are insulated with PE, which makes low capacitance.
- A common aluminum shield protects from electromagnetic interference.
- Fully shielded connectors.
- The plate around the pins is formed to make a strong grip.

Trico Video Interlinks True 75 Ohm
These interlinks are made of Supra Trico which is our best video cable.

The properties of Trico are the secret behind a sharp and clean picture: True 75 Ohm for low reflection losses, especially important for longer lengths, and double shielding for the least interference.

All connectors are fully shielding.

Tips and Tricks:
For absolute super quality you can use 3 pcs of Trico-RCA for component video.

AV-2 S-Video Interlinks
S-video is a better transfer system, but takes 2 cores providing equal velocity and phase, owing to the synchronising of the two signals luminance and chrominance.

In order to achieve this, the True 75 Ohm impedance is a very important property of the cable.

All connectors are fully shielding.

Item	Mechanical Specifications										Standard Lengths				
	Application	Conn. Type	< Direction >	Conn. Type	Cable	Screen	Solder	Connector	Cable	Colour	(1m = 3.28Ft)				
	Examples	From		To		Connection	Tin	Fixing	Clamping		1m	2m	4m	8m	15m
FS Full Scart	Fully Connected Scart	Metal Scart		Metal Scart	FS	Separate & Outer		Friction Grip	Squeeze Lock	Ice Blue	x	x	x		
1 RCA ⚹ Scart		PPX RCA	⚹	Metal Scart	Trico		Almit KR-	Exp./Friction Gr.	Screw/Squeeze		x	x	x	x	x
Scart ⚹ 1 RCA	Video/ CVBS/	Metal Scart	⚹	PPX RCA		Semi-	19SHrma	Friction Gr./Exp.	Squeeze/Screw		x	x	x	x	x
Trico-BNC	Composite Video	BNC		BNC		Balanced	Sn 96.6%	Bayonet	Crimp		x	x	x	x	x
Trico-RCA		PPX RCA		PPX RCA			Ag 2.9%	Expansion	Screw		x	x	x	x	x
Svideo-Svideo		SVHS-7		SVHS-7		Separately	Cu 0.5%	-	Crimp		x	x	x	x	x
Scart ⚹ Svideo	Svideo or Y/C	Metal Scart	⚹	SVHS-7	AV-2	Shielded	Rosin Free	Friction Grip/-	Squeeze/Crimp		x	x	x	x	x
Svideo ⚹ Scart		SVHS-7	⚹	Metal Scart		Conductors		-/Friction Grip	Crimp/Squeeze		x	x	x	x	x

Home Theatre Interconnects

SUPRA has quite a comprehensive portfolio of audio/video interlinks for home theatre. All are equipped with fully shielded connector housings.

The interlinks are suitable for:
- **Component Video (Y/Cb/Cr)**
- **S-video (Y/C)**
- **RGB**
- **Audio/Video**
- **Composite Video (CVBS)**

The table below will guide you to the correct choice of interlink.

! All of our soldering tem are holders of soldering certification to Military Quality Standards.

3 RCA - 3 RCA

6 RCA - 6 RCA

5 RCA - 5 RCA

4 RCA - 4 RCA

3 RCA -3 RCA

3 RCA - 3 BNC

5 RCA - 5 RCA

4 RCA - 4 RCA

5 RCA - 5 RCA

A choice of RCA and BNC terminated interlinks

Tests and Reviews

3RCA-3RCA

UK What Hi-Fi Oct '02

UK What Hi-Fi Best Buy Award 2002

Item	Mechanical Specifications									Standard Lengths				
	Application	Conn. Type	< Direction >	Conn. Type	Cable	Solder	Connector	Cable	Colour	(1m = 3.28Ft)				
	Examples	From		To		Tin	Fixing	Clamping		1m	2m	4m	8m	15m
3 RCA - 3 RCA	Component/AV	RCA-3		RCA-3	AV-3		Expansion			x	x	x	x	x
4 RCA - 4 RCA	RGB/Audio/Video	RCA-3		RCA-3	AV-6.4	Almit KR-19SHrma				x	x	x	x	x
5 RCA - 5 RCA	RGB/Audio/Video	RCA-3		RCA-3						x	x	x	x	x
6 RCA - 6 RCA	Audio/Video	RCA-3		RCA-3		Sn 96.6%				x	x	x	x	x
3 BNC - 3 BNC	Component/AV	BNC-3		BNC-3	AV-3	Ag 2.9%	Bayonet	Crimp	Ice Blue	x	x	x	x	x
4 BNC - 4 BNC	RGB/Audio/Video	BNC-3		BNC-3	AV-6.4	Cu 0.5%				x	x	x	x	x
5 BNC - 5 BNC	RGB/Audio/Video	BNC-3		BNC-3		Rosin				x	x	x	x	x
3 RCA - 3 BNC	Component/AV	RCA-3		BNC-3	AV-3	Free	Expansion/			x	x	x	x	x
5 RCA - 5 BNC	RGB/Audio/Aideo	RCA-3		BNC-3	AV-6.4		Bayonet			x	x	x	x	x

Home Theatre Interconnects

Test and Review

Scart-Scart RGB

UK	What Hi-Fi	Sep '02
UK	What Hi-Fi	Best Buy Award 2002

! All of our soldering team are holders of soldering certification to Military Quality Standards.

SCART - 2 RCA *

SCART - 4 RCA *

SCART - SCART

SCART - 3 RCA *

SCART - 4 BNC *

SCART - SVIDEO/2 RCA *

SCART - 3 BNC *

SCART - 6 RCA

SCART -> VGA

A choice of the available Scart combined interlinks

*** The interlinks are available with different configurations as well as for different directions.**

Item	Mechanical Specifications									Standard Lengths				
	Application	Conn. Type	< Direction >	Conn. Type	Cable	Solder	Connector	Cable	Colour	(1m = 3.28Ft)				
	Examples	From		To		Tin	Fixing	Clamping		1m	2m	4m	8m	15m
2 RCA ⚹ Scart Audio	Audio	RCA-3	⚹	Scart	AV-2		Expansion			x	x	x	x	x
3 RCA ⚹ Scart A/V	Audio & Video	RCA-3	⚹	Scart	AV-3		/			x	x	x	x	x
4 RCA ⚹ Scart RGB	RGB &	RCA-3	⚹	Scart	AV-6.4		Friction Grip			x	x	x	x	x
4 BNC ⚹ Scart RGB	C-sync	BNC-3	⚹	Scart			Bayon./Friction Gr.			x	x	x	x	x
Scart ⚹ 2 RCA Audio	Audio	Scart	⚹	RCA-3	AV-2	Almit KR-	Friction Grip	Crimp/		x	x	x	x	x
Scart ⚹ 3 RCA AV	Audio & video	Scart	⚹	RCA-3		19SHrma	/	Squeeze		x	x	x	x	x
Scart - 3 RCA Component	Component or	Scart	⚹	RCA-3	AV-3	Sn 96.6%	Expansion	Lock		x	x	x	x	x
Scart - 3 BNC Component	Y/Cb/Cr	Scart	⚹	BNC-3		Ag 2.9%	Friction Gr./Bayon.		Ice Blue	x	x	x	x	x
Scart ⚹ 4 RCA RGB	RGB &	Scart	⚹	RCA-3		Cu 0.5%	Friction Grip/Exp.			x	x	x	x	x
Scart ⚹ 4 BNC RGB	C-sync	Scart	⚹	BNC-3		Rosin	Friction Grip/Bayon.			x	x	x	x	x
Scart - 6 RCA AV	Audio & Video, In & Out	Scart	⚹	RCA-3		Free	Friction Grip/Exp.			x	x	x	x	x
Scart - Scart RGB & AV	RGB & Svideo & AV	Scart	⚹	Scart	AV-6.4		Friction Grip	Squeeze		x	x	x	x	x
Scart ⚹ Svideo/ 2 RCA	Svideo &	Scart	⚹	SVHS-7/RCA-3			Friction Grip/Exp.	Squeeze/Crimp		x	x	x	x	x
Svideo/ 2 RCA ⚹ Scart	Audio	SVHS-7/RCA-3	⚹	Scart			Exp./Friction Grip	Crimp/Squeeze		x	x	x	x	x
Scart ⚹VGA	RGB & C-sync	Scart	⚹	DB-15 (HD)			Friction Grip/Screw	Squeeze/Clamp		x	x	x	x	x

Home Theatre Interconnects

All of our interlinks are soldered with lead free silver tin - for sonics and ecology.

! All of our soldering tem are holders of soldering certification to Military Quality Standards.

VGA- 3 RCA

VGA - 4 BNC

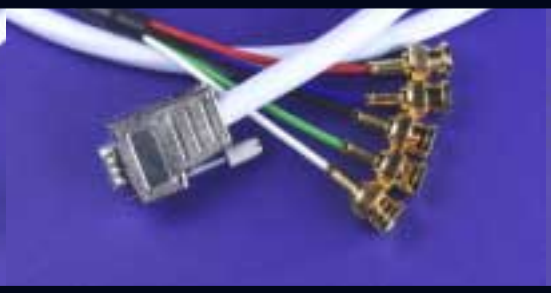
VGA - VGA

VGA - 3 BNC

VGA - 5 RCA

1 RCA/SVIDEO - 1 RCA/SVIDEO

VGA - 4 RCA



VGA - 5 BNC

4 RCA/SVIDEO - 4 RCA/SVIDEO

A choice of the available VGA combined and RCA/S-Video multifunction interlinks Check the table below for your application.

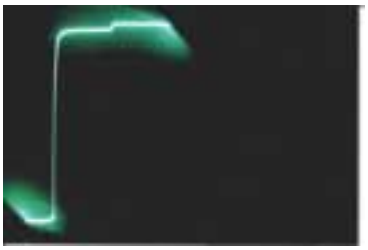
Item	Mechanical Specifications									Standard Lengths				
	Application	Conn. Type	< Direction >	Conn. Type	Cable	Solder	Connector	Cable	Colour	(1m = 3.28Ft)				
	Examples	From		To		Tin	Fixing	Clamping		1m	2m	4m	8m	15m
VGA - 3 RCA	Component	DB-15M (HD)	◍	RCA-3	AV-3		Screw	Clamp		x	x	x	x	x
VGA - 4 RCA	RGB & C-synk/VH-sync	DB-15M (HD)	◍	RCA-3	AV-6.4	Almit KR-	/	/		x	x	x	x	x
VGA - 5 RCA	RGB & V-sync & H-sync	DB-15M (HD)	◍	RCA-3		19SHrma	Expansion	Crimp		x	x	x	x	x
VGA - 3 BNC	Component	DB-15M (HD)	◍	BNC-3	AV-3	Sn 96.6%	Screw	Clamp		x	x	x	x	x
VGA - 4 BNC	RGB & C-synk/VH-sync	DB-15M (HD)	◍	BNC-3		Ag 2.9%	/	/	Ice Blue	x	x	x	x	x
VGA - 5 BNC	RGB & V-sync & H-sync	DB-15M (HD)	◍	BNC-3	AV-6.4	Cu 0.5%	Bayonet	Crimp		x	x	x	x	x
VGA-VGA	RGB & V-sync & H-sync	DB-15M (HD)	◍	DB-15M		Rosin	Screw	Clamp		x	x	x	x	x
1 RCA/Svideo - 1 RCA/Svideo	Svideo & Video	SVHS-7/RCA-3	◍	SVHS-7/RCA-3	AV-3	Free	Expansion	Crimp		x	x	x	x	x
4 RCA/Svideo - 4 RCA/Svideo	Component & Video & Svideo	RCA-3/SVHS-7	◍	RCA-3/SVHS-7	AV-6.4					x	x	x	x	x
VGA-3 RCA(F) ADAPTER	Component	DB-15M (HD)	◍	RCA-3 Female	AV-3		Screw/-	Clamp/Crimp		(25cm)				

These measurements show that the quality of the Supra Cables is on level with a MIL-spec cable and even outperforms it on velocity.

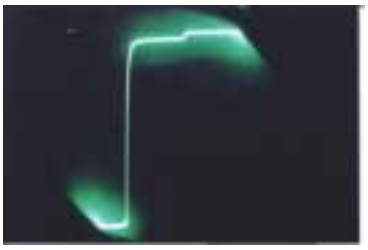
A Time-Domain Reflection (TDR) tester* detailedly analyses the response and impedance match of a cable *and* the connectors used, using a pulse that rises in 50 pS**.

In pictures 2 to 5, the 2nd step-up shows the effect of the 75 ohm (video standard) cabling and connectors operating in a standard 50 ohm test system. In 2 & 3, the tidy 'rectangularity' of the step shows that the impedance of the 75 ohm section is quite purely resistive, i.e. nearly ideal.

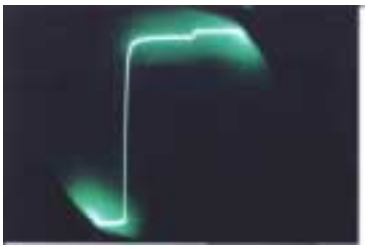
Pict. 1 shows reference with special GR-connectioned 50 ohm load, acting as a near pure resistance at all frequencies to above 2GHz (high RF).



Pict. 2 shows the response of Supra Trico. See below for explanation of the 2nd step.



Pict. 3 shows the response of Supra AV-3. See below also.

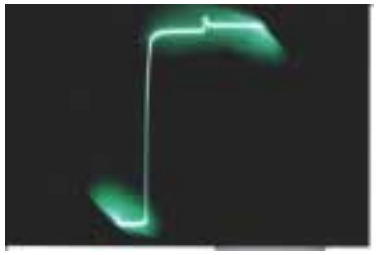


Pict. 4 shows response of RG179, a top-grade, 75 ohm coax made to US Military standard MIL-C-17D. Note that the two Supra cables perform similarly cleanly. Note also that all are fitted with 75 ohm BNC plugs.

The timing of the steps (10ns** per L-R div) shows that the electrical length of the Supra cables (in pictures 2 & 3) is shorter than the reference, by about 14%. As the cable lengths were physically matched to within 0.2%, this shows that signal speed in the Supra cables must be higher - meaning closer to the speed of E-M waves in air.

BNC is better than RCA on digital interconnects.

The physical dimensions of the RCA connector prevent it from having exactly 75 Ohm characteristic impedance. Therefore the BNC connected version is always preferred when there is a choice.



Pict. 5 shows Trico with phono/RCA plugs fitted. It could be any of the other cables. The RCA plugs' inconstant impedance match at high RF causes reflections (seen as 'positive spiking'), this kind of behaviour being *precisely* why BNC plugs were invented in the 1940s as serious RF coax connectors, to replace the 'failed' first generation plugs, namely RCA and UHF types. Thus the RCA was re-cycled as an audio plug.

The tested Supra Cables

Supra Trico

Supra AV-3

**Originally devised & made in 60s by HP, today known as Agilent.*

*** pS = picosecs = millionth-millionth's (1/1000,000,000,000th 's of 1 second). In air and ideal, air-insulated cables, EM waves travel 1m in about 3300pS (3.3nS). In all plastic-insulated cables, the lower speed increases the time to travel 1m by some 140 to 150%.*

Tests originally performed by Ben Duncan Research in UK.

Technical Information

For those who prefer to make their own cable sets and for carrying out servicing, we have gathered the following configuration tables. Please be aware of the importance of the soldering quality. All Supra pre-made cables are soldered with lead-free silver-tin with copper and non-corrosive flux, available as *Multicore TSC-96,* which we recommend.

The galvanic potential of silver is closer to copper than is lead to copper and thus the galvanic potential will be minimised.

Poor solderings mostly due to either too high or too low a temperature.

Flux is needed to get through the oxide and avoid a dry joint, without overheating.

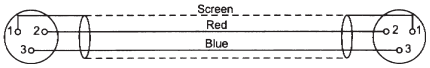
A dry joint might work very well for a period of time but as the oxide grow between the tin and the object there will eventually be a poor connection. In the worst case the conductors will loosen and create a short circuit.

All Supra connectors are insulated with Teflon to withstand the correct soldering temperatures (300°- 400°).

For these reasons we always recommend leaving the soldering of interlinks with a professional workshop.

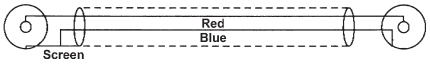
All of our soldering team are holders of soldering certification to Military Quality Standards.

Balanced connection with XLR



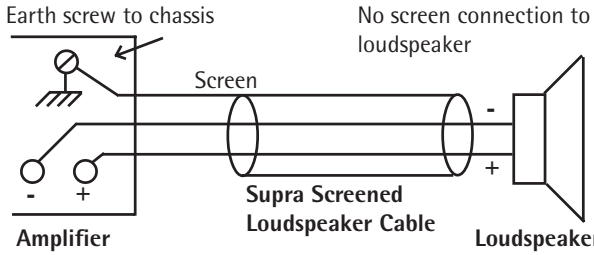
Signal source > Text reading this way >

Semibalanced connection with RCA



Signal source > Text reading this way >

Connection of screened loudspeaker cables:



The screen is to be connected to the amplifier chassis or any other ground point of the amplifier. No connection at the loudspeaker end.

DB-15 HD (VGA)			
Pin	Function	Pin	Function
1	Red +	9	
2	Green +	10	Sync Ground
3	Blue +	11	
4		12	
5		13	H-sync/C-sync
6	Red Ground	14	V-sync
7	Green Ground	15	
8	Blue Ground	Chassis	Screen

XLR			
Pin	Function	Pin	Function
1	Ground/Screen	3	Cold
2	Hot		

DB-25 (D-sub)			
Pin	Function	Pin	Function
1	Left Front +	14	Left Front -
2	Center +	15	Center -
3	Right Front +	16	Right Front -
4	Sub Woofer +	17	Sub Woofer -
5	Left Surround +	18	Left Surround -
6	Right Surround +	19	Right Surround -
Ground chassis - Ground chassis			

S-video (Y/C)			
Pin	Funktion	Pin	Funktion
1	Luminance (Y) Ground	3	Luminance (Y)
2	Chrominance (C) Ground	4	Chrominance (C)

Scart			
Pin	Function	Pin	Function
1	Audio Out Right	12	Data 1
2	Audio In Right	13	Red Ground
3	Audio Out Left	14	Data Ground
4	Audio Ground	15	Red RGB, C at Y/C
5	Blue Ground	16	RGB Status
6	Audio In Left	17	Video Ground (CVBS)
7	Blue RGB	18	RGB Status Ground
8	CVBS Status	19	Video (CVBS) Out, Y at Y/C
9	Green Ground	20	Video (CVBS) In, Y at Y/C
10	Data 2	21	Ground (Shield)
11	Green RGB		

Directionality Assurance

All Supra cables are constructed with attention to consistent and equal 'direction' in all the conductors. Simplistic electronics theory says there is no 'directionality' in conductors, but assumes conductors are perfectly isomorphic. It also ignores the inherently directional nature of signal and energy flow. Yet electricity could not be sold without 'energy flow directionality'. [1]

In reality, practical conductors are drawn many times - not cast. This creates highly elongated crystal structures. This in turn creates a physical (mechanical) directional feature or 'axial polarity'. Annealing and also 'burning-in' processes can reduce the 'strength' of the 'drawing imprint', but only to a degree.

All conductors in Supra cables are consistently arranged to point 'forwards, in the direction (left to right) implied by the legend (text) printed on the cable jacket. Directional consistency is ensured in two ways. First, direction of the conductors to be used in each cable is known from the spooled direction of the conductors received from the copper wire factory. That is a reliable method because an efficient manufacturing process is consistent and omits random re-spooling steps.

Forward Thinking Technology

Second, the 'directionality' of conductors is now able to be measured, and Supra cables are the first in the world to benefit from a spectral technique developed by audio consultant Ben Duncan [2] in conjunction with Jenving Technology AB. This employs some special test conditions which better approximate audio equipment's real-world usage than standard, pure signal sources. Test results show typical increases in harmonic (noise) levels 0.5dB when cables are connected so the conductors' drawn direction opposes the signal flow direction. In real use the noise difference, which is some dB below the main signal, could be much greater. From this, a reduction in such noise ('more clarity') is what's expected, and it is also one of the things that is heard in practice - when optimum conductor orientation is discovered.

Experiences of Directionality

In 'high-end' audio, 'Directionality' means: 'a cable used for audio signal transmission offering better sound quality (in various ways) when connected a particular way round.' To those sensitive to the sonic changes, this is repeatable, over spans of time, or in different systems. In other cases, if the less good direction were chosen, it too may approach the preferred direction after burn-in, i.e. a period of use, simple ageing, or even cryogenic treatment. Such 'burn-in' processes involve annealing of the metal.

Some pundits say that 'directionality' (in cables) can be heard even on the low quality 'curvy plastic' low/mid-fi audio equipment sold in high-street shops. On an higher vector, a US high-end enthusiast/ researcher, Doug Blackburn, suggests it is possible that when audiophiles say they hear sonic changes after changing polarity (by swapping conductors at one point - not by swapping ends as with conventional directionality*) that they've actually heard directionality instead. That's because purely digital ('software') polarity reversals mysteriously don't have the sonic attributes associated with analogue signal polarity reversal.

*Here, directionality effect being heard is in the connected parts (eg. long inductor wires), rather than in the preceding connective conductors.

Information

[1] For background, refer to extensive insights in 'Black Box' column, by Ben Duncan, originally in Hi-Fi News & Record Review, reprinted 73 part compendium 1994-2000 available from: www.hifiaccessoriesclub.com - or www.proaudioaccessories.com.

[2] Ben Duncan Research: www.BDR-UK.dial.pipex.com.

Useful to know about...

Tin Plating
A SUPRA concept for cleaner sound.
The tin is of higher resistance than copper and also protects copper from bad sounding corrosion. It also minimises the current jumps from wire to wire over corroded copper surfaces while more of the signal passes through the pure copper *inside* the wires. The tin layer also minimises the skin-effect, by acting as a semi-Litz.

Silver Plating
Only when the frequencies are very high, as in digital signals, does it seem wise to go the opposite way, i.e. to silver plate for a lower surface resistance. At such high frequencies it is hard to keep the signal inside the wire, so instead we design for an easier surface current flow.

Digital Interlinks
Important properties of digital cables are a high propagation velocity factor and a correct and stable characteristic impedance (Z).

Analogue Interconnects
Low capacitance (C) is important.

Microphone and Line Cables
Low microphonic effect and low capacitance assist quality.

Loudspeaker Cables
Loudspeaker cables generally need to be of low inductance (L) and preferably also of low resistance (R). Impedance is of greater importance than simplistic theory suggests because music comprises continuous transients. Phase shift in the frequency domain equals smearing in the time domain (Less distinct transients).

Directionality Assurance

All Supra Cables are constructed with attention to directionality in the conductors. Supra is the first in the world to prove directionality in conductors by measurements. These measurements are carried out by Ben Duncan Research on behalf of Jenving Technology. Explanation on page 30.

An interview with Tommy Jenving:
http://www.tnt-audio.com/intervis/suprae.html

Supra Colours

Ice Blue
NCS S0520 R90B

Anthracite Grey
NCS 7502 G

Conductor dimensions in AWG to Metric

AWG	Dia.	Area	AWG	Dia.	Area	AWG	Dia.	Area
(No.)	(mm)	(mm_)	(No.)	(mm)	(mm_)	(No.)	(mm)	(mm_)
6/0	14,73	170,3	10	2,59	5,27	25	0,455	0,163
5/0	13,12	135,1	11	2,3	4,15	26	0,405	0,128
4/0	11,68	107,2	12	2,05	3,31	27	0,361	0,102
3/0	10,4	85	13	1,83	2,63	28	0,321	0,0804
2/0	9,27	67,5	14	1,63	2,08	29	0,286	0,0646
0	8,25	53,4	15	1,45	1,65	30	0,255	0,0503
1	7,35	42,4	16	1,29	1,31	31	0,227	0,04
2	6,54	33,6	17	1,15	1,04	32	0,202	0,032
3	5,83	26,7	18	1,024	0,823	33	0,18	0,252
4	5,19	21,2	19	0,912	0,653	34	0,16	0,02
5	4,62	16,8	20	0,812	0,519	35	0,143	0,0161
6	4,11	13,3	21	0,723	0,412	36	0,127	0,0123
7	3,67	10,6	22	0,644	0,325	37	0,113	0,01
8	3,26	8,35	23	0,573	0,259	38	0,101	0,00795
9	2,91	6,62	24	0,511	0,205	39	0,0897	0,00632

Anglo/American vs. Metric

1 foot = 0.3048 m	1m = 3.281 feet
1 yard = 0.9144 m	1m = 1.094 yards
1 pound = 0.4536 kg	1kg = 2.205 pounds
F° = (C° x 9/5) + 32	C° = (F°-32) x 5/9

Formulas

Characteristic Impedance (Simplified formula)

$Z = \sqrt{L/C}$ where L = inductance and C = capacitance

Velocity Factor (Simplified formula)

$v = \sqrt{1/K}$ where K = dielectricity of the insulation

Effective Skin Depth

$\delta = 1/\sqrt{\pi \mu_r \mu_0 \sigma f}$ where σ = conductivity = 1/resistivity
f = frequency
μ_r = permeability of the conductor
μ_0 = permeability of air

Conductor Resistance

$R = L \times \rho / A$ where L = length in m
ρ = resistivity
A = cross section area in mm^2

Material Constants

Material	Dielectricity	Permability	Resistivity
	(K)	(μ_r)	(Ω x mm_/m)
PVC	4-5	-	-
PE Flame Ret.	2.3	-	-
PE	2.3	-	-
PTFE/Teflon	2.0	-	-
PE Foam	1.64	-	-
Tin (Sn)	-		0.115
Gold (Au)	-	μ_r>1 but approx.	0.022
Copper (Cu)	-	equal to 1	0.017
Silver (Ag)	-		0.016
Air/Vacuum	-	1.26×10^{-6} (μ_0)	-

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