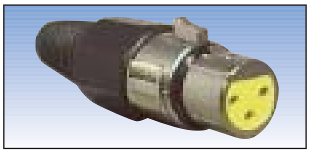
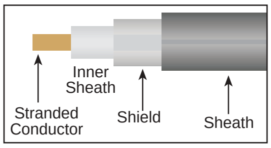
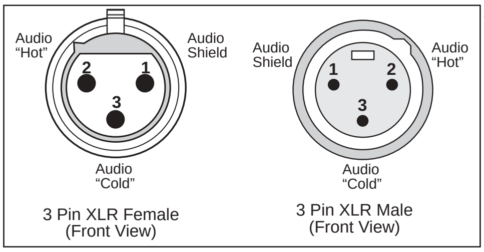
3 PIN XLR CONNECTORS





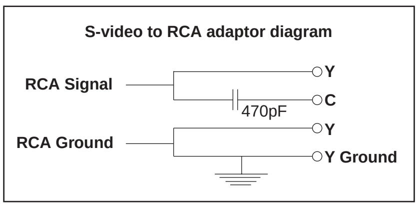


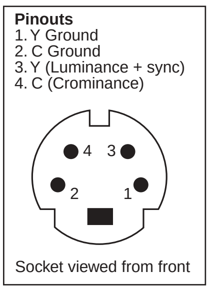
These are the standard pinouts for balanced leads using 3 pin XLR plugs and sockets. Audio "Hot" is the in-phase connection, whilst Audio "Cold" is the out-of-phase connection. Should an unbalanced lead be required, one of the audio pins must be referenced to ground ie. Pin 3 and 1 are connected together OR pins 2 and 1 are connected together. The last pin is used for the audio signal.

Shielding Cable: It is important to note that when shielding audio cables, you should only ground the shield at one end of the cable otherwise hum may be induced. This is commonly known as an earth loop which is a common problem that can turn up in many circuits (assuming the 2 circuits have a common earth).

VIDEO FORMATS

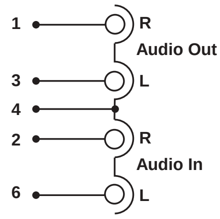
Composite Video is the "traditional" style of video transmission that most people would be familiar with. This is the single cable system that has been used on VCRs, camcorder and the like since the days of Beta video. It uses either a single core coaxial or shielded cable with the audio, luminance (B/W), chrominance (colour) and sync pulses all travelling along the same cable. This makes it a very simple and versatile format. However, because all this information is contained within one cable there is more likelihood of distortion and picture defects than with other formats.
Component Video takes the process of separation a further step by breaking the colour information (chrominance) down to two components resulting in three video components. ie one part luminance, one part red chrominance and one part blue chrominance. Component video requires three RCA connectors (usually marked red, blue and yellow).
RGB Video. This format is often found on European video equipment and is similar to component video in that it also works by separating the video components. RGB video carries the red, green and blue components of the signal separately. SCART connectors are capable of carrying all three formats via their 20 pins.ie composite, S-Video and RGB. It is important to check the manual of any device that utilises SCART to confirm the video format being transmitted.
S-Video takes a standard composite signal and separates the luminance and chrominance. This limits the possibility of image distortion. This format is carried via twin coaxial cable and is usually fitted with 4 pin mini DIM plug (see Altronics P 1084). Most modern equipment fitted with S-Video also carry composite video connectors for cases where both pieces of equipment may not have S-Video capability. Below is a simple adaptor circuit which can be used to convert S-video to a composite video.

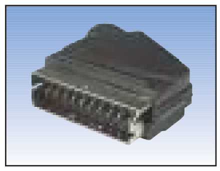




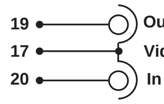
21 PIN SCART PIN OUTS

The SCART connector is used for connecting AV equipment together. The 21 pins in the connector are used for stereo audio, composite video in and out, RGB plus two data and two communication lines.

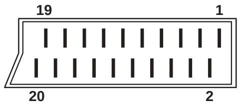




Pin	Use	Pin	Use
1	Audio Output (R)	11	Green
2	Audio Input (R)	12	Data D²B
3	Audio Output (L)	13	Red Ground
4	Audio Ground	14	D²B Ground
5	Blue Ground	15	Red
6	Audio Input (L)	16	RGB Status/Fast Blanking
7	Blue	17	CVBS Video Ground
8	Status (CVBS)	18	RGS Status Ground
9	Green Ground	19	Composite Video Output
10	Data D²B (Inverted)	20	Composite Video Input
		21	Case / Shield



SCART to RCA Lead Connections



CALCULATING SPEAKER SPL

When installing a number of speakers it is important to know the SPL (sound pressure level) that can be achieved. This enables the installer to use the right type and number of speakers. It is important to know that sound pressure level increases as the electrical input rises and falls as the distance from the speaker increases.

This relationship can be expressed in the following formula :

SPL(dB) = SPL (1W/1m) - Attenuation due to distance + Increase of SPL due to electrical input.

For the following tables we assume the SPL is measured as being an input of 1 watt over a distance of 1 metre (1W/1m).

Attenuation of SPL due to distance

Distance(m)	2	5	10	15	20	30	40	60
Attenuation(dB)	6.0	14.0	20.0	23.5	26.0	29.5	32.0	35.6

Increase of SPL due to electric input (amount of increase = 10 log W)

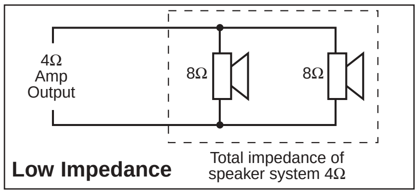
Electric input(W)	1	1.5	3	5	6	10	15	20
SPL increase(dB)	0	2.6	4.8	7.0	7.8	10	11.8	13

Example : Let us assume a speaker has an SPL rating of 98dB(1W/1m). If we wish to place this speaker at a distance of 20 metres whilst tapped at 10W we can equate the SPL thus:

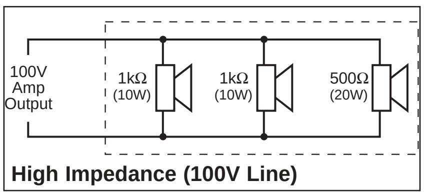
SPL = 98 - 26 dB(20m) + 10dB(10W) = 82 dB

CALCULATING SPEAKER IMPEDANCE

Where multiple speakers are connected it is important to maintain the correct impedance so as not to damage the amplifier. Most multimeters only measure resistance: impedance is different. Resistance is the measurement of DC current and the resistance to its flow, impedance is the measure of the resistance to flow of AC current, which varies with frequency. Typically an 8 ohm nominal impedance cone speaker has a DC resistance of 6 ohm. To measure impedance a dedicated meter is required, these use a 1k frequency the result of which should be cross referenced with the speaker's impedance chart to see what value should be expected.



$$\frac{1}{\frac{1}{8\Omega}+\frac{1}{8\Omega}} = 4\Omega$$



$$\frac{1}{\frac{1}{1k\Omega}+\frac{1}{1k\Omega}+\frac{1}{500\Omega}} = 250\Omega\ (40W)$$