The SCART Connector.

A technical briefing by J. S. Technology.

Introduction.

This document outlines the SCART connection and how it is used in a domestic home-cinema to connect between Audio/Visual equipment. The SCART connector (Syndicat des Constructeurs d'Appareile Radiorécepteurs et Téléviseurs) is used for combined audio and visual interconnection. A formal description is given in CENELEC EN 50 049-1:1989 or IEC 933-1 **[E-P Paul]**.

Overview.

The SCART connector, also known as the Pertitel, is a multi-purpose connector for use with domestic video equipment. It provides video, audio, and control interconnections via a standard 21-pin connection. The SCART connector is able to carry three different types of video information:

1: Composite. The lowest quality signal carried by SCART where the luminance and chrominance information is mixed. Due to the interference between the luminance and chrominance, this is considered to be poor in quality. A standard VHS VCR would produce composite.

2: S-Video. This is a high quality type of video, sometimes incorrectly referred to as S-VHS. S-VHS is a tape recording system derived from VHS designed to be higher in quality. S-Video has luminance and chrominance information in the same way as composite, but with the two signals being separate, there is no interference. An S-VHS VCR should have an S-Video source for optimum performance.

3: RGB. Similar to S-Video, RGB is a high quality video interface. RGB simply stands for Red, Green, and Blue. These are the colours used to represent a picture by a TV. In a domestic source a synchronisation signal is also required, which would be present on the composite line.

The Physical Connector.

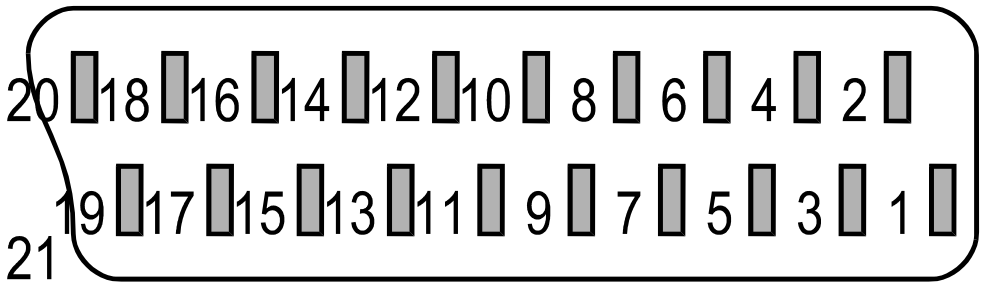

Figure 1. The SCART connector. Socket viewed from front. Many connectors have the pin numbers marked.

Pin Identification.

Composite only connection can be considered to be a subset of RGB where the RGB pins are not used. However, S-Video requires that some be re-used **[BBC, 1998]**. Tables 1 and 2 detail the connections for RGB/Composite and S-Video respectivley.

Pin Number	Pin Name	Signal Level	Impedance
1	Audio Output, Right	0.5V RMS	<1 kΩ
2	Audio Input, Right	0.5V RMS	<1 kΩ
3	Audio Output, Left	0.5V RMS	<1 kΩ
4	Ground, Audio	-	-
5	Ground, Blue	-	-
6	Audio Input, Left	0.5V RMS	<1 kΩ
7	Blue Input	0.7V	75 Ω
8	Function Select (A/V Control)	High (9.5-12V) – A/V Mode, Mid (5-8V) – Wide-screen, Low (0-2V) – TV Mode	>10 kΩ
9	Ground, Green	-	-
10	Comms Data 2	-	-
11	Green Input	0.7V	75 Ω
12	Comms Data 1	-	-
13	Ground, Red	-	-
14	Ground, blanking	-	-
15	Red Input	0.7V	75 Ω
16	RGB switching Control	High (1-3V) – RGB, Low (0-0.4) – Composite	75 Ω
17	Ground, Video input & output	-	-
18	Ground, RGB Switching control	-	-
19	Video Output, composite	1V including sync	75 Ω
20	Video Input, composite	1V including sync	75 Ω
21	Common Ground, shield	-	-

Table 1. RGB/Composite connection details for the SCART connector.

Pin Number	Pin Name	Signal Level	Impedance
1	Audio Output, Right	0.5V RMS	<1 kΩ
2	Audio Input, Right	0.5V RMS	<1 kΩ
3	Audio Output, Left	0.5V RMS	<1 kΩ
4	Ground, Audio	-	-
5	Ground, Blue	-	-
6	Audio Input, Left	0.5V RMS	<1 kΩ
7	Blue Input	0.7V	75 Ω
8	Function Select (A/V Control)	High (9.5-12V) – A/V Mode, Mid (5-8V) – Wide-screen, Low (0-2V) – TV Mode	>10 kΩ
9	Ground, Green	-	-
10	Comms Data 2	-	-
11	-	-	-
12	Comms Data 1	-	-

13	Ground, Red	-	-
14	Ground, blanking	-	-
15	Chrominance Input or Output*	0.3V	75 Ω
16	-	-	-
17	Ground, Video input & output	-	-
18	-	-	-
19	Luminance Output	1V including sync	75 Ω
20	Luminance Input	1V including sync	75 Ω
21	Common Ground, shield	-	-

Table 1. S-Video connection details for the SCART connector.

*Chrominance input or output is on the same pin. Luminance input and output is provided on two separate pins.

Conclusion.

The SCART connector is able to conveniently provide an interface for both audio and video in one standardised connection. Described in this document are the pin assignments for three possible connection means. S-Video and composite can be found with their own connectors **[Sim, J. 2001]**, but can also be carried by SCART either by an adapter or by a composite or S-Video to SCART lead.

References:

[BBC, 1998] "The SCART Interface." BBC Scotland North – Engineering Information.
http://www.bbc.co.uk/aberdeen/eng_info/scart_connector.shtml
[E-P Paul] "Scart Connector." Eric-Paul Rebel,
http://utopia.knoware.nl/users/eprebel/SoundAndVision/Engineering/SCART.html
[Sim, J. 2001] "Video Connections." Dr John Sim, J.S. Technology, 2001.

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