

AUDIO VISUAL CONNECTORS

Field of Invention

This invention relates to audio visual connectors and refers particularly, though not exclusively, to audio visual connectors able to be used with sockets of a different connector system.

Background to the Invention

Audio visual connectors used in audio visual equipment are different depending on the country. This causes problems in fitting the different connectors to one printed circuit board design. In order to utilize only one printed circuit board design in worldwide products, i.e. the printed circuit board is used in all countries, the connector is required to fit the original and only one printed circuit board footprint in the design.

SCART connectors are typically used in audio visual products in Europe, whereas the RCA pin jack is used elsewhere in the world, e.g. Asia/Pacific and the US. A printed circuit board must be capable of receiving both in order to meet the design requirements for all countries. The problem arises when the printed circuit boards are not the same, and cannot therefore be simply swapped. The SCART socket has 13 different signals, excluding ground connections.

Summary of the Invention

According to a first preferred aspect there is provided a connector comprising a plurality of sockets of a first category on a first face of the connector and a plurality pins of a second category on a second face of the connector, each of the sockets being operatively connected to at least one of the pins.

According to a second preferred aspect there is provided a connector system comprising a connector and a printed circuit board, the connector comprising a connector comprising a plurality of sockets of a first category on a first face of the connector and a plurality pins of a second category on a second face of the connector, each of the sockets being operatively to at least one of the pins; and the printed circuit board comprising a connector socket of the second category for releasably receiving therein the plurality of pins.

For both aspects the plurality sockets may be arranged in two substantially parallel rows, and the plurality of pins may be arranged in two substantially parallel rows. The plurality of rows of sockets may comprise an upper row and a lower row, and the plurality of rows of pins may comprise a front row and a rear row. The plurality of sockets may be RCA sockets, and the plurality of pins may be SCART pins. There may be six RCA sockets arranged on a front face of the connector in two rows of three sockets each; and there may be nine SCART pins arranged on an underneath face of the connector in two rows, the arrangement of the pins in each row being determined by socket functions.

The sockets of the upper row may be operatively connected to pins in the front row of pins, and the sockets of the lower row may be operatively connected to pins in the rear row of pins. The connector may

further comprise at least one retaining lug for releasably but securely engaging a hole in the printed circuit board to enable the connector to be releasably yet securely attached to the printed circuit board. The printed circuit board may further comprise a SCART printed circuit board footprint for releasably receiving therein the plurality of pins.

Brief Description of the Drawings

In order that the invention may be fully understood and readily put into practical effect there shall now be described by way of non-limitative example only a preferred embodiment of the present invention, the description being with reference to the accompanying illustrative drawings in which:

Figure 1 is a perspective view of the preferred connector with a printed circuit board;

Figure 2 is a front view of the connector of Figure 1;

Figure 3 is an underneath view of the connector of Figure 1;

Figure 4 is a side view of the connector of Figure 1;

Figure 5 is a schematic view of a YCbCr input jack board;

Figure 6 is a schematic view of an LRV input/output; and

Figure 7 illustrates the connection of SCART pins.

Detailed Description of the Preferred Embodiment

With the preferred embodiment there is a connector 10 with a body 30 and having six RCA sockets 12 arranged in two horizontal rows with there being three sockets 12 in each row. The sockets 12 in each row are vertically aligned with the sockets in the other row. The sockets 12 are located in and project outwardly from a front face 22 of the body 30.

The connector 10 can be placed directly into a SCART connector location 14 on a printed circuit board 16 by using SCART printed circuit board footprint holes 18 for input or output configuration. The connector pins 18 project downwardly from a bottom face 24 of the body 30. As such, only one printed circuit board 16 needs be used for audio visual connections thus allowing for all country variants. The utilization of the SCART connector location 14 allows the connector 10 with RCA sockets 12 to be fitted. This means that country variants can be accommodated by installing different connectors 10 rather than having to change the printed circuit board 16. As such, during assembly of the product, staff need only to take a connector 10 from a different bin to allow for the different socket requirements of a different country. This is a simple change in the assembly process to allow for country variants.

As can be seen from the drawings, the new 2 x 3 row RCA connector 10 can now be placed into the same location as a SCART connector, as the pins 18 match the pins 20 of the SCART connector 14. The front face 22 of the connector 10 now resembles a 2 x 3 row RCA connector block, but with SCART pin layout pins 18 projecting from bottom face 24.

Two locating lugs 26 are provided to enhance stability during the assembly process of the complete assembly of printed circuit board 16. The locating lugs 26 may be moved to suit other SCART connector footprints. A 4-pin mini-DIN connector may also be added for S-Video applications.

As shown in Figures 5 and 6 different configurations of input and output sockets 12 may be used. The configuration may be adopted by changing the connector backboard 28 so that various configurations of pins 18 may be made to correspond to the sockets 12 used. The number and location of the pins 18 will be dependent upon the function of the corresponding sockets 12.

The connector 10 illustrated may be used for audio and/or video connections for television receivers, DVD players and recorders, VCR players and recorders, or test equipment used in the audio/visual industry.

The SCART connector pins 18 are arranged so that the top row 32 of sockets 12 is connected to the front row 34 of pins 18, and the bottom row 36 of sockets 12 is connected to the rear row 38 of pins 18. The rows are changeable depending on whether normal or reverse SCART type connectors are used.

In the table below there are shown two different configurations of sockets 12 and the location of the corresponding pins 18.

TABLE

Row	Socket	Pin Location	Row
FIGURE 5			
Top	Cr	15	Front
Top	Y	11	Front
Top	Cb	7	Front
Bottom	V	20	Rear
Bottom	L	6	Rear
Bottom	R	2	Rear
FIGURE 6			
Top	V	19	Front
Top	L	3	Front
Top	R	1	Front
Bottom	V	20	Rear
Bottom	L	6	Rear
Bottom	R	2	Rear

Whilst there has been described in the foregoing description a preferred embodiment of the present invention, it will be understood by those skilled in the technology concerned that many variations or modifications in details of design or construction may be made without departing from the present invention.

The Claims:

1. A connector comprising a plurality of sockets of a first category on a first face of the connector and a plurality pins of a second category on a second face of the connector, each of the sockets being operatively connected to at least one of the pins.
2. A connector as claimed in claim 1 wherein the plurality sockets are arranged in two substantially parallel rows, and the plurality of pins are arranged in two substantially parallel rows.
3. A connector as claimed in claim 2, wherein the plurality of rows of sockets comprise an upper row and a lower row, and the plurality of rows of pins comprise a front row and a rear row.
4. A connector as claimed in any one of claims 1 to 3, wherein the plurality of sockets are RCA sockets, and the plurality of pins are SCART pins.
5. A connector as claimed in claim 4, wherein there are six RCA sockets arranged on a front face of the connector in two rows of three sockets each; and there are nine SCART pins arranged on an underneath face of the connector in two rows, the arrangement of the pins in each row being determined by socket functions.
6. A connector as claimed in claim 3, or claim 4 or claim 5 when appended to claim 3, wherein each of the sockets of the upper row are operatively connected to pins in the front row of pins, and each of the sockets of the lower row are operatively connected to pins in the rear row of pins.
7. A connector as claimed in any one of claims 1 to 6, further comprising at least one retaining lug for releasably yet securely engaging a hole in a printed circuit board to enable the connector to be releasably yet securely attached to the printed circuit board.
8. A connector as claimed in claim 7, wherein the printed circuit board further comprises a SCART printed circuit board footprint for releasably receiving therein the plurality of pins.
9. A connector system comprising a connector and a printed circuit board, the connector comprising a connector comprising a plurality of sockets of a first category on a first face of the connector and a plurality pins of a second category on a second face of the connector, each of the sockets being operatively connected to at least one of the pins; and the printed circuit board comprising a connector socket of the second category for releasably receiving therein the plurality of pins.
10. A connector system as claimed in claim 9, wherein the plurality sockets are arranged in two substantially parallel rows, and the plurality of pins are arranged in two substantially parallel rows.

11. A connector system as claimed in claim 10, wherein the plurality of rows of sockets comprise an upper row and a lower row, and the plurality of rows of pins comprise a front row and a rear row.
12. A connector system as claimed in any one of claims 9 to 11, wherein the plurality of sockets are RCA sockets, and the plurality of pins are SCART pins.
13. A connector system as claimed in claim 12, wherein there are six RCA sockets arranged on a front face of the connector in two rows of three sockets each; and there are nine SCART pins arranged on an underneath face of the connector arranged in two rows, the arrangement of the pins in each row being determined by socket functions.
14. A connector system as claimed in claim 11, or claim 12 or claim 13 when appended to claim 11, wherein the sockets of the upper row are operatively connected to pins in the front row of pins, and the sockets of the lower row are operatively connected to pins in the rear row of pins.
15. A connector system as claimed in any one of claims 9 to 14, further comprising at least one retaining lug for releasably yet securely engaging a hole in a printed circuit board to enable the connector to be releasably yet securely attached to the printed circuit board.
16. A connector system as claimed in claim 15, wherein the printed circuit board further comprises a SCART connector socket for releasably receiving therein the plurality of pins.