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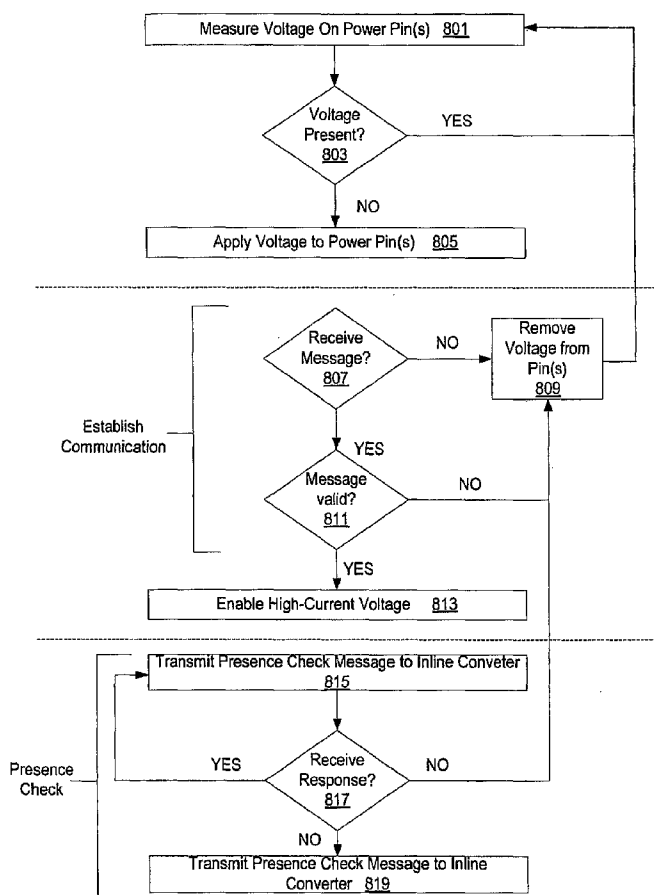
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[Continued on next page]

(54) Title: **INLINE AUDIO/VISUAL CONVERSION**



(57) Abstract: A system, method, and apparatus for inline audio/visual conversion are described. Power to an inline converter is provided over the A/V cable that couples the converter to a destination such as a selector.

WO 2007/124056 A3



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RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN,  
TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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**Published:**

- *with international search report*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

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8 May 2008

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 07/09669

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - G01R 15/00 (2008.01)

USPC - 702/57

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
USPC: 702/57

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
USPC: 702/57, 60, 62, 64; 710/65, 69, 72; 748/441, 445, 455

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Electronic Databases Searched: PubWEST(USPT,PGPB,EPAB,JPAB); Google Scholar

Search Terms Used: Reference, voltage, converter, power, pin, cable, communication, reserved, message, presence, HDMI, 14, high, low, current, attempt, establish, receive, valid, check

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2006/0036788 A1 (GALANG et al.) 16 February 2006 (16.02.2006) para [0003], [0005]-[0007], [0010] and [0011]; See Table.1	1-6
Y	US 2004/0080671 A1 (SIEMENS et al.) 29 April 2004 (29.04.2004) para [0012], [0016]-[0020], [0017], [0026], [0030], [0050] and [0080]	1-6
A	US 6,914,637 B1 (WOLF et al.) 05 July 2005 (05.07.2005)	1-6
A	US 2004/0027103 A1 (BOYLAN) 12 February 2004 (12.02.2004)	1-6

Further documents are listed in the continuation of Box C.

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

11 February 2008 (11.02.2008)

Date of mailing of the international search report

07 MAR 2008

Name and mailing address of the ISA/US

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 07/09669

**Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)**

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

- 1.  Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
- 2.  Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
  
- 3.  Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

**Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:

See Extra Sheet

- 1.  As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
- 2.  As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.
- 3.  As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
- 4.  No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:  
claims 1-6

**Remark on Protest**

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 07/09669

continuation of:

Box No. III --- Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be searched, the appropriate additional search fees must be paid.

Group 1, claims 1-6, drawn to a method for providing a low current reference voltage to the converter based on a determination whether or not a reference voltage is present on the power pin.

Group 2, claims 7-10 and 19-25, drawn to a method for providing power to conversion circuitry by establishing communications with the high-current voltage supplying device.

Group 3, claims 11-15 and 26, drawn to an inline converter/apparatus comprising a power circuit for providing power to video decoder, audio receiver, microcontroller, and an encoder by receiving power from another device over an existing power pin.

Group 4, claims 16-18, drawn to an apparatus comprising N sink ports for receiving N single digital streams and a N\*M switch for selecting between the N digital streams and M digital streams outputs.

The inventions listed as Groups 1-4 do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: The special technical feature of the Group 1 invention is *providing a low current reference voltage to the converter based on a determination whether or not a reference voltage is present on the power pin*. The special technical feature of the Group 2 invention is *providing power to conversion circuitry by establishing communications with the high-current voltage supplying device*. The special technical feature of the Group 3 invention is *a power circuit for providing power to video decoder, audio receiver, microcontroller, and an encoder by receiving power from another device over an existing power pin*. The special technical feature of the Group 4 invention is *N sink ports for receiving N single digital streams and a N\*M switch for selecting between the N digital streams and M digital streams outputs*. None of these special technical features are common to the other groups, nor do they correspond to a special technical feature in the other groups. Therefore, unity of invention is lacking.