

PART B - FEE(S) TRANSMITTAL

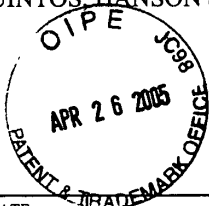
Complete and send this form, together with applicable fee(s), to: **Mail** **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (703) 746-4000

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

23850 7590 02/07/2005

ARMSTRONG, KRATZ, QUINTOS, HANSON & BROOKS, LLP
 1725 K STREET, NW
 SUITE 1000
 WASHINGTON, DC 20006



Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
 I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (703) 746-4000, on the date indicated below.

| |
|--------------------|
| (Depositor's name) |
| (Signature) |
| (Date) |

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/741,018 | 12/21/2000 | Katsuyuki Matsumoto | 001627 | 6673 |

TITLE OF INVENTION: PORTABLE ELECTRONIC DEVICE COMPRISING COMMON SERIAL BUS CONNECTOR

| APPLN. TYPE | SMALL ENTITY | ISSUE FEE | PUBLICATION FEE | TOTAL FEE(S) DUE | DATE DUE |
|----------------|--------------|-----------|-----------------|------------------|------------|
| nonprovisional | NO | \$1400 | \$300 | \$1700 | 05/09/2005 |

| EXAMINER | ART UNIT | CLASS-SUBCLASS |
|----------------|----------|----------------|
| PHAM, THOMAS K | 2121 | 700-017000 |

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
 Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
 "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list
 (1) the names of up to 3 registered patent attorneys or agents OR, alternatively,
 (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Armstrong, Kratz,
 2 Quintos, Hanson &
 3 Brooks, LLP

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)
 PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE
 1) Sanyo Electric Co., Ltd.
 2) Sanyo Technosound Co., Ltd.

(B) RESIDENCE: (CITY and STATE OR COUNTRY)
 Moriguchi-shi, Japan
 Daito-shi, Japan

09/27/2005 SZENDIE2 00000042 09741018
 01 FC:1501 1400.00 OP
 02 FC:1504 300.00 OP
 03 FC:8001 27.00 OP

Please check the appropriate assignee category or categories (will not be printed on the patent): Individual Corporation or other private group entity Government

4a. The following fee(s) are enclosed:
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 Publication Fee (No small entity discount permitted)
 Advance Order - # of Copies 9

4b. Payment of Fee(s):
 A check in the amount of the fee(s) is enclosed.
 Payment by credit card. Form PTO-2038 is attached.
 The Director is hereby authorized by charge the required fee(s), or credit any overpayment, to Deposit Account Number 01-2340 (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)
 a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

The Director of the USPTO is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above.
 NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature George N. Stevens Date April 26, 2005
 Typed or printed name George N. Stevens Registration No. 36,938

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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NOTICE OF ALLOWANCE AND FEE(S) DUE

23850 7590 02/07/2005
ARMSTRONG, KRATZ, QUINTOS, HANSON & BROOKS,
LLP
1725 K STREET, NW
SUITE 1000
WASHINGTON, DC 20006

EXAMINER
PHAM, THOMAS K

ART UNIT 2121
PAPER NUMBER

DATE MAILED: 02/07/2005

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.

TITLE OF INVENTION: PORTABLE ELECTRONIC DEVICE COMPRISING COMMON SERIAL BUS CONNECTOR

Table with 6 columns: APPLN. TYPE, SMALL ENTITY, ISSUE FEE, PUBLICATION FEE, TOTAL FEE(S) DUE, DATE DUE

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE REFLECTS A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE APPLIED IN THIS APPLICATION. THE PTOL-85B (OR AN EQUIVALENT) MUST BE RETURNED WITHIN THIS PERIOD EVEN IF NO FEE IS DUE OR THE APPLICATION WILL BE REGARDED AS ABANDONED.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

- A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.
B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

- A. Pay TOTAL FEE(S) DUE shown above, or
B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL should be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). Even if the fee(s) have already been paid, Part B - Fee(s) Transmittal should be completed and returned. If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

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Alexandria, Virginia 22313-1450
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CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

23850 7590 02/07/2005
ARMSTRONG, KRATZ, QUINTOS, HANSON & BROOKS,
LLP
1725 K STREET, NW
SUITE 1000
WASHINGTON, DC 20006

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|--------------------|
| (Depositor's name) |
| (Signature) |
| (Date) |

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/741,018 | 12/21/2000 | Katsuyuki Matsumoto | 001627 | 6673 |

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| nonprovisional | NO | \$1400 | \$300 | \$1700 | 05/09/2005 |

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| PHAM, THOMAS K | 2121 | 700-017000 |

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2. For printing on the patent front page, list
 (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
 (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)
 PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE _____ (B) RESIDENCE: (CITY and STATE OR COUNTRY) _____

Please check the appropriate assignee category or categories (will not be printed on the patent) : Individual Corporation or other private group entity Government

4a. The following fee(s) are enclosed:
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 Publication Fee (No small entity discount permitted)
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4b. Payment of Fee(s):
 A check in the amount of the fee(s) is enclosed.
 Payment by credit card. Form PTO-2038 is attached.
 The Director is hereby authorized by charge the required fee(s), or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)
 a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

The Director of the USPTO is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above.
 NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date _____
 Typed or printed name _____ Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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Table with columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.
23850 7590 02/07/2005
ARMSTRONG, KRATZ, QUINTOS, HANSON & BROOKS, LLP
1725 K STREET, NW
SUITE 1000
WASHINGTON, DC 20006
EXAMINER PHAM, THOMAS K
ART UNIT 2121 PAPER NUMBER
DATE MAILED: 02/07/2005

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 301 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 301 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571) 272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at (703) 305-8283.

| | | | |
|-------------------------------|------------------------|---------------------|--|
| Notice of Allowability | Application No. | Applicant(s) | |
| | 09/741,018 | MATSUMOTO ET AL. | |
| | Examiner | Art Unit | |
| | Thomas K Pham | 2121 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. This communication is responsive to amendment filed on 12/08/2004.
2. The allowed claim(s) is/are 1-5.
3. The drawings filed on 21 December 2000 are accepted by the Examiner.
4. Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some* c) None of the:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) hereto or 2) to Paper No./Mail Date _____.
 - (b) including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413), Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____ | 7. <input type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

Reasons for Allowance

1. Claims 1-5 are allowed.
2. The following is an examiner's statement of reasons for allowance:

While Wood (Patent No. 6,178,514) discloses an interface for connecting a device to a bus carrying power and a signal including a universal serial bus which carried both power and signal. A controller determines whether an external power supply is present or not. When no external power supply is detected, the controller communicates to the USB hub that the USB device should be considered as a low power device.

The Universal Serial Bus (USB) Specification teaches a USB standard where all hubs and functions must be able to provide configuration of at least 4.4 volts at a connector. Only low power functions need to operate fully with this minimum voltage. Voltage lower than 4.4 volts may cause damage to a USB device.

And Lynn (newly cited reference "Universal Serial Bus (USB) Power Management") teaches a USB self-powered hubs are required to provide a minimum of 4.75 volts and a maximum of 5.25 volts at downstream ports under a typical loading condition.

None of these references taken either alone or in combination discloses a portable electronic device with a common serial bus connector having all the claimed features of applicant's instant invention, specifically including: capable of receiving a power supply from the information processing device or an external power source as connected to the common serial bus connector or from an internal power source, the portable electronic device being characterized in that the control circuit discriminates among the sources of supply of power and causes the common serial bus controller to execute the predetermined data communication

Art Unit: 2121

processing while power voltage is greater than or equal to 4.4 volts and is supplied from the information processing device connected to the common serial bus connector, and executes the usual device operation processing while power voltage is less than 4.4 volts and is supplied from the external power source connected to the common serial bus connector. Also, there is no motivation to combine the references to meet these limitations. It is for these reasons that applicant's invention defines over the prior art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner *Thomas Pham*; whose telephone number is (571) 272-3689, Monday - Thursday from 6:30 AM - 5:00 PM EST or contact Supervisor *Mr. Anthony Knight* at (571) 272-3687.

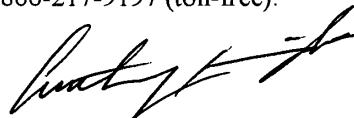
Any response to this office action should be mailed to: **Commissioner for Patents, P.O. Box 1450, Alexandria VA 22313-1450**. Responses may also be faxed to the **official fax number (703) 872- 9306**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Thomas Pham
Patent Examiner

TP

February 2, 2005



Anthony Knight
Supervisory Patent Examiner
Group 3600

| | | | |
|-----------------------------------|---------------------------------------|--|-------------|
| Notice of References Cited | Application/Control No. 09/741,018 | Applicant(s)/Patent Under Reexamination MATSUMOTO ET AL. | |
| | Examiner Thomas K Pham | Art Unit 2121 | Page 1 of 1 |

U.S. PATENT DOCUMENTS

| * | Document Number Country Code-Number-Kind Code | Date MM-YYYY | Name | Classification |
|---|--|-----------------|-------------------|----------------|
| A | US-6,516,418 | 02-2003 | Lee, Byeong-Chang | 713/320 |
| B | US-6,697,892 | 02-2004 | Laity et al. | 710/72 |
| C | US-6,058,441 | 05-2000 | Shu, Han | 710/100 |
| D | US- | | | |
| E | US- | | | |
| F | US- | | | |
| G | US- | | | |
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FOREIGN PATENT DOCUMENTS

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NON-PATENT DOCUMENTS

| * | Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages) |
|---|--|
| U | Lynn, K. "Universal serial bus (USB) power management" September 15-17, 1998, Wescon/98 Conference Proceedings, pages 194-201. |
| V | Lynn, K. "Universal serial bus (USB) power management" November 4-6, 1998, Wescon/97 Conference Proceedings, pages 434-441. |
| W | |
| X | |


*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

| | | | |
|--|--------------------------------------|---|--|
| Issue Classification  | Application No. 09/741,018 | Applicant(s) MATSUMOTO ET AL. | |
| | Examiner Thomas K Pham | Art Unit 2121 | |

| ISSUE CLASSIFICATION | | | | | | | | | | |
|------------------------------|---|----------|---|--------------------|-----------------------------------|-----|-----|-----|-----|--|
| ORIGINAL | | | | CROSS REFERENCE(S) | | | | | | |
| CLASS | | SUBCLASS | | CLASS | SUBCLASS (ONE SUBCLASS PER BLOCK) | | | | | |
| 710 | | 313 | | 710 | 305 | 73 | | | | |
| INTERNATIONAL CLASSIFICATION | | | | 713 | 320 | 324 | 340 | 300 | 330 | |
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|--|--|--|------------------------|--------------------|---|---|
|  Thomas Pham 02/02/2005 (Assistant Examiner) (Date) | Anthony Knight Supervisory Patent Examiner Group 3600 (Primary Examiner) (Date)  2/2/05 | Total Claims Allowed: 5 <table border="1" style="width: 100%; margin-top: 10px;"> <tr> <td style="text-align: center;">O.G. Print Claim(s)</td> <td style="text-align: center;">O.G. Print Fig.</td> </tr> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">1</td> </tr> </table> | O.G. Print Claim(s) | O.G. Print Fig. | 1 | 1 |
| O.G. Print Claim(s) | O.G. Print Fig. | | | | | |
| 1 | 1 | | | | | |
| (Legal Instruments Examiner) (Date) | | | | | | |

| <input checked="" type="checkbox"/> Claims renumbered in the same order as presented by applicant | | <input type="checkbox"/> CPA | | <input type="checkbox"/> T.D. | | <input type="checkbox"/> R.1.47 | |
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| Search Notes  | Application No. | Applicant(s) | |
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| Examiner | Art Unit | | |
| Thomas K Pham | 2121 | | |

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| see attached update search | 2/2/2005 | TP |
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Application No.

09/741,018

Examiner

Thomas K Pham

Applicant(s)

MATSUMOTO ET AL.

Art Unit

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Bib Data Sheet

CONFIRMATION NO. 6673

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|---|---|---------------------------------------|---|--------------------------------------|--------------------------------|
| SERIAL NUMBER 09/741,018 | FILING DATE 12/21/2000 | CLASS 438 710 | GROUP ART UNIT 2835 2121 | ATTORNEY DOCKET NO. 001627 | |
| APPLICANTS Katsuyuki Matsumoto, Osaka, JAPAN; Masanao Yoshida, Osaka, JAPAN; | | | | | |
| ** CONTINUING DATA ***** NONE (TP) | | | | | |
| ** FOREIGN APPLICATIONS ***** JAPAN HEI.11 - 370327 12/27/1999 YES (TP) | | | | | |
| IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** 03/01/2001 | | | | | |
| Foreign Priority claimed <input checked="" type="checkbox"/> yes <input type="checkbox"/> no | | STATE OR COUNTRY JAPAN | SHEETS DRAWING 2 | TOTAL CLAIMS 5 | INDEPENDENT CLAIMS 1 |
| 35 USC 119 (a-d) conditions met <input checked="" type="checkbox"/> yes <input type="checkbox"/> no <input checked="" type="checkbox"/> Met after Allowance | | | | | |
| Verified and Acknowledged | | Examiner's Signature | Initials | | |
| ADDRESS 23850 | | | | | |
| TITLE Portable electronic device comprising common serial bus connector | | | | | |
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| L3 | 1043 | (USB near3 port\$1) and (external near3 (power source\$1)) | US-PGPUB; USPAT; EPO; JPO; DERWENT | OR | OFF | 2005/02/02 12:20 |
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| L20 | 218 | 710/313.ccls. | USPAT | OR | OFF | 2005/02/02 12:48 |
| L21 | 116 | 710/313.ccls. and (usb or (universal adj serial adj bus)) | US-PGPUB; USPAT; DERWENT | OR | OFF | 2005/02/02 12:48 |
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Lynn, K.;
WESCON/98 , 15-17 Sept. 1998
Pages:194 - 201

[Abstract] [PDF Full-Text (544 KB)] IEEE CNF

2 Universal serial bus (USB) power management

Lynn, K.;
WESCON/97. Conference Proceedings , 4-6 Nov. 1997
Pages:434 - 441

[Abstract] [PDF Full-Text (620 KB)] IEEE CNF

3 Analog IP migration using design knowledge extraction

Hammouda, S.; Dessouky, M.; Tawfik, M.; Badawy, W.;
Custom Integrated Circuits Conference, 2004. Proceedings of the IEEE 2004 ,
Oct. 2004
Pages:333 - 336

[Abstract] [PDF Full-Text (477 KB)] IEEE CNF

4 On-chip high precision terminating resistors for transmitter

Xi Jianxiang; He Lenian; Yan Xiaolang;
ASIC, 2003. Proceedings. 5th International Conference on , Volume: 1 , 21-24
2003
Pages:544 - 547 Vol.1

[Abstract] [PDF Full-Text (250 KB)] IEEE CNF

5 Dual mode transmitter with adaptively controlled slew rate and impedance supporting wide range data rates

Hongjiang Song;
ASIC/SOC Conference, 2001. Proceedings. 14th Annual IEEE International , 1:
Sept. 2001
Pages:321 - 324

[\[Abstract\]](#) [\[PDF Full-Text \(248 KB\)\]](#) IEEE CNF

6 An on-chip USB-powered three-phase up/down DC/DC converter in standard 3.3 V CMOS process

Sluijs, F.; Neuteboom, H.; Breedveld, M.;

Solid-State Circuits Conference, 2000. Digest of Technical Papers. ISSCC. 200 IEEE International , 7-9 Feb. 2000

Pages:440 - 441

[\[Abstract\]](#) [\[PDF Full-Text \(230 KB\)\]](#) IEEE CNF

7 The Earth is mobile-power

Efland, T.R.;

Power Semiconductor Devices and ICs, 2003. Proceedings. ISPSD '03. 2003 II 15th International Symposium on , 14-17 April 2003

Pages:2 - 9

[\[Abstract\]](#) [\[PDF Full-Text \(934 KB\)\]](#) IEEE CNF

8 The MSM5100™ cdma2000 + AMPS + gpsOne™ + Bluetooth multim ASIC for 3G handsets

Butler, B.K.; King-Chung Lai; Saints, K.; Meagher, B.;

Radio Frequency Integrated Circuits (RFIC) Symposium, 2002 IEEE , 2-4 June

Pages:186_A - 186_F

[\[Abstract\]](#) [\[PDF Full-Text \(489 KB\)\]](#) IEEE CNF

9 High speed digital transceivers: A challenge for manufacturing

Cole, C.B.; Warwick, T.P.;

Test Conference, 1999. Proceedings. International , 28-30 Sept. 1999

Pages:211 - 215

[\[Abstract\]](#) [\[PDF Full-Text \(512 KB\)\]](#) IEEE CNF

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Luca Benini, Giovanni de Micheli

April 2000 **ACM Transactions on Design Automation of Electronic Systems (TODAES)**, Volume 5 Issue 2

Full text available: pdf(385.22 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This tutorial surveys design methods for energy-efficient system-level design. We consider electronic systems consisting of a hardware platform and software layers. We consider the three major constituents of hardware that consume energy, namely computation, communication, and storage units, and we review methods of reducing their energy consumption. We also study models for analyzing the energy cost of software, and methods for energy-efficient software design and compilation. This survey ...

2 [Energy conservation for mobile devices: Ghosts in the machine: interfaces for better power management](#)

Manish Anand, Edmund B. Nightingale, Jason Flinn

June 2004 **Proceedings of the 2nd international conference on Mobile systems, applications, and services**

Full text available: pdf(294.14 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

We observe that the modularity of current power management algorithms often leads to poor results. We propose two new interfaces that pierce the abstraction barrier that inhibits device power management. First, an OS power manager allows applications to query the current power mode of I/O devices to evaluate the performance and energy cost of alternative strategies for reading and writing data. Second, we allow applications to disclose *ghost hints* that enable better power management in th ...

Keywords: adaptive caching, energy-awareness, power management

3 [Wireless application drivers for low-power systems: Experience with a low power wireless mobile computing platform](#)

Vijay Raghunathan, Trevor Pering, Roy Want, Alex Nguyen, Peter Jensen









August 2004 **Proceedings of the 2004 international symposium on Low power electronics and design**

Full text available: pdf(315.45 KB)


Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

A detailed power analysis of a multi-radio mobile platform highlights the complex tradeoffs between the computation, storage, and communication subsystems. The particular mobile device, which does not include an LCD or other on-board display, can be used as a source for audio or video media files, or a source/sink for secure data transfers. A version of the device has been augmented with fine-grained power monitoring capability and used to obtain detailed measurements of power dissipation in the ...

Keywords: mobile computing, power management, wireless systems


- 4 [Augmented reality and mobile systems II: Design and implementation of a mobile device for outdoor augmented reality in the archeoguide project](#) 
Tim Gleue, Patrick Dähne
November 2001 **Proceedings of the 2001 conference on Virtual reality, archeology, and cultural heritage**
Full text available:  [pdf\(3.35 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)
This paper presents the design and implementation issues associated with the development of a mobile device for the ARCHEOGUIDE project. We describe general and application specific design goals as well as the technical requirements the implementation is based upon. Since speed is crucial for an interactive application we provide a survey of mobile and wearable computing equipment especially considering performance aspects. A detailed overview of available hardware components follows. We describ ...
- 5 [Technology to enable learning: Strategic decisions on technology selections for facilitating a network/systems laboratory using real options & total cost of ownership theories](#) 
Kimfong Lei, Phillip T. Rawles
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Full text available:  [pdf\(407.50 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)
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Keywords: VMware, course development, curriculum, end-user computing, innovative lab strategies in IT, interesting applications in IT, networking, operating systems, systems software
- 6 [\(Special session\) embedded tutorial + regular session: embedded system applications: Toward mobile phone Linux](#) 
Yukikazu Nakamoto
January 2004 **Proceedings of the 2004 conference on Asia South Pacific design automation: electronic design and solution fair 2004**
Full text available:  [pdf\(201.73 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#)
Recently mobile phones provide not only voice service but internet access, multi-media message services, games, local communication controllers and so on. Therefore, more productive software platforms are required. We have developed the next generation software platform based on Linux for mobile phones. In this paper, we describe requirements for mobile phone Linux and solution candidate technologies to satisfy the requirements based on the development experience.
- 7 [Power and energy: Graphical user interface energy characterization for handheld computers](#) 
Lin Zhong, Niraj K. Jha
October 2003 **Proceedings of the 2003 international conference on Compilers, architectures and synthesis for embedded systems**
Full text available:  [pdf\(183.92 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)
A significant fraction of the software and resource usage of a modern handheld computer is devoted to its graphical user interface (GUI). Moreover, GUIs are direct users of the display and also determine how users interact with software. Given that displays consume a significant fraction of system energy, it is very important to optimize GUIs for energy consumption. This work presents the first GUI energy characterization methodology. Energy consumption is characterized for three popular GUI pla ...

Keywords: GUI, energy characterization, graphical user interface, handheld computers, low power, low power design

8 [Quantifying the energy consumption of a pocket computer and a Java virtual machine](#) 


Keith I. Farkas, Jason Flinn, Godmar Back, Dirk Grunwald, Jennifer M. Anderson

June 2000 **ACM SIGMETRICS Performance Evaluation Review , Proceedings of the 2000 ACM SIGMETRICS international conference on Measurement and modeling of computer systems**, Volume 28 Issue 1

Full text available:  pdf(1.10 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

In this paper, we examine the energy consumption of a state-of-the-art pocket computer. Using a data acquisition system, we measure the energy consumption of the Itsy Pocket Computer, developed by Compaq Computer Corporation's Palo Alto Research Labs. We begin by showing that the energy usage characteristics of the Itsy differ markedly from that of a notebook computer. Then, since we expect that flexible software environments will become increasingly prevalent on pocket computers, we consid ...

9 [System estimation and voltage scheduling: B#: a battery emulator and power profiling instrument](#) 

Pai H. Chou, Chulsung Park, Jae Park, Kien Pham, Jinfeng Liu


August 2003 **Proceedings of the 2003 international symposium on Low power electronics and design**

Full text available:  pdf(499.16 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

This paper describes B# (B-sharp), a programmable power supply that emulates the behavior of a battery. It measures the current load, calls a battery simulation program to compute the voltage in real time, and controls a linear regulator to mimic the voltage output of a battery. This instrument enables validation of battery-aware power-optimization techniques with accurate, controllable, reproducible results. This instrument also supports training mode with actual batteries, and it can even be u ...

Keywords: battery emulation, power profiling instrument

10 [The information furnace: consolidated home control](#) 

Diomidis D. Spinellis


May 2003 **Personal and Ubiquitous Computing**, Volume 7 Issue 1

Full text available:  pdf(486.36 KB)

Additional Information: [full citation](#), [abstract](#), [index terms](#)

The Information Furnace is a basement-installed PC-type device that integrates existing consumer home-control, infotainment, security and communication technologies to transparently provide accessible and value-added services. A modern home contains a large number of sophisticated devices and technologies. Access to these devices is currently provided through a wide variety of disparate interfaces. As a result, end users face a bewildering array of confusing user-interfaces, access modes a ...

Keywords: Automation, Consumer electronics, Home-control, Multi-modal interfaces

11 [Intrusion detection: Enhancing byte-level network intrusion detection signatures with context](#) 

Robin Sommer, Vern Paxson

October 2003 **Proceedings of the 10th ACM conference on Computer and communications security**


Full text available:  pdf(217.68 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Many network intrusion detection systems (NIDS) use byte sequences as signatures to detect malicious activity. While being highly efficient, they tend to suffer from a high false-positive rate. We develop the concept of *contextual signatures* as an improvement of string-based signature-matching. Rather than matching fixed strings in isolation, we augment the matching process with additional context. When designing an efficient signature engine for

the NIDS bro, we provide low-level context ...

Keywords: bro, evaluation, network intrusion detection, pattern matching, security, signatures, snort

12 Educational environments: Maximising student exposure to networking using FreeBSD virtual hosts 


Grenville Armitage

July 2003 **ACM SIGCOMM Computer Communication Review**, Volume 33 Issue 3

Full text available:  pdf(171.58 KB) Additional Information: [full citation](#), [abstract](#), [references](#)

A Remote Unix Lab Environment (RULE) is being developed that allows student access to networked hosts for their coursework and research projects. This paper describes our first generation solution using FreeBSD's "jail" functionality to emulate many FreeBSD hosts on a small handful of physical machines. Our primary constraint is to minimise the incremental infrastructure cost to the University. Students access the RULE hosts through pre-existing PC labs scattered around campus and 802.11-equipped ...

Keywords: FreeBSD, IP, Unix, networking, students, teaching, virtual hosts

13 Exploiting path diversity in mobile systems: A mechanism for host mobility management supporting application awareness 


Arjan Peddemors, Hans Zandbelt, Mortaza Bargh

June 2004 **Proceedings of the 2nd international conference on Mobile systems, applications, and services**

Full text available:  pdf(499.48 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Many approaches exist today that address the issues that arise when a mobile node changes its point(s) of attachment to the Internet. Mobile IP takes care of host mobility at the IP layer; others at the transport layer (Mobile SCTP) or at the application layer (SIP with re-invite). In practice, most of these approaches rely on functionality residing on the mobile host that scans, detects and activates the networks available through one or more network interfaces. The mechanism proposed in this pa ...

Keywords: application awareness, host mobility, mobility management

14 The case for reconfigurable hardware in wearable computing 


Christian Plessl, Rolf Enzler, Herbert Walder, Jan Beutel, Marco Platzner, Lothar Thiele, Gerhard Tröster

October 2003 **Personal and Ubiquitous Computing**, Volume 7 Issue 5


Full text available:  pdf(469.92 KB) Additional Information: [full citation](#), [abstract](#), [index terms](#)

Wearable computers are embedded into the mobile environment of their users. A design challenge for wearable systems is to combine the high performance required for tasks such as video decoding with the low energy consumption required to maximise battery runtimes and the flexibility demanded by the dynamics of the environment and the applications. In this paper, we demonstrate that reconfigurable hardware technology is able to answer this challenge. We present the concept and the prototype implem ...

Keywords: Body area computing system, Embedded systems, Field-programmable gate arrays, Reconfigurable hardware, Wearable computing


15 Please touch tangible UIs: The calder toolkit: wired and wireless components for rapidly prototyping interactive devices 

Johnny C. Lee, Daniel Avrahami, Scott E. Hudson, Jodi Forlizzi, Paul H. Dietz, Darren Leigh
August 2004 **Proceedings of the 2004 conference on Designing interactive systems: processes, practices, methods, and techniques**

Full text available:  pdf(2.41 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)


Toolkits and other tools have dramatically reduced the time and technical expertise needed to design and implement graphical user interfaces (GUIs) allowing high-quality, iterative, user-centered design to become a common practice. Unfortunately the generation of functioning prototypes for physical interactive devices as not had similar support -- it still requires substantial time and effort by individuals with highly specialized skills and tools. This creates a divide between a designers' abil ...

Keywords: interaction and product design, physical user interfaces, rapid prototyping, toolkits

16 [Virtual machine monitors: Terra: a virtual machine-based platform for trusted computing](#) 


Tal Garfinkel, Ben Pfaff, Jim Chow, Mendel Rosenblum, Dan Boneh

October 2003 **Proceedings of the nineteenth ACM symposium on Operating systems principles**

Full text available:  [pdf\(140.31 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

We present a flexible architecture for trusted computing, called Terra, that allows applications with a wide range of security requirements to run simultaneously on commodity hardware. Applications on Terra enjoy the semantics of running on a separate, dedicated, tamper-resistant hardware platform, while retaining the ability to run side-by-side with normal applications on a general-purpose computing platform. Terra achieves this synthesis by use of a *trusted virtual machine monitor* (TVMM ...

Keywords: VMM, attestation, authentication, trusted computing, virtual machine, virtual machine monitor


17 [Energy Optimization of Distributed Embedded Processors by Combined Data Compression and Functional Partitioning](#) 

Jinfeng Liu, Pai H. Chou

November 2003 **Proceedings of the 2003 IEEE/ACM international conference on Computer-aided design**


Full text available:  [pdf\(271.66 KB\)](#) Additional Information: [full citation](#), [abstract](#), [index terms](#)

Transmitting compressed data can reduce inter-processor communication traffic and create new opportunities for DVS (dynamic voltage scaling) in distributed embedded systems. However, data compression alone may not be effective unless coordinated with functional partitioning. This paper presents a dynamic programming technique that combines compression and functional partitioning to minimize energy on multiple voltage-scalable processors running pipelined data-regular applications under performance cons ...

18 [Support for real time and OS services in embedded systems: Synthesizing operating system based device drivers in embedded systems](#) 


Shaojie Wang, Sharad Malik

October 2003 **Proceedings of the 1st IEEE/ACM/IFIP international conference on Hardware/software codesign and system synthesis**


Full text available:  [pdf\(205.33 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper presents a correct-by-construction synthesis method for generating operating system based device drivers from a formally specified device behavior model. Existing driver development is largely manual using an ad-hoc design methodology. Consequently, this task is error prone and becomes a bottleneck in embedded system design methodology. Our solution to this problem starts by accurately specifying device access behavior with a formal model, viz. extended event driven finite state machin ...

Keywords: correct-by-construction, device driver, embedded system software, operating system based software synthesis

19 [Wireless sensor networks: The platforms enabling wireless sensor networks](#) 

Jason Hill, Mike Horton, Ralph Kling, Lakshman Krishnamurthy

Full text available:  [pdf\(155.72 KB\)](#)
 [html\(29.37 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

All emphasize low-cost components operating on shoestring power budgets for years at a time in potentially hostile environments without hope of human intervention.

20 Platforms: Bluetooth and sensor networks: a reality check

Martin Leopold, Mads Bondo Dydensborg, Philippe Bonnet

November 2003 **Proceedings of the 1st international conference on Embedded networked sensor systems**

Full text available:  [pdf\(359.11 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

The current generation of sensor nodes rely on commodity components. The choice of the radio is particularly important as it impacts not only energy consumption but also software design (e.g., network self-assembly, multihop routing and in-network processing). Bluetooth is one of the most popular commodity radios for wireless devices. As a representative of the frequency hopping spread spectrum radios, it is a natural alternative to broadcast radios in the context of sensor networks. The questio ...

Keywords: bluetooth, mac layer, network self-assembly, sensor nodes

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ALAN ZEICHICK. InternetWeek. Manhasset: Nov 13, 2000. p. PG.62
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Fred Rebarber. ECN. Radnor: Nov 2000. Vol. 44, Iss. 12; p. 81 (1 page)
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Russell Kay. Computerworld. Framingham: Oct 16, 2000. Vol. 34, Iss. 42; p. 76 (1 page)
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Anonymous. Emedia Magazine. Oct 2000. Vol. 13, Iss. 10; p. 16 (4 pages)
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Crista Souza. Electronic Buyers' News. Sep 18, 2000. p. PG.24
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15. [Westell opens new era in DSL modem technology with USB products](#)
Anonymous. High - Speed Internet Access. Boston: Jun 2000. Vol. 16, Iss. 6; p. 13 (2 pages)


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M2 Presswire. Coventry: May 31, 2000. p. 1

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Rawn Shah. JavaWorld. San Francisco: May 1, 2000. p. 1


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19. [NATIONAL SEMICONDUCTOR: National Semiconductor adds power switch and protection devices to USB arena; Single and dual port USB devices offer thermal shutdown isolation and delay flag pin advances with pin compatibility to industry standard USB switches](#)
M2. Feb 18, 2000. p. 1

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20. [A compact notebook with generous storage](#)
Computimes Malaysia. New York: Jan 31, 2000. p. 1

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21. [PREMIER ELECTRONICS: Card reading in a Flash with USB technology](#)
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22. [Dell launches notebooks for business travellers](#)
Computimes Malaysia. New York: Dec 16, 1999. p. 1

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23. [New iMacs, iBook and Power Macs](#)
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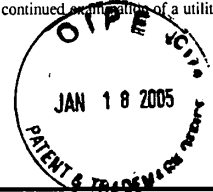
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RCE Fee

REQUEST FOR CONTINUED EXAMINATION (RCE) TRANSMITTAL

Subsection (b) of 35 U.S.C. § 132, effective on May 29, 2000, provides for the continued examination of a utility or plant application filed on or after June 8, 1995.



| | |
|----------------------|-----------------------------|
| Application Number | 09/741,018 |
| Filing Date | December 21, 2000 |
| First Named Inventor | MATSUMOTO, Katsuyuki et al. |
| Group Art Unit | 2121 |
| Name of Examiner | Thomas K. PHAM |
| Attorney Docket No. | 001627 |

This is a Request for Continued Examination (RCE) under 37 C.F.R. § 1.114 of the above-identified application. **Note:** 37 C.F.R. §1.114 is effective on May 29, 2000. If the above-identified application was filed prior to May 29, 2000, applicant may wish to consider filing a continued prosecution application (CPA) under 37 C.F.R. §1.53 (PTO/SB/29) instead of a RCE to be eligible for the patent term adjustment provisions of the AIPA. See changes to Application Examination and Provisional Application Practice, Interim Rule, 65 Fed. Reg. 14865 (Mar 20, 2000) 1233 Off. Gazette Pat Office (April 11, 2000) which established RCE practice.

1. Submission Required Under 37 C.F.R. § 1.114

- a. Previously submitted
 - i. Consider the amendment(s)/reply under 37 C.F.R. §1.116 previously filed on December 8, 2004
(Any unentered amendment(s) referred to above will be entered)
 - ii. Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____
 - iii. Other _____
- b. Enclosed
 - i. Amendment/Reply
 - ii. Affidavit(s)/Declaration(s)
 - iii. Information Disclosure Statement (IDS)
 - iv. Other Petition for Extension of Time

2. Miscellaneous

- a. Suspension of Action on the above-identified application is requested under 37 C.F.R. §1.103(c) for a period of _____ months (period shall not exceed three months; Fee under 37 C.F.R. §1.17(i) required)
- b. Other _____

Fees

The RCE fee under 37 C.F.R. §1.17(e) is required by 37 C.F.R. §1.114 when the RCE is filed.

- a. The Commissioner is hereby authorized to charge the following fees, and additional fees, or credit any overpayments, to Deposit Account No. 01-2340.

| | | |
|--|-------------------|-------------------|
| i. <input type="checkbox"/> RCE fee required under 37 C.F.R. § 1.17 (e) | 01/19/2005 JADD01 | 00000039 09741018 |
| ii. <input type="checkbox"/> Extension of Time Fee (37 C.F.R. §§ 1.136 and 1.17) | 01 FC:1801 | 750.00 50 |
| iii. <input type="checkbox"/> Other _____ | | |
- b. Check in the amount of \$910.00 is enclosed.

REQUEST FOR
CONTINUED EXAMINATION (RCE)
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Subsection (b) of 35 U.S.C. § 132, effective on May 29, 2000, provides for the continued examination of a utility or plant application filed on or after June 8, 1995.

PAGE 2



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001627

SIGNATURE BY APPLICANT, ATTORNEY, OR AGENT REQUIRED

Name **George N. Stevens**

Registration No. **36,938 (atty/agent)**

Signature

Date **January 18, 2005**

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In re the Application of: MATSUMOTO, Katsuyuki et al.

Group Art Unit: 2121

Serial No.: 09/741,018

Examiner: Thomas K. PHAM

Filed: December 21, 2000

P.T.O. Confirmation No.: 6673

For: PORTABLE ELECTRONIC DEVICE COMPRISING COMMON SERIAL BUS CONNECTOR

PETITION FOR EXTENSION OF TIME

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Date: January 18, 2005

Sir:

Applicants petition the Commissioner for Patents to extend the time for response to the Office Action dated September 27, 2004 for one month, from December 27, 2004 to January 27, 2005.

Attached please find a check in the amount of \$120.00 to cover the cost of the extension for a large entity. In the event that any additional fees are due in connection with this paper, please charge our Deposit Account No. 01-2340.

Respectfully submitted,

ARMSTRONG, KRATZ, QUINTOS,
HANSON & BROOKS, LLP

George N. Stevens
Attorney for Applicant
Reg. No. 36,938

01/19/2005 JADD01 00000039 09741018
02 FC:1251 120.00 DP

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| 09/741,018 | 12/21/2000 | Katsuyuki Matsumoto | 001627 | 6673 |
| 23850 | 7590 | 12/30/2004 | EXAMINER | |
| ARMSTRONG, KRATZ, QUINTOS, HANSON & BROOKS, LLP 1725 K STREET, NW SUITE 1000 WASHINGTON, DC 20006 | | | PHAM, THOMAS K | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2121 | |

DATE MAILED: 12/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------|-------------------------------|----------------------------------|--|
| Advisory Action | Application No. 09/741,018 | Applicant(s) MATSUMOTO ET AL. | |
| | Examiner Thomas K Pham | Art Unit 2121 | |

--Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 08 December 2004 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE. Therefore, further action by the applicant is required to avoid abandonment of this application. A proper reply to a final rejection under 37 CFR 1.113 may only be either: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114.

PERIOD FOR REPLY [check either a) or b)]

- a) The period for reply expires 3 months from the mailing date of the final rejection.
- b) The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection. ONLY CHECK THIS BOX WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

1. A Notice of Appeal was filed on _____. Appellant's Brief must be filed within the period set forth in 37 CFR 1.192(a), or any extension thereof (37 CFR 1.191(d)), to avoid dismissal of the appeal.
2. The proposed amendment(s) will not be entered because:
- (a) they raise new issues that would require further consideration and/or search (see NOTE below);
 - (b) they raise the issue of new matter (see Note below);
 - (c) they are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
 - (d) they present additional claims without canceling a corresponding number of finally rejected claims.

NOTE: See Continuation Sheet.

3. Applicant's reply has overcome the following rejection(s): _____.
4. Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).
5. The a) affidavit, b) exhibit, or c) request for reconsideration has been considered but does NOT place the application in condition for allowance because: _____.
6. The affidavit or exhibit will NOT be considered because it is not directed SOLELY to issues which were newly raised by the Examiner in the final rejection.
7. For purposes of Appeal, the proposed amendment(s) a) will not be entered or b) will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.

The status of the claim(s) is (or will be) as follows:


Claim(s) allowed: _____.

Claim(s) objected to: _____.

Claim(s) rejected: 1-5.

Claim(s) withdrawn from consideration: _____.

8. The drawing correction filed on _____ is a) approved or b) disapproved by the Examiner.
9. Note the attached Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____.
10. Other: _____


Anthony Knight
 Supervisory Patent Examiner
 Group 3600

Continuation Sheet (PTOL-303)
09/743,018

Application No.

Continuation of 2. NOTE: Changing the limitations of claim 1 from "OR" to "AND" raises new issues that would require further consideration and/or search.



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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of: **MATSUMOTO, Katsuyuki et al.**

Group Art Unit: **2121**

Serial No.: **09/741,018**

Examiner: **Thomas K. PHAM**

Filed: **December 21, 2000**

P.T.O. Confirmation No.: **6673**

FOR: **PORTABLE ELECTRONIC DEVICE COMPRISING COMMON SERIAL BUS CONNECTOR**

RESPONSE UNDER 37 CFR §1.116
- EXPEDITED RESPONSE -
GROUP ART UNIT 2121

MAILSTOP AF

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

December 8, 2004

Sir:

In response to the Office Action dated **September 27, 2004**, please amend the above-identified application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 5 of this paper.

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (Currently Amended): A portable electronic device comprising

a common serial bus connector provided with data terminals and a power supply terminal in compliance with a common serial bus standard for connecting a plurality of peripheral devices in common to a host information processing device,

a common serial bus controller for executing predetermined data communication processing attendant on data communication with an information processing device connected to the common serial bus controller connector, and

a control circuit connected to the common serial bus controller for executing device operation processing for the usual operation of the electronic device, the electronic device being capable of receiving a power supply from the information processing device or an external power source as connected to the common serial bus connector or from an internal power source, the portable electronic device being characterized in that the control circuit discriminates among the sources of supply of power and causes the common serial bus controller to execute the predetermined data communication processing while power voltage is greater than or equal to 4.4 volts and is supplied from the information processing device connected to the common serial bus connector, [[or]] and

executes the usual device operation processing while power voltage is less than 4.4 volts and is supplied from the external power source connected to the common serial bus connector.

Claim 2 (original): A portable electronic device according to claim 1 wherein the control circuit comprises discriminating means for judging which of the information processing device and the external power source is connected to the common serial bus connector, and control means for causing the common serial bus controller to execute the predetermined data communication processing when the connection of the information processing device to the common serial bus connector is recognized, or executes the usual device operation processing when the connection of the external power source to the common serial bus connector is recognized.

Claim 3 (original): A portable electronic device according to claim 2 wherein the discriminating means identifies the source of supply of power based on the voltage value of the power supply terminal of the common serial bus connector.

Claim 4 (original): A portable electronic device according to claim 2 wherein the discriminating means identifies the source of supply of power depending on whether the common serial bus controller has started data communication via the common serial bus connector.

Claim 5 (original): A portable electronic device according to claim 2 wherein the control circuit further comprises means for detecting the connection of the information processing device or the external power source to the common serial bus connector based on the binary state of voltage level of the power supply terminal thereof, and the discriminating means identifies the source of supply of power according to the result of detection.

REMARKS

Claims 1-5 are pending in the application and have been rejected.

Claim Rejections under 35 USC §103

Claims 1-5 are rejected under 35 USC §103(a) as being unpatentable over Wood (U.S. Patent No. 6,178,514) in view of “Universal Serial Bus Specification” Revision 1.0, January 15, 1996 (hereinafter USB Spec).

The present invention is a portable electronic device (1) connected to a personal computer (2) via a USB cable (11). An external power source (3) may be connected to USB connector (4). When the external power source (3) is connected to the USB connector (4), the voltage detected is less than 4.4 V and CPU (7) causes charging of the built-in secondary cell and execution of device operation processing based on user input to the device. When the external power source (3) is not connected to the USB connector (4), the voltage detected is greater than or equal to 4.4 V and CPU (7) causes USB controller (6) to start data communication processing.

Wood describes a USB cable (28) connected to a USB hub (42) that is in turn connected to a USB device (62), such as USB speakers (22) or a USB keyboard (16). If the USB device (62) is intended to draw more than 500 mA of current, it is typically provided with its own external power supply. When a controller (224) determines that an external power supply is not present, then the controller communicates to the USB hub (42) that the USB device should be considered as a low power device.

Universal Serial Bus Specification indicates on page 135, Section 7.2.2 that

“All hubs and functions must be able to provide configuration information with as little as 4.40 V at the connector end of their upstream cables. Only low power functions need be able to be fully operational with this minimum voltage.”

Further, page 114, Section 7.1.3 of Universal Serial Bus Specification states,

“The pull-up terminator is a 1.5 k Ω +-5% resistor tied to voltage source between 3.0 V and 3.6 V referenced to local ground. The pulldown terminators are resistors of 15 k Ω +-5% connected to their local ground.”

However, contrary to the Examiner’s assertion this second passage does not indicate that while power voltage is less than 4.4 volts power is supplied from the external power source connected to the common serial bus connector.

Therefore, claim 1 patentably distinguishes over the prior art relied upon by reciting,

“A portable electronic device comprising a common serial bus connector provided with data terminals and a power supply terminal in compliance with a common serial bus standard for connecting a plurality of peripheral devices in common to a host information processing device, a common serial bus controller for executing predetermined data communication processing attendant on data communication with an information processing device connected to the common serial bus controller connector, and a control circuit connected to the common serial bus controller for executing device operation processing for the usual operation of the electronic device, the electronic device being capable of receiving a power supply from the information processing device or an external power source as connected to the common serial bus connector or from an internal power source, the portable electronic device being characterized in that the control circuit discriminates among

the sources of supply of power and causes the common serial bus controller to execute the predetermined data communication processing while power voltage is greater than or equal to 4.4 volts and is supplied from the information processing device connected to the common serial bus connector, and executes the usual device operation processing while power voltage is less than 4.4 volts and is supplied from the external power source connected to the common serial bus connector."
(Emphasis Added)

Therefore, withdrawal of the rejection of Claims 1-5 under 35 USC §103(a) as being unpatentable over Wood (U.S. Patent No. 6,178,514) in view of "Universal Serial Bus Specification" Revision 1.0, January 15, 1996 (hereinafter USB Spec) is respectfully requested.

Conclusion


In view of the aforementioned amendments and accompanying remarks, the claims, as now amended, are believed to be in condition for allowance, which action, at an early date, is requested.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicants undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

ARMSTRONG, KRATZ, QUINTOS,
HANSON & BROOKS, LLP



George N. Stevens
Attorney for Applicant
Reg. No. 36,938

GNS/nrp
Atty. Docket No. 001627
Suite 1000
1725 K Street, N.W.
Washington, D.C. 20006
(202) 659-2930



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PATENT TRADEMARK OFFICE

H:\HOME\GSTEVEN\S\001627\Amendment

PATENT APPLICATION FEE DETERMINATION RECORD
Effective October 1, 2000

Application or Docket Number

0974018

CLAIMS AS FILED - PART I

| | (Column 1) | (Column 2) |
|----------------------------------|----------------------|--------------------------|
| TOTAL CLAIMS | | |
| FOR | NUMBER FILED | NUMBER EXTRA |
| TOTAL CHARGEABLE CLAIMS | 5 minus 20= * | |
| INDEPENDENT CLAIMS | 1 minus 3= * | |
| MULTIPLE DEPENDENT CLAIM PRESENT | | <input type="checkbox"/> |

SMALL ENTITY TYPE OR

OTHER THAN SMALL ENTITY

| RATE | FEE | OR | RATE | FEE |
|-----------|--------|----|-----------|---------------|
| BASIC FEE | 355.00 | OR | BASIC FEE | 710.00 |
| X\$ 9= | | OR | X\$18= | |
| X40= | | OR | X80= | |
| +135= | | OR | +270= | |
| TOTAL | | OR | TOTAL | 710.00 |

* If the difference in column 1 is less than zero, enter "0" in column 2

*IPW
12-8-04*

CLAIMS AS AMENDED - PART II

| | (Column 1) | (Column 2) | (Column 3) |
|---|----------------------------------|------------------------------------|---------------|
| AMENDMENT A | CLAIMS REMAINING AFTER AMENDMENT | HIGHEST NUMBER PREVIOUSLY PAID FOR | PRESENT EXTRA |
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| | Independent | * 1 Minus *** 3 | = 0 |
| FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/> | | | |

SMALL ENTITY TYPE OR

OTHER THAN SMALL ENTITY

| RATE | ADDITIONAL FEE | OR | RATE | ADDITIONAL FEE |
|------------------|----------------|----|------------------|----------------|
| X\$ 9= | | OR | X\$18= | |
| X40= | | OR | X80= | |
| +135= | | OR | +270= | |
| TOTAL ADDIT. FEE | | OR | TOTAL ADDIT. FEE | |

(Column 1) (Column 2) (Column 3)

| | (Column 1) | (Column 2) | (Column 3) |
|---|----------------------------------|------------------------------------|---------------|
| AMENDMENT B | CLAIMS REMAINING AFTER AMENDMENT | HIGHEST NUMBER PREVIOUSLY PAID FOR | PRESENT EXTRA |
| | Total | * Minus ** | = |
| | Independent | * Minus *** | = |
| FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/> | | | |

| RATE | ADDITIONAL FEE | OR | RATE | ADDITIONAL FEE |
|------------------|----------------|----|------------------|----------------|
| X\$ 9= | | OR | X\$18= | |
| X40= | | OR | X80= | |
| +135= | | OR | +270= | |
| TOTAL ADDIT. FEE | | OR | TOTAL ADDIT. FEE | |

(Column 1) (Column 2) (Column 3)

| | (Column 1) | (Column 2) | (Column 3) |
|---|----------------------------------|------------------------------------|---------------|
| AMENDMENT C | CLAIMS REMAINING AFTER AMENDMENT | HIGHEST NUMBER PREVIOUSLY PAID FOR | PRESENT EXTRA |
| | Total | * Minus ** | = |
| | Independent | * Minus *** | = |
| FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/> | | | |

| RATE | ADDITIONAL FEE | OR | RATE | ADDITIONAL FEE |
|------------------|----------------|----|------------------|----------------|
| X\$ 9= | | OR | X\$18= | |
| X40= | | OR | X80= | |
| +135= | | OR | +270= | |
| TOTAL ADDIT. FEE | | OR | TOTAL ADDIT. FEE | |

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
 ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20."
 *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3."
 The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 09/741,018 | 12/21/2000 | Katsuyuki Matsumoto | 001627 | 6673 |
| 23850 | 7590 | 09/27/2004 | EXAMINER | |
| ARMSTRONG, KRATZ, QUINTOS, HANSON & BROOKS, LLP 1725 K STREET, NW SUITE 1000 WASHINGTON, DC 20006 | | | PHAM, THOMAS K | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2121 | |

DATE MAILED: 09/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Handwritten mark resembling a stylized 'S' or 'Z'.

| | | | |
|------------------------------|-------------------------------|----------------------------------|--|
| Office Action Summary | Application No. 09/741,018 | Applicant(s) MATSUMOTO ET AL. | |
| | Examiner Thomas K Pham | Art Unit 2121 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 23 June 2004.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-5 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-5 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 - 1. Certified copies of the priority documents have been received.
 - 2. Certified copies of the priority documents have been received in Application No. _____.
 - 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: _____.

Response to Amendment

1. This action is in response to request for re-consideration filed on 6/23/2004.
2. Claims 1-5 have been considered but they are not persuasive.
3. Claims 1-5 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,178,514 in view of "Universal Serial Bus Specification" Revision 1.0, January 15, 1996.
4. Applicant's arguments have been fully considered but they are not persuasive.

DETAILED ACTION

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wood U.S. Patent No. 6,178,514 in view of "Universal Serial Bus Specification" Revision 1.0, January 15, 1996 (hereinafter USB Spec).

Regarding claim 1

Wood teaches a portable electronic device comprising a common serial bus connector provided with data terminals and a power supply terminal in compliance with a common serial bus standard (col. 9 lines 39-41) for connecting a plurality of peripheral devices in common to a host information processing device (col. 9 lines 31-36), a common serial bus controller for executing predetermined data communication processing attendant on data communication with an

Art Unit: 2121

information processing device connected to the common serial bus connector (fig. 12 element 224), and a control circuit connected to the common serial bus controller for executing device operation processing for the usual operation of the electronic device (fig. 7 element 21), the electronic device being capable of receiving a power supply from the information processing device or an external power source as connected to the common serial bus connector or from an internal power source (col. 9 lines 47-49 and col. 10 lines 10-13), the portable electronic device being characterized in that the control circuit discriminates among the sources of supply of power and causes the common serial bus controller to execute the predetermined data communication processing while power is supplied from the information processing device connected to the common serial bus connector, or executes the usual device operation processing while power is supplied from the external power source connected to the common serial bus connector (col. 9 lines 39-59) but does not teach power voltage is greater than or equal to 4.4 volts and is supplied from the information processing device connected to the common serial, or power voltage is less than 4.4 volts and is supplied from the external power source connected to the common serial bus connector. However, USB Spec teaches power voltage is greater than or equal to 4.4 volts and is supplied from a host device connected to the common serial bus connector (page 135, Section 7.2.2 third bullet, "All hubs and functions must be ... with this minimum voltage"). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made for the voltage requirement of USB Spec to be part of the device of Wood in order to comply with the USB standard and specification.

Regarding claim 2

Wood teaches a portable electronic device according to claim 1 wherein the control circuit comprises discriminating means for judging which of the information processing device and the external power source is connected to the common serial bus connector (col. 29 lines 4-8), and control means for causing the common serial bus controller to execute the predetermined data communication processing when the connection of the information processing device to the common serial bus connector is recognized (col. 22 lines 62-67), or executes the usual device operation processing when the connection of the external power source to the common serial bus connector is recognized (col. 30 lines 7-8).

Regarding claim 3

Wood teaches a portable electronic device according to claim 2 wherein the discriminating means identifies the source of supply of power based on the voltage value of the power supply terminal of the common serial bus connector (col. 28 lines 49-58).

Regarding claim 4

Wood teaches a portable electronic device according to claim 2 wherein the discriminating means identifies the source of supply of power depending on whether the common serial bus controller has started data communication via the common serial bus connector (col. 28 lines 24-27).

Regarding claim 5

Wood teaches a portable electronic device according to claim 2 wherein the control circuit further comprises means for detecting the connection of the information processing device or the external power source to the common serial bus connector based on the binary state of voltage

level of the power supply terminal thereof, and the discriminating means identifies the source of supply of power according to the result of detection (col. 30 lines 7-18).

Response to Arguments

In the remark the applicant argues that cited reference fails to disclose:

- I) “executing a usual device operation processing while power is supplied from an external power source connected to a common serial bus connector” as to claim 1
- II) “power voltage is less than 4.4 volts and is supplied from the external power source connected to the common serial bus connector”

In response to applicant’s argument,

It is noted that applicants includes many conditions within the claim separated by “or” as follow:

Limitation A: control circuit connected to the common serial bus controller for executing device operation processing for the usual operation of the electronic device, the electronic device being capable of receiving a power supply from

- condition 1: the information processing device
- or**
- condition 2: an external power source as connected to the common serial bus connector
- or**
- condition 3: from an internal power source,

Limitation B: the portable electronic device being characterized in that the control circuit discriminates among the sources of supply of power and causes the common serial bus controller to

- condition 1: execute the predetermined data communication processing while power voltage is greater than or equal to 4.4 volts and is supplied from the information processing device connected to the common serial bus connector,
- or**
- condition 2: executes the usual device operation processing while power voltage is less than 4.4 volts and is supplied from the external power source connected to the common serial bus connector.

Claim 1 is failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Since the above limitations include multiple conditions (indefinite), Examiner should reject the claim over the prior art based on the interpretation of the claim that renders the prior art applicable. Ex parte Ionescu, 222 USPQ 537 (Bd. Pat. App. & Inter. 1984). See MPEP 2143.03.

Response to Applicant Remarks:

(I) Prior art (Wood) teaches (column 9 lines 61-62, “The USB standard supports to designations of USB devices 62, low power and high power”). Therefore, it is clear that USB standard provide at least an internal power source. Thus, limitation A, condition 3 is meet by the reference.

(II) Prior art “USB Specification” teaches (page 135, the third bullets “All hubs and functions must be able to provide configuration information with as little as 4.40 V at the connector end of their upstream cables”). Therefore, it is clear that USB standard supports voltages of greater than or equal to 4.4 volts. Thus, limitation B – condition 1 is meet by the reference.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner *Thomas Pham*; whose telephone number is (703) 305-7587 or the new number (571) 272-3689 beginning around mid. October 2004, Monday to Friday from 8:00 AM - 5:00 PM EST or contact Supervisor *Mr. Anthony Knight* at (703) 308-3179 (or 571 272-3687 starting around mid. Oct. 2004).

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Thomas Pham
Patent Examiner

September 22, 2004



Anthony Knight
Supervisory Patent Examiner
Group 3600

Index of Claims



Application No.

09/741,018

Examiner

Thomas K Pham

Applicant(s)

MATSUMOTO ET AL.

Art Unit

2121

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2121
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of: **MATSUMOTO, Katsuyuki et al.**

Group Art Unit: **2121**

Serial No.: **09/741,018**

Examiner: **Thomas K. PHAM**

Filed: **December 21, 2000**

P.T.O. Confirmation No.: 6673

For: **PORTABLE ELECTRONIC DEVICE COMPRISING COMMON SERIAL BUS CONNECTOR**

RECEIVED

JUL 02 2004

AMENDMENT UNDER 37 CFR §1.111

Technology Center 2100

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

June 23, 2004

Sir:

In response to the Office Action dated **January 30, 2004**, extended to **June 30, 2004** by a 2 month Petition for Extension of Time, please amend the above-identified application as follows:

The Pending Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 2 of this paper.

IN THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

Claim 1 (previously presented): A portable electronic device comprising

a common serial bus connector provided with data terminals and a power supply terminal in compliance with a common serial bus standard for connecting a plurality of peripheral devices in common to a host information processing device,

a common serial bus controller for executing predetermined data communication processing attendant on data communication with an information processing device connected to the common serial bus controller connector, and

a control circuit connected to the common serial bus controller for executing device operation processing for the usual operation of the electronic device, the electronic device being capable of receiving a power supply from the information processing device or an external power source as connected to the common serial bus connector or from an internal power source, the portable electronic device being characterized in that the control circuit discriminates among the sources of supply of power and causes the common serial bus controller to execute the predetermined data communication processing while power voltage is greater than or equal to 4.4 volts and is supplied from the information processing device connected to the common serial bus connector, or executes the usual device operation processing while power voltage is less than 4.4 volts and is supplied from

the external power source connected to the common serial bus connector.

Claim 2 (original): A portable electronic device according to claim 1 wherein the control circuit comprises discriminating means for judging which of the information processing device and the external power source is connected to the common serial bus connector, and control means for causing the common serial bus controller to execute the predetermined data communication processing when the connection of the information processing device to the common serial bus connector is recognized, or executes the usual device operation processing when the connection of the external power source to the common serial bus connector is recognized.

Claim 3 (original): A portable electronic device according to claim 2 wherein the discriminating means identifies the source of supply of power based on the voltage value of the power supply terminal of the common serial bus connector.

Claim 4 (original): A portable electronic device according to claim 2 wherein the discriminating means identifies the source of supply of power depending on whether the common serial bus controller has started data communication via the common serial bus connector.

Claim 5 (original): A portable electronic device according to claim 2 wherein the control circuit further comprises means for detecting the connection of the information processing device

U.S. Patent Application Serial No. **09/741,018**
Amendment dated June 23, 2004
Reply to OA of **January 30, 2004**

or the external power source to the common serial bus connector based on the binary state of voltage level of the power supply terminal thereof, and the discriminating means identifies the source of supply of power according to the result of detection.

REMARKS

The applicants respectfully submit that no new matter has been added. It is believed that this Amendment is fully responsive to the Office Action dated **January 30, 2004**.

Claim Rejections under 35 US §103

Claims 1-5 are rejected under 35 USC §103(a) as being unpatentable over Wood (U.S. Patent No. 6,178,514) in view of "Universal Serial Bus Specification" Revision 1.0, January 15, 1996 (hereinafter USB Spec).

The present invention is a portable electronic device (1) connected to a personal computer (2) via a USB cable (11). An external power source (3) may be connected to USB connector (4). When the external power source (3) is connected to the USB connector (4), the voltage detected is less than 4.4 V and CPU (7) causes charging of the built-in secondary cell and execution of device operation processing based on user input to the device. When the external power source (3) is not connected to the USB connector (4), the voltage detected is greater than or equal to 4.4 V and CPU (7) causes USB controller (6) to start data communication processing.

Wood describes a USB cable (28) connected to a USB hub (42) that is in turn connected to a USB device (62), such as USB speakers (22) or a USB keyboard (16). If the USB device (62) is intended to draw more than 500 mA of current, it is typically provided with its own external power supply. When a controller (224) determines that an external power supply is not present, then the

controller communicates to the USB hub (42) that the USB device should be considered as a low power device.

Universal Serial Bus Specification indicates on page 135, Section 7.2.2 that

“All hubs and functions must be able to provide configuration information with as little as 4.40 V at the connector end of their upstream cables. Only low power functions need be able to be fully operational with this minimum voltage.”

Further, page 114, Section 7.1.3 of Universal Serial Bus Specification states,

“The pull-up terminator is a 1.5 k Ω +-5% resistor tied to voltage source between 3.0 V and 3.6 V referenced to local ground. The pulldown terminators are resistors of 15 k Ω +-5% connected to their local ground.”

In the Office Action, the following three issues are raised regarding claim 1.

A. It is asserted that Wood teaches on col. 9 lines 39-59 a control circuit discriminates among sources of supply of power and causes a common serial bus controller to execute a predetermined data communication processing while power is supplied from an information processing device connected to a common serial bus connector, or executes a usual device operation processing while power is supplied from an external power source connected to the common serial bus connector.

B. It is asserted that USB Spec teaches power voltage is greater than or equal to 4.4 volts and is supplied from a host device connected to a common serial bus connector (page 135, Section 7.2.2 third bullet, "All hubs and functions must be ... with this minimum voltage").

C. It is asserted that USB Spec teaches power voltage is less than 4.4 volts and is supplied from an external power source connected to a common serial bus connector (page 114, Section 7.1.3 line 5, "The pull-up terminator ... between 3.3 V and 3.6 V").

The applicant disagrees with the Examiner's assertions with respect to points A. and C. above.

Even if Wood describes being supplied with power from an external power source connected to a different port from a USB connector and executing a device operation processing, Wood does not describe executing a usual device operation processing while power is supplied from an external power source connected to a common serial bus connector (col. 10 lines 10-13 and col. 28 line 56 to col. 29 line 8). Wood is based on the premise that a USB device may be connected to both a computer and an external power source at the same time.

Section 7.1.3 of USB Spec only describes a pull-up resistor to a communication line tied to a voltage source between 3.0 v and 3.6 V. The USB Spec does not mention that this source is connected to a common serial bus connector to supply power to a control circuit.

The present invention is based on the premise that a common serial bus connector serves as a common terminal to connect either an information processing device or an external power source so that power can be supplied. The present invention is characterized in that when an external power source is connected to a common serial bus connector, a usual device operation processing is executed while power is supplied from the external power source via the common serial bus

connector. This feature is not described by either of the cited references and cannot be obtained even if the voltage requirement of USB Spec is made part of the device of Wood.

Therefore, the Examiner's grounds of rejection as discussed above is strongly traversed.

Independent claim 1 patentably distinguishes over the prior art relied upon by reciting,

“A portable electronic device comprising a common serial bus connector provided with data terminals and a power supply terminal in compliance with a common serial bus standard for connecting a plurality of peripheral devices in common to a host information processing device, a common serial bus controller for executing predetermined data communication processing attendant on data communication with an information processing device connected to the common serial bus controller connector, and a control circuit connected to the common serial bus controller for executing device operation processing for the usual operation of the electronic device, the electronic device being capable of receiving a power supply from the information processing device or an external power source as connected to the common serial bus connector or from an internal power source, the portable electronic device being characterized in that the control circuit discriminates among the sources of supply of power and causes the common serial bus controller to execute the predetermined data communication processing while power voltage is greater than or equal to 4.4 volts and is supplied from the information processing device connected to the common serial bus connector, or executes the usual device operation processing while power voltage is less than 4.4 volts and is supplied from the external power source connected to the common serial bus connector.”
(Emphasis Added)

Therefore, withdrawal of the rejection of Claims 1-5 under 35 USC §103(a) as being unpatentable over Wood (U.S. Patent No. 6,178,514) in view of “Universal Serial Bus Specification” Revision 1.0, January 15, 1996 (hereinafter USB Spec) is respectfully requested.

Conclusion

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicants undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

ARMSTRONG, KRATZ, QUINTOS,
HANSON & BROOKS, LLP



George N. Stevens
Attorney for Applicant
Reg. No. 36,938

GNS/alw
Atty. Docket No. **001627**
Suite 1000
1725 K Street, N.W.
Washington, D.C. 20006
(202) 659-2930



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PATENT TRADEMARK OFFICE

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2121
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of: **MATSUMOTO, Katsuyuki et al.**

Group Art Unit: **2121**

Serial No.: **09/741,018**

Examiner: **Thomas K. PHAM**

Filed: **December 21, 2000**

P.T.O. Confirmation No.: 6673

For: **PORTABLE ELECTRONIC DEVICE COMPRISING COMMON SERIAL BUS CONNECTOR**

PETITION FOR EXTENSION OF TIME

RECEIVED

JUL 02 2004

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Technology Center 2100
Date: June 23, 2004

Sir:

Applicants petition the Commissioner for Patents to extend the time for response to the Office Action dated January 30, 2004 for two months, from April 30, 2004 to June 30, 2004.

Attached please find a check in the amount of \$420.00 to cover the cost of the extension for a large entity. In the event that any additional fees are due in connection with this paper, please charge our Deposit Account No. 01-2340.

Respectfully submitted,

ARMSTRONG, KRATZ, QUINTOS,
HANSON & BROOKS, LLP

George N. Stevens
Attorney for Applicant
Reg. No. 36,938

06/25/2004 MMEKONEN 00000137 09741018

01 FC:1252

420.00 DP

GNS/alw
Atty. Docket No. **001627**
Suite 1000
1725 K Street, N.W.
Washington, D.C. 20006
(202) 659-2930



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UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 09/741,018 | 12/21/2000 | Katsuyuki Matsumoto | 001627 | 6673 |
| 23850 | 7590 | 01/30/2004 | EXAMINER | |
| ARMSTRONG, KRATZ, QUINTOS, HANSON & BROOKS, LLP 1725 K STREET, NW SUITE 1000 WASHINGTON, DC 20006 | | | PHAM, THOMAS K | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2121 | 10 |

DATE MAILED: 01/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/741,018

Applicant(s)

MATSUMOTO ET AL.

Examiner

Thomas K Pham

Art Unit

2121

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 29 December 2003.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-5 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-5 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 - 1. Certified copies of the priority documents have been received.
 - 2. Certified copies of the priority documents have been received in Application No. _____.
 - 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 - a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) Interview Summary (PTO-413) Paper No(s). _____
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other:

Notice to Applicants

1. This action is in response to request for continued Examination (RCE) filed on 12/29/2003.
2. Claims 1-5 are pending.

DETAILED ACTION

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wood U.S. Patent No. 6,178,514 in view of "Universal Serial Bus Specification" Revision 1.0, January 15, 1996 (hereinafter USB Spec).

Regarding claim 1

Wood teaches a portable electronic device comprising a common serial bus connector provided with data terminals and a power supply terminal in compliance with a common serial bus standard (col. 9 lines 39-41) for connecting a plurality of peripheral devices in common to a host information processing device (col. 9 lines 31-36), a common serial bus controller for executing predetermined data communication processing attendant on data communication with an information processing device connected to the common serial bus connector (fig. 12 element 224), and a control circuit connected to the common serial bus controller for executing device

operation processing for the usual operation of the electronic device (fig. 7 element 21), the electronic device being capable of receiving a power supply from the information processing device or an external power source as connected to the common serial bus connector or from an internal power source (col. 9 lines 47-49 and col. 10 lines 10-13), the portable electronic device being characterized in that the control circuit discriminates among the sources of supply of power and causes the common serial bus controller to execute the predetermined data communication processing while power is supplied from the information processing device connected to the common serial bus connector, or executes the usual device operation processing while power is supplied from the external power source connected to the common serial bus connector (col. 9 lines 39-59) but does not teach power voltage is greater than or equal to 4.4 volts and is supplied from the information processing device connected to the common serial, and power voltage is less than 4.4 volts and is supplied from the external power source connected to the common serial bus connector. However, USB Spec teaches power voltage is greater than or equal to 4.4 volts and is supplied from a host device connected to the common serial bus connector (page 135, Section 7.2.2 third bullet, "All hubs and functions must be ... with this minimum voltage"), and power voltage is less than 4.4 volts and is supplied from the external power source connected to the common serial bus connector (page 114, Section 7.1.3 line 5, "The pull-up terminator ... between 3.3 V and 3.6 V"). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made for the voltage requirement of USB Spec to be part of the device of Wood in order to comply with the USB standard and specification.

Regarding claim 2

Wood teaches a portable electronic device according to claim 1 wherein the control circuit comprises discriminating means for judging which of the information processing device and the external power source is connected to the common serial bus connector (col. 29 lines 4-8), and control means for causing the common serial bus controller to execute the predetermined data communication processing when the connection of the information processing device to the common serial bus connector is recognized (col. 22 lines 62-67), or executes the usual device operation processing when the connection of the external power source to the common serial bus connector is recognized (col. 30 lines 7-8).

Regarding claim 3

Wood teaches a portable electronic device according to claim 2 wherein the discriminating means identifies the source of supply of power based on the voltage value of the power supply terminal of the common serial bus connector (col. 28 lines 49-58).

Regarding claim 4

Wood teaches a portable electronic device according to claim 2 wherein the discriminating means identifies the source of supply of power depending on whether the common serial bus controller has started data communication via the common serial bus connector (col. 28 lines 24-27).

Regarding claim 5

Wood teaches a portable electronic device according to claim 2 wherein the control circuit further comprises means for detecting the connection of the information processing device or the external power source to the common serial bus connector based on the binary state of voltage

level of the power supply terminal thereof, and the discriminating means identifies the source of supply of power according to the result of detection (col. 30 lines 7-18).

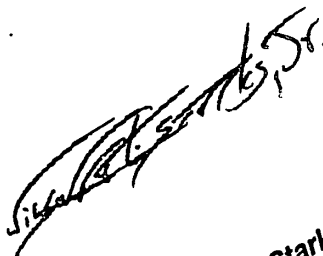
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner *Thomas Pham*; whose telephone number is (703) 305-7587 and fax number is (703) 746-8874. The examiner can normally be reached on Monday-Thursday and every other Friday from 7:30AM- 5:00PM EST or contact Supervisor, *Mr. Anil Khatri*, can be reached on (703) 305-0282.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3900.

Thomas Pham
Patent Examiner

TP
January 23, 2004



Wilbert L. Starks, Jr.
Primary Examiner
Art Unit - 2121

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| | | | |
|-----------------------------------|---------------------------------------|---|-------------|
| Notice of References Cited | Application/Control No. 09/741,018 | Applicant(s)/Patent Under Reexamination MATSUMOTO ET AL. | |
| | Examiner Thomas K Pham | Art Unit 2121 | Page 1 of 1 |

U.S. PATENT DOCUMENTS

| * | Document Number Country Code-Number-Kind Code | Date MM-YYYY | Name | Classification |
|---|--|-----------------|------|----------------|
| | A | US- | | |
| | B | US- | | |
| | C | US- | | |
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| | K | US- | | |
| | L | US- | | |
| | M | US- | | |

FOREIGN PATENT DOCUMENTS

| * | Document Number Country Code-Number-Kind Code | Date MM-YYYY | Country | Name | Classification |
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NON-PATENT DOCUMENTS

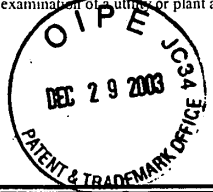
| * | Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages) |
|---|---|
| U | "Universal Serial Bus Specification" Revision 1.0, pages 111-136, January 15, 1996 |
| V | |
| W | |
| X | |

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Rce 1/21/04
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 #15

**REQUEST FOR
 CONTINUED EXAMINATION (RCE)
 TRANSMITTAL**

Subsection (b) of 35 U.S.C. § 132, effective on May 29, 2000, provides for the continued examination of a utility or plant application filed on or after June 8, 1995.



| | |
|----------------------|--------------------------------|
| Application Number | 09/741,018 |
| Filing Date | December 21, 2000 |
| First Named Inventor | MATSUMOTO, Katsuyuki et al. |
| Group Art Unit | .2121 |
| Name of Examiner | Thomas K. PHAM |
| Attorney Docket No. | 001627 |

This is a Request for Continued Examination (RCE) under 37 C.F.R. § 1.114 of the above-identified application.
 Note: 37 C.F.R. §1.114 is effective on May 29, 2000. If the above-identified application was filed prior to May 29, 2000, applicant may wish to consider filing a continued prosecution application (CPA) under 37 C.F.R. §1.53 (PTO/SB/29) instead of a RCE to be eligible for the patent term adjustment provisions of the AIPA. See changes to Application Examination and Provisional Application Practice, Interim Rule, 65 Fed. Reg. 14865 (Mar 20, 2000) 1233 Off. Gazette Pat

1. **Submission Required Under 37 C.F.R. § 1.114**

- a. Previously submitted
 - i. Consider the amendment(s)/reply under 37 C.F.R. §1.116 previously filed on November 20, 2003.
(Any unentered amendment(s) referred to above will be entered)
 - ii. Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____
 - iii. Other _____

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 Technology Center 2100

- b. Enclosed
 - i. Amendment/Reply
 - ii. Affidavit(s)/Declaration(s)
 - iii. Information Disclosure Statement (IDS)
 - iv. Other Petition for Extension of Time.

2. **Miscellaneous**

- a. Suspension of Action on the above-identified application is requested under 37 C.F.R. §1.103(c) for a period of _____ months (period shall not exceed three months; Fee under 37 C.F.R. §1.17(i) required)
- b. Other _____

3. **Fees** The RCE fee under 37 C.F.R. §1.17(e) is required by 37 C.F.R. §1.114 when the RCE is filed.

- a. The Director is hereby authorized to charge any underpayment or credit any overpayments, to Deposit Account No. 01-2340
 - i. RCE fee required under 37 C.F.R. § 1.17 (e)
 - ii. Extension of Time Fee (37 C.F.R. §§ 1.136 and 1.17)
 - iii. Other _____
- b. Check in the amount of \$880.00 is enclosed.

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 12/31/2003 01 FE:180

REQUEST FOR
CONTINUED EXAMINATION (RCE)
TRANSMITTAL

Subsection (b) of 35 U.S.C. § 132, effective on May 29, 2000, provides for the continued examination of a utility or plant application filed on or after June 8, 1995.

PAGE 2



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PATENT TRADEMARK OFFICE

Atty Docket No.

001627

SIGNATURE BY APPLICANT, ATTORNEY, OR AGENT REQUIRED

Name **Darren R. Crew**

Registration No. **37,806 (atty/agent)**

Signature

Darren R. Crew

Date **December 29, 2003**

CERTIFICATE OF MAILING OR TRANSMISSION

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to Commissioner for Patents, MAIL STOP RCE, Washington, D.C. 20231, or facsimile transmitted to the U.S. Patent and Trademark Office on:

Name

Signature

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Technology Center 2100



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Re the Application of: **MATSUMOTO, Katsuyuki et al.**

Group Art Unit: **2121**

Serial No.: **09/741,018**

Examiner: **Thomas K. PHAM**

Filed: **December 21, 2000**

P.T.O. Confirmation No.: **6673**

For: **PORTABLE ELECTRONIC DEVICE COMPRISING COMMON SERIAL BUS CONNECTOR**

PETITION FOR EXTENSION OF TIME

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Date: December 29, 2003

Sir:

Applicants petition the Commissioner for Patents to extend the time for response to the Office Action dated September 3, 2003 for one month from December 3, 2003 to January 3, 2004.

Attached please find a check in the amount of \$110.00 to cover the cost of the extension for a large entity. In the event that any additional fees are due in connection with this paper, please charge our Deposit Account No. 01-2340.

Respectfully submitted,

12/31/2003 HUONG1 00000021 09741018
02 FC:1251 110.00 DP

ARMSTRONG, KRATZ, QUINTOS,
HANSON & BROOKS, LLP
Darren R. Crew
Darren R. Crew
Attorney for Applicant
Reg. No. 37,806

DRC/alw
Atty. Docket No. **001627**
Suite 1000
1725 K Street, N.W.
Washington, D.C. 20006
(202) 659-2930



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PATENT TRADEMARK OFFICE

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UNITED STATES DEPARTMENT OF COMMERCE
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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 09/741,018 | 12/21/2000 | Katsuyuki Matsumoto | 001627 | 6673 |
| 23850 | 7590 | 12/09/2003 | EXAMINER | |
| ARMSTRONG, KRATZ, QUINTOS, HANSON & BROOKS, LLP 1725 K STREET, NW SUITE 1000 WASHINGTON, DC 20006 | | | PHAM, THOMAS K | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2121 | 8 |
| DATE MAILED: 12/09/2003 | | | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------|-------------------------------|----------------------------------|--|
| Advisory Action | Application No. 09/741,018 | Applicant(s) MATSUMOTO ET AL. | |
| | Examiner Thomas K Pham | Art Unit 2121 | |

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 20 November 2003 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE. Therefore, further action by the applicant is required to avoid abandonment of this application. A proper reply to a final rejection under 37 CFR 1.113 may only be either: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114.

PERIOD FOR REPLY [check either a) or b)]

- a) The period for reply expires 3 months from the mailing date of the final rejection.
- b) The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection. ONLY CHECK THIS BOX WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

1. A Notice of Appeal was filed on _____. Appellant's Brief must be filed within the period set forth in 37 CFR 1.192(a), or any extension thereof (37 CFR 1.191(d)), to avoid dismissal of the appeal.
2. The proposed amendment(s) will not be entered because:
- (a) they raise new issues that would require further consideration and/or search (see NOTE below);
 - (b) they raise the issue of new matter (see Note below);
 - (c) they are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
 - (d) they present additional claims without canceling a corresponding number of finally rejected claims.

NOTE: See Continuation Sheet.

3. Applicant's reply has overcome the following rejection(s): _____.
4. Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).
5. The a) affidavit, b) exhibit, or c) request for reconsideration has been considered but does NOT place the application in condition for allowance because: _____.
6. The affidavit or exhibit will NOT be considered because it is not directed SOLELY to issues which were newly raised by the Examiner in the final rejection.
7. For purposes of Appeal, the proposed amendment(s) a) will not be entered or b) will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.

The status of the claim(s) is (or will be) as follows:

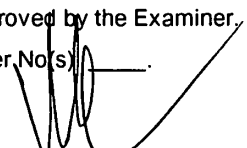
Claim(s) allowed: _____.

Claim(s) objected to: _____.

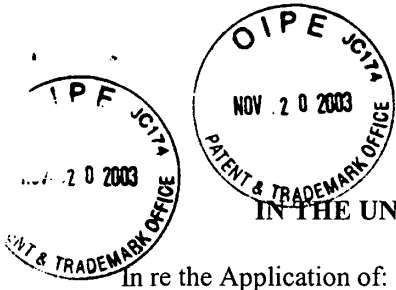
Claim(s) rejected: 1-5.

Claim(s) withdrawn from consideration: _____.

8. The drawing correction filed on _____ is a) approved or b) disapproved by the Examiner.
9. Note the attached Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
10. Other: _____


ANIL KHATRI
SUPERVISORY PATENT EXAMINER

Continuation of 2. NOTE: the phrase "voltage is greater than or equal to 4.4 volts" raises new issues that would require further consideration and/or search..



Handwritten notes:
AF/B
12/3/03
JKH

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of: **MATSUMOTO, Katsuyuki et al.**

Group Art Unit: 2121

Serial No.: **09/741,018**

Examiner: **Thomas K. PHAM**

Filed: **December 21, 2000**

P.T.O. Confirmation No.: 6673

For: **PORTABLE ELECTRONIC DEVICE COMPRISING COMMON SERIAL BUS CONNECTOR**

RESPONSE UNDER 37 CFR §1.116
- EXPEDITED RESPONSE -
GROUP ART UNIT 2121

MAILED

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Technology Center 2100

MAILSTOP AF

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

November 20, 2003

Sir:

In response to the Office Action dated **September 3, 2003**, please amend the above-identified application as follows:

U.S. Patent Application Serial No. 09/741,018
Amendment dated November 20, 2003
Reply to OA of September 3, 2003

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (Currently Amended): A portable electronic device comprising

B1 a common serial bus connector provided with data terminals and a power supply terminal in compliance with a common serial bus standard for connecting a plurality of peripheral devices in common to a host information processing device,

a common serial bus controller for executing predetermined data communication processing attendant on data communication with an information processing device connected to the common serial bus controller connector, and

a control circuit connected to the common serial bus controller for executing device operation processing for the usual operation of the electronic device, the electronic device being capable of receiving a power supply from the information processing device or an external power source as connected to the common serial bus connector or from an internal power source, the portable electronic device being characterized in that the control circuit discriminates among the sources of supply of power and causes the common serial bus controller to execute the predetermined data communication processing while power voltage is greater than or equal to 4.4 volts and is supplied from the information processing device connected to the common serial bus connector, or executes

U.S. Patent Application Serial No. 09/741,018
Amendment dated November 20, 2003
Reply to OA of September 3, 2003

the usual device operation processing while power voltage is less than 4.4 volts and is supplied from the external power source connected to the common serial bus connector.

B1
Claim 2 (Original): A portable electronic device according to claim 1 wherein the control circuit comprises discriminating means for judging which of the information processing device and the external power source is connected to the common serial bus connector, and control means for causing the common serial bus controller to execute the predetermined data communication processing when the connection of the information processing device to the common serial bus connector is recognized, or executes the usual device operation processing when the connection of the external power source to the common serial bus connector is recognized.

Claim 3 (Original): A portable electronic device according to claim 2 wherein the discriminating means identifies the source of supply of power based on the voltage value of the power supply terminal of the common serial bus connector.

Claim 4 (Original): A portable electronic device according to claim 2 wherein the discriminating means identifies the source of supply of power depending on whether the common serial bus controller has started data communication via the common serial bus connector.

U.S. Patent Application Serial No. 09/741,018
Amendment dated November 20, 2003
Reply to OA of September 3, 2003

B1
Claim 5 (Original): A portable electronic device according to claim 2 wherein the control circuit further comprises means for detecting the connection of the information processing device or the external power source to the common serial bus connector based on the binary state of voltage level of the power supply terminal thereof, and the discriminating means identifies the source of supply of power according to the result of detection.

U.S. Patent Application Serial No. **09/741,018**
Amendment dated November 20, 2003
Reply to OA of **September 3, 2003**

REMARKS

Claims 1-5 are pending in this application. Claim 1 has been amended in order to more particularly point out, and distinctly claim the subject matter to which the applicants regard as their invention. The applicants respectfully submit that no new matter has been added. It is believed that this Amendment is fully responsive to the Office Action dated **September 3, 2003**.

Claim Rejections under 35 USC §102

Claims 1-5 are rejected under 35 USC §102(e) as being anticipated by Wood (U.S. Patent No. 6,178,514).

Wood describes a USB cable (28) connected to a USB hub (42) that is in turn connected to a USB device (62), such as USB speakers (22) or a USB keyboard (16). If the USB device (62) is intended to draw more than 500 mA of current, it is typically provided with its own external power supply. When a controller (224) determines that an external power supply is not present, then the controller communicates to the USB hub (42) that the USB device should be considered as a low power device.

The present invention is a portable electronic device (1) connected to a personal computer (2) via a USB cable (11). An external power source (3) may be connected to USB connector (4). When the external power source (3) is connected to the USB connector (4), the voltage detected is less than 4.4 V and CPU (7) causes charging of the built-in secondary cell and execution of device operation processing based on user input to the device. When the external power source (3) is not

U.S. Patent Application Serial No. 09/741,018
Amendment dated November 20, 2003
Reply to OA of **September 3, 2003**

connected to the USB connector (4), the voltage detected is greater than or equal to 4.4 V and CPU (7) causes USB controller (6) to start data communication processing.

However, Wood does not describe the common serial bus controller causing the execution of predetermined data communication processing while power voltage is greater than or equal to 4.4 Volts and is supplied from the information processing device, or execution of the usual device operation processing while power voltage is less than 4.4 Volts and is supplied from the external power source or the internal power source.

Specifically, claim 1 patentably distinguishes over the prior art relied upon by reciting:

“A portable electronic device comprising a common serial bus connector provided with data terminals and a power supply terminal in compliance with a common serial bus standard for connecting a plurality of peripheral devices in common to a host information processing device, a common serial bus controller for executing predetermined data communication processing attendant on data communication with an information processing device connected to the common serial bus controller connector, and a control circuit connected to the common serial bus controller for executing device operation processing for the usual operation of the electronic device, the electronic device being capable of receiving a power supply from the information processing device or an external power source as connected to the common serial bus connector or from an internal power source, the portable electronic device being characterized in that the control circuit discriminates among the sources of supply of power and causes the common serial bus controller to execute the predetermined data communication processing while power voltage is greater than or equal to 4.4 volts and is supplied from the information processing device connected to the common serial bus connector, or executes the usual device operation processing while power voltage is less than 4.4 volts and is supplied from the external power source connected to the common serial bus connector.”
(Emphasis Added)

Therefore, withdrawal of the rejection of Claims 1-5 under 35 USC §102(e) as being anticipated by Wood (U.S. Patent No. 6,178,514) is respectfully requested.

U.S. Patent Application Serial No. 09/741,018
Amendment dated November 20, 2003
Reply to OA of September 3, 2003

CONCLUSION

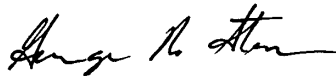
In view of the aforementioned amendments and accompanying remarks, claims, as amended, are in condition for allowance, which action, at an early date, is requested.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicants undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

ARMSTRONG, KRATZ, QUINTOS,
HANSON & BROOKS, LLP



George N. Stevens
Attorney for Applicant
Reg. No. 36,938

GNS/xl
Atty. Docket No. 001627
Suite 1000
1725 K Street, N.W.
Washington, D.C. 20006
(202) 659-2930



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HAHOME\GSTEVEN\00\001627\amendment of 11-19-03

P22



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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/741,018 | 12/21/2000 | Katsuyuki Matsumoto | 001627 | 6673 |

23850 7590 09/03/2003
ARMSTRONG, WESTERMAN & HATTORI, LLP
1725 K STREET, NW
SUITE 1000
WASHINGTON, DC 20006

EXAMINER

PHAM, THOMAS K

| ART UNIT | PAPER NUMBER |
|----------|--------------|
| 2121 | 6 |

DATE MAILED: 09/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

pre

| | | | |
|------------------------------|-------------------------------|----------------------------------|--|
| Office Action Summary | Application No. 09/741,018 | Applicant(s) MATSUMOTO ET AL. | |
| | Examiner Thomas K Pham | Art Unit 2121 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 25 June 2003.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-5 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-5 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 - 1. Certified copies of the priority documents have been received.
 - 2. Certified copies of the priority documents have been received in Application No. _____.
 - 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 - * See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 - a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) Interview Summary (PTO-413) Paper No(s). _____
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: _____

Response to Amendment

1. This action is in response to request for re-consideration filed on 06/25/2003
2. Claims 1-5 has been considered but they are not persuasive.
3. Claims 1-5 stand rejected under 35 U.S.C. 102(b) as being anticipated by Wood U.S.

Patent no. 6,178,514.

DETAILED ACTION

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-5 are rejected under 35 U.S.C. 102(e) as being anticipated by Wood U.S. Patent No. 6,178,514.
6. As for claim 1, Wood shows a portable electronic device comprising a common serial bus connector provided with data terminals and a power supply terminal in compliance with a common serial bus standard (col. 9 lines 39-41) for connecting a plurality of peripheral devices in common to a host information processing device (col. 9 lines 31-36), a common serial bus controller for executing predetermined data communication processing attendant on data communication with an information processing device connected to the common serial bus connector (fig. 12 element 224), and a control circuit connected to the common serial bus controller for executing device operation processing for the usual operation of the electronic

Art Unit: 2121

device (fig. 7 element 21), the electronic device being capable of receiving a power supply from the information processing device or an external power source as connected to the common serial bus connector or from an internal power source (col. 9 lines 47-49 and col. 10 lines 10-13), the portable electronic device being characterized in that the control circuit discriminates among the sources of supply of power and causes the common serial bus controller to execute the predetermined data communication processing while power is supplied from the information processing device connected to the common serial bus connector, or executes the usual device operation processing while power is supplied from the external power source connected to the common serial bus connector (col. 9 lines 39-59).

7. As for claim 2, Wood shows a portable electronic device according to claim 1 wherein the control circuit comprises discriminating means for judging which of the information processing device and the external power source is connected to the common serial bus connector (col. 29 lines 4-8), and control means for causing the common serial bus controller to execute the predetermined data communication processing when the connection of the information processing device to the common serial bus connector is recognized (col. 22 lines 62-67), or executes the usual device operation processing when the connection of the external power source to the common serial bus connector is recognized (col. 30 lines 7-8).

8. As for claim 3, Wood shows a portable electronic device according to claim 2 wherein the discriminating means identifies the source of supply of power based on the voltage value of the power supply terminal of the common serial bus connector (col. 28 lines 49-58).

9. As for claim 4, Wood shows a portable electronic device according to claim 2 wherein the discriminating means identifies the source of supply of power depending on whether the

common serial bus controller has started data communication via the common serial bus connector (col. 28 lines 24-27).

As for claim 5, Wood shows a portable electronic device according to claim 2 wherein the control circuit further comprises means for detecting the connection of the information processing device or the external power source to the common serial bus connector based on the binary state of voltage level of the power supply terminal thereof, and the discriminating means identifies the source of supply of power according to the result of detection (col. 30 lines 7-18).

Response to Arguments

In the remark the applicant argues that cited reference fails to disclose:

I) “discriminates among the sources of supply of power and causes the common serial bus controller to execute the predetermined data communication processing while power is supplied from the information processing device connected to the common serial, bus connector, or executes the usual device operation processing while power is supplied from the external power source connected to the common serial bus connector” as recited in claim 1.

In response to applicant’s argument,

I) It was noted that prior art (Wood USPN 6,178,514) teaches (as in figure 3) and (column 9, lines 39-43, “there is shown a USB cable 28 connecting master USB hub 42 to a generic USB device 62. For ease of illustration connector 58 and 60 are not shown. Each cable 28 includes four wires. Two wires 66 and 68 carry power, respectively ground and Vcc.”). Therefore, it is clear that power is supplied from the information processing device (computer 12 of Wood) connected to the common serial bus connector. Thus, limitations are met by the reference.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner *Thomas Pham*; whose telephone number is (703) 305-7587 and fax number is (703) 746-8874. The examiner can normally be reached on Monday-Thursday and every other Friday from 7:30AM- 5:00PM EST or contact Supervisor, *Mr. Anil Khatri*, can be reached on (703) 305-0282.

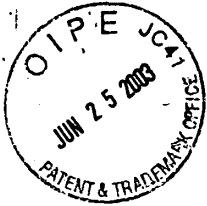
Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3900.

Thomas Pham
Patent Examiner

TP

August 28, 2003


ANIL KHATRI
SUPERVISORY PATENT EXAMINER



7/21
5/a
63003
E.Hall

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of: **MATSUMOTO, Katsuyuki et al.**

Group Art Unit: **2121**

Serial No.: **09/741,018**

Examiner: **Thomas K. PHAM**

Filed: **December 21, 2000**

P.T.O. Confirmation No.: **6673**

For: **PORTABLE ELECTRONIC DEVICE COMPRISING COMMON SERIAL BUS CONNECTOR**

RECEIVED

JUN 26 2003

AMENDMENT UNDER 37 CFR §1.111

Technology Center 2100

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

June 25, 2003

Sir:

In response to the Office Action dated **March 31, 2003**, please amend the above-identified application as follows:

IN THE CLAIMS:

Sub
B1
A1

Claim 1 (currently amended) A portable electronic device comprising a common serial bus connector provided with data terminals and a power supply terminal in compliance with a common serial bus standard for connecting a plurality of peripheral devices in common to a host information processing device, a common serial bus controller for executing predetermined data communication processing attendant on data communication with an information processing device connected to the common serial bus controller connector, and a control circuit connected to the common serial bus controller for executing device operation processing for the usual operation of the electronic device, the electronic device being capable of receiving a power supply from the information processing device or an external power source as connected to the common serial bus connector or from an internal power source, the portable electronic device being characterized in that the control circuit discriminates among the sources of supply of power and causes the common serial bus controller to execute the predetermined data communication processing while power is supplied from the information processing device connected to the common serial bus connector, or executes the usual device operation processing while power is supplied from the external power source connected to the common serial bus connector ~~or the internal power source.~~

Claim 2 (original) A portable electronic device according to claim 1 wherein the control circuit comprises discriminating means for judging which of the information processing

U.S. Patent Application Serial No. 09/741,018
Atty. Docket No. 001627

*Ad
Contd.*

device and the external power source is connected to the common serial bus connector, and control means for causing the common serial bus controller to execute the predetermined data communication processing when the connection of the information processing device to the common serial bus connector is recognized, or executes the usual device operation processing when the connection of the external power source to the common serial bus connector is recognized.

Bl

Claim 3 (original) A portable electronic device according to claim 2 wherein the discriminating means identifies the source of supply of power based on the voltage value of the power supply terminal of the common serial bus connector.

Claim 4 (original) A portable electronic device according to claim 2 wherein the discriminating means identifies the source of supply of power depending on whether the common serial bus controller has started data communication via the common serial bus connector.

Claim 5 (original) A portable electronic device according to claim 2 wherein the control circuit further comprises means for detecting the connection of the information processing device or the external power source to the common serial bus connector based on the binary state of voltage level of the power supply terminal thereof, and the discriminating means identifies the source of supply of power according to the result of detection.

U.S. Patent Application Serial No. 09/741,018
Atty. Docket No. 001627

REMARKS

Claims 1-5 are pending in this application and claim 1 has been amended in order to more particularly point out, and distinctly claim the subject matter to which the Applicants regard as their invention. It is believed that this Amendment is fully responsive to the Office Action dated **March 31, 2003**.

Claims 1 - 5 Rejection under 35 U.S.C. §102(e)

Claims 1 - 5 are rejected under 35 U.S.C. §102(e) as being anticipated by Wood U.S. Patent No. 6,178,514

Wood describes a USB cable (28) connected to a USB hub (42) that is in turn connected to a USB device (62), such as USB speakers (22) or a USB keyboard (16). If the USB device (62) is intended to draw more than 500 mA of current, it is typically provided with its own external power supply. When a controller (224) determines that an external power supply is not present, then the controller communicates to the USB hub (42) that the USB device should be considered as a low power device.

The present invention is a portable electronic device (1) connected to a personal computer (2) via a USB cable (11). An external power source (3) may be connected to USB connector (4). When the external power source (3) is connected to the USB connector (4), the voltage detected is less than 4.4 V and CPU (7) causes charging of the built-in secondary cell and execution of device operation processing based on user input to the device. When the external power source (3) is not connected to the USB connector (4), the voltage detected is greater than

U.S. Patent Application Serial No. 09/741,018
Atty. Docket No. 001627

or equal to 4.4 V and CPU (7) causes USB controller (6) to start data communication processing.

The portable electronic device recited in claim 1 of the present invention is characterized in that a control circuit "discriminates among the sources of supply of power and causes the common serial bus controller to execute the predetermined data communication processing while power is supplied from the information processing device connected to the common serial, bus connector, or executes the usual device operation processing while power is supplied from the external power source connected to the common serial bus connector".

On the other hand, in Wood, if a USB device (62) is intended to draw more than 500 mA of current, it is typically provided with its own external power supply (see column 10, line 10-13). When a controller (224) determines that an external power supply is not present, then the controller communicates to the USB hub (42) that the USB device should be considered as a low power device (see column 28, line 66 to column 29, line 4).

According to these descriptions, it appears that the external power supply of Wood is not connected to a USB terminal of the USB device (62) but connected to another terminal of the USB device at all times or incorporated in the USB device if the external power supply is present.

While the external power source of a portable electronic device of the present invention is connected to the common serial bus connector, the external power supply of Wood is connected to a terminal other than a USB terminal, which makes a patentable difference. Wood does not describe "a control circuit that discriminates among the sources of supply of power and causes the common serial bus controller to execute the predetermined data communication processing while power is supplied from the information processing device connected to the common serial

U.S. Patent Application Serial No. 09/741,018
Atty. Docket No. 001627

bus connector, or executes the usual device operation processing while power is supplied from the external power source connected to the common serial bus connector" as recited in claim 1.

Conclusion

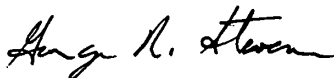
In view of the aforementioned amendments and accompanying remarks, claims, as amended, are in condition for allowance, which action, at an early date, is requested.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

ARMSTRONG, WESTERMAN & HATTORI, LLP



George N. Stevens
Attorney for Applicants
Reg. No. 36,938

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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/741,018 | 12/21/2000 | Katsuyuki Matsumoto | 001627 | 6673 |

23850 7590 03/31/2003

ARMSTRONG, WESTERMAN & HATTORI, LLP
1725 K STREET, NW
SUITE 1000
WASHINGTON, DC 20006

EXAMINER

PHAM, THOMAS K

ART UNIT PAPER NUMBER

2121

DATE MAILED: 03/31/2003

4

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|-------------------------------|----------------------------------|--|
| Office Action Summary | Application No. 09/741,018 | Applicant(s) MATSUMOTO ET AL. | |
| | Examiner Thomas K Pham | Art Unit 2121 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 12/21/2000.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-5 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>3</u> . | 7) <input type="checkbox"/> Other: |

Notice to Applicant(s)

1. Claims 1-5 of U.S. Application 09/741018 filed on 12/21/2000 are presented for examination.

DETAILED ACTION

Priority

2. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 11-370327, filed on 12/27/1999.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-5 are rejected under 35 U.S.C. 102(e) as being anticipated by Wood U.S. Patent No. 6,178,514.
5. As for claim 1, Wood shows a portable electronic device comprising a common serial bus connector provided with data terminals and a power supply terminal in compliance with a common serial bus standard (col. 9 lines 39-41) for connecting a plurality of peripheral devices in common to a host information processing device (col. 9 lines 31-36), a common serial bus controller for executing predetermined data communication processing attendant on data communication with an information processing device connected to the common serial bus

connector (fig. 12 element 224), and a control circuit connected to the common serial bus controller for executing device operation processing for the usual operation of the electronic device (fig. 7 element 21), the electronic device being capable of receiving a power supply from the information processing device or an external power source as connected to the common serial bus connector or from an internal power source (col. 9 lines 47-49 and col. 10 lines 10-13), the portable electronic device being characterized in that the control circuit discriminates among the sources of supply of power and causes the common serial bus controller to execute the predetermined data communication processing while power is supplied from the information processing device (col. 28 line 66 to col. 29 line 4), or executes the usual device operation processing while power is supplied from the external power source or the internal power source (col. 30 lines 7-8).

6. As for claim 2, Wood shows a portable electronic device according to claim 1 wherein the control circuit comprises discriminating means for judging which of the information processing device and the external power source is connected to the common serial bus connector (col. 29 lines 4-8), and control means for causing the common serial bus controller to execute the predetermined data communication processing when the connection of the information processing device to the common serial bus connector is recognized (col. 22 lines 62-67), or executes the usual device operation processing when the connection of the external power source to the common serial bus connector is recognized (col. 30 lines 7-8).

7. As for claim 3, Wood shows a portable electronic device according to claim 2 wherein the discriminating means identifies the source of supply of power based on the voltage value of the power supply terminal of the common serial bus connector (col. 28 lines 49-58).

8. As for claim 4, Wood shows a portable electronic device according to claim 2 wherein the discriminating means identifies the source of supply of power depending on whether the common serial bus controller has started data communication via the common serial bus connector (col. 28 lines 24-27).

9. As for claim 5, Wood shows a portable electronic device according to claim 2 wherein the control circuit further comprises means for detecting the connection of the information processing device or the external power source to the common serial bus connector based on the binary state of voltage level of the power supply terminal thereof, and the discriminating means identifies the source of supply of power according to the result of detection (col. 30 lines 7-18).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Thomas Pham; whose telephone number is (703) 305-7587 and fax number is (703) 746-8874. The examiner can normally be reached on Monday-Friday from 7:30AM- 4:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Follansbee, can be reached on (703) 305-8498 or via e-mail addressed to [joh.follansbee@uspto.gov]. The fax number for this Group is (703) 308-5403.

Communications via Internet e-mail regarding this application, other than those under 35 U.S.C. 132 or which otherwise require a signature, may be used by the applicant and should be addressed to [thomas.pham@uspto.gov].

All Internet e-mail communications will be made of record in the application file. PTO employees do not engage in Internet communications where there exists a possibility that sensitive information could be identified or exchanged unless the record includes a properly signed express waiver of the confidentiality requirements of 35 U.S.C. 122. This is more clearly set forth in the Interim Internet Usage Policy published in the Official Gazette of the Patent and Trademark on February 25, 1997 at 1195 OG 89.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3900.

Thomas K. Pham
Patent Examiner

tp
March 26, 2003

Ramesh Patel
RAMESH PATEL
PRIMARY EXAMINER 2/26/03
For John Follansbee

| | | | |
|-----------------------------------|---------------------------------------|---|-------------|
| Notice of References Cited | Application/Control No. 09/741,018 | Applicant(s)/Patent Under Reexamination MATSUMOTO ET AL. | |
| | Examiner Thomas K Pham | Art Unit 2121 | Page 1 of 1 |


U.S. PATENT DOCUMENTS

| * | Document Number Country Code-Number-Kind Code | Date MM-YYYY | Name | Classification |
|---|--|-----------------|------------------|----------------|
| A | US-6,178,514 | 01-2001 | Wood, Bradley C. | 713/300 |
| B | US- | | | |
| C | US- | | | |
| D | US- | | | |
| E | US- | | | |
| F | US- | | | |
| G | US- | | | |
| H | US- | | | |
| I | US- | | | |
| J | US- | | | |
| K | US- | | | |
| L | US- | | | |
| M | US- | | | |

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NON-PATENT DOCUMENTS

| * | Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages) |
|---|---|
| U | |
| V | |
| W | |
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*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.





| | | |
|---|---|------------------------------|
| INFORMATION DISCLOSURE CITATION PTO-1449 | Docket No. 001627 | Serial No. 09/741,018 |
| | Applicant(s): Katsuyuki MATSUMOTO et al. | |
| | Filing Date: December 21, 2000 | Group Art Unit: 2833 |

U.S. PATENT DOCUMENTS

| Examiner Initial | Document No. | Name | Date | Class | Subclass | Filing Date (If appropriate) |
|------------------|--------------|-----------|----------|---------|----------|------------------------------|
| <u>TP</u> | AA | 5,928,336 | Takeuchi | 7-27-99 | 710 1 | 5-15-97 |
| _____ | AB | | | | | |
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FOREIGN PATENT DOCUMENTS

| Document No. | Date | Country | Translation (Yes or No) |
|--------------|-------------|---------|-------------------------|
| <u>VP</u> AF | WO 96-13802 | 5-9-96 | PCT |
| _____ AG | | | |
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OTHER DOCUMENTS

| | | |
|----------|-----------------------|--------------------------------|
| _____ | AK | |
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| Examiner | <i>Thomas A. Pham</i> | Date Considered <i>3/26/03</i> |

| L Number | Hits | Search Text | DB | Time stamp |
|----------|------|---|--------------------------------|------------------|
| 1 | 1114 | (usb or (universal adj serial adj bus)) same (power\$3 and data) | USPAT; US-PGPUB; DERWENT | 2003/03/25 17:49 |
| 2 | 441 | ((usb or (universal adj serial adj bus)) same (power\$3 and data)) and (portable or handheld) | USPAT; US-PGPUB; DERWENT | 2003/03/25 10:21 |
| 3 | 9 | ((usb or (universal adj serial adj bus)) same (power\$3 and data)) and (portable or handheld) and @pd<19981227 | USPAT; US-PGPUB; DERWENT | 2003/03/25 10:29 |
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| 6 | 44 | (usb or (universal adj serial adj bus)) near5 (power\$3 and data) | USPAT; US-PGPUB; DERWENT | 2003/03/25 12:55 |
| 7 | 10 | (matsumoto adj katsuyuki).in. | USPAT; US-PGPUB; DERWENT | 2003/03/25 13:49 |
| 10 | 32 | ("3740569" "4373183" "4395710" "4528662" "4907183" "4980836" "5036251" "5163124" "5237258" "5257163" "5448554" "5465366" "5485458" "5587876" "5675364" "5689574" "5730512" "5758171" "5767844" "5799196" "5877745" "5884086" "5890015" "5914877" "5938770" "6009529" "6067628" "6253267" "6253329" "6338143" "6345364" "6357011").PN. | USPAT | 2003/03/25 14:21 |
| 25 | 2 | 6438638.pn. | USPAT; US-PGPUB; DERWENT | 2003/03/25 16:50 |
| 26 | 18 | ("5296692" "5394206" "5576698" "5589719" "5640541" "5729204" "5786769" "5815426" "5828905" "5877975" "5905888" "D416541" "5995376" "6006295" "6026007" "6075706" "6264506" "6353870").PN. | USPAT | 2003/03/25 16:47 |
| 27 | 1 | 5767844.pn. | USPAT | 2003/03/25 17:17 |
| 28 | 8 | ("5214785" "5347167" "5410305" "5530878" "5548764" "5652895" "5657593" "5675813").PN. | USPAT | 2003/03/25 16:51 |
| 29 | 61 | 5767844.URPN. | USPAT | 2003/03/25 16:53 |
| 30 | 114 | 710/313.ccls. | USPAT | 2003/03/25 17:17 |
| 31 | 21 | 710/313.ccls. and (usb or (universal adj serial adj bus)) | USPAT; US-PGPUB; DERWENT | 2003/03/25 17:36 |
| 32 | 21 | 710/313.ccls. and (usb or (universal adj serial)) | USPAT; US-PGPUB; DERWENT | 2003/03/25 17:36 |
| 33 | 127 | (usb or (universal adj serial adj bus)) same (external adj power) | USPAT; US-PGPUB; DERWENT | 2003/03/25 17:50 |
| 34 | 5 | ("3784765" "3839614" "4886946" "5315079" "6084192").PN. | USPAT | 2003/03/25 18:04 |



2833

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

3
DW
11/27/01

In re Application of: **Katsuyuki MATSUMOTO et al.**

Serial No.: **09/741,018**

Group Art Unit: **2833**

Filed: **December 21, 2000**

Examiner: **To be assigned**

For: **PORTABLE ELECTRONIC DEVICE COMPRISING COMMON SERIAL BUS CONNECTOR**

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**INFORMATION DISCLOSURE STATEMENT
PURSUANT TO 37 CFR 1.97(b)**

Commissioner for Patents
Washington, D.C. 20231

November 13, 2001

Sir:

The attention of the Patent and Trademark Office is hereby directed to the documents listed on the attached Form PTO-1449. One copy of each of these documents is attached along with a European Search Report.

No fee or certification is required in connection with this Information Disclosure Statement, since it is being submitted prior to the issuance of a first official action on the merits or expiration of the three month period following the filing date or the entry of the national stage of the above-captioned application.

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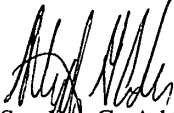
The above information is presented so that the Patent and Trademark Office can, in the first instance, determine any materiality thereof to the claimed invention. See 37 CFR 1.104(a) concerning the PTO duty to consider and use any such information. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that

the documents cited in the attached Form PTO-1449 be made of record therein and appear on the first page of any patent to issue therefrom.

The Commissioner is authorized to charge our Deposit Account No. 01-2340 for any fee which is deemed by the Patent and Trademark Office to be required to effect consideration of this statement.

Respectfully submitted,

ARMSTRONG, WESTERMAN, HATTORI,
McLELAND & NAUGHTON, LLP



Stephen G. Adrian
Attorney for Applicants
Reg. No. 32,878

Atty. Docket No. 001627
1725 K Street, N.W., Suite 1000
Washington, DC 20006
Tel: (202) 659-2930
Fax: (202) 887-0357
SGA/plb

Enclosures: European Search Report, PTO-1449 and 2 references

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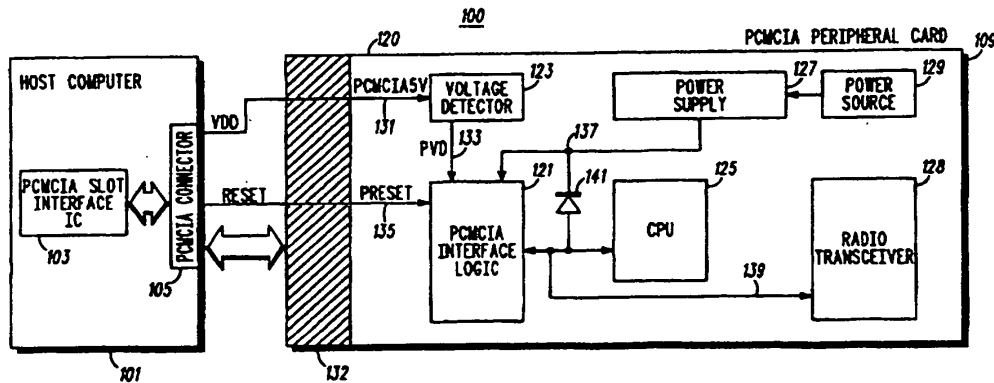
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| | | |
|--|-----------|---|
| <p>(51) International Patent Classification ⁶ : G06K 13/00, 13/14</p> | <p>A1</p> | <p>(11) International Publication Number: WO 96/13802 (43) International Publication Date: 9 May 1996 (09.05.96)</p> |
| <p>(21) International Application Number: PCT/US95/11614 (22) International Filing Date: 13 September 1995 (13.09.95) (30) Priority Data: 08/332,008 31 October 1994 (31.10.94) US (71) Applicant: MOTOROLA, INC. [US/US]; 1303 East Algonquin Road, Schaumburg, IL 60196 (US). (72) Inventors: MOSS, Berry; 2560 Adelaide Street, Matsqui, British Columbia V2T 3L7 (CA). RUSSO, David, William; 2301 Dorman Drive, Burnaby, British Columbia V5A 2V3 (CA). LOCKHART, Thomas, Wayne; 9400 Ryan Crescent, Richmond, British Columbia V7A 2H2 (CA). LIM, Ricardo; 6231 Dakota Drive, Richmond, British Columbia V7C 4X5 (CA). BEAUDOIN, Denis; 12353 Northpark Crescent, Surrey, British Columbia V3X 2A9 (CA). (74) Agents: BUFORD, Kevin, A. et al.; Motorola Inc., Intellectual Property Dept., 1303 East Algonquin Road, Schaumburg, IL 60196 (US).</p> | | <p>(81) Designated States: AM, AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TT, UA, UG, UZ, VN, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG), ARIPO patent (KE, MW, SD, SZ, UG). Published <i>With international search report.</i></p> |

(54) Title: A PERIPHERAL CARD HAVING INDEPENDENT FUNCTIONALITY AND METHOD USED THEREWITH



(57) Abstract

A PCMCIA card having independent functionality and alternatively arranged to operate in conjunction with a host computer, that includes a peripheral apparatus (109) having an integral CPU (125), a power source (129), and a power supply (127) for exhibiting an independent operating state; and an interface function (121) integral with and coupled to said peripheral apparatus (109), said interface function arranged and constructed to couple said peripheral apparatus to the host computer (101) over a PCMCIA compliant interface and initiate a dependent operating state at said peripheral apparatus (109).

FOR THE PURPOSES OF INFORMATION ONLY

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An Peripheral Card Having Independent Functionality
and Method Used Therewith

Field Of The Invention

5

This disclosure deals with peripheral functionality arranged and constructed to interface to a host computer and more specifically but not limited to independent functionality in the form of peripheral cards having a Personal Computer Memory Card International Association (PCMCIA) compliant interface arranged to operate in conjunction with the host computer .

10

Background Of The Invention

15 General and special purpose host computers often include provisions for various peripheral functionality, such as a communications modem, memory expansion, or an add on hard disk drive. In order to facilitate the addition of various peripherals the Personal Computer Memory Card International Association (PCMCIA) has endeavored to standardize a family of peripheral cards with a requisite PCMCIA interface. The PCMCIA defined parameters can be found in the PC Card Standard Release 2.0 document, published by the PCMCIA, 1030B East Duane Avenue, Sunnyvale California and incorporated herein by reference. The defined parameters include physical parameters such as dimensions, input/output connections such as control, address, and data buses, signal parameters such as operating levels, and impedances, power levels, source polarity and levels and certain operating procedures.

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Based upon the provisions supported by the host computer for additional devices such as the PCMCIA devices it is generally known that PCMCIA peripheral cards draw their power from the host computer socket and are generally controlled by a single RESET line when inserted or removed from the host computer socket in order to reinstate functionality.

30

However, a new class of PCMCIA devices, such as wireless modems, and the like, available from manufacturers such as Motorola, Inc. at 1303 East Algonquin Road, Schaumburg, Illinois 60193, are designed to continue to operate while removed from the socket or while the socket and the host computer are powered-off. These PCMCIA devices have their own power source and CPU that allows each device to maintain independent functionality once removed from the host computer socket. This paradigm shift allow the users the enhanced capabilities of remaining logged into a network while removed from the host computer thus operating in a manner that allows them to maintain a partial communication link such as, for example storing messages until the peripheral card is reinserted into the host computer.

However since existing PCMCIA peripheral cards, are designed to function in accordance with the PCMCIA standard where the only power source and reset state is generated by the host computer, an undesirable phenomenon can occur. This phenomenon results in the circuitry on the peripheral cards being unnecessarily or inadvertently reset, thus interfering with the planned or expected functionality of the device.

Clearly a need exists for a peripheral function or card that has a PCMCIA compliant interface that is additionally capable of operating reliably in a deterministic fashion in an environment where the host device and peripheral device both contain their own CPU and power source.

Brief Description Of The Drawings

The features of the present invention which are believed to be novel are set forth with particularity in the appended claims. However, the invention together with further advantages thereof, may best be understood by reference to the accompanying drawings wherein:

FIG. 1 is a block diagram of a host computer and peripheral card suitable for employing a preferred embodiment in accordance with the instant invention;

FIG. 2 is a detailed block diagram of the peripheral card of FIG. 1.

FIG. 3 flowchart diagram of the steps performed at the peripheral card for determining whether the peripheral card is in a dependent or independent operating state.

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Detailed Description Of A Preferred Embodiment

Generally this disclosure deals with a peripheral arrangement for a host computer. The peripheral arrangement includes a peripheral card that has a PCMCIA compliant interface that may be generally and advantageously employed when, among others, the peripheral arrangement includes independent functionality, such as may be present if a separate power supply and controller (CPU) is included with the peripheral arrangement. The preferred embodiment is a peripheral card that exhibits an independent and dependent operating state and has an interface function that is coupled to the peripheral card. The interface function is arranged and constructed to couple the peripheral card to the host computer over the PCMCIA compliant interface and initiate a dependent operating state at the peripheral card when inserted in a host computer that is or is subsequently powered up. The interface function that is coupled to the peripheral card during the dependent operating state, initiates an independent operating state when the peripheral card is removed or the host computer is powered down.

25 A preferred embodiment in accordance with the instant invention will be further explained with reference to the Figures, in which FIG. 1 is a block diagram of a host computer (101) and a peripheral arrangement (120) suitable for employing a preferred embodiment in accordance with the instant invention. Depicted in
30 FIG. 1 is the host computer (101) having a PCMCIA slot interface integrated circuit (103) or the like and a PCMCIA connector (105). The peripheral arrangement (120) includes a peripheral card (109) having a PCMCIA interface logic (121), a voltage detector (123), a CPU (125), a power supply (127), a radio transceiver (128), a battery (129), and a
35 PCMCIA connector (132).

The peripheral arrangement (120) is coupled, interfaced, or connected to the host computer (101) by plugging the PCMCIA connector (132) of the peripheral card (109) into the PCMCIA connector (105) of the host computer (101). All these elements (121), (123), (125), (127), (128), (129), and (132) of the peripheral arrangement (120) may be physically located on one PCMCIA compliant or consistent card or the PCMCIA connector (132) may be physically separated from the peripheral card (109) with the physical connection provided by some mechanism, such as a cable, connecting the two. The host computer (101) can be any general purpose computer that includes functionally and logically as well as, preferably, physically a PCMCIA interface that operates according to the PCMCIA standards. The preferred embodiment of the instant invention is considered to be consistent or compliant with the PCMCIA standards and defined PCMCIA interfaces and ports, provided it operates at least in part in accordance with the PCMCIA interface and transparently to the host computer's hardware, operating system software, or other attributes.

In any event the preferred embodiment of the first peripheral card (109), includes, all inter coupled as depicted, a controller, preferably, a central processing unit CPU (125) with associated RAM and ROM, such as a Motorola MCM68300 series microprocessor, a radio transceiver (128) that is arranged to transceive data over a communications medium all as well known in the art, a power supply (127) and a power source, preferably, battery (129) such as NiCAD or 9 volt alkaline or lead acid, that is coupled to the power supply (127). Circuitry, well known, in the power supply (127) allows the CPU (125) to detect the status of the power supply (127) in order to determine the operating state of the peripheral card (109).

In the preferred embodiment whenever the peripheral card (109) is disconnected, decoupled, or pulled out of the host computer (101) by disengaging the PCMCIA connector (105) from the PCMCIA connector (132) or when the host computer's PCMCIA slot interface (103) is powered down while the peripheral arrangement (120) is inserted, the PCMCIA will initiate an independent operating state as described below.

When the PCMCIA power supply line, PCMCIA5V (131) drops below a preset voltage, the voltage detector (123) will deassert the PVD signal (133), which will in turn cause a CPU interrupt signal, GPINT (221) to be generated. The CPU, upon receiving the interrupt, determines the current state of the PVD signal, which can be read as a bit in the PCMCIA interface logic (121). The CPU, having determined that PVD is unasserted, then initiates an independent operating state. At the same time, the deassertion of the PVD signal (133) causes the first register set (201) to be cleared to a default state and held in that default state until the card is reinserted into a powered PCMCIA slot. This ensures that the PCMCIA interface will operate in memory only mode (as opposed to I/O mode) when the card is reinserted into a PCMCIA slot regardless of the interface mode established when the card was removed from the slot.

Consequently, when the card is reinserted or the host computer's PCMCIA slot is powered up, the PCMCIA card will initiate a dependent operating state based on the assertion of the PVD signal. When the PCMCIA power supply line, PCMCIA5V (131) rises above a preset voltage, the voltage detector (123) will assert the PVD signal (133), which will in turn cause a CPU interrupt signal, GPINT (221) to be generated. The CPU, upon receiving the interrupt, determines the current state of the PVD signal, which can be read as a bit in the PCMCIA interface logic (121). The CPU, having determined that PVD is asserted, then initiates a dependent operating state.

In order to avoid the phenomenon of unnecessarily resting circuitry, the PCMCIA card uses four reset signals, each of which resets a specific domain of circuitry. The P_RESET (135) signal originating from the PCMCIA host computer (101) and the PVD signal (when unasserted) primarily reset those circuits which are directly controlled by the PCMCIA host. The C_RESET circuit primarily resets those circuits which are controlled by the integral CPU (125). The fourth reset signal, power on reset, POR (137), originates from the on-board power supply and acts as a global reset of all circuits on the PCMCIA card. POR is asserted (active low) whenever the output of the on-board

power supply is below the minimum operating voltage for the PCMCIA card.

FIG. 2 is a detailed block diagram of the peripheral card of FIG. 1. The interface function or PCMCIA interface logic (121) contains three
5 major functional blocks, a first set of registers or PCMCIA registers (201), a second set of registers or CPU registers (203), and a communications block (205) having a third set of registers (206).

The first set of register (201) contains a plurality of registers which can be read and written through the PCMCIA interface via the
10 PCMCIA read and write signals 299, 297 but which may only be read through the CPU interface via CPU read 295. The first set of registers is reset by any one of three reset conditions each coupled through OR gate 211, the PRESET signal (135) being asserted, the POR, active low, signal (137) being asserted or the PVD signal (133) being unasserted. The
15 second set of registers (203) contains a plurality of registers which can be read and written through the CPU interface via CPU read and write 295, 293 but which may only be read through the PCMCIA interface via PCMCIA read 299. The second set of registers is reset by either the
20 CRESET, active low, signal (139) or the POR, active low, being asserted. The communication block (205) contains a third set of registers (206) and their associated logic such as FIFO memory registers and control logic registers. The FIFO memory registers are used to buffer data from the PCMCIA interface to the CPU interface and to buffer data from the
25 CPU interface to the PCMCIA interface. The communications block (205) is reset by any one of the four reset conditions each as coupled through OR gate 215, the PRESET signal (135) being asserted, the POR, active low, signal (137) being asserted, CRESET, active low, signal (139) being asserted, or the PVD signal (133) being unasserted.

As previously stated, in order to avoid the phenomenon of
30 unnecessarily resetting circuitry, the PCMCIA card uses the four reset signals as described, each of which resets a specific domain of circuitry.

The host computer will assert the P_RESET signal (135) whenever it wishes to place the card into a default condition, usually
whenever a new card is inserted into the slot, or when the host
35 computer itself is reset. The assertion of the P_RESET signal (135)

resets the first set of registers or PCMCIA registers (201), and the third set of registers (205) associated with the interface function or PCMCIA interface logic (121). This causes those registers associated with the card interface mode to be reset to memory only access as well as resetting
5 any other registers which had been previously altered by the PCMCIA host, and clears the communications block in preparation for a new communications session.

The PCMCIA interface logic (121) further includes a second set of registers or CPU registers (203) coupled to the integral CPU (125). The
10 integral CPU (125) asserts the CRESET*(where '*' signifies active low) signal whenever it wishes to place the card into a default condition, usually as the result of a software reset, a watchdog timer expiration, or to recover from an error condition. The CRESET* assertion resets the
15 second set of registers and the third set of registers (205) coupled to the CPU (125). This causes all registers which could have been altered by the CPU to be reset, and clears the communications block in preparation for a new communications session.

The assertion of the POR* signal (137) resets the first set of registers, the second set of registers, and the communications block in
20 order to completely reset the PCMCIA interface logic (121) after the power supply output is stable above the minimum operating voltage. Referring to figure 1, the POR* signal (137) is coupled to the CRESET* signal (139) via a diode (141) in order to allow the POR* signal to also reset the CPU (125) and the radio transceiver (128).

25 The PVD signal (133) de-assertion resets the first set of registers (201) and the third set of registers (205). This causes those registers associated with the card interface mode to be reset to memory only access as well as resetting any other registers which had been
30 previously altered by the PCMCIA host, and clears the communications block in preparation for a new communications session when the PCMCIA card is reinserted into a powered PCMCIA slot.

35 FIG. 3 is flowchart diagram of the steps performed at the peripheral card for determining whether the peripheral card is in a dependent or independent operating state. Beginning with START

block 302, flow proceeds to block 304 where the power to the card is turned on by the power switch on the card. This action causes the on-board power supply to generate a power-on reset which resets all circuit on the card. During the card initialization, at block 306, the integral
5 CPU checks if there is power on the PCMCIA interface by examining the PCMCIA Voltage Detect (PVD) signal. If PVD is asserted; i.e. $PVD = 1$, the CPU places the card in a dependent operating state at block 308; otherwise the CPU places the card in an independent operating state at block 314.

10 While the card is in an dependent operating state, the interface circuit monitors the PCMCIA power line. If the card is removed from the socket or power is removed from the socket, then $PVD = 0$ at block 316 and a delta PVD interrupt is generated to the integral CPU at block 318.

15 Similarly, while the card is in an independent operating state, the interface circuit monitors the PCMCIA power line. At block 310, if the card is placed in socket and power is applied to the socket, then $PVD = 1$ at block 312 and a delta PVD interrupt is generated to the integral CPU at 320.

20 Whenever the CPU receives a delta PVD interrupt, the integral CPU checks if there is power on the PCMCIA interface by examining the PCMCIA Voltage Detect (PVD) signal. If PVD is asserted; i.e. $PVD = 1$, the CPU places the card in a dependent operating state; otherwise the CPU places the card in an independent operating state.

25 Those skilled in the art will recognize that the instant invention provides a peripheral card with independent functionality that is capable of operating in a independent state when de coupled from a host computer and in a dependent state when coupled to the host computer. Furthermore, the peripheral card may alternatively or
30 additionally be arranged to operate in conjunction with the host computer over a PCMCIA compliant interface.

It will also be apparent to the skilled that the disclosed invention may be modified in numerous ways and may assume many
35 embodiments other than the preferred form specifically set out and described above.

An alternate embodiment of the present invention would not require a voltage detection scheme, as used in a preferred embodiment and described above, but instead would use watchdog timers. If after a predetermined time period, the host computer has not interacted with the PCMCIA card, it would be assumed by the PCMCIA card that it was
5 out of the socket. The CPU on the PCMCIA card would place the card into a independent operating mode. Subsequently, if communications with the host processor is restored, the CPU on the PCMCIA card would resume a dependent operating mode.

10 Accordingly, it is intended by the appended claims to cover all modifications of the invention which fall within the true spirit and scope of the invention.

Claims

1. A PCMCIA card having independent functionality and
alternatively arranged to operate in conjunction with a host computer,
5 comprising in combination:
a peripheral apparatus having an integral CPU, a power source,
and a power supply and exhibiting an independent operating state;
an interface function integral with and coupled to said
10 peripheral apparatus, said interface function arranged and constructed
to couple said peripheral apparatus to the host computer over a
PCMCIA compliant interface and initiate a dependent operating state at
said peripheral apparatus.
- 15 2. The PCMCIA card of claim 1, wherein said peripheral apparatus
further includes a voltage detector operating to assert a PCMCIA
voltage detect (PVD) signal, said integral CPU initiating said dependent
operating state at said peripheral apparatus, responsive to said PVD
20 signal.
3. The PCMCIA card of claim 1, wherein said interface function
further includes a first set of registers associated with said PCMCIA card
coupled to said host computer over said PCMCIA compliant interface,
said host computer operating to assert a PCMCIA reset (PRESET) signal
25 to reset said first set of registers.
4. The PCMCIA card of claim 1, wherein said interface function
further includes a second set of registers coupled to said integral CPU,
said integral CPU operating to assert a CPU reset (CRESET) signal to
30 reset said second set of registers.
5. The PCMCIA card of claim 4, wherein said interface function
further includes said communications block coupled to said integral
CPU, said integral CPU operating to assert the CPU reset (CRESET)
35 signal to reset the communications block.

6. The PCMCIA card of claim 1, wherein the peripheral apparatus further includes a radio transceiver.
- 5 7. The PCMCIA card of claim 2, further comprising a first status bit being set by an assertion of said PVD signal and being readable by said CPU.
- 10 8. The PCMCIA card of claim 1, wherein said power supply asserts a power-on reset (POR) signal, responsive to a predetermined voltage level, said power-on reset signal resets all circuitry on said PCMCIA card.
- 15 9. A peripheral card having an integral CPU and power supply, the peripheral card including an interface function having a first set registers and a second set of registers coupled to a communications control block having a first set of FIFO registers and a second set of FIFO registers and a set of control registers, the interface function arranged to operate in conjunction with a host computer over a
20 PCMCIA compliant interface, a method including the steps of:
- exhibiting a dependent operating state at the peripheral card when operating in conjunction with the host computer; and
initiating a independent operating state at said peripheral card.
- 25 10. The method of claim 9 further including a step of setting a flag in the interface function by an de-assertion of the PVD signal in order to initiate the independent operating state at said peripheral card.

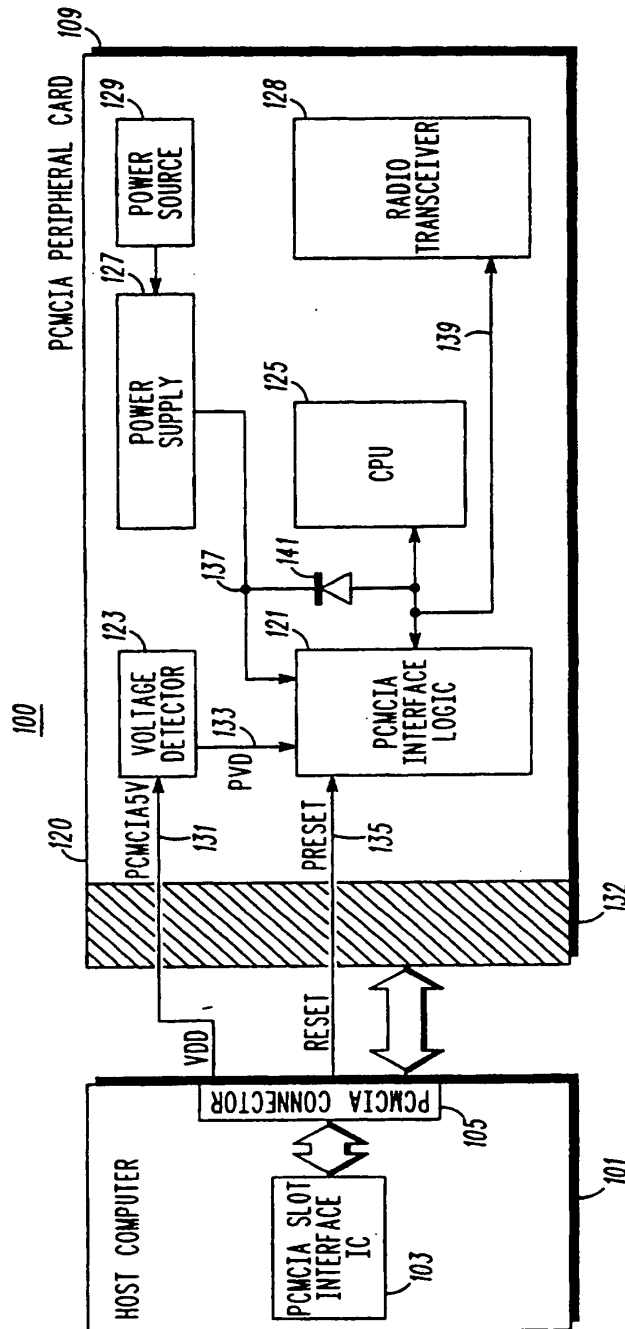


FIG. 1

FIG. 2

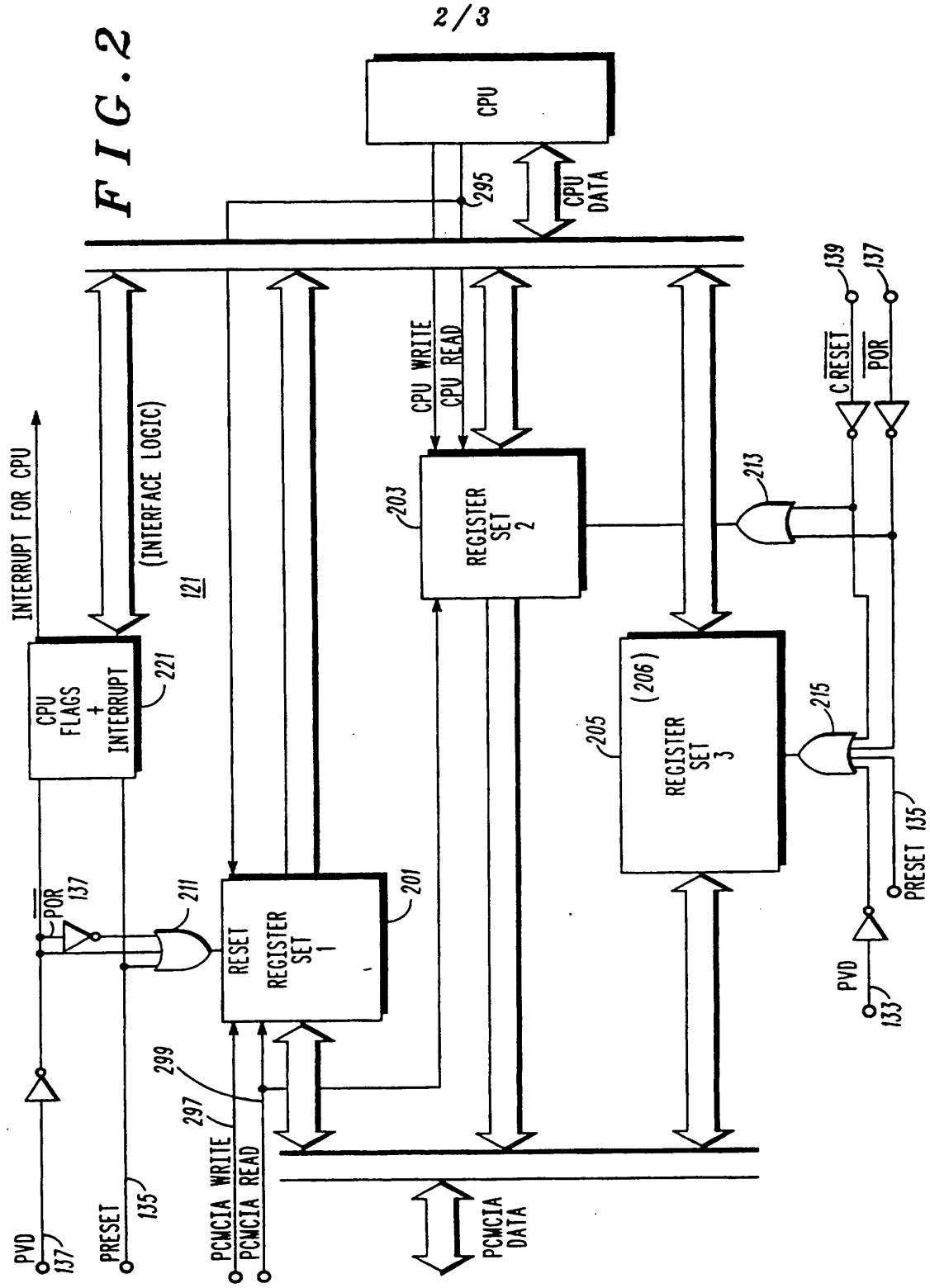
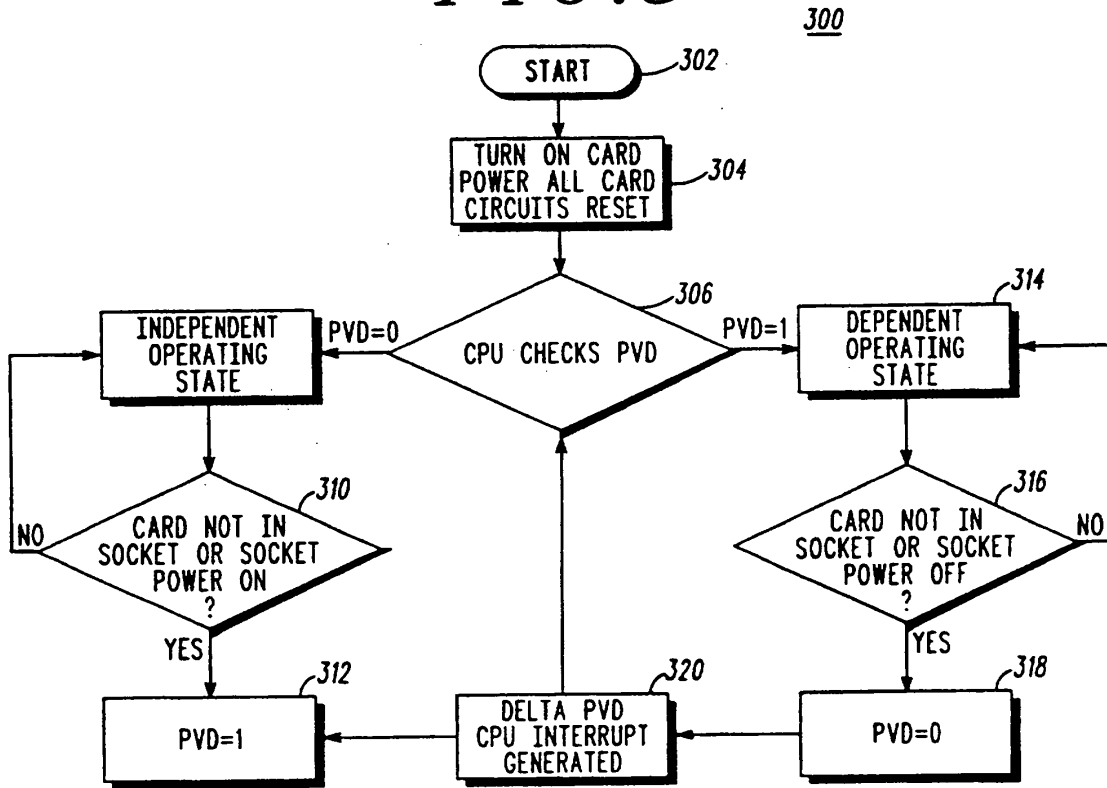


FIG. 3



INTERNATIONAL SEARCH REPORT

International application No.
PCT/US95/11614

| A. CLASSIFICATION OF SUBJECT MATTER | | |
|--|--|---|
| IPC(6) : G06K13/00, 13/14 US CL : 395/500, 395/325 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) U.S. : 395/500, 395/325 | | |
| Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched | | |
| Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) A.P.S. | | |
| C. DOCUMENTS CONSIDERED TO BE RELEVANT | | |
| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
| Y,P | US, A, 5,365,221 (FENNEL ET AL) 15 November 1994, See figs. 3 and 5, col. 1, lines 11-53, col. 2, lines 9-38. | 1-10 |
| Y,E | US, A, 5,455,505 (LAPLACE ET AL) 03 October 1995, See figs. 3-5, col. 2, lines 27-51 and claims 1 and 7. | 1-10 |
| A | US, A, 5,334,046 (BROUILLETE ET AL) 02 August 1994, See the entire document. | 1-10 |
| A | US, A, 5,334,030 (BRILLIOTT) 02 August 1994, See the entire document. | 1-10 |
| <input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex. | | |
| * Special categories of cited documents: "A" document defining the general state of the art which is not considered to be part of particular relevance "E" earlier document 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 01 NOVEMBER 1995 | | Date of mailing of the international search report 21 DECEMBER 1995 |
| Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230 | | Authorized officer <i>Amel Seale</i> EXAMINER MOHAMED Telephone No. (703) 305-9694 |

Form PCT/ISA/210 (second sheet)(July 1992)*

BNSDOCID: <WO__9613802A1_1_>

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US95/11614

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|-----------|---|-----------------------|
| X,E | US, A, 5,451,933 (STRICKLIN ET AL) 19 September 1995, See figs. 5 and 6, col. 1, lines 15-68, col. 2, lines 1-20, 45-62, col. 3, lines 14-56, col. 4, 17-58, col. 5, lines 11-61. | 1-10 |

Form PCT/ISA/210 (continuation of second sheet)(July 1992)*

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JC694 U.S. PTO

UTILITY PATENT APPLICATION TRANSMITTAL

Only for new nonprovisional applications under 37 CFR 1.53(b)

Attorney Docket No.

001627

Total Pages

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09/741118



12/21/00

First Named Inventor or Application Identifier

Katsuyuki MATSUMOTO and Masanao YOSHIDA

Check Box, if applicable [] Duplicate

Express Mail Label No.

APPLICATION ELEMENTS FOR:
**PORTABLE ELECTRONIC DEVICE COMPRISING
COMMON SERIAL BUS CONNECTOR**

ADDRESS TO: Director of Patents and Trademarks
BOX PATENT APPLICATIONS
Washington, D.C. 20231

1. Fee Transmittal Form (Incorporated within this form)
(Submit an original and a duplicate for fee processing)
2. Specification Total Pages [18]
3. Drawing(s) (35 USC 113) Total Sheets [2]
4. Oath or Declaration Total Pages [3]
 - a. Newly executed (original)
 - b. Copy from prior application (37 CFR 1.63(d)
(for continuation/divisional with Box 17 completed).
 - i. Deletion of Inventor(s)
Signed statement attached deleting inventor(s) named in prior application,
see 37 CFR 1.63(d)(2) and 1.33(b).
5. Incorporation by reference (useable if box 4b is checked)
The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.
6. Microfiche Computer Program (Appendix)
7. Nucleotide and/or Amino Acid Sequence Submission (if applicable, all necessary)
 - a. Computer Readable Copy
 - b. Paper Copy (identical to computer copy)
 - c. Statement Verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

8. Assignment Papers (cover sheet and document(s)) to: Sanyo Electric Co., Ltd., Osaka, Japan
SANYO Technosound Co., Ltd., Osaka, Japan
9. 37 CFR 3.73(b) Statement (when there is an assignee) Power of Attorney

| | | |
|---|--|--------|
| UTILITY PATENT APPLICATION TRANSMITTAL (Only for new nonprovisional applications under 37 CFR 1.53(b)) | Attorney Docket No. | 001627 |
| | First Named Inventor or Application Identifier | |
| | Katsuyuki MATSUMOTO and Masanao YOSHIDA | |
| | PAGE 2 OF 3 | |

10. English translation Document (if applicable)

11. Information Disclosure Statement Copies of IDS Citations

12. Preliminary Amendment

13. Return Receipt Postcard (MPEP 503)

14. Small Entity Status is claimed.

15. Claim for Convention Priority Certified copy of Priority Document

 a. Priority of _____ application no. _____ filed on _____ is claimed under 35 USC 119.
 The certified copies/copy have/has been filed in prior application Serial No. _____.
 (For Continuing Applications, if applicable).

16. Other _____

17. If a CONTINUING APPLICATION, check appropriate box and supply the requisite information:
 Continuation Division Continuation-in-part (CIP) of prior application no. ____/____

| FEE TRANSMITTAL | Number Filed | Number Extra | Rate | Basic . . Fee |
|---------------------------------------|--------------|--------------|-----------|------------------|
| The filing fee is calculated below | | | | \$710.00 |
| Total Claims | 5 - 20 | | x \$18.00 | |
| Independent Claims | 1 - 3 | | x \$80.00 | |
| Multiple Dependent Claims | | | \$270.00 | |
| Basic Filing Fee | | | | \$710.00 |
| Reduction by 1/2 for small entity | | | | |
| Fee for recording enclosed Assignment | | | \$40.00 | \$40.00 |
| TOTAL | | | | \$750.00 |

| | | |
|---|--|--------|
| UTILITY PATENT APPLICATION TRANSMITTAL (Only for new nonprovisional applications under 37 CFR 1.53(b)) | Attorney Docket No. | 001627 |
| | First Named Inventor or Application Identifier | |
| | Katsuyuki MATSUMOTO and Masanao YOSHIDA | |
| | PAGE 3 OF 3 | |

[XX] A check in the amount of \$ 750.00 is enclosed to cover the filing fee of \$ 710.00 and the assignment recordation fee of \$ 40.00.

[] Please charge our Deposit Account No. **01-2340** in the total amount of _____ to cover the filing fee and the _____ assignment recordation fee. A duplicate of this sheet is attached.

[XX] The Commissioner is hereby authorized to charge payment for any additional filing fees required under 37 CFR 1.16 or credit any overpayment to Deposit Account No. **01-2340**. A duplicate of this sheet is attached.

18. CORRESPONDENCE ADDRESS:



23850

PATENT TRADEMARK OFFICE

| | |
|-----------------------|--------------------------|
| SUBMITTED BY | |
| Typed or Printed Name | Stephen G. Adrian |
| Reg. No. | 32,878 |
| Signature | <i>Stephen G. Adrian</i> |
| Date: | December 21, 2000 |

SGA/ll

This nevertheless entails the problem that the provision of a connector for connecting the external power source to the portable electronic device renders the device greater in size.

In recent years, USB has attracted attention as a universal interface for connecting a plurality of peripheral devices in common to a host personal computer, and studies are underway for providing USB connectors, which are compliant with the USB standard, on various portable electronic devices. The USB connector has a pair of data terminals D+ and D-, power source terminal and ground terminal, and can be used for supplying power to peripheral devices by way of the power source terminal.

Accordingly, it appears feasible to provide the USB connector on a portable electronic device for use with an a.c. adaptor (external power source) connectable to the power source terminal of the USB connector, and to connect the a.c. adaptor to the power source terminal of the USB connector for the supply of power to the device, the USB connector thus serving also as a connector for the connection of the external power source, whereby an increase in the size of the electronic device is

avoidable.

However, it is usual practice with the portable electronic device (compliant with the USB standard) having the USB connector to provide a main CPU for executing predetermined device operation processing for various operations of the device including reproduction of data, and a USB controller separate from the main CPU and adapted to execute predetermined data processing for carrying out data communication with the personal computer through the USB connector so as to ensure simplified processing. When the personal computer is connected to the USB connector on the portable electronic device in this case, it is necessary for the USB controller to conduct data communication with the personal computer with a definite period as required by the USB standard, so that the leadership in data processing is taken over by the USB controller from the main CPU. This entails the problem that even if the user gives the portable electronic device a command for data reproduction (play operation), the main CPU is unable to rapidly execute device operation processing for data reproduction.

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Further while the USB controller is connected to the personal computer for data communication, some kind of data is handled also between the main CPU and the USB controller. This gives rise to the problem that the main CPU must execute very complicated processing since there is a need for the main CPU to execute device processing for data reproduction in this state.

SUMMARY OF THE INVENTION

Accordingly, an object of the present invention is to provide a portable electronic device which has a USB connector or like common serial bus connector and which is adapted to execute simplified processing at a higher speed even when the connector serves also as a connector for the connection of an external power source.

The present invention provides a portable electronic device comprising a common serial bus connector, a common serial bus controller for executing predetermined data communication processing attendant on data communication with an information processing device connected to the common serial bus connector, and a control circuit connected to the common serial bus controller for executing device operation processing for the usual

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operation of the electronic device, the electronic device being capable of receiving a power supply from the information processing device or an external power source as connected to the common serial bus connector or from an internal power source.

The control circuit discriminates among the sources of supply of power and causes the common serial bus controller to execute the predetermined data communication processing while power is supplied from the information processing device, or executes the usual device operation processing while power is supplied from the external power source or the internal power source.

With the portable electronic device of the present invention, processing is assigned according to the source of supply of power; the control circuit causes the common serial bus controller to execute the predetermined data communication processing when the information processing device is the power source, or executes the usual device operation processing, such as data reproduction control, when the external power source or the internal power source is the source of supply of power. Thus, the control circuit and the common serial bus controller

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perform processing as distinctly dividedly assigned thereto according to the source of supply of power. This ensures simplified processing at a higher speed.

Stated more specifically, the control circuit comprises discriminating means for judging which of the information processing device and the external power source is connected to the common serial bus connector, and control means for causing the common serial bus controller to execute the predetermined data communication processing when the connection of the information processing device to the common serial bus connector is recognized, or executes the usual device operation processing when the connection of the external power source to the common serial bus connector is recognized.

The discriminating means identifies the source of supply of power based on the voltage value of the power supply terminal of the common serial bus connector, or identifies the source of supply of power depending on whether the common serial bus controller has started data communication via the common serial bus connector.

According to the former method, the supply voltage

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of the external power source is made lower or higher than the voltage of the power supply terminal of the common serial bus connector. The difference in the voltage value of the power supply terminal makes it possible to discriminate among the sources of supply of power. Further with the latter method, when the common serial bus controller started data communication via the common serial bus connector within a predetermined period of time, the information processing device is found to be the source of supply of power, whereas if data communication has not been started within the predetermined period of time, the external power source is found to be the supply source. Although the source of power supply can be identified by either of these methods, the former method based on the voltage value permits more rapid discrimination or identification.

Further stated more specifically, the control circuit comprises means for detecting the connection of the information processing device or the external power source to the common serial bus connector based on the binary state (high or low) of voltage level of the power supply terminal thereof, and the discriminating means

identifies the source of supply of power according to the result of detection.

The binary state of voltage level of the power supply terminal is changed by the connection of the information processing device or the external power source to the common serial bus connector, so that the control circuit can be initiated into operation from sleep state according to the change to identify the source of supply of power.

As described above, the portable electronic device of the invention having a common serial bus connector is adapted to execute simplified processing at a higher speed even when the connector serves also for the connection of the external power source.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block diagram showing the construction of a portable electronic device embodying the invention; and

FIG. 2 is a flow chart showing the control procedure to be performed by a main CPU.

DETAILED DESCRIPTION OF EMBODIMENT

An embodiment of the present invention will be

described below in detail with reference to the drawings. FIG. 1 shows a portable electronic device 1 of the invention, which has a USB connector 4. A USB connector 5 of a personal computer 2 serving as a host can be connected to the USB connector 4 by a USB cable 11, or an external power source 3 such as an a.c. adaptor can be connected to the USB connector 4 by a power source cable 12. The USB connector 4 has a pair of data terminals D+ and D-, a power source terminal V_{DD} and a ground terminal GND.

The portable electronic device 1 comprises a USB controller 6 for executing predetermined data processing for conducting data communication with the personal computer 2 through the USB connector 4, a main CPU 7 for executing predetermined device operation processing for various operations of the device including reproduction of data, and a memory 9 for storing the data downloaded from the personal computer 2.

The pair of data terminals D+ and D- of the USB connector 4 are connected to a pair of data terminals D+ and D- provided on the USB controller 6. The power source voltage obtained from the power source terminal V_{DD}

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of the USB connector 4 is adjusted to 3.3 V by a voltage regulator 8 and then supplied to the USB controller 6 and the main CPU 7.

When the personal computer 2 is connected to the USB connector 4, the power source voltage to be supplied from the USB connector 5 of the personal computer 2 is prescribed at 4.75 V to 5.25 V. Further when a hub is connected to the USB connector 4 in the case where the personal computer 2, etc. provide a LAN, the power source voltage to be supplied from the hub is prescribed at 4.4 V to 5.25 V.

According to the present invention, on the other hand, the voltage to be supplied from the external power source 3 is set at 4.0 V to 4.3 V. This makes it possible to discriminate between the sources of supply of power as will be described later and to avoid damage to other USB device even if the external power source 3 is connected to the device.

Extending from the power source terminal V_{DD} of the USB connector 4 is a branch line 13 which is connected to inverting means 10 and then to a USB connection detecting terminal USBin provided on the main CPU 7. The branch

line 13 has connected thereto a pair of voltage dividing resistors R1 and R2, and an intermediate point between the resistors is connected to a voltage detecting terminal Vdet provided on the main CPU 7.

FIG. 2 shows the control procedure to be executed by the main CPU 7. First when the personal computer 2 or the external power source 3 is connected to the USB connector 4 of the portable electronic device 1 in step S1, this changes the voltage at the USB connection detecting terminal USBin from high to low, with the result that the main CPU 7 rises from sleep mode.

Subsequently in step S2, the voltage value Vdet is retrieved from the voltage detecting terminal Vdet, and based on this voltage value Vdet, an inquiry is made in step S3 as to whether the power source voltage is at least 4.4 V. When the personal computer 2 or hub is connected to the USB connector 4, the power source voltage is within the range of 4.4 V to 5.25 V, so that the inquiry is answered in the affirmative, followed by step S4. If the external power source 3 is connected to the USB connector 4, on the other hand, the answer is negative since the power source voltage is in the range

of 4.0 V to 4.3 V, followed by step S5.

In step S4, the main CPU 7 notifies the USB controller 6 of the connection of the personal computer 2 to the USB connector 4, sets the controller 6 in communication mode and causes the controller 6 to start data communication processing with the personal computer 2.

In step S5, on the other hand, the CPU 7 controls charging of the built-in secondary cell (not shown) as required, and executes device operation processing, such as data reproduction control, in response to the user's manipulation.

Thus, when the personal computer 2 is connected to the portable electronic device of the present invention by means of the USB connector 4, the USB controller 6 is caused to execute only data communication processing assigned thereto, while when the external power source 3 is connected to the device, the main CPU 7 executes only device operation processing assigned thereto. In this way, the processing to be executed is distinctly divided in two. This assures the main CPU 7 of simplified processing at a higher speed.

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For example, in the case where the personal computer 2 is connected to the USB connector 4 of the portable electronic device 1 for downloading data from the computer 2 to the electronic device 1, the main CPU 7 entrusts the USB controller 6 with the processing, with the result that the USB controller 6 performs data communication with the computer 2 and stores the data downloaded therefrom via the USB connector 4 in the memory 9.

When the portable electronic device 1 is thereafter given a command to reproduce the data stored in the memory 9, with the external power source 3 connected to the USB connector 4 thereof, the main CPU 7 commands the controller 6 to read the data from the memory 9 and receives the read data to execute device operation processing required for data reproduction. At this time, rapid processing is realized since the main CPU 7 takes the leadership of data processing.

The present invention is not limited to the foregoing embodiment in construction but can be modified variously by one skilled in the art without departing from the spirit of the invention as set forth in the

appended claims. For example, the common serial bus connector is not limited to a USB connector in conformity with the USB standard but can be a connector compliant with other standard.

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What is claimed is:

1. A portable electronic device comprising a common serial bus connector provided with data terminals and a power supply terminal in compliance with a common serial bus standard for connecting a plurality of peripheral devices in common to a host information processing device, a common serial bus controller for executing predetermined data communication processing attendant on data communication with an information processing device connected to the common serial bus connector, and a control circuit connected to the common serial bus controller for executing device operation processing for the usual operation of the electronic device, the electronic device being capable of receiving a power supply from the information processing device or an external power source as connected to the common serial bus connector or from an internal power source, the portable electronic device being characterized in that the control circuit discriminates among the sources of supply of power and causes the common serial bus controller to execute the predetermined data communication processing while power is supplied from the

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information processing device, or executes the usual device operation processing while power is supplied from the external power source or the internal power source.

2. A portable electronic device according to claim 1 wherein the control circuit comprises discriminating means for judging which of the information processing device and the external power source is connected to the common serial bus connector, and control means for causing the common serial bus controller to execute the predetermined data communication processing when the connection of the information processing device to the common serial bus connector is recognized, or executes the usual device operation processing when the connection of the external power source to the common serial bus connector is recognized.

3. A portable electronic device according to claim 2 wherein the discriminating means identifies the source of supply of power based on the voltage value of the power supply terminal of the common serial bus connector.

4. A portable electronic device according to claim 2 wherein the discriminating means identifies the source of supply of power depending on whether the common serial

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bus controller has started data communication via the common serial bus connector.

5. A portable electronic device according to claim 2 wherein the control circuit further comprises means for detecting the connection of the information processing device or the external power source to the common serial bus connector based on the binary state of voltage level of the power supply terminal thereof, and the discriminating means identifies the source of supply of power according to the result of detection.

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FIG.1

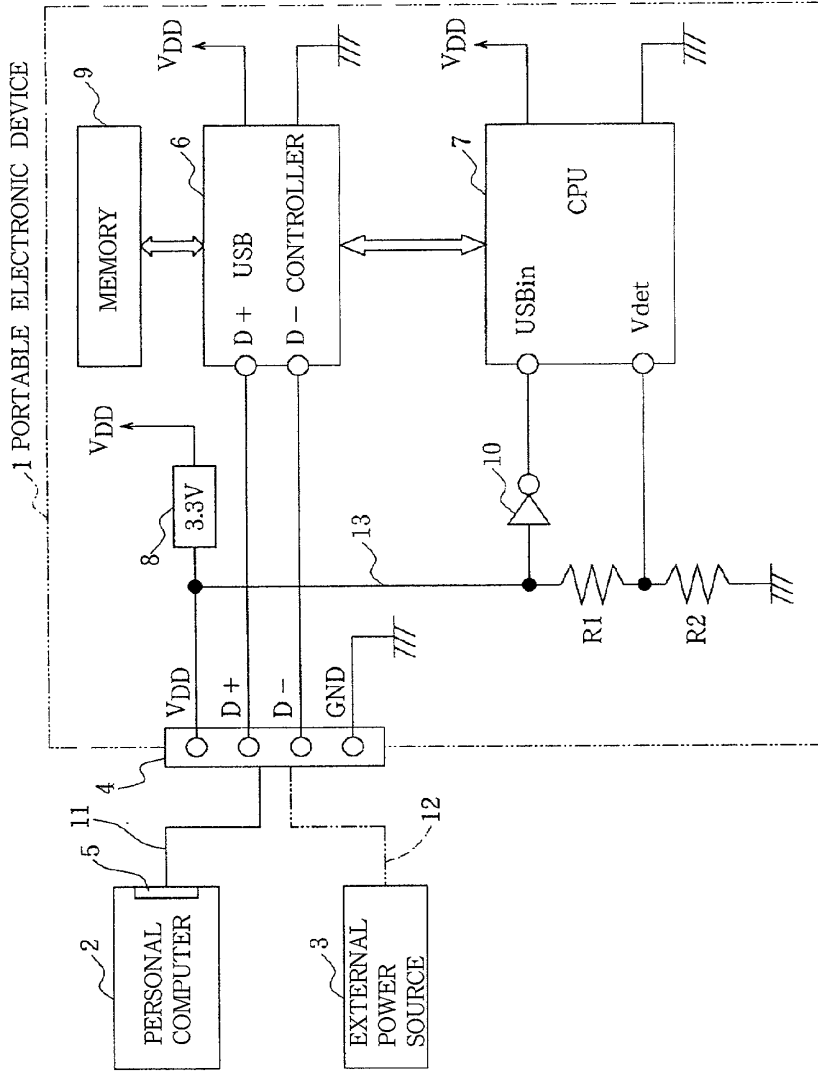
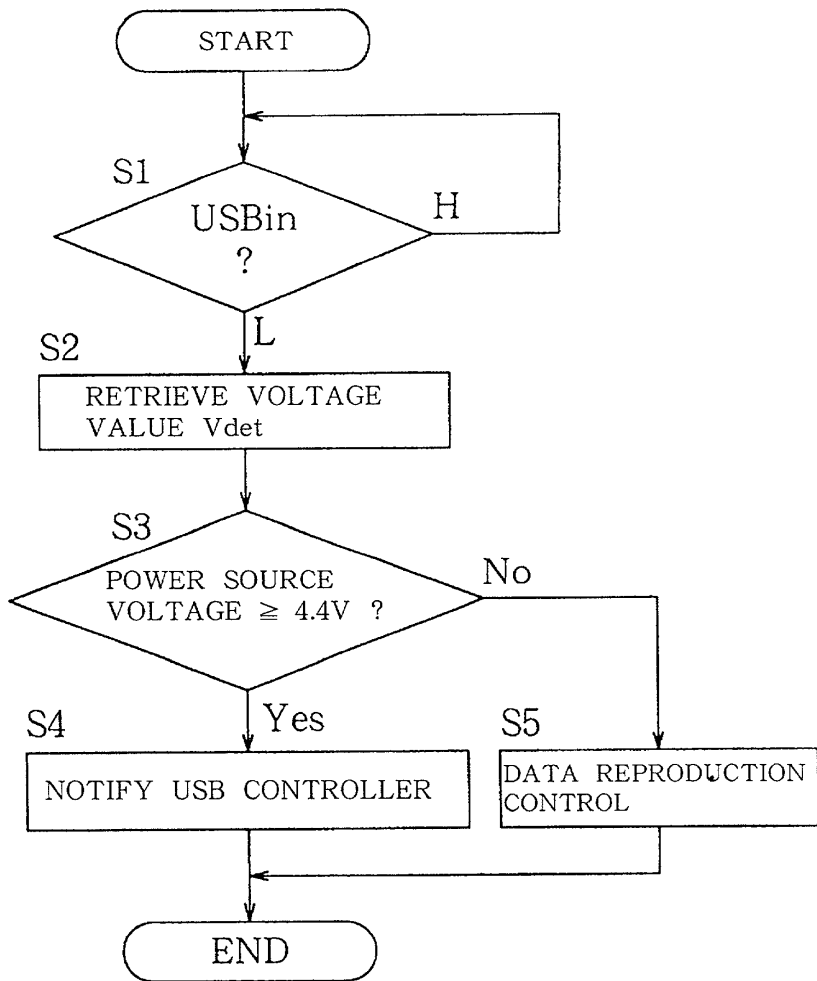


FIG.2



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Declaration For U.S. Patent Application

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled (Insert Title) PORTABLE ELECTRONIC DEVICE COMPRISING COMMON SERIAL BUS CONNECTOR

the specification of which is attached hereto unless the following is checked:

was filed on _____ as United States Application Number or PCT International Application Number _____ and was amended on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claim(s), as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, § 119 (a) - (d) of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

| | | | | |
|--|-----------------|-----------|------------------------|---|
| (List prior foreign applications. See note A on back of this page) | HEI.11 - 370327 | Japan | 27/12/1999 | Priority Claimed |
| | (Number) | (Country) | (Day/Month/Year Filed) | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| | (Number) | (Country) | (Day/Month/Year Filed) | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | (Number) | (Country) | (Day/Month/Year Filed) | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | (Number) | (Country) | (Day/Month/Year Filed) | <input type="checkbox"/> Yes <input type="checkbox"/> No |

(See note B on back of this page) See attached list for additional prior foreign applications

I hereby claim the benefit under Title 35, United States Code, § 119(e) of any United States provisional application(s) listed below.

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|----------------------|---------------|
| _____ | _____ |
| (Application Number) | (Filing Date) |
| _____ | _____ |
| (Application Number) | (Filing Date) |

I hereby claim the benefit under Title 35, United States Code, § 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of the application:

| | | | |
|--------------------------------|-----------------------------|---------------|---|
| (List Prior U.S. Applications) | _____ | _____ | _____ |
| | (Application Serial Number) | (Filing Date) | (Status) (patented, pending, abandoned) |
| | _____ | _____ | _____ |
| | (Application Serial Number) | (Filing Date) | (Status) (patented, pending, abandoned) |

I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

James E. Armstrong, III, Reg. No. 18,366; William F. Westerman, Reg. No. 29,988; Ken-Ichi Hattori, Reg. No. 32,861; Le-Nhung McLeland, Reg. No. 31,541; Ronald F. Naughton, Reg. No. 24,616; John R. Pegan, Reg. No. 18,069; William G. Kratz, Jr., Reg. No. 22,631; Albert Tockman, Reg. No. 19,722; Mel R. Quintos, Reg. No. 31,898; Donald W. Hanson, Reg. No. 27,133; Stephen G. Adrian, Reg. No. 32,878; William L. Brooks, Reg. No. 34,129; John F. Carney, Reg. No. 20,276; Edward F. Welsh, Reg. No. 22,455; Patrick D. Muir, Reg. No. 37,403; Gay A. Spahn, Reg. No. 34,978; John P. Kong, Reg. No. 40,054; and Luke A. Kilyk, Reg. No. 33,251.

Please direct all communications to the following address: ARMSTRONG, WESTERMAN, HATTORI,
McLELAND & NAUGHTON
1725 K Street, N.W., Suite 1000
Washington, D.C. 20006
Telephone: (202) 659-2930 Fax: (202) 887-0357

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Title 18 of the United States Code, § 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

(See note C above) Full name of sole or first inventor (given name, family name) Katsuyuki Matsumoto
Inventor's Signature Katsuyuki Matsumoto Date 11/17/2000
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Post Office Address 5 - 25 - 46, Nagaomotomachi, Hirakata - shi, Osaka, Japan

Full name of second inventor (given name, family name) Masanao Yoshida
Inventor's Signature Masanao Yoshida Date 11/17/2000
Residence Osaka - shi, Osaka, Japan Citizenship Japanese
Post Office Address 3 - 4 - 29, Kire, Hirano - ku, Osaka - shi, Osaka, Japan

Full name of third inventor (given name, family name) _____
Inventor's Signature _____ Date _____
Residence _____ Citizenship _____
Post Office Address _____

Full name of fourth inventor (given name, family name) _____
Inventor's Signature _____ Date _____
Residence _____ Citizenship _____
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Full name of fifth inventor (given name, family name) _____
Inventor's Signature _____ Date _____
Residence _____ Citizenship _____
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Full name of sixth inventor (given name, family name) _____
Inventor's Signature _____ Date _____
Residence _____ Citizenship _____
Post Office Address _____

Full name of seventh inventor (given name, family name) _____
Inventor's Signature _____ Date _____
Residence _____ Citizenship _____
Post Office Address _____

Full name of eighth inventor (given name, family name) _____
Inventor's Signature _____ Date _____
Residence _____ Citizenship _____
Post Office Address _____

NOTES

- A. Please list all foreign applications relating to the invention and check block "yes" or "no".
- B. If more than 4 prior foreign applications, please check this box and attach a sheet listing the remaining prior foreign applications.
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PATENT NUMBER

U.S. UTILITY Patent Application

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| APPLICATION NO. | CONT/PRIOR | CLASS | SUBCLASS | ART UNIT | EXAMINER |
|-----------------|------------|------------|----------|--------------|----------|
| 09/741018 | F | 439 700 | 66 | 2833 2121 | Pham |

APPLICANTS: Katsuyuki Matsumoto
Masanao Yoshida

TITLE: Portable electronic device comprising common serial bus connector

PTO-2040
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| ISSUING CLASSIFICATION | | | | | | | |
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| | Sheets Drwg. | Figs. Drwg. | Print Fig. | Total Claims | Print Claim for O.G. |
| <input type="checkbox"/> The term of this patent subsequent to _____ (date) has been disclaimed. | _____ (Assistant Examiner) _____ (Date) | | | NOTICE OF ALLOWANCE MAILED | |
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SEARCH NOTES (INCLUDING SEARCH STRATEGY)

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| See attached search history | 3/26/03 | TP |
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| FORMALITY REVIEW | TN | 870 | 2/12/01 |
| RESPONSE FORMALITY REVIEW | | | 04-01-01 |

INDEX OF CLAIMS

- ✓ Rejected
- = Allowed
- (Through numeral) Canceled
- + Restricted
- N Non-elected
- I Interference
- A Appeal
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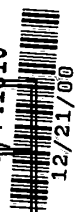
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| UTILITY PATENT APPLICATION TRANSMITTAL Only for new nonprovisional applications under 37 CFR 1.53(b) | Attorney Docket No. 001627 | Total Pages |
| | First Named Inventor or Application Identifier | |
| Katsuyuki MATSUMOTO and Masanao YOSHIDA | | |
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| APPLICATION ELEMENTS FOR: PORTABLE ELECTRONIC DEVICE COMPRISING COMMON SERIAL BUS CONNECTOR | ADDRESS TO: Director of Patents and Trademarks BOX PATENT APPLICATIONS Washington, D.C. 20231 |
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1. Fee Transmittal Form (Incorporated within this form)
(Submit an original and a duplicate for fee processing)
2. Specification Total Pages [18]
3. Drawing(s) (35 USC 113) Total Sheets [2]
4. Oath or Declaration Total Pages [3]
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 - b. Copy from prior application (37 CFR 1.63(d)
(for continuation/divisional with Box 17 completed).
 - i. Deletion of Inventor(s)
Signed statement attached deleting inventor(s) named in prior application, see 37 CFR 1.63(d)(2) and 1.33(b).
 - Incorporation by reference (useable if box 4b is checked)
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7. Nucleotide and/or Amino Acid Sequence Submission (if applicable, all necessary)
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 - c. Statement Verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

8. Assignment Papers (cover sheet and document(s)) to: Sanyo Electric Co., Ltd., Osaka, Japan
SANYO Technosound Co., Ltd., Osaka, Japan
9. 37 CFR 3.73(b) Statement (when there is an assignee) Power of Attorney

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APPLICATION TRANSMITTAL**

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Katsuyuki MATSUMOTO and Masanao YOSHIDA

PAGE 2 OF 3

10. English translation Document (if applicable)
11. Information Disclosure Statement Copies of IDS Citations
12. Preliminary Amendment
13. Return Receipt Postcard (MPEP 503)
14. Small Entity Status is claimed.
15. Claim for Convention Priority Certified copy of Priority Document
- a. Priority of _____ application no. _____ filed on _____ is claimed under 35 USC 119.
 The certified copies/copy have/has been filed in prior application Serial No. _____.
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|---------------------------------------|--------------|--------------|-----------|-----------------|
| The filing fee is calculated below | | | | \$710.00 |
| Total Claims | 5 - 20 | | x \$18.00 | |
| Independent Claims | 1 - 3 | | x \$80.00 | |
| Multiple Dependent Claims | | | \$270.00 | |
| Basic Filing Fee | | | | \$710.00 |
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| Fee for recording enclosed Assignment | | | \$40.00 | \$40.00 |
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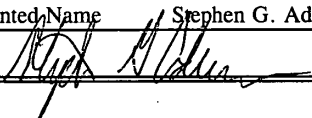
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SUBMITTED BY

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Reg. No. 32,878

Signature



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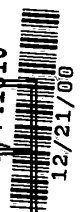
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First Named Inventor or Application Identifier

Katsuyuki MATSUMOTO and Masanao YOSHIDA

Check Box, if applicable [] Duplicate

Express Mail Label No.

APPLICATION ELEMENTS FOR:
**PORTABLE ELECTRONIC DEVICE COMPRISING
COMMON SERIAL BUS CONNECTOR**

ADDRESS TO: Director of Patents and Trademarks
BOX PATENT APPLICATIONS
Washington, D.C. 20231

- 1. Fee Transmittal Form (Incorporated within this form)
(Submit an original and a duplicate for fee processing)
- 2. Specification Total Pages [18]
- 3. Drawing(s) (35 USC 113) Total Sheets [2]
- 4. Oath or Declaration Total Pages [3]
 - a. Newly executed (original)
 - b. Copy from prior application (37 CFR 1.63(d)
(for continuation/divisional with Box 17 completed).
 - i. Deletion of Inventor(s)
Signed statement attached deleting inventor(s) named in prior application,
see 37 CFR 1.63(d)(2) and 1.33(b).
 - c. Incorporation by reference (useable if box 4b is checked)
The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under
Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby
incorporated by reference therein.
- 6. Microfiche Computer Program (Appendix)
- 7. Nucleotide and/or Amino Acid Sequence Submission (if applicable, all necessary)
 - a. Computer Readable Copy
 - b. Paper Copy (identical to computer copy)
 - c. Statement Verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

- 8. Assignment Papers (cover sheet and document(s)) to: Sanyo Electric Co., Ltd., Osaka, Japan
SANYO Technosound Co., Ltd., Osaka, Japan
- 9. 37 CFR 3.73(b) Statement (when there is an assignee) Power of Attorney

**UTILITY PATENT
APPLICATION TRANSMITTAL**

(Only for new nonprovisional applications
under 37 CFR 1.53(b))

Attorney Docket No. **001627**

First Named Inventor or Application Identifier

Katsuyuki MATSUMOTO and Masanao YOSHIDA

PAGE 2 OF 3

10. English translation Document (if applicable)
11. Information Disclosure Statement Copies of IDS Citations
12. Preliminary Amendment
13. Return Receipt Postcard (MPEP 503)
14. Small Entity Status is claimed.
15. Claim for Convention Priority Certified copy of Priority Document
- a. Priority of _____ application no. _____ filed on _____ is claimed under 35 USC 119.
The certified copies/copy have/has been filed in prior application Serial No. _____.
(For Continuing Applications, if applicable).
16. Other _____
17. If a CONTINUING APPLICATION, check appropriate box and supply the requisite information:
 Continuation Division Continuation-in-part (CIP) of prior application no. ____/____

OFFICE OF THE ATTORNEY GENERAL

| FEE TRANSMITTAL | Number Filed | Number Extra | Rate | Basic . . . Fee |
|---------------------------------------|--------------|--------------|-----------|-----------------|
| The filing fee is calculated below | | | | \$710.00 |
| Total Claims | 5 - 20 | | x \$18.00 | |
| Independent Claims | 1 - 3 | | x \$80.00 | |
| Multiple Dependent Claims | | | \$270.00 | |
| Basic Filing Fee | | | | \$710.00 |
| Reduction by 1/2 for small entity | | | | |
| Fee for recording enclosed Assignment | | | \$40.00 | \$40.00 |
| TOTAL | | | | \$750.00 |

UTILITY PATENT
APPLICATION TRANSMITTAL

(Only for new nonprovisional applications
under 37 CFR 1.53(b))

Attorney Docket No.

001627

First Named Inventor or Application Identifier

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PAGE 3 OF 3

A check in the amount of \$ 750.00 is enclosed to cover the filing fee of \$ 710.00 and the assignment recordation fee of \$ 40.00.

Please charge our Deposit Account No. **01-2340** in the total amount of _____ to cover the filing fee and the _____ assignment recordation fee. A duplicate of this sheet is attached.

The Commissioner is hereby authorized to charge payment for any additional filing fees required under 37 CFR 1.16 or credit any overpayment to Deposit Account No. **01-2340**. A duplicate of this sheet is attached.

8. CORRESPONDENCE ADDRESS:



23850

PATENT TRADEMARK OFFICE

SUBMITTED BY

Typed or Printed Name Stephen G. Adrian

Reg. No. 32,878

Signature

Date: December 21, 2000

SGA/ll

PTO/SB/05

FIG.1

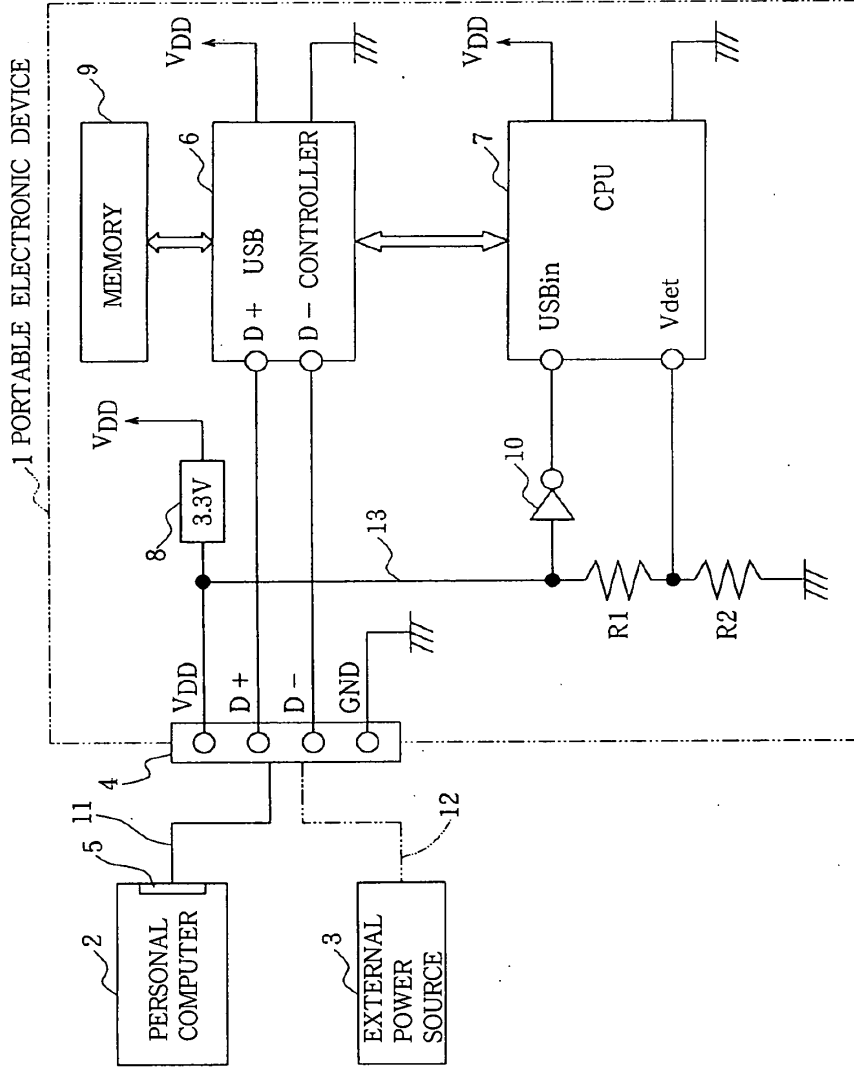
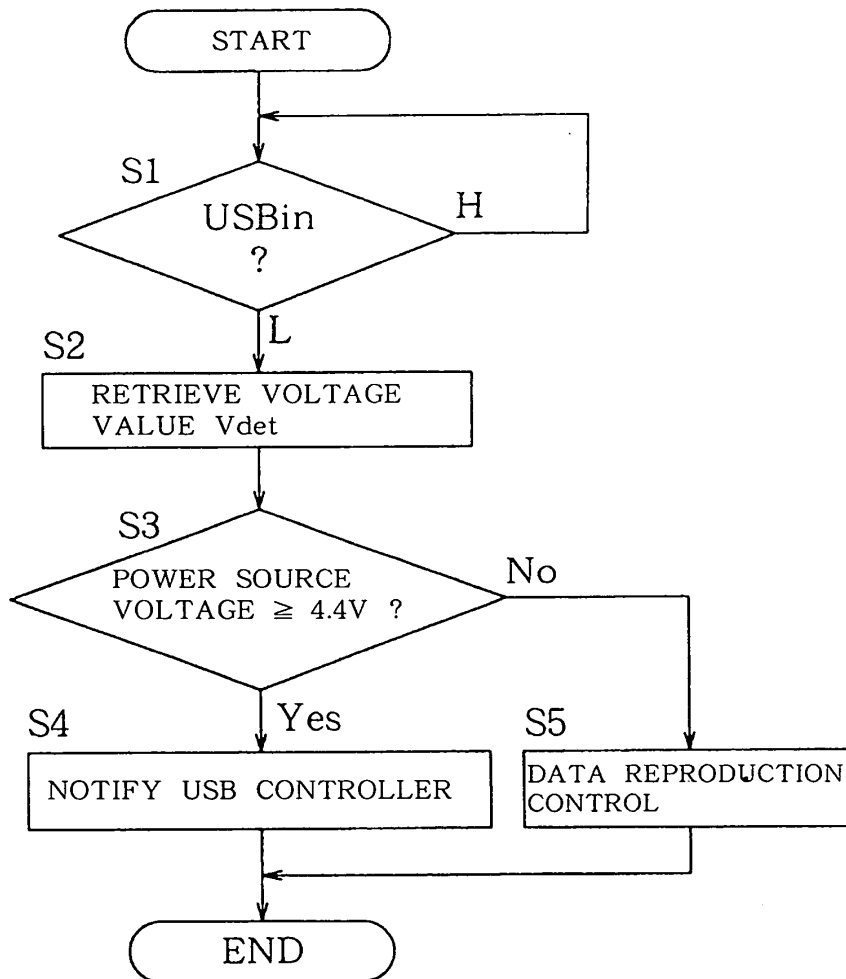


FIG.2



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TITLE OF THE INVENTION

PORTABLE ELECTRONIC DEVICE COMPRISING COMMON
SERIAL BUS CONNECTOR

FIELD OF THE INVENTION

The present invention relates to portable electronic devices such as audio players or digital cameras of the portable type, and more particularly to portable electronic devices comprising a common serial bus connector compliant with a common serial bus standard, such as a USB connector conforming to the USB (Universal Serial Bus) standard, for connecting a plurality of peripheral devices in common to a host information processing device.

BACKGROUND OF THE INVENTION

Portable electronic devices such as audio players or digital cameras of the portable type conventionally have incorporated therein a dry cell or secondary cell serving as the power source to realize the portability of the device. In some cases, however, it is desired to connect a commercial a.c. power source or like external power source to such a device and operate the device therewith.

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This nevertheless entails the problem that the provision of a connector for connecting the external power source to the portable electronic device renders the device greater in size.

In recent years, USB has attracted attention as a universal interface for connecting a plurality of peripheral devices in common to a host personal computer, and studies are underway for providing USB connectors, which are compliant with the USB standard, on various portable electronic devices. The USB connector has a pair of data terminals D+ and D-, power source terminal and ground terminal, and can be used for supplying power to peripheral devices by way of the power source terminal.

Accordingly, it appears feasible to provide the USB connector on a portable electronic device for use with an a.c. adaptor (external power source) connectable to the power source terminal of the USB connector, and to connect the a.c. adaptor to the power source terminal of the USB connector for the supply of power to the device, the USB connector thus serving also as a connector for the connection of the external power source, whereby an increase in the size of the electronic device is

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avoidable.

However, it is usual practice with the portable electronic device (compliant with the USB standard) having the USB connector to provide a main CPU for executing predetermined device operation processing for various operations of the device including reproduction of data, and a USB controller separate from the main CPU and adapted to execute predetermined data processing for carrying out data communication with the personal computer through the USB connector so as to ensure simplified processing. When the personal computer is connected to the USB connector on the portable electronic device in this case, it is necessary for the USB controller to conduct data communication with the personal computer with a definite period as required by the USB standard, so that the leadership in data processing is taken over by the USB controller from the main CPU. This entails the problem that even if the user gives the portable electronic device a command for data reproduction (play operation), the main CPU is unable to rapidly execute device operation processing for data reproduction.

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Further while the USB controller is connected to the personal computer for data communication, some kind of data is handled also between the main CPU and the USB controller. This gives rise to the problem that the main CPU must execute very complicated processing since there is a need for the main CPU to execute device processing for data reproduction in this state.

SUMMARY OF THE INVENTION

Accordingly, an object of the present invention is to provide a portable electronic device which has a USB connector or like common serial bus connector and which is adapted to execute simplified processing at a higher speed even when the connector serves also as a connector for the connection of an external power source.

The present invention provides a portable electronic device comprising a common serial bus connector, a common serial bus controller for executing predetermined data communication processing attendant on data communication with an information processing device connected to the common serial bus connector, and a control circuit connected to the common serial bus controller for executing device operation processing for the usual

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operation of the electronic device, the electronic device being capable of receiving a power supply from the information processing device or an external power source as connected to the common serial bus connector or from an internal power source.

The control circuit discriminates among the sources of supply of power and causes the common serial bus controller to execute the predetermined data communication processing while power is supplied from the information processing device, or executes the usual device operation processing while power is supplied from the external power source or the internal power source.

With the portable electronic device of the present invention, processing is assigned according to the source of supply of power; the control circuit causes the common serial bus controller to execute the predetermined data communication processing when the information processing device is the power source, or executes the usual device operation processing, such as data reproduction control, when the external power source or the internal power source is the source of supply of power. Thus, the control circuit and the common serial bus controller

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perform processing as distinctly dividedly assigned thereto according to the source of supply of power. This ensures simplified processing at a higher speed.

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Stated more specifically, the control circuit comprises discriminating means for judging which of the information processing device and the external power source is connected to the common serial bus connector, and control means for causing the common serial bus controller to execute the predetermined data communication processing when the connection of the information processing device to the common serial bus connector is recognized, or executes the usual device operation processing when the connection of the external power source to the common serial bus connector is recognized.

The discriminating means identifies the source of supply of power based on the voltage value of the power supply terminal of the common serial bus connector, or identifies the source of supply of power depending on whether the common serial bus controller has started data communication via the common serial bus connector.

According to the former method, the supply voltage

of the external power source is made lower or higher than the voltage of the power supply terminal of the common serial bus connector. The difference in the voltage value of the power supply terminal makes it possible to discriminate among the sources of supply of power. Further with the latter method, when the common serial bus controller started data communication via the common serial bus connector within a predetermined period of time, the information processing device is found to be the source of supply of power, whereas if data communication has not been started within the predetermined period of time, the external power source is found to be the supply source. Although the source of power supply can be identified by either of these methods, the former method based on the voltage value permits more rapid discrimination or identification.

Further stated more specifically, the control circuit comprises means for detecting the connection of the information processing device or the external power source to the common serial bus connector based on the binary state (high or low) of voltage level of the power supply terminal thereof, and the discriminating means

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identifies the source of supply of power according to the result of detection.

The binary state of voltage level of the power supply terminal is changed by the connection of the information processing device or the external power source to the common serial bus connector, so that the control circuit can be initiated into operation from sleep state according to the change to identify the source of supply of power.

As described above, the portable electronic device of the invention having a common serial bus connector is adapted to execute simplified processing at a higher speed even when the connector serves also for the connection of the external power source.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block diagram showing the construction of a portable electronic device embodying the invention; and

FIG. 2 is a flow chart showing the control procedure to be performed by a main CPU.

DETAILED DESCRIPTION OF EMBODIMENT

An embodiment of the present invention will be

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described below in detail with reference to the drawings.. FIG. 1 shows a portable electronic device 1 of the invention, which has a USB connector 4. A USB connector 5 of a personal computer 2 serving as a host can be connected to the USB connector 4 by a USB cable 11, or an external power source 3 such as an a.c. adaptor can be connected to the USB connector 4 by a power source cable 12. The USB connector 4 has a pair of data terminals D+ and D-, a power source terminal V_{DD} and a ground terminal GND.

The portable electronic device 1 comprises a USB controller 6 for executing predetermined data processing for conducting data communication with the personal computer 2 through the USB connector 4, a main CPU 7 for executing predetermined device operation processing for various operations of the device including reproduction of data, and a memory 9 for storing the data downloaded from the personal computer 2.

The pair of data terminals D+ and D- of the USB connector 4 are connected to a pair of data terminals D+ and D- provided on the USB controller 6. The power source voltage obtained from the power source terminal V_{DD}

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of the USB connector 4 is adjusted to 3.3 V by a voltage regulator 8 and then supplied to the USB controller 6 and the main CPU 7.

When the personal computer 2 is connected to the USB connector 4, the power source voltage to be supplied from the USB connector 5 of the personal computer 2 is prescribed at 4.75 V to 5.25 V. Further when a hub is connected to the USB connector 4 in the case where the personal computer 2, etc. provide a LAN, the power source voltage to be supplied from the hub is prescribed at 4.4 V to 5.25 V.

According to the present invention, on the other hand, the voltage to be supplied from the external power source 3 is set at 4.0 V to 4.3 V. This makes it possible to discriminate between the sources of supply of power as will be described later and to avoid damage to other USB device even if the external power source 3 is connected to the device.

Extending from the power source terminal V_{DD} of the USB connector 4 is a branch line 13 which is connected to inverting means 10 and then to a USB connection detecting terminal USBin provided on the main CPU 7. The branch

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line 13 has connected thereto a pair of voltage dividing resistors R1 and R2, and an intermediate point between the resistors is connected to a voltage detecting terminal Vdet provided on the main CPU 7.

FIG. 2 shows the control procedure to be executed by the main CPU 7. First when the personal computer 2 or the external power source 3 is connected to the USB connector 4 of the portable electronic device 1 in step S1, this changes the voltage at the USB connection detecting terminal USBin from high to low, with the result that the main CPU 7 rises from sleep mode.

Subsequently in step S2, the voltage value Vdet is retrieved from the voltage detecting terminal Vdet, and based on this voltage value Vdet, an inquiry is made in step S3 as to whether the power source voltage is at least 4.4 V. When the personal computer 2 or hub is connected to the USB connector 4, the power source voltage is within the range of 4.4 V to 5.25 V, so that the inquiry is answered in the affirmative, followed by step S4. If the external power source 3 is connected to the USB connector 4, on the other hand, the answer is negative since the power source voltage is in the range

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of 4.0 V to 4.3 V, followed by step S5.

In step S4, the main CPU 7 notifies the USB controller 6 of the connection of the personal computer 2 to the USB connector 4, sets the controller 6 in communication mode and causes the controller 6 to start data communication processing with the personal computer 2.

In step S5, on the other hand, the CPU 7 controls charging of the built-in secondary cell (not shown) as required, and executes device operation processing, such as data reproduction control, in response to the user's manipulation.

Thus, when the personal computer 2 is connected to the portable electronic device of the present invention by means of the USB connector 4, the USB controller 6 is caused to execute only data communication processing assigned thereto, while when the external power source 3 is connected to the device, the main CPU 7 executes only device operation processing assigned thereto. In this way, the processing to be executed is distinctly divided in two. This assures the main CPU 7 of simplified processing at a higher speed.

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For example, in the case where the personal computer 2 is connected to the USB connector 4 of the portable electronic device 1 for downloading data from the computer 2 to the electronic device 1, the main CPU 7 entrusts the USB controller 6 with the processing, with the result that the USB controller 6 performs data communication with the computer 2 and stores the data downloaded therefrom via the USB connector 4 in the memory 9.

When the portable electronic device 1 is thereafter given a command to reproduce the data stored in the memory 9, with the external power source 3 connected to the USB connector 4 thereof, the main CPU 7 commands the controller 6 to read the data from the memory 9 and receives the read data to execute device operation processing required for data reproduction. At this time, rapid processing is realized since the main CPU 7 takes the leadership of data processing.

The present invention is not limited to the foregoing embodiment in construction but can be modified variously by one skilled in the art without departing from the spirit of the invention as set forth in the

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.. appended claims. For example, the common serial bus connector is not limited to a USB connector in conformity with the USB standard but can be a connector compliant with other standard.

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What is claimed is:

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1. A portable electronic device comprising a common serial bus connector provided with data terminals and a power supply terminal in compliance with a common serial bus standard for connecting a plurality of peripheral devices in common to a host information processing device, a common serial bus controller for executing predetermined data communication processing attendant on data communication with an information processing device connected to the common serial bus connector, and a control circuit connected to the common serial bus controller for executing device operation processing for the usual operation of the electronic device, the electronic device being capable of receiving a power supply from the information processing device or an external power source as connected to the common serial bus connector or from an internal power source, the portable electronic device being characterized in that the control circuit discriminates among the sources of supply of power and causes the common serial bus controller to execute the predetermined data communication processing while power is supplied from the

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information processing device, or executes the usual device operation processing while power is supplied from the external power source or the internal power source.

2. A portable electronic device according to claim 1 wherein the control circuit comprises discriminating means for judging which of the information processing device and the external power source is connected to the common serial bus connector, and control means for causing the common serial bus controller to execute the predetermined data communication processing when the connection of the information processing device to the common serial bus connector is recognized, or executes the usual device operation processing when the connection of the external power source to the common serial bus connector is recognized.

3. A portable electronic device according to claim 2 wherein the discriminating means identifies the source of supply of power based on the voltage value of the power supply terminal of the common serial bus connector.

4. A portable electronic device according to claim 2 wherein the discriminating means identifies the source of supply of power depending on whether the common serial

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bus controller has started data communication via the common serial bus connector.

5. A portable electronic device according to claim 2 wherein the control circuit further comprises means for detecting the connection of the information processing device or the external power source to the common serial bus connector based on the binary state of voltage level of the power supply terminal thereof, and the discriminating means identifies the source of supply of power according to the result of detection.

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ABSTRACT

A portable electronic device according to the invention comprises a USB connector 4, a USB controller 6 for executing predetermined data communication processing attendant on data communication with a personal computer 2 connected to the USB connector 4, and a main CPU 7 for executing device operation processing for the usual operation of the device, and is adapted to receive a power supply from the personal computer 2 or an external power source 3 as connected to the USB connector 4. Discriminating between the sources of supply of power, the main CPU 7 causes the USB controller 6 to execute the predetermined data communication processing while power is supplied from the personal computer 2, or executes the usual device operation processing while power is supplied from the external power source 3. This assures more rapid and simplified processing even when the USB connector is used also as a connector for the external power source.

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Declaration For U.S. Patent Application

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled (Insert Title) PORTABLE ELECTRONIC DEVICE COMPRISING COMMON SERIAL BUS

CONNECTOR
the specification of which is attached hereto unless the following is checked:

was filed on _____ as United States Application Number or PCT International Application Number _____ and was amended on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claim(s), as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, § 119 (a) - (d) of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

| | | | | |
|--|-----------------|-----------|------------------------|---|
| (List prior foreign applications. See note A on back of this page) | HEL.11 - 370327 | Japan | 27/12/1999 | Priority Claimed |
| | (Number) | (Country) | (Day/Month/Year Filed) | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| | (Number) | (Country) | (Day/Month/Year Filed) | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | (Number) | (Country) | (Day/Month/Year Filed) | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | (Number) | (Country) | (Day/Month/Year Filed) | <input type="checkbox"/> Yes <input type="checkbox"/> No |

(See note B on back of this page) See attached list for additional prior foreign applications

I hereby claim the benefit under Title 35, United States Code, § 119(e) of any United States provisional application(s) listed below.

| | |
|----------------------|---------------|
| (Application Number) | (Filing Date) |
| (Application Number) | (Filing Date) |

I hereby claim the benefit under Title 35, United States Code, § 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of the application:

| | | | |
|--------------------------------|-----------------------------|---------------|---|
| (List Prior U.S. Applications) | (Application Serial Number) | (Filing Date) | (Status) (patented, pending, abandoned) |
| | (Application Serial Number) | (Filing Date) | (Status) (patented, pending, abandoned) |

I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

James E. Armstrong, III, Reg. No. 18,366; William F. Westerman, Reg. No. 29,988; Ken-Ichi Hattori, Reg. No. 32,861; Le-Nhung McLeland, Reg. No. 31,541; Ronald F. Naughton, Reg. No. 24,616; John R. Pegan, Reg. No. 18,069; William G. Kratz, Jr., Reg. No. 22,631; Albert Tockman, Reg. No. 19,722; Mel R. Quintos, Reg. No. 31,898; Donald W. Hanson, Reg. No. 27,133; Stephen G. Adrian, Reg. No. 32,878; William L. Brooks, Reg. No. 34,129; John F. Carney, Reg. No. 20,276; Edward F. Welsh, Reg. No. 22,455; Patrick D. Muir, Reg. No. 37,403; Gay A. Spahn, Reg. No. 34,978; John P. Kong, Reg. No. 40,054; and Luke A. Kilyk, Reg. No. 33,251.

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McLELAND & NAUGHTON
1725 K Street, N.W., Suite
Washington, D.C. 20006
Telephone: (202) 659-2930 Fax: (202) 887-0357

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Title 18 of the United States Code, § 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

(See note C above)
Full name of sole or first inventor (given name, family name) Katsuyuki Matsumoto
Inventor's Signature Katsuyuki Matsumoto Date 11/17/2000
Residence Hirakata - shi, Osaka, Japan Citizenship Japanese
Post Office Address 5 - 25 - 46, Nagaomotomachi, Hirakata - shi, Osaka, Japan

Full name of second inventor (given name, family name) Masanao Yoshida
Inventor's Signature Masanao Yoshida Date 11/17/2000
Residence Osaka - shi, Osaka, Japan Citizenship Japanese
Post Office Address 3 - 4 - 29, Kire, Hirano - ku, Osaka - shi, Osaka, Japan

Full name of third inventor (given name, family name) _____
Inventor's Signature _____ Date _____
Residence _____ Citizenship _____
Post Office Address _____

Full name of fourth inventor (given name, family name) _____
Inventor's Signature _____ Date _____
Residence _____ Citizenship _____
Post Office Address _____

Full name of fifth inventor (given name, family name) _____
Inventor's Signature _____ Date _____
Residence _____ Citizenship _____
Post Office Address _____

Full name of sixth inventor (given name, family name) _____
Inventor's Signature _____ Date _____
Residence _____ Citizenship _____
Post Office Address _____

Full name of seventh inventor (given name, family name) _____
Inventor's Signature _____ Date _____
Residence _____ Citizenship _____
Post Office Address _____

Full name of eighth inventor (given name, family name) _____
Inventor's Signature _____ Date _____
Residence _____ Citizenship _____
Post Office Address _____

NOTES

- A. Please list all foreign applications related to the invention and check block "yes" or "no".
- B. If more than 4 prior foreign applications, please check this box and attach a sheet listing the remaining prior foreign applications.
- C. For residence in the U.S., indicate city and state, for residence outside the U.S., indicate city and country. The "Post Office Address" must be an address acceptable by a Post Office for delivery of mail.

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PATENT APPLICATION SERIAL NO. _____

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE
FEE RECORD SHEET

12/26/2000 NROCHA1 00000021 09741018
01 FC:101 710.00 OP

PTO-1556
(5/87)

*U.S. GPO: 1969-459-022/19144

PATENT APPLICATION FEE DETERMINATION RECORD
Effective October 1, 2000

Application or Docket Number

0974018

CLAIMS AS FILED - PART I

(Column 1) (Column 2)

| | | |
|---|----------------------|--------------|
| TOTAL CLAIMS | | |
| FOR | NUMBER FILED | NUMBER EXTRA |
| TOTAL CHARGEABLE CLAIMS | 5 minus 20= * | * |
| INDEPENDENT CLAIMS | 1 minus 3 = * | * |
| MULTIPLE DEPENDENT CLAIM PRESENT <input type="checkbox"/> | | |

* If the difference in column 1 is less than zero, enter "0" in column 2

SMALL ENTITY TYPE OR

OTHER THAN SMALL ENTITY

| | |
|-----------|--------|
| RATE | FEE |
| BASIC FEE | 355.00 |
| X\$ 9= | |
| X40= | |
| +135= | |
| TOTAL | |

| | |
|-----------|---------------|
| RATE | FEE |
| BASIC FEE | 710.00 |
| X\$18= | |
| X80= | |
| +270= | |
| TOTAL | 710.00 |

CLAIMS AS AMENDED - PART II

(Column 1) (Column 2) (Column 3)

| | | | | | |
|---|-------------|----------------------------------|-------|------------------------------------|---------------|
| AMENDMENT A | | CLAIMS REMAINING AFTER AMENDMENT | | HIGHEST NUMBER PREVIOUSLY PAID FOR | PRESENT EXTRA |
| | Total | * | Minus | ** | = |
| | Independent | * | Minus | *** | = |
| FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/> | | | | | |

SMALL ENTITY OR

OTHER THAN SMALL ENTITY

| | |
|------------------|----------------|
| RATE | ADDITIONAL FEE |
| X\$ 9= | |
| X40= | |
| +135= | |
| TOTAL ADDIT. FEE | |

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|------------------|----------------|
| RATE | ADDITIONAL FEE |
| X\$18= | |
| X80= | |
| +270= | |
| TOTAL ADDIT. FEE | |

(Column 1) (Column 2) (Column 3)

| | | | | | |
|---|-------------|----------------------------------|-------|------------------------------------|---------------|
| AMENDMENT B | | CLAIMS REMAINING AFTER AMENDMENT | | HIGHEST NUMBER PREVIOUSLY PAID FOR | PRESENT EXTRA |
| | Total | * | Minus | ** | = |
| | Independent | * | Minus | *** | = |
| FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/> | | | | | |

| | |
|------------------|----------------|
| RATE | ADDITIONAL FEE |
| X\$ 9= | |
| X40= | |
| +135= | |
| TOTAL ADDIT. FEE | |

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| RATE | ADDITIONAL FEE |
| X\$18= | |
| X80= | |
| +270= | |
| TOTAL ADDIT. FEE | |

(Column 1) (Column 2) (Column 3)

| | | | | | |
|---|-------------|----------------------------------|-------|------------------------------------|---------------|
| AMENDMENT C | | CLAIMS REMAINING AFTER AMENDMENT | | HIGHEST NUMBER PREVIOUSLY PAID FOR | PRESENT EXTRA |
| | Total | * | Minus | ** | = |
| | Independent | * | Minus | *** | = |
| FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/> | | | | | |

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|------------------|----------------|
| RATE | ADDITIONAL FEE |
| X\$ 9= | |
| X40= | |
| +135= | |
| TOTAL ADDIT. FEE | |

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|------------------|----------------|
| RATE | ADDITIONAL FEE |
| X\$18= | |
| X80= | |
| +270= | |
| TOTAL ADDIT. FEE | |

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: **Katsuyuki MATSUMOTO, et al.**

Serial No.: **Not Yet Assigned**

Filed: **December 21, 2000**

For: **PORTABLE ELECTRONIC DEVICE COMPRISING COMMON SERIAL BUS CONNECTOR**

CLAIM FOR PRIORITY UNDER 35 U.S.C. 119

Director of Patents and Trademarks
Washington, D.C. 20231

December 21, 2000

Sir:

The benefit of the filing date of the following prior foreign application is hereby requested for the above-identified application, and the priority provided in 35 U.S.C. 119 is hereby claimed:


Japanese Appln. No. 11-370327, filed December 27, 1999

In support of this claim, the requisite certified copy of said original foreign application is filed herewith.

It is requested that the file of this application be marked to indicate that the applicants have complied with the requirements of 35 U.S.C. 119 and that the Patent and Trademark Office kindly acknowledge receipt of said certified copy.

In the event that any fees are due in connection with this paper, please charge our Deposit Account No. 01-2340.

Respectfully submitted,
ARMSTRONG, WESTERMAN, HATTORI
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This is to certify that the annexed is a true copy of the following application as filed with this office.

Date of Application: December 27, 1999

Application Number: Patent Application
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Applicant: Sanyo Electric Co.,Ltd.
SANYO Technosound Co.,Ltd.

November 17, 2000

Commissioner,
Patent Office

Kozo Oikawa

Number of Certificate
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別紙添付の書類に記載されている事項は下記の出願書類に記載されている事項と同一であることを証明する。

This is to certify that the annexed is a true copy of the following application as filed with this Office.

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特平 11-370327

【物件名】 要約書 1
【プルーフの要否】 要

【書類名】 明細書

【発明の名称】 共通シリアルバスコネクタを具えた携帯電子機器

【特許請求の範囲】

【請求項1】 ホストとなる情報処理機器に複数台の周辺機器を共通に接続するための共通シリアルバス規格に準拠して、データ端子と電源端子が設けられた共通シリアルバスコネクタと、該共通シリアルバスコネクタに接続された情報処理機器との間のデータ通信に伴う所定のデータ通信処理を実行する共通シリアルバスコントローラと、該共通シリアルバスコントローラに接続されて通常の機器動作のための機器動作処理を実行する制御回路とを具え、共通シリアルバスコネクタに接続された情報処理機器若しくは外部電源、或いは内部電源から、電源の供給を受けることが可能な携帯電子機器において、

前記制御回路は、電源の供給元を判別して、情報処理機器から電源の供給を受けている状態では、共通シリアルバスコントローラに前記所定のデータ通信処理を実行せしめ、外部電源又は内部電源から電源の供給を受けている状態では、前記所定の機器動作処理を実行することを特徴とする携帯電子機器。

【請求項2】 前記制御回路は、共通シリアルバスコネクタに情報処理機器又は外部電源の何れが接続されたかを判別する判別手段と、共通シリアルバスコネクタに情報処理機器が接続されたことが判別されたときは、共通シリアルバスコントローラに前記所定のデータ通信処理を実行せしめ、共通シリアルバスコネクタに外部電源が接続されたことが判別されたときは、前記所定の機器動作処理を実行する制御手段とを具えている請求項1に記載の携帯電子機器。

【請求項3】 前記判別手段は、共通シリアルバスコネクタの電源端子の電圧値に基づいて、電源の供給元を判別する請求項2に記載の携帯電子機器。

【請求項4】 前記判別手段は、共通シリアルバスコントローラが共通シリアルバスコネクタを介してデータ通信を開始したか否かで、電源の供給元を判別する請求項2に記載の携帯電子機器。

【請求項5】 前記制御回路は更に、共通シリアルバスコネクタの電源端子の電圧レベルの2値状態に基づいて、情報処理機器又は外部電源の何れかが接続されたことを検知する検知手段を具え、該検知に応じて、前記判別手段による

判別動作を実行する請求項 2 乃至請求項 4 の何れかに記載の携帯電子機器。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】

本発明は、携帯型のオーディオプレーヤやデジタルカメラの如き携帯電子機器に関し、特に、ホストとなる情報処理機器に複数台の周辺機器を共通に接続するための共通シリアルバス規格、例えばUSB(Universal Serial Bus)規格に準拠したUSBコネクタを具えた携帯電子機器に関するものである。

【0002】

【従来技術】

従来より、携帯型のオーディオプレーヤやデジタルカメラの如き携帯電子機器においては、電源として乾電池や二次電池を内蔵して、携帯性を実現しているが、場合によって、商用交流電源などの外部電源を接続して機器を動作させたいとの要望がある。

しかしながら、携帯電子機器に外部電源接続用のコネクタを配備することによって、機器が大型化する問題がある。

【0003】

ところで、近年、ホストとなるパーソナルコンピュータに複数台の周辺機器を共通に接続するための汎用インターフェースとして、USBが注目を集めており、各種携帯電子機器に、USB規格に準拠したUSBコネクタを設けることが検討されている。

USBコネクタには、一对のデータ端子D+及びD-と、電源端子と、グラウンド端子とが設けられており、電源端子を利用して、周辺機器に電源を供給することが可能である。

【0004】

そこで、携帯電子機器にUSBコネクタを設けると共に、該USBコネクタの電源端子に接続可能なACアダプター(外部電源)を構成して、該ACアダプターをUSBコネクタの電源端子に接続して電源を供給することにより、USBコネクタを外部電源接続用のコネクタとして兼用することが考えられる。

これによって、機器の大型化を回避することが出来る。

【0005】

【発明が解決しようとする課題】

しかしながら、USBコネクタを具えた携帯電子機器(USB対応機器)においては、処理の簡略化のために、データ再生等の各種機器動作のための所定の機器動作処理を実行するメインCPUと、USBコネクタを介してパーソナルコンピュータとの間でデータ通信を行なうための所定のデータ通信処理を実行するUSBコントローラとを、別個に設けるのが通常であり、この場合、携帯電子機器のUSBコネクタにパーソナルコンピュータを接続すると、USBコントローラは、USB規格上の要請から、パーソナルコンピュータと一定周期で常時データ通信を行なう必要があるため、データ処理の主導権がメインCPUからUSBコントローラへ移ってしまい、ユーザが携帯電子機器にデータ再生(プレイ動作)を指令したとしても、メインCPUは、データ再生のための機器動作処理を迅速に実行することが出来ない問題があった。

又、USBコントローラがパーソナルコンピュータと接続されてデータ通信を行なっている状態では、メインCPUとUSBコントローラの間でもある種のデータのやりとりが行なわれており、この状態でメインCPUがデータ再生のための機器動作処理を実行する必要があるため、メインCPUの処理が極めて煩雑となる問題があった。

【0006】

そこで本発明の目的は、USBコネクタ等の共通シリアルバスコネクタを具えた携帯電子機器において、該コネクタを外部電源接続用のコネクタとして兼用した場合にも、処理の迅速化と簡略化を図ることが出来る携帯電子機器を提供することである。

【0007】

【課題を解決する為の手段】

本発明に係る携帯電子機器は、共通シリアルバスコネクタと、該共通シリアルバスコネクタに接続された情報処理機器との間のデータ通信に伴う所定のデータ通信処理を実行する共通シリアルバスコントローラと、該共通シリアルバス

コントローラに接続されて通常の機器動作のための機器動作処理を実行する制御回路とを具え、共通シリアルバスコネクタに接続された情報処理機器若しくは外部電源、或いは内部電源から、電源の供給を受けることが可能である。

ここで、前記制御回路は、電源の供給元を判別して、情報処理機器から電源の供給を受けている状態では、共通シリアルバスコントローラに前記所定のデータ通信処理を実行せしめ、外部電源又は内部電源から電源の供給を受けている状態では、前記所定の機器動作処理を実行するものである。

【0008】

上記本発明の携帯電子機器においては、制御回路は、電源の供給元に応じ、情報処理機器が電源供給元であるときは、共通シリアルバスコントローラに処理を委ねて所定のデータ通信処理を実行せしめ、外部電源又は内部電源が電源供給元であるときは、データ再生制御などの所定の機器動作処理を実行する。

この様に、電源の供給元に応じて、制御回路と共通シリアルバスコントローラの間で処理の受け持ちが明確に分担されているので、処理の迅速化と簡略化が図られる。

【0009】

具体的構成において、前記制御回路は、共通シリアルバスコネクタに情報処理機器又は外部電源の何れが接続されたかを判別する判別手段と、共通シリアルバスコネクタに情報処理機器が接続されたことが判別されたときは、共通シリアルバスコントローラに前記所定のデータ通信処理を実行せしめ、共通シリアルバスコネクタに外部電源が接続されたことが判別されたときは、前記所定の機器動作処理を実行する制御手段とを具えている。

【0010】

ここで、判別手段は、共通シリアルバスコネクタの電源端子の電圧値に基づいて、電源の供給元を判別する方式、若しくは、共通シリアルバスコントローラが共通シリアルバスコネクタを介してデータ通信を開始したか否かで、電源の供給元を判別する方式を採用することが出来る。

【0011】

前者の判別方式では、外部電源の供給電圧を、共通シリアルバスコネクタの

電源端子の電圧よりも低く、若しくは高く設定することにより、電源端子の電圧値の大小に基づいて電源の供給元を判別することが出来る。又、後者の判別方式では、一定時間内に共通シリアルバスコントローラが共通シリアルバスコネクタを介してデータ通信を開始したとき、情報処理機器が電源供給元と判別し、一定時間内にデータ通信の開始がないとき、外部電源が電源供給元と判別することが出来る。

この様に何れの方式によっても、電源供給元を確実に判別することが出来るが、電圧値に基づく前者の方式によれば、より迅速な判別が可能である。

【 0 0 1 2 】

更に具体的な構成において、前記制御回路は更に、共通シリアルバスコネクタ一の電源端子の電圧レベルの 2 値状態(ハイ又はロー)に基づいて、情報処理機器又は外部電源の何れかが接続されたことを検知する検知手段を具え、該検知に応じて、前記判別手段による判別動作を実行する。

該具体的構成によれば、共通シリアルバスコネクタに情報処理機器又は外部電源の何れかが接続されることによって、電源端子の電圧レベルの 2 値状態が変化するので、これに応じて、スリープ状態の制御回路を起動せしめて、電源供給元判別動作を実行させることが出来る。

【 0 0 1 3 】

【発明の効果】

本発明に係る共通シリアルバスコネクタを具えた携帯電子機器によれば、共通シリアルバスコネクタを外部電源接続用のコネクタとして兼用した場合にも、処理の迅速化と簡略化を図ることが出来る。

【 0 0 1 4 】

【発明の実施の形態】

以下、本発明の実施の形態につき、図面に沿って具体的に説明する。

図 1 に示す如く、本発明に係る携帯電子機器(1)は USB コネクタ(4)を具え、該 USB コネクタ(4)には、USB ケーブル(11)を介して、ホストとなるパーソナルコンピュータ(2)の USB コネクタ(5)を接続し、若しくは電源ケーブル(12)を介して、AC アダプター等の外部電源(3)を接続することが出来る

USBコネクタ(4)には、一对のデータ端子D+及びD-と、電源端子 V_{DD} と、グランド端子GNDとが設けられている。

【0015】

携帯電子機器(1)には、USBコネクタ(4)を介してパーソナルコンピュータ(2)との間でデータ通信を行なうための所定のデータ通信処理を実行するUSBコントローラ(6)と、データ再生等の各種機器動作のための所定の機器動作処理を実行するメインCPU(7)と、パーソナルコンピュータ(2)からダウンロードされたデータを格納するためのメモリ(9)とが設けられている。

【0016】

USBコネクタ(4)の一对のデータ端子D+及びD-は、USBコントローラ(6)に設けられた一对のデータ端子D+及びD-に接続されている。

又、USBコネクタ(4)の電源端子 V_{DD} から得られる電源電圧は、電圧レギュレータ(8)を経て、3.3Vに調節された後、USBコントローラ(6)やメインCPU(7)へ供給される。

【0017】

尚、USBコネクタ(4)にパーソナルコンピュータ(2)が接続されたとき、パーソナルコンピュータ(2)のUSBコネクタ(5)から供給される電源電圧は4.75V~5.25Vと規定されている。又、パーソナルコンピュータ(2)等からLANを構成した場合において、USBコネクタ(4)にハブが接続されたときには、ハブから供給される電源電圧は4.4V~5.25Vと規定されている。

一方、本発明においては、外部電源(3)の供給電圧を4.0V~4.3Vに設定している。これによって、後述の如く電源供給元の判別が可能となると共に、仮に外部電源(3)が他のUSB機器に接続されたとしても、該機器の損傷が回避される。

【0018】

又、USBコネクタ(4)の電源端子 V_{DD} からは分岐線(13)が伸びており、該分岐線(13)は更に反転器(10)を経て、メインCPU(7)に設けられたUSB接続検出端子USB inに接続されている。又、分岐線(13)には一对の分圧抵抗R1

及びR2が接続され、両分圧抵抗の中間点が、メインCPU(7)に設けられた電圧検出端子Vdetに接続されている。

【0019】

図2は、メインCPU(7)が実行する制御手続きを表わしている。

まずステップS1にて、携帯電子機器(1)のUSBコネクタ(4)にパーソナルコンピュータ(2)若しくは外部電源(3)の何れかが接続されると、これによってUSB接続検出端子USBinの電圧がハイからローに変化することになり、この結果、メインCPU(7)はスリープモードから立ち上がることになる。

【0020】

次にステップS2では、電圧検出端子Vdetから電圧値Vdetを取り込み、ステップS3では、電圧値Vdetに基づいて電源電圧が4.4V以上であるか否かを判断する。ここで、USBコネクタ(4)にパーソナルコンピュータ(2)若しくはハブが接続されているときは、電源電圧は4.4V~5.25Vの範囲内であるから、イエスと判断され、ステップS4へ移行する。これに対し、USBコネクタ(4)に外部電源(3)が接続されているときは、電源電圧は4.0V~4.3Vの範囲であるから、ノーと判断されて、ステップS5に移行する。

【0021】

ステップS4では、USBコントローラ(6)に対して、USBコネクタ(4)にパーソナルコンピュータ(2)が接続された旨を通知して、USBコントローラ(6)を通信モードに設定し、USBコントローラ(6)にパーソナルコンピュータ(2)との間のデータ通信処理を開始させる。

一方、ステップS5では、必要に応じて内蔵二次電池(図示省略)の充電を制御すると共に、ユーザ操作に応じてデータ再生制御等の機器動作処理を実行する。

【0022】

上述の如く、本発明に係る携帯電子機器においては、USBコネクタ(4)を介してパーソナルコンピュータ(2)が接続されたときには、USBコントローラ(6)が受け持つデータ通信処理のみを実行せしめ、外部電源(3)が接続されたときはメインCPU(7)が受け持つ機器動作処理のみを実行することとして、処理を明確に二分したので、メインCPU(7)の処理の簡略化と高速化を図ることが

出来る。

【 0 0 2 3 】

例えば、携帯電子機器(1)のUSBコネクタ(4)にパーソナルコンピュータ(2)を接続して、パーソナルコンピュータ(2)から携帯電子機器(1)へデータのダウンロードを行なう場合、メインCPU(7)は、USBコントローラ(6)に処理を委ねる。この結果、USBコントローラ(6)は、パーソナルコンピュータ(2)とデータ通信を行なって、USBコネクタ(4)を経てダウンロードされてくるデータをメモリ(7)に格納する。

その後、携帯電子機器(1)のUSBコネクタ(4)に外部電源(3)を接続した状態で、携帯電子機器(1)に対し、メモリ(9)に格納されているデータの再生を指令すると、メインCPU(7)は、USBコントローラ(6)に対してメモリ(9)からのデータの読み込みを指令し、これによって読み出されたデータを受信して、データ再生に必要な機器動作処理を実行する。このとき、メインCPU(7)は、データ処理の主導権を握っているため、迅速な処理が実現されるのである。

【 0 0 2 4 】

尚、本発明の各部構成は上記実施の形態に限らず、特許請求の範囲に記載の技術的範囲内で種々の変形が可能である。例えば、共通シリアルバスコネクタとしては、USB規格に準拠したUSBコネクタに限らず、他の規格に準拠したコネクタを採用することも可能である。

【図面の簡単な説明】

【図1】

本発明に係る携帯電子機器の構成を示すブロック図である。

【図2】

メインCPUの制御手続きを示すフローチャートである。

【符号の説明】

- (1) 携帯電子機器
- (2) パーソナルコンピュータ
- (3) 外部電源
- (4) USBコネクタ

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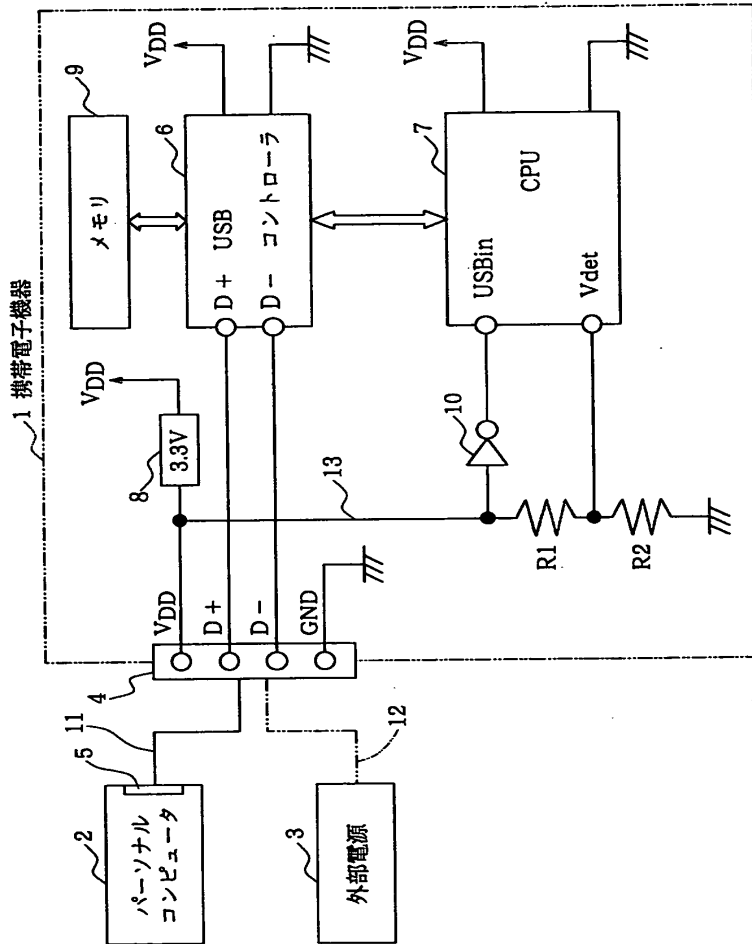
(6) USBコントローラ

(7) メインCPU

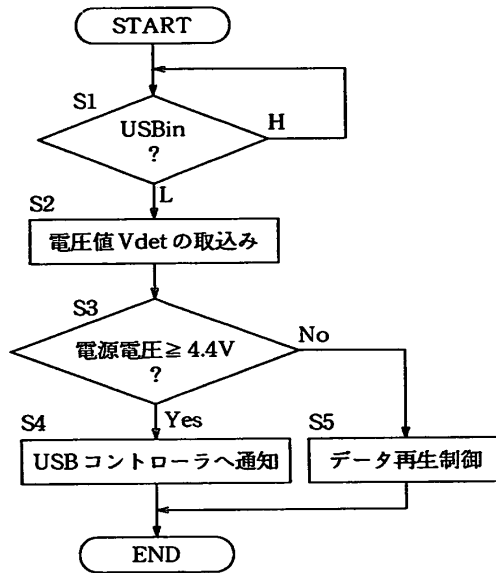
【書類名】

図面

【図1】



【図 2】



【書類名】 要約書

【要約】

【課題】 USBコネクタを外部電源接続用のコネクタとして兼用した場合にも、処理の迅速化と簡略化を図ることが出来る携帯電子機器を提供する。

【解決手段】 本発明に係る携帯電子機器は、USBコネクタ4と、USBコネクタ4に接続されたパーソナルコンピュータ2との間のデータ通信に伴う所定のデータ通信処理を実行するUSBコントローラ6と、通常の機器動作のための機器動作処理を実行するメインCPU7とを具え、USBコネクタ4に接続されたパーソナルコンピュータ2若しくは外部電源3から電源の供給を受けることが可能である。メインCPU7は、電源の供給元を判別して、パーソナルコンピュータ2から電源の供給を受けている状態では、USBコントローラ6に前記所定のデータ通信処理を実行せしめ、外部電源3から電源の供給を受けている状態では、前記所定の機器動作処理を実行する。

【選択図】 図1

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