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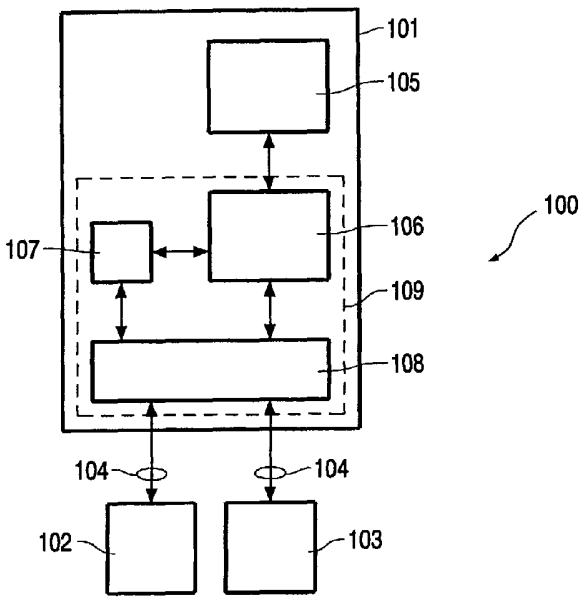
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18 March 2004

[Continued on next page]

(54) Title: BUS SYSTEM, STATION FOR USE IN A BUS SYSTEM, AND BUS INTERFACE



(57) Abstract: The invention relates to a bus system comprising a first station and a second station coupled by a bus for transferring signals. The bus is arranged to operate according to a protocol in which said first station repeatedly sends requests for data to the second station. The protocol comprises a first mode for transferring the requests in a first request format at a first communication speed and at least a second mode for transferring said requests in a second request format at a second speed. The second station is arranged to receive requests in a mode selected from a group of modes comprising said first and second modes, and is arranged to give a first indication to said first station if it is arranged to operate according to the first mode and a second indication if it is arranged to operate according to the second mode. The first station comprises a processor, a controller, and a translator. The processor is operable to generate request properties for requests in the first request format. The controller is operable to generate the requests in the first request format from the request properties. The controller is also operable to transmit the request in the first format to the second station upon detection of the first indication and to forward the requests to the translator upon detection of the second indication. The translator is also operable to transmit the requests in the second format to the second station.

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INTERNATIONAL SEARCH REPORT

Intern Application No
PCT/IB 03/02196

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G06F13/42 H04L29/06

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)
IPC 7 H04L G06F

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 practical, search terms used)

EPO-Internal, BIOSIS, COMPENDEX, EMBASE, INSPEC, PAJ, IBM-TDB, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 259 706 B1 (SHIMADA JUNICHI) 10 July 2001 (2001-07-10) abstract; figures 1-4 column 3, line 60 -column 15, line 25	1,6,8, 13,15,20
Y	---	2,9,16
Y	ANONYMOUS: "Enhanced Host Controller Interface Specification for Universal Serial Bus, Rev. 1.0" [Online] 12 March 2002 (2002-03-12) XP002255364 Retrieved from the Internet: <URL: www.intel.com/technology/usb/download/ehci-r10.pdf> [retrieved on 2003-09-18] cited in the application paragraph [01.2]	2,9,16

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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

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

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

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

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

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

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

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

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

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
23 September 2003	17/12/2003

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Albert, J

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

INTERNATIONAL SEARCH REPORT

Interr Application No
PCT/IB 03/02196

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	"On-The-Go supplement to the USB 2.0 specifition, Revision 1,0" , UNIVERSAL SERIAL BUS (USB), XX, XX, PAGE(S) 1-66,1-3,2-6 XP002952944 the whole document -----	1,2,6,8, 9,13,15, 16,20

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

INTERNATIONAL SEARCH REPORT

Int[illegible]onal application No.
PCT/IB 03/02196

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

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

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1, 2, 6, 8, 9, 13, 15, 16, 20

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1,2,6,8,9,13,15,16,20

   Processor being operable to generate request properties for requests in said first format, said controller being operable to generate said requests in said first request format from said request properties, further being operable to transmit said requests in said first format to said second station upon detection of said first indication and to forward said requests to said translator upon detection of said first indication and to forward said request to said translator upon detection of said second indication, and said translator being operable to transmit said request in said second format to said second station,

   wherein said bus system is a USB system.

2. Claims: 3,10,17

   Said request properties comprise mode information whereby said controller is operable to determine from said mode information whereby said controller is operable to determine from said mode information if said request is to be transmitted in said first or second format, respectively.

3. Claims: 4,11,18

   Said second station is assigned an address, said request properties comprise address information whereby said controller is operable to determine from said address information if said request is to be transmitted in said first or second format, respectively.

4. Claims: 5,7,12,14,19,21

   Said first station also comprises a router for routing said requests transmitted in said first and second modes by said controller and said translator, respectively to said bus.

INTERNATIONAL SEARCH REPORT

Information on patent family members

Inter Application No
PCT/IB 03/02196

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6259706 B1	10-07-2001	JP 11127215 A	11-05-1999