

031105
17712 U.S. PTO

PTO/SB/05 (08-03)
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UTILITY PATENT APPLICATION TRANSMITTAL <i>(Only for new nonprovisional applications under 37 CFR 1.53(b))</i>	Attorney Docket No.	SCHO0102D-C
	First Inventor	TASLER
	Title	Flexible Interface
	Express Mail Label No.	EV541427914 US

APPLICATION ELEMENTS <i>See MPEP chapter 600 concerning utility patent application contents.</i>	ADDRESS TO: Mail Stop Patent Application Commissioner for Patents P.O. Box 1450 Alexandria VA 22313-1450
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1. Fee Transmittal Form (e.g., PTO/SB/17)
(Submit an original and a duplicate for fee processing)
2. Applicant claims small entity status.
See 37 CFR 1.27.
3. Specification [Total Pages 23]
(preferred arrangement set forth below)
 - Descriptive title of the invention
 - Cross Reference to Related Applications
 - Statement Regarding Fed sponsored R & D
 - Reference to sequence listing, a table, or a computer program listing appendix
 - Background of the Invention
 - Brief Summary of the Invention
 - Brief Description of the Drawings *(if filed)*
 - Detailed Description
 - Claim(s)
 - Abstract of the Disclosure
4. Drawing(s) (35 U.S.C. 113) [Total Sheets 2]
5. Oath or Declaration [Total Sheets 3]
 a. Newly executed (original or copy)
 b. Copy from a prior application (37 CFR 1.63(d))
(for continuation/divisional with Box 18 completed)
 i. **DELETION OF INVENTOR(S)**
 Signed statement attached deleting inventor(s) name in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b).
6. Application Data Sheet. See 37 CFR 1.76

7. CD-ROM or CD-R in duplicate, large table or Computer Program *(Appendix)*
8. Nucleotide and/or Amino Acid Sequence Submission *(if applicable, all necessary)*
 a. Computer Readable Form (CRF)
 b. Specification Sequence Listing on:
 i. CD-ROM or CD-R (2 copies); or
 ii. Paper
 c. Statements verifying identity of above copies

ACCOMPANYING APPLICATION PARTS	
9. <input type="checkbox"/>	Assignment Papers (cover sheet & document(s))
10. <input type="checkbox"/>	37 CFR 3.73(b) Statement <input checked="" type="checkbox"/> Power of Attorney <i>(when there is an assignee)</i>
11. <input type="checkbox"/>	English Translation Document <i>(if applicable)</i>
12. <input type="checkbox"/>	Information Disclosure Statement (IDS)/PTO-1449 <input type="checkbox"/> Copies of IDS Citations
13. <input type="checkbox"/>	Preliminary Amendment
14. <input checked="" type="checkbox"/>	Return Receipt Postcard (MPEP 503) <i>(Should be specifically itemized)</i>
15. <input type="checkbox"/>	Certified Copy of Priority Document(s) <i>(if foreign priority is claimed)</i>
16. <input type="checkbox"/>	Nonpublication Request under 35 U.S.C. 122 (b)(2)(B)(i). Applicant must attach form PTO/SB/35 or its equivalent.
17. <input checked="" type="checkbox"/>	Other: Certificate of Express mail; Revocation... of Prior and Grant of New Power of Attorney...

18. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below and in the first sentence of the specification following the title, or in an Application Data Sheet under 37 CFR 1.76:

Continuation
 Divisional
 Continuation-in-part (CIP)
 of prior application No.: 10/219,105

Prior application information: Examiner Harold J. Kim Art Unit: 2182
 For CONTINUATION OF DIVISIONAL APPS only; The entire disclosure of the prior application, from which an oath or declaration is supplied under Box 5b, is considered a part of the disclosure of the accompanying continuation or divisional application and is hereby incorporated by reference. The incorporation can only be relied upon when a portion has been inadvertently omitted from the submitted application parts.

19. CORRESPONDENCE ADDRESS

Customer Number: 22862
 OR
 Correspondence address below

Name			
Address			
City	State	Zip Code	
Country	Telephone	Fax	

Name (Print/Type)	Michael A. Glenn	Registration No. (Attorney/Agent)	30,176
Signature		Date	March 11, 2005

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<p style="text-align: center;">Effective on 12/08/2004. Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).</p> <h2 style="text-align: center;">FEE TRANSMITTAL For FY 2005</h2> <p><input checked="" type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27</p> <p>TOTAL AMOUNT OF PAYMENT (\$) 500.00</p>	<p style="text-align: center;">Complete if Known</p> <table border="1" style="width:100%; border-collapse: collapse;"> <tr><td>Application Number</td><td>Unknown</td></tr> <tr><td>Filing Date</td><td>March 11, 2005</td></tr> <tr><td>First Named Inventor</td><td>TASLER</td></tr> <tr><td>Examiner Name</td><td>Unknown</td></tr> <tr><td>Art Unit</td><td>Unknown</td></tr> <tr><td>Attorney Docket No.</td><td>SCHO0102D-C</td></tr> </table>	Application Number	Unknown	Filing Date	March 11, 2005	First Named Inventor	TASLER	Examiner Name	Unknown	Art Unit	Unknown	Attorney Docket No.	SCHO0102D-C
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Art Unit	Unknown												
Attorney Docket No.	SCHO0102D-C												

METHOD OF PAYMENT (check all that apply)

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 Other (please identify): _____

Deposit Account
 Deposit Account Number: 07-1445
 Deposit Account Name: Glenn Patent Group

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FEE CALCULATION

1. BASIC FILING, SEARCH, AND EXAMINATION FEES

Application Type	FILING FEES		SEARCH FEES		EXAMINATION FEES		Fees Paid (\$)
	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	
Utility	300	150	500	250	200	100	500
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

2. EXCESS CLAIM FEES

Fee Description	Fee (\$)	Small Entity Fee (\$)
Each claim over 20 or, for Reissues, each claim over 20 and more than in the original patent	50	25
Each independent claim over 3 or, for Reissues, each independent claim more than in the original patent	200	100
Multiple dependent claims	360	180

Total Claims **Extra Claims** **Fee (\$)** **Fee Paid (\$)** **Multiple Dependent Claims**
 16 - 20 or HP = 0 x = 0.00 **Fee (\$)** **Fee Paid (\$)**
 HP = highest number of total claims paid for, if greater than 20 0.00 _____

Indep. Claims **Extra Claims** **Fee (\$)** **Fee Paid (\$)**
 3 - 3 or HP = 0 x = 0.00

HP = highest number of independent claims paid for, if greater than 3

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee (\$)	Fee Paid (\$)
_____ - 100 = _____	_____	_____ / 50 = _____ (round up to a whole number) x _____	_____	_____

4. OTHER FEE(S)

	Fees Paid (\$)
Non-English Specification, \$130 fee (no small entity discount)	_____
Other: _____	_____

SUBMITTED BY

Signature		Registration No. (Attorney/Agent)	30,176	Telephone	(650) 474-8400
Name (Print/Type)	Michael A. Glenn	Date	March 11, 2005		

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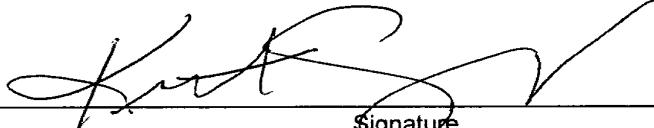
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Kristianne Serrano

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9. Assignment Papers (cover sheet & document(s))
10. 37 CFR 3.73(b) Statement Power of Attorney *(when there is an assignee)*
11. English Translation Document *(if applicable)*
12. Information Disclosure Statement (IDS)/PTO-1449 Copies of IDS Citations
13. Preliminary Amendment
14. Return Receipt Postcard (MPEP 503)
(Should be specifically itemized)
15. Certified Copy of Priority Document(s)
(if foreign priority is claimed)
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Continuation Divisional Continuation-in-part (CIP) of prior application No.: 10/219,105

Prior application information: Examiner Harold J. Kim Art Unit: 2182
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**FEE TRANSMITTAL
For FY 2005** Applicant claims small entity status. See 37 CFR 1.27TOTAL AMOUNT OF PAYMENT (\$)**500.00****Complete if Known**

Application Number	Unknown
Filing Date	March 11, 2005
First Named Inventor	TASLER
Examiner Name	Unknown
Art Unit	Unknown
Attorney Docket No.	SCHO0102D-C

METHOD OF PAYMENT (check all that apply)
 Check Credit Card Money Order None Other (please identify): _____
 Deposit Account Deposit Account Number: 07-1445 Deposit Account Name: Glenn Patent Group

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0.00						

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Non-English Specification, \$130 fee (no small entity discount)

Other: _____

SUBMITTED BY

Signature		Registration No. (Attorney/Agent)	30,176	Telephone	(650) 474-8400
Name (Print/Type)	Michael A. Glenn	Date	March 11, 2005		

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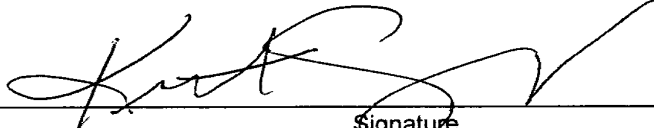
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Flexible Interface

Description

The present invention relates to the transfer of data and in particular to interface devices for communication between a computer or host device and a data transmit/receive device from which data is to be acquired or with which two-way communication is to take place.

Existing data acquisition systems for computers are very limited in their areas of application. Generally such systems can be classified into two groups.

In the first group host devices or computer systems are attached by means of an interface to a device whose data is to be acquired. The interfaces of this group are normally standard interfaces which, with specific driver software, can be used with a variety of host systems. An advantage of such interfaces is that they are largely independent of the host device. However, a disadvantage is that they generally require very sophisticated drivers which are prone to malfunction and which limit data transfer rates between the device connected to the interface and the host device and vice versa. Further, it is often very difficult to implement such interfaces for portable systems and they offer few possibilities for adaptation with the result that such systems offer little flexibility.

The devices from which data is to be acquired cover the entire electrical engineering spectrum. In a typical case, it is assumed that a customer who operates, for example, a diagnostic radiology system in a medical engineering environment reports a fault. A field service technician of the system manufacturer visits the customer and reads system log files generated by the diagnostic radiology system by means a portable computer or laptop for example. If the fault cannot be localized or if the fault is intermittent, it will be necessary for the service technician to read not only an error log file but also data from current operation. It is apparent that in this case fast data transfer and rapid data analysis are necessary.

Another case requiring the use of an interface could be, for example, when an electronic measuring device, e.g. a multimeter, is attached to a computer system to transfer the data measured by the multimeter to the computer. Particularly when long-term measurements or large volumes of data are involved it is necessary for the interface to support a high data transfer rate.

From these randomly chosen examples it can be seen that an interface may be put to totally different uses. It is therefore desirable that an interface be sufficiently flexible to permit attachment of very different electrical or electronic systems to a host device by means of the interface. To prevent operator error, it is also desirable that a service technician is not required to operate different interfaces in different ways for different applications but that, if possible, a universal method of operating the interface be provided for a large number of applications.

To increase the data transfer rates across an interface, the route chosen in the second group of data acquisition systems for the interface devices was to specifically match the interface very closely to individual host systems or computer systems. The advantage of this solution is that high data transfer rates are possible. However, a disadvantage is that the drivers for the interfaces of the second group are very closely matched to a single host system with the result that they generally cannot be used with other host systems or their use is very ineffective. Further, such types of interface have the disadvantage that they must be installed inside the computer casing to achieve maximum data transfer rates as they access the internal host bus system. They are therefore generally not suitable for portable host systems in the form of laptops whose minimum possible size leaves little internal space to plug in an interface card.

A solution to this problem is offered by the interface devices of IOtech (business address: 25971 Cannon Road, Cleveland, Ohio 44146, USA) which are suitable for laptops such as the WaveBook/512 (registered trademark). The interface devices are connected by means of a plug-in card, approximately the size of a credit card, to the PCMCIA interface which is now a standard feature in laptops. The plug-in card converts the PCMCIA interface into an interface known in the art as IEEE 1284. The said plug-in card provides a special printer interface which is enhanced as regards the data transfer rate and delivers a data transfer rate of approximately 2 MBps as

compared with a rate of approx. 1 MBps for known printer interfaces. The known interface device generally consists of a driver component, a digital signal processor, a buffer and a hardware module which terminates in a connector to which the device whose data is to be acquired is attached. The driver component is attached directly to the enhanced printer interface thus permitting the known interface device to establish a connection between a computer and the device whose data is to be acquired.

In order to work with the said interface, an interface-specific driver must be installed on the host device so that the host device can communicate with the digital signal processor of the interface card. As described above, the driver must be installed on the host device. If the driver is a driver developed specifically for the host device, a high data transfer rate is achieved but the driver cannot be easily installed on a different host system. However, if the driver is a general driver which is as flexible as possible and which can be used on many host devices, compromises must be accepted with regard to the data transfer rate.

Particularly in an application for multi-tasking systems in which several different tasks such as data acquisition, data display and editing are to be performed quasi-simultaneously, each task is normally assigned a certain priority by the host system. A driver supporting a special task requests the central processing system of the host device for processor resources in order to perform its task. Depending on the particular priority assignment method and on the driver implementation, a particular share of processor resources is assigned to a special task in particular time slots. Conflicts arise if one or more drivers are implemented in such a way that they have the highest priority by default, i.e. they are incompatible, as happens in practice in many applications. It may occur that both drivers are set to highest priority which, in the worst case, can result in a system crash.

EP 0685799 A1 discloses an interface by means of which several peripheral devices can be attached to a bus. An interface is connected between the bus of a host device and various peripheral devices. The interface comprises a finite state machine and several branches each of which is assigned to a peripheral device. Each branch comprises a data manager, cycle control, user logic and a buffer. This known interface

device provides optimal matching between a host device and a specific peripheral device.

The specialist publication IBM Technical Disclosure Bulletin, Vol. 38, No. 05, page 245; "Communication Method between Devices through FDD Interface" discloses an interface which connects a host device to a peripheral device via a floppy disk drive interface. The interface consists in particular of an address generator, an MFM encoder/decoder, a serial/parallel adapter and a format signal generator. The interface makes it possible to attach not only a floppy disk drive but also a further peripheral device to the FDD host controller of a host device. The host device assumes that a floppy disk drive is always attached to its floppy disk drive controller and communication is initiated if the address is correct. However, this document contains no information as to how communication should be possible if the interface is connected to a multi-purpose interface instead of to a floppy disk drive controller.

It is the object of the present invention to provide an interface device for communication between a host device and a data transmit/receive device whose use is host device-independent and which delivers a high data transfer rate.

This object is achieved by an interface device according to claim 1 or 12 and by a method according to claim 15.

The present invention is based on the finding that both a high data transfer rate and host device-independent use can be achieved if a driver for an input/output device customary in a host device, normally present in most commercially available host devices, is utilized. Drivers for input/output devices customary in a host device which are found in practically all host devices are, for example, drivers for hard disks, for graphics devices or for printer devices. As however the hard disk interfaces in common host devices which can be, for example, IBM PCs, IBM-compatible PCs, Commodore PCs, Apple computers or even workstations, are the interfaces with the highest data transfer rate, the hard disk driver is utilized in the preferred embodiment of the interface device of the present invention. Drivers for other storage devices such as floppy disk drives, CD-ROM drives or tape drives could also be utilized in order to implement the interface device according to the present invention.

As described in the following, the interface device according to the present invention is to be attached to a host device by means of a multi-purpose interface of the host device which can be implemented, for example, as an SCSI interface or as an enhanced printer interface. Multi-purpose interfaces comprise both an interface card and specific driver software for the interface card. The driver software can be designed so that it can replace the BIOS driver routines. Communication between the host device and the devices attached to the multi-purpose interface then essentially takes place by means of the specific driver software for the multi-purpose interface and no longer primarily by means of BIOS routines of the host device. Recently however drivers for multi-purpose interfaces can also already be integrated in the BIOS system of the host device as, alongside classical input/output interfaces, multi-purpose interfaces are becoming increasingly common in host devices. It is of course also possible to use BIOS routines in parallel with the specific driver software for the multi-purpose interface, if this is desired.

The interface device according to the present invention comprises a processor means, a memory means, a first connecting device for interfacing the host device with the interface device, and a second connecting device for interfacing the interface device with the data transmit/receive device. The interface device is configured by the processor means and the memory means in such a way that the interface device, when receiving an inquiry from the host device via the first connecting device as to the type of a device attached to the host device, sends a signal, regardless of the type of the data transmit/receive device, to the host device via the first connecting device which signals to the host device that it is communicating with an input/output device. The interface device according to the present invention therefore simulates, both in terms of hardware and software, the way in which a conventional input/output device functions, preferably that of a hard disk drive. As support for hard disks is implemented as standard in all commercially available host systems, the simulation of a hard disk, for example, can provide host device-independent use. The interface device according to the present invention therefore no longer communicates with the host device or computer by means of a specially designed driver but by means of a program which is present in the BIOS system (Basic Input/Output System) and is normally precisely matched to the specific computer system on which it is installed,

or by means of a specific program for the multi-purpose interface. Consequently, the interface device according to the present invention combines the advantages of both groups. On the one hand, communication between the computer and the interface takes place by means of a host device-specific BIOS program or by means of a driver program which is matched to the multi-purpose interface and which could be regarded as a "device-specific driver". On the other hand, the BIOS program or a corresponding multi-purpose interface program which operates one of the common input/output interfaces in host systems is therefore present in all host systems so that the interface device according to the present invention is host device-independent.

In the following, preferred embodiments of the present invention will be explained in more detail with reference to the drawings enclosed, in which:

Fig. 1 shows a general block diagram of the interface device according to the present invention; and

Fig. 2 shows a detailed block diagram of an interface device according to a preferred embodiment of the present invention.

Fig. 1 shows a general block diagram of an interface device 10 according to the present invention. A first connecting device 12 of the interface device 10 can be attached to a host device (not shown) via a host line 11. The first connecting device is attached both to a digital signal processor 13 and to a memory means 14. The digital signal processor 13 and the memory means 14 are also attached to a second connecting device 15 by means of bi-directional communication lines (shown for all lines by means of two directional arrows). The second connecting device can be attached by means of an output line 16 to a data transmit/receive device which is to receive data from the host device or from which data is to be read, i.e. acquired, and transferred to the host device. The data transmit/receive device itself can also communicate actively with the host device via the first and second connecting device, as described in more detail in the following.

Communication between the host system or host device and the interface device is based on known standard access commands as supported by all known operating

systems (e.g. DOS, Windows, Unix). Preferably, the interface device according to the present invention simulates a hard disk with a root directory whose entries are "virtual" files which can be created for the most varied functions. When the host device system with which the interface device according to the present invention is connected is booted and a data transmit/receive device is also attached to the interface device 10, usual BIOS routines or multi-purpose interface programs issue an instruction, known by those skilled in the art as the INQUIRY instruction, to the input/output interfaces in the host device. The digital signal processor 13 receives this inquiry instruction via the first connecting device and generates a signal which is sent to the host device (not shown) again via the first connecting device 12 and the host line 11. This signal indicates to the host device that, for example, a hard disk drive is attached at the interface to which the INQUIRY instruction was sent. Optionally, the host device can send an instruction, known by those skilled in the art as "Test Unit Ready", to the interface device to request more precise details regarding the queried device.

Regardless of which data transmit/receive device at the output line 16 is attached to the second connecting device, the digital signal processor 13 informs the host device that it is communicating with a hard disk drive. If the host device receives the response that a drive is present, it then sends a request to the interface device 10 to read the boot sequence which, on actual hard disks, normally resides on the first sectors of the disk. The digital signal processor 13, whose operating system is stored in the memory means 14, responds to this instruction by sending to the host device a virtual boot sequence which, in the case of actual drives, includes the drive type, the starting position and the length of the file allocation table (FAT), the number of sectors, etc., known to those skilled in the art. Once the host device has received this data, it assumes that the interface device 10 according to a preferred embodiment of the present invention is a hard disk drive. In reply to an instruction from the host device to display the directory of the "virtual" hard disk drive simulated by the interface device 10 with respect to the host device, the digital signal processor can respond to the host device in exactly the same way as a conventional hard disk would, namely by reading on request the file allocation table or FAT on a sector specified in the boot sequence, normally the first writable sector, and transferring it to the host device, and subsequently by transferring the directory structure of the virtual hard

disk. Further, it is possible that the FAT is not read until immediately prior to reading or storing the data of the "virtual" hard disk and not already at initialization.

In a preferred embodiment of the present invention, the digital signal processor 13, which need not necessarily be implemented as a digital signal processor but may be any other kind of microprocessor, comprises a first and a second command interpreter. The first command interpreter carries out the steps described above whilst the second command interpreter carries out the read/write assignment to specific functions. If the user now wishes to read data from the data transmit/receive device via the line 16, the host device sends a command, for example "read file xy", to the interface device. As described above, the interface device appears to the host device as a hard disk. The second command interpreter of the digital signal processor now interprets the read command of the host processor as a data transfer command, by decoding whether "xy" denotes, for example, a "real-time input" file, a "configuration" file or an executable file, whereby the same begins to transfer data from the data transmit/receive device via the second connecting device to the first connecting device and via the line 11 to the host device.

Preferably, the volume of data to be acquired by a data transmit/receive device is specified in a configuration file described in the following by the user specifying in the said configuration file that a measurement is to last, for example, five minutes. To the host device the "real-time input" file then appears as a file whose length corresponds to the anticipated volume of data in those five minutes. Those skilled in the art know that communication between a processor and a hard disk consists of the processor transferring to the hard disk the numbers of the blocks or clusters or sectors whose contents it wishes to read. By reference to the FAT the processor knows which information is contained in which block. In this case, communication between the host device and the interface device according to the present invention therefore consists of the very fast transfer of block numbers and preferably of block number ranges because a virtual "real-time input" file will not be fragmented. If the host device now wants to read the "real-time input" file, it transfers a range of block numbers to the interface device, whereupon data commences to be received via the second connecting device and data commences to be sent to the host device via the first connecting device.

In addition to the digital signal processor instruction memory, which comprises the operating system of the digital signal processor and can be implemented as an EPROM or EEPROM, the memory means 14 can have an additional buffer for purposes of synchronizing data transfer from the data transmit/receive device to the interface device 10 and data transfer from the interface device 10 to the host device.

Preferably, the buffer is implemented as a fast random access memory or RAM buffer.

Further, from the host device the user can also create a configuration file, whose entries automatically set and control various functions of the interface device 10, on the interface device 10 which appears to the host device as a hard disk. These settings can be, for example, gain, multiplex or sampling rate settings. By creating and editing a configuration file, normally a text file which is simple to understand with little prior knowledge, users of the interface device 10 are able to perform essentially identical operator actions for almost any data transmit/receive devices which can be attached to the second connecting device via the line 16, thus eliminating a source of error arising from users having to know many different command codes for different applications. In the case of the interface device 10 according to the present invention it is necessary for users to note the conventions of the configuration file once only in order to be able to use the interface device 10 as an interface between a host device and almost any data transmit/receive device.

As a result of the option of storing any files in agreed formats in the memory means 14 of the interface device 10, taking into account the maximum capacity of the memory means, any enhancements or even completely new functions of the interface device 10 can be quickly implemented. Even files executable by the host device, such as batch files or executable files (BAT or EXE files), and also help files can be implemented in the interface device, thus achieving independence of the interface device 10 from any additional software (with the exception of the BIOS routines) of the host device. On the one hand, this avoids licensing and/or registration problems and, on the other hand, installation of certain routines which can be frequently used, for example an FFT routine to examine acquired time-domain data in the frequency

domain, is rendered unnecessary as the EXE files are already installed on the interface device 10 and appear in the virtual root directory, by means of which the host device can access all programs stored on the interface device 10.

In a preferred embodiment of the present invention in which the interface device 10 simulates a hard disk to the host device, the interface device is automatically detected and readied for operation when the host system is powered up or booted. This corresponds to the plug-and-play standard which is currently finding increasingly widespread use. The user is no longer responsible for installing the interface device 10 on the host device by means of specific drivers which must also be loaded; instead the interface device 10 is automatically readied for operation when the host system is booted.

For persons skilled in the art it is however obvious that the interface device 10 is not necessarily signed on when the computer system is powered up but that a special BIOS routine or a driver for a multi-purpose interface can also be started on the host device during current operation of the computer system in order to sign on or mount the interface device 10 as an additional hard disk. This embodiment is suitable for larger workstation systems which are essentially never powered down as they perform, e.g. mail functions or monitor processes which run continuously, for example, in multi-tasking environments.

In the interface device according to the present invention an enormous advantage is to be gained, as apparent in the embodiment described in the following, in separating the actual hardware required to attach the interface device 10 to the data transmit/receive device from the communication unit, which is implemented by the digital signal processor 13, the memory means 14 and the first connecting device 12, as this allows a plurality of dissimilar device types to be operated in parallel in identical manner. Accordingly, many interface devices 10 can be connected to a host device which then sees many different "virtual" hard disks. In addition, any modification of the specific hardware symbolized by the second connecting device 15 can be implemented essentially without changing the operation of the interface device according to the present invention. Further, an experienced user can intervene at any time on any level of the existing second connecting device by making use of the above mentioned

option of creating a configuration file or adding or storing new program sections for the second connecting device.

An important advantage of the interface device 10 of the present invention is that it also permits extremely high data transfer rates by using, for data interchange, the host device-own BIOS routines which are optimized for each host device by the host device manufacturer or BIOS system manufacturer, or by using driver programs which are normally optimized and included by the manufacturers of multi-purpose interfaces. Furthermore, due to the simulation of a virtual mass storage device, the data is managed and made available in such a way that it can be transferred directly to other storage media, e.g. to an actual hard disk of the host device without, as it were, intervention of the host device processor. The only limitation to long-term data transfer at high speed is therefore imposed exclusively by the speed and the size of the mass storage device of the host device. This is the case as the digital signal processor 13 already formats the data read by the data transmit/receive device via the second connecting device 15 into block sizes suitable for a hard disk of the host device, whereby the data transfer speed is limited only by the mechanical latency of the hard disk system of the host device. At this point, it should be noted that normally data flow from a host device must be formatted in blocks to permit writing to a hard disk and subsequent reading from a hard disk, as known by those skilled in the art.

The said data transfer rate can be increased further by setting up a direct memory access (DMA) or RAM drive in the host system. As those skilled in the art know, the setting up of a RAM drive requires processor resources of the host device, with the result that the advantage of writing the data to a hard disk drive of the host device essentially without the need for processor resources is lost.

As described above, a data buffer can be implemented in the memory means 14 to permit independence in terms of time of the data transmit/receive device attached to the second connecting device from the host device attached to the first connecting device. This guarantees error-free operation of the interface device 10 even for time-critical applications in multi-tasking host systems.

Fig. 2 shows a detailed block diagram of an interface device 10 according to the present invention.

A digital signal processor (DSP) 1300 is, in a manner of speaking, the heart of the interface device 10. The DSP can be any DSP but preferably has a 20-MB on-chip random access memory (RAM). Certain instruction sets, for example, can be stored in the RAM already integrated in the DSP. An 80-MHz clock generator is attached to the DSP 1300 in order to synchronize the DSP. The DSP implements a fast Fourier transformation (FFT) in real time and also optional data compression of the data to be transferred from the data transmit/receive device to the host device in order to achieve greater efficiency and to permit interoperation with host devices which have a smaller memory.

In the preferred embodiment of the interface device 10 shown in Fig. 2, the first connecting device 12 of Fig. 1 contains the following components: an SCSI interface 1220 and a 50-pin SCSI connector 1240 for attachment to an SCSI interface present on most host devices or laptops. The SCSI (small computer system interface) interface 1220 translates the data received via the SCSI connector 1240 into data understood by the DSP 1300, as known by those skilled in the art. Further, the first connecting device 12 comprises an EPP (enhanced parallel port) with a data transfer rate of approx. 1 MBps which delivers a more moderate data transfer rate of 1 MBps by comparison to the data transfer rate of 10 MBps of the SCSI interface. The EPP 1260 is connected to a 25-pin D-shell connector 1280 to permit attachment to a printer interface of a host device for example. Optionally, the first connecting device 12 also comprises a 25-pin connector 1282 which permits the attachment of 8 digital outputs and 8 digital inputs 1284 at a host device.

Preferably, the second connecting device comprises 8 BNC inputs with the calibration relay 1505, a block 1510 with 8 device amplifiers with an overvoltage protection of ± 75 V, this block being connected in turn to 8 sample/hold (S&H) circuits 1515. The calibration relays are relays which permit controlled changeover between a test voltage and a calibration reference voltage. Each sample/hold circuit is connected to a corresponding input of an 8-channel multiplexer 1520 which feeds its output signals

via a programmable amplifier 1525 into an analog/digital converter (ADC) with 12 bit and 1.25 MHz 1530 and to the DSP 1300. The ADC 1530 is controlled by means of a 20-bit timer 1535, as known by persons skilled in the art. The programmable amplifier 1525 and the 8-channel multiplexer 1520 are controlled via an amplifier channel selection circuit 1540 which is in turn controlled by the DSP 1300.

The complete interface device 10 is supplied with power by an external AC/DC converter 1800 which delivers a digital supply voltage of ± 5 V and is attached to a DC/DC converter 1810 which can deliver analog supply voltages of ± 5 V and ± 15 V as required for the interface device 10. Further, the DC/DC converter controls a precision voltage reference 1820 which controls the 8 BNC inputs 1505 and the ADC 1530 as well as a digital/analog converter (DAC) 1830 which permits, via an output amplifier block with 4 output amplifiers 1840 and a 9-pin connector 1850, analog output direct from the DSP 1300 to an output device, e.g. printer device or monitor device, which can be attached via the 9-pin connector 1850, thus providing the option of monitoring the data transferred to the host device or also, for example, of viewing an FFT to obtain rapid and comprehensive data analysis without using processor time of the host device.

In Fig. 2 the memory means 14 of Fig. 1 is implemented by an EPROM 1400 which, in a preferred embodiment of the present invention, contains the operating system of the digital signal processor 1300. A random access memory with an access time of 15 ns and a size of 512 KB or optionally 1024 KB 1420 serves as a data buffer to achieve independence in terms of time of the output line 16 from the output lines 11a, 11b and 11c to the data transmit/receive device and to the host device respectively. As described above, in a preferred embodiment of the present invention the digital signal processor 1300 already contains a 20-KB on-chip RAM 1440 which can store certain instruction sets, functions and also smaller application software units.

The connection, symbolized by the line 16, of the interface device 10 to any data transmit/receive device implements, by means of the blocks 1505 – 1535, an analog input with a sampling rate of 1.25 MHz and quantization of 12 bits. There are 8 channels with an overvoltage protection of ± 75 V. By means of the programmable

amplifier 1525 the channels can be programmed independently of each other in voltage ranges up to a maximum of ± 10 V. Unused channels can be grounded internally to reduce channel intermodulation. The block 1515 is implemented as a monolithic high-precision, high-speed sample/hold amplifier for simultaneous sampling of all channels. The precision voltage reference 1820 provides a high-precision, temperature-compensated monolithic energy gap voltage reference for auto-calibration of each channel and each gain. Further, offset fine adjustment for each channel is implemented by the same.

The blocks 1830, 1840 and 1850 implement a direct analog output for the digital signal processor 1300, and the DAC 1830 provides a data transfer rate of 625 kHz and a quantization of 12 bits. The block 1840 comprises 4 channels with a common output latch.

Further, the interface device 10 comprises a digital input/output device implemented by the blocks 1284 and 1282. Here there are 8 digital inputs, 8 digital outputs with a common latch, and the digital port can be attached preferably to a side panel of the interface device 10 so that the port itself can easily be accessed.

The digital signal processor 1300 provides on-board digital data processing. In particular, it is a high-performance DSP with a clock speed of 80 MHz and a 20-bit timer 1535.

As described above, the first connecting device 12 comprises the SCSI interface 1220 with a peak transfer rate of 10 MBps. An optional PCMCIA-to-SCSI adapter permits high-speed communication with laptop computers which are desirable and in widespread use, particularly by mobile service technicians. The EPP 1260 with its associated connector 1280 permits data transfer at a more moderate rate.

As described above, the interface device 10 is supplied with power by means of an external AC/DC adapter which has a universal power input (85 – 264 VAC, 47 – 63 Hz). Interference suppression complies with the standards EN 55022, curve B and FFC, Class B). Further, it is also in accordance with international safety regulations

(TÜV, UL, CSA). The interface device 10 is externally shielded and achieves a value of 55 dB at 30 – 60 MHz and a value of approximately 40 dB at 1 GHz, and therefore complies with the MILSTD 285-1 standard.

As described above, communication between the host device and the multi-purpose interface can take place not only via drivers for input/output device customary in a host device which reside in the BIOS system of the host device but also via specific interface drivers which, in the case of SCSI interfaces, are known as multi-purpose interface ASPI (advanced SCSI programming interface) drivers. This ASPI driver, which can also be referred to as an ASPI manager, is specific to a special SCSI host adapter, i.e. to a special multi-purpose interface, and is normally included by the manufacturer of the multi-purpose interface. Generally speaking, this multi-purpose interface driver has the task of moving precisely specified SCSI commands from the host system program to the host system SCSI adapter. For this reason, the command set is almost identical to that of the SCSI interface itself. Essentially, only status and reset commands for the host adapter have been added.

The ASPI driver can be used if the hard disk was not already addressable at boot time or if the SCSI-related BIOS routines of the host computer were still disabled. Here too, the steps needed to initialize the interface device, preferably as a virtual hard disk, are similar to the steps taken when initializing at boot time.

In general terms, the ASPI manager comprises two sides. One side is the proprietary, hardware-oriented side. It is responsible for converting all commands into a form required by the corresponding multi-purpose interface. The hardware-oriented side of the ASPI driver is therefore matched to a very specific type of multi-purpose interface or SCSI interface. The other side is known as the user software side. This side is totally independent of the proprietary operating characteristics of the SCSI adapter and is therefore identical for all SCSI interfaces. This permits SCSI programming which is however independent of the individual SCSI adapter types.

In contrast to communication between the host device and the interface device according to the present invention on the basis of a BIOS driver, the use of such an ASPI driver for communication between the host device and the interface device

according to the present invention allows various further possibilities of the SCSI multi-purpose interface to be exploited. In the case described above, the interface device which preferably signs on and behaves as a virtual hard disk is detected by the BIOS driver of the host computer at boot time and is configured as a hard disk. This step does not however support active requests sent by the interface device to the host computer. If however the virtual hard disk wishes to write data actively to, for example, a hard disk of the host computer or wishes to initiate communication with the processor of the host computer, the host computer must recognize the request of the virtual hard disk and tolerate a further issuer of instructions on its bus. If the interface device behaves solely like a virtual hard disk, it would always receive and never issue commands. The BIOS has no objections to an additional issuer of commands that actively wishes to place data on the bus of the host device but the BIOS does not support the host device in recognizing corresponding requests of the interface device or in granting the interface device permission to access the bus.

Using the ASPI manager the interface device according to the present invention can now obtain active access to an SCSI hard disk of the host device connected to the same SCSI bus which, in contrast to the interface device, cannot be a virtual but a real SCSI mass storage device or also a further interface device according to the present invention. Thereupon, the interface device according to the present invention can write the desired data to the SCSI hard disk of the host computer totally independently of the host computer or can communicate with the same in some other manner. The interface device according to the present invention therefore initially behaves passively as a virtual hard disk and then, as required and using the driver software for the multi-purpose interface, actively on the same SCSI bus. This means however that the interface device according to the present invention, using a driver software for the multi-purpose interface which comprises the BIOS routines customary in host devices and simultaneously provides the option of active participation, can, regardless of the type of the data transmit/receive device attached to the second connecting device, behave initially as a virtual and at the same time passive hard disk but can, as required, participate actively on the bus so as to be able to initiate communication directly with other SCSI hard disks of the host device by bypassing the processor of the host device.

Using a standard interface of a host device, the interface device according to the present invention permits communication with any host device. By simulating an input/output device to the host device and, in a preferred embodiment, by simulating a virtual mass storage device, the interface device 10 is automatically supported by all known host systems without any additional sophisticated driver software. The simulation of a freely definable file structure on the "virtual" hard disk provides simple operation and expansion options and, through the implementation of any programs, independence from special software implemented on the host device. Help files included on the interface device 10 and plug-and-play support ensure ease of use even in portable, flexible host devices. Despite the very simple user interface, experienced users are free at any time to intervene in the functions of the interface device 10 on system level. The interface device 10 thus provides a universal solution which can cover the entire spectrum of possible data transmit/receive devices.

Claims

1. An interface device (10) for communication between a host device, which comprises drivers for input/output devices customary in a host device and a multi-purpose interface, and a data transmit/receive device comprising the following features:

a processor means (13; 1300, 1320);

a memory means (14; 1400, 1420, 1440);

a first connecting device (12; 1220, 1240, 1260, 1280) for interfacing the host device with the interface device (10) via the multi-purpose interface of the host device; and

a second connecting device (15; 1505 – 1535) for interfacing the interface device (10) with the data transmit/receive device,

wherein the interface device (10) is configured by the processor means (13; 1300, 1320) and the memory means (14; 1400, 1420, 1440) in such a way that the interface device, when receiving an inquiry from the host device as to the type of a device attached to the multi-purpose interface of the host device, sends a signal, regardless of the type of the data transmit/receive device attached to the second connecting device (15; 1505 – 1535) of the interface device (10), to the host device which signals to the host device that it is an input/output device customary in a host device, whereupon the host device communicates with the interface device (10) by means of the driver for the input/output device customary in a host device.

2. An interface device (10) according to claim 1,

wherein the drivers for input/output drivers customary in a host device comprise a

hard disk driver, and the signal indicates to the host device that the host device is communicating with a hard disk.

3. An interface device (10) according to claim 1 or 2,

wherein the memory means comprises a buffer (1420) to buffer data to be transferred between the data transmit/receive device and the host device.

4. An interface device (10) according to one of the preceding claims,

wherein the multi-purpose interface of the host device is an SCSI interface and the first connecting device also comprises an SCSI interface (1220).

5. An interface device (10) according to one of the preceding claims,

wherein the second connecting device comprises an analog input (1505) with a subsequent A/D converter (1530) in order to transfer analog data to the host device from a data transmit/receive device connectable to the analog device (1505).

6. An interface device (10) according to one of the preceding claims,

wherein the processor means (13) is a digital signal processor (1300).

7. An interface device (10) according to one of the claims 2 to 6,

wherein the data to be transferred from the data transmit/receive device to the host device in the interface device (10) is formatted in a suitable format for a hard disk present in the host device.

8. An interface device (10) according to one of the claims 2 to 7,

which further comprises a root directory and virtual files which are present on the

signaled hard disk drive and which can be accessed from the host device.

9. An interface device (10) according to claim 8,

wherein the virtual files comprise a configuration file in text format which are stored in the memory means (14) and using which the user can configure the interface device (10) for a specific data transmit/receive device.

10. An interface device (10) according to claim 8 or 9,

wherein the virtual files comprise batch files or executable files for the microprocessor means which are stored in the interface device (10) in order to perform data processing, independently of the host device, of data received via the second connecting device (15; 1505 – 1535).

11. An interface device (10) according to claim 8 or 9,

wherein the virtual files comprise batch files or executable files for the host device which are stored in the interface device (10).

12. An interface device (10) for communication between a host device, which comprises a multi-purpose interface and a specific driver for this interface, and a data transmit/receive device comprising the following features:

a processor means (13; 1300, 1320);

a memory means (14; 1400, 1420, 1440);

a first connecting device (12; 1220, 1240, 1260, 1280) for interfacing the host device with the interface device (10) via the multi-purpose interface of the host device; and

a second connecting device (15; 1505 – 1535) for interfacing the interface device (10) with the data transmit/receive device,

where the interface device (10) is configured using the processor means (13; 1300, 1320) and the memory means (14; 1400, 1420, 1440) in such a way that the interface device, when receiving an inquiry from the host device as to the type of a device attached at the multi-purpose interface of the host device, sends a signal, regardless of the type of the data transmit/receive device attached to the second connecting device (15; 1505 – 1535) of the interface device (10), to the host device which signals to the host device that it is an input/output device customary in a host device, whereupon the host device communicates with the interface device (10) by means of the specific driver for the multi-purpose interface.

13. An interface device according to claim 12,

wherein, in addition to the first connecting device of the interface device, there is a further input/output device at the multi-purpose interface of the host device, and wherein the interface device can communicate directly with the hard disk via the specific driver for the multi-purpose interface.

14. An interface device according to claim 12 or 13,

wherein the multi-purpose interface is an SCSI interface, and wherein the specific driver for the multi-purpose interface is an ASPI manager.

15. A method of communication between a host device, which comprises drivers for input/output devices customary in a host device and a multi-purpose interface, and a data transmit/receive device via an interface device (10) comprising the following steps:

interfacing of the host device with a first connecting device (12; 1220, 1240, 1260, 1280) of the interface device (10) via the multi-purpose interface of the host device;

interfacing of the data transmit/receive device with a second connecting device (15; 1505 – 1535) of the interface device (10);

inquiring by the host device at the interface device (10) as to the type of device to which the multi-purpose interface of the host device is attached;

regardless of the type of the data transmit/receive device attached to the second connecting device of the interface device (10), responding to the inquiry from the host device by the interface device (10) in such a way that it is an input/output device customary in a host device, whereupon the host device communicates with the interface device (10) by means of the usual driver for the input/output device.

16. A method according to claim 15,

wherein the drivers for input/output devices customary in a host device comprise a driver for a storage device and in particular for a hard disk drive.

Flexible Interface

ABSTRACT

An interface device (10) provides fast data communication between a host device with input/output interfaces and a data transmit/receive device, wherein the interface device (10) comprises a processor means (13), a memory means (14), a first connecting device (12) for interfacing the host device with the interface device, and a second connecting device (15) for interfacing the interface device (10) with the data transmit/receive device. The interface device (10) is configured by the processor means (13) and the memory means (14) in such a way that, when receiving an inquiry from the host device via the first connecting device (12) as to the type of a device attached to the host device, regardless of the type of the data transmit/receive device, the interface device sends a signal to the host device via the first connecting device (12) which signals to the host device that it is communicating with an input/output device.

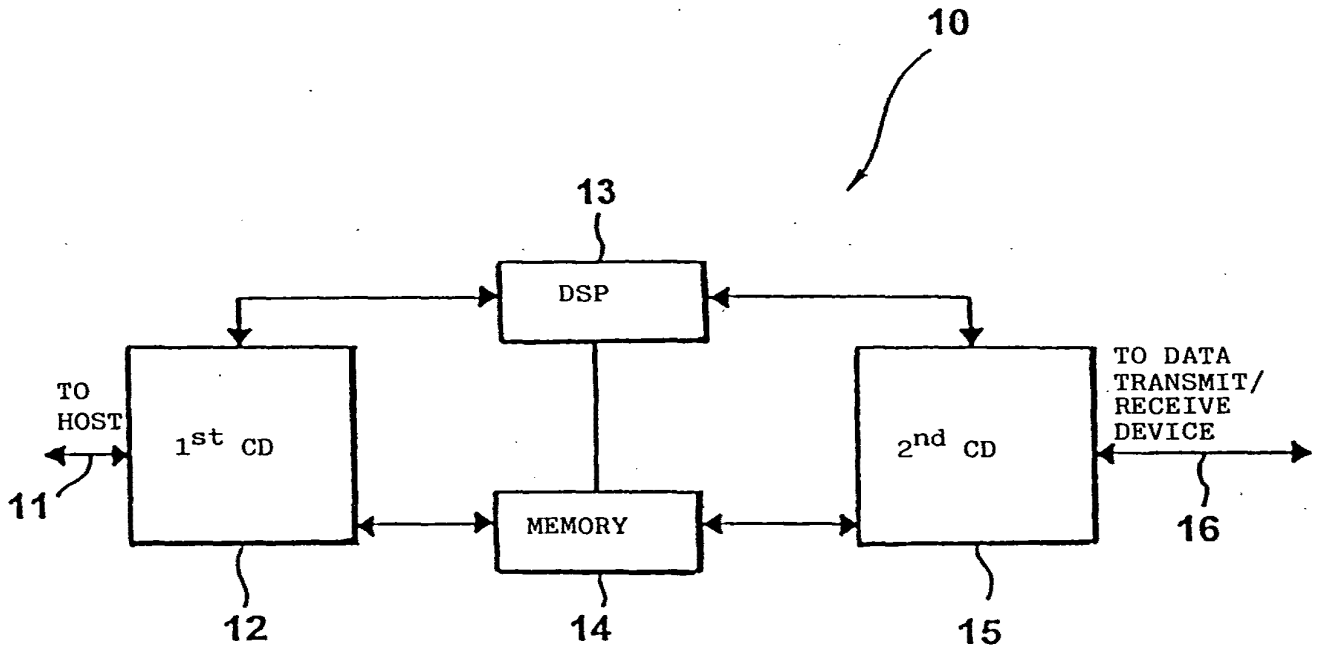


FIG. 1

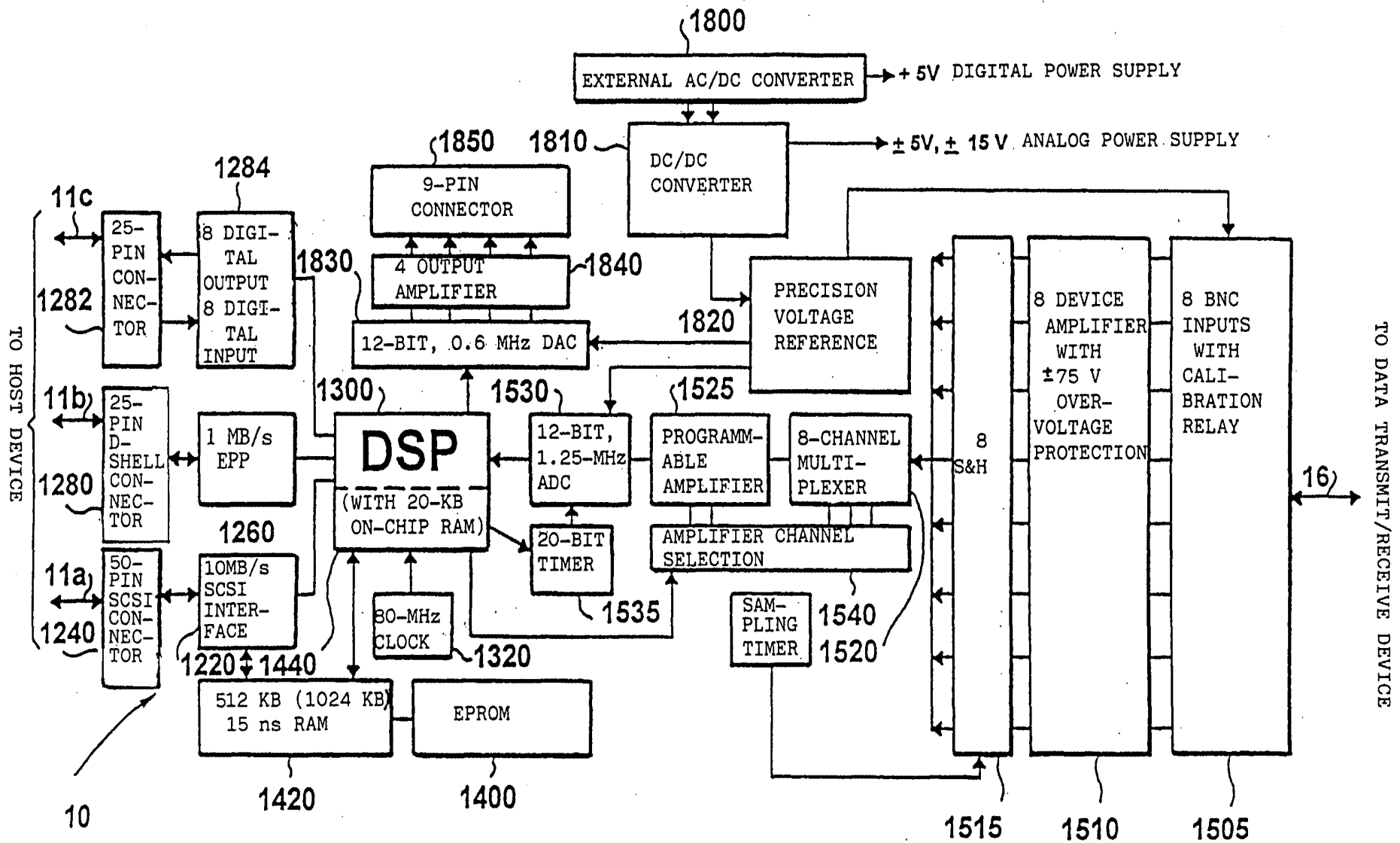


FIG.2

Declaration and Power of Attorney For Patent Application **COPY**

Erklärung Für Patentanmeldungen Mit Vollmacht

German Language Declaration

Als nachstehend benannter Erfinder erkläre ich hiermit an Eides Statt:

As a below named inventor, I hereby declare that:

dass mein Wohnsitz, meine Postanschrift, und meine Staatsangehörigkeit den im Nachstehenden nach meinem Namen aufgeführten Angaben entsprechen.

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

dass ich, nach bestem Wissen der ursprüngliche, erste und alleinige Erfinder (falls nachstehend nur ein Name angegeben ist) oder ein ursprünglicher, erster und Miterfinder (falls nachstehend mehrere Namen aufgeführt sind) des Gegenstandes bin, für den dieser Antrag gestellt wird und für den ein Patent beantragt wird (s. die Erfindung mit dem Titel:

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

Flexible Interface

deren Beschreibung

(zutreffendes ankreuzen)

hier beigefügt ist.

am _____ unter der

Anmeldungsseriennummer _____

eingereicht wurde und am _____

abgeändert wurde (falls tatsächlich abgeändert).

Ich bestätige hiermit, dass ich den Inhalt der obigen Patentanmeldung einschliesslich der Ansprüche durchgesehen und verstanden habe, die eventuell durch einen Zusatzantrag wie oben erwähnt abgeändert wurde.

Ich erkenne meine Pflicht zur Offenbarung irgendwelcher Informationen, die für die Prüfung der vorliegenden Anmeldung in Einklang mit Absatz 37, Bundesgesetzbuch, Paragraph 1.56(a) von Wichtigkeit sind, an.

Ich beanspruche hiermit ausländische Prioritätsvorteile gemäss Abschnitt 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 119 aller unten angegebenen Auslandsanmeldungen für ein Patent oder eine Erfindersurkunde, und habe auch alle Auslandsanmeldungen für ein Patent oder eine Erfindersurkunde nachstehend gekennzeichnet, die ein Anmeldedatum haben, das vor dem Anmeldedatum der Anmeldung liegt, für die Priorität beansprucht wird.

the specification of which

(check one)

is attached hereto.

was filed on _____ as

Application Serial No. _____

and was amended on _____

(if applicable)

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

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, §119 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:

Prior foreign applications
Priorität beansprucht

Priority Claimed

19708755.8 Germany 04/3/97 (March 4, 1997)
(Number) (Country) (Day/Month/Year Filed)
(Nummer) (Land) (Tag/Monat/Jahr eingereicht)

Yes
Ja No
Nein

PCT/EP98/01187 Germany 03/03/98 (March 3, 1998)
(Number) (Country) (Day/Month/Year Filed)
(Nummer) (Land) (Tag/Monat/Jahr eingereicht)

Yes
Ja No
Nein

(Number) (Country) (Day/Month/Year Filed)
(Nummer) (Land) (Tag/Monat/Jahr eingereicht)

Yes
Ja No
Nein

Ich beanspreche hiermit gemäss Absatz 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 120, den Vorzug aller unten aufgeführten Anmeldungen und falls der Gegenstand aus jedem Anspruch dieser Anmeldung nicht in einer früheren amerikanischen Patentanmeldung laut dem ersten Paragraphen des Absatzes 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 112 offenbart ist, erkenne ich gemäss Absatz 37, Bundesgesetzbuch, Paragraph 1.55(a) meine Pflicht zur Offenbarung von Informationen an, die zwischen dem Anmeldedatum der früheren Anmeldung und dem nationalen oder PCT internationalen Anmeldedatum dieser Anmeldung bekannt geworden sind.

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 material information as defined in Title 37, Code of Federal Regulations, §1.55(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

(Application Serial No.)
(Anmeldeseriennummer)

(Filing Date)
(Anmeldedatum)

(Status)
(patentiert, anhängig,
aufgegeben)

(Status)
(patented, pending,
abandoned)

(Application Serial No.)
(Anmeldeseriennummer)

(Filing Date)
(Anmeldedatum)

(Status)
(patentiert, anhängig,
aufgegeben)

(Status)
(patented, pending,
abandoned)

Ich erkläre hiermit, dass alle von mir in der vorliegenden Erklärung gemachten Angaben nach meinem besten Wissen und Gewissen der vollen Wahrheit entsprechen, und dass ich diese eidesstattliche Erklärung in Kenntnis dessen abgebe, dass wissentlich und vorsätzlich falsche Angaben gemäss Paragraph 1001, Absatz 18 der Zivilprozessordnung der Vereinigten Staaten von Amerika mit Geldstrafe belegt und/oder Gefängnis bestraft werden koennen, und dass derartig wissentlich und vorsätzlich falsche Angaben die Gültigkeit der vorliegenden Patentanmeldung oder eines darauf erteilten Patentes gefährden können.

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 Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

VERTRETUNGSVOLLMACHT: Als benannter Erfinder beauftrage ich hiermit den nachstehend benannten Patentanwalt (oder die nachstehend benannten Patentanwälte) und/oder Patent-Agenten mit der Verfolgung der vorliegenden Patentanmeldung sowie mit der Abwicklung aller damit verbundenen Geschäfte vor dem Patent- und Warenzeichenamt: (Name und Registrationsnummer anführen)

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (list name and registration number)

Donald M. Duft 17,484
 James M. Graziano 28,300
 Carl A. Forest 28,494
 Dan Cleveland, Jr. 36,106
 Michael J. Setter 37,936

William P. Wilbar 43,265
 Thomas Swenson 36,696
 Curtis A. Vock 38,356
 Kirk D. Williams 42,229
 Steven W. Weinrieb 26,520

Telefongespräche bitte richten an:
 (Name und Telefonnummer)

Direct Telephone Calls to: (name and telephone number)

Postanschrift:

Send Correspondence to:
 Carl A. Forest, Ph.D.
 c/o DUFT, GRAZIANO & FOREST, P.C.
 1790-30th Street
 - Suite 140 -
 Boulder, Colorado 80301-1018, U.S.A.

Voller Name des einzigen oder ursprünglichen Erfinders:		Full name of sole or first inventor	
		Michael TASLER	
Unterschrift des Erfinders	Datum	Inventor's signature	Date
		<i>Michael Tasler</i>	April 27, 1999
Wohnsitz	Residence		
	Würzburg, Germany		
Staatsangehörigkeit	Citizenship		
	German		
Postanschrift	Post Office Address		
	Cronthalstraße 6c		
	D-97074 Würzburg, Germany		
Voller Name des zweiten Mitfinders (falls zutreffend)		Full name of second joint inventor, if any	
Unterschrift des Erfinders	Datum	Second inventor's signature	Date
Wohnsitz	Residence		
Staatsangehörigkeit	Citizenship		
Postanschrift	Post Office Address		

(Bitte entsprechende Informationen und Unterschriften im Falle von dritten und weiteren Mitfindern angeben).

(Supply similar information and signature for third and subsequent joint inventors.)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Michael Tasler, et al. Docket No. SCH00102D
Serial No.: 10/219,105 Group Art Unit: Unassigned
Filed: 08/15/2002 Examiner: Unassigned
Title: Flexible Interface for Communication Between a Host and an
Analog I/O Device Connected to the Interface...

Revocation of Prior and Grant of New Power of Attorney

As Assignee of record of the entire interest of the above-identified patents, all powers of attorney previously given are hereby revoked and the following attorneys and agents are hereby appointed to prosecute and transact all business in the U.S. Patent and Trademark Office connected therewith.

MICHAEL A. GLENN, Reg. No. 30,176
DONALD M. HENDRICKS, Reg. No. 40,355
KIRK WONG, Reg. No. 43,284
CHRISTOPHER PEIL, Reg. No. 45,005
JULIA THOMAS, Reg. No. 52,283

Please send all correspondence for this application as follows:

GLENN PATENT GROUP
3475 Edison Way, Suite L
Menlo Park, CA 94025

Please direct any calls to 650-474-8400.

Please change the Attorney Docket No. to SCH00102D.

In accordance with 37 CFR 3.73, the assignee hereby certifies that the evidentiary documents with respect to its ownership have been reviewed and that, to the best of assignee's knowledge and belief, title is in the assignee seeking to take this action.

01/10/2003

Date

Michael Tasler

Name: Michael Tasler

Title:

BEST AVAILABLE COPY

CLAIMS ONLY							SERIAL NO	FILING DATE
							APPLICANT(S)	
CLAIMS								
	AS FILED		AFTER 1ST AMENDMENT		AFTER 2ND AMENDMENT			
	IND	DEP	IND	DEP	IND	DEP	IND	DEP
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TOTAL IND.								
TOTAL DEP.								
TOTAL CLAIMS								

PATENT APPLICATION SERIAL NO. _____

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

03/17/2005 DTESSEH1 00000058 071445 11078778

01 FC:2011	150.00 DA
02 FC:2111	250.00 DA
03 FC:2311	100.00 DA
04 FC:2203	180.00 DA

PTO-1556
(5/87)

PATENT APPLICATION FEE DETERMINATION RECORD

Effective December 8, 2004

11078778

CLAIMS AS FILED - PART I

	(Column 1)	(Column 2)
TOTAL CLAIMS	16	
FOR	NUMBER FILED	NUMBER EXTRA
TOTAL CHARGEABLE CLAIMS	18 minus 20 = *	2
INDEPENDENT CLAIMS	3 minus 3 = *	0
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	150.00
X\$ 25=	
X100=	
+180=	180
TOTAL	330

RATE	FEE
BASIC FEE	300.00
X\$50=	
X200=	
+360=	
TOTAL	

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\$ 25=	
X100=	
+180=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$50=	
X200=	
+360=	
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\$ 25=	
X100=	
+180=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$50=	
X200=	
+360=	
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"/>			

RATE	ADDITIONAL FEE
X\$ 25=	
X100=	
+180=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$50=	
X200=	
+360=	
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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FACSIMILE COVER SHEET

From: Jeffrey W. Salmon, Esq.

Date: March 15, 2006

To: Group 2181
Commissioner for Patents
UNITED STATES PATENT & TRADEMARK OFFICE
Washington, D.C. 20231

Fax: (571) 273-8300

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Number of pages including this cover letter: 10

COMMENTS:

File No. 9576/96908, 09, 10

Items being filed via this facsimile are listed below:

- o Transmittal Letter (1 Page)
- o Executed Revocation of Power of Attorney with New Power of Attorney, Change of Correspondence Address, and Statement Under 37 C.F.R. 3.73(b) (2 Pages)

IF YOU DO NOT RECEIVE ALL PAGES OR ARE HAVING TROUBLE, PLEASE CALL IMMEDIATELY (312) 655-1500 AND ASK FOR Maura Halvey

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TRANSMITTAL LETTER (General - Patent Pending)	RECEIVED CENTRAL FAX CENTER	Docket No. 9576/96910
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In Re Application Of: Michael Tasler MAR 15 2006

Application No. 11/078,778	Filing Date 03/11/2005	Examiner Harold J. Kim	Customer No. 24728	Group Art Unit 2181	Confirmation No. 8978
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Title: Flexible Interface

COMMISSIONER FOR PATENTS:

Transmitted herewith is:

Executed Revocation of Power of Attorney With New Power of Attorney, Change of Correspondence Address, and Statement of Under 37 C.F.R. 3.73(b)

In the above identified application.

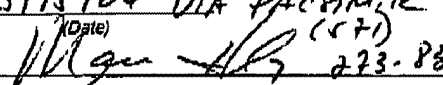
- No additional fee is required.
- A check in the amount of _____ is attached.
- The Director is hereby authorized to charge and credit Deposit Account No. 23-0920 as described below.
 - Charge the amount of _____
 - Credit any overpayment.
 - Charge any additional fee required.
- Payment by credit card. Form PTO-2038 is attached.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.



 Signature

Dated: 15 March 2006

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to the "Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" [37 CFR 1.8(a)] on 3/15/06 via facsimile (Date)
 Signature of Person Mailing Correspondence
Maura Halvey Typed or Printed Name of Person Mailing Correspondence

cc:

RECEIVED
CENTRAL FAX CENTER
MAR 15 2006

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

U.S. Application Number: 11/078,778)
 Filing Date: Mar. 11, 2005)
 First Named Inventor: Michael Tasler,)
 Wurzburg (DE))
 Title of Invention: Flexible Interface)
 Art Unit: 2181)
 Examiner Name: Kim, Harold J)
 Attorney Docket Number: 9576/96910)

**REVOCATION OF POWER OF ATTORNEY WITH NEW POWER OF ATTORNEY,
CHANGE OF CORRESPONDENCE ADDRESS, AND
STATEMENT UNDER 37 C.F.R. 3.73(b)**

1. Papst Licensing GmbH & Co. KG hereby revokes all previous powers of attorney given in the above-identified application.
2. Papst Licensing GmbH & Co. KG hereby appoints the Practitioners named below as its attorneys or agents to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith.

Name	Registration Number
Jeffrey W. Salmon	37,435
Richard L. Wood	22,839
Joseph R. Marcus	25,060
Gerald T. Shekleton	27,466
Edward P. Gamson, Ph.D.	29,381
Kathleen A. Rheintgen	34,044
Eric D. Cohen	38,110
John P. Christensen	34,137
Louise T. Walsh	45,195
Paul M. Vargo, Ph.D.	29,116
Richard J. Gurak	41,050
Daniel M. Gurfinkel	24,177

3. Please change the correspondence address for the above-identified patent to:

Jeffrey W. Salmon, Esq.
Welsh & Katz, Ltd.
120 S. Riverside Plaza, 22nd Floor
Chicago IL, 60606 USA
Telephone: (312) 655-1500
Facsimile: (312) 655-1501
Email: jwsalmon@welshkatz.com

4. Papst Licensing GmbH & Co. KG, a German Corporation, is the assignee of the entire right, title and interest the above-captioned patent by virtue of a chain of title from the inventor as set forth hereafter:

(a) From: Michael Tasler to Labortechnik Tasler GmbH. The assignment document was recorded in the Patent and Trademark Office on July 23, 2001 at reel/frame no. 012023/0515.

(b) From: Labortechnik Tasler GmbH to Papst Licensing GmbH & Co KG. A copy of this assignment is attached as Exhibit A hereto and, by separate filing, is being submitted to the U.S. Patent & Trademark Office for recordation.

5. I have reviewed all of the documents in the chain of title to this application and, to the best of my knowledge and belief, title is in Papst Licensing GmbH & Co. KG.

6. I aver that I am empowered to sign this document on behalf of Papst Licensing GmbH & Co. KG.

7. I hereby declare that all statements made herein of my own knowledge are true and that all statements made upon 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 Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Papst Licensing GmbH & Co. KG

By: L. Pamm
Title: PRESIDENT
Date: March 8, 2006

ASSIGNMENT

WHEREAS, LTT Labortechnik Tasler GmbH, is a corporation of Germany, has a P.O. address of Friedrich-Bergius-Ring 15, 97076 Würzburg, Germany, ("Assignor") and is the owner of the entire right, title, and interest in and to: United States Patent No. 6,470,399 B1, United States Patent No. 6,895,449 B2, and United States Patent Application No. 11/078,778 (hereinafter "Patent Rights").

WHEREAS, Papst Licensing GmbH & Co. KG, a German Corporation, having its principal place of business at Bahnhofstrasse 33, 78112 St. Georgen, Germany ("Assignee"), is desirous of acquiring the entire interest in and to the Patent Rights.

NOW, THEREFORE, for good and valuable consideration, the receipt of which is hereby acknowledged, and in consideration of the covenants and obligations hereinafter set forth to be well and truly performed, the parties hereby agree as follows.

1. Assignor hereby, sells, assigns, and transfers to Assignee, its lawful successors and assigns, Assignor's entire right, title and interest in and to the Patent Rights. Assignee hereby shall take, acquire and hold such right, title and interest in and to the Patent Rights.

2. Assignor hereby furthermore sells, assigns, and transfers to Assignee all claims for past, present, and future infringement of the inventions covered by Patent Rights, including without limitation all rights to recover damages and the right to grant releases for past infringement of the Patent Rights.

3. Assignor hereby further covenants and agrees, to render such assistance to Assignee as may be necessary to perfect the title to Patent Rights in said Assignee, its successors and assigns, to enable Assignee to prosecute all divisional, continuation, reexamination, and reissue applications, and to enable Assignee to obtain and enforce proper patent protection for the Patent Rights.

4. Assignor hereby covenants that no assignment, sale, agreement or encumbrance has been or will be made or entered into which would conflict with this assignment and sale.

5. Assignor further covenants that (i) Assignee will, upon its request, be provided promptly with all pertinent facts and documents relating to the Patent Rights as may be known and/or accessible to Assignor, (ii) Assignor shall testify as to the same in any interference or litigation related thereto, and (iii) Assignor shall promptly execute and deliver to Assignee or its legal representative any and all papers, instruments or affidavits required to apply for, obtain, maintain or enforce the Patent Rights and/or any U.S. patent rights evolving therefrom. Assignor shall use his best efforts to cooperate in good faith with Assignee.

LTT Labortechnik Tasler GmbH

Papst Licensing GmbH & Co. KG

By: [Signature]

By: [Signature]

Title: General Manager

Title: PRESIDENT

Date: March 8, 2006

Date: March 8, 2006

Exhibit A

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- OTHER: _____

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of: Michael Tasler

Group No.: 2181

Serial No.: 11/078,778

Conf. No.: 8978

Filed: 3/11/06

Examiner: Harold J. Kim

For: ANALOG DATA GENERATING AND PROCESSING DEVICE FOR USE WITH A PERSONAL COMPUTER (As Amended)

I hereby certify that this paper is being deposited with the United States Postal Service as EXPRESS MAIL POST OFFICE TO ADDRESSEE service under 37 C.F.R. 1.10 on the date indicated below and is addressed to: Commissioner for Patents, Mail Stop - Fee Amendment, P.O. Box 1450, Alexandria, VA 22313-1450:

Date: March 28, 2006
Exp. Mail No. EV555557389US

Attorney

Docket No.: 0757/96910

PRELIMINARY AMENDMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-0001

Dear Sir:

Please enter this preliminary amendment prior to examination of the above-captioned application.

03/29/2006 FMETEK11 00000099 230920 - 11078778

01 FC:2E02 - 1400.00 DA

Applicant: Michael Tasler
Application No.: 11/078,778
Filed: 03/11/05
Date: March 28, 2006
Page - 2 -

IN THE TITLE:

Please amend the title to read as follows: ~~Flexible Interface~~ Analog Data Generating And
Processing Device For Use With A Personal Computer.

IN THE CLAIMS:

Please cancel claims 1-16 without prejudice as to the subject matter claimed therein, and please add the following claims 17-93:

17. (new) An analog data generating and processing device for use with a personal computer having at least one multi-purpose interface to which the personal computer sends periodic inquiry signals as to what type of device is operatively connected thereto, the analog data generating and processing device comprising:

a sensor that is mounted on a housing, the sensor being adapted to receive analog wave signals that are generated by a source that is external to the housing and that is not located in substantial proximity to the sensor, the sensor being further adapted to generate sets of analog data from the analog wave signals that it receives;

an analog to digital converter that is operatively connected to the sensor and that generates a set of digitized analog data from each set of analog data;

a circuit that includes a processor and a memory that are operatively connected to the analog to digital converter, a first set of instructions being stored in the memory that are utilized by the processor to cause the sets of digitized analog data to be individually stored in the memory irrespective of whether or not the analog data generating and processing device has been recognized by the personal computer;

an input/output port that is adapted to be operatively connected to the multi-purpose interface of the personal computer, a response signal being automatically and without user intervention sent from the input/output port to the multi-purpose interface after they have been operatively connected together and after an inquiry signal has been received by the

input/output port, the receipt and processing of the receipt signal by the personal computer causing it to automatically and without user intervention recognize the analog data generating and processing device as being a device having digital data that is stored therein and selectively retrievable therefrom; and

wherein, after the analog data generating and processing device has been automatically recognized by the personal computer, and while the input/output port is operatively connected to the multi-purpose interface, user selected ones of the digitized sets of analog data can be transferred from the memory, through the input/output port, through the multi-purpose interface, and to the personal computer by means of a driver that is associated with the personal computer.

18. (new) A combination comprising the analog data generating and processing device of claim 17 and a personal computer.

19. (new) The analog data generating and processing device of claim 17, wherein the analog wave signals comprise electromagnetic radiation.

20. (new) The analog data generating and processing device of claim 19, wherein the electromagnetic radiation received by the sensor is representative of an object that is physically separated from and can be located not in substantial proximity to the housing.

21. (new) The analog data generating and processing device of claim 20, wherein the electromagnetic radiation is generated by a medical device.

22. (new) The analog data generating and processing device of claim 21, wherein the medical device comprises a diagnostic radiological system.

23. (new) The analog data generating and processing device of claim 20, wherein the sensor comprises an electronic measuring device.

24. (new) The analog data generating and processing device of claim 23, wherein the electronic measuring device comprises a multi-meter.

25. (new) The analog data generating and processing device of claim 20, wherein the driver is adapted for use with a mass storage device.

26. (new) The analog data generating and processing device of claim 25, wherein the driver is adapted for use with a mass storage device that includes a rotatable storage medium.

27. (new) The analog data generating and processing device of claim 26, wherein the driver is adapted for use with a hard disk drive.

28. (new) The analog data generating and processing device of claim 20, wherein the driver is located in a memory of the personal computer.

29. (new) The analog data generating and processing device of claim 28, wherein the personal computer memory comprises a BIOS of the personal computer.

30. (new) The analog data generating and processing device of claim 20, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device even though it is not a mass storage device.

31. (new) The analog data generating and processing device of claim 30, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device having

a rotatable storage disk even though it is not a mass storage device having a rotatable storage disk.

32. (new) The analog data generating and processing device of claim 31, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a hard disk drive even though it is not a hard disk drive.

33. (new) The analog data generating and processing device of claim 20, wherein the memory of the analog data generating and processing device comprises a buffer memory.

34. (new) The analog data generating and processing device of claim 20, wherein the input/output port is adapted to be operatively connected to a SCSI interface of the personal computer.

35. (new) The analog data generating and processing device of claim 20, wherein the processor comprises a digital signal processor.

36. (new) The analog data generating and processing device of claim 20, wherein the sets of digitized analog data are transferred to the personal computer in a format suitable for a mass storage device present in the personal computer.

37. (new) The analog data generating and processing device of claim 36, wherein a root directory and virtual files are created in the memory which can be accessed by the personal computer.

38. (new) The analog data generating and processing device of claim 37, wherein at least one of the virtual files comprises a configuration file stored in the memory.

39. (new) The analog data generating and processing device of claim 38, wherein the configuration file allows a user to configure the analog data generating and processing device as being a specific mass storage device.

40. (new) The analog data generating and processing device of claim 39, wherein the configuration file allows a user to configure the analog data generating and processing device as being a specific hard disk drive.

41. (new) The analog data generating and processing device of claim 20, wherein a wire based connection is used to operatively connect the input/output port to the multi-purpose interface of the personal computer.

42. (new) The analog data generating and processing device of claim 20, wherein a second set of instructions are stored in the memory which are adapted to cause the response signals to be generated.

43. (new) The analog data generating and processing device of claim 20, wherein a third set of instructions are stored in the memory that allow user selected ones of the digitized sets of analog data to be transferred to a memory of the personal computer.

44. (new) An analog data generating and processing device for use with a personal computer having at least one multi-purpose interface to which the personal computer sends periodic inquiry signals as to what type of device is operatively connected thereto, the analog data generating and processing device comprising:

means for receiving analog wave signals that are generated by a source external to and not located in substantial proximity to the analog data generating and processing device, for generating sets of analog data therefrom, and for digitizing each set of analog data;

means for causing the digitized sets of analog data to be individually stored in a memory irrespective of whether or not the analog data generating and processing device has been recognized by the personal computer;

means for receiving from the multi-purpose interface of the personal computer the periodic inquiry signals, and for automatically and without user intervention responding thereto by sending a signal to the multi-purpose interface that causes the personal computer to automatically and without user intervention recognize the analog data generating and processing device as being a device having digital data that is stored in and to be selectively retrievable from a memory in which digital signals are stored; and

means for transferring user selected ones of the digitized sets of analog data to the personal computer by means of a driver that is associated with the personal computer.

45. (new) A combination comprising the analog data generating and processing device of claim 44 and a personal computer.

46. (new) The analog data generating and processing device of claim 44, wherein the analog wave signals comprise electromagnetic radiation.

47. (new) The analog data generating and processing device of claim 46, wherein the electromagnetic radiation is representative of an object that is physically separated from and can be located not in substantial proximity to the analog data generating and processing device.

48. (new) The analog data generating and processing device of claim 47, wherein the means for receiving analog wave signals forms a part of a medical device.

49. (new) The analog data generating and processing device of claim 48, wherein the medical device comprises a diagnostic radiological system.

50. (new) The analog data generating and processing device of claim 47, wherein the means for receiving analog wave signals includes an electronic measuring device.

51. (new) The analog data generating and processing device of claim 50, wherein the electronic measuring device comprises a multi-meter.

52. (new) The analog data generating and processing device of claim 47, wherein the driver is adapted for use with a mass storage device.

53. (new) The analog data generating and processing device of claim 52, wherein the driver is adapted for use with a mass storage device that includes a rotatable storage medium.

54. (new) The analog data generating and processing device of claim 53, wherein the driver is adapted for use with a hard disk drive.

55. (new) The analog data generating and processing device of claim 47, wherein the driver is located in a memory of the personal computer.

56. (new) The analog data generating and processing device of claim 55, wherein the personal computer memory comprises a BIOS of the personal computer.

57. (new) The analog data generating and processing device of claim 47, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device even though it is not a mass storage device.

58. (new) The analog data generating and processing device of claim 57, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device having

a rotatable storage disk even though it is not a mass storage device having a rotatable storage disk.

59. (new) The analog data generating and processing device of claim 58, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a hard disk drive even though it is not a hard disk drive.

60. (new) The analog data generating and processing device of claim 47, wherein the memory of the analog data generating and processing device comprises a buffer memory.

61. (new) The analog data generating and processing device of claim 47, wherein the means for receiving from the multi-purpose interface is adapted to be operatively connected to a SCSI interface of the personal computer.

62. (new) The analog data generating and processing device of claim 61, wherein the means for transferring comprises at least a portion of a digital signal processor.

63. (new) The analog data generating and processing device of claim 47, wherein the sets of digitized analog data are transferred to the personal computer in a format suitable for a mass storage device present in the personal computer.

64. (new) The analog data generating and processing device of claim 63 wherein a root directory and virtual files are created in the memory which can be accessed by the personal computer.

65. (new) The analog data generating and processing device of claim 64, wherein at least one of the virtual files comprises a configuration file stored in the memory.

66. (new) The analog data generating and processing device of claim 64, wherein the configuration file allows a user to configure the analog data generating and processing device as being a specific mass storage device.

67. (new) The analog data generating and processing device of claim 65, wherein the configuration file allows a user to configure the analog data generating and processing device as being a specific hard disk drive.

68. (new) The analog data generating and processing device of claim 47, wherein a wire based connection is used to operatively connect the multi-purpose interface of the personal computer with the means for receiving from the multi-purpose interface.

69. (new) An analog data generating and processing device for use with a personal computer having at least one multi-purpose interface to which the personal computer sends periodic inquiry signals as to what type of device is operatively connected thereto, the analog data generating and processing device comprising:

a circuit that includes a sensor and an analog to digital converter, the circuit being adapted to be exposed to analog wave signals originate from a source that is external to the analog data generating and processing device and that is not located in substantial proximity to the sensor, to generate sets of analog data therefrom, and to generate digitized sets of analog data from the sets of analog data;

a processor and a memory both of which are operatively connected to the circuit, the processor being adapted to cause the digitized sets of analog data to be individually stored in the memory irrespective of whether or not the analog data generating and processing device has been recognized by the personal computer;

a connecting device operatively connected to the processor and the memory, the connecting device being adapted to be operatively connected to the multi-purpose interface of the personal computer and to receive therefrom the periodic inquiry signals;

wherein a response signal is automatically and without user intervention sent to the multi-purpose interface of the personal computer after the connecting device is operatively connected to the multi-purpose interface and after the connecting device receives at least one inquiry signal therefrom, receipt and processing of the response signal by the personal computer causing the personal computer to automatically and without user intervention recognize the analog data generating and processing device as being a device having digital data that is stored therein and selectively retrievable therefrom; and

wherein, after the analog data generating and processing device has been automatically recognized by the personal computer, and when the processor and memory are operatively connected to the circuit, user selected ones of the digitized sets of analog data can be transferred to the personal computer by means of a driver that is associated with the personal computer.

70. (new) A combination comprising the analog data generating and processing device of claim 69 and a personal computer.

71. (new) The analog data generating and processing device of claim 69, wherein the analog wave signals comprise electromagnetic radiation.

72. (new) The analog data generating and processing device of claim 71, wherein the electromagnetic radiation is representative of an object that is physically separated from and can be located not in substantial proximity to the analog data generating and processing device.

73. (new) The analog data generating and processing device of claim 72, wherein the electromagnetic radiation is generated by a medical device.

74. (new) The analog data generating and processing device of claim 73, wherein the medical device comprises a diagnostic radiological system.

75. (new) The analog data generating and processing device of claim 72, wherein the sensor comprises an electronic measuring device.

76. (new) The analog data generating and processing device of claim 75, wherein the electronic measuring device comprises a multi-meter.

77. (new) The analog data generating and processing device of claim 72, wherein the driver is adapted for use with a mass storage device.

78. (new) The analog data generating and processing device of claim 77, wherein the driver is adapted for use with a mass storage device that includes a rotatable storage medium.

79. (new) The analog data generating and processing device of claim 78, wherein the driver is adapted for use with a hard disk drive.

80. (new) The analog data generating and processing device of claim 72, wherein the driver is located in a memory of the personal computer.

81. (new) The analog data generating and processing device of claim 80, wherein the personal computer memory comprises a BIOS of the personal computer.

82. (new) The analog data generating and processing device of claim 72, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device even though it is not a mass storage device.

83. (new) The analog data generating and processing device of claim 82, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device having a rotatable storage disk even though it is not a mass storage device having a rotatable storage disk.

84. (new) The analog data generating and processing device of claim 83, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a hard disk drive even though it is not a hard disk drive.

85. (new) The analog data generating and processing device of claim 72, wherein the memory of the analog data generating and processing device comprises a buffer memory.

86. (new) The analog data generating and processing device of claim 72, wherein the connecting device is adapted to be operatively connected to a SCSI interface of the personal computer.

87. (new) The analog data generating and processing device of claim 72, wherein the processor comprises a digital signal processor.

88. (new) The analog data generating and processing device of claim 72, wherein the digitized versions of the analog data is transferred to the personal computer in a format suitable for a mass storage device present in the personal computer.

89. (new) The analog data generating and processing device of claim 88 wherein the processor is adapted to create a root directory and virtual files in the memory which can be accessed by the personal computer.

90. (new) The analog data generating and processing device of claim 89, wherein at least one of the virtual files comprises a configuration file stored in the memory.

91. (new) The analog data generating and processing device of claim 90, wherein the configuration file allows a user to configure the analog data generating and processing device as being a specific mass storage device.

92. (new) The analog data generating and processing device of claim 91, wherein the configuration file allows a user to configure the analog data generating and processing device as being a specific hard disk drive.

93. (new) The analog data generating and processing device of claim 72, wherein a wire based connection is used to operatively connect the input/output port of the processor circuit to the multi-purpose interface of the personal computer.

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REMARKS

Claims 1-16 have been cancelled without prejudice as to the subject matter claimed therein. New claims 17-93 are being submitted herewith for the Examiner's consideration.

An Information Disclosure statement is being filed herewith for the Examiner's consideration. It is respectfully submitted that the claims presented in this preliminary amendment are patentable over all of the prior art references included in the IDS, either taken along or in a purported combination, for a number of different reasons, including those that are discussed in greater detail hereinafter.

The Examiner is respectfully requested to review the following eight references in detail, all of which are listed in the IDS. Portions of each reference that one may argue allegedly are relevant to the subject matter of the currently pending claims, together with an identification of each reference, are presented hereinafter:

- 1) US Patent No. 5,915,106, which is entitled "Method And System For Operating A Scanner Which Emulates A Disk Drive," is not prior art to any of the claims submitted herewith. The earliest US filing date of this patent (March 20, 1997) is sixteen days after the earliest effective filing date of the currently pending claims, which is the March 4, 1997 filing date of German application no. 197 08 755. The Examiner's confirmation of this is earnestly solicited.
- 2) US Patent No. 5,508,821 is entitled "Image Scanner And Image Forming Apparatus With An Interface For Connection With An External Computer." Column 4, lines 21-23 of this patent state that the "image scanner 20 emulates the file system of 'UNIX' as if it were a hard disc. Accordingly, the image scanner 20

looks like the hard disc from the workstation 21 can be handled as a hard disk."

In the summary of the invention of this patent, it is stated that an "object" of the invention is to provide an "image scanner" that "requires no preparation of any new device driver."

- 3) US Patent No. 5,131,089 is entitled "Solid State disk Drive Emulation."
The abstract of this patent states that the "system permits software written for use with floppy disks to be used with solid state memory devices such as RAM cards or ROM without modification of the software."
- 4) US Patent No. 4,642,759 is entitled "Bubble Memory Disk Emulation."
- 5) A two page printout of text included with Windows 95 is submitted herewith concerning the "RAMDRIVE.SYS" command. This document states that this command allows a computer's RAM memory to simulate a hard disk drive.
- 6) Figure 1 of US Patent No. 5,724,574 discloses a hardware arrangement that includes, for example, a high speed scanner 24, a local area network 10, an optical disk based document server 15, and a number of workstations 18.
- 7) An article entitled "Optical Server Uses Network Protocol For Plug-And-Play Integration" was published in 1993. Page two of this article states that "emulation of the magnetic file system with a WORM-specific file system in this manner has several distinct advantages. The principal advantage is that the WORM disk appears to applications and utilities as just another disk."
- 8) The manual for Polaroid's Digital Camera model no. PDC-2000 indicates

that it was published in 1996. The Examiner is asked to assume, for the sake of argument, that this is the case. Applicant reserves the right to challenge this in all forums and proceedings other than the examination of this application.

Page 11 of the manual states that the "PDC-2000 camera is a Small Computer Systems Interface (SCSI) device," that one can "connect up to seven SCSI devices to your computer," and that the "PDC-2000 camera's SCSI ID is preset to 4 at the factor."

Page 83 of the manual states that to "transfer and work with pictures from the PDC-2000 camera on your PC, you use the PDC-2000 TWAIN driver . . ." or one can install "PDC-2000 Direct" software.

The currently pending claims clearly are supported by the specification as originally filed. As one example, all of the currently pending claims generally require that a sensor of some kind be adapted to be exposed to analog wave signals (*e.g.*, electromagnetic radiation) that originate at least in part from a source that is external to and not located in substantial proximity to the housing in which the sensor is contained. These claim features are supported, for example, by the "diagnostic radiology system" disclosed at page 1, paragraph 4, line 3 of the specification of the instant application.

An example of such a "diagnostic radiology system" is, for example, an x-ray machine, the x-rays being one example of the claimed "analog wave signals." As readily apparent to one of ordinary skill in the relevant art, typical x-ray machines include two housings – one in which an x-ray generator is mounted and a second one in which an x-ray transducer is mounted. The x-ray generator is physically separated from and not located in substantial proximity to the

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transducer so that, for example, a patient can position his or her leg between the generator and the transducer. The transducer creates a set of analog data that comprises an x-ray so that, for example, a user can determine whether the patient's leg is broken.

It should be noted that the scope of the currently pending claims *is not* limited to "diagnostic radiology systems" and or to systems that only produce "x-rays." In this regard, other "modes" of practicing the claimed invention include, for example, the CCD device of a camera that is exposed to ambient light, and that creates therefrom a set of analog data representative of a picture. Further "modes" of practicing the claimed invention include, for example, a camera having a CCD that is adapted to receive ambient light as well as light from the camera's flash, and that creates therefrom a set of analog data representative of a picture. Other types of "sensors" within the scope of the present invention include, for example, dictaphone transducers that change analog voice signals into analog vocal signals.

For the Examiner's information, the inclusion of the above-described subject matter in the currently pending claims is one reason that the Examiner should find these claims patentable over, for example, the prior art of record that discloses the use of document scanners (*e.g.*, US Patent Nos. 5,508,821, 5,532,825 and 5,724,574). In contrast to the currently pending claims, the scanner references teach a light source that is located inside the scanner and that is located in substantial proximity to the CCD of the scanner. Such sensors *are not* adapted to process analog wave signals such as, for example, ambient light or other electromagnetic radiation that is present outside of the scanner housing or that is reflected off of or pass through objects that are not located in substantial proximity to the scanner. For this reason alone, the currently pending claims should be found to be patentable over the scanner references.

A second example of how the currently pending claims clearly are supported by the originally filed specification is as follows. One aspect of the currently pending claims is that analog data can be generated, digitized and stored in memory *irrespective* of whether communication with a personal computer already has been initiated. Support for this claim element is found, for example, at the third full paragraph on page 11 of the specification, which states:

"As described above, a data buffer can be implemented in the memory means 14 to permit independence in terms of time of the data transmit/receive device attached to the second connecting device from the hose device attached to the first connecting device."

A still further aspect of the currently pending claims that is fully supported by the originally filed specification is as follows. All of the claims presented in this preliminary amendment generally require that the analog data generating and processing device (*e.g.*, an x-ray machine or a digital camera having a flash) be operatively connected to a multi-purpose interface of a personal computer (by, for example, a wire-based connection), and further be *automatically and without user intervention* recognized by the personal computer as being a device that has digital data which is stored therein and which is selectively retrievable therefrom. Support for these claim features is found, for example, at page 7, lines 8-12 of the specification, which recite:

"The digital signal processor 13 receives this inquiry instruction via the first connecting device and generates a signal which is sent to the host device (not shown) again via the first connecting device 12 and the host line 11. This signal

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indicates to the host device that, for example, a hard disk drive is attached at the interface to which the INQUIRY instruction was sent."

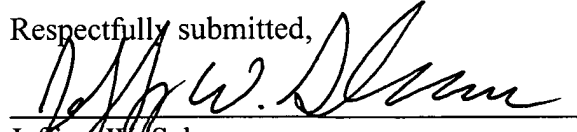
It is respectfully submitted that no prior art reference of record, either taken alone or in a purported combination, teaches or suggests the combinations claimed in the currently pending claims for a number of different reasons. As one example, US Patent No. 5,508,821 does not teach or suggest, for example, the above-noted "automatic recognition" feature because, for example, the system disclosed therein is UNIX based. As readily apparent to one of ordinary skill in the relevant art, such UNIX based systems affirmatively require user intervention in order to operate and use the scanner disclosed in the '821 patent.

As a further example of the patentability of the currently pending claims, the camera disclosed in the Polaroid manual submitted (assuming, for argument's sake that it is prior art) cannot be automatically recognized without human intervention. In this regard, user intervention always is required because, for example, a user needs to make sure that the camera's SCSI identification number does not conflict with the ID number of any other device in a daisy chain of which the camera forms a part. For this reason alone, for example, the currently pending claims should be found to be patentable over the Polaroid camera manual (assuming for argument's sake that it is prior art).

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It is respectfully submitted that the new claims are in condition for allowance and, therefore, a formal notice to that effect is earnestly solicited. In this regard, the Examiner is respectfully requested to contact the undersigned attorney upon entry of this amendment.

Respectfully submitted,

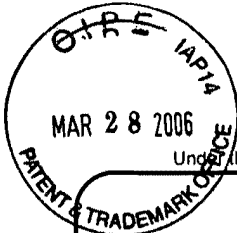


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TRANSMITTAL FORM <i>(to be used for all correspondence after initial filing)</i>	Application Number	11/078,778
	Filing Date	03/11/05
	First Named Inventor	Michael Tasler
	Art Unit	2181
	Examiner Name	Harold J. Kim
Total Number of Pages in This Submission	Attorney Docket Number	0757/96910

ENCLOSURES (Check all that apply)		
<input checked="" type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached <input checked="" type="checkbox"/> Amendment/Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input checked="" type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Response to Missing Parts/Incomplete Application <input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s) _____ <input type="checkbox"/> Landscape Table on CD	<input type="checkbox"/> After Allowance Communication to TC <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input type="checkbox"/> Other Enclosure(s) (please identify below):
<div style="border: 1px solid black; padding: 5px;"> Remarks Form PTO-1449 34 Attached References </div>		

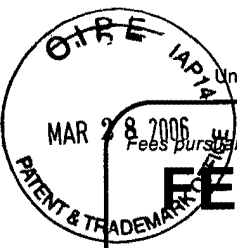
SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT			
Firm Name	Welsh & Katz, Ltd.		
Signature			
Printed name	Jeffrey W. Salmon		
Date	28 March 2006	Reg. No.	37,435

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		Complete if Known	
<input checked="" type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27		Application Number	11/078,778
		Filing Date	03/11/05
		First Named Inventor	Michael Tasler
		Examiner Name	Harold J. Kim
		Art Unit	2181
		Attorney Docket No.	0757/96910
TOTAL AMOUNT OF PAYMENT			(\$)1400.00

METHOD OF PAYMENT (check all that apply)

Check Credit Card Money Order None Other (please identify): _____

Deposit Account Deposit Account Number: 23-0920 Deposit Account Name: Welsh & Katz, Ltd.

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

Charge fee(s) indicated below Charge fee(s) indicated below, **except for the filing fee**

Charge any additional fee(s) or underpayments of fee(s) under 37 CFR 1.16 and 1.17 Credit any overpayments

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1. BASIC FILING, SEARCH, AND EXAMINATION FEES

Application Type	FILING FEES		SEARCH FEES		EXAMINATION FEES		Fees Paid (\$)
	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	
Utility	300	150	500	250	200	100	_____
Design	200	100	100	50	130	65	_____
Plant	200	100	300	150	160	80	_____
Reissue	300	150	500	250	600	300	_____
Provisional	200	100	0	0	0	0	_____

2. EXCESS CLAIM FEES

Fee Description	Small Entity Fee (\$)	Fee Paid (\$)
Each claim over 20 (including Reissues)	50	25
Each independent claim over 3 (including Reissues)	200	100
Multiple dependent claims	360	180

Total Claims 76 - 20 or HP = 56 **Extra Claims** 56 **Fee (\$)** x 25 **Fees Paid (\$)** = 1400

HP = highest number of total claims paid for, if greater than 20

Indep. Claims 3 - 3 or HP = 0 **Extra Claims** 0 **Fee (\$)** x **Fees Paid (\$)** =

HP = highest number of independent claims paid for, if greater than 3

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee (\$)	Fees Paid (\$)
_____	- 100 = _____	/50= _____ (round up to a whole number)	x _____	= _____

4. OTHER FEE(S)

Non-English Specification, \$130 fee (no small entity discount) _____

Other (e.g., late filing surcharge): _____

SUBMITTED BY

Signature		Registration No. 37,435 (Attorney/Agent)	Telephone 312-655-1500
Name (Print/Type)	Jeffrey W. Salmon		Date <u>28 Mar 2006</u>



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of: Michael Tasler

Group No.: 2181

Serial No.: 11/078,778

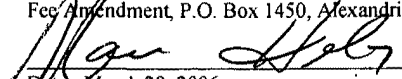
Conf. No.: 8978

Filed: 3/11/05

Examiner: Harold J. Kim

For: ANALOG DATA GENERATING
AND PROCESSING DEVICE
FOR USE WITH A PERSONAL
COMPUTER (As Amended)

I hereby certify that this paper is being deposited with the United States Postal Service as EXPRESS MAIL POST OFFICE TO ADDRESSEE service under 37 C.F.R. 1.10 on the date indicated below and is addressed to: Commissioner for Patents, Mail Stop - Fee Amendment, P.O. Box 1450, Alexandria, VA 22313-1450:


Date: March 28, 2006
Exp. Mail No. EV55557389US

Attorney

Docket No.: 0757/96910

INFORMATION DISCLOSURE STATEMENT

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

Sir:

Pursuant to 37 C.F.R. §1.97, a list of documents is disclosed on the attached Form PTO-1449 that may be material to the examination of this application. Listed Documents are U.S. patents, foreign patents and/or published papers. Copies of all references other than US Patents are being submitted herewith.

It is submitted that no fees are due in connection with this Information Disclosure Statement because it is being submitted prior to the issuance of the first Office Action.

Documents for which the supplied date of publication lists the year of publication without the month were published sufficiently earlier than the effective U.S. filing date and any foreign priority date, so that the particular month of publication is not in issue. Pursuant to §609 of the MPEP, it is understood that the month of publication is not required when the particular month of publication is not in issue.

No inferences should be drawn that the attached list represents a comprehensive investigation, or that any material disclosed is equivalent to the subject invention. In addition, none of the documents that have publication dates prior to the priority date of the above application anticipate the invention in this application.

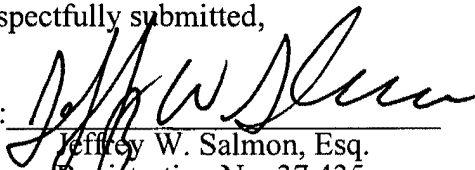
The cited document(s) disclose numerous specific features. There has been no attempt to list each and every feature disclosed by each document. The Examiner is requested to review the document(s) and determine the extent of the materiality of the document disclosures with respect to the present invention.

The discussion of any art and the citation of any document(s) herein is not to be construed as an admission that the art or document disclosure is necessarily within the invention field of endeavor, that the art or document disclosure is necessarily prior in time to a particular date which may be relevant to the instant patent application, and/or that the art or document disclosure is otherwise necessarily prior art as defined by the patent law with respect to the instant invention and application.

Also, there is reserved the right to later set forth how the instant invention is distinguished over the disclosure of any document or other art, including the disclosures of the art and document(s) recited herein, that may be cited by the Examiner in rejecting a claim in the instant patent application. The recitation herein of the art and document(s) is not to be construed as an assertion that more pertinent art could not possibly be in existence.

Respectfully submitted,

By:


Jeffrey W. Salmon, Esq.
Registration No. 37,435

Dated: March 28, 2006
Enclosures: Form PTO-1449

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Form PTO-1449 (Rev. 8-88)	U.S. Department of Commerce Patent and Trademark Office	Attorney Docket No. 0757/96910	Serial No. 11/078,778
INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)		Applicant Michael Tasler	
		Filing Date 03/11/05	Group No. 2181

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Examiner	Date Considered
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*Examiner: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Form PTO-1449 (Rev. 8-88)		U.S. Department of Commerce Patent and Trademark Office		Attorney Docket No. 0757/96910		Serial No. 11/078,778	
INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)				Applicant Michael Tasler			
				Filing Date 03/11/05		Group No. 2181	
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Examiner				Date Considered			
<p>*Examiner: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.</p>							

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INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)				Applicant Michael Tasler			
				Filing Date 03/11/05		Group No. 2181	
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		Document Number	Date	Country	Class	Subclass	Translation
							Yes No
	1.	53145535 A	12/18/78	Japan			x
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*Examiner: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.							

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INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)				Applicant Michael Tasler	
				Filing Date 03/11/05	
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INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)				Applicant Michael Tasler	
				Filing Date 03/11/05	Group No. 2181
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Examiner			Date Considered		
*Examiner: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.					

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of: Michael Tasler

Group No.: 2181

Serial No.: 11/078,778

Conf. No.: 8978

Filed: 3/11/05

Examiner: Harold J. Kim

For: ANALOG DATA GENERATING
AND PROCESSING DEVICE
FOR USE WITH A PERSONAL
COMPUTER (As Amended)

Attorney

Docket No.: 0757/96910

INFORMATION DISCLOSURE STATEMENT

ATTACHED REFERENCES

1 OF 3

WELSH & KATZ, LTD.
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(19)



JAPANESE PATENT OFFICE

PATENT ABSTRACTS OF JAPAN

(11) Publication number: **53145535 A**

(43) Date of publication of application: **18.12.78**

(51) Int. Cl **G06F 3/00**
G06F 11/00

(21) Application number: **52060716**

(71) Applicant: **TOSHIBA CORP**

(22) Date of filing: **25.05.77**

(72) Inventor: **SANO YOSHINOBU**

(54) **UNIVERSAL INTERFACE**

devices with just one universal interface by rewriting freely the contents of the CPU memory or the program incorporated into RAM.

(57) Abstract

PURPOSE: To ensure a simulation for many input/output

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公開特許公報

昭53-145535

⑤Int. Cl. ² G 06 F 3/00 G 06 F 11/00	識別記号	⑥日本分類 97(7) D 0 97(7) D 2 97(7) G 2	庁内整理番号 6711-5B 6676-5B	④公開 昭和53年(1978)12月18日	発明の数 1 審査請求 有
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(全 4 頁)

⑤ユニバーサルインターフェイス	東京都府中市東芝町1番地 東京 芝浦電気株式会社府中工場内
①特 願 昭52-60716	①出 願 人 東京芝浦電気株式会社
②出 願 昭52(1977)5月25日	川崎市幸区堀川町72番地
⑦発 明 者 佐野義信	④代 理 人 弁理士 鈴江武彦 外2名

明 細 書

1. 発明の名称

ユニバーサルインターフェイス

2. 特許請求の範囲

プログラムを内蔵したランダムアクセスメモリあるいはソフトウェアを実行するホストコンピュータからデータが与えられることによつてこのホストコンピュータからの信号に対して所定のデータを上記ホストコンピュータに返すコントローラ部と、上記ホストコンピュータの指令を上記コントローラ部に適したフォーマットに変換するとともにこのコントローラ部の指令を上記ホストコンピュータに適したフォーマットに変換してホストコンピュータおよびコントローラ部に転送するインターフェイス部とよりなるユニバーサルインターフェイス。

3. 発明の詳細な説明

この発明は、プログラムを記憶したメモリ装置の内容を書き変えることにより、任意の機器をシミュレートできるようにしたユニバーサル

インターフェイスに関する。

最近では電子計算機関係の各種のデバイスの開発が大に行なわれているが、それはハードウェアとソフトウェアの開発に分類される。そして、開発を短期間で仕上げるためには、両者の開発を同じに行なうことが必要である。しかし、ソフトウェアはそのハードウェアが製作されないかぎり、実機でデバッグできない。したがつてハードウェアの開発遅れがソフトウェア開発遅れに重なり、デバイス開発が大いに遅れてしまうことが多々生じる。そのために、デバイスをシミュレートできるインターフェイスを作成して、上記の問題点を解決している例がある。しかし、それらはそのデバイス固有のインターフェイスであり、デバイスが異なれば異なつたインターフェイスを必要とする。加えて、その性質上、ハードウェアが完成すれば、不用に近しいものとなつてしまう。

この発明は、上記従来欠点を除去するためになされたもので、任意のデバイスがシミュレ

を作成する必要がなく、開発費用の減少と期間の短縮化を期することのできるユニバーサルインターフェイスを提供することを目的とする。

以下、この発明のユニバーサルインターフェイスの実施例について図面に基づき説明する。第1図はその一実施例の全体的構成を示すブロック図である。この第1図における1はホストコンピュータであつて、開発ソフトウェアを実行する電子計算機である。またUIはユニバーサルインターフェイスを示すもので、この第1図の実施例では、インターフェイス部2、コントローラ部3およびRAM(ランダム・アクセス・メモリ)4とから構成されている。RAMにはプログラムが記憶されている。コントローラ部3はRAMの記憶内容を書き変えることによりホストコンピュータ1からの信号に対して希望する信号、データをホストコンピュータ1に返すことができるようになつている。

また、インターフェイス部2はホストコンピ

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ある。さらに、ホストコンピュータ1とコントローラ部3間にはテストラインフリップ・フロップ回路(以下、テストラインFFと云う)9が接続されている。このテストラインFF9はコントローラ部3からホストコンピュータ1に与える指令を保持するためのものである。なお、10はホストコンピュータ1とテストラインFF9間、テストラインFF9と、ホストコンピュータ1間に接続されたテストラインであり、11はメモリバスで、ホストコンピュータ1とコントローラ部3間に接続されている。そして、RAM4はホストコンピュータ1およびコントローラ部3間に信号の授受を行なうようになつている。

いま、第2図において、ホストコンピュータ1からのコントロールライン信号はコントロールラインFF6にセットされる。コントローラ部3はこのコントロールラインFF6にセットされた内容を読み込み、RAM4に内蔵されたプログラムにしたがつて解読する。これにより、

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コントロールラインの信号をコントローラ部3に適用し、フォーマットに変換し、逆に、コントローラ部3の指令をホストコンピュータ1に適したフォーマットに変換する部分である。このインターフェイス部2の具体的構成は第2図に示す通りである。この第2図において、第1図と同一部分には同一符号が付されており、ホストコンピュータ1、コントローラ部3、RAM4は第1図と同様である。このコントローラ部3とホストコンピュータ1間にはコントロールライン5を通してコントロールラインフリップ・フロップ回路(以下、コントロールラインFFと云う)6が設けられている。このコントロールラインFF6はコントロールライン5の状態を記憶するものである。

ホストコンピュータ1とコントローラ部3間にはデータライン7を通して入出力バッファ回路8が接続されている。この入出力バッファ回路8はホストコンピュータ1からまたはコントローラ部3からのデータを一時保存するもので

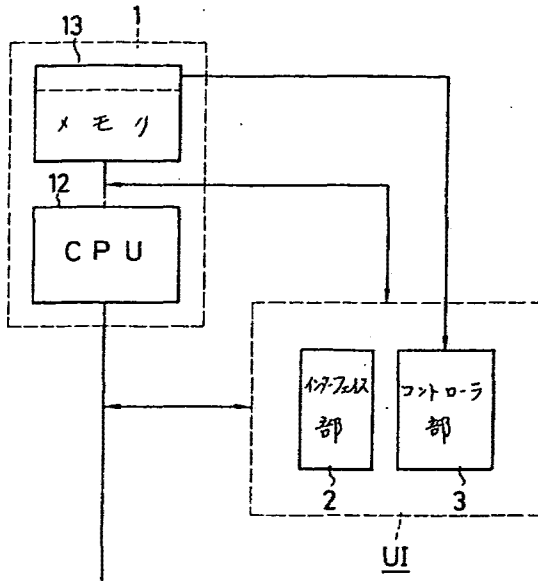
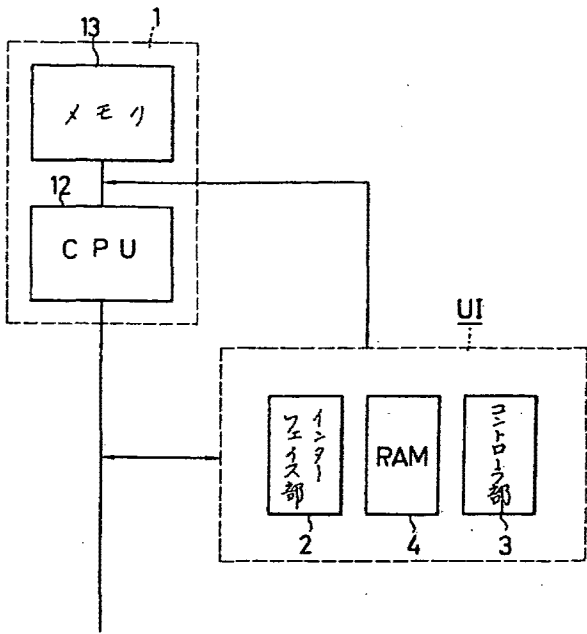
4

コントローラ部3は入出力バッファ回路8との信号の授受を行なつたり、メモリバス11を使用して入出力の処理を行なつたり、あるいはホストコンピュータ1への信号の返還などの処理を行なう。

ここで、具体的な例を挙げて説明すると、たとえば、コントロールライン5の中のアドレスラインがアクティブになつたとき、コントローラ部3はコントロールラインFF6の内容を読み込んで、入出力バッファ回路8の内容が機器アドレスであることを知り、この入出力バッファ回路8の内容を読み込んで、これがプログラムで指定されたアドレスと等しいかどうかを調べる。その結果、等しければ、SYNCを返すようなプログラムをRAM4に入れておく。

さて、第3図は第1図および第2図の実施例を要約して示したブロック図であり、この第3図からも明らかなように、第1図および第2図の実施例では、ユニバーサルインターフェイスUIはインターフェイス部2、コントローラ部

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PATENT ABSTRACTS OF JAPAN

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(21) Application number: 59155321

(22) Date of filing: 27.07.84

(71) Applicant: HITACHI LTD

(72) Inventor: TAGUCHI HISAO

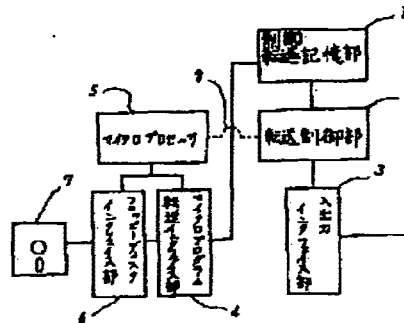
(54) ARTIFICIAL INPUT/OUTPUT CONTROL DEVICE

(57) Abstract:

PURPOSE: To obtain an artificial input/output device for simulating many kinds of input/output control devices without providing an exclusive circuit, so as to correspond to the input/output control device to be simulated, by replacing a microprogram by one set of artificial input/output control device.

CONSTITUTION: A microprogram corresponding to an input/output control device to be simulated is stored in advance in a floppy disk 7. By a microprocessor 5, the microprogram corresponding to the input/output control device to be simulated is stored in a control storage part 1. Subsequently, the program in the storage part 1 is read out and executed under the control of a transfer control part 2, and an interface operation as an artificial input/output control device is executed. Also, several kinds of interface operations can be executed continuously by controlling (8) the transfer control part 2 by the microprocessor 5.

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⑫ 公開特許公報 (A) 昭61-34652

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7165-5B

⑬ 公開 昭和61年(1986)2月18日

審査請求 未請求 発明の数 1 (全3頁)

⑭ 発明の名称 擬似入出力制御装置

⑰ 特 願 昭59-155321

⑱ 出 願 昭59(1984)7月27日

⑲ 発 明 者 田 口 久 生 横浜市戸塚区戸塚町216番地 株式会社日立製作所戸塚工場内

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明 細 書

1 発明の名称 擬似入出力制御装置

2 特許請求の範囲

1. データ処理システムと、入出力インタフェイスを介して接続され、入出力制御装置の入出力インタフェイス動作を擬似し、制御部を、マイクロプログラム制御方式で構成した擬似入出力装置において、マイクロプログラムを、書き替え可能な素子で構成した記憶部に格納し、マイクロプログラムを書き替えることにより、複数種類の入出力制御装置の動作を擬似する手段を有することを特徴とする擬似入出力制御装置。

3 発明の詳細な説明

〔発明の利用分野〕

本発明は、擬似入出力制御装置に関するものであり、特に、制御方式をマイクロプログラム方式とし、さらにマイクロプログラムを、書き替え可能な記憶部に格納する事により、多種の入出力制御装置を擬似可能とした入出力制御装

置に関する。

〔発明の背景〕

従来の擬似入出力制御装置は、一般に、その制御を布線論理か、あるいは、読み出し専用記憶素子内に書き込まれたプログラムによる、マイクロプログラム制御で行っていた。そのため、数種の入出力制御装置を一装置で擬似するには、擬似する装置の異なる機能対応に、論理を組むか、あるいは、擬似する装置ごとに対応したマイクロプログラムを格納した読み出し専用記憶部を設ける必要がある。しかしこの方法では

(1) 擬似する装置対応に専用回路及び、専用部品が増え経済性が悪い。

(2) 装置の拡張性が悪い。拡張性を良くしようとすると、むだな空間を多く必要とする。

等の欠点がある。

〔発明の目的〕

本発明の目的は、1台の擬似入出力制御装置でマイクロプログラムを入れ替えることにより、擬似する入出力制御装置対応に、専用回路を設

る擬似入出力装置を提供することにある。

〔発明の概要〕

本発明は、制御方式をマイクロプログラム方式とし、さらに、マイクロプログラムの格納部を、書き替え可能な記憶素子にて構成し、専用回路を設けず、マイクロプログラムを変更することにより、多種の入出力制御装置を擬似可能としたことを特徴とするものである。

〔発明の実施例〕

第1図に本発明の一実施例を示す。図において1は、転送制御用マイクロプログラムを格納する制御記憶部であり、2は、1の制御記憶部内のマイクロプログラムにより、入出力インタフェース動作の制御する転送制御部、3は、被試験装置とのインタフェース部である。又、4は1の制御記憶部内のマイクロプログラムを、転送するためのインタフェース部、5は、プログラムの書き替えを制御する書き替え制御部、6は、擬似対応装置ごとに作成されたマイクロ

前述のように、書き替え可能な記憶素子により構成されているため、その内容をクリアしたのち、他のマイクロプログラムを格納することにより、複数の入出力制御装置の擬似が可能である。

さらに8の点線で示すように、5のマイクロプロセッサにより、2の転送制御部を制御することにより、数種のインタフェース動作を連続的に、行う事が可能となり、データ処理装置のより送出される入出力装置の番地により、マイクロプログラムを自律的に決定し、書き込める機能を持させれば、被試験データ装置に対し、数種の入出力装置とのインタフェース試験を自動的に行える。

〔発明の効果〕

本発明によれば、1装置で、多数の入出力制御装置を擬似する擬似入出力装置を、擬似する入出力制御装置対応に、専用のハードウェアを設けることなく実現できるため、経済性の良い擬似入出力制御装置を提供できるとともに、新

イス部であり、7はその記憶媒体である。なお本実施例では、5の書き替え制御部をマイクロプロセッサ、7の記憶媒体をフロッピーディスクで構成している。

1の制御記憶部は、書き替え可能な記憶素子により構成されており、5のマイクロプロセッサにより、7、6、4の経路で、内部のプログラムを書き替えることが可能となっている。

本擬似入出力制御装置を動作するには、まず準備作業として、7のフロッピーディスク内に、擬似する入出力制御装置に対応したマイクロプログラムを格納しておく必要がある。擬似入出力制御装置として動作させるには、まず前述した方法により、1の制御記憶部内に、擬似する入出力制御装置に対応したマイクロプログラムを格納し、次に、2の転送制御部の制御により、1の制御記憶部内のマイクロプログラムを読み出し、実行して、擬似入出力制御装置としてのインタフェース動作を行う。1の制御記憶部は、

たな入出力制御装置を擬似しようとする際も、マイクロプログラムの変更により、最も少ないハードウェアの変更により行えるために、拡張性の優れた擬似入出力装置を提供できる。さらに、本実施例のごとく、マイクロプロセッサにより、擬似入出力装置の動作を総合的に制御することにより、容易に自動検査システムの一部となりうる擬似入出力制御装置を提供できる。

4 図面の簡単な説明

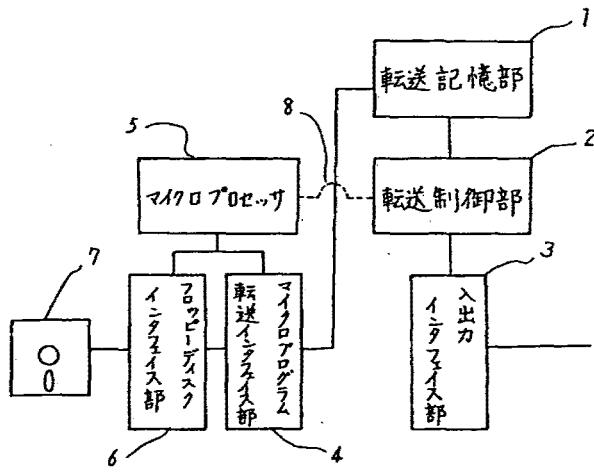
第1図は本発明の一実施例のブロック図である。

- 1…制御記憶部、
- 2…転送制御部
- 3…入出力インタフェース部
- 4…マイクロプログラム転送インタフェース部
- 5…マイクロプロセッサ
- 6…フロッピーディスクインタフェース部
- 7…フロッピーディスク
- 8…制御線。



代理人弁理士 高橋明夫

第 1 図





PATENT ABSTRACTS OF JAPAN

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(43) Date of publication of application: 27.03.86

(51) Int. Cl. G06F 13/38

(21) Application number: 59182116

(71) Applicant: NEC CORP

(22) Date of filing: 31.08.84

(72) Inventor: TAKADA SHIGEMITSU

(54) DATA TRANSFER DEVICE

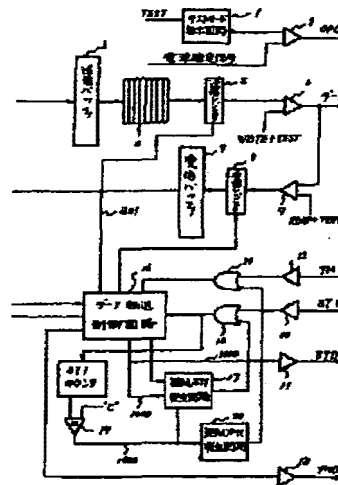
of the transfer of data against reception of the TMI signal.

(57) Abstract:

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PURPOSE: To facilitate the easy test of a data transfer device by using a means which separates the interface from a device at the remote side, a means which produces a false signal of the data transfer request signal sent from the device at the remote side and a means which receives by return the data to be sent to the device at the remote side.

CONSTITUTION: The OPO (operation-out) signal is first set at '0' to separate the interface at the side of a device of the remote side. A false STI generating circuit 17 is used for supply of a false STI (strobe-in) signal produced in its own device to the device of its own exactly in the same way as the actual STI signal sent from the device of the remote side. Thus the transmission data produced from its own device is received by return via a driver of a data bus and a receiver. At the same time, the data is produced in response to reception of the STI signal and supplied again to the self device. Thus the transfer of data is continued via a returned data bus, and a false TMI signal is produced when the data transferred reaches a prescribed quantity. Then the test is given to the end



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④公開 昭和61年(1986)3月27日

審査請求 未請求 発明の数 1 (全5頁)

④発明の名称 データ転送装置

①特 願 昭59-182116

②出 願 昭59(1984)8月31日

⑦発 明 者 高 田 重 光 東京都港区芝5丁目33番1号 日本電気株式会社内
⑧出 願 人 日本電気株式会社 東京都港区芝5丁目33番1号
⑨代 理 人 弁理士 内 原 晋

明 細 書

2. 発明の詳細な説明

(技術分野)

本発明はデータ転送装置、とくに、情報処理システム中で用いられる非応答確認方式のインタフェースをもつデータ転送装置に関するものである。

(従来技術)

情報処理システム中で用られるデータ転送装置を試験する場合には一般に、データ転送を行なう相手側装置と接続し、または試験器等を接続してインタフェースの試験を行なっている。

しかし、相手側装置に接続してインタフェースの試験を行ない障害が検出された場合にはその障害が相手相置側にあるのかまたは自己装置側にあるのかの切り分けが困難である。

また試験器等を接続して試験を行なうためにはシステムを停止させ、電源を落し、ケーブルを接続しなければならない。

この他に、データの折返機能を設け、データバスの試験のみを行なうという方法もあるが、この方法ではデータバスだけの動作はテストされるが、

1. 発明の名称

データ転送装置

2. 特許請求の範囲

相手装置との間でデータ転送要求信号と受付信号とにより非応答確認形式で送受しながらデータ転送を行なうデータ転送装置において、

相手装置とのインタフェースを切離すための第1の手段と、

相手装置からの前記データ転送要求信号の疑似信号を当該装置内で発生する第2の手段と、

前記データ転送要求信号により相手装置へ送出するデータを折返し受信する第3の手段とを設け、

前記第1の手段により相手装置とのインタフェースを切り離し前記第2および第3の手段により当該装置の試験を行なえるようにしたことを特徴とするデータ転送装置。

I 信号にかわる TMI 信号 (データ転送終了要求信号) の受信によって終了する。あるいはまた、自己装置からの STO 信号にかわる TMO 信号 (データ転送終了信号) によって終了させることもできる。

さて、第 3 図は本発明の一実施例を示すブロック図である。

本実施例は、テストモード指示回路 1, OPO ドライバ 2, 送信バッファ 3, セレクタ 4, 送信レジスタ 5, データドライバ 6, データレシーバ 7, 受信レジスタ 8, 受信バッファ 9, STI レシーバ 10, STO ドライバ 11, TMI レシーバ 12, TMO ドライバ 13, OR ゲート 14, 15, データ転送制御回路 16, 疑似 STI 発生回路 17, STI カウンタ 18, 比較器 19 および疑似 TMI 発生回路 20 を含んでいる。

本実施例による自己装置側のインタフェースのテストは以下のように行なわれる。

まずテストモード指示回路 1 にテストモードを

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出により何等影響を受けない。

さて、制御回路 16 は、STO 信号の発生とともにこれと同期して、ライン 1601 を介してデータバスに対するデータ送りの制御を行なう。すなわち、送信すべきデータは、送信バッファ 3 に、1 ワード分 (32 ビット分) が格納されているが、セレクタ 4 によって、まずこの中の最上位の 8 ビット分が選択され、これに対するパリティが付加されたものが、送信レジスタ 5 にラッチされ、データドライバ 6 を介してデータバス上に送出される。

かくしてデータバスに送出された転送データは、テストモード動作のために折返し受信がイネーブルされているデータレシーバ 7 を介して受信レジスタ 8 にラッチされる。これはパリティチェックが OK の場合にはパリティビットを除く 8 ビット分が、32 ビット幅をもつ受信バッファ 9 の最上位の 8 ビット分として格納される。

さて、制御回路 16 からライン 1600 を介して最初の STO 信号の供給を受けた疑似 STI 発生

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れを保持させる。

この結果、前述のように、相手装置側は、データバス, STI, STO, TMI, TMO 等の各信号線を相手装置側のインタフェースから切離し、これらの信号線の自由使用を自己装置側に許すことになる。

そこで自己装置側においては、疑似 STI 発生回路 17 に指令して、最初の疑似 STI 信号を発生させる。

この疑似 STI 信号は OR ゲート 15 を介して相手装置側からの STI 信号と全く同様にデータ転送制御回路 16 に供給される。

この結果、回路 16 は実際の STI 信号を受けたのと全く同様に動作し、前記 STI 信号から一定の時間間隔内に STO 信号を発生しこれをライン 1600 に送出する。これは STO ドライバ 11 を介し正常の STO 信号として相手装置側に送出されるとともに、疑似 STI 発生回路 17 にも供給される。勿論相手装置側はこの STO 信号の送

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回路 17 は、この供給された STO 信号を一定時間だけ遅らせることによって、次の疑似 STI 信号を生成し、前述のように、これを OR ゲート 15 を介して、制御回路 16 に供給する。

この結果、制御回路 16 は、実際の次の STI 信号を受信したのと同様に動作して、ライン 1600 を介して次の STO 信号を送出するとともに、ライン 1601 を介して、次の 8 ビット分のデータとそれに対するパリティビットを送信レジスタ 5 にラッチし、データドライバ 6 を介してデータバスに送出する。

前述のように、これはテストモードのためにイネーブルされているデータレシーバ 7 を介して折返され、受信レジスタ 8 にラッチされ、受信バッファ 9 の次の 8 ビット分として格納される。

以上のようにして、次々に疑似 STI 信号が発生され、これは実際の STI 信号と全く同様にデータ転送制御回路 16 に加えられ、この結果、制御回路 16 は、実際の場合と全く同様に STO 信号を生成し、また転送データの送出行なう。送

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イネブルされているデータレシーバ7を介して折返され、かくして送信バッファ3から送出されたワードデータは、受信バッファ9に折返され、上位装置で両者を比較することによりデータバスのインタフェースがチェックされる。

オアゲート15を介して次次に入力される疑似STI信号は、STIカウンタ18でカウントされており、このカウント出力は比較器19により予め定められたカウント数“C”と比較され両者が一致すると一致信号1900が出力される。この一致信号は前記回路17に供給されて、回路17による次の疑似STI信号の生成を抑制するとともに、疑似TMI発生回路20に供給され、疑似STI信号にかわる疑似TMI信号を生成する。

こうして生成された疑似TMI信号は、ORゲート14を介して、実際の相手装置側からのTMI信号と全く同様にデータ転送制御回路16に供給され、これにより回路16のTMI信号受信に伴うデータ転送終了動作がテストされる。

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はない。

例えば、上述の実施例においては、疑似STI信号および疑似TMI信号の合成はそれぞれのレシーバの内側に設けたORゲートにより行なうたが、これをそれぞれのレシーバの外側で行なうことによつてこれらのレシーバをテストの対象内に入れることもできる。同様に疑似STI発生回路17のSTO信号入力をSTOドライバ11の出力側からとることによりこのドライバ11をテストの対象として含ませるようにすることもできる。

またデータバスに転送されるデータ形式は一例を示したもので勿論これに限定される必要はない。(発明の効果)

以上のように本発明を用いると、相手装置側のインタフェースを切離して、相手装置と無関係に、しかもケーブル等の接続替や他の試験装置の接続を行わずに、データバスのみならず制御信号を含む殆んどすべてのインタフェースを実際の使用状態でテストできる機能を有するデータ転送装置を提供できる。

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信号を“0”とすることにより相手装置側のインタフェースを切離し、疑似STI発生回路17を用いて自己装置内で発生した疑似STI信号を相手装置側からの実際のSTI信号と全く同様に自己装置に供給し、これに回答して自己装置で生成される送出データをデータバスのドライバおよびレシーバを介して折返し受信し、またSTI信号受信に回答して生成してこれと再び自己装置に供給する。かくして折返されたデータバスによるデータ転送を継続し、転送データ数が定められた数に達すると疑似TMI信号を発生してこれによりTMI受信に対するデータ転送終了処理のテストを行う。

このようにして本実施例によると、相手装置に頼ることなく、しかもケーブル等の接続替を行わずに、データバスのみならず制御信号を含む殆んどすべてのインタフェースを実際の使用状態でテストできるデータ転送装置を提供できる。

なお、以上は本発明の一実施例を示したもので

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これによりデータ転送装置の保守を容易にし、信頼性の向上を達成できる。

4. 図面の簡単な説明

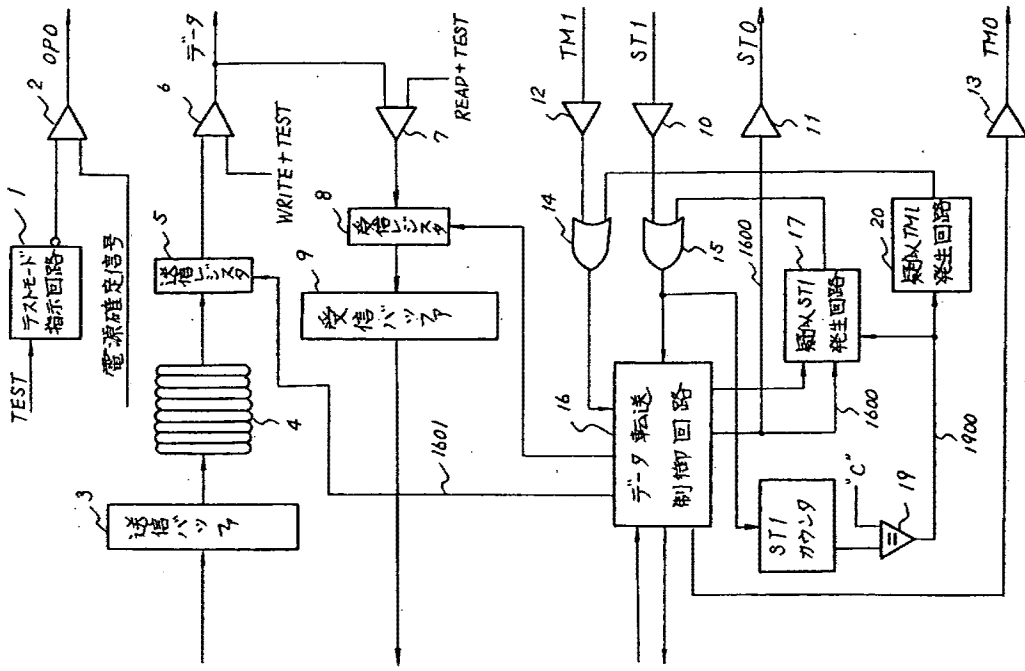
第1図は、非応答確認形式でデータ転送を行なうデータ転送方式の各種の信号を説明するためのブロック図、第2図は前記方式のデータ転送を説明するためのタイムチャートおよび第3図は本発明の一実施例を示すブロック図である。

図において、1……テストモード指示回路、2……OPOドライバ、3……送信バッファ、4……セレクタ、5……送信レジスタ、6……データドライバ、7……データレシーバ、8……受信レジスタ、9……受信バッファ、10……STIレシーバ、11……STOドライバ、12……TMIレシーバ、13……TMOドライバ、14、15……ORゲート、16……データ転送制御回路、17……疑似STI発生回路、18……STIカウンタ、19……比較器、20……疑似TMI発生回路。

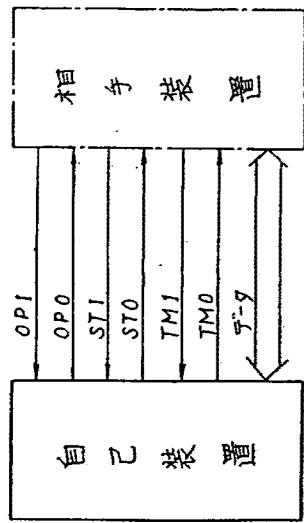
代理人 弁理士 内原 晋

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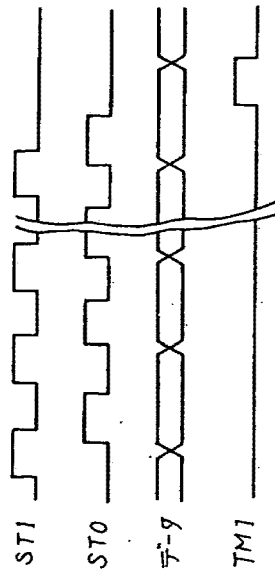
-14-



第 3 図



第 1 図



第 2 図



PATENT ABSTRACTS OF JAPAN

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(43) Date of publication of application: 07.12.89

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(71) Applicant: NEC CORP

(72) Inventor: HORIKAWA TAKASHI

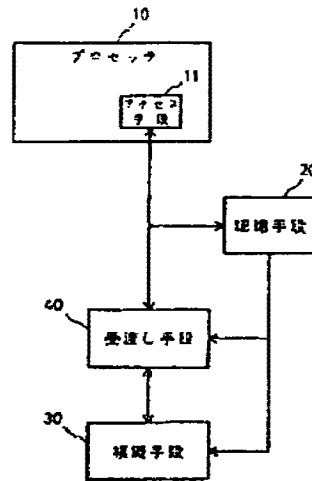
(54) INFORMATION PROCESSOR

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(57) Abstract:

PURPOSE: To realize the application of an input/output device so far in applicable by setting a delivery means to transfer the requests given from a processor and the execution results of a simulation means between these simulation means and processor.

CONSTITUTION: The input/output accesses given to an input/output device from a processor 10 are recognized by a recognizing means 20 and gives an instruction to a delivery means 40 to store the access contents. At the same time, the means 20 starts a simulation means 30. The means 30 receives the access contents given from the processor 10 via the means 40 and simulates the action of the input/output device based on said access contents. In this case, the means 30 sometimes uses an existing similar input/output device to simulate the action of the input/output device. The result of this simulation of the means 30 is stored in the means 40 and received by the processor 10. Thus an access is possible even to such input/output device that has no control program.



⑤Int. Cl. 4

識別記号

庁内整理番号

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G 06 F 13/12

3 4 0

H-7737-5B

審査請求 未請求 請求項の数 1 (全4頁)

⑭発明の名称 情報処理装置

⑰特 願 昭63-133802

⑱出 願 昭63(1988)5月31日

⑲発 明 者 堀 川 隆 東京都港区芝5丁目33番1号 日本電気株式会社内

⑳出 願 人 日本電気株式会社 東京都港区芝5丁目33番1号

㉑代 理 人 弁理士 岩佐 義幸

明 細 書

1. 発明の名称

情報処理装置

2. 特許請求の範囲

(1) 入出力装置に対するアクセス手段を内蔵するプロセッサを持つ情報処理装置において、
 特定の入出力装置に対するアクセスが行われていることを認識する認識手段と、
 入出力装置の動作を模擬する模擬手段と、
 模擬手段とプロセッサとの間でプロセッサからの要求および模擬手段における実行結果をやりとりするための受渡し手段とを有する情報処理装置。

3. 発明の詳細な説明

(産業上の利用分野)

本発明は、入出力装置に対しプロセッサの入出力アクセスにより制御を行う情報処理装置に関し、特に入出力装置模擬機能を有する情報処理装置に関する。

(従来の技術)

プロセッサから入出力装置をアクセスするためには、プロセッサの入出力アクセスにより入出力装置にコマンドを送るか、入出力装置が解釈できるチャンネル・プログラムを作成して入出力装置を起動する必要がある。前者の方法は、主にパーソナル・コンピュータなどの小規模な計算機システムで採用されている方法であり、後者は汎用計算機など比較的大規模な計算機システムで採用されている方式である。

ところで、一般に、情報処理装置で複数の入出力装置を持つのが通常であるが、そのように複数の入出力装置を持つ場合、プロセッサの入出力アクセスにより制御する方式を採用した情報処理装置では、その入出力装置個々によって制御方法が異なる。このため、従来、この方式による情報処理装置では、個々の入出力装置毎に、制御プログラムを用意することによって、これに対処している。

(発明が解決しようとする課題)

しかし、プロセッサの持つ入出力アクセスによ

装置では、上述のように入出力装置毎に制御プログラムを用意する必要があるため、制御プログラムが用意されていない入出力装置に対してはこれを使用することができない。

すなわち、制御方法が少しでも異なると、別個に制御プログラムを用意しなければならないのであり、入出力装置の動作が類似していても、すなわち、例えば使用しようとする入出力装置の動作が既設の入出力装置のそれと類似していたとしても、制御プログラムを共用することができなかつた。このため、情報処理装置に入出力装置を追加しようとした場合、同種の装置を制御する制御プログラムを流用することができず、別個に制御プログラムを用意しなければならなかつた。

本発明の目的は、情報処理装置が持っている制御プログラムにより類似の入出力装置を制御することを可能とし、もって、制御プログラムが用意されていない入出力装置に対してもアクセスを行うことが可能な情報処理装置を提供することにある。

もある。模擬手段により模擬された結果は受渡し手段に格納され、プロセッサがこれを受け取る。

〔実施例〕

次に、本発明について図面を参照して説明する。

第1図は本発明の基本構成を示す機能ブロック図である。

本発明に従う情報処理装置は、プロセッサ10の他、認識手段20、模擬手段30及び受渡し手段40を備えている。

プロセッサ10は、入出力装置に対するアクセス手段11を内蔵するプロセッサであり、また、認識手段20は、特定の入出力装置に対するアクセスが行われていることを認識する手段である。

模擬手段30は、入出力装置の動作を模擬する手段であり、受渡し手段40は、模擬手段30とプロセッサ10との間でプロセッサ10からの要求および模擬手段30における実行結果をやりとりするための手段である。

このように、入出力装置に対するアクセス手段11を内蔵するプロセッサ10を持つ情報処理装置に

〔課題を解決するための手段〕

本発明は、入出力装置に対するアクセス手段を内蔵するプロセッサを持つ情報処理装置において、

特定の入出力装置に対するアクセスが行われていることを認識する認識手段と、

入出力装置の動作を模擬する模擬手段と、

模擬手段とプロセッサとの間でプロセッサからの要求および模擬手段における実行結果をやりとりするための受渡し手段とを持たせたことを特徴としている。

〔作用〕

プロセッサが入出力装置に対し入出力アクセスを行うと、認識手段がこれを認識し受渡し手段にアクセスの内容を格納する様に指示するとともに、模擬手段を起動する。模擬手段では、受渡し手段よりプロセッサからのアクセス内容を受け取り、この内容にもとづいて入出力装置の動作を模擬する。この場合、模擬手段が実在する類似の入出力装置を使用して入出力装置の動作を模擬すること

において、特定の入出力装置に対するアクセスが行われていることを認識する認識手段20と、入出力装置の動作を模擬する模擬手段30と、模擬手段30とプロセッサ10との間でプロセッサ10からの要求および模擬手段30における実行結果をやりとりするための受渡し手段40を持たせることにより、入出力装置の動作を模擬する。

第2図は本発明の一実施例を示すブロック図である。

本実施例は、通常の入出力装置が2つの場合の例を示している。第2図においてプロセッサ10内部のアクセス手段11は既述したように入出力装置に対し入出力アクセスを行う部分である。また、プロセッサ10は受渡し手段40からウェイト信号S1を受け付ける。この信号がアクティブの場合、プロセッサ10は入出力アクセスの完了をウェイト信号S1がインアクティブになるまで保留する。

この情報処理装置では、通常の入出力装置50、51に対するアクセスは、アクセス手段11に接続されたバスを通して行われる。バスにはアドレス

バス111とデータ・バス112がある。プロセッサ10が入出力装置に対してアクセスを行うと、アクセス手段11はアドレス・バス111に、この入出力装置のアドレスを出力する。このアドレスによりアクセス対象である入出力装置が区別される。

入出力装置の動作を模擬する模擬手段30は通常入出力装置に類似した入出力装置を持つ。類似入出力装置60は、情報処理装置が持つ制御プログラムの対象となっている装置に類似した装置であるが、直接対象となっていないため、従来の手法では制御プログラムで扱えない装置である。

特定の入出力装置に対するアクセスが行われていること、すなわち後述のように目的とする入出力装置に対しプロセッサ10がアクセスしていることを認識する認識手段20、および模擬手段30とプロセッサ10との間でプロセッサ10からの要求、模擬手段30における実行結果をやりとりするための受渡し手段40もバスに接続される。

入出力装置の動作の模擬は、次のようにしてなされる。

して、模擬手段30では、受渡し手段40よりプロセッサ10からのアクセス内容を受け取り、この内容にもとづいて入出力装置の動作を模擬する。

すなわち、まず、受渡し手段40では上記の情報を取り込むとともに、プロセッサ10のアクセスが入力アクセスの場合には、模擬手段30から模擬結果を渡されるまでウェイト信号S1をアクティブにしてプロセッサ10をウェイトさせる。

一方、模擬手段30が認識手段20により起動されると、上記の受渡し手段40よりアドレス・バス111とデータ・バス112の値およびプロセッサ10が行っているのが入力アクセスであるか出力アクセスであるのかの区別を受け取って、プロセッサ10からの発行された入出力アクセスを解釈する。模擬手段30では、この解釈結果に従い自分の制御する類似入出力装置を動作させる。

プロセッサ10のアクセスが出力アクセスの場合、模擬手段30はプロセッサ10の出力するアドレスおよびデータを受け取り、これを解釈することによりプロセッサ10が行う入出力装置の制御コマンド

プログラムにより類似の入出力装置を制御することを可能にするため、目的とする入出力装置に対しプロセッサ10がアクセスしていることを認識手段20で認識し、模擬手段30は入出力装置の動作を模擬し、受渡し手段40では、模擬手段30とプロセッサ10との間でプロセッサ10からの要求および模擬手段30における実行結果をやりとりする。

以下、具体的に説明すると、認識手段20はアドレス・バス111を常に監視しており、模擬対象である入出力装置のアドレスがアドレス・バス111に出力されると、受渡し手段40に対しアドレス・バス111とデータ・バス112の値およびプロセッサ10が行っているのが入力アクセスであるか出力アクセスであるのかの区別を取り込むように指示するとともに、模擬手段30を起動する。

このようにプロセッサ10が入出力装置に対し入出力アクセスを行うと、認識手段20がこれを認識し受渡し手段40にアクセスの内容を格納する様に指示するとともに、模擬手段30を起動する。しか

を認識する。さらに模擬手段30では、この結果に従って、類似入出力装置に対し同様の役割を果たすコマンドを発行する。

プロセッサ10のアクセスが入力アクセスの場合、模擬手段30ではプロセッサ10が受け取るべきデータを作成し、これを受渡し手段40に模擬結果として渡す。受渡し手段40では、模擬結果を受け取ると、データ・バス112にこれを出力するとともにウェイト信号S1をインアクティブにする。プロセッサ10は、ウェイト信号S1がインアクティブになった時点におけるデータ・バス112の値すなわち模擬結果を入力アクセスの結果として受け取る。

以上の操作により、プロセッサ10は制御プログラムが用意されていない入出力装置に対しても、動作が類似する入出力装置の制御プログラムを使用してアクセスを行うことが可能になる。

従って、また、情報処理装置に入出力装置を追加しようとするときでも、従来のように同種の装置を制御する制御プログラムを流用することがで

ればならないということもない。

〔発明の効果〕

以上説明したように、本発明によれば、プロセッサの入出力アクセスにより入出力装置を制御する方式を採用した情報処理装置において、制御プログラムが用意されていない入出力装置に対しても、動作が類似する入出力装置の制御プログラムを使用してアクセスを行うことが可能になる。

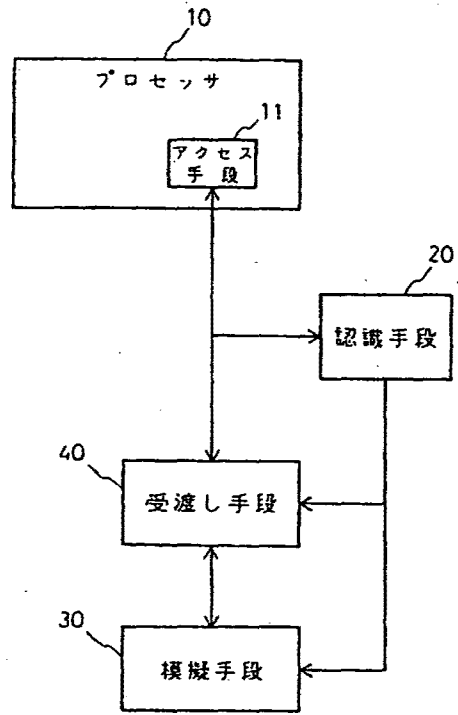
これにより、従来は使用できなかった入出力装置も使用することが可能になる。

4. 図面の簡単な説明

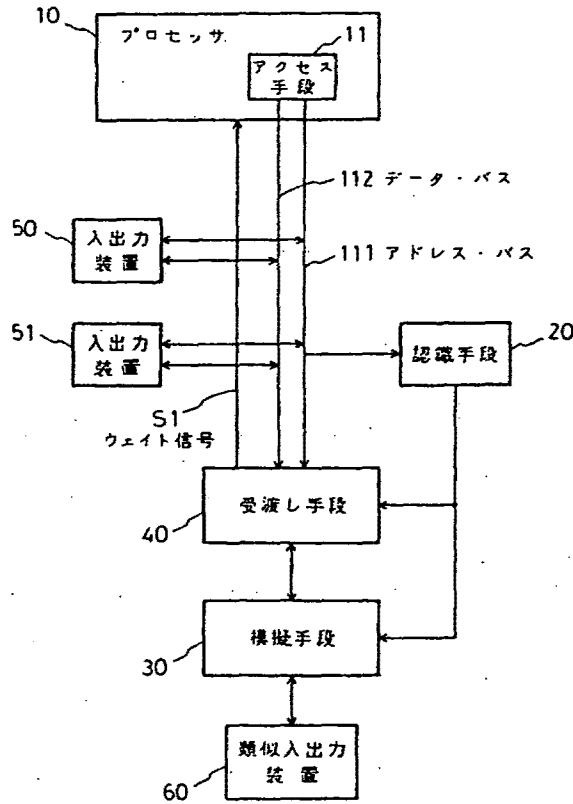
第1図は本発明の基本構成を示す図、

第2図は本発明の一実施例に係る情報処理装置の構成を示す図である。

- 10…プロセッサ
- 11…アクセス手段
- 20…認識手段
- 30…模擬手段
- 40…受渡し手段



第1図



第2図



PATENT ABSTRACTS OF JAPAN

(11) Publication number: **01293404 A**

(43) Date of publication of application: **27.11.89**

(51) Int. Cl. **G05B 19/04**
G06F 3/00

(21) Application number: **63124483**

(22) Date of filing: **20.05.88**

(71) Applicant: **KOYO ELECTRON IND CO LTD**

(72) Inventor: **IKUTA KOJI**
WATANABE YUICHI

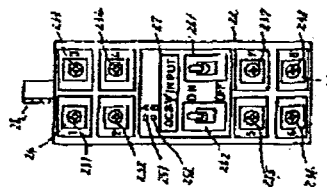
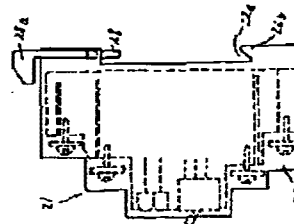
(54) PROGRAMMABLE CONTROLLER AND INPUT/OUTPUT INTERFACE

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(57) Abstract:

PURPOSE: To attain the laborsaving of fitting by providing an input interface having a circuit to output a signal from input equipment to an output terminal when a signal to select it is given from a programmable controller main body.

CONSTITUTION: An input interface 21 having simulation signal generating means 261 and 262 to simulate a signal from input equipment and a circuit to output a signal from the input equipment to the output terminal when a signal to select it from a programmable controller main body is given is provided. When a simulation signal is generated from the input interface 21, this is inputted to the programmable controller main body. Thus, the simulation at the time of rising is executed. When the selecting signal from the programmable controller main body is received, the signal from the input equipment is inputted to the programmable controller main body and therefore, the control by it is executed. Thus, at the time of fitting, the drastical laborsaving can be executed.





PATENT ABSTRACTS OF JAPAN

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(43) Date of publication of application: 26.04.90

(51) Int. Cl

G06F 13/12
G06F 13/10

(21) Application number: 63268616

(71) Applicant: NEC CORP

(22) Date of filing: 24.10.88

(72) Inventor: HORIKAWA TAKASHI

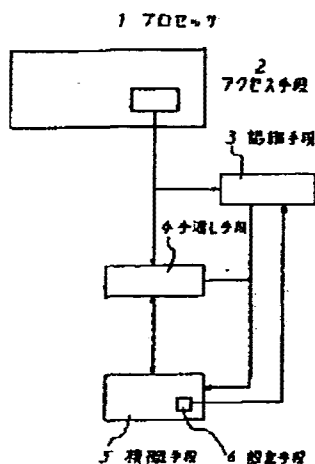
(54) INFORMATION PROCESSOR HAVING INPUT/OUTPUT DEVICE SIMULATING FUNCTION

(57) Abstract:

PURPOSE: To periodically use an information processor whose using environment is drastically improved by changing an I/O device to be recognized without replacing a recognizing means constituted of a hardware.

CONSTITUTION: A simulating means 5 has a setting means 6 for the recognizing means 3. When the I/O device to be simulated is changed by the means 5, the means 6 is started to set up the means 3 to change the I/O device to be recognized and I/O access to the I/O device set up by the means 5 is recognized by a processor 1, so that the I/O device to be simulated can be changed. Consequently, I/O constitution can be changed during the operation of information processing and an information processor whose using environment is improved can be periodically used.

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⑤ Int. Cl.⁵

G 06 F 13/12
13/10

識別記号

3 4 0 H
3 3 0 C

庁内整理番号

7737-5B
7737-5B

③ 公開 平成2年(1990)4月26日

審査請求 未請求 請求項の数 1 (全5頁)

④ 発明の名称 入出力装置模擬機能を有する情報処理装置

① 特 願 昭63-268616

② 出 願 昭63(1988)10月24日

⑦ 発 明 者 堀 川 隆 東京都港区芝5丁目33番1号 日本電気株式会社内

⑧ 出 願 人 日本電気株式会社 東京都港区芝5丁目33番1号

⑨ 代 理 人 弁理士 内 原 晋

明 細 書

発明の名称

入出力装置模擬機能を有する情報処理装置

特許請求の範囲

入出力装置に対するアクセス手段を内蔵するプロセッサと、特定の入出力装置に対するアクセスが行なわれていることを認識する認識手段と、前記入出力装置の動作を模擬する模擬手段と、該模擬手段と前記プロセッサとの間でプロセッサからの要求および模擬手段における実行結果をやりとりするための受渡し手段とを持つ情報処理装置において、前記模擬手段に認識手段に対する設定手段を含むことにより、模擬対象入出力装置を変更可能にしたことを特徴とする入出力装置模擬機能を有する情報処理装置。

発明の詳細な説明

(産業上の利用分野)

本発明は、入出力装置模擬機能を有する情報処

理装置に関し、特に入出力装置に対しプロセッサの入出力アクセスにより制御を行なう情報処理装置に関する。

(従来の技術)

プロセッサから入出力装置をアクセスするためには、プロセッサの入出力アクセスにより入出力装置にコマンドを送るか、入出力装置が解釈できるチャンネル・プログラムを作成して入出力装置を起動する必要がある。前者の方法は、主にパーソナル・コンピュータなどの小規模な計算機システムで採用されている方法であり、後者は汎用計算機など比較的・大規模な計算機システムで採用されている方式である。一般に、パーソナル・コンピュータでは、様々なオペレーティング・システムが提供されているが、同時刻においては単一のオペレーティング・システムしか動作しないため、異なるオペレーティング・システムを使用するユーザはオペレーティング・システムを変更するたびにパーソナル・コンピュータを再起動する必要があった。このような不便を解消するために、複

るマルチOSワークステーションが出現している。

一般に、オペレーティング・システムは単独で動くことを前提に作られているため、入出力装置を他のオペレーティング・システムと共用することは考慮されていない。このため、マルチOSワークステーションにおいては、第2図に示すように、各オペレーティング・システム10が動作するプロセッサ1が入出力装置に対して入出力アクセスを行なっていることをアクセス手段2を発行する入出力装置アドレスにより認識する認識手段3、ホスト・プロセッサ12上で動作しワークステーション全体を管理するオペレーティング・システム11に対して処理結果を通知するための受渡し手段4、および、ホスト・オペレーティングシステム11中に入出力装置の動作を模擬する模擬手段5を持たせることにより、各オペレーティング・システム10が入出力装置に対して発行する入出力アクセスを模擬していた。模擬手段にお

するプロセッサと、特定の入出力装置に対するアクセスが行なわれていることを認識する認識手段と、前記入出力装置の動作を模擬する模擬手段と、該模擬手段と前記プロセッサとの間でプロセッサからの要求および模擬手段における実行結果をやりとりするための受渡し手段とを持つ情報処理装置において、前記模擬手段に認識手段に対する設定手段を有している。

本発明は模擬手段で模擬対象入出力装置が変更されると設定手段を起動し、認識手段に対して認識する入出力装置を変更するように設定し、かつプロセッサから模擬手段より設定された入出力装置に対する入出力アクセスを認識することにより、模擬対象入出力装置の変更を可能にする。

〔実施例〕

以下、本発明の実施例について図面を参照して説明する。

第2図は本発明の一実施例を示すブロック図である。第2図において、まず、本実施例により、入出力装置の模擬を行なう方法について説明する

なっている装置に類似した類似入出力装置13を使用することもあり、また、このような入出力装置を全く使用しないこともある。

〔発明が解決しようとする課題〕

従来のこの種の情報処理装置は認識手段が、特定の入出力装置に対するアクセスを認識し、受渡し手段および模擬手段を起動するが、認識対象とする入出力装置が固定されているため、模擬対象入出力装置を変更するためには、認識手段を交換しなければならなかった。従って、情報処理装置の動作中に入出力装置構成を変更することが不可能であった。また、入出力装置の構成が異なる装置については、各々に対して認識手段を用意する必要があるため、ハードウェア設計コストおよび、入出力装置構成の変更による保守コストが大ききという問題点があった。

〔課題を解決するための手段〕

本発明の入出力装置模擬機能を有する情報処理装置は、入出力装置に対するアクセス手段を内蔵

と、プロセッサ1内部のアクセス手段2は入出力装置に対し入出力アクセスを行なう部分である。また、本プロセッサ1はウェイト信号16を受け付ける。この信号がアクティブの場合、プロセッサ1は入出力アクセスの完了をウェイト信号16がインアクティブになるまで保留する。

本情報処理装置では、通常の入出力装置に対するアクセスは、アクセス手段2に接続されたバスを通して行なわれる。バスにはアドレス・バス14とデータ・バス15がある。プロセッサ1が入出力装置に対してアクセスを行なうと、アクセス手段2はアドレス・バス14に、この入出力装置のアドレスを出力する。このアドレスによりアクセス対象である入出力装置が区別される。

認識手段3および受渡し手段4もバスに接続される。認識手段3はアドレス・バス14を常に監視しており、模擬対象である入出力装置のアドレスがアドレス・バス14に出力されると、認識手段出力25を有効にすることにより、受渡し手段4に対してアドレス・バス14とデータ・バス

入力アクセスであるか出力アクセスであるのかの区別を取り込むように指示するとともに、模擬手段5を起動する。

受渡し手段1では上記の情報を取り込むとともに、プロセッサ1のアクセスが入力アクセスの場合には、模擬手段5から模擬結果を渡されるまでウェイト信号16をアクティブにしてプロセッサ1をウェイトさせる。

模擬手段5はシステム全体を管理するホスト・プロセッサ12に内蔵される。ここでは、プロセッサ1がアクセスを行なっている入出力装置の動作を模擬し、その結果を受渡し手段4を通じてプロセッサ1に反映させる。この模擬動作に際しては、模擬対象入出力装置に類似した入出力装置を使用することもあり、また、全く使用しないこともある。

模擬手段5が認識手段3により起動されると、受渡し手段4よりアドレス・バス14とデータ・バス15の値およびプロセッサ1が行なっている

におけるデータ・バス15の値すなわち模擬結果を入力アクセスの結果として受け取る。以上の操作により、入出力装置の模擬動作を行なうことが可能となる。

次に、模擬対象入出力装置を変更するときの操作を説明する。第3図は本発明の一実施例における認識手段3への設定方法を示すブロック図である。

認識手段3は、アドレス選択部20と判別部21から構成される。アドレス選択部20には、アクセス手段2から送られる入出力装置のアドレスを送るためのアドレス・バス14と設定手段6から送られる設定アドレス・バス22が接続され、判別部21へ送るアドレスを選択をする。アドレス選択部20においては、書き込み指示24が無効となっている通常状態では、アクセス手段2から送られるアドレスを選択して判別部21に送る。判別部21では、アドレス選択部20から送られたアドレスで示される入出力装置が模擬対象入出力装置かどうかを判別する。

の区別を受け取って、プロセッサ1からの発行された入出力アクセスを解釈する。模擬手段5では、この解釈結果に従い入出力装置の模擬を行なう。このとき必要であれば、自分の制御する類似入出力装置13を動作させる。

プロセッサ1のアクセスが出力アクセスの場合、模擬手段5はプロセッサ1の出力するアドレスおよびデータを受け取り、これを解釈することによりプロセッサ1が行なう入出力装置の制御コマンドを認識する。さらに模擬手段5では、この結果に従って、類似入出力装置13に対し同様の役割を果たすコマンドを発行する。

プロセッサ1のアクセスの場合、模擬手段5ではプロセッサ1が受け取るべきデータを作成し、これを受渡し手段4に模擬結果として渡す。受渡し手段4では、模擬手段を受け取ると、データ・バス15にこれを出力するとともにウェイト信号16をインアクティブにする。プロセッサ1は、ウェイト信号16がインアクティブになった時点

模擬対象入出力装置が変更されて新たに追加されると、設定手段6では変更された入出力装置のアドレスを設定アドレス・バス22、模擬対象であることを示す値を設定データ・バス23に送出し、書き込み指示24を有効にする。アドレス選択部20では、書き込み指示24が有効になると、設定アドレス・バス22から送られるアドレスを判別部21に送る。判別部21では、書き込み指示24が有効になると、アドレス選択部20から送られるアドレスで示される入出力装置についての判別結果を設定データ・バス23で送られる内容に設定する。判別部21では、この設定操作以後に行なわれるアクセス手段2から当該入出力装置に対する入出力アクセスに対しては、設定操作により設定された値、すなわち、模擬対象であることを示す値を出力する。この出力は、認識手段出力25となり、受渡し手段4および模擬手段5を起動する。これにより、当該入出力装置を模擬対象入出力装置に追加することが可能となる。

と、設定手段6では模擬対象でないことを示す値を設定データ・バス23に送出して上記の書き込み効果を行なう。この操作以後、アクセス手段2により当該入出力装置に対して入出力アクセスが行なわれると上記の動作により、判別部21では模擬対象でないことを示す値を出力する。この値は、認識手段出力25となり、受渡し手段4および模擬手段5は起動されない。これにより、当該入出力装置を模擬対象入出力装置から削除することが可能となる。

以上の操作により、認識対象とする入出力装置を追加または削除することが可能となる。

〔発明の効果〕

本発明は、入出力装置を模擬する情報処理装置において、ハードウェアで構成される認識手段を交換することなく認識対象入出力装置を変更することが可能となる。このため、情報処理装置の動作中に入出力装置構成の変更が可能となり、使用環境が格段に改善された情報処理装置を定期要す

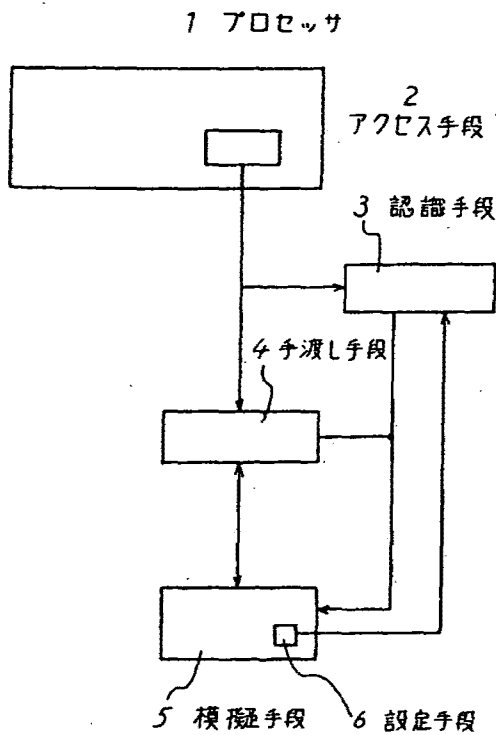
また、入出力装置の構成が異なる装置についても同一のハードウェアを使用することが可能になるため、ハードウェア設計コストおよび、入出力装置構成の変更による保守コストを大幅に削減することも可能になる。

図面の簡単な説明

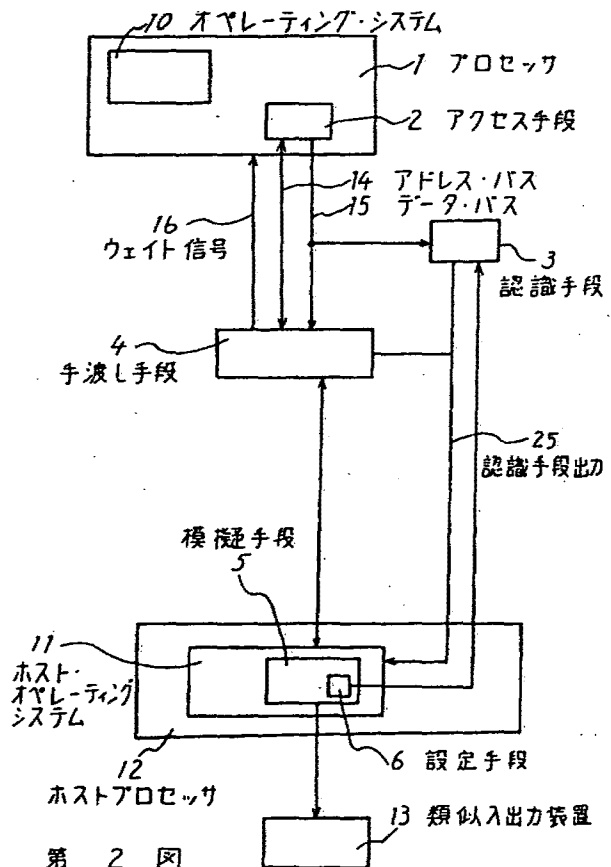
第1図は、本発明の一実施例における基本構成を示す図、第2図は、本発明の一実施例である情報処理装置の構成を示す図、第3図は、本発明の一実施例のける認識手段への設定方法を示すブロック図である。

1…プロセッサ、2…アクセス手段、3…認識手段、4…受渡し手段、5…模擬手段、6…設定手段。

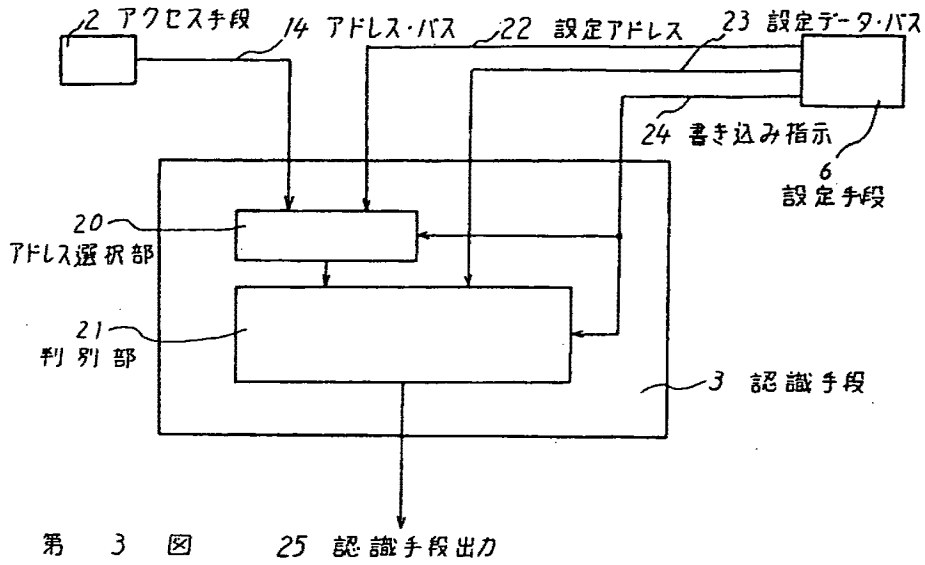
代理人 弁理士 内 原 晋



第 1 図



第 2 図





PATENT ABSTRACTS OF JAPAN

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(54) INPUT/OUTPUT INTERFACE EXTENSION CONTROL METHOD AND CHANNEL SIDE EXTENSION DEVICE AND INPUT/OUTPUT SIDE EXTENSION DEVICE THEREFOR

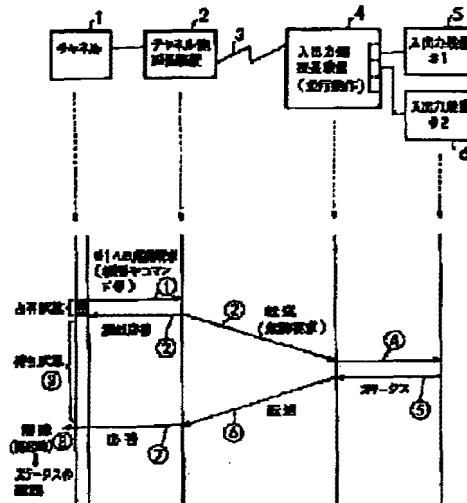
side extension device 4, and the execution of the pre-fetch processing of the chain write command from the channel 1.

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(57) Abstract:

PURPOSE: To improve channel working efficiency for plural input/output devices and line working efficiency for a chain command and to heighten the performance of the whole system.

CONSTITUTION: A channel side extension device 2 receiving a start-up request to a selection target input/output device #1 from a channel 1 sends a false response to the channel 1 without awaiting the status (information with respect to the execution of a command) of the device #1 with respect to the start-up request, and transfers the start-up request to an input/output side extension device #4. The channel 1 receiving the false response performs start-up processing for the device #1 by setting an awaiting state capable of issuing the start-up request to another input/output device, and canceling the state based on the status. The channel side extension device 2 sets the channel 1 in the awaiting state at a stage receiving data when the data is transferred after the start-up processing is performed. Also, the device 2 performs the advance execution of the chain read command by the input/output



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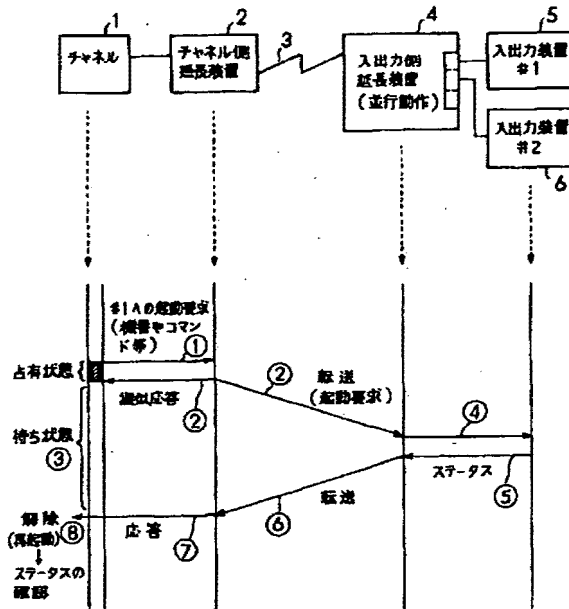
(54) 【発明の名称】 入出力インタフェース延長制御方法並びにそのためのチャンネル側延長装置及び入出力側延長装置

(57) 【要約】

【目的】 複数の入出力装置に対するチャンネル使用効率や連鎖コマンドに対する回線使用効率を向上させ、システム全体の性能を高めることを目的とする。

【構成】 選択対象入出力装置#1への起動要求をチャンネル1から受け取ったチャンネル側延長装置2は、この起動要求に関する#1のステータス(コマンドの実行に関する情報)を待たずに疑似応答をチャンネル1に送り、かつ起動要求を入出力側延長装置4に転送する。疑似応答を受け取ったチャンネル1は、#1に対する起動処理を、別の入出力装置への起動要求の発行が可能な形の待ち状態とし、前記ステータスに基づいてこれを解除する。起動処理後のデータ転送のときにもチャンネル側延長装置2がこのデータを受け取った段階でチャンネル1を待ち状態としている。また、連鎖リードコマンドの入出力側延長装置4での先行実行や、連鎖ライトコマンドのチャンネル1からの先取り処理も実行している。

本発明の原理説明図(その1)



【チャンネル1は、待ち状態の間、他の入出力装置6(#2)への起動要求信号を発行することができる】

【特許請求の範囲】

【請求項1】 チャネルと入出力装置との間に、入出力インタフェース用のチャネル側延長装置および入出力側延長装置と、これら延長装置間を接続する回線とを設けた入出力インタフェース延長制御方法において、

前記入出力側延長装置として、前記入出力装置に対して並行動作する機能を備えたものを用い、選択対象入出力装置への起動要求を前記チャネルから受け取った前記チャネル側延長装置は、前記起動要求に関する前記選択対象入出力装置の第1のステータスが転送されてくるのを待たずに第1の疑似応答を前記チャネルに送るとともに、前記起動要求を前記入出力側延長装置に転送し、

第1の疑似応答を受け取った前記チャネルは、前記選択対象入出力装置に対する起動処理を、これとは別の前記入出力装置への起動要求の発行が可能な形の待ち状態とし、また、第1のステータスに基づいて前記チャネル側延長装置から送られる第1の応答で前記待ち状態を解除するようにしたことを特徴とする入出力インタフェース延長制御方法。

【請求項2】 前記選択対象入出力装置のビジジを擬似的に示す信号を第1の疑似応答として用いたことを特徴とする請求項1記載の入出力インタフェース延長制御方法。

【請求項3】 前記起動処理終了後の、前記チャネルから前記選択対象入出力装置へのデータ転送に際し、前記チャネル側延長装置は、前記チャネルからの前記データの受け取り終了に基づいて、前記データ転送に関する前記選択対象入出力装置の第2のステータスが転送されてくるのを待たずに第2の疑似応答を前記チャネルに送るとともに、前記入出力側延長装置へのデータ転送を行ない、

第2の疑似応答を受け取った前記チャネルは、前記選択対象入出力装置へのデータ転送処理を、これとは別の入出力装置へのデータ転送が実行できる形の仮終了状態とし、また、第2のステータスに基づいて前記チャネル側延長装置から送られる第2の応答で前記データ転送処理を終えることを特徴とする請求項1または2記載の入出力インタフェース延長制御方法。

【請求項4】 前記選択対象入出力装置におけるチャネルエンドを擬似的に示す信号を第2の疑似応答として用い、また前記選択対象入出力装置におけるデバイスエンドを示す信号を第2の応答として用いることを特徴とする請求項3記載の入出力インタフェース延長制御方法。

【請求項5】 チャネルと入出力装置との間に、入出力インタフェース用のチャネル側延長装置および入出力側延長装置と、これら延長装置間を接続する回線とを設けた入出力インタフェース延長制御方法において、前記入出力側延長装置は、前記チャネル側から発行される連鎖指定の第1のリードコマンドのそれぞれを個々に

処理するとともにその総数を予測値として記憶しておき、続いて前記チャネル側から連鎖指定の第2のリードコマンドが発行されたときには、当該予測値に基づく所定数のリードコマンドを前記入出力装置に先行的に発行するとともにこれによって得られるリードデータを順次前記チャネル側延長装置に転送し、前記チャネル側延長装置は、これらのリードデータを、第2のリードコマンドの中の所定のものに順番に対応付けた形で前記チャネルに転送するようにしたことを特徴とする入出力インタフェース延長制御方法。

【請求項6】 前記チャネル側延長装置は、前記予測値よりも第2のリードコマンドの数 N (N は正の整数)の方が小さいために余分となった順番の前記リードデータを廃棄するとともにこの N の値を前記入出力側延長装置に通知し、前記入出力側延長装置は、前記入出力装置を N 番目の前記リードデータの読み出し直後の状態に設定するためのコマンドを発行することを特徴とする請求項5記載の入出力インタフェース延長制御方法。

【請求項7】 前記チャネル側延長装置は、前記予測値よりも第2のリードコマンドの数 N (N は正の整数)の方が大きいために前記リードデータの対応付けができない順番の当該リードコマンドを前記入出力側延長装置に発行し、

前記入出力側延長装置は、このリードコマンドを第1のリードコマンドのときのように個々に処理することを特徴とする請求項5記載の入出力インタフェース延長制御方法。

【請求項8】 前記入出力側延長装置は、前記予測値を、前記チャネル側延長装置から通知される N に変更することを特徴とする請求項6または7記載の入出力インタフェース延長制御方法。

【請求項9】 チャネルと入出力装置との間に、入出力インタフェース用のチャネル側延長装置および入出力側延長装置と、これら延長装置間を接続する回線とを設けた入出力インタフェース延長制御方法において、前記チャネル側延長装置は、自装置への第1のライトデータの転送処理についての擬似的な第1の終了ステータスを前記チャネルに通知した際に、ライトコマンド連鎖の指示がある場合には第1のライトデータの処理に関する前記入出力装置の応答を待たずに第2の終了ステータスを前記チャネルに通知して次の第2のライトコマンドおよび第2のライトデータの先取り処理へと移行し、また前記指示がない場合には前記応答に基づく第2の終了ステータスを前記チャネルに通知することを特徴とする入出力インタフェース延長制御方法。

【請求項10】 前記第1の終了ステータスとして前記入出力装置のチャネルエンドを擬似的に示す信号を用い、また前記第2の終了ステータスとして前記入出力装置のデバイスエンドを示す信号を用いることを特徴とす

る請求項9記載の入出力インタフェース延長制御方法。

【請求項11】 入出力装置への起動要求をチャンネルから受け取って転送するチャンネル側延長装置において、前記起動要求を受けた段階で、前記チャンネルの選択対象入出力装置に対する起動処理を、これとは別の前記入出力装置への前記起動要求の発行が可能な形の、待ち状態にするための第1の疑似応答を前記チャンネルに送り、前記起動要求に関する前記選択対象入出力装置の第1のステータスを受け取った段階で、前記待ち状態を解除するための、当該ステータスに基づく第1の応答を前記チャンネルに送る機能を備えるようにしたことを特徴とするチャンネル側延長装置。

【請求項12】 前記選択対象入出力装置のビジーを疑似的に示す信号を第1の疑似応答として用いる機能を併せ持つことを特徴とする請求項11記載のチャンネル側延長装置。

【請求項13】 前記起動処理終了後の前記選択対象入出力装置へのデータ転送に際して、前記チャンネルからの前記データの受け取りが終了した段階で、前記選択対象入出力装置に対する前記データ転送処理を、これとは別の前記入出力装置へのデータ転送が可能な形の、仮終了状態とするための第2の疑似応答を前記チャンネルに送り、前記データ転送に関する前記選択対象入出力装置の第2のステータスを受け取った段階で、前記データ転送処理を終えるための、当該ステータスに基づく第2の応答を前記チャンネルに送る機能を併せ持つことを特徴とする請求項11または12記載のチャンネル側延長装置。

【請求項14】 前記選択対象入出力装置におけるチャンネルエンドを疑似的に示す信号を第2の疑似応答として用い、また、前記選択対象入出力装置におけるデバイスエンドを示す信号を第2の応答として用いる機能を併せ持つことを特徴とする請求項13記載のチャンネル側延長装置。

【請求項15】 チャンネルからリードコマンドを取り込んで入出力側延長装置に発行するチャンネル側延長装置において、前記入出力側延長装置が、連鎖指定の第1のリードコマンドのそれぞれを個々に処理するとともにその総数を予測値として記憶し、続いて連鎖指定の第2のリードコマンドが発行された場合に、当該予測値に基づく所定数のリードコマンドを前記入出力装置に先行的に発行して得られるリードデータを転送してきたとき、当該リードデータを、第2のリードコマンドの中の所定のものに順番に対応付けた形で前記チャンネルに転送する機能を備えるようにしたことを特徴とするチャンネル側延長装置。

【請求項16】 前記予測値よりも第2のリードコマンドの数 N (N は正の整数)の方が小さいために余分となった順番の前記リードデータを廃棄するとともにこの N の値を前記入出力側延長装置に通知する機能を併せ持つ

ことを特徴とする請求項15記載のチャンネル側延長装置。

【請求項17】 前記予測値よりも第2のリードコマンドの数 N (N は正の整数)の方が大きいために前記リードデータの対応付けができない順番の当該リードコマンドを前記入出力側延長装置に発行する機能を併せ持つことを特徴とする請求項15記載のチャンネル側延長装置。

【請求項18】 チャンネルからライトコマンドを取り込んで入出力側延長装置に発行するチャンネル側延長装置において、

自装置への第1のライトデータの転送処理についての擬似的な第1の終了ステータスを前記チャンネルに通知した際に、ライトコマンド連鎖の指示がある場合には第1のライトデータの処理に関する入出力装置の応答を待たずに第2の終了ステータスを前記チャンネルに通知して次の第2のライトコマンドおよび第2のライトデータの先取り処理へと移行し、また前記指示がない場合には前記応答に基づく第2の終了ステータスを前記チャンネルに通知する機能を備えるようにしたことを特徴とするチャンネル側延長装置。

【請求項19】 前記第1の終了ステータスとして前記入出力装置のチャンネルエンドを疑似的に示す信号を用い、また前記第2の終了ステータスとして前記入出力装置のデバイスエンドを示す信号を用いる機能を併せ持つことを特徴とする請求項18記載のチャンネル側延長装置。

【請求項20】 チャンネル側から発行されるリードコマンドを処理する入出力側延長装置において、連鎖指定の第1のリードコマンドのそれぞれを個々に処理するとともにその総数を予測値として記憶しておき、続いて連鎖指定の第2のリードコマンドが発行されたときには、当該予測値に基づく所定数のリードコマンドを入出力装置に先行的に発行するとともにこれによって得られるリードデータのそれぞれを順次チャンネル側延長装置に転送する機能を備えるようにしたことを特徴とする入出力側延長装置。

【請求項21】 前記予測値よりも第2のリードコマンドの数 N (N は正の整数)の方が小さいとき、前記入出力装置を N 番目の前記リードデータの読み出し直後の状態に設定するためのコマンドを発行する機能を併せ持つことを特徴とする請求項20記載の入出力側延長装置。

【請求項22】 前記予測値よりも第2のリードコマンドの数 N (N は正の整数)の方が大きいとき、この多い分だけチャンネル側延長装置から転送されるリードコマンドを第1のリードコマンドのときのように個々に処理する機能を併せ持つことを特徴とする請求項21記載の入出力側延長装置。

【請求項23】 前記予測値を N に変更する機能を併せ持つことを特徴とする請求項21または22記載の入出力側延長装置。

【発明の詳細な説明】

【0001】

【産業上の利用分野】本発明は、入出力インタフェース延長制御方法並びにそのためのチャンネル側延長装置及び入出力側延長装置に関し、特にチャンネルと入出力装置との間に、入出力インタフェース用のチャンネル側延長装置および入出力側延長装置と、これら延長装置間を接続する回線とを設けた通信システムにおいて、複数の入出力装置に対する起動処理やその後のデータ転送処理、さらには連鎖指定されたリードコマンドやライトコマンドの処理を効率的に行なうためのものである。

【0002】なお、本明細書で用いる「起動処理」とは入出力装置の選択処理や、選択された入出力装置に対するコマンド実行処理などのことであり、本発明が適用される起動処理の単位としてはこれら両方の処理の場合に加えて、個々の処理の場合もある。

【0003】一般に、複数の入出力装置をホストコンピュータから遠隔の地に高速回線を介して設置した通信システムにおいては、入出力装置に対する起動処理やデータ転送の際の回線上での時間遅延のため、ホストコンピュータのチャンネルが選択対象入出力装置にその必要がないまま占有される時間が長くなりがちである。

【0004】また、連鎖指定されたリードコマンドやライトコマンドの各コマンドについても順次その終了ステータスを確認してから次のコマンドの処理に移行するため、1コマンド当たりの回線上での時間遅延が大きく、特に1コマンドのデータブロック長が小さい場合には回線使用効率が悪くなる。

【0005】このような状況において、チャンネルのこの占有時間の中の無駄な部分を他の入出力装置に対する起動処理やデータ転送処理に用いてチャンネルの利用効率を高めることや、さらには連鎖指定されたコマンドをいわば先行処理する形で実行してスループットを高めることが要請され、本発明はこのような要請に応えるものである。

【0006】

【従来の技術】図14は、一般的な、入出力インタフェース延長制御システムの概要を示す説明図であり、41はホスト、42はチャンネル(BMC:Block Multiplex Channel)、43はチャンネル側TAG/BUS、44はチャンネル側延長装置(BMA:Block Multiplex Adapter)、45は回線、46は入出力側延長装置(IOA)、47は入出力側TAG/BUS、48、49は入出力装置をそれぞれ示している。以下、必要に応じてBMC42、BMA44、IOA46と記載する。

【0007】チャンネル側延長装置44および入出力側延長装置46はチャンネル42と複数の入出力装置48、49との間の送受信信号の入出力インタフェースとして動作し、

・チャンネル側延長装置44は、例えば8本のバス線と複数本のタグ線からなるチャンネル側TAG/BUS43を介し

てチャンネル42から送られたパラレル信号をシリアル信号に変換してこれを高速の回線45に送り出し、

・入出力側延長装置46は、これを元のパラレル信号に変換している。

【0008】図15は、選択対象入出力装置に対するチャンネル(BMC)の起動処理、すなわち選択対象入出力装置の特定と選択した入出力装置への実行コマンドの指示についてのシーケンスを示す説明図であり、その内容は次のようになっている。

【0009】(111) BMC42は、選択対象入出力装置の機番をBMA44に通知する。

(112) BMA44は、この機番を高速の回線45を經由してIOA46に転送する。

(113) IOA46は、この機番の入出力装置(IO#1)を選択する。

(114) IO#1は、自機番をIOA46に通知する。

(115) IOA46は、この通知内容を回線45を經由してBMA44に転送する。

(116) BMA44は、入出力装置の選択結果をBMC42に通知する。

(117) BMC42は、IO#1に対するコマンドをBMA44に通知する。

(118) BMA44は、このコマンドを回線45を經由してIOA46に転送する。

(119) IOA46は、このコマンドをIO#1に通知する。

(120) IO#1は、このコマンドの実行に関する応答をIOA46に行なう。この応答に用いられるのは、コマンドの実行が正常終了したか、異常終了したかなどを示すステータスでありIOA46についてのチャンネルエンド(CE)やデバイスエンド(DE)などが含まれる。

(121) IOA46は、この応答内容を回線45を經由してBMA44に転送する。

(122) BMA44は、IO#1でのコマンドの実行に関する情報をBMC42に通知する。

【0010】このようにしてチャンネルと選択対象入出力装置との間での起動処理が実行され、また、当該入出力装置における実行コマンドがその後のデータ処理をともなう、例えばライトコマンドなどであればチャンネルからのデータ転送が続いて行われる。

【0011】一方、近年の回線技術の進歩などにもない入出力装置の遠隔設置化が進んで、例えばチャンネル側延長装置と入出力側延長装置との間の回線が数100kmにおよぶこともある。

【0012】このような距離では1回の送信にともなう回線上での時間遅延は10ms~20msほどとなり、チャンネルから入出力装置に対する処理の場合、その開始から終了までに両者間で回線を介して順番に行われる送受信の回数だけ当該遅延時間を累積した値に対応の処理遅延が発生することになる。

【0013】従来、この処理遅延を少なくするため、
・チャンネルから入出力装置に向けて発行された起動要求などに対し、チャンネル側延長装置に相当する部分が入出力装置に代わることにより擬似応答または先行応答して、チャンネルと入出力装置との間の送受信回数を減らすこと（特開昭62-299145号公報参照）

・チャンネル側延長装置に相当する部分は、コマンド等を入出力装置側に送出した段階で、これに対する応答が転送されてくるのを待たずに次のコマンド等をチャンネルから先読みして入出力装置側に送るようにすること（特開平3-232042号公報参照）

などが提案されている。

【0014】また、連鎖指定されたリードコマンドやライトコマンドの処理に際し、チャンネル側延長装置（BMA）44は、BMC42から送られる各コマンドを対応する入出力装置に転送してそこでの処理が終了した後の応答であるチャンネルエンドやデバイスエンドを確認した上で次のコマンドを取り込むようにしている。

【0015】なお、連鎖指定されたコマンドが発行されるのはテープ装置やディスク装置などの連続した領域に対するリードやライトを順に実行する場合が一般的であり、連鎖したコマンドの個数はジョブ特性によって決まり同一ジョブ内では通常一定値である。

【0016】

【発明が解決しようとする課題】このように、入出力装置の遠隔設置化、すなわちチャンネルと入出力装置とを接続する回線の長距離化にともなってチャンネルからの起動要求やデータ転送に対する処理遅延が顕著になることを抑えるための各種手法が提案され、それぞれ所定の効果をj得ている。

【0017】しかしながら、いずれの場合にも、チャンネル自体は、選択対象入出力装置への機番、コマンドなどの処理要求の発行やデータ転送を開始してからそれについての終了ステータスを受け取るまでの間、当該入出力装置に占有されたままとなっており、この間にチャンネルが他の入出力装置への処理要求を発行することなどはできない。

【0018】また、連鎖指定されたリードコマンドやライトコマンドの処理の際にも、コマンドごとにその実行と実行先からの終了ステータスの確認とを繰り返しているため、1コマンド当たりの回線上での時間遅延が大きく回線使用効率が悪いという問題点があった。このことは、1コマンドのデータブロック長が小さい場合に顕著となる。

【0019】そこで、本発明では、チャンネルからの処理要求やデータ転送を受けたチャンネル側延長装置はこれに対する選択対象入出力装置からの応答を待たずに擬似応答をいったんチャンネルに通知し、これを受けたチャンネルは、この処理要求やデータ転送の処理を、これとは別の入出力装置に対する当該処理が可能な形でのいわゆる待

ち状態とし、その後の選択対象入出力装置からの応答に基づいてこの待ち状態を解除することにより、複数の入出力装置に対するチャンネルの使用効率を向上させ、入出力装置全体の性能を高めることを目的とする。

【0020】さらには、連鎖指定されたリードコマンドやライトコマンドをいわば先行処理する形で実行する、例えば同一ジョブ内では連鎖リードコマンドの個数が通常一定であることに着目し、入出力側延長装置は、最初の連鎖リードコマンドの個数を記憶してその後の連鎖リードコマンド中の1番目のリードコマンドが発行されたことを確認した場合には、チャンネル側からのその後のリードコマンドを待つことなしに、先に記憶した個数に基づく所定数のリードコマンドを自らが新たに発行することにより、連鎖コマンド全体の処理時間を短縮化してスループットを高めることを目的とする。

【0021】

【課題を解決するための手段】図1は本発明の原理説明図（その1）であり、1はチャンネル、2はチャンネル側延長装置、3は回線、4は入出力側延長装置、5および6は入出力装置をそれぞれ示し、入出力側延長装置4は各入出力装置に対し並行動作する機能を持っている。

【0022】チャンネル1が任意の入出力装置（例えば#1）の起動処理を行なうときのシーケンスは次のようになっている。

①チャンネル1は、選択対象入出力装置の機番やコマンドなどの起動要求をチャンネル側延長装置2に送出する。

②チャンネル側延長装置2は、

・この起動要求を入出力側延長装置4に回線3を介して転送し、

・擬似応答、例えば選択対象入出力装置が擬似的にBUSYである旨の信号をチャンネル1に送出する。起動要求の内容はチャンネル側延長装置2に保持される。

③チャンネル1は、この擬似応答に基づいて入出力装置5（#1）に対する起動処理を待ち状態に設定する。この待ち状態は、当該起動処理のためのチャンネル側延長装置2との結合をいったん解いて他の入出力装置に対する起動処理が可能な形のものであり、入出力装置5からの本来の応答で解除される。

④入出力側延長装置4は、起動要求に基づいて入出力装置5を選択しそこにコマンドを送出する。

⑤入出力装置5は、コマンドの処理結果に関するステータスを入出力側延長装置4に送出する。

⑥入出力側延長装置4は、このステータスをチャンネル側延長装置2に回線3を介して転送する。

⑦チャンネル側延長装置2は、このステータスに基づいた応答をチャンネル1に行なう。

⑧チャンネル1は、待ち状態を解除して①の再起動処理を行ない、チャンネル側延長装置2に保持されているコマンドやステータスを確認する。

【0023】チャンネル1は、この確認によって起動要求

時のコマンドがライトコマンドのようにその後のデータ転送を必要とするもので、入出力装置5の応答が「ライト可能」であることを認識した場合にはデータ転送を開始する(図5参照)。

【0024】図2は本発明の原理説明図(その2)である。これは、任意の選択済の入出力装置5に発行される連鎖指定のリードコマンドに対する処理手順の概要であり、その内容は次のようになっている。

【0025】①' チャンネル1は、連鎖指定の第1のリードコマンドを発行する。

②' 入出力側延長装置4は、チャンネル1から受け取った第1のリードコマンドのそれぞれを個々に処理するとともに、当該リードコマンドの総数を例えばカウントすることにより求め、予測値として記憶する。

③' チャンネル1は、連鎖指定の第2のリードコマンドを発行する。

④' 入出力側延長装置4は、第2のリードコマンド中の先頭コマンドを受け取って処理した後で、前記予測値に基づく所定数、例えばそれから1個だけ少ない数のリードコマンドを入出力装置5に発行する。

⑤' 入出力側延長装置4は、入出力装置から送られるリードデータを順次チャンネル側延長装置2に転送する。

⑥' チャンネル側延長装置2は、転送されたリードデータを、すでにチャンネル1から受け取っている第2のリードコマンドの中の所定のものに順番に対応付けた形で転送する。

【0026】図3は本発明の原理説明図(その3)である。これは、任意の選択済の入出力装置5に対する連鎖指定のライトコマンドなどをチャンネル1から先取りして実行するときの処理手順の概要であり、その内容は次のようになっている。

【0027】①' チャンネル側延長装置2は、第1のライトコマンドおよび第1のライトデータをチャンネル1から取り込む。

②' チャンネル側延長装置2は、第1の終了ステータス(擬似応答)をチャンネル1に通知する。

③' チャンネル側延長装置2は、チャンネル1からライトコマンド連鎖の指示があるかどうかを判断し、「YES」の場合は次のステップに進み、「NO」の場合はステップ⑤'に進む。

④' チャンネル側延長装置2は、第1のライトデータの処理に関する入出力装置5の応答を待たずに第2の終了ステータス(擬似応答)をチャンネル1に通知して次の第2のライトコマンドおよびライトデータを先取りする。

⑤' チャンネル側延長装置2は、第1のライトデータの処理に関する入出力装置5の応答に基づく第2の終了ステータスをチャンネル1に通知する。

【0028】なお、ステップ③'で「YES」の場合に擬似応答をチャンネル1に返すのは、連鎖指定がある場合にチャンネル1がこの擬似応答をCPUに通知することがな

いからである。

【0029】逆に、連鎖指定のない場合にまで擬似応答をチャンネル1に返すとこれがCPUに通知され、CPUはジョブが正常終了したものと判断してしまい、このジョブが入出力装置の異常のために正常終了できない場合にはCPUの判断と実際の状況とが合致しないことになる。

【0030】

【作用】本発明は、このように、チャンネルが発行する機番やコマンドなどの起動要求を受けたチャンネル側延長装置が、この起動要求に関する選択対象入出力装置からのステータス応答を待たずに擬似応答をチャンネルに通知して、当初の選択対象入出力装置に対するチャンネルの起動処理をいったん待ち状態にすることにより、このいわばアイドル時間にチャンネルが他の入出力装置への起動処理を新たに開始できるようにしている(図7、図8参照)。

【0031】また、チャンネルから選択対象入出力装置へのデータ転送の場合にも同じように、チャンネル側延長装置がこのデータを受け取った段階、すなわちデータ転送の実行終了のステータスを選択対象入出力装置から受け取っていない段階でチャンネルのそれまでのデータ転送処理を仮終了させる。

【0032】そのため、チャンネルは、従来のように、最初に選択した入出力装置に対する起動処理やデータ転送の開始から終了までの間、継続して当該入出力装置に占有されるといったことはなく、チャンネルの使用効率の向上を図ることができる。

【0033】ことにチャンネルの占有時間が、長距離にわたって設置された回線上の時間遅延や入出力装置の性能に依存しない構成になっているので、この占有時間をほぼローカル接続の場合と同じ程度にすることができ、チャンネルの使用効率の向上も顕著なものとなる。

【0034】さらには、入出力側延長装置は複数の入出力装置に対して並行動作できるようにしているので、チャンネルの配下の複数の入出力装置を同時動作させることも可能である。

【0035】なお、擬似応答はコマンド対応のもののみ限定される必要はなく、この他に機番対応のものを用いるようにしてもよい。この場合、機番対応の擬似応答で待ち状態となっているチャンネルから当該指示機番の入出力装置へのコマンドが発行されるのは、当該入出力装置からの応答によって当該待ち状態が解除された後である。

【0036】本発明は、また、同一ジョブ内では連鎖リードコマンドの個数が通常一定であることに着目して、入出力側延長装置(IOA)が、先ず起動1の連鎖リードコマンドの個数を記憶し、その後の起動2の連鎖リードコマンド中の1番目のリードコマンドをチャンネル側延長装置から受け取って入出力装置でのその処理が終了し

たのを確認すると、チャンネル側からのその後のリードコマンドを待つことなしに、先に記憶した個数に基づく所定数のリードコマンドを自らが新たに発行してリードデータを先行的に読み出してチャンネル側延長装置に転送し、そこで当該リードデータの起動2の連鎖リードコマンドとの対応付けを行なうことにより、連鎖コマンド全体の処理時間を短縮化するようにしたものである(図9参照)。

【0037】そして、起動2の連鎖リードコマンドの実際の個数Nが起動1のそれよりも少ない場合には、チャンネル側延長装置は、余分となったリードデータを廃棄してこのNの値を入出力側延長装置に通知し、これを受け取った入出力側延長装置は、記憶値をNに変更し、入出力装置をN番目のリードデータの読み出し直後の状態にするためのコマンドを入出力装置に発行している(図10参照)。

【0038】逆に、起動2の連鎖リードコマンドの実際の個数Nが起動1のそれよりも多い場合には、チャンネル側延長装置は、入出力側延長装置に対してこの多い分だけのリードコマンドを発行するとともにこのNの値を通知し、これを受け取った入出力側延長装置は、記憶値をNに変更し、これらリードコマンドの処理を入出力装置に個々に指示している(図11参照)。

【0039】本発明は、また、チャンネル側延長装置が、自装置への第1のライトデータの転送処理についての擬似的な第1の終了ステータス(チャンネルエンド)を前記チャンネルに通知した際に、ライトコマンド連鎖の指示がある場合には第1のライトデータの処理に関する入出力装置の応答を待たずに擬似的な第2の終了ステータス(デバイスエンド)をチャンネルに通知して次の第2のライトコマンドや第2のライトデータの先取り処理へと移行し、また前記指示がない場合には前記応答に基づく第2の終了ステータス(デバイスエンド)を前記チャンネルに通知するようにしている(図12、図13参照)。

【0040】ここで、チャンネル側延長装置は、チャンネルに対して、ライトコマンド連鎖の指示がない場合には擬似応答をチャンネルに返さずに入出力装置での実際の処理結果に基づく第2の終了ステータスを通知しているので、入出力装置の異常発生のためジョブが正常に終了していないにもかかわらず、ホストが擬似的な第2の終了ステータスの通知によってジョブは正常終了したものと誤認するようなことはない。

【0041】

【実施例】図4～図13を参照して本発明の実施例を説明する。図4は、本発明の、入出力インタフェース延長制御システムの概要を示す説明図であり、

11は、ホスト

12は、チャンネル1に相当のBMC(Block Multiplex Channel)

13は、チャンネル側TAG/BUSケーブル

14は、チャンネル側延長装置

15は、チャンネル側延長装置中のBMA(Block Multiplex Adapter)

16は、送受信ドライバからなるラインセット(LS)

17は、LANなどの回線

18は、入出力側延長装置

19は、送受信ドライバからなるラインセット(LS)

20および21は、入出力側延長装置中のIOA(入出力アダプタ)

22および23は、チャンネル1の配下のI/O装置(入出力装置)

24は、入出力側TAG/BUSケーブル

をそれぞれ示している。チャンネル側TAG/BUS13および入出力側TAG/BUS24の構成、作用などは図7のものと同様である。

【0042】IOA20とI/O装置22の結合と、IOA21とI/O装置23の結合とは物理的に切り離されているので、各結合間での競合は発生せずI/O装置22とI/O装置23との並行動作が確保される。

【0043】図5は、BMA15の内部構成を示す説明図であり、31はコントロールストレージ、32はマイクロプロセッサ、33はRAM、34はIO-IFコントローラ、35はバッファコントローラ、36はSYSBUSコントローラ、37はデータバッファ、38はシステムバスをそれぞれ示している。なお、このような構成のBMA15は入出力側延長装置としても使用できる。

【0044】各コントローラの中、

・IO-IFコントローラ34は、マイクロプロセッサ32の指示に従ってBMC12との間でインタフェース制御を実行し、

・SYSBUSコントローラ36は、マイクロプロセッサ32の指示に従ってラインセット16との間でインタフェース制御を実行し、

・バッファコントローラ35は、データバッファ37へのアクセス源であるマイクロプロセッサ32、IO-IFコントローラ34、SYSBUSコントローラ36の競合制御を実行している。

【0045】ここで、BMA15の制御は、コントロールストレージ31に格納されたマイクロプログラムに基づくシーケンス制御のかたちで行なわれ、各入出力装置の情報は個々にRAM33およびデータバッファ37上に格納されている。

【0046】なお、RAM33には各入出力装置のデータの保持状態などに関する制御情報が、またデータバッファ37にはコマンド、データ、ステータスについての情報がそれぞれ入出力装置ごとに保持されている。

【0047】図6は、入出力装置からBMCに通知されるステータスのフォーマットを示す説明図である。ステータスは1バイトで構成され、例えば、

・3ビット目は入出力装置が使用中であることを示すビ

イジイ

・4ビット目はチャンネルとの通信終了を示すチャンネルエンド (CE)

・5ビット目は入出力装置の動作終了または使用状態解除を示すデバイスエンド (DE)

のためのビットとしてそれぞれ用いられている。

【0048】図7は、機番およびコマンドなどの起動要求に対する処理シーケンスを示す説明図であり、その内容は次のようになっている。なお、シーケンス中の「#1」および「#2」は選択対象の入出力装置の機番を示している。

【0049】(1) BMC12は、入出力装置22 (以下、IO#1と略記する) に対する選択指示の発行を行なう。これにより、IO#1の機番がBMA15に通知される。

(2) BMA15は、IO#1が選択されたことの擬似応答をBMC12に対して行なう。

(3) BMC12は、IO#1に対するライトコマンドを指示する。

(4) BMA15は、IO#1が使用中 (BUSY) である旨の擬似応答をBMC12に対して行なう。なお、このときのデータとしてはBUSY形式の「00010000」が用いられる (図6参照)。

【0050】このBUSYを示す擬似応答の結果、ホスト11の内部ではIO#1に対する起動処理を待ち状態にして解除通知 (デバイスエンド: DE#1) が通知されるのを待つことになる。

【0051】(5) BMA15は、BMC12から受けている機番およびライトコマンドを、IO#1の制御主体であるIOA20 (以下、IOA#1と略記する) に転送する。

(6) IOA#1は、IO#1に対する選択指示の発行を行なう。

(7) IO#1は、自分が選択されたことをIOA#1に報告する。

(8) IOA#1は、IO#1に対してコマンドを指示する。

(9) IO#1は、コマンド実行に関するステータスをIOA#1に報告する (図6参照)。

(10) IOA#1は、IO#1から報告された内容 (選択結果、コマンド実行に関する情報) をBMA15に通知する。

【0052】(11) BMA15は、この報告内容をデータバッファ37に保持してBMC12に解除通知を行なう。なお、このときのデータとしてはDE形式の「00000100」が用いられる (図6参照)。

(12) BMC12は、(4) で設定した待ち状態を解除することにより再起動処理を開始し、先ずIO#1の選択指示を発行する。

(13) BMA15は、データバッファ37を参照し、IO#1が選択されていることをBMC12に報告する。

(14) BMC12は、IO#1に対する前記コマンドを指示する。

(15) BMA15は、データバッファ37を参照し、IO#1でのコマンド実行に関する情報をBMC12に通知する。

【0053】以上のシーケンスによりチャンネルと入出力装置当該の間での起動処理はいったん終了するが、(15)の通知に基づいて、IO#1が「ライト可能」あることをBMC12が確認したときには図6に示すようなデータ転送処理に移行する。このときの確認は、IO#1から報告されたステータスが転送可能形式の「00000000」であることによって行われる。

【0054】なお、ステップ(4) やステップ(11)の擬似応答および解除通知で用いるデータ形式はIO#1から報告されたステータスの内容に依存しないものであり、例えば解除通知の場合にはステータス中の実際のDEビットなどの値とは無関係に前記の「00000100」が、BMA15からBMC12に通知される。

【0055】前述のように、BMC12は、IO#1を対象とした起動処理が待ち状態となってその後のBMA15からの解除通知で再起動するまでの間、他の入出力装置に対する起動処理をIO#1のときと同様のシーケンスで行なうことができる。

【0056】図7では、BMC12の待ち状態の間にIO#2の起動処理が実行されており、IO#1のときと同じように、コマンド指示を受けたBMA15はIO#2が使用中 (BUSY) である旨の擬似応答をBMC12に対して通知し、この通知に基づいてBMC12は待ち状態に設定される。なお、図中の網線部分はBMC12とBMA15との結合時間を示している。

【0057】このように、入出力装置の起動処理にともなうBMC12とBMA15との結合を、入出力装置からの本来の応答を待たずにBMA15からの擬似応答でいったん解き、続いて他の入出力装置に対する起動処理を行なえるようにしているので、複数の入出力装置に対する起動要求が競合しても効率的な処理を行なうことができる。

【0058】図8は、図7のライトコマンドの起動処理に続いてライトデータをチャンネルから入出力装置に転送するときの処理シーケンスを示す説明図であり、その内容は次のようになっている。なお、「...S」はデータ転送の開始を、「...E」はその終了をそれぞれ示している。

【0059】(21) BMA15は、IO#1へのライトデータをBMC12から先取りしてデータバッファ37に保持する。

(22) BMA15は、この先取りが終了した段階でBMC12に擬似応答を返す。この擬似応答によりBMC12とBMA15との結合がいったん切れてBMC12はDE待ちの状態になる。なお、このときのデータとしてはCE形式の「00001000」が用いられる (図6参照)。

(23) BMA15は、IOA#1にライトデータを転送する。

(24) IOA#1は、IO#1にライトデータを転送する。

(25) IO#1は、転送されたデータのライト処理が正常終了したか、異常終了したかを示すステータスをIOA#1に通知する。なお、このステータスには図6に示すようにCEとDEとが含まれている。

(26) IOA#1は、このステータスをBMA15に通知する。

(27) BMA15は、このステータス中のDEをBMC12に通知する。

【0060】DE待ちの状態になっていたBMC12はこのDEに基づいてIO#1に対するライト処理を終了することになる。なお、ライト処理が異常終了の場合にはこれに対応した処理に移行する。

【0061】図8のシーケンスにおいても、図7のときと同じように、BMA15でのデータの先取りの終了にともないステップ(22)において発行される擬似応答によりBMC12はIO#1へのデータ転送処理からいったん解放され、その後はIO#2に対するデータ転送を開始することができる。なお、従来は、ステップ(27)の通知によってIO#1に対するライト処理が終了するまで、IO#2へのデータ転送を開始することはできない。

【0062】図9は、連鎖指定されたリードコマンドに対する処理手順を示している。なお、以下の実施例では入出力装置として、大量のデータを記憶でき、ホストとの間で入力方向あるいは出力方向の一括したデータ転送が行なわれるのが一般的である磁気テープ装置(MT)を用いることにする。

【0063】また、連鎖指定されたコマンドは、リードコマンド(RD)およびライトコマンド(WT)ともにモードセットコマンド(MS)を先頭としてその後複数回のRDまたはWTが続く次のような形、

(a) MS-RD-RD-RD-RD...-RD

(b) MS-WT-WT-WT-WT...-WT

で連鎖している。

【0064】そして、この連鎖(CC)が指定されていることは、BMA15からBMC12に通知される各種ステータスを受理した旨の後者から前者への通知(AP)の内容によって、BMA15は認識することになる。

【0065】図9の処理手順の内容は次のようになっている。なお、以下の記載では、説明の便宜上、コマンドや終了ステータスなどの送信の際に経由するBMA15やIOA20などを適宜省略する。

【0066】(31) BMC12は、BMA15およびIOA20を経由して起動1のMSコマンドをMT22に発行する。

(32) MT22は、チャンネルエンドCEとデバイスエンドDEの終了ステータスをBMC12に通知する。

(33) BMC12は、この終了ステータスに回答する形で、

「連鎖(CC)あり」のAPと1番目のRDコマンドをMT22に発行する。

(34) MT22は、このRDコマンドの実行結果であるリードデータと、チャンネルエンドCEとデバイスエンドDEの終了ステータスとをBMC12に通知する。

【0067】この後はステップ(33)とステップ(34)とが起動1の残りの各RDコマンドに対して個々に実行され、IOA20はステップ(33)の処理で受け取ったRDコマンドの数をカウントしていく。

【0068】そして、起動1の最後のRDコマンド、すなわち4番目のRDコマンドのときのMT22からの終了ステータスに回答する形で、

(35) BMC12は「連鎖(CC)なし」のAPを発行し、これを受け取ったIOA20はそのときのカウント値である連鎖総数「4」を予測値として記憶する。

【0069】その後、起動2の連鎖指定されたリードコマンドに対して先ず起動1のその場合と同じように次の処理が行なわれる。

(41) BMC12は、BMA15およびIOA20を経由して起動2のMSコマンドをMT22に発行する。

(42) MT22は、チャンネルエンドCEとデバイスエンドDEの終了ステータスをBMC12に通知する。

(43) BMC12は、この終了ステータスに回答する形で、「連鎖(CC)あり」のAPと1番目のRDコマンドをMT22に発行する。

(44) MT22は、このRDコマンドの実行結果であるリードデータと、チャンネルエンドCEとデバイスエンドDEの終了ステータスとをBMC12に通知する。

【0070】ここで、ステップ(43)における「連鎖(CC)あり」のAPを受け取ったIOA20は、ステップ(44)のチャンネルエンドCEとデバイスエンドDEとを確認した後のステップ(45)で自発的にRDコマンドをMT22に発行する。

【0071】そして、ステップ(47)で、このRDコマンドに対する終了ステータスとリードデータがMT22からBMA15に送られる。BMA15は、当該リードデータを、すでにステップ(46)により「連鎖(CC)あり」のAPとともに取り込んでデータバッファ37に保持していた起動2の2番目のRDコマンドに対応付けてからBMC12に送る。このとき、BMA15は、MT22から受け取った終了ステータスも送っている。

【0072】また、起動2の3番目および4番目のRDコマンドに対してもこのような一連の処理が、

・起動1の3番目のRDコマンドの場合はステップ(48)~(50)

・起動1の4番目のRDコマンドの場合はステップ(51)~(53)

の形でそれぞれ実行される。

【0073】このように、起動2の連鎖指定されたリードコマンドの中の2番目から2番目(最後)までの各リ

ードコマンドについては、BMA15から長距離の回線を経由してIOA20に送るといった処理工程を省略でき、連鎖コマンド全体の処理時間が短縮化されてスループットを高めることになる。

【0074】なお、ステップ(46)、(49)、(52)における「連鎖(CC)あり」のAPとRDコマンドの発行はそれぞれステップ(44)、(47)、(50)によってBMC12が終了ステータスを受け取った後である。

【0075】BMC12は、起動2の4番目のRDコマンドに対応付けられたリードデータをBMA15から受け取ると、もはや起動2には連鎖指定がないので「連鎖(CC)なし」のAPをIOA20に通知する。

【0076】このとき、BMC12は起動2のRDコマンドの総数「4」についても送っており、これを受け取ったIOA20は起動1のときに求めた予測値と一致していること、すなわち予測値を変更する必要がないことを確認する。

【0077】図10は、図9において起動2のリードコマンドの総数が起動1のそれよりも少ない場合の処理手順を示す説明図であり、図9とは、このRDコマンドが少ない分だけのリードデータを廃棄することや、MT22を起動2のRDコマンドが個々に実行されたときの本来の状態に戻すことなどが相違している。

【0078】すなわち、起動2のRDコマンドの総数は「2」であるので、ステップ(45)のリードコマンド発行に対応したステップ(47)の処理によって起動2は終了となり、このステップ(47)に続くステップ(50)やステップ(53)でMT22からBMA15に送られるリードデータはともに不要であり、BMA15はこれらの廃棄処理を行なっている。

【0079】また、ステップ(54)における「連鎖(CC)なし」のAPを受け取ったIOA20はMT22との間で次の処理を実行する。

(61) IOA20は、MT22に対してBS(Back Space)コマンドを発行する。

(62) MT22は、IOA20に対して終了ステータスのデバイスエンドDEを通知する。

(63) IOA20は、MT22に対してBSコマンドを発行する。

(64) MT22は、IOA20に対して終了ステータスのデバイスエンドDEを通知する。

【0080】BSコマンドは、MT22の読み取りヘッドの位置を1ブロック分だけ戻す指示であり、IOA20がこれを2回発行することにより、MT22のヘッド位置は3番目と4番目のデータブロックを読み込んでいない状態、つまり2番目のデータブロックを読んだ直後の状態になる。

【0081】なお、BMA15は「連鎖(CC)なし」のAPを確認した上で、自装置で取り込んだRDコマンドの数「2」をIOA20に通知し、これを受け取ったIO

A20は予測値をそれまでの「4」から「2」に変更している。

【0082】図11は、図9において起動2のリードコマンドの総数が起動1のそれよりも多い場合の処理手順を示す説明図であり、図9とは、BMC12はこの多い分だけのRDコマンドを従来の方法で発行してその実行結果であるリードデータをMT22から受け取るステップ(71)、(72)が付加されることが相違している。

【0083】また、起動2の終了とともにBMC12が「連鎖(CC)なし」のAPをBMA15に通知し、このBMA15が自装置で取り込んだRDコマンドの数「4」をIOA20に通知して予測値をそれまでの「3」から「4」に変更することは、図10の場合と同様である。

【0084】図12は、連鎖指定されたライトコマンドなどをBMC12から先取りして実行するときの処理手順を示す説明図であり、その内容は次のようになっている。

(81) BMC12は、BMA15およびIOA20を経由してMSコマンドをMT22に発行する。

(82) MT22は、チャンネルエンドCEとデバイスエンドDEの終了ステータスをBMC12に通知する。

(83) BMA15は、1番目のWTコマンドおよびデータをBMC12から取り込んでMT22に転送し、擬似応答をBMC12に通知する。

(84) MT22は、デバイスエンドDEを発行する。

(85) BMA15は、2番目のWTコマンドおよびデータをBMC12から取り込んでMT22に転送し、擬似応答をBMC12に通知する。

(86) MT22は、デバイスエンドDEを発行する。

(87) BMA15は、3番目のWTコマンドおよびデータをBMC12から取り込んでMT22に転送し、擬似応答をBMC12に通知する。

(88) MT22は、デバイスエンドDEを発行する。

(89) BMA15は、4番目のWTコマンドおよびデータをBMC12から取り込んでMT22に転送し、擬似応答をBMC12に通知する。

(90) MT22は、デバイスエンドDEを発行する。

【0085】ここで、BMA15は、MT22からのデバイスエンドDEを受け取ることにより、それまで擬似応答を返していたWTコマンドのそれぞれが正常終了したであろうと判断する。

【0086】また、BMC12がステップ(90)のデバイスエンドDEを確認することにより一連の先取り処理を終了する。なお、BMC12およびBMA15は他のステップにおけるMT22からのデバイスエンドDEも順次受け取っており、それがステータス(90)のデバイスエンドDEであることを確認する手法としては、

・連鎖指定されたWTコマンドの総数をあらかじめ確認しておき、MT22から送られるデバイスエンドDEの数

を順にカウントしていくこと、

・最後(4番目)のWTコマンドおよびこれに対するデバイスエンドDE自体に最後であることを示す情報を含ませておくこと、
などが用いられる。

【0087】図13は、図12のBMCとBMAとの間でのライトコマンドなどに対する処理手順を示す説明図であり、その内容は次のようになっている。

(91) BMC12は、WTコマンドをBMA15に発行する。

(92) BMA15は、WTコマンドを受け取った旨の初期ステータスをBMC12に擬似応答として通知する。

(93) BMC12は、初期ステータスの受理を示すAPをBMA15に発行する。

(94) BMC12は、データをBMA15に転送する。

(95) BMA15は、データを受け取った旨の終了ステータス1(チャンネルエンド)をBMC12に擬似応答として通知する。

(96) BMC12は、終了ステータス1の受理を示すAPを、連鎖(CC)の有無、すなわち次のWTコマンドが連鎖されているかどうかを示す情報を含む形でBMA15に発行する。

(97) BMA15は、再結合要求をBMC12に発行する。この発行は、ステップ(95)のチャンネルエンドに基づいてBMA15とBMC12との間が切断されるからであり、また、ステップ(96)のAPが「連鎖(CC)なし」の場合にはMT22からのデバイスエンドDEを確認した上で実行される。

(98) BMA15は、次のWTコマンドを取り込むための終了ステータス2(デバイスエンド)をBMC12に通知する。この終了ステータスは、先のステップ(96)のAPが「連鎖(CC)あり」の場合には擬似応答、「連鎖(CC)なし」の場合にはMT22からのデバイスエンドDEとなる。

(99) BMC12は、終了ステータス1の受理を示すAPをBMA15に発行する。この中には連鎖(CC)の有無を示す情報が含まれるのが通常である。

(100) BMC12は、「連鎖(CC)あり」の場合は次のWTコマンドを先取りして発行する。

【0088】ステップ(98)における終了ステータス2の使い分けは、前述のように、「連鎖(CC)なし」の場合に擬似応答がCPUに通知され、CPUの方で、まだ実際の実行結果が分かっていないジョブについて正常終了したものとみなすことを防止するためである。なお、「連鎖(CC)あり」の場合の終了ステータスはCPUに通知されない。

【0089】

【発明の効果】本発明は、このように、チャンネルから発行される機番やコマンドなどの起動要求を受けたチャンネル側延長装置が、この起動要求に関する選択対象入出力装置のステータスを待たずに擬似応答をチャンネルに通知

してチャンネルのそれまでの選択対象入出力装置に対する起動処理をいったん待ち状態にすることにより、選択対象入出力装置の起動処理を行なっているチャンネルのいわばアイドル時間に他の入出力装置に対する新たな起動処理を開始できるようにしている。

【0090】さらに、チャンネルから選択対象入出力装置へのデータ転送の場合にも同じように、チャンネル側延長装置がこのデータを受け取った段階、すなわちデータ転送の実行終了のステータスを受け取っていない段階でチャンネルのそれまでのデータ転送処理を仮終了とする。

【0091】そのため、チャンネルは、従来のように、最初に選択した入出力装置に対する起動処理やデータ転送の開始から終了までの間、継続して当該入出力装置に占有されるといったことはなく、チャンネルの使用効率の向上を図ることができる。

【0092】ことにチャンネルの占有時間が長距離にわたって設置された回線上の時間遅延や入出力装置の性能に依存しない構成になっているので、この占有時間をほぼローカル接続の場合と同じ程度にすることができ、チャンネルの使用効率の向上も顕著なものとなる。

【0093】さらには、入出力側延長装置は入出力装置に対して並行動作できるようにしているため、チャンネルの配下の複数の入出力装置を同時動作させることも可能である。

【0094】本発明は、また、同一ジョブ内では連鎖リードコマンドの個数が通常一定であることに着目して、先ず起動1の連鎖リードコマンドの個数を記憶しておき、その後の起動2の連鎖リードコマンドの処理の際には、入出力側延長装置がこの個数に基づく所定数だけのリードコマンドを入出力装置に独自に発行するようにしており、これは、チャンネル側延長装置から長距離の回線を経由して入出力側延長装置までリードコマンドを送信する時間を省略することになるので、連鎖リードコマンド全体の処理時間の短縮化を図ることができ、回線使用効率が大幅に改善される。

【0095】本発明は、また、チャンネル側延長装置が、自装置への第1のライトデータの転送処理についての擬似的な第1の終了ステータスをチャンネルに通知した際に、ライトコマンド連鎖の指示がある場合には第1のライトデータの処理に関する入出力装置の応答を待たずに擬似的な第2の終了ステータスをチャンネルに通知して次の第2のライトコマンドなどの先取り処理へと移行し、また前記指示がない場合には前記応答に基づく第2の終了ステータスをチャンネルに通知するようにしているため、CPUの方で、まだ実際の実行結果が分かっていないジョブについて正常終了したものとみなすといったことは発生せず、システムの信頼性を確保した状態でのライトコマンドの先取り処理が可能となる。

【図面の簡単な説明】

【図1】本発明の、原理説明図(その1)である。

【図2】本発明の、原理説明図（その2）である。

【図3】本発明の、原理説明図（その3）である。

【図4】本発明の、入出力インタフェース延長制御システムの概要を示す説明図である。

【図5】本発明の、チャンネル側延長装置（BMA）の内部構成を示す説明図である。

【図6】本発明の、入出力装置からBMCに通知されるステータスのフォーマットを示す説明図である。

【図7】本発明の、起動要求に対する処理シーケンスを示す説明図である。

【図8】本発明の、起動処理に続いてデータ転送を行なうときの処理シーケンスを示す説明図である。

【図9】本発明の、連鎖指定されたリードコマンドに対する処理手順を示す説明図である。

【図10】図9において、起動2のリードコマンドの総数が起動1のそれよりも小さい場合の処理手順を示す説明図である。

【図11】図9において、起動2のリードコマンドの総数が起動1のそれよりも大きい場合の処理手順を示す説

明図である。

【図12】本発明の、連鎖指定されたライトコマンドなどをBMCから先取りして実行するときの処理手順を示す説明図である。

【図13】図12の、BMCとBMAとの間でのライトコマンドなどに対する処理手順を示す説明図である。

【図14】一般的な、入出力インタフェース延長制御システムの概要を示す説明図である。

【図15】一般的な、起動要求に対する処理シーケンスを示す説明図である。

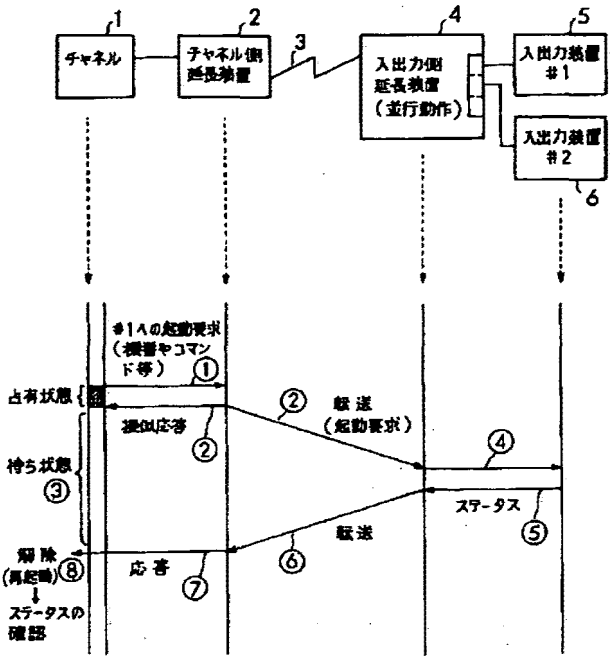
【符号の説明】

図1において、

- 1・・・チャンネル
- 2・・・チャンネル側延長装置
- 3・・・高速の回線
- 4・・・入出力側延長装置
- 5・・・入出力装置
- 6・・・入出力装置

【図1】

本発明の原理説明図（その1）

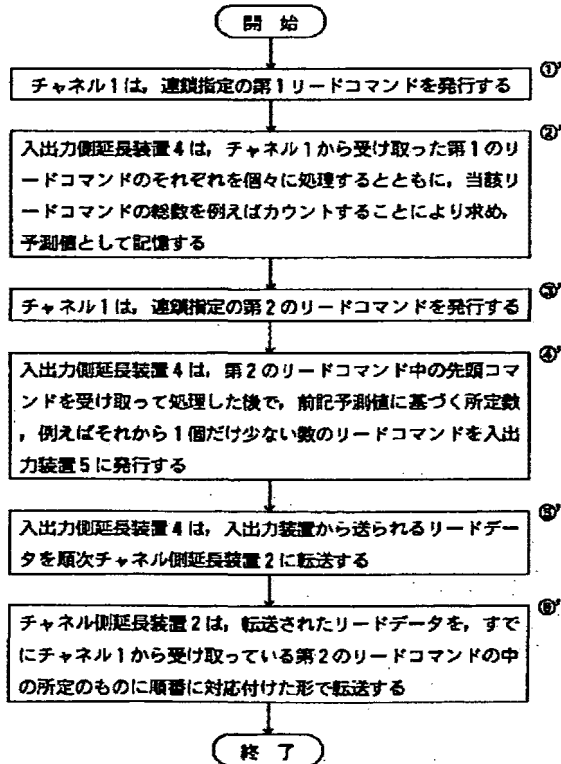


【チャンネル1は、待ち状態の間、他の入出力装置6（#2）への起動要求信号を発行することができる】

【図2】

本発明の原理説明図（その2）

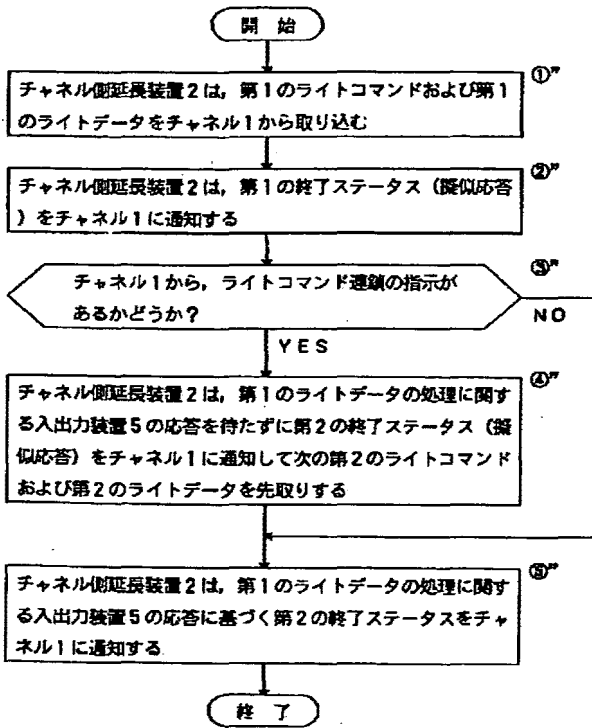
任意の選択済の入出力装置5に発行される連鎖指定のリードコマンドに対する処理手順の概要



【図3】

本発明の原理説明図（その3）

任意の選択済の入出力装置5に対する連続指定のライトコマンドなどをチャンネル1から先取りして実行するときの処理手順の概要



【図6】

本発明の入出力装置からBMCに通知されるステータスのフォーマット

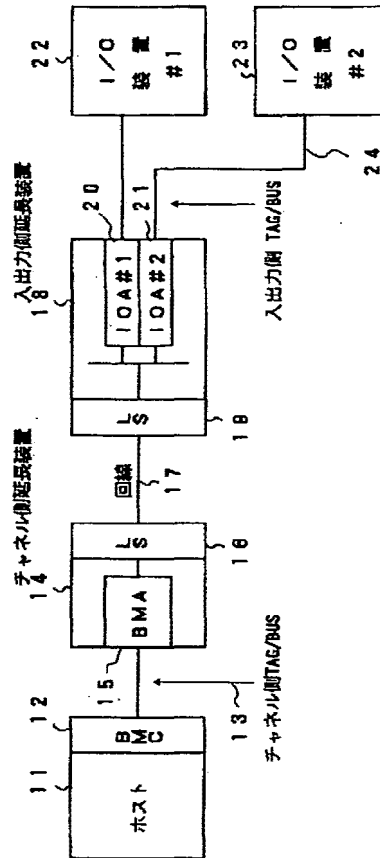
ビット 0 1 2 3 4 5 6 7

ATT	SM	CUE	BUSY	CE	DE	UCK	UEXP
-----	----	-----	------	----	----	-----	------

- ATT : 入出力装置側からホストに通知したい事象が発生したことを示す
- SM : 他のステータスピットの修飾に使用する
- CUE : コントロールユニットの使用解除を示す
- BUSY : 入出力装置が使用中であることを示す
- CE : チャンネルとの通信終了を示す
- DE : 入出力装置の動作終了あるいは使用中解除を示す
- UCK : 入出力装置が異常を検出したことを示す
- UEXP : 入出力装置が例外を検出したことを示す

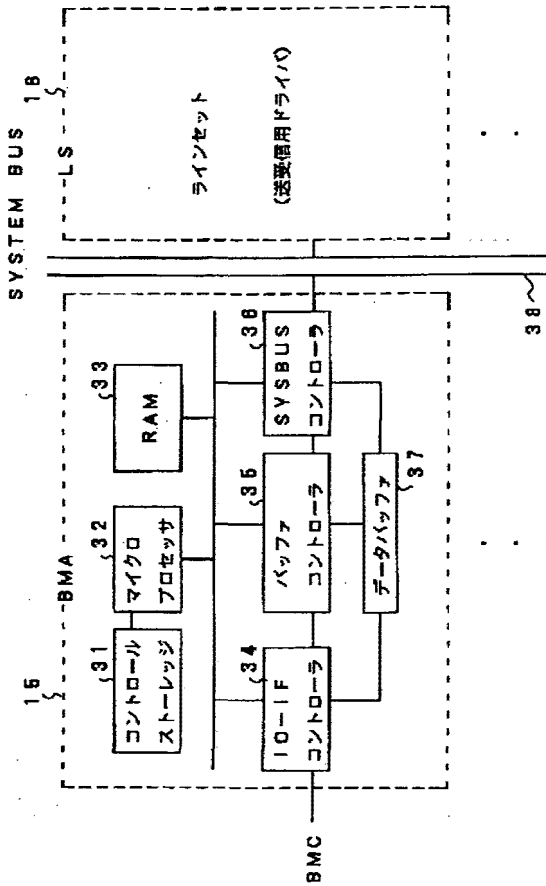
【図4】

本発明の入出力インタフェース延長制御システムの概要



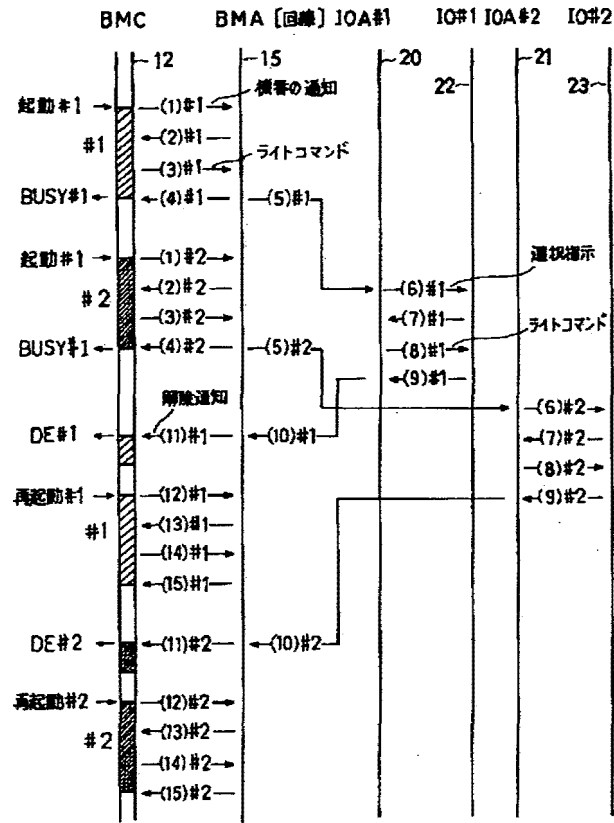
【図5】

本発明のチャネル側延長装置 (BMA) の内部構成



【図7】

本発明の起動要求に対する処理シーケンス



【図12】

本発明の連鎖指定されたライトコマンドなどを BMC から先取りして実行するときの処理手順

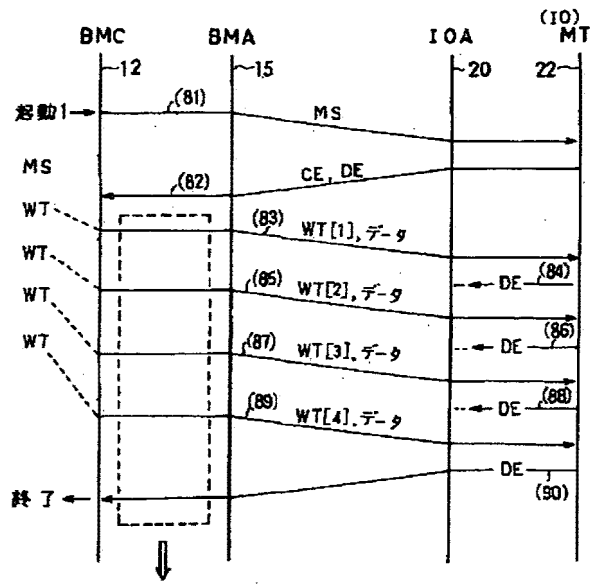
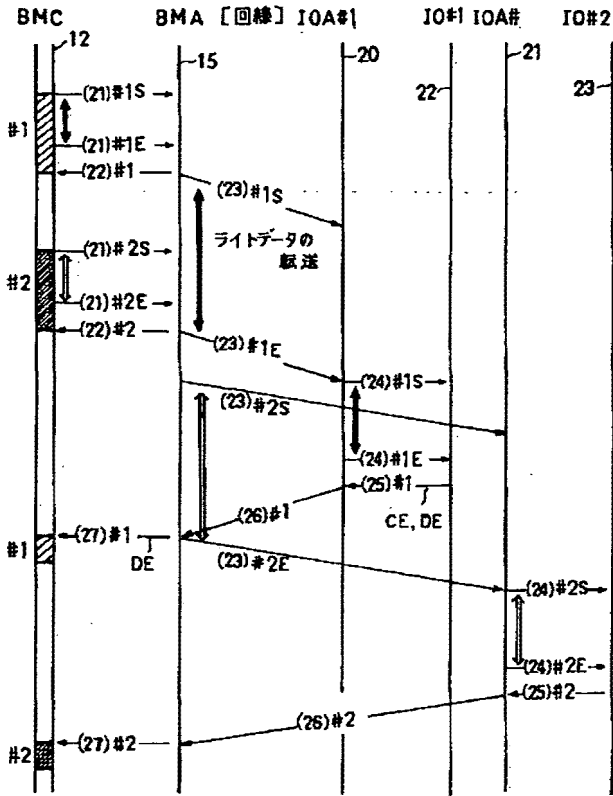


図8 参照

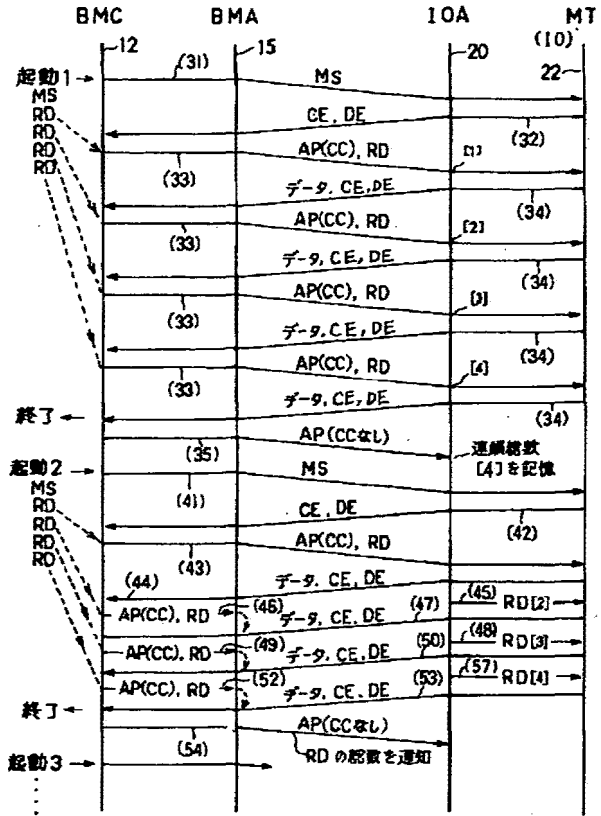
【図8】

本発明の起動処理に続いてデータ転送を行なうときの処理シーケンス



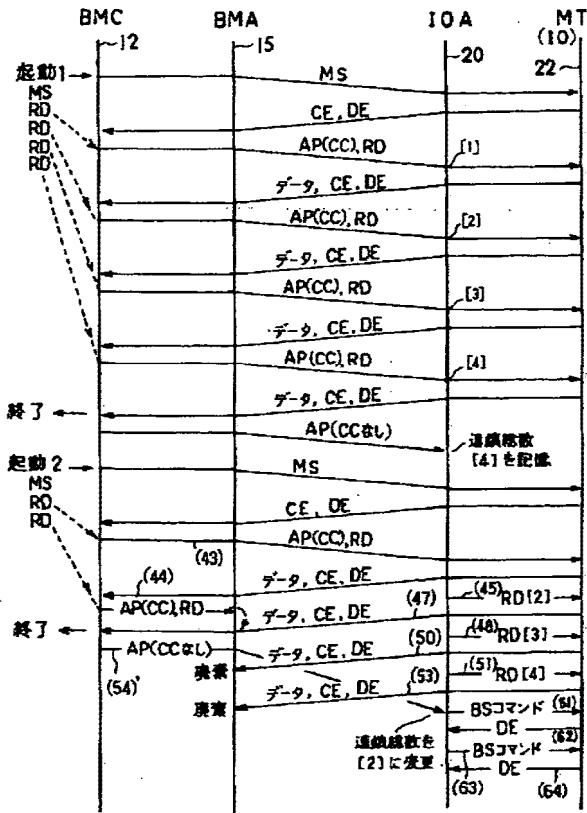
【図9】

本発明の連鎖指定されたリードコマンドに対する処理手順



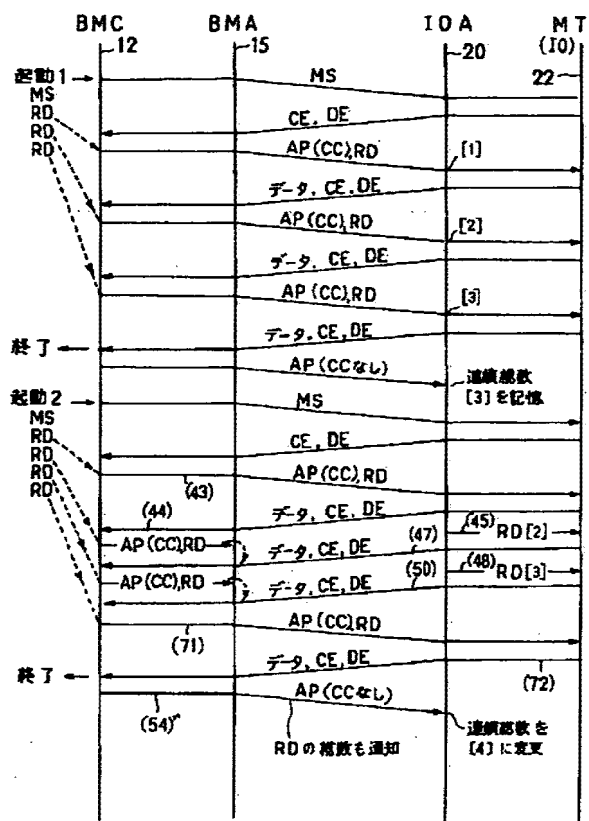
【図10】

図9において起動2のリードコマンドの総数が
起動1のそれよりも小さい場合の処理手順



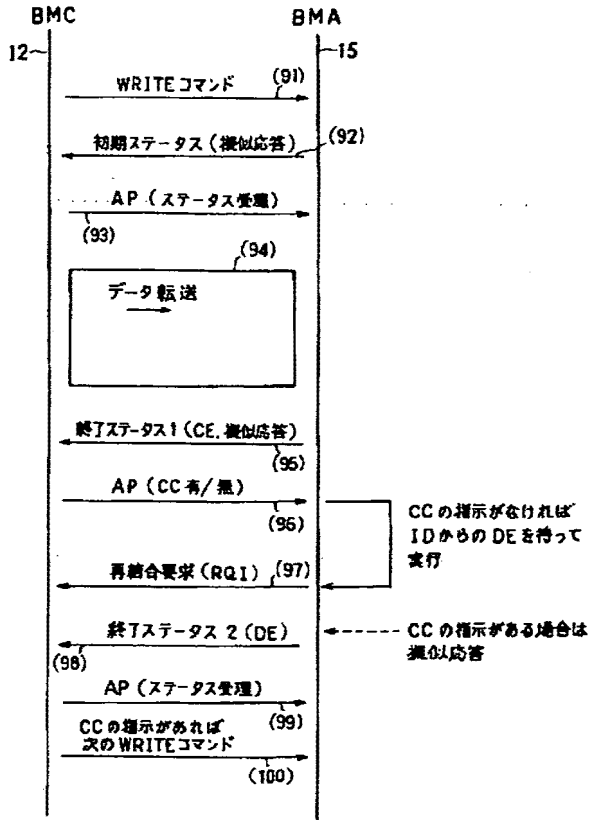
【図11】

図9において起動2のリードコマンドの総数が
起動1のそれよりも大きい場合の処理手順



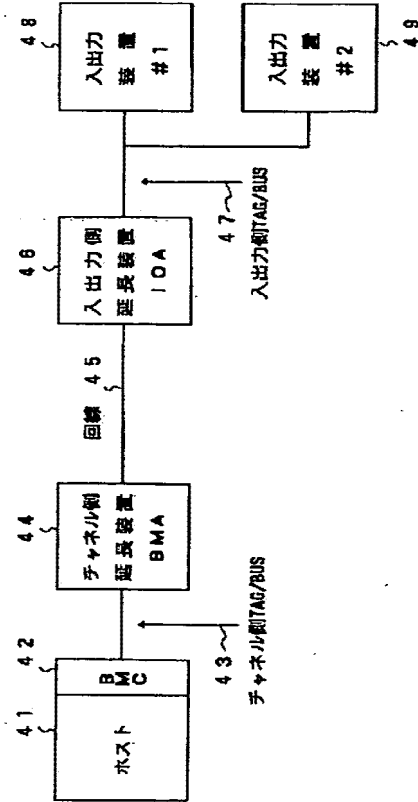
【図13】

図12のBMCとBMAとの間での
ライトコマンドなどに対する処理手順



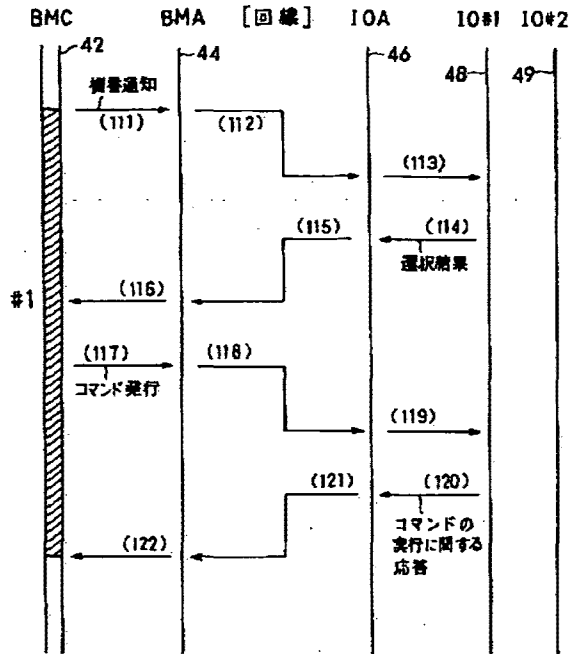
【図14】

一般的な入出力インタフェース延長制御システムの概要



【図15】

一般的な起動要求に対する処理シーケンス



【網部分の間は IO # 2 への起動処理は不可】

フロントページの続き

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ARTIFACT SHEET

Enter artifact number below. Artifact number is application number + artifact type code (see list below) + sequential letter (A, B, C ...). The first artifact folder for an artifact type receives the letter A, the second B, etc..
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110 78778ZA

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Doc Code: Artifact Artifact Type Code X

Other, description:

NPL

Doc Code: Artifact Artifact Type Code: Z

March 8, 2004

PATENT APPLICATION FEE DETERMINATION RECORD
Effective December 8, 2004

11078778

CLAIMS AS FILED - PART I

	(Column 1)	(Column 2)
TOTAL CLAIMS	16	
FOR	NUMBER FILED	NUMBER EXTRA
TOTAL CHARGEABLE CLAIMS	18 minus 20 =	2
INDEPENDENT CLAIMS	3 minus 3 =	0
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

RATE	FEE
BASIC FEE	150.00
X\$ 25=	
X100=	
+180=	180
TOTAL	330

OTHER THAN SMALL ENTITY

RATE	FEE
BASIC FEE	300.00
X\$50=	
X200=	
+360=	
TOTAL	

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	76 Minus 20	= 56
	Independent	3 Minus 3	= 0
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/>			

SMALL ENTITY OR

RATE	ADDITIONAL FEE
X\$ 25=	1400
X100=	
+180=	
TOTAL ADDIT. FEE	1400

OTHER THAN SMALL ENTITY

RATE	ADDITIONAL FEE
X\$50=	
X200=	
+360=	
TOTAL ADDIT. FEE	

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

RATE	ADDITIONAL FEE
X\$ 25=	
X100=	
+180=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$50=	
X200=	
+360=	
TOTAL ADDIT. FEE	

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

RATE	ADDITIONAL FEE
X\$ 25=	
X100=	
+180=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$50=	
X200=	
+360=	
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."
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APPLICATION NUMBER	FILING OR 371 (c) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
11/078,778	03/11/2005	Michael Tasler	SCHO0102D-C

22862
 GLENN PATENT GROUP
 3475 EDISON WAY, SUITE L
 MENLO PARK, CA 94025

CONFIRMATION NO. 8978



Date Mailed: 04/05/2006

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 03/15/2006.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

BERHANU GIRUM
 PTOSS (703) 305-0677

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APPLICATION NUMBER	FILING OR 371 (c) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
11/078,778	03/11/2005	Michael Tasler	9576/96910

Jeffrey W. Salmon, Esq.
Welsh & Katz, Ltd.
22nd Floor
120 S. Riverside Plaza
Chicago, IL 60606

CONFIRMATION NO. 8978



Date Mailed: 04/05/2006

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 03/15/2006.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

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WELSH & KATZ, LTD.

120 South Riverside Plaza
22nd Floor
Chicago, Illinois 60606
Phone (312) 655-1500
Facsimile Number (312) 655-1501

FACSIMILE COVER SHEET

From: Jeffrey W. Salmon, Esq.

Date: June 7, 2006

To: Commissioner for Patents
UNITED STATES PATENT & TRADEMARK OFFICE
Washington, D.C. 20231

Attn: Examiner, Mr. Harold J. Kim

Fax: (571) 273-8300

Number of pages including this cover letter: 4

COMMENTS:

File No. 0757/96910

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JUN 07 2006

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of: Michael Tasler

Group No.: 2181

Serial No.: 11/078,778

Conf. No.: 8978

Filed: 3/11/05

Examiner: Harold J. Kim

For: ANALOG DATA GENERATING
AND PROCESSING DEVICE
FOR USE WITH A PERSONAL
COMPUTER (As Amended)

I hereby certify under 37 C.F.R. 1.8 that this paper is
being transmitted via facsimile pursuant to 37 C.F.R.
1.6(d) to the U.S. Patent and Trademark Office, (703)
872-9306, on the date indicated below.


Date: June 7, 2006

Attorney

Docket No.: 0757/96910

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

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

Sir:

Pursuant to 37 C.F.R. §1.97, a list of documents is disclosed on the attached Form PTO-1449 that may be material to the examination of this application. The listed document is U.S. Patent No. 5,844,961. No copy of it is being submitted herewith.

It is submitted that no fees are due in connection with this Information Disclosure Statement because it is being submitted prior to the issuance of the first Office Action.

No inferences should be drawn that the attached list represents a comprehensive investigation, or that any material disclosed is equivalent to the subject invention. In addition, none of the documents that have publication dates prior to the priority date of the above application anticipate the invention in this application.

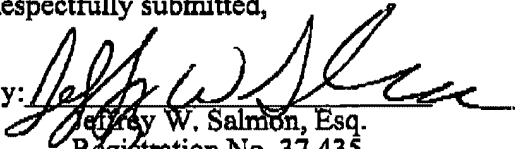
The cited document(s) disclose numerous specific features. There has been no attempt to list each and every feature disclosed by each document. The Examiner is requested to review the document(s) and determine the extent of the materiality of the document disclosures with respect to the present invention.

The discussion of any art and the citation of any document(s) herein is not to be construed as an admission that the art or document disclosure is necessarily within the invention field of endeavor, that the art or document disclosure is necessarily prior in time to a particular

date which may be relevant to the instant patent application, and/or that the art or document disclosure is otherwise necessarily prior art as defined by the patent law with respect to the instant invention and application.

Also, there is reserved the right to later set forth how the instant invention is distinguished over the disclosure of any document or other art, including the disclosures of the art and document(s) recited herein, that may be cited by the Examiner in rejecting a claim in the instant patent application. The recitation herein of the art and document(s) is not to be construed as an assertion that more pertinent art could not possibly be in existence.

Respectfully submitted,

By: 
Jeffrey W. Salmon, Esq.
Registration No. 37,435

Dated: June 7, 2006
Enclosures: Form PTO-1449

WELSH & KATZ, LTD.
120 South Riverside Plaza
22nd Floor
Chicago, Illinois 60606
Telephone: (312) 655-1500
Facsimile: (312) 655-1501

Form PTO-1449 (Rev. 8-88)		U.S. Department of Commerce Patent and Trademark Office			Attorney Docket No. 0757/96910		Serial No. 11/078,778	
INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)					Applicant Michael Tasler			
					Filing Date 03/11/05		Group No. 2181	
U.S. PATENT DOCUMENTS								
		5,844,961	12/1/98	McEvoy, et al.				
FOREIGN PATENT DOCUMENTS								
		Document Number	Date	Country	Class	Subclass	Translation Yes No	
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)								
Examiner				Date Considered				
*Examiner:		Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.						

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	0	(analognear3signal)and(externalnear5hou\$5)andsensorand(analognear3digitalnear3converter)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2006/06/08 23:10
L2	233402	(analog near3 signal)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2006/06/08 23:10
L3	1447	(analog near3 signal) and (external near5 hous\$5) and sensor	US-PGPUB; USPAT; EPO; JPO	OR	ON	2006/06/08 23:11
L4	989	(analog near3 signal) and (external near5 hous\$5) and sensor and converter	US-PGPUB; USPAT; EPO; JPO	OR	ON	2006/06/08 23:11
L5	738	(analog near3 signal) and (external near5 hous\$5) and sensor and (digital near3 converter)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2006/06/08 23:12
L6	72	(analog near3 signal) and (external near5 hous\$5) and sensor and (digital near3 converter) and poll\$4	US-PGPUB; USPAT; EPO; JPO	OR	ON	2006/06/08 23:13
L7	21	l6 and @ad<"19970304"	US-PGPUB; USPAT; EPO; JPO	OR	ON	2006/06/08 23:14
L8	30	l6 and @rlad<"19970304"	US-PGPUB; USPAT; EPO; JPO	OR	ON	2006/06/08 23:14
L9	6	l6 and @prad<"19970304"	US-PGPUB; USPAT; EPO; JPO	OR	ON	2006/06/08 23:14
L10	40	l7 or l8 or l9	US-PGPUB; USPAT; EPO; JPO	OR	ON	2006/06/08 23:16
L11	126	710/220.ccls.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2006/06/08 23:17
L12	387	710/16.ccls.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2006/06/08 23:18
L13	216	710/23.ccls.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2006/06/08 23:18
L14	488	(703/23).CCLS.	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2006/06/08 23:21

EAST Search History

L15	5870	(707/10).CCLS.	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2006/06/08 23:21
L16	2462	(358/296).CCLS.	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2006/06/08 23:21
L17	725	(358/442).CCLS.	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2006/06/08 23:22
L18	1	("5508821").PN.	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2006/06/08 23:22
L19	8	("5508821").URPN.	USPAT	OR	ON	2006/06/08 23:45
L20	813	(710/15).CCLS.	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2006/06/08 23:45
S1	1	("6470399").PN.	USPAT; USOCR; EPO; JPO	OR	OFF	2004/05/17 01:03
S2	814	710/8.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:04
S3	225	710/16.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:04
S4	0	710/321.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:04
S5	0	709/321.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:04
S6	730	709/220.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:05
S7	328	709/222.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:05
S8	237	710/11.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:05
S9	74	710/12.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:05
S10	15	710/115.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:05
S11	598	710/62.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:05
S12	196	710/63.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:05

EAST Search History

S13	180	710/64.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:05
S14	324	703/23.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:05
S15	225	703/24.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:05
S16	220	703/25.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:05
S17	50	710/8.ccls. and 710/16.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:06
S18	36	710/8.ccls. and 709/220.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:06
S19	14	710/8.ccls. and 709/222.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:06
S20	50	710/8.ccls. and 710/11.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:06
S21	20	710/8.ccls. and 710/12.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:06
S22	122	710/8.ccls. and 710/62.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:06
S23	35	710/8.ccls. and 710/63.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:06
S24	28	710/8.ccls. and 710/64.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:06
S25	3	710/8.ccls. and 703/23.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:06
S26	5	710/8.ccls. and 703/24.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:06
S27	21	710/8.ccls. and 703/25.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:06
S28	29	(driver with storage) same (virtual near2 system)	USPAT; EPO; JPO	OR	ON	2004/05/17 01:08
S29	3	(driver with storage) same (virtual near2 system) same directory	USPAT; EPO; JPO	OR	ON	2004/05/17 01:09
S30	0	(driver with storage with regardless) same (virtual near2 system)	USPAT; EPO; JPO	OR	ON	2004/05/17 01:09
S31	0	(driver with storage with inquiry) same (virtual near2 system)	USPAT; EPO; JPO	OR	ON	2004/05/17 01:10
S32	1	(driver with storage) same inquiry same (virtual near2 system)	USPAT; EPO; JPO	OR	ON	2004/05/17 01:10
S33	1	(driver with storage) same inquiry\$3 same (virtual near2 system)	USPAT; EPO; JPO	OR	ON	2004/05/17 01:10

EAST Search History

S34	0	(driver with storage) same detect\$4 same (virtual near2 system)	USPAT; EPO; JPO	OR	ON	2004/05/17 01:10
S35	3	(driver with storage) same monitor\$4 same (virtual near2 system)	USPAT; EPO; JPO	OR	ON	2004/05/17 01:11
S36	576	(driver with storage) same monitor\$4	USPAT; EPO; JPO	OR	ON	2004/05/17 01:11
S37	1	("6012113").PN.	USPAT; USOCR; EPO; JPO	OR	OFF	2004/05/17 01:14
S38	6	"6012113".URPN.	USPAT	OR	ON	2004/05/17 01:12
S39	0	"6470399".URPN.	USPAT	OR	ON	2004/05/17 01:12
S40	15	("4040014" "4045774" "4425625" "4503288" "4797878" "4989203" "5065427" "5155847" "5355365" "5369700" "5408527" "5452329" "5524047" "5596628" "5628030").PN.	USPAT	OR	ON	2004/05/17 01:13
S41	15	("4040014" "4045774" "4425625" "4503288" "4797878" "4989203" "5065427" "5155847" "5355365" "5369700" "5408527" "5452329" "5524047" "5596628" "5628030").PN.	USPAT	OR	ON	2004/05/17 01:14
S42	1	("5548783").PN.	USPAT; USOCR; EPO; JPO	OR	OFF	2004/05/17 01:14
S43	26	"5548783".URPN.	USPAT	OR	ON	2004/05/17 01:15
S44	1	("6895449").PN.	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2006/06/08 20:30
S45	388	(710/16).CCLS.	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2006/06/08 21:09
S46	6	((("5915106") or ("5508821") or ("5131089") or ("4642759") or ("5724574") or ("5532825"))).PN.	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2006/06/08 21:22
S47	1	("6895449").PN.	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2006/06/08 22:59

EAST Search History

S48	0	("(analognear3signal)and(externalnear5hour\$5)andsensorand(analognear3digitalnear3converter)").PN.	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2006/06/08 23:07
S49	0	(analognear3signal)and(externalnear5hour\$5)andsensorand(analognear3digitalnear3converter)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2006/06/08 23:10



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NOTICE OF ALLOWANCE AND FEE(S) DUE

7590 06/20/2006
Jeffrey W. Salmon, Esq.
Welsh & Katz, Ltd.
22nd Floor
120 S. Riverside Plaza
Chicago, IL 60606

EXAMINER

KIM, HAROLD J

ART UNIT PAPER NUMBER

2181

DATE MAILED: 06/20/2006

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

11/078,778 03/11/2005 Michael Tasler 9576/96910 8978

TITLE OF INVENTION: FLEXIBLE INTERFACE

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

nonprovisional YES \$700 \$300 \$1000 09/20/2006

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.

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A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

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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.

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PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail** Mail Stop ISSUE FEE
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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)

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.

7590 06/20/2006

Jeffrey W. Salmon, Esq.
 Welsh & Katz, Ltd.
 22nd Floor
 120 S. Riverside Plaza
 Chicago, IL 60606

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/078,778	03/11/2005	Michael Tasler	9576/96910	8978

TITLE OF INVENTION: FLEXIBLE INTERFACE

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	\$700	\$300	\$1000	09/20/2006

EXAMINER	ART UNIT	CLASS-SUBCLASS
KIM, HAROLD J	2181	710-015000

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, 1 _____
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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

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- Issue Fee
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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.

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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 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.
11/078,778 03/11/2005 Michael Tasler 9576/96910 8978

Jeffrey W. Salmon, Esq.
Welsh & Katz, Ltd.
22nd Floor
120 S. Riverside Plaza
Chicago, IL 60606

EXAMINER

KIM, HAROLD J

ART UNIT PAPER NUMBER

2181

DATE MAILED: 06/20/2006

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 40 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 40 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 1-(888)-786-0101 or (571)-272-4200.

Notice of Allowability	Application No.	Applicant(s)	
	11/078,778	TASLER, MICHAEL	
	Examiner	Art Unit	
	Harold Kim	2181	

-- 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 the Preliminary Amendment filed on 3/28/06.
2. The allowed claim(s) is/are 17-93. [now 1-77].
3. 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. 09/331,002.
 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.

4. 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.
5. 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).
6. 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)

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date <u>20060328</u> 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material | <ol style="list-style-type: none"> 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) 6. <input type="checkbox"/> Interview Summary (PTO-413), Paper No./Mail Date _____. 7. <input type="checkbox"/> Examiner's Amendment/Comment 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance 9. <input type="checkbox"/> Other _____. |
|---|--|

Supervisory
FRITZ FLEMING
PRIMARY EXAMINER
GROUP 2100
6/11/2006
AU2181

Reasons for Allowance

1. The following is an examiner's statement of reasons for allowance:

The prior art cited on the attached form PTO-892 is the most relevant prior art known. However, Applicant's claimed invention distinguishes over the prior art for the following reasons. The claims are allowable over the prior art of record because none of the references, either alone or in combination, discloses or renders obvious that a analog data generating and processing device comprising: a sensor that is mounted on a housing, the sensor being adapted to receive analog wave signal that are generated by a source that is external to the housing, the sensor to generate sets of analog data from the analog wave signals that is receives, generates a set of digitized analog data from each set of analog data, a first set of instructions being stored in a memory that are utilized by a processor to cause the sets of digitized analog data to be individually stored in the memory irrespective of whether or not the analog data generating and processing device has been recognized by a personal computer, and a response signal being automatically and without user intervention sent from an input/output port to a multi-purpose interface after an inquiry signal has been received by the input/output port, the receipt and processing of the receipt signal by the personal computer causing it to automatically and without user intervention recognized the analog data generating and processing device as being a device having digital data that is stored therein and selectively retrievable therefrom. The cited references at most, contain only one or the

other, but not all the limitations claimed. There would also be no reason to make any of the possible combinations

2. 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 response to this action should be mailed to:

Mail Stop _____
Commissioner for Patents
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Alexandria, VA 22313-1450

The centralized fax number is 571-273-8300.

The centralized hand carry paper drop off location is:

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Customer Service Window, Mail Stop _____
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Any inquiry of a general nature or relating to the status of this application should be directed to the central telephone number (571) 272-2100.

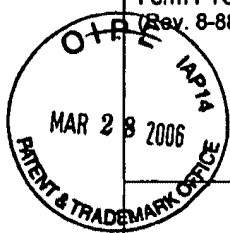
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harold Kim whose telephone number is 571-272-4148. The examiner can normally be reached on Monday-Friday 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fritz Fleming, can be reached on 571-272-4145. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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).

nk
Harold J. Kim
Patent Examiner
June 9, 2006/HK

Fritz Fleming
FRITZ FLEMING
PRIMARY EXAMINER
GROUP 2100
Supervisory
HK 2181
6/11/2006



Form PTO-1449 (Rev. 8-88)	U.S. Department of Commerce Patent and Trademark Office	Attorney Docket No. 0757/96910	Serial No. 11/078,778
INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)		Applicant Michael Tasler	
		Filing Date 03/11/05	Group No. 2181

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Examiner	/Harold Kim/ (06/09/2006)	Date Considered	/Harold Kim/ (06/09/2006)
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*Examiner: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Form PTO-1449 (Rev. 8-88)		U.S. Department of Commerce Patent and Trademark Office		Attorney Docket No. 0757/96910		Serial No. 11/078,778	
INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)				Applicant Michael Tasler			
				Filing Date 03/11/05		Group No. 2181	
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Examiner /Harold Kim/ (06/09/2006)			Date Considered /Harold Kim/ (06/09/2006)				
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INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)				Applicant Michael Tasler			
				Filing Date 03/11/05		Group No. 2181	
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		Document Number	Date	Country	Class	Subclass	Translation Yes No
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Examiner		/Harold Kim/ (06/09/2006)		Date Considered		/Harold Kim/ (06/09/2006)	
*Examiner:		Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.					

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				Filing Date 03/11/05		Group No. 2181
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Examiner		/Harold Kim/ (06/09/2006)		Date Considered		
				/Harold Kim/ (06/09/2006)		
*Examiner:		Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.				

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INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)				Applicant Michael Tasler			
				Filing Date 03/11/05		Group No. 2181	
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Examiner		/Harold Kim/ (06/09/2006)		Date Considered		/Harold Kim/ (06/09/2006)	
*Examiner: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.							

Notice of References Cited	Application/Control No. 11/078,778	Applicant(s)/Patent Under Reexamination TASLER, MICHAEL	
	Examiner Harold Kim	Art Unit 2181	Page 1 of 1

U.S. PATENT DOCUMENTS

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A US-6,167,456	12-2000	Daur et al.	719/321
*	B US-7,051,281	05-2006	Yokota, Masahiko	715/740
*	C US-6,545,775	04-2003	Watanabe et al.	358/442
*	D US-5,508,821	04-1996	Murata, Kazuyuki	358/442
	E US-			
	F US-			
	G US-			
	H US-			
	I US-			
	J US-			
	K US-			
	L US-			
	M US-			


FOREIGN PATENT DOCUMENTS

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N				
	O				
	P				
	Q				
	R				
	S				
	T				

NON-PATENT DOCUMENTS

*	Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
U	
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.

Issue Classification 	Application/Control No. 11/078,778	Applicant(s)/Patent under Reexamination TASLER, MICHAEL
	Examiner Harold Kim	Art Unit 2181

ISSUE CLASSIFICATION										
ORIGINAL				INTERNATIONAL CLASSIFICATION						
CLASS		SUBCLASS		CLAIMED			NON-CLAIMED			
710		15		G	06	F	3	/00	/	
CROSS REFERENCES								/	/	
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)							/	/	
710	220							/	/	
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<i>Harold Kim</i> Harold Kim 6/9/2006 (Assistant Examiner) (Date)				Supervisory FRITZ FLEMING PRIMARY EXAMINER GROUP 2100 <i>6/11/2006</i> (Primary Examiner) (Date)			Total Claims Allowed: 77			
<i>Legal Instruments Examiner</i> (Legal Instruments Examiner) (Date)							O.G. Print Claim(s) 1		O.G. Print Fig. 2	

<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	
Final	Original	Final	Original	Final	Original	Final	Original
	1		31		61		91
	2		32		62		92
	3		33		63		93
	4		34		64		94
	5		35		65		95
	6		36		66		96
	7		37		67		97
	8		38		68		98
	9		39		69		99
	10		40		70		100
	11		41		71		101
	12		42		72		102
	13		43		73		103
	14		44		74		104
	15		45		75		105
	16		46		76		106
	17		47		77		107
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	19		49		79		109
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Search Notes



Application/Control No.

11/078,778

Examiner

Harold Kim

Applicant(s)/Patent under
Reexamination

TASLER, MICHAEL

Art Unit

2181

SEARCHED

Class	Subclass	Date	Examiner
710	15, 23, 220	6/8/2006	HK
703	23	6/8/2006	HK
707	10	6/8/2006	HK
358	296, 442	6/8/2006	HK

INTERFERENCE SEARCHED

Class	Subclass	Date	Examiner
710	15, 220	6/8/2006	HK

**SEARCH NOTES
(INCLUDING SEARCH STRATEGY)**

	DATE	EXMR
USPAT, USPGPUB, JPO, EPO, IEEE, NPL, EAST, inventor search on eDAN, see attached search note	6/8/2006	HK

Harold Kim 6/9/2008



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Bib Data Sheet

CONFIRMATION NO. 8978

Table with 5 columns: SERIAL NUMBER (11/078,778), FILING OR 371(c) DATE (03/11/2005), CLASS (710), GROUP ART UNIT (2181), ATTORNEY DOCKET NO. (9576/96910)

APPLICANTS
Michael Tasler, Wurzburg, GERMANY;
** CONTINUING DATA ***** YES HK, 6/9/2006
This application is a CON of 10/219,105 08/15/2002 PAT, 6,895,449
** FOREIGN APPLICATIONS ***** YES HK, 6/9/2006
GERMANY 19708755.8 03/04/1997
EUROPEAN PATENT OFFICE (EPO) PCT/EP98/01187 03/03/1998
IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** 04/08/2005 ** SMALL ENTITY **

Table with 5 columns: Foreign Priority claimed (yes/no), 35 USC 119 (a-d) conditions met (yes/no/Met after Allowance), STATE OR COUNTRY (GERMANY), SHEETS DRAWING (2), TOTAL CLAIMS (16), INDEPENDENT CLAIMS (3)

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TITLE
Flexible interface

Table with 2 columns: FILING FEE RECEIVED (2080) and FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following: (List of fee options: All Fees, 1.16 Fees, 1.17 Fees, 1.18 Fees, Other, Credit)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of: Michael Tasler

Group No.: 2181

Serial No.: 11/078,778

Conf. No.: 8978

Filed: 3/11/06

Examiner: Harold J. Kim

For: ANALOG DATA GENERATING
AND PROCESSING DEVICE
FOR USE WITH A PERSONAL
COMPUTER (As Amended)

Attorney

Docket No.: 0757/96910

SUPPLEMENTAL PRELIMINARY AMENDMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-0001

Dear Sir:

Please enter this supplemental preliminary amendment prior to examination of the above-captioned application.

Applicant: Michael Tasler
Application No.: 11/078,778
Filed: 03/11/05
Date: June 26, 2006
Page – 2 –

IN THE CLAIMS:

Please cancel claims 18, 45 and 70 without prejudice, and please amend claims 17, 44, and 69 as follows:

17. (currently amended) A combination, comprising:

~~An analog data generating and processing device for use with a personal computer having at least one multi-purpose interface to which the personal computer sends periodic inquiry signals~~ are periodically sent as to what type of device is operatively connected thereto; ~~and;~~

~~an the analog data generating and processing device comprising:~~ having an input/output port that is operatively connected to the multi-purpose interface of the personal computer, the analog data generating and processing device including

a sensor that is mounted on a housing, the sensor being adapted to receive analog wave signals that are generated by a source that is external to the housing and that is not located in substantial proximity to the sensor, the sensor being further adapted to generate sets of analog data from the analog wave signals that it receives;

an analog to digital converter that is operatively connected to the sensor and that generates a set of digitized analog data from each set of analog data;

a circuit that includes a processor and a memory that are operatively connected to the analog to digital converter, a first set of instructions being stored in the memory that are utilized by the processor to cause the sets of digitized analog data to be individually stored in the memory irrespective of whether or not the analog data generating and processing device has been recognized by the personal computer;

~~an input/output port that is adapted to be operatively connected to the multi-purpose interface of the personal computer, wherein a response signal being is~~ automatically and without user intervention sent from the input/output port to the multi-purpose interface after they have been operatively connected together and after an inquiry signal has been received by the input/output port, the receipt and processing of the receipt signal by the personal computer causing it to automatically and without user intervention recognize the analog data generating and processing device as being a device having digital data that is stored therein and selectively retrievable therefrom;³ and

wherein, after the analog data generating and processing device has been automatically recognized by the personal computer, and while the input/output port is operatively connected to the multi-purpose interface, user selected ones of the digitized sets of analog data can be transferred from the memory, through the input/output port, through the multi-purpose interface, and to the personal computer by means of a driver that is associated with the personal computer.

18. (cancelled).

19. (currently amended) The combination ~~analog data generating and processing device~~ of claim 17, wherein the analog wave signals comprise electromagnetic radiation.

20. (currently amended) The combination ~~analog data generating and processing device~~ of claim 19, wherein the electromagnetic radiation received by the sensor is representative of an object that is physically separated from and can be located not in substantial proximity to the housing.

21. (currently amended) The combination ~~analog data generating and processing~~ device-claim 20, wherein the electromagnetic radiation is generated by a medical device.

22. (currently amended) The combination ~~analog data generating and processing~~ device-of claim 21, wherein the medical device comprises a diagnostic radiological system.

23. (currently amended) The combination ~~analog data generating and processing~~ device-of claim 20, wherein the sensor comprises an electronic measuring device.

24. (currently amended) The combination ~~analog data generating and processing~~ device-of claim 23, wherein the electronic measuring device comprises a multi-meter.

25. (currently amended) The combination ~~analog data generating and processing~~ device-of claim 20, wherein the driver is adapted for use with a mass storage device.

26. (currently amended) The combination ~~analog data generating and processing~~ device-of claim 25, wherein the driver is adapted for use with a mass storage device that includes a rotatable storage medium.

27. (currently amended) The combination ~~analog data generating and processing~~ device-of claim 26, wherein the driver is adapted for use with a hard disk drive.

28. (currently amended) The combination ~~analog data generating and processing~~ device-of claim 20, wherein the driver is located in a memory of the personal computer.

29. (currently amended) The combination ~~analog data generating and processing~~ device-of claim 28, wherein the personal computer memory comprises a BIOS of the personal computer.

30. (currently amended) The combination ~~analog data generating and processing~~ device-of claim 20, wherein receipt and processing of the response signal by the personal

computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device even though it is not a mass storage device.

31. (currently amended) The combination ~~analog data generating and processing device~~ of claim 30, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device having a rotatable storage disk even though it is not a mass storage device having a rotatable storage disk.

32. (currently amended) The combination ~~analog data generating and processing device~~ of claim 31, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a hard disk drive even though it is not a hard disk drive.

33. (currently amended) The combination ~~analog data generating and processing device~~ of claim 20, wherein the memory of the analog data generating and processing device comprises a buffer memory.

34. (currently amended) The combination ~~analog data generating and processing device~~ of claim 20, wherein the input/output port is adapted to be operatively connected to a SCSI interface of the personal computer.

35. (currently amended) The combination ~~analog data generating and processing device~~ of claim 20, wherein the processor comprises a digital signal processor.

36. (currently amended) The combination ~~analog data generating and processing device~~ of claim 20, wherein the sets of digitized analog data are transferred to the personal computer in a format suitable for a mass storage device present in the personal computer.

37. (currently amended) The combination ~~analog data generating and processing device~~ of claim 36, wherein a root directory and virtual files are created in the memory which can be accessed by the personal computer.

38. (currently amended) The combination ~~analog data generating and processing device~~ of claim 37, wherein at least one of the virtual files comprises a configuration file stored in the memory.

39. (currently amended) The combination ~~analog data generating and processing device~~ of claim 38, wherein the configuration file allows a user to configure the analog data generating and processing device as being a specific mass storage device.

40. (currently amended) The combination ~~analog data generating and processing device~~ of claim 39, wherein the configuration file allows a user to configure the analog data generating and processing device as being a specific hard disk drive.

41. (currently amended) The combination ~~analog data generating and processing device~~ of claim 20, wherein a wire based connection is used to operatively connect the input/output port to the multi-purpose interface of the personal computer.

42. (currently amended) The combination ~~analog data generating and processing device~~ of claim 20, wherein a second set of instructions are stored in the memory which are adapted to cause the response signals to be generated.

43. (currently amended) The combination ~~analog data generating and processing device~~ of claim 20, wherein a third set of instructions are stored in the memory that allow user selected ones of the digitized sets of analog data to be transferred to a memory of the personal computer.

44. (currently amended) A combination, comprising:

~~An analog data generating and processing device for use with a personal computer having at least one multi-purpose interface to which the personal computer sends periodic inquiry signals~~ are periodically sent as to what type of device is operatively connected thereto; ~~and, the~~

an analog data generating and processing device comprising: that is operatively coupled to the multi-purpose interface of the personal computer, the analog data generating and processing device including

means for receiving analog wave signals that are generated by a source external to and not located in substantial proximity to the analog data generating and processing device, for generating sets of analog data therefrom, and for digitizing each set of analog data;

means for causing the digitized sets of analog data to be individually stored in a memory irrespective of whether or not the analog data generating and processing device has been recognized by the personal computer;

~~means for receiving from the multi-purpose interface of the personal computer the periodic inquiry signals, and for automatically and without user intervention responding thereto~~ the receipt of a periodic inquiry signal from the personal computer by sending a signal to the multi-purpose interface that causes the personal computer to automatically and without user intervention recognize the analog data generating and processing device as being a device having digital data that is stored in and to be selectively retrievable from a memory in which digital signals are stored; and

means for transferring user selected ones of the digitized sets of analog data to the personal computer by means of a driver that is associated with the personal computer.

45. (cancelled).

46. (currently amended) The combination ~~analog data generating and processing device~~ of claim 44, wherein the analog wave signals comprise electromagnetic radiation.

47. (currently amended) The combination ~~analog data generating and processing device~~ of claim 46, wherein the electromagnetic radiation is representative of an object that is physically separated from and can be located not in substantial proximity to the analog data generating and processing device.

48. (currently amended) The combination ~~analog data generating and processing device~~ of claim 47, wherein the means for receiving analog wave signals forms a part of a medical device.

49. (currently amended) The combination ~~analog data generating and processing device~~ of claim 48, wherein the medical device comprises a diagnostic radiological system.

50. (currently amended) The combination ~~analog data generating and processing device~~ of claim 47, wherein the means for receiving analog wave signals includes an electronic measuring device.

51. (currently amended) The combination ~~analog data generating and processing device~~ of claim 50, wherein the electronic measuring device comprises a multi-meter.

52. (currently amended) The combination ~~analog data generating and processing device~~ of claim 47, wherein the driver is adapted for use with a mass storage device.

53. (currently amended) The combination ~~analog data generating and processing device~~ of claim 52, wherein the driver is adapted for use with a mass storage device that includes a rotatable storage medium.

54. (currently amended) The combination ~~analog data generating and processing device~~ of claim 53, wherein the driver is adapted for use with a hard disk drive.

55. (currently amended) The combination ~~analog data generating and processing device~~ of claim 47, wherein the driver is located in a memory of the personal computer.

56. (currently amended) The combination ~~analog data generating and processing device~~ of claim 55, wherein the personal computer memory comprises a BIOS of the personal computer.

57. (currently amended) The combination ~~analog data generating and processing device~~ of claim 47, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device even though it is not a mass storage device.

58. (currently amended) The combination ~~analog data generating and processing device~~ of claim 57, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device having a rotatable storage disk even though it is not a mass storage device having a rotatable storage disk.

59. (currently amended) The combination ~~analog data generating and processing device~~ of claim 58, wherein receipt and processing of the response signal by the personal

computer allows it to communicate with the analog data generating and processing device as if it were a hard disk drive even though it is not a hard disk drive.

60. (currently amended) The combination ~~analog data generating and processing device~~ of claim 47, wherein the memory of the analog data generating and processing device comprises a buffer memory.

61. (currently amended) The combination ~~analog data generating and processing device~~ of claim 47, wherein the means for receiving from the multi-purpose interface is adapted to be operatively connected to a SCSI interface of the personal computer.

62. (currently amended) The combination ~~analog data generating and processing device~~ of claim 61, wherein the means for transferring comprises at least a portion of a digital signal processor.

63. (currently amended) The combination ~~analog data generating and processing device~~ of claim 47, wherein the sets of digitized analog data are transferred to the personal computer in a format suitable for a mass storage device present in the personal computer.

64. (currently amended) The combination ~~analog data generating and processing device~~ of claim 63 wherein a root directory and virtual files are created in the memory which can be accessed by the personal computer.

65. (currently amended) The combination ~~analog data generating and processing device~~ of claim 64, wherein at least one of the virtual files comprises a configuration file stored in the memory.

66. (currently amended) The combination ~~analog data generating and processing device~~ of claim 64, wherein the configuration file allows a user to configure the analog data generating and processing device as being a specific mass storage device.

67. (currently amended) The combination ~~analog data generating and processing device~~ of claim 65, wherein the configuration file allows a user to configure the analog data generating and processing device as being a specific hard disk drive.

68. (currently amended) The combination ~~analog data generating and processing device~~ of claim 47, wherein a wire based connection is used to operatively connect the multi-purpose interface of the personal computer with the means for receiving from the multi-purpose interface.

69. (currently amended) A combination, comprising:
~~An analog data generating and processing device for use with a personal computer having at least one multi-purpose interface to which the personal computer sends periodic inquiry signals~~ are periodically sent as to what type of device is operatively connected thereto; and, the

an analog data generating and processing device comprising: having a connecting device that is operatively connected to the multi-purpose interface of the personal computer and that is able to receive therefrom the periodic inquiry signals, the analog data generating and processing device including

a circuit that includes a sensor and an analog to digital converter, the circuit being adapted to be exposed to analog wave signals originate from a source that is external to the analog data generating and processing device and that is not located in substantial

proximity to the sensor, to generate sets of analog data therefrom, and to generate digitized sets of analog data from the sets of analog data;

a processor and a memory both of which are operatively connected to the circuit, the processor being adapted to cause the digitized sets of analog data to be individually stored in the memory irrespective of whether or not the analog data generating and processing device has been recognized by the personal computer;

~~a connecting device operatively connected to the processor and the memory, the connecting device being adapted to be operatively connected to the multi-purpose interface of the personal computer and to receive therefrom the periodic inquiry signals;~~

wherein a response signal is automatically and without user intervention sent to the multi-purpose interface of the personal computer after the connecting device is operatively connected to the multi-purpose interface and after the connecting device receives at least one periodic inquiry signal therefrom, receipt and processing of the response signal by the personal computer causing the personal computer to automatically and without user intervention recognize the analog data generating and processing device as being a device having digital data that is stored therein and selectively retrievable therefrom; and

wherein, after the analog data generating and processing device has been automatically recognized by the personal computer, ~~and when the processor and memory are operatively connected to the circuit,~~ user selected ones of the digitized sets of analog data can be transferred to the personal computer by means of a driver that is associated with the personal computer.

70. (cancelled).

71. (currently amended) The combination ~~analog data generating and processing device~~ of claim 69, wherein the analog wave signals comprise electromagnetic radiation.

72. (currently amended) The combination ~~analog data generating and processing device~~ of claim 71, wherein the electromagnetic radiation is representative of an object that is physically separated from and can be located not in substantial proximity to the analog data generating and processing device.

73. (currently amended) The combination ~~analog data generating and processing device~~ of claim 72, wherein the electromagnetic radiation is generated by a medical device.

74. (currently amended) The combination ~~analog data generating and processing device~~ of claim 73, wherein the medical device comprises a diagnostic radiological system.

75. (currently amended) The combination ~~analog data generating and processing device~~ of claim 72, wherein the sensor comprises an electronic measuring device.

76. (currently amended) The combination ~~analog data generating and processing device~~ of claim 75, wherein the electronic measuring device comprises a multi-meter.

77. (currently amended) The combination ~~analog data generating and processing device~~ of claim 72, wherein the driver is adapted for use with a mass storage device.

78. (currently amended) The combination ~~analog data generating and processing device~~ of claim 77, wherein the driver is adapted for use with a mass storage device that includes a rotatable storage medium.

79. (currently amended) The combination ~~analog data generating and processing device~~ of claim 78, wherein the driver is adapted for use with a hard disk drive.

80. (currently amended) The combination ~~analog data generating and processing device~~ of claim 72, wherein the driver is located in a memory of the personal computer.

81. (currently amended) The combination ~~analog data generating and processing device~~ of claim 80, wherein the personal computer memory comprises a BIOS of the personal computer.

82. (currently amended) The combination ~~analog data generating and processing device~~ of claim 72, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device even though it is not a mass storage device.

83. (currently amended) The combination ~~analog data generating and processing device~~ of claim 82, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device having a rotatable storage disk even though it is not a mass storage device having a rotatable storage disk.

84. (currently amended) The combination ~~analog data generating and processing device~~ of claim 83, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a hard disk drive even though it is not a hard disk drive.

85. (currently amended) of claim 72, wherein the memory of the analog data generating and processing device comprises a buffer memory.

86. (currently amended) The combination ~~analog data generating and processing device~~ of claim 72, wherein the connecting device is adapted to be operatively connected to a SCSI interface of the personal computer.

87. (currently amended) The combination ~~analog data generating and processing device~~ of claim 72, wherein the processor comprises a digital signal processor.

88. (currently amended) The combination ~~analog data generating and processing device~~ of claim 72, wherein the digitized versions of the analog data is transferred to the personal computer in a format suitable for a mass storage device present in the personal computer.

89. (currently amended) The combination ~~analog data generating and processing device~~ of claim 88 wherein the processor is adapted to create a root directory and virtual files in the memory which can be accessed by the personal computer.

90. (currently amended) The combination ~~analog data generating and processing device~~ of claim 89, wherein at least one of the virtual files comprises a configuration file stored in the memory.

91. (currently amended) The combination ~~analog data generating and processing device~~ of claim 90, wherein the configuration file allows a user to configure the analog data generating and processing device as being a specific mass storage device.

92. (currently amended) The combination ~~analog data generating and processing device~~ of claim 91, wherein the configuration file allows a user to configure the analog data generating and processing device as being a specific hard disk drive.

Applicant: Michael Tasler
Application No.: 11/078,778
Filed: 03/11/05
Date: June 26, 2006
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93. (currently amended) The combination ~~analog data generating and processing~~
~~device~~ of claim 72, wherein a wire based connection is used to operatively connect the
input/output port of the processor circuit to the multi-purpose interface of the personal computer.

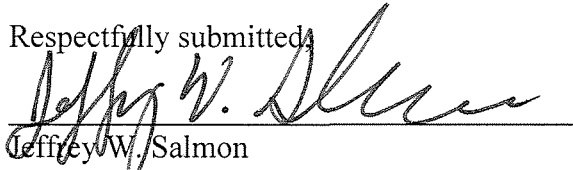
Applicant: Michael Tasler
Application No.: 11/078,778
Filed: 03/11/05
Date: June 26, 2006
Page – 17 –

REMARKS

The purpose of this supplemental preliminary amendment is to amend the claims so that only combination claims are presented for the Examiner's consideration – a combination of a personal computer with an analog data generating and processing device.

It is respectfully submitted that no prior art reference of record, either taken alone or in a purported combination, teaches or suggests the combinations claimed in the currently amended claims, for example, for the reasons stated in the previously submitted preliminary amendment. It also is respectfully submitted that the currently amended claims are in condition for allowance and, therefore, a formal notice to that effect is earnestly solicited. In this regard, the Examiner is respectfully requested to contact the undersigned attorney upon entry of this amendment.

Respectfully submitted,



Jeffrey W. Salmon
Attorney for Applicant
Registration No. 37,435

June 26, 2006
Welsh & Katz, Ltd.
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Electronic Acknowledgement Receipt

EFS ID:	1092231
Application Number:	11078778
Confirmation Number:	8978
Title of Invention:	FLEXIBLE INTERFACE
First Named Inventor:	Michael Tasler
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Filer:	Jeffrey W. Salmon/Maura Halvey
Filer Authorized By:	Jeffrey W. Salmon
Attorney Docket Number:	9576/96910
Receipt Date:	26-JUN-2006
Filing Date:	11-MAR-2005
Time Stamp:	16:35:32
Application Type:	Utility
International Application Number:	

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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)	Multi Part	Pages
1	Amendment - After Non-Final Rejection	supp-prel-amendment.pdf	768988	no	17

Warnings:

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National Stage of an International Application under 35 U.S.C. 371

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From: Jeffrey W. Salmon, Esq.

Date: June 30, 2006

To: Commissioner for Patents
UNITED STATES PATENT & TRADEMARK OFFICE
Washington, D.C. 20231

Attn: Examiner, Mr. Harold J. Kim

Fax: (571) 273-8300

Number of pages including this cover letter: *24 22*

COMMENTS:

File No. 0757/96910

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<p align="center">Request for Continued Examination (RCE) Transmittal</p> <p>Address to: Mail Stop RCE Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450</p>	Application Number	11/078,778
	Filing Date	03/11/2005
	First Named Inventor	Michael Tasler
	Art Unit	2181
	Examiner Name	Harold J. Kim
	Attorney Docket Number	9676/96910

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This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application. Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. See Instruction Sheet for RCEs (not to be submitted to the USPTO) on page 2.

1. **Submission required under 37 CFR 1.114** Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

a. Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

i. Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____

ii. Other Supp. Prel. Amendment (filed 6/26/06) a copy attached as Exhibit A

b. Enclosed

i. Amendment/Reply

ii. Affidavit(s)/ Declaration(s)

iii. Information Disclosure Statement (IDS)

iv. other _____

2. **Miscellaneous**

Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for

a. period of _____ months. (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

b. Other IDS (filed 6/7/06), a copy attached as Exhibit B

3. **Fees**

The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed. The Director is hereby authorized to charge the following fees any underpayment of fees or credit any overpayments to

a. Deposit Account No. 23-0920. I have enclosed a duplicate copy of this sheet.

i. RCE fee required under 37 CFR 1.17(e)

ii. Extension of time fee (37 CFR 1.136 and 1.17)

iii. Other _____

b. Check in the amount of \$ _____ enclosed

c. Payment by credit card (Form PTO-2038 enclosed)

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

Signature	<i>Jeffrey W. Salmon</i>	Date	30 June 2006
Name (Print/Type)	Jeffrey W. Salmon	Registration No.	37,435

CERTIFICATE OF MAILING OR TRANSMISSION

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 or facsimile transmitted to the U.S. Patent and Trademark Office on the date shown below.

Signature	<i>Maura Halvey</i>	Date	6/30/06
Name (Print/Type)	Maura Halvey		

This collection of information is required by 37 CFR 1.114. 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 1.11 and 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, VA 22313-1450. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of: Michael Tasler

Group No.: 2181

**RECEIVED
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Serial No.: 11/078,778

Conf. No.: 8978

JUN 30 2006

Filed: 3/11/06

Examiner: Harold J. Kim

For: ANALOG DATA GENERATING
AND PROCESSING DEVICE
FOR USE WITH A PERSONAL
COMPUTER (As Amended)

Attorney
Docket No.: 0757/96910

SUPPLEMENTAL PRELIMINARY AMENDMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-0001

Dear Sir:

Please enter this supplemental preliminary amendment prior to examination of the above-captioned application.

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Applicant: Michael Tasler
Application No.: 11/078,778
Filed: 03/11/05
Date: June 26, 2006
Page - 2 -

IN THE CLAIMS:

Please cancel claims 18, 45 and 70 without prejudice, and please amend claims 17, 44, and 69 as follows:

17. (currently amended) A combination, comprising:

~~An analog data generating and processing device for use with a personal computer~~
having at least one multi-purpose interface to which ~~the personal computer sends periodic~~
inquiry signals are periodically sent as to what type of device is operatively connected thereto;
and,

~~an the analog data generating and processing device comprising: having an~~
input/output port that is operatively connected to the multi-purpose interface of the personal
computer, the analog data generating and processing device including

a sensor that is mounted on a housing, the sensor being adapted to receive analog wave signals that are generated by a source that is external to the housing and that is not located in substantial proximity to the sensor, the sensor being further adapted to generate sets of analog data from the analog wave signals that it receives,;

an analog to digital converter that is operatively connected to the sensor and that generates a set of digitized analog data from each set of analog data,;

a circuit that includes a processor and a memory that are operatively connected to the analog to digital converter, a first set of instructions being stored in the memory that are utilized by the processor to cause the sets of digitized analog data to be individually stored in the memory irrespective of whether or not the analog data generating and processing device has been recognized by the personal computer,;

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~~an input/output port that is adapted to be operatively connected to the multi-purpose interface of the personal computer, wherein a response signal being is automatically and without user intervention sent from the input/output port to the multi-purpose interface after they have been operatively connected together and after an inquiry signal has been received by the input/output port, the receipt and processing of the receipt signal by the personal computer causing it to automatically and without user intervention recognize the analog data generating and processing device as being a device having digital data that is stored therein and selectively retrievable therefrom;~~ and

wherein, after the analog data generating and processing device has been automatically recognized by the personal computer, and while the input/output port is operatively connected to the multi-purpose interface, user selected ones of the digitized sets of analog data can be transferred from the memory, through the input/output port, through the multi-purpose interface, and to the personal computer by means of a driver that is associated with the personal computer.

18. (cancelled).

19. (currently amended) The ~~combination analog data generating and processing device~~ of claim 17, wherein the analog wave signals comprise electromagnetic radiation.

20. (currently amended) The ~~combination analog data generating and processing device~~ of claim 19, wherein the electromagnetic radiation received by the sensor is representative of an object that is physically separated from and can be located not in substantial proximity to the housing.

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21. (currently amended) The combination analog data generating and processing ~~device~~-claim 20, wherein the electromagnetic radiation is generated by a medical device.
22. (currently amended) The combination analog data generating and processing ~~device~~-of claim 21, wherein the medical device comprises a diagnostic radiological system.
23. (currently amended) The combination analog data generating and processing ~~device~~-of claim 20, wherein the sensor comprises an electronic measuring device.
24. (currently amended) The combination analog data generating and processing ~~device~~-of claim 23, wherein the electronic measuring device comprises a multi-meter.
25. (currently amended) The combination analog data generating and processing ~~device~~-of claim 20, wherein the driver is adapted for use with a mass storage device.
26. (currently amended) The combination analog data generating and processing ~~device~~-of claim 25, wherein the driver is adapted for use with a mass storage device that includes a rotatable storage medium.
27. (currently amended) The combination analog data generating and processing ~~device~~-of claim 26, wherein the driver is adapted for use with a hard disk drive.
28. (currently amended) The combination analog data generating and processing ~~device~~-of claim 20, wherein the driver is located in a memory of the personal computer.
29. (currently amended) The combination analog data generating and processing ~~device~~-of claim 28, wherein the personal computer memory comprises a BIOS of the personal computer.
30. (currently amended) The combination analog data generating and processing ~~device~~-of claim 20, wherein receipt and processing of the response signal by the personal

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computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device even though it is not a mass storage device.

31. (currently amended) The combination ~~analog data generating and processing device~~ of claim 30, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device having a rotatable storage disk even though it is not a mass storage device having a rotatable storage disk.

32. (currently amended) The combination ~~analog data generating and processing device~~ of claim 31, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a hard disk drive even though it is not a hard disk drive.

33. (currently amended) The combination ~~analog data generating and processing device~~ of claim 20, wherein the memory of the analog data generating and processing device comprises a buffer memory.

34. (currently amended) The combination ~~analog data generating and processing device~~ of claim 20, wherein the input/output port is adapted to be operatively connected to a SCSI interface of the personal computer.

35. (currently amended) The combination ~~analog data generating and processing device~~ of claim 20, wherein the processor comprises a digital signal processor.

36. (currently amended) The combination ~~analog data generating and processing device~~ of claim 20, wherein the sets of digitized analog data are transferred to the personal computer in a format suitable for a mass storage device present in the personal computer.

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37. (currently amended) The combination analog data generating and processing device of claim 36, wherein a root directory and virtual files are created in the memory which can be accessed by the personal computer.

38. (currently amended) The combination analog data generating and processing device of claim 37, wherein at least one of the virtual files comprises a configuration file stored in the memory.

39. (currently amended) The combination analog data generating and processing device of claim 38, wherein the configuration file allows a user to configure the analog data generating and processing device as being a specific mass storage device.

40. (currently amended) The combination analog data generating and processing device of claim 39, wherein the configuration file allows a user to configure the analog data generating and processing device as being a specific hard disk drive.

41. (currently amended) The combination analog data generating and processing device of claim 20, wherein a wire based connection is used to operatively connect the input/output port to the multi-purpose interface of the personal computer.

42. (currently amended) The combination analog data generating and processing device of claim 20, wherein a second set of instructions are stored in the memory which are adapted to cause the response signals to be generated.

43. (currently amended) The combination analog data generating and processing device of claim 20, wherein a third set of instructions are stored in the memory that allow user selected ones of the digitized sets of analog data to be transferred to a memory of the personal computer.

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44. (currently amended) A combination, comprising:

~~An analog data generating and processing device for use with a personal computer having at least one multi-purpose interface to which the personal computer sends periodic inquiry signals are periodically sent as to what type of device is operatively connected thereto; and, the~~

~~an analog data generating and processing device comprising: that is operatively coupled to the multi-purpose interface of the personal computer, the analog data generating and processing device including~~

~~means for receiving analog wave signals that are generated by a source external to and not located in substantial proximity to the analog data generating and processing device, for generating sets of analog data therefrom, and for digitizing each set of analog data;~~

~~means for causing the digitized sets of analog data to be individually stored in a memory irrespective of whether or not the analog data generating and processing device has been recognized by the personal computer;~~

~~means for receiving from the multi-purpose interface of the personal computer the periodic inquiry signals, and for automatically and without user intervention responding thereto the receipt of a periodic inquiry signal from the personal computer by sending a signal to the multi-purpose interface that causes the personal computer to automatically and without user intervention recognize the analog data generating and processing device as being a device having digital data that is stored in and to be selectively retrievable from a memory in which digital signals are stored;~~ and

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means for transferring user selected ones of the digitized sets of analog data to the personal computer by means of a driver that is associated with the personal computer.

45. (cancelled).

46. (currently amended) The combination analog data generating and processing device of claim 44, wherein the analog wave signals comprise electromagnetic radiation.

47. (currently amended) The combination analog data generating and processing device of claim 46, wherein the electromagnetic radiation is representative of an object that is physically separated from and can be located not in substantial proximity to the analog data generating and processing device.

48. (currently amended) The combination analog data generating and processing device of claim 47, wherein the means for receiving analog wave signals forms a part of a medical device.

49. (currently amended) The combination analog data generating and processing device of claim 48, wherein the medical device comprises a diagnostic radiological system.

50. (currently amended) The combination analog data generating and processing device of claim 47, wherein the means for receiving analog wave signals includes an electronic measuring device.

51. (currently amended) The combination analog data generating and processing device of claim 50, wherein the electronic measuring device comprises a multi-meter.

52. (currently amended) The combination analog data generating and processing device of claim 47, wherein the driver is adapted for use with a mass storage device.

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53. (currently amended) The combination analog data generating and processing ~~device~~ of claim 52, wherein the driver is adapted for use with a mass storage device that includes a rotatable storage medium.

54. (currently amended) The combination analog data generating and processing ~~device~~ of claim 53, wherein the driver is adapted for use with a hard disk drive.

55. (currently amended) The combination analog data generating and processing ~~device~~ of claim 47, wherein the driver is located in a memory of the personal computer.

56. (currently amended) The combination analog data generating and processing ~~device~~ of claim 55, wherein the personal computer memory comprises a BIOS of the personal computer.

57. (currently amended) The combination analog data generating and processing ~~device~~ of claim 47, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device even though it is not a mass storage device.

58. (currently amended) The combination analog data generating and processing ~~device~~ of claim 57, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device having a rotatable storage disk even though it is not a mass storage device having a rotatable storage disk.

59. (currently amended) The combination analog data generating and processing ~~device~~ of claim 58, wherein receipt and processing of the response signal by the personal

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computer allows it to communicate with the analog data generating and processing device as if it were a hard disk drive even though it is not a hard disk drive.

60. (currently amended) The combination ~~analog data generating and processing device~~ of claim 47, wherein the memory of the analog data generating and processing device comprises a buffer memory.

61. (currently amended) The combination ~~analog data generating and processing device~~ of claim 47, wherein the means for receiving from the multi-purpose interface is adapted to be operatively connected to a SCSI interface of the personal computer.

62. (currently amended) The combination ~~analog data generating and processing device~~ of claim 61, wherein the means for transferring comprises at least a portion of a digital signal processor.

63. (currently amended) The combination ~~analog data generating and processing device~~ of claim 47, wherein the sets of digitized analog data are transferred to the personal computer in a format suitable for a mass storage device present in the personal computer.

64. (currently amended) The combination ~~analog data generating and processing device~~ of claim 63 wherein a root directory and virtual files are created in the memory which can be accessed by the personal computer.

65. (currently amended) The combination ~~analog data generating and processing device~~ of claim 64, wherein at least one of the virtual files comprises a configuration file stored in the memory.

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66. (currently amended) The combination analog data generating and processing device of claim 64, wherein the configuration file allows a user to configure the analog data generating and processing device as being a specific mass storage device.

67. (currently amended) The combination analog data generating and processing device of claim 65, wherein the configuration file allows a user to configure the analog data generating and processing device as being a specific hard disk drive.

68. (currently amended) The combination analog data generating and processing device of claim 47, wherein a wire based connection is used to operatively connect the multi-purpose interface of the personal computer with the means for receiving from the multi-purpose interface.

69. (currently amended) A combination, comprising:

An analog data generating and processing device for use with a personal computer having at least one multi-purpose interface to which the personal computer sends periodic inquiry signals are periodically sent as to what type of device is operatively connected thereto; and, the

an analog data generating and processing device comprising: having a connecting device that is operatively connected to the multi-purpose interface of the personal computer and that is able to receive therefrom the periodic inquiry signals, the analog data generating and processing device including

a circuit that includes a sensor and an analog to digital converter, the circuit being adapted to be exposed to analog wave signals originate from a source that is external to the analog data generating and processing device and that is not located in substantial

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Filed: 03/11/05
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proximity to the sensor, to generate sets of analog data therefrom, and to generate digitized sets of analog data from the sets of analog data;

a processor and a memory both of which are operatively connected to the circuit, the processor being adapted to cause the digitized sets of analog data to be individually stored in the memory irrespective of whether or not the analog data generating and processing device has been recognized by the personal computer;

~~a connecting device operatively connected to the processor and the memory, the connecting device being adapted to be operatively connected to the multi-purpose interface of the personal computer and to receive therefrom the periodic inquiry signals;~~

wherein a response signal is automatically and without user intervention sent to the multi-purpose interface of the personal computer after the connecting device is operatively connected to the multi-purpose interface and after the connecting device receives at least one periodic inquiry signal therefrom, receipt and processing of the response signal by the personal computer causing the personal computer to automatically and without user intervention recognize the analog data generating and processing device as being a device having digital data that is stored therein and selectively retrievable therefrom; and

wherein, after the analog data generating and processing device has been automatically recognized by the personal computer, ~~and when the processor and memory are operatively connected to the circuit,~~ user selected ones of the digitized sets of analog data can be transferred to the personal computer by means of a driver that is associated with the personal computer.

70. (cancelled).

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71. (currently amended) The combination analog data generating and processing device of claim 69, wherein the analog wave signals comprise electromagnetic radiation.

72. (currently amended) The combination analog data generating and processing device of claim 71, wherein the electromagnetic radiation is representative of an object that is physically separated from and can be located not in substantial proximity to the analog data generating and processing device.

73. (currently amended) The combination analog data generating and processing device of claim 72, wherein the electromagnetic radiation is generated by a medical device.

74. (currently amended) The combination analog data generating and processing device of claim 73, wherein the medical device comprises a diagnostic radiological system.

75. (currently amended) The combination analog data generating and processing device of claim 72, wherein the sensor comprises an electronic measuring device.

76. (currently amended) The combination analog data generating and processing device of claim 75, wherein the electronic measuring device comprises a multi-meter.

77. (currently amended) The combination analog data generating and processing device of claim 72, wherein the driver is adapted for use with a mass storage device.

78. (currently amended) The combination analog data generating and processing device of claim 77, wherein the driver is adapted for use with a mass storage device that includes a rotatable storage medium.

79. (currently amended) The combination analog data generating and processing device of claim 78, wherein the driver is adapted for use with a hard disk drive.

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80. (currently amended) The combination analog data generating and processing device of claim 72, wherein the driver is located in a memory of the personal computer.

81. (currently amended) The combination analog data generating and processing device of claim 80, wherein the personal computer memory comprises a BIOS of the personal computer.

82. (currently amended) The combination analog data generating and processing device of claim 72, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device even though it is not a mass storage device.

83. (currently amended) The combination analog data generating and processing device of claim 82, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device having a rotatable storage disk even though it is not a mass storage device having a rotatable storage disk.

84. (currently amended) The combination analog data generating and processing device of claim 83, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a hard disk drive even though it is not a hard disk drive.

85. (currently amended) of claim 72, wherein the memory of the analog data generating and processing device comprises a buffer memory.

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86. (currently amended) The combination analog data generating and processing device of claim 72, wherein the connecting device is adapted to be operatively connected to a SCSI interface of the personal computer.

87. (currently amended) The combination analog data generating and processing device of claim 72, wherein the processor comprises a digital signal processor.

88. (currently amended) The combination analog data generating and processing device of claim 72, wherein the digitized versions of the analog data is transferred to the personal computer in a format suitable for a mass storage device present in the personal computer.

89. (currently amended) The combination analog data generating and processing device of claim 88 wherein the processor is adapted to create a root directory and virtual files in the memory which can be accessed by the personal computer.

90. (currently amended) The combination analog data generating and processing device of claim 89, wherein at least one of the virtual files comprises a configuration file stored in the memory.

91. (currently amended) The combination analog data generating and processing device of claim 90, wherein the configuration file allows a user to configure the analog data generating and processing device as being a specific mass storage device.

92. (currently amended) The combination analog data generating and processing device of claim 91, wherein the configuration file allows a user to configure the analog data generating and processing device as being a specific hard disk drive.

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93. (currently amended) The combination ~~analog data-generating and processing~~
~~device~~ of claim 72, wherein a wire based connection is used to operatively connect the
input/output port of the processor circuit to the multi-purpose interface of the personal computer.

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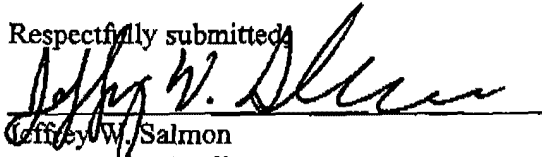
Applicant: Michael Tasler
Application No.: 11/078,778
Filed: 03/11/05
Date: June 26, 2006
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REMARKS

The purpose of this supplemental preliminary amendment is to amend the claims so that only combination claims are presented for the Examiner's consideration - a combination of a personal computer with an analog data generating and processing device.

It is respectfully submitted that no prior art reference of record, either taken alone or in a purported combination, teaches or suggests the combinations claimed in the currently amended claims, for example, for the reasons stated in the previously submitted preliminary amendment. It also is respectfully submitted that the currently amended claims are in condition for allowance and, therefore, a formal notice to that effect is earnestly solicited. In this regard, the Examiner is respectfully requested to contact the undersigned attorney upon entry of this amendment.

Respectfully submitted,



Jeffrey W. Salmon
Attorney for Applicant
Registration No. 37,435

June 26, 2006
Welsh & Katz, Ltd.
120 South Riverside Plaza
22nd Floor
Chicago, IL 60606
Telephone (312) 655-1500
Facsimile (312) 655-1501

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Ex. A 17 of 17

PATENT APPLICATION FEE DETERMINATION RECORD
Effective December 8, 2004

11/078778
11078778

CLAIMS AS FILED - PART I

	(Column 1)	(Column 2)
TOTAL CLAIMS	16	
FOR	NUMBER FILED	NUMBER EXTRA
TOTAL CHARGEABLE CLAIMS	18 minus 20 =	2
INDEPENDENT CLAIMS	3 minus 3 =	0
MULTIPLE DEPENDENT CLAIM PRESENT	<input type="checkbox"/>	

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

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	74 Minus	18 = 54
	Independent	3 Minus	3 =
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/>			

	(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"/>			

	(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"/>			

* 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.

SMALL ENTITY TYPE OR

RATE	FEE
BASIC FEE	150.00
X\$ 25=	
X100=	
+180=	180
TOTAL	330

OTHER THAN SMALL ENTITY

RATE	FEE
BASIC FEE	300.00
X\$50=	
X200=	
+360=	
TOTAL	

SMALL ENTITY OR

RATE	ADDITIONAL FEE
X\$ 25=	
X100=	
+180=	
TOTAL ADDIT. FEE	

OTHER THAN SMALL ENTITY

RATE	ADDITIONAL FEE
X\$50=	
X200=	
+360=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$ 25=	
X100=	
+180=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$50=	
X200=	
+360=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$ 25=	
X100=	
+180=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$50=	
X200=	
+360=	
TOTAL ADDIT. FEE	

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DWYATT SALE #00000001 Mailroom Dt: 06/30/2006 230920 11078778
01 FC:1801 790.00 DA

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of: Michael Tasler

Group No.: 2181

Serial No.: 11/078,778

Conf. No.: 8978

Filed: 3/11/06

Examiner: Harold J. Kim

For: ANALOG DATA GENERATING
AND PROCESSING DEVICE
FOR USE WITH A PERSONAL
COMPUTER (As Amended)

Attorney

Docket No.: 0757/96910

SUPPLEMENTAL PRELIMINARY AMENDMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-0001

Dear Sir:

A Notice of Allowance for this case was mailed from the USPTO on June 20, 2006. On June 30, 2006, an RCE request was filed by facsimile, the purpose of which was for the USPTO to consider and act on the supplemental preliminary amendment that was filed by facsimile on June 26, 2006, as well as the IDS that was filed by facsimile on June 7, 2006. Please enter this further supplemental preliminary amendment prior to examination of the above-captioned application in connection with the above-noted RCE request.

IN THE CLAIMS:

Prior to the entry of this supplemental preliminary amendment, claims 1-16, 18, 45 and 70 were cancelled, which leaves only claims 17, 19-44, 46-69, and 71-93 pending. In addition to such claims, please add claims 94-113 as follows:

1-16. (cancelled).

17. (previously presented) A combination, comprising:

a personal computer having at least one multi-purpose interface to which inquiry signals are periodically sent as to what type of device is operatively connected thereto; and

an analog data generating and processing device having an input/output port that is operatively connected to the multi-purpose interface of the personal computer, the analog data generating and processing device including

a sensor that is mounted on a housing, the sensor being adapted to receive analog wave signals that are generated by a source that is external to the housing and that is not located in substantial proximity to the sensor, the sensor being further adapted to generate sets of analog data from the analog wave signals that it receives,

an analog to digital converter that is operatively connected to the sensor and that generates a set of digitized analog data from each set of analog data,

a circuit that includes a processor and a memory that are operatively connected to the analog to digital converter, a first set of instructions being stored in the memory that are utilized by the processor to cause the sets of digitized analog data to be individually stored in the memory irrespective of whether or not the analog data generating and processing device has been recognized by the personal computer,

wherein a response signal is automatically and without user intervention sent from the input/output port to the multi-purpose interface after they have been operatively connected together and after an inquiry signal has been received by the input/output port, the receipt and processing of the receipt signal by the personal computer causing it to automatically and without user intervention recognize the analog data generating and processing device as being a device having digital data that is stored therein and selectively retrievable therefrom, and

wherein, after the analog data generating and processing device has been automatically recognized by the personal computer, and while the input/output port is operatively connected to the multi-purpose interface, user selected ones of the digitized sets of analog data can be transferred from the memory, through the input/output port, through the multi-purpose interface, and to the personal computer by means of a driver that is associated with the personal computer.

18. (cancelled).
19. (previously presented) The combination of claim 17, wherein the analog wave signals comprise electromagnetic radiation.
20. (previously presented) The combination of claim 19, wherein the electromagnetic radiation received by the sensor is representative of an object that is physically separated from and can be located not in substantial proximity to the housing.
21. (previously presented) The combination claim 20, wherein the electromagnetic radiation is generated by a medical device.
22. (previously presented) The combination of claim 21, wherein the medical device comprises a diagnostic radiological system.

23. (previously presented) The combination of claim 20, wherein the sensor comprises an electronic measuring device.

24. (previously presented) The combination of claim 23, wherein the electronic measuring device comprises a multi-meter.

25. (previously presented) The combination of claim 20, wherein the driver is adapted for use with a mass storage device.

26. (previously presented) The combination of claim 25, wherein the driver is adapted for use with a mass storage device that includes a rotatable storage medium.

27. (previously presented) The combination of claim 26, wherein the driver is adapted for use with a hard disk drive.

28. (previously presented) The combination of claim 20, wherein the driver is located in a memory of the personal computer.

29. (previously presented) The combination of claim 28, wherein the personal computer memory comprises a BIOS of the personal computer.

30. (previously presented) The combination of claim 20, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device even though it is not a mass storage device.

31. (previously presented) The combination of claim 30, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device having a rotatable storage disk even though it is not a mass storage device having a rotatable storage disk.

32. (previously presented) The combination of claim 31, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a hard disk drive even though it is not a hard disk drive.

33. (previously presented) The combination of claim 20, wherein the memory of the analog data generating and processing device comprises a buffer memory.

34. (previously presented) The combination of claim 20, wherein the input/output port is adapted to be operatively connected to a SCSI interface of the personal computer.

35. (previously presented) The combination of claim 20, wherein the processor comprises a digital signal processor.

36. (previously presented) The combination of claim 20, wherein the sets of digitized analog data are transferred to the personal computer in a format suitable for a mass storage device present in the personal computer.

37. (previously presented) The combination of claim 36, wherein a root directory and virtual files are created in the memory which can be accessed by the personal computer.

38. (previously presented) The combination of claim 37, wherein at least one of the virtual files comprises a configuration file stored in the memory.

39. (previously presented) The combination of claim 38, wherein the configuration file allows a user to configure the analog data generating and processing device as being a specific mass storage device.

40. (previously presented) The combination of claim 39, wherein the configuration file allows a user to configure the analog data generating and processing device as being a specific hard disk drive.

41. (previously presented) The combination of claim 20, wherein a wire based connection is used to operatively connect the input/output port to the multi-purpose interface of the personal computer.

42. (previously presented) The combination of claim 20, wherein a second set of instructions are stored in the memory which are adapted to cause the response signals to be generated.

43. (previously presented) The combination of claim 20, wherein a third set of instructions are stored in the memory that allow user selected ones of the digitized sets of analog data to be transferred to a memory of the personal computer.

44. (previously presented) A combination, comprising:
a personal computer having at least one multi-purpose interface to which inquiry signals are periodically sent as to what type of device is operatively connected thereto; and
an analog data generating and processing device that is operatively coupled to the multi-purpose interface of the personal computer, the analog data generating and processing device including

means for receiving analog wave signals that are generated by a source external to and not located in substantial proximity to the analog data generating and processing device, for generating sets of analog data therefrom, and for digitizing each set of analog data,

means for causing the digitized sets of analog data to be individually stored in a memory irrespective of whether or not the analog data generating and processing device has been recognized by the personal computer,

means for automatically and without user intervention responding the receipt of a periodic inquiry signal from the personal computer by sending a signal to the multi-purpose interface that causes the personal computer to automatically and without user intervention recognize the analog data generating and processing device as being a device having digital data that is stored in and to be selectively retrievable from a memory in which digital signals are stored, and

means for transferring user selected ones of the digitized sets of analog data to the personal computer by means of a driver that is associated with the personal computer.

45. (cancelled).

46. (previously presented) The combination of claim 44, wherein the analog wave signals comprise electromagnetic radiation.

47. (previously presented) The combination of claim 46, wherein the electromagnetic radiation is representative of an object that is physically separated from and can be located not in substantial proximity to the analog data generating and processing device.

48. (previously presented) The combination of claim 47, wherein the means for receiving analog wave signals forms a part of a medical device.

49. (previously presented) The combination of claim 48, wherein the medical device comprises a diagnostic radiological system.

50. (previously presented) The combination of claim 47, wherein the means for receiving analog wave signals includes an electronic measuring device.

51. (previously presented) The combination of claim 50, wherein the electronic measuring device comprises a multi-meter.

52. (previously presented) The combination of claim 47, wherein the driver is adapted for use with a mass storage device.

53. (previously presented) The combination of claim 52, wherein the driver is adapted for use with a mass storage device that includes a rotatable storage medium.

54. (previously presented) The combination of claim 53, wherein the driver is adapted for use with a hard disk drive.

55. (previously presented) The combination of claim 47, wherein the driver is located in a memory of the personal computer.

56. (previously presented) The combination of claim 55, wherein the personal computer memory comprises a BIOS of the personal computer.

57. (previously presented) The combination of claim 47, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device even though it is not a mass storage device.

58. (previously presented) The combination of claim 57, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device having a rotatable storage disk even though it is not a mass storage device having a rotatable storage disk.

59. (previously presented) The combination of claim 58, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a hard disk drive even though it is not a hard disk drive.

60. (previously presented) The combination of claim 47, wherein the memory of the analog data generating and processing device comprises a buffer memory.

61. (previously presented) The combination of claim 47, wherein the means for receiving from the multi-purpose interface is adapted to be operatively connected to a SCSI interface of the personal computer.

62. (previously presented) The combination of claim 61, wherein the means for transferring comprises at least a portion of a digital signal processor.

63. (previously presented) The combination of claim 47, wherein the sets of digitized analog data are transferred to the personal computer in a format suitable for a mass storage device present in the personal computer.

64. (previously presented) The combination of claim 63 wherein a root directory and virtual files are created in the memory which can be accessed by the personal computer.

65. (previously presented) The combination of claim 64, wherein at least one of the virtual files comprises a configuration file stored in the memory.

66. (previously presented) The combination of claim 64, wherein the configuration file allows a user to configure the analog data generating and processing device as being a specific mass storage device.

67. (previously presented) The combination of claim 65, wherein the configuration file allows a user to configure the analog data generating and processing device as being a specific hard disk drive.

68. (previously presented) The combination of claim 47, wherein a wire based connection is used to operatively connect the multi-purpose interface of the personal computer with the means for receiving from the multi-purpose interface.

69. (previously presented) A combination, comprising:
a personal computer having at least one multi-purpose interface to which inquiry signals are periodically sent as to what type of device is operatively connected thereto; and
an analog data generating and processing device having a connecting device that is operatively connected to the multi-purpose interface of the personal computer and that is able to receive therefrom the periodic inquiry signals, the analog data generating and processing device including

a circuit that includes a sensor and an analog to digital converter, the circuit being adapted to be exposed to analog wave signals originate from a source that is external to the analog data generating and processing device and that is not located in substantial proximity to the sensor, to generate sets of analog data therefrom, and to generate digitized sets of analog data from the sets of analog data,

a processor and a memory both of which are operatively connected to the circuit, the processor being adapted to cause the digitized sets of analog data to be individually stored in the memory irrespective of whether or not the analog data generating and processing device has been recognized by the personal computer,

wherein a response signal is automatically and without user intervention sent to the multi-purpose interface of the personal computer after the connecting device is operatively connected to the multi-purpose interface and after the connecting device receives at least one periodic inquiry signal therefrom, receipt and processing of the response signal by the personal computer causing the personal computer to automatically and without user intervention recognize the analog data generating and processing device as being a device having digital data that is stored therein and selectively retrievable therefrom, and

wherein, after the analog data generating and processing device has been automatically recognized by the personal computer, user selected ones of the digitized sets of analog data can be transferred to the personal computer by means of a driver that is associated with the personal computer.

70. (cancelled).

71. (previously presented) The combination of claim 69, wherein the analog wave signals comprise electromagnetic radiation.

72. (previously presented) The combination of claim 71, wherein the electromagnetic radiation is representative of an object that is physically separated from and can be located not in substantial proximity to the analog data generating and processing device.

73. (previously presented) The combination of claim 72, wherein the electromagnetic radiation is generated by a medical device.

74. (previously presented) The combination of claim 73, wherein the medical device comprises a diagnostic radiological system.

75. (previously presented) The combination of claim 72, wherein the sensor comprises an electronic measuring device.

76. (previously presented) The combination of claim 75, wherein the electronic measuring device comprises a multi-meter.

77. (previously presented) The combination of claim 72, wherein the driver is adapted for use with a mass storage device.

78. (previously presented) The combination of claim 77, wherein the driver is adapted for use with a mass storage device that includes a rotatable storage medium.

79. (previously presented) The combination of claim 78, wherein the driver is adapted for use with a hard disk drive.

80. (previously presented) The combination of claim 72, wherein the driver is located in a memory of the personal computer.

81. (previously presented) The combination of claim 80, wherein the personal computer memory comprises a BIOS of the personal computer.

82. (previously presented) The combination of claim 72, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device even though it is not a mass storage device.

83. (previously presented) The combination of claim 82, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device having a rotatable storage disk even though it is not a mass storage device having a rotatable storage disk.

84. (previously presented) The combination of claim 83, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a hard disk drive even though it is not a hard disk drive.

85. (previously presented) The combination of claim 72, wherein the memory of the analog data generating and processing device comprises a buffer memory.

86. (previously presented) The combination of claim 72, wherein the connecting device is adapted to be operatively connected to a SCSI interface of the personal computer.

87. (previously presented) The combination of claim 72, wherein the processor comprises a digital signal processor.

88. (previously presented) The combination of claim 72, wherein the digitized versions of the analog data is transferred to the personal computer in a format suitable for a mass storage device present in the personal computer.

89. (previously presented) The combination of claim 88 wherein the processor is adapted to create a root directory and virtual files in the memory which can be accessed by the personal computer.

90. (previously presented) The combination of claim 89, wherein at least one of the virtual files comprises a configuration file stored in the memory.

91. (previously presented) The combination of claim 90, wherein the configuration file allows a user to configure the analog data generating and processing device as being a specific mass storage device.

92. (previously presented) The combination of claim 91, wherein the configuration file allows a user to configure the analog data generating and processing device as being a specific hard disk drive.

93. (previously presented) The combination of claim 72, wherein a wire based connection is used to operatively connect the input/output port of the processor circuit to the multi-purpose interface of the personal computer.

94. (new) A combination, comprising:
a personal computer (PC) having an operating system, a display, and one or more multi-purpose user interfaces (MPUI), the operating system causing a device identification signal to be periodically sent to each MPUI so that the PC can identify the time when and what type of a device is operatively connected to a particular MPUI, the operating system also being adapted to send a data identification signal to a particular MPUI to which a data storage device is operatively coupled so that a visual representation of the contents of the data storage device can be displayed on the display;

an analog data generating and processing device (ADGPD) having a processor, an I/O port that is operatively connected to an MPUI of the PC, an analog to digital converter, and a memory in which one or more digitized data sets are stored, each one of the digitized data sets being representative of one or more analog wave signals that are generated or reflected by a source that is external to and not in substantial proximity to the ADGPD;

wherein, after a device identification signal has been received and processed by the ADGPD, the ADGPD automatically and without user intervention sends a response signal to

the MPUI to which its I/O port is operatively coupled to cause the PC to automatically and without user intervention recognize the ADGPD as being a data storage device;

wherein, after a data identification signal has been received and processed by the ADGPD, the ADGPD automatically and without user intervention sends to the MPUI to which the I/O port is operatively coupled information that allows the operating system to create, on the display, a visual representation of the contents of the portion of the memory in which the digitized data sets are or can be stored; and

wherein user selected ones of the digitized data sets can be transferred from the memory and to the MPUI to which the I/O port is operatively coupled by means of a driver that is a part of the operating system when it is installed in the PC for the first time.

95. (new) The combination of claim 94, wherein each analog wave signal comprises electromagnetic radiation.

96. (new) The combination of claim 95, wherein the electromagnetic radiation is representative of an object that is physically separated from and can be located not in substantial proximity to the ADGPD.

97. (new) The combination claim 96, wherein the electromagnetic radiation is generated by a medical device.

98. (new) The combination of claim 97, wherein the medical device comprises a diagnostic radiological system.

99. (new) The combination of claim 94, wherein the data storage device comprises a mass storage device.

100. (new) The combination of claim 99, wherein the mass storage device comprises a hard disk drive.

101. (new) The combination of claim 94, wherein receipt and processing of the response signal by the PC allows it to communicate with the ADGPD as if it were a mass storage device even though it is not a mass storage device.

102. (new) The combination of claim 101, wherein receipt and processing of the response signal by the PC allows it to communicate with the ADGPD device as if it were a hard disk drive even though it is not a hard disk drive.

103. (new) The combination of claim 94, the MPUI to which the I/O port is connected comprises a SCSI interface.

104. (new) The combination of claim 94, wherein the processor comprises a digital signal processor.

105. (new) The combination of claim 94, wherein the information that the ADGPD sends to the PC comprises at least the number of different digitized data sets that are stored in the memory of the ADGPD.

106. (new) The combination of claim 105, wherein the information that the ADGPD sends to the PC further comprises a root directory that can be accessed by the PC.

107. (new) The combination of claim 106, wherein the information that the ADGPD sends to the PC further comprises a configuration file.

108. (new) The combination of claim 94, wherein the I/O port is operatively coupled to a MPUI by a wire-based connection.

109. (new) The combination of claim 94, wherein the digitized data sets are stored as individual files in the memory of the ADGPD.

110. (new) The combination of claim 109, wherein the individual files form a part of a file system.

111. (new) The combination of claim 110, wherein the file system comprises a virtual file system.

112. (new) The combination of claim 94, wherein the digitized data sets are generated and stored in the memory independent of then when the I/O port is operatively coupled to an MPUI.

113. (new) The combination of claim 112, wherein the digitized data sets are generated and stored in the memory before the time when the I/O port is operatively coupled to an MPUI.

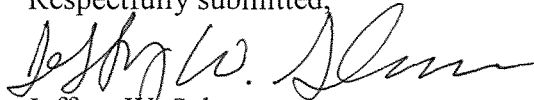
Applicant: Michael Tasler
Application No.: 11/078,778
Filed: 03/11/05
Date: July 13, 2006
Page – 18 –

REMARKS

After entry of this supplemental preliminary amendment, claims 17, 19-44, 46-69, and 71-113 will be pending. Claims 94-113 are new claims that are being added in connection with this supplemental preliminary amendment. Such claims are similar in scope in material respects to the claims that the Examiner found to be patentable and, therefore, also should be found to be patentable by the Examiner for at least the same reasons as the previously presented claims were deemed to be allowable.

It also is respectfully submitted that all of the currently pending claims are in condition for allowance and, therefore, a formal notice to that effect is earnestly solicited. If the Examiner is of the opinion that a telephone interview would help to expedite the prosecution of the above-captioned application, he is respectfully requested to contact the undersigned attorney at his convenience.

Respectfully submitted,



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July 13, 2006
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Electronic Patent Application Fee Transmittal

Application Number:	11078778
Filing Date:	11-Mar-2005
Title of Invention:	FLEXIBLE INTERFACE
First Named Inventor:	Michael Tasler
Filer:	Jeffrey W. Salmon
Attorney Docket Number:	9576/96910

Filed as Large Entity

Utility Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Claims in excess of 20	1202	1	50	50
Independent claims in excess of 3	1201	1	200	200

Miscellaneous-Filing:

Petition:

Patent-Appeals-and-Interference:

Post-Allowance-and-Post-Issuance:

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				250

Electronic Acknowledgement Receipt

EFS ID:	1111407
Application Number:	11078778
Confirmation Number:	8978
Title of Invention:	FLEXIBLE INTERFACE
First Named Inventor:	Michael Tasler
Correspondence Address:	Jeffrey W. Salmon, Esq. Welsh & Katz, Ltd. 22nd Floor 120 S. Riverside Plaza Chicago IL 60606 US 3126551501 jwsalmon@welshkatz.com
Filer:	Jeffrey W. Salmon
Filer Authorized By:	
Attorney Docket Number:	9576/96910
Receipt Date:	13-JUL-2006
Filing Date:	11-MAR-2005
Time Stamp:	11:47:25
Application Type:	Utility
International Application Number:	

Payment information:

Submitted with Payment	yes
Payment was successfully received in RAM	\$250

RAM confirmation Number	659
Deposit Account	230920
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 C.F.R. Section 1.16 and 1.17	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)	Multi Part	Pages
1	Preliminary Amendment	supprlmamdmnt96910.pdf	873081	no	18

Warnings:

Information:

2	Fee Worksheet (PTO-875)	fee-info.pdf	8239	no	2
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Warnings:

Information:

Total Files Size (in bytes):	881320
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

Electronic Acknowledgement Receipt

EFS ID:	1113272
Application Number:	11078778
Confirmation Number:	8978
Title of Invention:	FLEXIBLE INTERFACE
First Named Inventor:	Michael Tasler
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Filer:	Jeffrey W. Salmon/Maura Halvey
Filer Authorized By:	Jeffrey W. Salmon
Attorney Docket Number:	9576/96910
Receipt Date:	14-JUL-2006
Filing Date:	11-MAR-2005
Time Stamp:	12:06:34
Application Type:	Utility
International Application Number:	

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)	Multi Part	Pages
1	Preliminary Amendment	96910secsupprelmamdmnt.pdf	899955	no	18

Warnings:

Information:

Total Files Size (in bytes):	899955
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

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EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	1	("5844961").PN.	USPAT; USOCR; EPO; JPO	OR	OFF	2006/07/20 18:09
L2	14	("5844961").URPN.	USPAT	OR	ON	2006/07/20 17:34
L3	604	(710/15).CCLS.	USPAT; USOCR; EPO; JPO	OR	OFF	2006/07/20 18:09
L4	122	(710/220).CCLS.	USPAT; USOCR; EPO; JPO	OR	OFF	2006/07/20 18:09
S1	1	("6470399").PN.	USPAT; USOCR; EPO; JPO	OR	OFF	2006/07/20 17:29
S2	814	710/8.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:04
S3	225	710/16.ccls..	USPAT; EPO; JPO	OR	ON	2004/05/17 01:04
S4	0	710/321.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:04
S5	0	709/321.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:04
S6	730	709/220.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:05
S7	328	709/222.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:05
S8	237	710/11.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:05
S9	74	710/12.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:05
S10	15	710/115.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:05
S11	598	710/62.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:05
S12	196	710/63.ccls..	USPAT; EPO; JPO	OR	ON	2004/05/17 01:05
S13	180	710/64.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:05
S14	324	703/23.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:05
S15	225	703/24.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:05
S16	220	703/25.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:05

EAST Search History

S17	50	710/8.ccls. and 710/16.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:06
S18	36	710/8.ccls. and 709/220.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:06
S19	14	710/8.ccls. and 709/222.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:06
S20	50	710/8.ccls. and 710/11.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:06
S21	20	710/8.ccls. and 710/12.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:06
S22	122	710/8.ccls. and 710/62.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:06
S23	35	710/8.ccls. and 710/63.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:06
S24	28	710/8.ccls. and 710/64.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:06
S25	3	710/8.ccls. and 703/23.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:06
S26	5	710/8.ccls. and 703/24.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:06
S27	21	710/8.ccls. and 703/25.ccls.	USPAT; EPO; JPO	OR	ON	2004/05/17 01:06
S28	29	(driver with storage) same (virtual near2 system)	USPAT; EPO; JPO	OR	ON	2004/05/17 01:08
S29	3	(driver with storage) same (virtual near2 system) same directory	USPAT; EPO; JPO	OR	ON	2004/05/17 01:09
S30	0	(driver with storage with regardless) same (virtual near2 system)	USPAT; EPO; JPO	OR	ON	2004/05/17 01:09
S31	0	(driver with storage with inquiry) same (virtual near2 system)	USPAT; EPO; JPO	OR	ON	2004/05/17 01:10
S32	1	(driver with storage) same inquiry same (virtual near2 system)	USPAT; EPO; JPO	OR	ON	2004/05/17 01:10
S33	1	(driver with storage) same inquire\$3 same (virtual near2 system)	USPAT; EPO; JPO	OR	ON	2004/05/17 01:10
S34	0	(driver with storage) same detect\$4 same (virtual near2 system)	USPAT; EPO; JPO	OR	ON	2004/05/17 01:10
S35	3	(driver with storage) same monitor\$4 same (virtual near2 system)	USPAT; EPO; JPO	OR	ON	2004/05/17 01:11
S36	576	(driver with storage) same monitor\$4	USPAT; EPO; JPO	OR	ON	2004/05/17 01:11
S37	1	("6012113").PN.	USPAT; USOCR; EPO; JPO	OR	OFF	2004/05/17 01:14

EAST Search History

S38	6	"6012113".URPN.	USPAT	OR	ON	2004/05/17 01:12
S39	0	"6470399".URPN.	USPAT	OR	ON	2004/05/17 01:12
S40	15	("4040014" "4045774" "4425625" "4503288" "4797878" "4989203" "5065427" "5155847" "5355365" "5369700" "5408527" "5452329" "5524047" "5596628" "5628030").PN.	USPAT	OR	ON	2004/05/17 01:13
S41	15	("4040014" "4045774" "4425625" "4503288" "4797878" "4989203" "5065427" "5155847" "5355365" "5369700" "5408527" "5452329" "5524047" "5596628" "5628030").PN.	USPAT	OR	ON	2004/05/17 01:14
S42	1	("5548783").PN.	USPAT; USOCR; EPO; JPO	OR	OFF	2004/05/17 01:14
S43	26	"5548783".URPN.	USPAT	OR	ON	2004/05/17 01:15
S44	1	("6895449").PN.	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2006/06/08 20:30
S45	388	(710/16).CCLS.	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2006/06/08 21:09
S46	6	((("5915106") or ("5508821") or ("5131089") or ("4642759") or ("5724574") or ("5532825")).PN.	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2006/06/08 21:22
S47	1	("6895449").PN.	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2006/06/08 22:59
S48	0	("(analognear3signal)and(externaln ear5hou\$5)andsensorand(analogn ear3digitalnear3converter)").PN.	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2006/06/08 23:07
S49	0	(analognear3signal)and(externalnea r5hou\$5)andsensorand(analognear 3digitalnear3converter)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2006/06/08 23:10
S50	0	(analognear3signal)and(externalnea r5hou\$5)andsensorand(analognear 3digitalnear3converter)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2006/06/08 23:10

EAST Search History

S51	233402	(analog near3 signal)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2006/06/08 23:10
S52	1447	(analog near3 signal) and (external near5 hous\$5) and sensor	US-PGPUB; USPAT; EPO; JPO	OR	ON	2006/06/08 23:11
S53	989	(analog near3 signal) and (external near5 hous\$5) and sensor and converter	US-PGPUB; USPAT; EPO; JPO	OR	ON	2006/06/08 23:11
S54	738	(analog near3 signal) and (external near5 hous\$5) and sensor and (digital near3 converter)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2006/06/08 23:12
S55	72	(analog near3 signal) and (external near5 hous\$5) and sensor and (digital near3 converter) and poll\$4	US-PGPUB; USPAT; EPO; JPO	OR	ON	2006/06/08 23:13
S56	21	S55 and @ad<"19970304"	US-PGPUB; USPAT; EPO; JPO	OR	ON	2006/06/08 23:14
S57	30	S55 and @rlad<"19970304"	US-PGPUB; USPAT; EPO; JPO	OR	ON	2006/06/08 23:14
S58	6	S55 and @prad<"19970304"	US-PGPUB; USPAT; EPO; JPO	OR	ON	2006/06/08 23:14
S59	40	S56 or S57 or S58	US-PGPUB; USPAT; EPO; JPO	OR	ON	2006/06/08 23:16
S60	126	710/220.ccls.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2006/06/08 23:17
S61	387	710/16.ccls.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2006/06/08 23:18
S62	216	710/23.ccls.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2006/06/08 23:18
S63	488	(703/23).CCLS.	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2006/06/08 23:21
S64	5870	(707/10).CCLS.	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2006/06/08 23:21
S65	2462	(358/296).CCLS.	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2006/06/08 23:21

EAST Search History

S66	725	(358/442).CCLS.	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2006/06/08 23:22
S67	1	("5508821").PN.	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2006/06/08 23:22
S68	8	("5508821").URPN.	USPAT	OR	ON	2006/06/08 23:45
S69	813	(710/15).CCLS.	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2006/06/08 23:45
S70	3462	(digital adj camera) with (download\$4 or transfer\$4)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2006/06/09 01:39
S71	164	(digital adj camera) with flash with (download\$4 or transfer\$4)	US-PGPUB; USPAT; EPO; JPO	OR	ON	2006/06/09 01:39



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BIBDATASHEET

CONFIRMATION NO. 8978

Bib Data Sheet

SERIAL NUMBER 11/078,778	FILING OR 371(c) DATE 03/11/2005 RULE	CLASS 710	GROUP ART UNIT 2181	ATTORNEY DOCKET NO. 9576/96910
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APPLICANTS

Michael Tasler, Wurzburg, GERMANY;

**** CONTINUING DATA *******

**** FOREIGN APPLICATIONS *******

IF REQUIRED, FOREIGN FILING LICENSE GRANTED SMALL ENTITY ****
**** 04/08/2005**

Foreign Priority claimed 35 USC 119 (a-d) conditions met	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no <input type="checkbox"/> yes <input checked="" type="checkbox"/> no <input type="checkbox"/> Met after Allowance	STATE OR COUNTRY GERMANY	SHEETS DRAWING 2	TOTAL CLAIMS 16	INDEPENDENT CLAIMS 3
Verified and Acknowledged	Examiner's Signature _____ Initials _____				

ADDRESS

Jeffrey W. Salmon, Esq.
 Welsh & Katz, Ltd.
 22nd Floor
 120 S. Riverside Plaza
 Chicago, IL60606

TITLE

ANALOG DATA GENERATING AND PROCESSING DEVICE FOR USE WITH A PERSONAL COMPUTER

FILING FEE RECEIVED 2330	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:	<input type="checkbox"/> All Fees
		<input type="checkbox"/> 1.16 Fees (Filing)
		<input type="checkbox"/> 1.17 Fees (Processing Ext. of time)
		<input type="checkbox"/> 1.18 Fees (Issue)
		<input type="checkbox"/> Other _____
		<input type="checkbox"/> Credit

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NOTICE OF ALLOWANCE AND FEE(S) DUE

7590 07/28/2006

Jeffrey W. Salmon, Esq.
Welsh & Katz, Ltd.
22nd Floor
120 S. Riverside Plaza
Chicago, IL 60606

EXAMINER: KIM, HAROLD J
ART UNIT: 2181
PAPER NUMBER:
DATE MAILED: 07/28/2006

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.
Row 1: 11/078,778, 03/11/2005, Michael Tasler, 9576/96910, 8978
TITLE OF INVENTION: ANALOG DATA GENERATING AND PROCESSING DEVICE FOR USE WITH A PERSONAL COMPUTER

Table with 7 columns: APPLN. TYPE, SMALL ENTITY, ISSUE FEE DUE, PUBLICATION FEE DUE, PREV. PAID ISSUE FEE, TOTAL FEE(S) DUE, DATE DUE
Row 1: nonprovisional, YES, \$700, \$300, \$0, \$1000, 10/30/2006

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 DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

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, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). 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. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

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

**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 (571)-273-2885**

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)

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.

7590 07/28/2006

Jeffrey W. Salmon, Esq.
 Welsh & Katz, Ltd.
 22nd Floor
 120 S. Riverside Plaza
 Chicago, IL 60606

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 (571) 273-2885, on the date indicated below.

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

11/078,778 03/11/2005 Michael Tasler 9576/96910 8978

TITLE OF INVENTION: ANALOG DATA GENERATING AND PROCESSING DEVICE FOR USE WITH A PERSONAL COMPUTER

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
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nonprovisional YES \$700 \$300 \$0 \$1000 10/30/2006

EXAMINER	ART UNIT	CLASS-SUBCLASS
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KIM, HAROLD J 2181 710-015000

<p>1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).</p> <p><input type="checkbox"/> Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.</p> <p><input type="checkbox"/> "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.</p>	<p>2. For printing on the patent front page, list</p> <p>(1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____</p> <p>(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 _____</p> <p>3 _____</p>
--	---

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

<p>4a. The following fee(s) are submitted:</p> <p><input type="checkbox"/> Issue Fee</p> <p><input type="checkbox"/> Publication Fee (No small entity discount permitted)</p> <p><input type="checkbox"/> Advance Order - # of Copies _____</p>	<p>4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)</p> <p><input type="checkbox"/> A check is enclosed.</p> <p><input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.</p> <p><input type="checkbox"/> The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).</p>
---	--

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).

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 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.
11/078,778 03/11/2005 Michael Tasler 9576/96910 8978

Jeffrey W. Salmon, Esq.
Welsh & Katz, Ltd.
22nd Floor
120 S. Riverside Plaza
Chicago, IL 60606

EXAMINER

KIM, HAROLD J

ART UNIT PAPER NUMBER

2181

DATE MAILED: 07/28/2006

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 40 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 40 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 1-(888)-786-0101 or (571)-272-4200.

Notice of Allowability	Application No.	Applicant(s)	
	11/078,778	TASLER, MICHAEL	
	Examiner	Art Unit	
	Harold Kim	2181	

-- 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 the Preliminary Amendment filed on 7/13/2006, and the RCE filed on 6/30/2006.
2. The allowed claim(s) is/are 17, 19-44, 46-69, 71-93. [now 1-74].
3. 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. 09/331,002.
 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)).

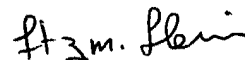
* Certified copies not received: _____.

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.

4. 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.
 5. 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).
6. 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)

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. <input type="checkbox"/> Notice of References Cited (PTO-892) 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date <u>20060607; 20060630</u> 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material | <ol style="list-style-type: none"> 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance 9. <input type="checkbox"/> Other _____ |
|--|---|


FRITZ FLEMING
 SUPERVISORY PATENT EXAMINER
 TECHNOLOGY CENTER 2100
 7/24/2006

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.
2. Authorization for this examiner's amendment was given in telephone interviews with Jeffrey W. Salmon, Reg. No. 37,435 on 7/20/2006.
3. Cancel claims 94-113.

Reasons for Allowance

4. The following is an examiner's statement of reasons for allowance:

The prior art cited on the attached form PTO-892 is the most relevant prior art known. However, Applicant's claimed invention distinguishes over the prior art for the following reasons. The claims are allowable over the prior art of record because none of the references, either alone or in combination, discloses or renders obvious that a personal computer having at least one multi-purpose interface to which inquiry signals are periodically sent, and an analog data generating and processing device having an input/output port that is operatively connected to the multi-purpose interface of a personal computer including a sensor that is mounted on a housing, the sensor being adapted to receive analog wave signal that are generated by a source that is external to

Art Unit: 2181


the housing, the sensor to generate sets of analog data from the analog wave signals that it receives, generates a set of digitized analog data from each set of analog data, a first set of instructions being stored in a memory that are utilized by a processor to cause the sets of digitized analog data to be individually stored in the memory irrespective of whether or not the analog data generating and processing device has been recognized by a personal computer, and a response signal being automatically and without user intervention sent from an input/output port to a multi-purpose interface after an inquiry signal has been received by the input/output port, the receipt and processing of the receipt signal by the personal computer causing it to automatically and without user intervention recognize the analog data generating and processing device as being a device having digital data that is stored therein and selectively retrievable therefrom. The cited references at most, contain only one or the other, but not all the limitations claimed. There would also be no reason to make any of the possible combinations.

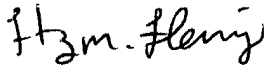
Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harold Kim whose telephone number is 703-305-1948. The examiner can normally be reached on Monday-Friday 9 AM - 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fritz Fleming, can be reached on 571-272-4145. The fax phone numbers for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-746-7240.


Harold J. Kim
Patent Examiner
July 20, 2006/HK



FRITZ FLEMING
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100
7/24/2006

Form PTO-1449 (Rev. 8-88)		U.S. Department of Commerce Patent and Trademark Office		Attorney Docket No. 0757/96910		Serial No. 11/078,778	
INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)				Applicant Michael Tasler			
				Filing Date 03/11/05		Group No. 2181	
U.S. PATENT DOCUMENTS							
HK		5,844,961	12/1/98	McEvoy, et al.			
FOREIGN PATENT DOCUMENTS							
		Document Number	Date	Country	Class	Subclass	Translation Yes No
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)							
Examiner	/Harold Kim/ (07/20/2006)		Data Considered		/Harold Kim/ (07/20/2006)		
*Examiner:	Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.						

Form PTO-1449 (Rev. 8-88)		U.S. Department of Commerce Patent and Trademark Office		Attorney Docket No. 0757/96910		Serial No. 11/078,778	
INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)				Applicant Michael Tasler			
				Filing Date 03/11/05		Group No. 2181	
U.S. PATENT DOCUMENTS							
HK		5,844,961	12/1/98	McEvoy, et al.			
FOREIGN PATENT DOCUMENTS							
		Document Number	Date	Country	Class	Subclass	Translation Yes No
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)							
Examiner	/Harold Kim/ (07/20/2006) Considered			/Harold Kim/ (07/20/2006)			
*Examiner:	Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.						

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ex. B 3 of 3

Issue Classification 	Application/Control No. 11/078,778	Applicant(s)/Patent under Reexamination TASLER, MICHAEL
	Examiner Harold Kim	Art Unit 2181

ISSUE CLASSIFICATION										
ORIGINAL				INTERNATIONAL CLASSIFICATION						
CLASS		SUBCLASS		CLAIMED			NON-CLAIMED			
710		15		G	06	F	3	/00		/
CROSS REFERENCES										/
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)									/
710	220									/
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<i>Harold Kim</i> Harold Kim 7/20/06 (Assistant Examiner) (Date)	<i>Fritz Fleming</i> FRITZ FLEMING SUPERVISORY PATENT EXAMINER TECHNOLOGY CENTER 2100 (Primary Examiner) (Date) 7/24/06	Total Claims Allowed: 74 <table border="1" style="width: 100%;"> <tr> <td style="width: 50%;">O.G. Print Claim(s)</td> <td style="width: 50%;">O.G. Print Fig.</td> </tr> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> </tr> </table>	O.G. Print Claim(s)	O.G. Print Fig.	1	2
O.G. Print Claim(s)	O.G. Print Fig.					
1	2					

<input 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		
Final	Original	Final	Original	Final	Original	Final	Original	
	1	14	31	43	61	72	91	
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	4	17	34	46	64		94	
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	15	28	45	56	75		105	
	16	28	46	57	76		106	
1	17	29	47	58	77		107	
	18	30	48	59	78		108	
2	19	31	49	60	79		109	
3	20	32	50	61	80		110	
4	21	33	51	62	81		111	
5	22	34	52	63	82		112	
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8	25	37	55	66	85		115	
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CONFIRMATION NO. 8978

Table with 5 columns: SERIAL NUMBER (11/078,778), FILING OR 371(c) DATE (03/11/2005), CLASS (710), GROUP ART UNIT (2181), ATTORNEY DOCKET NO. (9576/96910)

APPLICANTS: Michael Tasler, Wurzburg, GERMANY;
** CONTINUING DATA ***** YES HK, 1/20/2006
This application is a CON of 10/219,105 08/15/2002 PAT 6,895,449
** FOREIGN APPLICATIONS ***** YES HK, 1/20/2006
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EUROPEAN PATENT OFFICE (EPO) PCT/EP98/01187 03/03/1998
IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** 04/08/2005 ** SMALL ENTITY **

Table with 5 columns: Foreign Priority claimed (yes/no), 35 USC 119 (a-d) conditions met (yes/no/Met after Allowance), STATE OR COUNTRY (GERMANY), SHEETS DRAWING (2), TOTAL CLAIMS (16), INDEPENDENT CLAIMS (3)

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TITLE: FLEXIBLE INTERFACE

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FEES: Authority has been given in Paper
No. _____ to charge/credit DEPOSIT ACCOUNT
No. _____ for following:
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- 1.16 Fees (Filing)
- 1.17 Fees (Processing Ext. of time)
- 1.18 Fees (Issue)
- Other _____
- Credit

Applicant: Michael Tasler
Application No.: 11/078,778
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Date: July 13, 2006
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IN THE CLAIMS:

Prior to the entry of this supplemental preliminary amendment, claims 1-16, 18, 45 and 70 were cancelled, which leaves only claims 17, 19-44, 46-69, and 71-93 pending. In addition to such claims, please add claims 94-113 as follows:

1-16. (cancelled).

17. (previously presented) A combination, comprising:

a personal computer having at least one multi-purpose interface to which inquiry signals are periodically sent as to what type of device is operatively connected thereto; and

an analog data generating and processing device having an input/output port that is operatively connected to the multi-purpose interface of the personal computer, the analog data generating and processing device including

a sensor that is mounted on a housing, the sensor being adapted to receive analog wave signals that are generated by a source that is external to the housing and that is not located in substantial proximity to the sensor, the sensor being further adapted to generate sets of analog data from the analog wave signals that it receives,

an analog to digital converter that is operatively connected to the sensor and that generates a set of digitized analog data from each set of analog data,

a circuit that includes a processor and a memory that are operatively connected to the analog to digital converter, a first set of instructions being stored in the memory that are utilized by the processor to cause the sets of digitized analog data to be individually stored in the memory irrespective of whether or not the analog data generating and processing device has been recognized by the personal computer,

wherein a response signal is automatically and without user intervention sent from the input/output port to the multi-purpose interface after they have been operatively connected together and after an inquiry signal has been received by the input/output port, the receipt and processing of the receipt signal by the personal computer causing it to automatically and without user intervention recognize the analog data generating and processing device as being a device having digital data that is stored therein and selectively retrievable therefrom, and

wherein, after the analog data generating and processing device has been automatically recognized by the personal computer, and while the input/output port is operatively connected to the multi-purpose interface, user selected ones of the digitized sets of analog data can be transferred from the memory, through the input/output port, through the multi-purpose interface, and to the personal computer by means of a driver that is associated with the personal computer.

18. (cancelled).

19. (previously presented) The combination of claim 17, wherein the analog wave signals comprise electromagnetic radiation.

20. (previously presented) The combination of claim 19, wherein the electromagnetic radiation received by the sensor is representative of an object that is physically separated from and can be located not in substantial proximity to the housing.

21. (previously presented) The combination claim 20, wherein the electromagnetic radiation is generated by a medical device.

22. (previously presented) The combination of claim 21, wherein the medical device comprises a diagnostic radiological system.

23. (previously presented) The combination of claim 20, wherein the sensor comprises an electronic measuring device.

24. (previously presented) The combination of claim 23, wherein the electronic measuring device comprises a multi-meter.

25. (previously presented) The combination of claim 20, wherein the driver is adapted for use with a mass storage device.

26. (previously presented) The combination of claim 25, wherein the driver is adapted for use with a mass storage device that includes a rotatable storage medium.

27. (previously presented) The combination of claim 26, wherein the driver is adapted for use with a hard disk drive.

28. (previously presented) The combination of claim 20, wherein the driver is located in a memory of the personal computer.

29. (previously presented) The combination of claim 28, wherein the personal computer memory comprises a BIOS of the personal computer.

30. (previously presented) The combination of claim 20, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device even though it is not a mass storage device.

31. (previously presented) The combination of claim 30, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device having a rotatable storage disk even though it is not a mass storage device having a rotatable storage disk.

32. (previously presented) The combination of claim 31, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a hard disk drive even though it is not a hard disk drive.

33. (previously presented) The combination of claim 20, wherein the memory of the analog data generating and processing device comprises a buffer memory.

34. (previously presented) The combination of claim 20, wherein the input/output port is adapted to be operatively connected to a SCSI interface of the personal computer.

35. (previously presented) The combination of claim 20, wherein the processor comprises a digital signal processor.

36. (previously presented) The combination of claim 20, wherein the sets of digitized analog data are transferred to the personal computer in a format suitable for a mass storage device present in the personal computer.

37. (previously presented) The combination of claim 36, wherein a root directory and virtual files are created in the memory which can be accessed by the personal computer.

38. (previously presented) The combination of claim 37, wherein at least one of the virtual files comprises a configuration file stored in the memory.

39. (previously presented) The combination of claim 38, wherein the configuration file allows a user to configure the analog data generating and processing device as being a specific mass storage device.

40. (previously presented) The combination of claim 39, wherein the configuration file allows a user to configure the analog data generating and processing device as being a specific hard disk drive.

41. (previously presented) The combination of claim 20, wherein a wire based connection is used to operatively connect the input/output port to the multi-purpose interface of the personal computer.

42. (previously presented) The combination of claim 20, wherein a second set of instructions are stored in the memory which are adapted to cause the response signals to be generated.

43. (previously presented) The combination of claim 20, wherein a third set of instructions are stored in the memory that allow user selected ones of the digitized sets of analog data to be transferred to a memory of the personal computer.

44. (previously presented) A combination, comprising:
a personal computer having at least one multi-purpose interface to which inquiry signals are periodically sent as to what type of device is operatively connected thereto; and
an analog data generating and processing device that is operatively coupled to the multi-purpose interface of the personal computer, the analog data generating and processing device including

means for receiving analog wave signals that are generated by a source external to and not located in substantial proximity to the analog data generating and processing device, for generating sets of analog data therefrom, and for digitizing each set of analog data,

means for causing the digitized sets of analog data to be individually stored in a memory irrespective of whether or not the analog data generating and processing device has been recognized by the personal computer,

means for automatically and without user intervention responding the receipt of a periodic inquiry signal from the personal computer by sending a signal to the multi-purpose interface that causes the personal computer to automatically and without user intervention recognize the analog data generating and processing device as being a device having digital data that is stored in and to be selectively retrievable from a memory in which digital signals are stored, and

means for transferring user selected ones of the digitized sets of analog data to the personal computer by means of a driver that is associated with the personal computer.

45. (cancelled).

46. (previously presented) The combination of claim 44, wherein the analog wave signals comprise electromagnetic radiation.

47. (previously presented) The combination of claim 46, wherein the electromagnetic radiation is representative of an object that is physically separated from and can be located not in substantial proximity to the analog data generating and processing device.

48. (previously presented) The combination of claim 47, wherein the means for receiving analog wave signals forms a part of a medical device.

49. (previously presented) The combination of claim 48, wherein the medical device comprises a diagnostic radiological system.

50. (previously presented) The combination of claim 47, wherein the means for receiving analog wave signals includes an electronic measuring device.

51. (previously presented) The combination of claim 50, wherein the electronic measuring device comprises a multi-meter.

52. (previously presented) The combination of claim 47, wherein the driver is adapted for use with a mass storage device.

53. (previously presented) The combination of claim 52, wherein the driver is adapted for use with a mass storage device that includes a rotatable storage medium.

54. (previously presented) The combination of claim 53, wherein the driver is adapted for use with a hard disk drive.

55. (previously presented) The combination of claim 47, wherein the driver is located in a memory of the personal computer.

56. (previously presented) The combination of claim 55, wherein the personal computer memory comprises a BIOS of the personal computer.

57. (previously presented) The combination of claim 47, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device even though it is not a mass storage device.

58. (previously presented) The combination of claim 57, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device having a rotatable storage disk even though it is not a mass storage device having a rotatable storage disk.

59. (previously presented) The combination of claim 58, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a hard disk drive even though it is not a hard disk drive.

60. (previously presented) The combination of claim 47, wherein the memory of the analog data generating and processing device comprises a buffer memory.

61. (previously presented) The combination of claim 47, wherein the means for receiving from the multi-purpose interface is adapted to be operatively connected to a SCSI interface of the personal computer.

62. (previously presented) The combination of claim 61, wherein the means for transferring comprises at least a portion of a digital signal processor.

63. (previously presented) The combination of claim 47, wherein the sets of digitized analog data are transferred to the personal computer in a format suitable for a mass storage device present in the personal computer.

64. (previously presented) The combination of claim 63 wherein a root directory and virtual files are created in the memory which can be accessed by the personal computer.

65. (previously presented) The combination of claim 64, wherein at least one of the virtual files comprises a configuration file stored in the memory.

66. (previously presented) The combination of claim 64, wherein the configuration file allows a user to configure the analog data generating and processing device as being a specific mass storage device.

67. (previously presented) The combination of claim 65, wherein the configuration file allows a user to configure the analog data generating and processing device as being a specific hard disk drive.

68. (previously presented) The combination of claim 47, wherein a wire based connection is used to operatively connect the multi-purpose interface of the personal computer with the means for receiving from the multi-purpose interface.

69. (previously presented) A combination, comprising:
a personal computer having at least one multi-purpose interface to which inquiry signals are periodically sent as to what type of device is operatively connected thereto; and
an analog data generating and processing device having a connecting device that is operatively connected to the multi-purpose interface of the personal computer and that is able to receive therefrom the periodic inquiry signals, the analog data generating and processing device including

a circuit that includes a sensor and an analog to digital converter, the circuit being adapted to be exposed to analog wave signals originate from a source that is external to the analog data generating and processing device and that is not located in substantial proximity to the sensor, to generate sets of analog data therefrom, and to generate digitized sets of analog data from the sets of analog data,

a processor and a memory both of which are operatively connected to the circuit, the processor being adapted to cause the digitized sets of analog data to be individually stored in the memory irrespective of whether or not the analog data generating and processing device has been recognized by the personal computer,

wherein a response signal is automatically and without user intervention sent to the multi-purpose interface of the personal computer after the connecting device is operatively connected to the multi-purpose interface and after the connecting device receives at least one periodic inquiry signal therefrom, receipt and processing of the response signal by the personal computer causing the personal computer to automatically and without user intervention recognize the analog data generating and processing device as being a device having digital data that is stored therein and selectively retrievable therefrom, and

wherein, after the analog data generating and processing device has been automatically recognized by the personal computer, user selected ones of the digitized sets of analog data can be transferred to the personal computer by means of a driver that is associated with the personal computer.

70. (cancelled).

71. (previously presented) The combination of claim 69, wherein the analog wave signals comprise electromagnetic radiation.

72. (previously presented) The combination of claim 71, wherein the electromagnetic radiation is representative of an object that is physically separated from and can be located not in substantial proximity to the analog data generating and processing device.

73. (previously presented) The combination of claim 72, wherein the electromagnetic radiation is generated by a medical device.

74. (previously presented) The combination of claim 73, wherein the medical device comprises a diagnostic radiological system.

75. (previously presented) The combination of claim 72, wherein the sensor comprises an electronic measuring device.

76. (previously presented) The combination of claim 75, wherein the electronic measuring device comprises a multi-meter.

77. (previously presented) The combination of claim 72, wherein the driver is adapted for use with a mass storage device.

78. (previously presented) The combination of claim 77, wherein the driver is adapted for use with a mass storage device that includes a rotatable storage medium.

79. (previously presented) The combination of claim 78, wherein the driver is adapted for use with a hard disk drive.

80. (previously presented) The combination of claim 72, wherein the driver is located in a memory of the personal computer.

81. (previously presented) The combination of claim 80, wherein the personal computer memory comprises a BIOS of the personal computer.

82. (previously presented) The combination of claim 72, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device even though it is not a mass storage device.

83. (previously presented) The combination of claim 82, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device having a rotatable storage disk even though it is not a mass storage device having a rotatable storage disk.

84. (previously presented) The combination of claim 83, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a hard disk drive even though it is not a hard disk drive.

85. (previously presented) The combination of claim 72, wherein the memory of the analog data generating and processing device comprises a buffer memory.

86. (previously presented) The combination of claim 72, wherein the connecting device is adapted to be operatively connected to a SCSI interface of the personal computer.

87. (previously presented) The combination of claim 72, wherein the processor comprises a digital signal processor.

88. (previously presented) The combination of claim 72, wherein the digitized versions of the analog data is transferred to the personal computer in a format suitable for a mass storage device present in the personal computer.

89. (previously presented) The combination of claim 88 wherein the processor is adapted to create a root directory and virtual files in the memory which can be accessed by the personal computer.

90. (previously presented) The combination of claim 89, wherein at least one of the virtual files comprises a configuration file stored in the memory.

91. (previously presented) The combination of claim 90, wherein the configuration file allows a user to configure the analog data generating and processing device as being a specific mass storage device.

92. (previously presented) The combination of claim 91, wherein the configuration file allows a user to configure the analog data generating and processing device as being a specific hard disk drive.

93. (previously presented) The combination of claim 72, wherein a wire based connection is used to operatively connect the input/output port of the processor circuit to the multi-purpose interface of the personal computer.

94. (new) A combination, comprising:
a personal computer (PC) having an operating system, a display, and one or more multi-purpose user interfaces (MPUI), the operating system causing a device identification signal to be periodically sent to each MPUI so that the PC can identify the time when and what type of a device is operatively connected to a particular MPUI, the operating system also being adapted to send a data identification signal to a particular MPUI to which a data storage device is operatively coupled so that a visual representation of the contents of the data storage device can be displayed on the display;

an analog data generating and processing device (ADGPD) having a processor, an I/O port that is operatively connected to an MPUI of the PC, an analog to digital converter, and a memory in which one or more digitized data sets are stored, each one of the digitized data sets being representative of one or more analog wave signals that are generated or reflected by a source that is external to and not in substantial proximity to the ADGPD;

wherein, after a device identification signal has been received and processed by the ADGPD, the ADGPD automatically and without user intervention sends a response signal to

the MPUI to which its I/O port is operatively coupled to cause the PC to automatically and without user intervention recognize the ADGPD as being a data storage device;

wherein, after a data identification signal has been received and processed by the ADGPD, the ADGPD automatically and without user intervention sends to the MPUI to which the I/O port is operatively coupled information that allows the operating system to create, on the display, a visual representation of the contents of the portion of the memory in which the digitized data sets are or can be stored; and

wherein user selected ones of the digitized data sets can be transferred from the memory and to the MPUI to which the I/O port is operatively coupled by means of a driver that is a part of the operating system when it is installed in the PC for the first time.

95. (new) The combination of claim 94, wherein each analog wave signal comprises electromagnetic radiation.

96. (new) The combination of claim 95, wherein the electromagnetic radiation is representative of an object that is physically separated from and can be located not in substantial proximity to the ADGPD.

97. (new) The combination claim 96, wherein the electromagnetic radiation is generated by a medical device.

98. (new) The combination of claim 97, wherein the medical device comprises a diagnostic radiological system.

99. (new) The combination of claim 94, wherein the data storage device comprises a mass storage device.

100. (new) The combination of claim 99, wherein the mass storage device comprises a hard disk drive.

101. (new) The combination of claim 94, wherein receipt and processing of the response signal by the PC allows it to communicate with the ADGPD as if it were a mass storage device even though it is not a mass storage device.

102. (new) The combination of claim 101, wherein receipt and processing of the response signal by the PC allows it to communicate with the ADGPD device as if it were a hard disk drive even though it is not a hard disk drive.

103. (new) The combination of claim 94, the MPUI to which the I/O port is connected comprises a SCSI interface.

104. (new) The combination of claim 94, wherein the processor comprises a digital signal processor.

105. (new) The combination of claim 94, wherein the information that the ADGPD sends to the PC comprises at least the number of different digitized data sets that are stored in the memory of the ADGPD.

106. (new) The combination of claim 105, wherein the information that the ADGPD sends to the PC further comprises a root directory that can be accessed by the PC.

107. (new) The combination of claim 106, wherein the information that the ADGPD sends to the PC further comprises a configuration file.

108. (new) The combination of claim 94, wherein the I/O port is operatively coupled to a MPUI by a wire-based connection.

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109. (new) The combination of claim 94, wherein the digitized data sets are stored as individual files in the memory of the ADGPD.

110. (new) The combination of claim 109, wherein the individual files form a part of a file system.

111. (new) The combination of claim 110, wherein the file system comprises a virtual file system.

112. (new) The combination of claim 94, wherein the digitized data sets are generated and stored in the memory independent of then when the I/O port is operatively coupled to an MPUI.

113. (new) The combination of claim 112, wherein the digitized data sets are generated and stored in the memory before the time when the I/O port is operatively coupled to an MPUI.

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Filed: 03/11/05
Date: June 26, 2006
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IN THE CLAIMS:

Please cancel claims 18, 45 and 70 without prejudice, and please amend claims 17, 44, and 69 as follows:

17. (currently amended) A combination, comprising:

~~An analog data generating and processing device for use with a personal computer~~
having at least one multi-purpose interface to which ~~the personal computer sends periodic~~
inquiry signals are periodically sent as to what type of device is operatively connected thereto;
and;

~~an the analog data generating and processing device comprising:~~ having an
input/output port that is operatively connected to the multi-purpose interface of the personal
computer, the analog data generating and processing device including

a sensor that is mounted on a housing, the sensor being adapted to receive
analog wave signals that are generated by a source that is external to the housing and that is not
located in substantial proximity to the sensor, the sensor being further adapted to generate sets of
analog data from the analog wave signals that it receives;

an analog to digital converter that is operatively connected to the sensor
and that generates a set of digitized analog data from each set of analog data;

a circuit that includes a processor and a memory that are operatively
connected to the analog to digital converter, a first set of instructions being stored in the memory
that are utilized by the processor to cause the sets of digitized analog data to be individually
stored in the memory irrespective of whether or not the analog data generating and processing
device has been recognized by the personal computer;

~~an input/output port that is adapted to be operatively connected to the multi-purpose interface of the personal computer, wherein a response signal being is~~ automatically and without user intervention sent from the input/output port to the multi-purpose interface after they have been operatively connected together and after an inquiry signal has been received by the input/output port, the receipt and processing of the receipt signal by the personal computer causing it to automatically and without user intervention recognize the analog data generating and processing device as being a device having digital data that is stored therein and selectively retrievable therefrom; and

wherein, after the analog data generating and processing device has been automatically recognized by the personal computer, and while the input/output port is operatively connected to the multi-purpose interface, user selected ones of the digitized sets of analog data can be transferred from the memory, through the input/output port, through the multi-purpose interface, and to the personal computer by means of a driver that is associated with the personal computer.

18. (cancelled).

19. (currently amended) The combination ~~analog data generating and processing device~~ of claim 17, wherein the analog wave signals comprise electromagnetic radiation.

20. (currently amended) The combination ~~analog data generating and processing device~~ of claim 19, wherein the electromagnetic radiation received by the sensor is representative of an object that is physically separated from and can be located not in substantial proximity to the housing.

21. (currently amended) The combination ~~analog data generating and processing~~ device-claim 20, wherein the electromagnetic radiation is generated by a medical device.

22. (currently amended) The combination ~~analog data generating and processing~~ device-of claim 21, wherein the medical device comprises a diagnostic radiological system.

23. (currently amended) The combination ~~analog data generating and processing~~ device-of claim 20, wherein the sensor comprises an electronic measuring device.

24. (currently amended) The combination ~~analog data generating and processing~~ device-of claim 23, wherein the electronic measuring device comprises a multi-meter.

25. (currently amended) The combination ~~analog data generating and processing~~ device-of claim 20, wherein the driver is adapted for use with a mass storage device.

26. (currently amended) The combination ~~analog data generating and processing~~ device-of claim 25, wherein the driver is adapted for use with a mass storage device that includes a rotatable storage medium.

27. (currently amended) The combination ~~analog data generating and processing~~ device-of claim 26, wherein the driver is adapted for use with a hard disk drive.

28. (currently amended) The combination ~~analog data generating and processing~~ device-of claim 20, wherein the driver is located in a memory of the personal computer.

29. (currently amended) The combination ~~analog data generating and processing~~ device-of claim 28, wherein the personal computer memory comprises a BIOS of the personal computer.

30. (currently amended) The combination ~~analog data generating and processing~~ device-of claim 20, wherein receipt and processing of the response signal by the personal

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computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device even though it is not a mass storage device.

31. (currently amended) The combination analog data generating and processing device of claim 30, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device having a rotatable storage disk even though it is not a mass storage device having a rotatable storage disk.

32. (currently amended) The combination analog data generating and processing device of claim 31, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a hard disk drive even though it is not a hard disk drive.

33. (currently amended) The combination analog data generating and processing device of claim 20, wherein the memory of the analog data generating and processing device comprises a buffer memory.

34. (currently amended) The combination analog data generating and processing device of claim 20, wherein the input/output port is adapted to be operatively connected to a SCSI interface of the personal computer.

35. (currently amended) The combination analog data generating and processing device of claim 20, wherein the processor comprises a digital signal processor.

36. (currently amended) The combination analog data generating and processing device of claim 20, wherein the sets of digitized analog data are transferred to the personal computer in a format suitable for a mass storage device present in the personal computer.

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37. (currently amended) The combination ~~analog data generating and processing~~ device of claim 36, wherein a root directory and virtual files are created in the memory which can be accessed by the personal computer.

38. (currently amended) The combination ~~analog data generating and processing~~ device of claim 37, wherein at least one of the virtual files comprises a configuration file stored in the memory.

39. (currently amended) The combination ~~analog data generating and processing~~ device of claim 38, wherein the configuration file allows a user to configure the analog data generating and processing device as being a specific mass storage device.

40. (currently amended) The combination ~~analog data generating and processing~~ device of claim 39, wherein the configuration file allows a user to configure the analog data generating and processing device as being a specific hard disk drive.

41. (currently amended) The combination ~~analog data generating and processing~~ device of claim 20, wherein a wire based connection is used to operatively connect the input/output port to the multi-purpose interface of the personal computer.

42. (currently amended) The combination ~~analog data generating and processing~~ device of claim 20, wherein a second set of instructions are stored in the memory which are adapted to cause the response signals to be generated.

43. (currently amended) The combination ~~analog data generating and processing~~ device of claim 20, wherein a third set of instructions are stored in the memory that allow user selected ones of the digitized sets of analog data to be transferred to a memory of the personal computer.

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44. (currently amended) A combination, comprising:

~~An analog data generating and processing device for use with a personal computer having at least one multi-purpose interface to which the personal computer sends periodic inquiry signals~~ are periodically sent as to what type of device is operatively connected thereto; ~~and, the~~

an analog data generating and processing device comprising: that is operatively coupled to the multi-purpose interface of the personal computer, the analog data generating and processing device including

means for receiving analog wave signals that are generated by a source external to and not located in substantial proximity to the analog data generating and processing device, for generating sets of analog data therefrom, and for digitizing each set of analog data;

means for causing the digitized sets of analog data to be individually stored in a memory irrespective of whether or not the analog data generating and processing device has been recognized by the personal computer;

~~means for receiving from the multi-purpose interface of the personal computer the periodic inquiry signals, and for~~ automatically and without user intervention responding ~~thereto~~ the receipt of a periodic inquiry signal from the personal computer by sending a signal to the multi-purpose interface that causes the personal computer to automatically and without user intervention recognize the analog data generating and processing device as being a device having digital data that is stored in and to be selectively retrievable from a memory in which digital signals are stored; and

means for transferring user selected ones of the digitized sets of analog data to the personal computer by means of a driver that is associated with the personal computer.

45. (cancelled).

46. (currently amended) The combination ~~analog data generating and processing device~~ of claim 44, wherein the analog wave signals comprise electromagnetic radiation.

47. (currently amended) The combination ~~analog data generating and processing device~~ of claim 46, wherein the electromagnetic radiation is representative of an object that is physically separated from and can be located not in substantial proximity to the analog data generating and processing device.

48. (currently amended) The combination ~~analog data generating and processing device~~ of claim 47, wherein the means for receiving analog wave signals forms a part of a medical device.

49. (currently amended) The combination ~~analog data generating and processing device~~ of claim 48, wherein the medical device comprises a diagnostic radiological system.

50. (currently amended) The combination ~~analog data generating and processing device~~ of claim 47, wherein the means for receiving analog wave signals includes an electronic measuring device.

51. (currently amended) The combination ~~analog data generating and processing device~~ of claim 50, wherein the electronic measuring device comprises a multi-meter.

52. (currently amended) The combination ~~analog data generating and processing device~~ of claim 47, wherein the driver is adapted for use with a mass storage device.

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53. (currently amended) The combination ~~analog data generating and processing~~ device of claim 52, wherein the driver is adapted for use with a mass storage device that includes a rotatable storage medium.

54. (currently amended) The combination ~~analog data generating and processing~~ device of claim 53, wherein the driver is adapted for use with a hard disk drive.

55. (currently amended) The combination ~~analog data generating and processing~~ device of claim 47, wherein the driver is located in a memory of the personal computer.

56. (currently amended) The combination ~~analog data generating and processing~~ device of claim 55, wherein the personal computer memory comprises a BIOS of the personal computer.

57. (currently amended) The combination ~~analog data generating and processing~~ device of claim 47, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device even though it is not a mass storage device.

58. (currently amended) The combination ~~analog data generating and processing~~ device of claim 57, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device having a rotatable storage disk even though it is not a mass storage device having a rotatable storage disk.

59. (currently amended) The combination ~~analog data generating and processing~~ device of claim 58, wherein receipt and processing of the response signal by the personal

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computer allows it to communicate with the analog data generating and processing device as if it were a hard disk drive even though it is not a hard disk drive.

60. (currently amended) The combination ~~analog data generating and processing device~~ of claim 47, wherein the memory of the analog data generating and processing device comprises a buffer memory.

61. (currently amended) The combination ~~analog data generating and processing device~~ of claim 47, wherein the means for receiving from the multi-purpose interface is adapted to be operatively connected to a SCSI interface of the personal computer.

62. (currently amended) The combination ~~analog data generating and processing device~~ of claim 61, wherein the means for transferring comprises at least a portion of a digital signal processor.

63. (currently amended) The combination ~~analog data generating and processing device~~ of claim 47, wherein the sets of digitized analog data are transferred to the personal computer in a format suitable for a mass storage device present in the personal computer.

64. (currently amended) The combination ~~analog data generating and processing device~~ of claim 63 wherein a root directory and virtual files are created in the memory which can be accessed by the personal computer.

65. (currently amended) The combination ~~analog data generating and processing device~~ of claim 64, wherein at least one of the virtual files comprises a configuration file stored in the memory.

66. (currently amended) The ~~combination analog data generating and processing device~~ of claim 64, wherein the configuration file allows a user to configure the analog data generating and processing device as being a specific mass storage device.

67. (currently amended) The ~~combination analog data generating and processing device~~ of claim 65, wherein the configuration file allows a user to configure the analog data generating and processing device as being a specific hard disk drive.

68. (currently amended) The ~~combination analog data generating and processing device~~ of claim 47, wherein a wire based connection is used to operatively connect the multi-purpose interface of the personal computer with the means for receiving from the multi-purpose interface.

69. (currently amended) A combination, comprising:

~~An analog data generating and processing device for use with a personal computer having at least one multi-purpose interface to which the personal computer sends periodic inquiry signals~~ are periodically sent as to what type of device is operatively connected thereto; ~~and, the~~

an analog data generating and processing device comprising: having a connecting device that is operatively connected to the multi-purpose interface of the personal computer and that is able to receive therefrom the periodic inquiry signals, the analog data generating and processing device including

a circuit that includes a sensor and an analog to digital converter, the circuit being adapted to be exposed to analog wave signals originate from a source that is external to the analog data generating and processing device and that is not located in substantial

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Date: June 26, 2006
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proximity to the sensor, to generate sets of analog data therefrom, and to generate digitized sets of analog data from the sets of analog data;

a processor and a memory both of which are operatively connected to the circuit, the processor being adapted to cause the digitized sets of analog data to be individually stored in the memory irrespective of whether or not the analog data generating and processing device has been recognized by the personal computer;

~~a connecting device operatively connected to the processor and the memory, the connecting device being adapted to be operatively connected to the multi-purpose interface of the personal computer and to receive therefrom the periodic inquiry signals;~~

wherein a response signal is automatically and without user intervention sent to the multi-purpose interface of the personal computer after the connecting device is operatively connected to the multi-purpose interface and after the connecting device receives at least one periodic inquiry signal therefrom, receipt and processing of the response signal by the personal computer causing the personal computer to automatically and without user intervention recognize the analog data generating and processing device as being a device having digital data that is stored therein and selectively retrievable therefrom; and

wherein, after the analog data generating and processing device has been automatically recognized by the personal computer, ~~and when the processor and memory are operatively connected to the circuit,~~ user selected ones of the digitized sets of analog data can be transferred to the personal computer by means of a driver that is associated with the personal computer.

70. (cancelled).

71. (currently amended) The combination ~~analog data generating and processing device~~ of claim 69, wherein the analog wave signals comprise electromagnetic radiation.

72. (currently amended) The combination ~~analog data generating and processing device~~ of claim 71, wherein the electromagnetic radiation is representative of an object that is physically separated from and can be located not in substantial proximity to the analog data generating and processing device.

73. (currently amended) The combination ~~analog data generating and processing device~~ of claim 72, wherein the electromagnetic radiation is generated by a medical device.

74. (currently amended) The combination ~~analog data generating and processing device~~ of claim 73, wherein the medical device comprises a diagnostic radiological system.

75. (currently amended) The combination ~~analog data generating and processing device~~ of claim 72, wherein the sensor comprises an electronic measuring device.

76. (currently amended) The combination ~~analog data generating and processing device~~ of claim 75, wherein the electronic measuring device comprises a multi-meter.

77. (currently amended) The combination ~~analog data generating and processing device~~ of claim 72, wherein the driver is adapted for use with a mass storage device.

78. (currently amended) The combination ~~analog data generating and processing device~~ of claim 77, wherein the driver is adapted for use with a mass storage device that includes a rotatable storage medium.

79. (currently amended) The combination ~~analog data generating and processing device~~ of claim 78, wherein the driver is adapted for use with a hard disk drive.

80. (currently amended) The combination analog data generating and processing ~~device~~ of claim 72, wherein the driver is located in a memory of the personal computer.

81. (currently amended) The combination analog data generating and processing ~~device~~ of claim 80, wherein the personal computer memory comprises a BIOS of the personal computer.

82. (currently amended) The combination analog data generating and processing ~~device~~ of claim 72, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device even though it is not a mass storage device.

83. (currently amended) The combination analog data generating and processing ~~device~~ of claim 82, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device having a rotatable storage disk even though it is not a mass storage device having a rotatable storage disk.

84. (currently amended) The combination analog data generating and processing ~~device~~ of claim 83, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a hard disk drive even though it is not a hard disk drive.

85. (currently amended) of claim 72, wherein the memory of the analog data generating and processing device comprises a buffer memory.

86. (currently amended) The combination analog data generating and processing device of claim 72, wherein the connecting device is adapted to be operatively connected to a SCSI interface of the personal computer.

87. (currently amended) The combination analog data generating and processing device of claim 72, wherein the processor comprises a digital signal processor.

88. (currently amended) The combination analog data generating and processing device of claim 72, wherein the digitized versions of the analog data is transferred to the personal computer in a format suitable for a mass storage device present in the personal computer.

89. (currently amended) The combination analog data generating and processing device of claim 88 wherein the processor is adapted to create a root directory and virtual files in the memory which can be accessed by the personal computer.

90. (currently amended) The combination analog data generating and processing device of claim 89, wherein at least one of the virtual files comprises a configuration file stored in the memory.

91. (currently amended) The combination analog data generating and processing device of claim 90, wherein the configuration file allows a user to configure the analog data generating and processing device as being a specific mass storage device.

92. (currently amended) The combination analog data generating and processing device of claim 91, wherein the configuration file allows a user to configure the analog data generating and processing device as being a specific hard disk drive.

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93. (currently amended) The combination ~~analog data-generating and processing~~
~~device~~ of claim 72, wherein a wire based connection is used to operatively connect the
input/output port of the processor circuit to the multi-purpose interface of the personal computer.

PATENT APPLICATION FEE DETERMINATION RECORD
Effective December 8, 2004

11/078778
~~11078778~~

CLAIMS AS FILED - PART I

(Column 1) (Column 2)

TOTAL CLAIMS	16	
FOR	NUMBER FILED	NUMBER EXTRA
TOTAL CHARGEABLE CLAIMS	18 minus 20 =	2
INDEPENDENT CLAIMS	3 minus 3 =	0
MULTIPLE DEPENDENT CLAIM PRESENT <input type="checkbox"/>		

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

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	74	Minus	18	54
	Independent	3	Minus	3	
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/>				

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

AMENDMENT B		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total	74	Minus	74	
	Independent	3	Minus	3	
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/>				

(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"/>				

* 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.

SMALL ENTITY TYPE OR

OTHER THAN SMALL ENTITY

RATE	FEE		RATE	FEE
BASIC FEE	150.00	OR	BASIC FEE	300.00
X\$ 25=		OR	X\$50=	
X100=		OR	X200=	
+180=	180	OR	+360=	
TOTAL	330	OR	TOTAL	

SMALL ENTITY OR

OTHER THAN SMALL ENTITY

RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X\$ 25=		OR	X\$50=	
X100=		OR	X200=	
+180=		OR	+360=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X\$ 25=		OR	X\$50=	
X100=		OR	X200=	
+180=		OR	+360=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X\$ 25=		OR	X\$50=	
X100=		OR	X200=	
+180=		OR	+360=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X\$ 25=		OR	X\$50=	
X100=		OR	X200=	
+180=		OR	+360=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X\$ 25=		OR	X\$50=	
X100=		OR	X200=	
+180=		OR	+360=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

Electronic Patent Application Fee Transmittal

Application Number:	11078778
Filing Date:	11-Mar-2005
Title of Invention:	ANALOG DATA GENERATING AND PROCESSING DEVICE FOR USE WITH A PERSONAL COMPUTER
First Named Inventor:	Michael Tasler
Filer:	Jeffrey W. Salmon
Attorney Docket Number:	9576/96910

Filed as Large Entity

Utility Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl issue fee	1501	1	1400	1400
Publ. Fee- early, voluntary, or normal	1504	1	300	300

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				1700

Electronic Acknowledgement Receipt

EFS ID:	1133397
Application Number:	11078778
Confirmation Number:	8978
Title of Invention:	ANALOG DATA GENERATING AND PROCESSING DEVICE FOR USE WITH A PERSONAL COMPUTER
First Named Inventor:	Michael Tasler
Correspondence Address:	Jeffrey W. Salmon, Esq. Welsh & Katz, Ltd. 22nd Floor 120 S. Riverside Plaza Chicago IL 60606 US 3126551501 jwsalmon@welshkatz.com
Filer:	Jeffrey W. Salmon
Filer Authorized By:	
Attorney Docket Number:	9576/96910
Receipt Date:	31-JUL-2006
Filing Date:	11-MAR-2005
Time Stamp:	12:01:22
Application Type:	Utility
International Application Number:	

Payment information:

Submitted with Payment	yes
Payment was successfully received in RAM	\$1700

RAM confirmation Number	772
Deposit Account	230920
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 C.F.R. Section 1.16 and 1.17	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)	Multi Part	Pages
1	Fee Worksheet (PTO-875)	fee-info.pdf	8305	no	2

Warnings:

Information:

Total Files Size (in bytes):	8305
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail Stop ISSUE FEE Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 or Fax (571)-273-2885

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)

7590 07/28/2006

Jeffrey W. Salmon, Esq. Welsh & Katz, Ltd. 22nd Floor 120 S. Riverside Plaza Chicago, IL 60606

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 (571) 273-2885, on the date indicated below.

Maura Halvey (Depositor's name) Maura Halvey (Signature) October 27, 2006 (Date)

Table with columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO. Values: 11/078,778, 03/11/2005, Michael Tasler, 9576/96910, 8978

TITLE OF INVENTION: ANALOG DATA GENERATING AND PROCESSING DEVICE FOR USE WITH A PERSONAL COMPUTER

Table with columns: APPLN. TYPE, SMALL ENTITY, ISSUE FEE DUE, PUBLICATION FEE DUE, PREV. PAID ISSUE FEE, TOTAL FEE(S) DUE, DATE DUE. Values: nonprovisional, YES, \$700, \$300, \$0, \$1000, 10/30/2006

Table with columns: EXAMINER, ART UNIT, CLASS-SUBCLASS. Values: KIM, HAROLD J, 2181, 710-015000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363). 2. For printing on the patent front page, list (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 WELSH & KATZ, LTD. (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.

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. (A) NAME OF ASSIGNEE Papst Licensing GmbH & Co. KG (B) RESIDENCE: (CITY AND STATE OR COUNTRY) St. Georgen, GERMANY

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

4a. The following fee(s) are submitted: [X] Issue Fee [X] Publication Fee [] Advance Order - # of Copies 4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above) [] A check is enclosed. [] Payment by credit card. Form PTO-2038 is attached. [X] The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number 230920 (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above) [X] 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).

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 Jeffrey W. Salmon Date 10/27/06 Typed or printed name Jeffrey W. Salmon Registration No. 37,435

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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Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Request for Continued Examination (RCE) Transmittal

Address to:
Mail Stop RCE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Application Number	11/078,778
Filing Date	03/11/2005
First Named Inventor	Michael Tasler
Art Unit	2181
Examiner Name	Harold J. Kim
Attorney Docket Number	9676/96910

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.

Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. See Instruction Sheet for RCEs (not to be submitted to the USPTO) on page 2.

1. **Submission required under 37 CFR 1.114** Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

a. Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

i. Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____

ii. Other _____

b. Enclosed

i. Amendment/Reply

iii. Information Disclosure Statement (IDS)

ii. Affidavit(s)/ Declaration(s)

iv. other Preliminary Amendment

2. Miscellaneous

Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for

a. period of _____ months. (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

b. Other _____

3. Fees

The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.

The Director is hereby authorized to charge the following fees any underpayment of fees or credit any overpayments to

a. Deposit Account No. 23-0920. I have enclosed a duplicate copy of this sheet.

i. RCE fee required under 37 CFR 1.17(e)

ii. Extension of time fee (37 CFR 1.136 and 1.17)

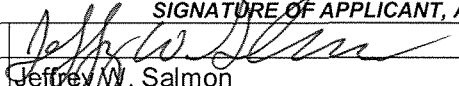
iii. Other _____

b. Check in the amount of \$ _____ enclosed

c. Payment by credit card (Form PTO-2038 enclosed)

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

Signature		Date	19 Dec 2006
Name (Print/Type)	Jeffrey W. Salmon	Registration No.	37,435

CERTIFICATE OF MAILING OR TRANSMISSION

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop RCE, Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450 or facsimile transmitted to the U.S. Patent and Trademark Office on the date shown below.

Signature		Date	6/30/06 18/19/06
Name (Print/Type)	Maura Halvey		

This collection of information is required by 37 CFR 1.114. 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 1.11 and 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, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of: Michael Tasler

Group No.: 2181

Serial No.: 11/078,778

Conf. No.: 8978

Filed: 3/11/05

Examiner: Harold J. Kim

For: ANALOG DATA GENERATING
AND PROCESSING DEVICE
FOR USE WITH A PERSONAL
COMPUTER (As Amended)

Attorney

Docket No.: 0757/96910

**NOTICE TO THE EXAMINER UNDER
MPEP §1442.04 OF PENDING LITIGATION**

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

This is a Notice To The Examiner Under MPEP §1442.04 to disclose the existence of litigation with respect to the grandparent and parent patents of the above-captioned application, US Patent Nos. 6,470,399 and 6,895,449 (the “399 and ‘449 patents”).

On October 16, 2006, Casio, Inc. filed a declaratory judgment action against Papst Licensing in the U.S. District Court for the District of Columbia that was assigned case number 1:06CV01751. Papst Licensing has not yet filed a response to the complaint.

In the complaint, Casio alleges that the ‘399 and ‘449 patents are not infringed by the sale of any Casio products. Casio also alleges in the complaint that all claims of the ‘399 and ‘449 patents which Papst Licensing asserts are infringed by Casio products are invalid for failure to

comply with the patent laws of the United States, including the requirements of 35 U.S.C. §§
102, 103 and/or 112.

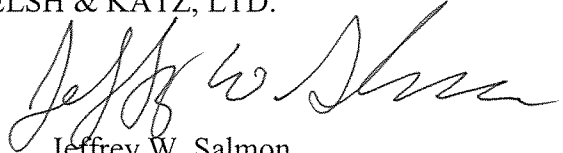
Papst Licensing disagrees with Casio's assertion about the infringement and/or validity
issues with regard to the '399 and '449 patents.

December 19, 2006
Welsh & Katz, Ltd.
120 South Riverside Plaza, 22nd Floor
Chicago, IL 60606
Telephone (312) 655-1500
Facsimile (312) 655-1501

Respectfully submitted,

WELSH & KATZ, LTD.

By



Jeffrey W. Salmon

Reg. No. 37,435

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of: Michael Tasler

Group No.: 2181

Serial No.: 11/078,778

Conf. No.: 8978

Filed: 3/11/05

Examiner: Harold J. Kim

For: ANALOG DATA GENERATING
AND PROCESSING DEVICE
FOR USE WITH A PERSONAL
COMPUTER (As Amended)

Attorney

Docket No.: 0757/96910

**PETITION UNDER 37 CFR 1.313(C)(2) FOR WITHDRAWAL FROM ISSUE FOR
CONSIDERATION OF AN RCE REQUEST UNDER 37 CFR 1.114**

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-0001

Dear Sir:

This is a petition under 37 CFR 1.313(c)(2) to withdraw the instant application from issue so that the USPTO can consider the RCE request under 37 CFR 1.114 concurrently filed herewith. The petition fee set forth in 37 CFR 1.17(h) is paid in connection with the electronic filing of this petition. A showing of good and sufficient reasons why this petition should be granted follows.

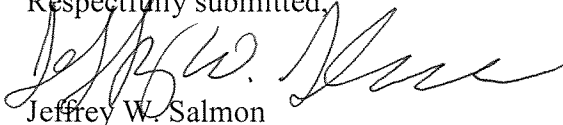
The issue fee for the above-noted application was paid on October 27, 2006. Subsequent to this date, the undersigned attorney became aware of new prior art relating to the patentability of the claims that are to be issued in connection with this application.

After this application issues as a patent, the patent will be asserted against third parties.

Applicant: Michael Tasler
Application No.: 11/078,778
Filed: 03/11/05
Date: December 19, 2006
Page – 2 –

Even though the newly cited art is believed to be cumulative of at least one reference already considered by the Examiner, the newly cited prior art should be given to the Examiner for his consideration to eliminate the possibility of third parties raising inequitable conduct issues with regard to the newly cited art in connection with the enforcement of any patent granted on the instant application. For this reason, it is respectfully requested that this petition be granted so that the Examiner can consider the prior art listed in the IDS filed herewith, and allow the instant application to issue over such prior art.

Respectfully submitted,



Jeffrey W. Salmon
Attorney for Applicant
Registration No. 37,435

December 19, 2006
Welsh & Katz, Ltd.
120 South Riverside Plaza, 22nd Floor
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of: Michael Tasler

Group No.: 2181

Serial No.: 11/078,778

Conf. No.: 8978

Filed: 3/11/05

Examiner: Harold J. Kim

For: ANALOG DATA GENERATING
AND PROCESSING DEVICE
FOR USE WITH A PERSONAL
COMPUTER (As Amended)

Attorney

Docket No.: 0757/96910

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

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

Sir:

Pursuant to 37 C.F.R. §1.97, a list of documents is disclosed on the attached Form PTO-1449 that may be material to the examination of this application. It is submitted that no fees are due in connection with this Information Disclosure Statement because it is being submitted in connection with a Request for Continued Examination.

No inferences should be drawn that the attached list represents a comprehensive investigation, or that any material disclosed is equivalent to the subject invention. In addition, none of the documents that have publication dates prior to the priority date of the above application anticipate the invention in this application.

The cited document(s) disclose numerous specific features. There has been no attempt to list each and every feature disclosed by each document. The Examiner is requested to review the

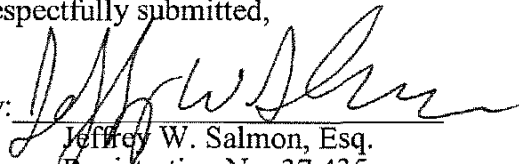
document(s) and determine the extent of the materiality of the document disclosures with respect to the present invention.

The discussion of any art and the citation of any document(s) herein or in the papers filed contemporaneously herewith is not to be construed as an admission that the art or document disclosure is necessarily within the invention field of endeavor, that the art or document disclosure is necessarily prior in time to a particular date which may be relevant to the instant patent application, and/or that the art or document disclosure is otherwise necessarily prior art as defined by the patent law with respect to the instant invention and application.

Also, there is reserved the right to later set forth how the instant invention is distinguished over the disclosure of any document or other art, including the disclosures of the art and document(s) recited herein, that may be cited by the Examiner in rejecting a claim in the instant patent application. The recitation herein of the art and document(s) is not to be construed as an assertion that more pertinent art could not possibly be in existence.

Respectfully submitted,

By:



Jeffrey W. Salmon, Esq.
Registration No. 37,435

Dated: December 19, 2006
Enclosures: Form PTO-1449

WELSH & KATZ, LTD.
120 South Riverside Plaza, 22nd Floor
Chicago, Illinois 60606
Telephone: (312) 655-1500
Facsimile: (312) 655-1501

Form PTO-1449 (Rev. 8-88)		U.S. Department of Commerce Patent and Trademark Office		Attorney Docket No. 0757/96910		Serial No. 11/078,778	
INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)				Applicant Michael Tasler			
				Filing Date 03/11/05		Group No. 2181	
U.S. PATENT DOCUMENTS							
		5,493,335	2/20/96	Parulski, et al.			
		5,614,948	3/25/97	Hannah			
		5,639,606	6/17/97	Willey			
		5,712,682	1/27/98	Hannah			
		5,784,581	7/21/98	Hannah			
		5,841,471	11/24/98	Endsley, et al.			
		5,914,748	6/22/99	Parulski, et al.			
		5,923,193	7/13/99	Bloch, et al.			
		5,926,208	7/20/99	Noonen, et al.			
		5,929,903	7/27/99	Kiesow			
		5,995,080	11/30/99	Biro, et al.			
		6,005,613	12/21/99	Endsley, et al.			
		6,026,217	2/15/00	Adiletta			
		6,088,532	7/11/00	Yamamoto, et al.			
		6,101,276	8/8/00	Adeiletta, et al.			
		6,292,589	9/18/01	Chow, et al.			
FOREIGN PATENT DOCUMENTS							
		Document Number	Date	Country	Class	Subclass	Translation Yes No
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)							
		Universal Serial Bus Specification," 1.0 Final Draft Revision, November 13, 1995					
		Universal Serial Bus Specification," Revision 1.0, January 15, 1996					
Examiner				Date Considered			
*Examiner: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.							

Electronic Patent Application Fee Transmittal

Application Number:	11078778			
Filing Date:	11-Mar-2005			
Title of Invention:	ANALOG DATA GENERATING AND PROCESSING DEVICE FOR USE WITH A PERSONAL COMPUTER			
First Named Inventor/Applicant Name:	Michael Tasler			
Filer:	Jeffrey W. Salmon/Maura Halvey			
Attorney Docket Number:	9576/96910			
Filed as Large Entity				
Utility Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Request for continued examination	1801	1	790	790
Total in USD (\$)				790

Electronic Acknowledgement Receipt

EFS ID:	1387049
Application Number:	11078778
International Application Number:	
Confirmation Number:	8978
Title of Invention:	ANALOG DATA GENERATING AND PROCESSING DEVICE FOR USE WITH A PERSONAL COMPUTER
First Named Inventor/Applicant Name:	Michael Tasler
Correspondence Address:	Jeffrey W. Salmon, Esq. Welsh & Katz, Ltd. 22nd Floor 120 S. Riverside Plaza Chicago IL 60606 US 3126551501 jwsalmon@welshkatz.com
Filer:	Jeffrey W. Salmon/Maura Halvey
Filer Authorized By:	Jeffrey W. Salmon
Attorney Docket Number:	9576/96910
Receipt Date:	19-DEC-2006
Filing Date:	11-MAR-2005
Time Stamp:	20:49:46
Application Type:	Utility

Payment information:

Submitted with Payment	yes
Payment was successfully received in RAM	\$ 790
RAM confirmation Number	1146

Deposit Account	230920
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)	Multi Part /.zip	Pages (if appl.)
1	Preliminary Amendment	96910preamendment.pdf	1399908	no	23
Warnings:					
Information:					
2	Request for Continued Examination (RCE)	96910rce.pdf	128277	no	1
Warnings:					
This is not a USPTO supplied RCE SB30 form.					
Information:					
3	Miscellaneous Incoming Letter	96910pendinglit.pdf	63112	no	2
Warnings:					
Information:					
4	Petition to Withdraw from Issue	96910petitionwithdraw.pdf	77032	no	2
Warnings:					
Information:					
5	Information Disclosure Statement (IDS) Filed	96910ids.pdf	171216	no	3
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
6	Fee Worksheet (PTO-06)	fee-info.pdf	8215	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			1847760		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of: Michael Tasler

Group No.: 2181

Serial No.: 11/078,778

Conf. No.: 8978

Filed: 3/11/05

Examiner: Harold J. Kim

For: ANALOG DATA GENERATING
AND PROCESSING DEVICE
FOR USE WITH A PERSONAL
COMPUTER (As Amended)

Attorney

Docket No.: 0757/96910

PRELIMINARY AMENDMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-0001

Dear Sir:

The issue fee for the instant application case was paid on October 27, 2006, but it has not yet issued as a patent. A petition for withdrawal from issue under 37 CFR 1.313(c)(2), a Request for Continued Examination under 37 CFR 1.114, and an Information Disclosure Statement are being concurrently filed herewith. It is respectfully submitted that this application be withdrawn from issue, and that this preliminary amendment be entered before consideration of the RCE request.

IN THE CLAIMS:

Please amend claims 17, 19-44, 46-69 and 71-93 as noted hereinafter:

1-16. (cancelled).

17. (currently amended) An analog data generating and processing device for use with a combination, comprising: a personal computer having at least one multi-purpose interface to which inquiry signals are periodically sent as to what type of device is operatively connected thereto, the; ~~and an analog data generating and processing device having comprising:~~

an input/output port that is to be operatively connected to the multi-purpose interface of the personal computer;~~;~~ ~~the analog data generating and processing device including~~
a sensor that is mounted on a housing, the sensor being adapted to receive analog wave signals from that are generated by a source that is external to the housing and that is not located in substantial proximity to the sensor, the sensor being further adapted to generate sets of analog data from the analog wave signals that it receives;~~;~~

an analog to digital converter that is operatively connected to the sensor and that generates a set of digitized analog data from each set of analog data;~~;~~

a circuit that includes a processor and a memory that are operatively connected to the analog to digital converter, a first set of instructions being stored in the memory that are utilized by the processor to cause the sets of digitized analog data to be ~~individually~~ stored in the memory irrespective of whether or not the analog data generating and processing device has been recognized by the personal computer;~~;~~

a second set of instructions being stored in the memory that are utilized by the processor to cause wherein a response signal to be automatically and without user intervention

sent from the input/output port to the multi-purpose interface after they have been operatively connected together and after an inquiry signal has been received by the input/output port, the receipt and processing of the receipt response signal informing by the personal computer causing it to that the personal computer can automatically and without user intervention recognize the analog data generating and processing device as being a device having digital data that is stored therein and selectively retrievable therefrom; and

a third set of instructions being stored in the memory that are utilized by the processor, wherein, after the analog data generating and processing device has been automatically recognized by the personal computer, and while the input/output port is operatively connected to the multi-purpose interface, to cause user selected ones of the digitized sets of analog data can to be transferred from the memory, through the input/output port, through the multi-purpose interface, and to the personal computer, by means of a driver that is associated with the personal computer.

18. (previously presented) A combination comprising the analog data generating and processing device of claim 17 and a personal computer.

19. (currently amended) The ~~combination~~ analog data generating and processing device of claim 17, wherein the analog wave signals comprise electromagnetic radiation.

20. (currently amended) The ~~combination~~ analog data generating and processing device of claim 17,19, wherein the ~~electromagnetic radiation received by the sensor is~~ representative of an object that is physically separated from and can be located not in substantial proximity to the housing; the sensor is adapted to have two-way communication with the personal computer.

21. (currently amended) The ~~combination~~ analog data generating and processing device of claim 17,20, wherein the analog wave signals are electromagnetic radiation is generated by a medical device.

22. (currently amended) The ~~combination~~ analog data generating and processing device of claim 17,21, wherein the processor, memory and circuit form a flexible interface. ~~medical device comprises a diagnostic radiological system.~~

23. (currently amended) The ~~combination~~ analog data generating and processing device of claim 17, 20, wherein the sensor comprises an electronic measuring device.

24. (currently amended) The ~~combination~~ analog data generating and processing device of claim 17, 23, wherein the electronic measuring device comprises a multi-meter sensor is electrically connected to the processor and the memory by a two-way communication line.

25. (currently amended) The ~~combination~~ analog data generating and processing device of claim 17, 20, wherein the driver is adapted for use with a mass storage device having a rotatable storage medium. digitized sets of analog data are stored in the memory only after the analog data generating and transmitting device is operatively connected to the personal computer.

26. (currently amended) The ~~combination~~ analog data generating and processing device of claim 17,25, wherein the response signal is adapted to inform a personal computer that the analog data generating and processing device is driver is adapted for use with a mass storage device, that includes a rotatable storage medium.

27. (currently amended) The ~~combination~~ analog data generating and processing device of claim 17,26, wherein the driver is adapted for use with response signal is adapted to

inform the personal computer that the analog data generating and processing device is a hard disk drive.

28. (currently amended) ~~The combination~~ analog data generating and processing device of claim 17, 20, wherein the ~~driver is located in a memory of the personal computer.~~ response signal is adapted to lie to the personal computer about the true nature of the analog data generating and processing device.

29. (currently amended) ~~The combination~~ analog data generating and processing device of claim 17, 28, wherein the ~~personal computer memory comprises~~ driver is located in a BIOS of the personal computer.

30. (currently amended) ~~The combination~~ analog data generating and processing device of claim 17, 20, wherein ~~receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device even though it is not a mass storage device.~~ the analog to digital converter receives power when the digitized sets of analog data are being transferred to the personal computer.

31. (currently amended) ~~The combination~~ analog data generating and processing device of claim 17, 30, wherein ~~receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device having a rotatable storage disk even though it is not a mass storage device having a rotatable storage disk.~~ the sensor receives power when the digitized sets of analog data are being transferred to the personal computer.

32. (currently amended) The ~~combination~~ analog data generating and processing device of claim 17,31, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a ~~hard-disk-drive~~mass storage device even though it is not a ~~hard-disk-drive~~mass storage device.

33. (currently amended) The ~~combination~~ analog data generating and processing device of claim 17, 20, wherein the memory of the analog data generating and processing device comprises a buffer memory.

34. (currently amended) The ~~combination~~ analog data generating and processing device of claim 17, 20, wherein the input/output port is adapted to be ~~operatively~~ connected to a SCSI interface of the personal computer.

35. (currently amended) The ~~combination~~ analog data generating and processing device of claim 17, 20, wherein the processor comprises a digital signal processor.

36. (currently amended) The ~~combination~~ analog data generating and processing device of claim 17, 20, wherein the sets of digitized analog data are transferred to the personal computer in a format suitable for a mass storage device present in the personal computer.

37. (currently amended) The ~~combination~~ analog data generating and processing device of claim 17,36, wherein a root directory ~~and virtual files are~~ is created in the memory which can be accessed by the personal computer.

38. (currently amended) The ~~combination~~ analog data generating and processing device of claim 17,37, wherein ~~at least one of the virtual files comprises~~ a configuration file is stored in the memory.

39. (currently amended) ~~The combination~~ analog data generating and processing device of claim ~~17,38~~, wherein ~~the~~ a configuration file allows a user to configure the analog data generating and processing device as being a specific mass storage device.

40. (currently amended) ~~The combination~~ analog data generating and processing device of claim ~~17,39~~, wherein ~~the~~ a configuration file allows a user to configure the analog data generating and processing device as being a specific hard disk drive.

41. (currently amended) ~~The combination~~ analog data generating and processing device of claim ~~17, 20~~, wherein a wire based connection is used to ~~operatively~~ connect the input/output port to the multi-purpose interface of the personal computer.

42. (currently amended) ~~The combination~~ analog data generating and processing device of claim ~~17, 20~~, wherein ~~a second set of instructions are stored in the memory which are adapted to cause the response signals to be generated.~~ the sensor is detachably coupled to the analog to digital converter.

43. (currently amended) ~~The combination~~ analog data generating and processing device of claim ~~17, 20~~, wherein ~~a third set of instructions are stored in the memory that allow user selected ones of the digitized sets of analog data to be transferred to a memory of the personal computer.~~ wherein the sensor is adapted to provide data to the personal computer.

44. (currently amended) An analog data generating and processing device for use with combination, comprising: a personal computer having at least one multi-purpose interface to which inquiry signals are periodically sent as to what type of device is operatively connected thereto; ~~and an analog data generating and processing device that is~~ and capable of being

operatively coupled to the multi-purpose interface of the personal computer, the analog data generating and processing device ~~including~~ comprising:

means for receiving analog wave signals from ~~that are generated by~~ a source external to and not located in substantial proximity to the analog data generating and processing device, for generating sets of analog data therefrom, and for digitizing each set of analog data;

means for causing the digitized sets of analog data to be ~~individually~~ stored in a memory irrespective of whether or not the analog data generating and processing device has been recognized by the personal computer;

means for automatically and without user intervention responding to the receipt of a periodic inquiry signal from the personal computer by sending a response signal to the multi-purpose interface, the response signal informing a personal computer that ~~causes~~ the personal computer can ~~to~~ automatically and without user intervention recognize the analog data generating and processing device as being a device having digital data that is stored in and to be selectively retrievable from a memory in which digital signals are stored; and

means for utilizing a driver associated with the personal computer to allow ~~transferring~~ user selected ones of the digitized sets of analog data to be transferred through a cable that is attached to the multipurpose interface and to the personal computer by means of a driver that is associated with the personal computer.

45. (previously presented) A combination comprising the analog data generating and processing device of claim 44 and a personal computer.

46. (currently amended) The ~~combination~~ analog data generating and processing device of claim 44, wherein the analog wave signals comprise electromagnetic radiation.

47. (currently amended) The ~~combination~~ analog data generating and processing device of claim 44,46, wherein the electromagnetic radiation is representative of an object that is ~~physically separated from and can be located not in substantial proximity to the analog data generating and processing device.~~ means for receiving is adapted to have two-way communication with a personal computer.

48. (currently amended) The ~~combination~~ analog data generating and processing device of claim 44,47, wherein the means for receiving analog wave signals forms a part of a medical device.

49. (currently amended) The ~~combination~~ analog data generating and processing device of claim 44,48, wherein the digitizing means, causing means and responding means ~~comprise a flexible interface. medical device comprises a diagnostic radiological system.~~

50. (currently amended) The ~~combination~~ analog data generating and processing device of claim 44,47, wherein the means for receiving analog wave signals includes an electronic measuring device.

51. (currently amended) The ~~combination~~ analog data generating and processing device of claim 44,50, wherein the ~~electronic measuring device comprises a multi-meter.~~ receiving means is electrically connected to the causing means by a two-way communication line.

52. (currently amended) The ~~combination~~ analog data generating and processing device of claim 44,52, wherein the ~~driver is adapted for use with a mass storage device.~~ causing means is adapted to cause the sets of digitized analog data to be individually stored in the

memory only after the analog data generating and processing device has been connected to the multi-purpose user interface of the personal computer.

53. (currently amended) ~~The combination~~ analog data generating and processing device of claim 44,52, wherein the driver is adapted for use with response signal is adapted to inform the personal computer that the analog data generating and processing device is a mass storage device that includes a rotatable storage medium.

54. (currently amended) ~~The combination~~ analog data generating and processing device of claim 44,53, wherein the driver is adapted for use with response signal is adapted to inform the personal computer that the analog data generating and processing device is a hard disk drive.

55. (currently amended) ~~The combination~~ analog data generating and processing device of claim 44, 47, wherein the driver is located in a memory of the personal computer. response signal is adapted to lie to the personal computer about the true nature of the analog data generating and processing device.

56. (currently amended) ~~The combination~~ analog data generating and processing device of claim 44,55, wherein the personal computer memory comprises the driver is located in a BIOS of the personal computer.

57. (currently amended) ~~The combination~~ analog data generating and processing device of claim 44, 47, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device even though it is not a mass storage device. the means for receiving

receives power when the digitized sets of analog data are being transferred to a personal computer.

58. (currently amended) The ~~combination~~ analog data generating and processing device of claim 44,57, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device having a rotatable storage disk even though it is not a mass storage device having a rotatable storage disk. the means for digitizing receives power when the digitized sets of analog data are being transferred to a personal computer.

59. (currently amended) The ~~combination~~ analog data generating and processing device of claim 44,58, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device~~hard disk drive~~ even though it is not a ~~hard disk drive~~mass storage device.

60. (currently amended) The ~~combination~~ analog data generating and processing device of claim 44, 47, wherein the ~~memory of the analog data generating and processing device~~ comprises a buffer memory. means for receiving is adapted to provide data to the personal computer.

61. (currently amended) The ~~combination~~ analog data generating and processing device of claim 44, 47, wherein the means for transferring ~~receiving from the multi-purpose interface~~ is adapted to be ~~operatively~~ connected to a SCSI interface of the personal computer.

62. (currently amended) The ~~combination~~ analog data generating and processing device of claim ~~44,61~~, wherein the means for transferring comprises at least a portion of a digital signal processor receiving is detachably coupled to the means for causing.

63. (currently amended) The ~~combination~~ analog data generating and processing device of claim ~~44, 47~~, wherein the sets of digitized analog data are transferred to the personal computer in a format suitable for a mass storage device present in the personal computer.

64. (currently amended) The ~~combination~~ analog data generating and processing device of claim ~~44,63~~ wherein a root directory and virtual files are created in the memory which can be accessed by the personal computer.

65. (currently amended) The ~~combination~~ analog data generating and processing device of claim ~~44,64~~, wherein at least one of the virtual files comprises a configuration file is stored in the memory.

66. (currently amended) The ~~combination~~ analog data generating and processing device of claim ~~44, 64~~, wherein the a configuration file allows a user to configure the analog data generating and processing device as being a specific mass storage device.

67. (currently amended) The ~~combination~~ analog data generating and processing device of claim ~~44, 65~~, wherein the configuration file allows a user to configure the analog data generating and processing device as being a specific hard disk drive. the means for receiving is adapted to provide analog data to a personal computer.

68. (currently amended) The ~~combination~~ analog data generating and processing device of claim ~~44,47~~, wherein a wire based connection is used to operatively connect the multi-

purpose interface of the personal computer with the means for receiving from the multi-purpose interface.

69. (currently amended) An analog data generating and processing device for use with combination, comprising: a personal computer having at least one multi-purpose interface to which inquiry signals are periodically sent as to what type of device is operatively connected thereto;~~;~~ and an analog data generating and processing device having comprising:

a connecting device that is to be operatively connected to the multi-purpose interface of the personal computer and that is able to receive therefrom the periodic inquiry signals;~~;~~ the analog data generating and processing device including

a circuit that includes a sensor and an analog to digital converter, the circuit being adapted to be exposed to analog wave signals that originate from a source that is external to the analog data generating and processing device and that is not located in substantial proximity to the sensor, to generate sets of analog data therefrom, and to generate digitized sets of analog data from the sets of analog data;~~;~~

a processor and a memory both of which are operatively connected to the circuit, the processor being adapted to cause the digitized sets of analog data to be ~~individually~~ stored in the memory irrespective of whether or not the analog data generating and processing device has been recognized by the personal computer;~~;~~

the processor and memory being adapted to wherein a response signal is automatically and without user intervention send a response signal sent to the multi-purpose interface of the personal computer after the connecting device is operatively connected to the multi-purpose interface and after the connecting device receives at least one periodic inquiry

signal therefrom, receipt and processing of the response signal informing by the personal computer causing the personal computer to that it can automatically and without user intervention recognize the analog data generating and processing device as being a device having digital data that is stored therein and selectively retrievable therefrom; and

~~wherein, after the analog data generating and processing device being adapted to, after it has been automatically recognized by the personal computer, and after the connecting device has been coupled to the multi-purpose interface of the personal computer, utilize a driver associated with the personal computer to allow user selected ones of the digitized sets of analog data to~~ can be transferred to the personal computer, by means of a driver that is associated with the personal computer.

70. (previously presented) A combination comprising the analog data generating and processing device of claim 69 and a personal computer.

71. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69, wherein the analog wave signals comprise electromagnetic radiation.

72. (currently amended) The ~~combination~~ analog data generating and processing device of claim ~~69, 71,~~ wherein the electromagnetic radiation is representative of an object that is physically separated from and can be located not in substantial proximity to the analog data ~~generating and processing device.~~ the sensor is adapted to have two-way communication with a personal computer.

73. (currently amended) The ~~combination~~ analog data generating and processing device of claim ~~69, 72,~~ wherein the electromagnetic radiation is analog wave signals are generated by a medical device.

74. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69,73, wherein the connecting device, circuit, processor and memory form a flexible interface. medical device comprises a diagnostic radiological system.

75. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69, 72, wherein the sensor comprises an electronic measuring device.

76. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69,75, wherein the ~~electronic measuring device comprises a multi-meter.~~ sensor is electrically connected to the processor and memory by a two-way communication line.

77. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69,77, wherein the sets of digitized analog data are to be individually stored in the memory only after the connecting device has been connected to the multi-purpose interface of the personal computer.

78. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69,77, wherein the ~~driver is adapted for use with~~ response signal is adapted to inform a personal computer that the analog data generating and processing device is a mass storage device, that includes a rotatable storage medium.

79. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69,78, wherein the ~~driver is adapted for use with a hard disk drive.~~ the response signal is adapted to inform a personal computer that the analog data generating and processing device is a hard disk drive.

80. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69, 72, wherein the ~~driver is located in a memory of the personal computer.~~ the

response signal is adapted to lie to a personal computer about the true nature of the analog data generating and processing device.

81. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69,80, wherein the ~~personal computer memory comprises driver~~ is located in a BIOS of the personal computer.

82. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69,72, wherein the circuit receives power when the digitized sets of analog data are being transferred to a personal computer. ~~receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device even though it is not a mass storage device.~~

83. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69,82, wherein the sensor receives power when the digitized sets of analog data are being transferred to a personal computer. ~~receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device having a rotatable storage disk even though it is not a mass storage device having a rotatable storage disk.~~

84. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69,83, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device. ~~hard disk drive even though it is not a mass storage device. hard disk drive.~~

85. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69, 72, wherein the ~~memory of the analog data generating and processing device comprises a buffer memory~~ the sensor is detachably coupled to the analog to digital converter.

86. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69, 72, wherein the connecting device is adapted to be ~~operatively~~ connected to a SCSI interface of the personal computer.

87. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69, 72, wherein the ~~processor comprises a digital signal processor~~ sensor is adapted to provide data to the personal computer.

88. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69, 72, wherein the digitized versions of the analog data is transferred to the personal computer in a format suitable for a mass storage device present in the personal computer.

89. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69, 88 wherein the processor is adapted to create a root directory ~~and virtual files~~ in the memory which can be accessed by the personal computer.

90. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69, 89, wherein ~~at least one of the virtual files comprises a configuration file~~ is stored in the memory.

91. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69, 90, wherein ~~the~~ a configuration file allows a user to configure the analog data generating and processing device as being a specific mass storage device.

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Filed: 03/11/05
Date: December 19, 2006
Page – 18 –

92. (currently amended) The ~~combination~~ analog data generating and processing device of claim ~~69,91~~, wherein ~~the~~ a configuration file allows a user to configure the analog data generating and processing device as being a specific hard disk drive.

93. (currently amended) The ~~combination~~ analog data generating and processing device of claim ~~69, 72~~, wherein a wire based connection is used to operatively connect the input/output port of the processor circuit to the multi-purpose interface of the personal computer.

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Application No.: 11/078,778
Filed: 03/11/05
Date: December 19, 2006
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REMARKS

After the issue fee was paid for this application, but before the application issued as a patent, the undersigned attorney became aware of a number of arguably relevant prior art references that were not of record in this application. All such references are identified on the PTO 1449 form submitted herewith. A petition for withdrawal from issue pursuant to 37 CFR 1.313(c)(2) for consideration of an RCE request, an RCE request pursuant to 37 CFR 1.114, and an Information Disclosure Statement are being filed herewith.

This paragraph provides a further explanation of the “*automatically and without user intervention recognize*” language of the previously allowed claims. In particular, the use of this claim language indicates, for example, that a PC can automatically and without user intervention recognize that digital data can be selectively transferred from a device to the PC by means of a driver that is both associated with a host device and that is a standard component of practically all host devices. Such drivers are, for example, found in virtually all personal computers that are commercially available at any particular time, and can be, for example, located in a memory of a host device (*e.g.*, BIOS of a PC). Thus, a user *does not* have to, for example, load an applications level program (*e.g.*, Adobe Photoshop) onto a PC in order for a user to cause a PC to recognize the device. No prior art of record teaches, for example, this subject matter.

It is respectfully submitted that support for the above-noted aspect of the claimed invention is found in the specification of the instant application. See, for example, page 4, paragraph 4, lines 1-6 of the originally filed specification, which refer to “drivers for input/output devices customary in a host device which are found in practically all host devices are, for example, drivers for hard disks, graphics devices or for printer devices.”

Applicant: Michael Tasler
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Filed: 03/11/05
Date: December 19, 2006
Page – 20 –

All claims listed herein (except claims 18, 45 and 70) have been amended so that they would be directly infringed by the manufacture or sale of an analog data generating and processing device that falls within the scope of claims. Examples of such infringing devices include, for example, digital cameras, digital camcorders, camera phones, and digital devices with a voice recorder function. Such claims also would be directly infringed by, for example, the use of such products by an end user. Claims 18, 45 and 70 claim the combination of a personal computer and an analog data generating and processing device and, therefore, would be first directly infringed by the use of, for example, a digital camera in connection with a personal computer.

Some of the previously allowed dependent claims have been amended to depend directly from an independent claim, not a dependent claim, and refer to information taken from the originally filed specification. Although it is believed to be not necessary to do so, these amendments have been made in order to clarify the claim differentiation issues. In particular, such amendments have been made to make it clear that the scope of the independent claims *should not* be limited to the elements recited in the dependent claims.

It is respectfully submitted that no prior art reference of record, either taken alone or in a purported combination, teaches or suggests the subject matter claimed in the currently pending claims for a number of different reasons. An exemplary analysis is presented hereinafter with respect to the camera that is disclosed in the Polaroid camera manual that previously was considered by the Examiner, and over which the claims were allowed. Again, the Examiner is asked to assume, for the sake of argument, that this manual is prior art, and applicant reserves the rights to contest that the manual is prior art.

Assuming, for argument's sake, that the camera manual is prior art, it should be noted that, for example, the camera disclosed therein cannot be automatically recognized by a PC as claimed in the previously allowed and currently pending claims. In particular, user intervention always is required to have the Polaroid camera recognized because, for example, a user needs to make sure that the camera's SCSI identification number does not conflict with the ID number of any other device in a daisy chain of which the camera forms a part. Moreover, the camera manual states at page 3 that a user must load an applications level program such as "Adobe Photoshop" or "PDC-2000 Direct" onto a PC in order to "view and manipulate pictures taken with the PDC-2000 camera." For this reason alone, for example, the currently pending claims should be found to be patentable over the Polaroid camera manual (assuming, for argument's sake, that it is prior art).

An Information Disclosure statement is being filed herewith for the Examiner's consideration so that all of the prior art listed therein will be listed on the cover page of any patent that is granted on the instant application. A number of references noted in the IDS (*e.g.*, U.S. Patent Nos. 5,493,335, 6,088,532 and 6,005,613¹) are believed to be cumulative of the Polaroid camera manual discussed above because, for example, a user must load an applications level program onto a PC in order to transfer pictures to the PC just as is the case the camera described in the Polaroid camera manual.

As a first example, Figure 2 of US Patent No. 5,493,335 is a flowchart showing the operation of the camera illustrated in Figure 1, and contains a block that states "initiate computer

¹ A copy of the USB specification referred to in the '613 patent, together with a copy of the final version of the document dated January 13, 1996, is being submitted herewith.

interface program on computer.” Column 3, lines 52-58 of the patent state that, after “the images are captured . . . the interface is initiated through the computer 18 (by appropriate software, which is no part of the invention).” This means that the devices disclosed in the ‘335 patent require, for example, a user to utilize an applications level program in order for the camera to be recognized by the PC. This is, for example, in direct contrast to the “*automatic and without user intervention*” element of the previously allowed and currently pending claims. For this reason alone, the currently pending claims should be found to be patentable over the ‘335 patent.

As a second example, US Patent No. 6,088,532 requires that a user load an applications level program on a PC in order for the device shown in Figure 29 to be recognized by a PC. The patent teaches that a user can utilize a PC to cause a camera to perform various operations. See, for example, column 23, lines 4-9, which state that the camera shown in Figure 29 is “used as a scanner by the external computer, which controls the still video camera to read an image recorded in the electro-developing recording medium 30, and outputs the image into a monitor provided in the computer.” The “scan” and “set window” commands discussed later in column 23 of the patent are example of software commands that a user inputs into the PC. The presence of such commands and PC control indicate, for example, that an applications level program must be loaded onto the PC in order to have the Figure 29 device recognized by the PC. This is in direct contrast to the “automatic and without user intervention” feature of the currently pending and previously allowed claims. For this reason, for example, the currently pending claims should be found to be patentable over the ‘532 patent.

As a third example, the following analysis demonstrates why US Patent No. 6,005,613 requires human intervention in order to have the camera disclosed therein recognized by a PC.

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Figures 3A and 3B of the '613 patent show illustrations of interfaces that are shown on a computer screen to which the camera disclosed in the patent is connected. Such screen interfaces are not a part of or customary to PCs. The presence of such screen interfaces in the disclosure indicates, for example, that a user must load an applications level software program on the PC to be able to display them. Accordingly, a user cannot transfer pictures from the camera to a PC without loading the applications level program, which is in direct contrast to the “*automatic recognition and without user intervention*” feature of the previously allowed claims. For this reason, for example, the currently pending claims should be found to be patentable over the '613 patent.

It is respectfully submitted that the currently pending claims are in condition for allowance and, therefore, a formal notice to that effect is earnestly solicited. In this regard, the Examiner is respectfully requested to contact the undersigned attorney upon entry of this supplemental preliminary amendment.

Respectfully submitted,



Jeffrey W. Salmon
Attorney for Applicant
Registration No. 37,435

December 19, 2006
Welsh & Katz, Ltd.
120 South Riverside Plaza, 22nd Floor
Chicago, IL 60606
Telephone (312) 655-1500
Facsimile (312) 655-1501

Electronic Patent Application Fee Transmittal

Application Number:	11078778
Filing Date:	11-Mar-2005
Title of Invention:	ANALOG DATA GENERATING AND PROCESSING DEVICE FOR USE WITH A PERSONAL COMPUTER
First Named Inventor/Applicant Name:	Michael Tasler
Filer:	Jeffrey W. Salmon/Maura Halvey
Attorney Docket Number:	9576/96910

Filed as Large Entity

Utility Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Petition fee- 37 CFR 1.17(h) (Group III)	1464	1	130	130

Patent-Appeals-and-Interference:

Post-Allowance-and-Post-Issuance:

Extension-of-Time:

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Total in USD (\$)				130

Electronic Acknowledgement Receipt

EFS ID:	1389319
Application Number:	11078778
International Application Number:	
Confirmation Number:	8978
Title of Invention:	ANALOG DATA GENERATING AND PROCESSING DEVICE FOR USE WITH A PERSONAL COMPUTER
First Named Inventor/Applicant Name:	Michael Tasler
Correspondence Address:	Jeffrey W. Salmon, Esq. Welsh & Katz, Ltd. 22nd Floor 120 S. Riverside Plaza Chicago IL 60606 US 3126551501 jwsalmon@welshkatz.com
Filer:	Jeffrey W. Salmon/Maura Halvey
Filer Authorized By:	Jeffrey W. Salmon
Attorney Docket Number:	9576/96910
Receipt Date:	20-DEC-2006
Filing Date:	11-MAR-2005
Time Stamp:	15:56:48
Application Type:	Utility

Payment information:

Submitted with Payment	yes
Payment was successfully received in RAM	\$ 130
RAM confirmation Number	388

Deposit Account	230920
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 C.F.R. Section 1.16 and 1.17	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)	Multi Part /.zip	Pages (if appl.)
1	Fee Worksheet (PTO-06)	fee-info.pdf	8206	no	2

Warnings:

Information:

Total Files Size (in bytes):	8206
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

PATENT WITHDRAWAL NOTICE

15139

The following **WITHDRAWAL** and **SUBSTITUTION**, where appropriate, has been made in the issue of Tuesday, January 09, 2007

WITHDRAWAL	SUBSTITUTION
SERIAL NO. 11/078,778	SERIAL NO.
PATENT NUMBER 7,162,548	PATENT NUMBER
DRAWINGS 002	DRAWINGS
CLASS 710/015	CLASS
NAME AND ADDRESS MICHAEL TASLER WURZBURG, GERMANY	NAME AND ADDRESS
ASSIGNEE	ASSIGNEE
TITLE ANALOG DATA GENERATING AND PROCESSING DEVICE FOR USE WITH A PERSONAL COMPUTER	TITLE

APPROVED

Mary Louise McAskill, Manager
Statistical Analysis Division



UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

JEFFREY W. SALMON, ESQ.
WELSH & KATZ, LTD.
120 S. RIVERSIDE PLAZA, 22ND FLOOR
CHICAGO, IL 60606

COPY MAILED

DEC 20 2006

OFFICE OF PETITIONS

In re Application of :
Michael Tasler :
Application No. 11/078,778 : DECISION GRANTING PETITION
Filed: March 11, 2005 : UNDER 37 CFR 1.313(c)(2)
Attorney Docket No. 9576/96910 :

This is a decision on the petition, filed December 19, 2006, under 37 CFR 1.313(c)(2) to withdraw the above-identified application from issue after payment of the issue fee.

The petition is **GRANTED**.

The above-identified application is withdrawn from issue for consideration of a submission under 37 CFR 1.114 (request for continued examination). See 37 CFR 1.313(c)(2).

Petitioner is advised that the issue fee paid on July 31, 2006 in the above-identified application cannot be refunded. If, however, the above-identified application is again allowed, petitioner may request that it be applied towards the issue fee required by the new Notice of Allowance.¹

Telephone inquiries should be directed to the undersigned at (571) 272-3218.

This matter is being referred to Technology Center AU 2181 for processing of the request for continued examination under 37 CFR 1.114 and for consideration of the Information Disclosure Statement.

Frances Hicks
Frances Hicks
Petitions Examiner
Office of Petitions

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¹ The request to apply the issue fee to the new Notice may be satisfied by completing and returning the new Part B – Fee(s) Transmittal Form (along with any balance due at the time of submission). Petitioner is advised that the Issue Fee Transmittal Form must be completed and timely submitted to avoid abandonment.



UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

Date : December 20, 2006
TO : Director, Office of Patent Publication
FROM : Office of Petitions
SUBJECT : Withdrawal from Issue of **Application No. 11/078,778**

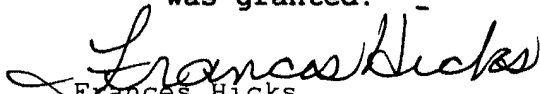
Applicant(s) : Michael Tasler
Application No. : 11/078,778
Filed : March 11, 2005

The above-identified application has been assigned Patent No. 7,162,548 and an issue date of January 9, 2007.

It is hereby directed that this application be withdrawn from issue at the request of the applicant. Do not refund the issue fee.

The following erratum should be published in the Official Gazette if the above-identified application is published in the OG of January 9, 2007:

"All reference to Patent No. 7,162,548 to Michael Tasler of Germany for ANALOG DATA GENERATING AND PROCESSING DEVICE FOR USE WITH A PERSONAL COMPUTER appearing in the Official Gazette of January 9, 2007 should be deleted since no patent was granted."


Frances Hicks
Petitions Examiner
Office of Petitions

cc: Paul Harrison
Deneise Boyd
Mary Louise McAskill
Niomi Farmer
Mary E. Johnson (Cookie)
Duane Davis (CDS)

PATENT WITHDRAWAL NOTICE

15139

The following **WITHDRAWAL** and **SUBSTITUTION**, where appropriate, has been made in the issue of Tuesday, January 09, 2007

WITHDRAWAL	SUBSTITUTION
SERIAL NO. 11/078,778	SERIAL NO.
PATENT NUMBER 7,162,548 <i>E</i>	PATENT NUMBER
DRAWINGS 002	DRAWINGS
CLASS 710/015	CLASS
NAME AND ADDRESS MICHAEL TASLER WURZBURG, GERMANY	NAME AND ADDRESS
ASSIGNEE	ASSIGNEE
TITLE ANALOG DATA GENERATING AND PROCESSING DEVICE FOR USE WITH A PERSONAL COMPUTER	TITLE

APPROVED

Mary Louise McAskill, Manager
Statistical Analysis Division

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of: Michael Tasler

Group No.: 2181

Serial No.: 11/078,778

Conf. No.: 8978

Filed: 3/11/05

Examiner: Harold J. Kim

For: ANALOG DATA GENERATING
AND PROCESSING DEVICE
FOR USE WITH A PERSONAL
COMPUTER (As Amended)

Attorney

Docket No.: 0757/96910

SECOND SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

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

Sir:

Pursuant to 37 C.F.R. §1.97, a list of documents is disclosed on the attached Form PTO-1449 that may be material to the examination of this application. It is submitted that no fees are due in connection with this Information Disclosure Statement because a Request for Continued Examination was filed on December 19, 2006, and no USPTO response has yet been received.

No inferences should be drawn that the attached list represents a comprehensive investigation, or that any material disclosed is equivalent to the subject invention. In addition, none of the documents that have publication dates prior to the priority date of the above application anticipate the invention in this application.

The cited document(s) disclose numerous specific features. There has been no attempt to list each and every feature disclosed by each document. The Examiner is requested to review the

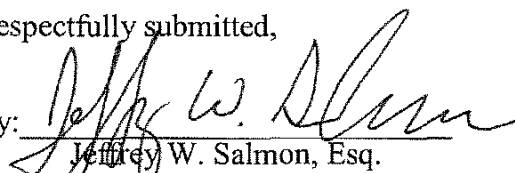
document(s) and determine the extent of the materiality of the document disclosures with respect to the present invention.

The discussion of any art and the citation of any document(s) herein or in the papers filed contemporaneously herewith is not to be construed as an admission that the art or document disclosure is necessarily within the invention field of endeavor, that the art or document disclosure is necessarily prior in time to a particular date which may be relevant to the instant patent application, and/or that the art or document disclosure is otherwise necessarily prior art as defined by the patent law with respect to the instant invention and application.

Also, there is reserved the right to later set forth how the instant invention is distinguished over the disclosure of any document or other art, including the disclosures of the art and document(s) recited herein, that may be cited by the Examiner in rejecting a claim in the instant patent application. The recitation herein of the art and document(s) is not to be construed as an assertion that more pertinent art could not possibly be in existence.

Respectfully submitted,

By:


Jeffrey W. Salmon, Esq.
Registration No. 37,435

Dated: December 21, 2006
Enclosures: Form PTO-1449

WELSH & KATZ, LTD.
120 South Riverside Plaza, 22nd Floor
Chicago, Illinois 60606
Telephone: (312) 655-1500
Facsimile: (312) 655-1501

Form PTO-1449 (Rev. 8-88)	U.S. Department of Commerce Patent and Trademark Office	Attorney Docket No. 0757/96910	Serial No. 11/078,778
INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)		Applicant Michael Tasler	
		Filing Date 03/11/05	Group No. 2181

U.S. PATENT DOCUMENTS

		5,969,750	10/19/1999	Hsieh et al.		

FOREIGN PATENT DOCUMENTS

	Document Number	Date	Country	Class	Subclass	Translation	
						Yes	No

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

Examiner	Date Considered
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*Examiner: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Electronic Acknowledgement Receipt

EFS ID:	1393246
Application Number:	11078778
International Application Number:	
Confirmation Number:	8978
Title of Invention:	ANALOG DATA GENERATING AND PROCESSING DEVICE FOR USE WITH A PERSONAL COMPUTER
First Named Inventor/Applicant Name:	Michael Tasler
Correspondence Address:	Jeffrey W. Salmon, Esq. Welsh & Katz, Ltd. 22nd Floor 120 S. Riverside Plaza Chicago IL 60606 US 3126551501 jwsalmon@welshkatz.com
Filer:	Jeffrey W. Salmon
Filer Authorized By:	
Attorney Docket Number:	9576/96910
Receipt Date:	21-DEC-2006
Filing Date:	11-MAR-2005
Time Stamp:	15:48:08
Application Type:	Utility

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Filed	96910IDS.pdf	170718	no	3

Warnings:

Information:

This is not an USPTO supplied IDS fillable form

Total Files Size (in bytes):	170718
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

COPY

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of: Michael Tasler

Group No.: 2181

Serial No.: 11/078,778

Conf. No.: 8978

Filed: 3/11/05

Examiner: Harold J. Kim

For: ANALOG DATA GENERATING
AND PROCESSING DEVICE
FOR USE WITH A PERSONAL
COMPUTER (As Amended)

RECEIVED
DEC 21 2006

OFFICE OF PETITIONS

Attorney
Docket No.: 0757/96910

PRELIMINARY AMENDMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-0001

Dear Sir:

The issue fee for the instant application case was paid on October 27, 2006, but it has not yet issued as a patent. A petition for withdrawal from issue under 37 CFR 1.313(c)(2), a Request for Continued Examination under 37 CFR 1.114, and an Information Disclosure Statement are being concurrently filed herewith. It is respectfully submitted that this application be withdrawn from issue, and that this preliminary amendment be entered before consideration of the RCE request.

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IN THE CLAIMS:

Please amend claims 17, 19-44, 46-69 and 71-93 as noted hereinafter:

1-16. (cancelled).

17. (currently amended) An analog data generating and processing device for use with a combination, comprising: a personal computer having at least one multi-purpose interface to which inquiry signals are periodically sent as to what type of device is operatively connected thereto, ~~the~~; ~~and an analog data generating and processing device having comprising:~~

an input/output port that is to be operatively connected to the multi-purpose interface of the personal computer; ~~the analog data generating and processing device including~~
a sensor that is mounted on a housing, the sensor being adapted to receive analog wave signals from that are generated by a source that is external to the housing and that is not located in substantial proximity to the sensor, the sensor being further adapted to generate sets of analog data from the analog wave signals that it receives;

an analog to digital converter that is operatively connected to the sensor and that generates a set of digitized analog data from each set of analog data;

a circuit that includes a processor and a memory that are operatively connected to the analog to digital converter, a first set of instructions being stored in the memory that are utilized by the processor to cause the sets of digitized analog data to be ~~individually~~ stored in the memory irrespective of whether or not the analog data generating and processing device has been recognized by the personal computer;

a second set of instructions being stored in the memory that are utilized by the processor to cause wherein a response signal to be automatically and without user intervention

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sent from the input/output port to the multi-purpose interface after they have been operatively connected together and after an inquiry signal has been received by the input/output port, the receipt and processing of the receipt response signal informing by the personal computer causing it to that the personal computer can automatically and without user intervention recognize the analog data generating and processing device as being a device having digital data that is stored therein and selectively retrievable therefrom; and

a third set of instructions being stored in the memory that are utilized by the processor, wherein, after the analog data generating and processing device has been automatically recognized by the personal computer, and while the input/output port is operatively connected to the multi-purpose interface, to cause user selected ones of the digitized sets of analog data can to be transferred from the memory, through the input/output port, through the multi-purpose interface, and to the personal computer, by means of a driver that is associated with the personal computer.

18. (previously presented) A combination comprising the analog data generating and processing device of claim 17 and a personal computer.

19. (currently amended) The ~~combination~~ analog data generating and processing device of claim 17, wherein the analog wave signals comprise electromagnetic radiation.

20. (currently amended) The ~~combination~~ analog data generating and processing device of claim ~~17, 19,~~ wherein the ~~electromagnetic radiation received by the sensor is~~ representative of an object that is physically separated from and can be located not in substantial ~~proximity to the housing,~~ the sensor is adapted to have two-way communication with the personal computer.

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21. (currently amended) The ~~combination~~ analog data generating and processing device of claim 17,20, wherein the analog wave signals are electromagnetic radiation is generated by a medical device.

22. (currently amended) The ~~combination~~ analog data generating and processing device of claim 17,21, wherein the processor, memory and circuit form a flexible interface. ~~medical device comprises a diagnostic radiological system.~~

23. (currently amended) The ~~combination~~ analog data generating and processing device of claim 17, 20, wherein the sensor comprises an electronic measuring device.

24. (currently amended) The ~~combination~~ analog data generating and processing device of claim 17, 23, wherein the electronic measuring device comprises a multi-meter sensor is electrically connected to the processor and the memory by a two-way communication line.

25. (currently amended) The ~~combination~~ analog data generating and processing device of claim 17, 20, wherein the driver is adapted for use with a mass storage device having a rotatable storage medium. digitized sets of analog data are stored in the memory only after the analog data generating and transmitting device is operatively connected to the personal computer.

26. (currently amended) The ~~combination~~ analog data generating and processing device of claim 17,25, wherein the response signal is adapted to inform a personal computer that the analog data generating and processing device is ~~driver is adapted for use with a mass storage device, that includes a rotatable storage medium.~~

27. (currently amended) The ~~combination~~ analog data generating and processing device of claim 17,26, wherein the driver is adapted for use with response signal is adapted to

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inform the personal computer that the analog data generating and processing device is a hard disk drive.

28. (currently amended) ~~The combination~~ analog data generating and processing device of claim 17, 20, wherein the driver is located in a memory of the personal computer. ~~response signal is adapted to lie to the personal computer about the true nature of the analog data generating and processing device.~~

29. (currently amended) ~~The combination~~ analog data generating and processing device of claim 17, 28, wherein the personal computer memory comprises driver is located in a BIOS of the personal computer.

30. (currently amended) ~~The combination~~ analog data generating and processing device of claim 17, 20, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device even though it is not a mass storage device. the analog to digital converter receives power when the digitized sets of analog data are being transferred to the personal computer.

31. (currently amended) ~~The combination~~ analog data generating and processing device of claim 17, 30, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device having a rotatable storage disk even though it is not a mass storage device having a rotatable storage disk. the sensor receives power when the digitized sets of analog data are being transferred to the personal computer.

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32. (currently amended) The ~~combination~~ analog data generating and processing device of claim 17,31, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a ~~hard disk drive~~ mass storage device even though it is not a ~~hard disk drive~~ mass storage device.

33. (currently amended) The ~~combination~~ analog data generating and processing device of claim 17, 20, wherein the memory of the analog data generating and processing device comprises a buffer memory.

34. (currently amended) The ~~combination~~ analog data generating and processing device of claim 17, 20, wherein the input/output port is adapted to be ~~operatively~~ connected to a SCSI interface of the personal computer.

35. (currently amended) The ~~combination~~ analog data generating and processing device of claim 17, 20, wherein the processor comprises a digital signal processor.

36. (currently amended) The ~~combination~~ analog data generating and processing device of claim 17, 20, wherein the sets of digitized analog data are transferred to the personal computer in a format suitable for a mass storage device present in the personal computer.

37. (currently amended) The ~~combination~~ analog data generating and processing device of claim 17,36, wherein a root directory ~~and virtual files are~~ is created in the memory which can be accessed by the personal computer.

38. (currently amended) The ~~combination~~ analog data generating and processing device of claim 17,37, wherein ~~at least one of the virtual files comprises~~ a configuration file is stored in the memory.

39. (currently amended) ~~The combination~~ analog data generating and processing device of claim 17,38, wherein ~~the a~~ configuration file allows a user to configure the analog data generating and processing device as being a specific mass storage device.

40. (currently amended) ~~The combination~~ analog data generating and processing device of claim 17,39, wherein ~~the a~~ configuration file allows a user to configure the analog data generating and processing device as being a specific hard disk drive.

41. (currently amended) ~~The combination~~ analog data generating and processing device of claim 17, 20, wherein a wire based connection is used to ~~operatively connect the~~ input/output port to the multi-purpose interface of the personal computer.

42. (currently amended) ~~The combination~~ analog data generating and processing device of claim 17, 20, wherein ~~a second set of instructions are stored in the memory which are adapted to cause the response signals to be generated;~~ the sensor is detachably coupled to the analog to digital converter.

43. (currently amended) ~~The combination~~ analog data generating and processing device of claim 17, 20, wherein ~~a third set of instructions are stored in the memory that allow user selected ones of the digitized sets of analog data to be transferred to a memory of the personal computer;~~ wherein the sensor is adapted to provide data to the personal computer.

44. (currently amended) An analog data generating and processing device for use with combination, comprising: a personal computer having at least one multi-purpose interface to which inquiry signals are periodically sent as to what type of device is operatively connected thereto; ~~and an analog data generating and processing device that is~~ and capable of being

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operatively coupled to the multi-purpose interface of the personal computer, the analog data generating and processing device ~~including comprising:~~

means for receiving analog wave signals from ~~that are generated by~~ a source external to and not located in substantial proximity to the analog data generating and processing device, for generating sets of analog data therefrom, and for digitizing each set of analog data;

means for causing the digitized sets of analog data to be ~~individually~~ stored in a memory irrespective of whether or not the analog data generating and processing device has been recognized by the personal computer;

means for automatically and without user intervention responding to the receipt of a periodic inquiry signal from the personal computer by sending a response signal to the multi-purpose interface, the response signal informing a personal computer that causes the personal computer can ~~to~~ automatically and without user intervention recognize the analog data generating and processing device as being a device having digital data that is stored in and to be selectively retrievable from a memory in which digital signals are stored; and

means for utilizing a driver associated with the personal computer to allow ~~transferring~~ user selected ones of the digitized sets of analog data to be transferred through a cable that is attached to the multipurpose interface and to the personal computer by means of a driver that is associated with the personal computer.

45. (previously presented) A combination comprising the analog data generating and processing device of claim 44 and a personal computer.

46. (currently amended) The ~~combination~~ analog data generating and processing device of claim 44, wherein the analog wave signals comprise electromagnetic radiation.

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47. (currently amended) The ~~combination~~ analog data generating and processing device of claim 44,46, wherein the ~~electromagnetic radiation is representative of an object that is physically separated from and can be located not in substantial proximity to the analog data generating and processing device.~~ means for receiving is adapted to have two-way communication with a personal computer.

48. (currently amended) The ~~combination~~ analog data generating and processing device of claim 44,47, wherein the means for receiving analog wave signals forms a part of a medical device.

49. (currently amended) The ~~combination~~ analog data generating and processing device of claim 44,48, wherein the digitizing means, causing means and responding means comprise a flexible interface. ~~medical device comprises a diagnostic radiological system.~~

50. (currently amended) The ~~combination~~ analog data generating and processing device of claim 44,47, wherein the means for receiving analog wave signals includes an electronic measuring device.

51. (currently amended) The ~~combination~~ analog data generating and processing device of claim 44,50, wherein the ~~electronic measuring device comprises a multi-meter.~~ receiving means is electrically connected to the causing means by a two-way communication line.

52. (currently amended) The ~~combination~~ analog data generating and processing device of claim 44,52, wherein the ~~driver is adapted for use with a mass storage device.~~ causing means is adapted to cause the sets of digitized analog data to be individually stored in the

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memory only after the analog data generating and processing device has been connected to the multi-purpose user interface of the personal computer.

53. (currently amended) The ~~combination~~ analog data generating and processing device of claim 44,52, wherein the ~~driver is adapted for use with~~ response signal is adapted to inform the personal computer that the analog data generating and processing device is a mass storage device that includes a rotatable storage medium.

54. (currently amended) The ~~combination~~ analog data generating and processing device of claim 44,53, wherein the ~~driver is adapted for use with~~ response signal is adapted to inform the personal computer that the analog data generating and processing device is a hard disk drive.

55. (currently amended) The ~~combination~~ analog data generating and processing device of claim 44, 47, wherein the ~~driver is located in a memory of the personal computer.~~ response signal is adapted to lie to the personal computer about the true nature of the analog data generating and processing device.

56. (currently amended) The ~~combination~~ analog data generating and processing device of claim 44,55, wherein the ~~personal computer memory comprises~~ the driver is located in a BIOS of the personal computer.

57. (currently amended) The ~~combination~~ analog data generating and processing device of claim 44, 47, wherein ~~receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device even though it is not a mass storage device.~~ the means for receiving

receives power when the digitized sets of analog data are being transferred to a personal computer.

58. (currently amended) The ~~combination~~ analog data generating and processing device of claim 44,57, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device having a rotatable storage disk even though it is not a mass storage device having a rotatable storage disk. the means for digitizing receives power when the digitized sets of analog data are being transferred to a personal computer.

59. (currently amended) The ~~combination~~ analog data generating and processing device of claim 44,58, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device ~~hard disk drive~~ even though it is not a ~~hard disk drive~~ mass storage device.

60. (currently amended) The ~~combination~~ analog data generating and processing device of claim 44, 47, wherein the memory of the analog data generating and processing device ~~comprises a buffer memory~~ means for receiving is adapted to provide data to the personal computer.

61. (currently amended) The ~~combination~~ analog data generating and processing device of claim 44, 47, wherein the means for transferring ~~receiving from the multi-purpose interface~~ is adapted to be ~~operatively~~ connected to a SCSI interface of the personal computer.

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62. (currently amended) The ~~combination~~ analog data generating and processing device of claim 44,61, wherein the means for ~~transferring comprises at least a portion of a digital signal processor receiving is detachably coupled to the means for causing.~~

63. (currently amended) The ~~combination~~ analog data generating and processing device of claim 44, 47, wherein the sets of digitized analog data are transferred to the personal computer in a format suitable for a mass storage device present in the personal computer.

64. (currently amended) The ~~combination~~ analog data generating and processing device of claim 44,63 wherein a root directory ~~and virtual files are~~ is created in the memory which can be accessed by the personal computer.

65. (currently amended) The ~~combination~~ analog data generating and processing device of claim 44,64, wherein ~~at least one of the virtual files comprises a configuration file is~~ stored in the memory.

66. (currently amended) The ~~combination~~ analog data generating and processing device of claim 44, 64, wherein ~~the~~ a configuration file allows a user to configure the analog data generating and processing device as being a specific mass storage device.

67. (currently amended) The ~~combination~~ analog data generating and processing device of claim 44, 65, wherein ~~the configuration file allows a user to configure the analog data generating and processing device as being a specific hard disk drive.~~ the means for receiving is adapted to provide analog data to a personal computer.

68. (currently amended) The ~~combination~~ analog data generating and processing device of claim 44,47, wherein a wire based connection is used to operatively connect the multi-

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purpose interface of the personal computer with the means for receiving from the multi-purpose interface.

69. (currently amended) An analog data generating and processing device for use with combination, comprising: a personal computer having at least one multi-purpose interface to which inquiry signals are periodically sent as to what type of device is operatively connected thereto; ~~and an analog data generating and processing device having comprising:~~

a connecting device that is to be operatively connected to the multi-purpose interface of the personal computer and that is able to receive therefrom the periodic inquiry signals; ~~the analog data generating and processing device including~~

a circuit that includes a sensor and an analog to digital converter, the circuit being adapted to be exposed to analog wave signals that originate from a source that is external to the analog data generating and processing device and that is not located in substantial proximity to the sensor, to generate sets of analog data therefrom, and to generate digitized sets of analog data from the sets of analog data;

a processor and a memory both of which are operatively connected to the circuit, the processor being adapted to cause the digitized sets of analog data to be ~~individually~~ stored in the memory irrespective of whether or not the analog data generating and processing device has been recognized by the personal computer;

the processor and memory being adapted to wherein a response signal is automatically and without user intervention send a response signal sent to the multi-purpose interface of the personal computer after the connecting device is operatively connected to the multi-purpose interface and after the connecting device receives at least one periodic inquiry

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signal therefrom, ~~receipt and processing of the response signal informing~~ by the personal computer ~~causing the personal computer to that it can~~ automatically and without user intervention recognize the analog data generating and processing device as being a device having digital data that is stored therein and selectively retrievable therefrom; and

~~wherein, after the analog data generating and processing device being adapted to, after it has been automatically recognized by the personal computer, and after the connecting device has been coupled to the multi-purpose interface of the personal computer, utilize a driver associated with the personal computer to allow user selected ones of the digitized sets of analog data to can be transferred to the personal computer, by means of a driver that is associated with the personal computer.~~

70. (previously presented) A combination comprising the analog data generating and processing device of claim 69 and a personal computer.

71. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69, wherein the analog wave signals comprise electromagnetic radiation.

72. (currently amended) The ~~combination~~ analog data generating and processing device of claim ~~69, 71~~, wherein the ~~electromagnetic radiation is representative of an object that is physically separated from and can be located not in substantial proximity to the analog data generating and processing device.~~ the sensor is adapted to have two-way communication with a personal computer.

73. (currently amended) The ~~combination~~ analog data generating and processing device of claim ~~69, 72~~, wherein the ~~electromagnetic radiation is analog wave signals are~~ generated by a medical device.

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74. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69,73, wherein the connecting device, circuit, processor and memory form a flexible interface, medical device comprises a diagnostic radiological system.

75. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69, 72, wherein the sensor comprises an electronic measuring device.

76. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69,75, wherein the electronic measuring device comprises a multi-meter sensor is electrically connected to the processor and memory by a two-way communication line.

77. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69,77, wherein the sets of digitized analog data are to be individually stored in the memory only after the connecting device has been connected to the multi-purpose interface of the personal computer.

78. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69,77, wherein the driver is adapted for use with response signal is adapted to inform a personal computer that the analog data generating and processing device is a mass storage device, that includes a rotatable storage medium.

79. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69,78, wherein the driver is adapted for use with a hard disk drive the response signal is adapted to inform a personal computer that the analog data generating and processing device is a hard disk drive.

80. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69, 72, wherein the driver is located in a memory of the personal computer the

response signal is adapted to lie to a personal computer about the true nature of the analog data generating and processing device.

81. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69,80, wherein the ~~personal-computer memory comprises~~ driver is located in a BIOS of the personal computer.

82. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69, 72, wherein the circuit receives power when the digitized sets of analog data are being transferred to a personal computer ~~receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device even though it is not a mass storage device.~~

83. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69,82, wherein the sensor receives power when the digitized sets of analog data are being transferred to a personal computer ~~receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device having a rotatable storage disk even though it is not a mass storage device having a rotatable storage disk.~~

84. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69,83, wherein receipt and processing of the response signal by the personal computer allows it to communicate with the analog data generating and processing device as if it were a mass storage device ~~hard disk drive even though it is not a mass storage device, hard disk drive.~~

85. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69, 72, wherein the ~~memory of the analog data generating and processing device comprises a buffer memory~~ the sensor is detachably coupled to the analog to digital converter.

86. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69, 72, wherein the connecting device is adapted to be ~~operatively~~ connected to a SCSI interface of the personal computer.

87. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69, 72, wherein the ~~processor comprises a digital signal processor~~ sensor is adapted to provide data to the personal computer.

88. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69, 72, wherein the digitized versions of the analog data is transferred to the personal computer in a format suitable for a mass storage device present in the personal computer.

89. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69, 88 wherein the processor is adapted to create a root directory ~~and virtual files~~ in the memory which can be accessed by the personal computer.

90. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69, 89, wherein ~~at least one of the virtual files comprises a configuration file~~ is stored in the memory.

91. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69, 90, wherein ~~the~~ a configuration file allows a user to configure the analog data generating and processing device as being a specific mass storage device.

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92. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69,91, wherein ~~the~~ a configuration file allows a user to configure the analog data generating and processing device as being a specific hard disk drive.

93. (currently amended) The ~~combination~~ analog data generating and processing device of claim 69,72, wherein a wire based connection is used to operatively connect the input/output port of the processor circuit to the multi-purpose interface of the personal computer.

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REMARKS

After the issue fee was paid for this application, but before the application issued as a patent, the undersigned attorney became aware of a number of arguably relevant prior art references that were not of record in this application. All such references are identified on the PTO 1449 form submitted herewith. A petition for withdrawal from issue pursuant to 37 CFR 1.313(c)(2) for consideration of an RCE request, an RCE request pursuant to 37 CFR 1.114, and an Information Disclosure Statement are being filed herewith.

This paragraph provides a further explanation of the “*automatically and without user intervention recognize*” language of the previously allowed claims. In particular, the use of this claim language indicates, for example, that a PC can automatically and without user intervention recognize that digital data can be selectively transferred from a device to the PC by means of a driver that is both associated with a host device and that is a standard component of practically all host devices. Such drivers are, for example, found in virtually all personal computers that are commercially available at any particular time, and can be, for example, located in a memory of a host device (e.g., BIOS of a PC). Thus, a user does not have to, for example, load an applications level program (e.g., Adobe Photoshop) onto a PC in order for a user to cause a PC to recognize the device. No prior art of record teaches, for example, this subject matter.

It is respectfully submitted that support for the above-noted aspect of the claimed invention is found in the specification of the instant application. See, for example, page 4, paragraph 4, lines 1-6 of the originally filed specification, which refer to “drivers for input/output devices customary in a host device which are found in practically all host devices are, for example, drivers for hard disks, graphics devices or for printer devices.”

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All claims listed herein (except claims 18, 45 and 70) have been amended so that they would be directly infringed by the manufacture or sale of an analog data generating and processing device that falls within the scope of claims. Examples of such infringing devices include, for example, digital cameras, digital camcorders, camera phones, and digital devices with a voice recorder function. Such claims also would be directly infringed by, for example, the use of such products by an end user. Claims 18, 45 and 70 claim the combination of a personal computer and an analog data generating and processing device and, therefore, would be first directly infringed by the use of, for example, a digital camera in connection with a personal computer.

Some of the previously allowed dependent claims have been amended to depend directly from an independent claim, not a dependent claim, and refer to information taken from the originally filed specification. Although it is believed to be not necessary to do so, these amendments have been made in order to clarify the claim differentiation issues. In particular, such amendments have been made to make it clear that the scope of the independent claims *should not* be limited to the elements recited in the dependent claims.

It is respectfully submitted that no prior art reference of record, either taken alone or in a purported combination, teaches or suggests the subject matter claimed in the currently pending claims for a number of different reasons. An exemplary analysis is presented hereinafter with respect to the camera that is disclosed in the Polaroid camera manual that previously was considered by the Examiner, and over which the claims were allowed. Again, the Examiner is asked to assume, for the sake of argument, that this manual is prior art, and applicant reserves the rights to contest that the manual is prior art.

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Assuming, for argument's sake, that the camera manual is prior art, it should be noted that, for example, the camera disclosed therein cannot be automatically recognized by a PC as claimed in the previously allowed and currently pending claims. In particular, user intervention always is required to have the Polaroid camera recognized because, for example, a user needs to make sure that the camera's SCSI identification number does not conflict with the ID number of any other device in a daisy chain of which the camera forms a part. Moreover, the camera manual states at page 3 that a user must load an applications level program such as "Adobe Photoshop" or "PDC-2000 Direct" onto a PC in order to "view and manipulate pictures taken with the PDC-2000 camera." For this reason alone, for example, the currently pending claims should be found to be patentable over the Polaroid camera manual (assuming, for argument's sake, that it is prior art).

An Information Disclosure statement is being filed herewith for the Examiner's consideration so that all of the prior art listed therein will be listed on the cover page of any patent that is granted on the instant application. A number of references noted in the IDS (*e.g.*, U.S. Patent Nos. 5,493,335, 6,088,532 and 6,005,613¹) are believed to be cumulative of the Polaroid camera manual discussed above because, for example, a user must load an applications level program onto a PC in order to transfer pictures to the PC just as is the case the camera described in the Polaroid camera manual.

As a first example, Figure 2 of US Patent No. 5,493,335 is a flowchart showing the operation of the camera illustrated in Figure 1, and contains a block that states "initiate computer

¹ A copy of the USB specification referred to in the '613 patent, together with a copy of the final version of the document dated January 13, 1996, is being submitted herewith.

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interface program on computer.” Column 3, lines 52-58 of the patent state that, after “the images are captured . . . the interface is initiated through the computer 18 (by appropriate software, which is no part of the invention).” This means that the devices disclosed in the ‘335 patent require, for example, a user to utilize an applications level program in order for the camera to be recognized by the PC. This is, for example, in direct contrast to the “*automatic and without user intervention*” element of the previously allowed and currently pending claims. For this reason alone, the currently pending claims should be found to be patentable over the ‘335 patent.

As a second example, US Patent No. 6,088,532 requires that a user load an applications level program on a PC in order for the device shown in Figure 29 to be recognized by a PC. The patent teaches that a user can utilize a PC to cause a camera to perform various operations. See, for example, column 23, lines 4-9, which state that the camera shown in Figure 29 is “used as a scanner by the external computer, which controls the still video camera to read an image recorded in the electro-developing recording medium 30, and outputs the image into a monitor provided in the computer.” The “scan” and “set window” commands discussed later in column 23 of the patent are example of software commands that a user inputs into the PC. The presence of such commands and PC control indicate, for example, that an applications level program must be loaded onto the PC in order to have the Figure 29 device recognized by the PC. This is in direct contrast to the “*automatic and without user intervention*” feature of the currently pending and previously allowed claims. For this reason, for example, the currently pending claims should be found to be patentable over the ‘532 patent.

As a third example, the following analysis demonstrates why US Patent No. 6,005,613 requires human intervention in order to have the camera disclosed therein recognized by a PC.

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Figures 3A and 3B of the '613 patent show illustrations of interfaces that are shown on a computer screen to which the camera disclosed in the patent is connected. Such screen interfaces are not a part of or customary to PCs. The presence of such screen interfaces in the disclosure indicates, for example, that a user must load an applications level software program on the PC to be able to display them. Accordingly, a user cannot transfer pictures from the camera to a PC without loading the applications level program, which is in direct contrast to the "*automatic recognition and without user intervention*" feature of the previously allowed claims. For this reason, for example, the currently pending claims should be found to be patentable over the '613 patent.

It is respectfully submitted that the currently pending claims are in condition for allowance and, therefore, a formal notice to that effect is earnestly solicited. In this regard, the Examiner is respectfully requested to contact the undersigned attorney upon entry of this supplemental preliminary amendment.

Respectfully submitted,


Jeffrey W. Salmon

Attorney for Applicant

Registration No. 37,435

December 19, 2006
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<p align="center">Request for Continued Examination (RCE) Transmittal</p> <p>Address to: Mail Stop RCE Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450</p>	Application Number	11/078,778
	Filing Date	03/11/2005
	First Named Inventor	Michael Tasler
	Art Unit	2181
	Examiner Name	Harold J. Kim
	Attorney Docket Number	9676/96910

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OFFICE OF PETITIONS

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. See Instruction Sheet for RCEs (not to be submitted to the USPTO) on page 2.

1. **Submission required under 37 CFR 1.114** Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

a. Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

i. Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____

ii. Other _____

b. Enclosed

i. Amendment/Reply

ii. Affidavit(s)/ Declaration(s)

iii. Information Disclosure Statement (IDS)

iv. other Preliminary Amendment

2. **Miscellaneous**

Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for

a. period of _____ months. (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

b. Other _____

3. **Fees** The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed. The Director is hereby authorized to charge the following fees any underpayment of fees or credit any overpayments to

a. Deposit Account No. 23-0920. I have enclosed a duplicate copy of this sheet.

i. RCE fee required under 37 CFR 1.17(e)

ii. Extension of time fee (37 CFR 1.136 and 1.17)

iii. Other _____

b. Check in the amount of \$ _____ enclosed

c. Payment by credit card (Form PTO-2038 enclosed)

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED			
Signature	<i>Jeffrey M. Salmon</i>	Date	<u>19 Dec 2006</u>
Name (Print/Type)	Jeffrey M. Salmon	Registration No.	37,435

CERTIFICATE OF MAILING OR TRANSMISSION			
I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop RCE, Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450 or facsimile transmitted to the U.S. Patent and Trademark Office on the date shown below.			
Signature	<i>Maura Halvey</i>	Date	<u>6/30/06</u>
Name (Print/Type)	Maura Halvey	Date	<u>12/19/06</u>

This collection of information is required by 37 CFR 1.114. 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 1.11 and 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, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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Electronic Acknowledgement Receipt

EFS ID:	1387049
Application Number:	11078778
International Application Number:	
Confirmation Number:	8978
Title of Invention:	ANALOG DATA GENERATING AND PROCESSING DEVICE FOR USE WITH A PERSONAL COMPUTER
First Named Inventor/Applicant Name:	Michael Tasler
Correspondence Address:	Jeffrey W. Salmon, Esq. Welsh & Katz, Ltd. 22nd Floor 120 S. Riverside Plaza Chicago IL 60606 US 3126551501 jwsalmon@welshkatz.com
Filer:	Jeffrey W. Salmon/Maura Halvey
Filer Authorized By:	Jeffrey W. Salmon
Attorney Docket Number:	9576/96910
Receipt Date:	19-DEC-2006
Filing Date:	11-MAR-2005
Time Stamp:	20:49:46
Application Type:	Utility

Payment information:

Submitted with Payment	yes
Payment was successfully received in RAM	\$ 790
RAM confirmation Number	1146

Deposit Account	230920
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)	Multi Part /.zip	Pages (if appl.)
1	Preliminary Amendment	96910preamendment.pdf	1399908	no	23
Warnings:					
Information:					
2	Request for Continued Examination (RCE)	96910rce.pdf	128277	no	1
Warnings:					
This is not a USPTO supplied RCE SB30 form.					
Information:					
3	Miscellaneous Incoming Letter	96910pendinglit.pdf	63112	no	2
Warnings:					
Information:					
4	Petition to Withdraw from Issue	96910petitionwithdraw.pdf	77032	no	2
Warnings:					
Information:					
5	Information Disclosure Statement (IDS) Filed	96910ids.pdf	171216	no	3
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
6	Fee Worksheet (PTO-06)	fee-info.pdf	8215	no	2
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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.