USB 2.0

- USB 2.0 Adopter's Agreement - USB 2.0 Adopters Agreement allows a signing company to participate in a reciprocal, royalty-free licensing arrangement for compliant products. Please review the agreement terms for specific details.
- USB 2.0 Backgrounder - USB Specification Expanding, Boosting Performance Up to 40 Times Beyond Current Capability.
- USB 2.0 Press Release - Target speed for USB 2.0 announced by industry leaders.
- FAQ - These questions are compiled from a list of most common questions asked on USB 2.0 topic.
- An Introduction to USB 2.0 - (151kb .pdf file, includes graphs)
- An Introduction to USB 2.0 - (21kb .pdf file, text only version)

USB Specification Expanding, Boosting Performance Up to 40 Times Beyond Current Capability

Compaq, Hewlett-Packard, Intel, Lucent, Microsoft, NEC and Philips Are Leading Development

The PC industry leaders who brought Universal Serial Bus (USB) technology from concept to its current mainstream market acceptance are developing a next generation USB 2.0 specification that will extend performance by up to 40 times over existing capabilities. USB 2.0 will be fully compatible with USB 1.1, and use the same cables and connectors. Compaq, Hewlett-Packard, Intel, Lucent, Microsoft, NEC and Philips are jointly leading this initiative which will enable new classes of high performance PC peripherals.

Earlier this year, the USB 2.0 Promoter group announced an early speed estimate at between 10 to 20 times faster than USB 1.1. At the USB 2.0 Developer Conference in October, the group revised the target upward to 40 times faster than USB 1.1. This was a result of engineering studies and test silicon that concluded 480 Mbs (megabits per second) could be achieved while still maintaining full compatibility with USB 1.1. This speed is expected to be sufficient to satisfy the bandwidth requirements for the most demanding PC user applications leading into the future.

With the increased availability of USB-enabled PCs and USB peripherals on the market today, the need for legacy dependent input/output (I/O) connectivity is decreasing significantly. USB 2.0 will be a significant step toward providing additional I/O bandwidth and broadening the range of peripherals that may be attached to the PC.

USB: Developed to Simplify PC Peripheral Connections

The Universal Serial Bus (USB) specification is a standardized peripheral connection developed by leading PC industry companies. USB makes plugging in new peripherals easy with plug and play, is nearly 100 times faster than the original serial port, and supports multiple device connectivity. Because of these benefits, USB is enjoying broad market acceptance today.

USB allows expandability of the PC's capabilities via an external port, eliminating the need for users or integrators to open the system chassis. Since USB supports multiple peripheral devices simultaneously, it allows users to run numerous devices such as printers, scanners, digital cameras and speakers from a single PC. USB also allows for automatic device detection and installation, making connectivity a true plug-and-play experience for end users. USB's quick proliferation as the replacement for the serial port and other PC ports for I/O devices such as digital joysticks, phones, scanners and digital cameras has accelerated the production and availability of such devices. Several hundred of these devices are in the marketplace today, with many more on their way. In addition, virtually every new PC today has one or more USB ports, quickly moving the installed base of USB-capable PCs to the range of hundreds of millions.

USB 2.0: An "Evolution" Underway

USB 2.0 will extend the speed of the connection from 12 Mbps on USB 1.1 up to 480 Mbps on USB 2.0, providing an attachment point for next-generation peripherals which will complement higher performance PCs and user applications. USB 2.0 will be both forward and backward compatible with USB 1.1, resulting in a seamless transition process for the end user. In fact, USB 2.0 will use the same cables and connectors as USB 1.1. USB 2.0 offers a compelling opportunity for peripherals vendors to migrate their USB peripherals to higher performance, while still being able to sell the same peripherals into the huge installed base of USB-capable PCs. USB 2.0 is also expected to lead to the development of higher performance peripherals that will bring new applications to the PC.

USB 1.1's data rate of 12 Mbps is sufficient for many PC peripherals such as telephones, keyboards, mice, digital joysticks, floppy drives, digital speakers, and low-end printers. These peripherals will continue to operate with no change in USB 2.0 systems. The higher bandwidth of USB 2.0 will permit PC peripherals with more functionality, including higher resolution video conferencing cameras, next generation scanners and printers, fast storage units, and faster broadband Internet connections. It will make today's user applications more productive, such as taking the time to download a "roll" of digital photos from a few minutes on USB 1.1 down to a few seconds on USB 2.0. In addition, the higher bandwidth will support the

most demanding PC user applications, such as digital image creation and interactive gaming, where multiple high-speed peripherals will be running simultaneously. The higher data rate of USB 2.0 will also open up the possibilities of new and exciting peripherals.

As with USB 1.1, USB 2.0 is expected to eventually be in industry chipsets. Once these chipsets reach high volume, it is expected that USB 2.0 will be about the same cost as USB is today. Because of this, USB 2.0 is expected to supercede USB 1.1, which is already a ubiquitous connector on PC systems today. Also like USB 1.1, USB 2.0 will satisfy the peripheral-interface needs of desktops, mobile systems and other classes of host platforms. To satisfy the needs of power-sensitive applications such as notebook computers, USB 2.0 will provide the same power-management mechanisms as USB 1.1 to allow aggressive management of I/O power consumption. This is expected to allow USB 2.0 to find use even in demanding low-power systems.

USB 2.0 and 1394

I/O connectivity is being further advanced with the IEEE 1394 standard. USB 2.0 and 1394 primarily differ in terms of application focus. The USB 2.0 Promoter group expects USB 2.0 to be the preferred connection for most PC peripherals, whereas IEEE 1394's primary target is audio/visual consumer electronic devices such as digital camcorders, digital VCRs, DVDs, and digital televisions. Both USB 2.0 and 1394 are expected to co-exist on many consumer systems in the future.

USB 2.0 and 1394 differ in application focus because of continuous evolution of the current environment. Today, there is a large and rapidly increasing installed base of USB-capable PCs, and hundreds of USB peripherals in the marketplace that connect to the PC. It is a natural evolution to increase the speed of USB and provide an easy migration path for existing USB peripherals. In the A/V consumer electronics equipment industry, IEEE 1394 is on its way to becoming the dominant connector. Therefore, if a PC wants to connect to one of these devices, it needs an IEEE 1394 connection.

They also support different connection models. USB 2.0 continues to use a low cost host-centric connection model, which is the best solution for a PC connection to PC peripherals. The added capability of a peer-to-peer connection enabled by IEEE 1394, however, allows a PC to connect to a cluster of consumer electronics devices, such as one that might exist in the family room.

Leading the Development of USB 2.0

The companies that are leading the development of USB 2.0 have the expertise needed to focus on a specification that supports higher functionality peripherals. The USB 2.0 core team includes four members of the original USB core team (Compaq, Intel, Microsoft, and NEC), and three new members (Hewlett Packard, Lucent and Philips). As with USB 1.1, members of this promoters group will not charge royalties for essential patents required to implement products compliant with the USB 2.0 specification.

The USB 2.0 specification draft was released at the USB 2.0 Developer Conference in October. The final specification is scheduled for release in the first quarter of 2000 with systems and peripherals anticipated in the marketplace in the second half of 2000.

For more information, see the USB Implementers Forum web site at www.usb.org.

Press Release

TARGET SPEED FOR USB 2.0 ANNOUNCED BY INDUSTRY LEADERS

480 Mbs Announcement Coincides With Specification Draft Release to Industry

CONTACT:
David A. Dickstein
Intel Corporation
(916) 356-2211; pager (800) 391-5379
david.a.dickstein@intel.com

USB 2.0 DEVELOPER CONFERENCE, Coronado, Calif., Oct. 12, 1999 - A group of seven PC industry leaders announced today that the target speed of Universal Serial Bus (USB) 2.0 is 40 times faster than the existing USB 1.1. The achievement is anticipated to further build on the momentum of USB into more demanding user applications, such as image creation and interactive gaming.

The target speed of USB 2.0 is 480 Megabits per second (Mbs), as announced by the USB 2.0 Promoter Group, consisting of Compaq, Hewlett-Packard, Intel, Lucent, Microsoft, NEC and Philips. The target speed announcement coincides with the release of the USB 2.0 specification draft to industry developers here. The specification draft enables vendors to begin their product planning and development of USB 2.0 products.

"The revised and significantly higher target rate provides an effective upgrade path for today's USB peripherals. It is the result of engineering studies and test silicon that concluded that 480 Mbs can be achieved while still maintaining full compatibility with USB 1.1," said Jim Pappas, director of Intel's technology initiatives.

The previous target speed range of between 360 and 480 Mbs was announced by the Promoter Group in August at the Intel Developer Forum.

Benefits of USB 2.0

The increased bandwidth of USB 2.0 opens the door for PC peripherals with more functionality, including faster broadband internet connections, higher resolution video conferencing cameras, next generation printers and scanners and fast external storage units. USB 2.0 also will make today's applications more productive. For example:

- Consumers with digital cameras using USB 2.0 technology will be able to download a "roll" of digital film in seconds, compared to minutes on the earlier version of USB.
- Consumers can back up a gigabyte of data from their PC hard drive in less than a minute on USB 2.0 versus about a half-hour on USB 1.1.
- Scanners can create a high-resolution digital image in seconds on USB 2.0, versus minutes on USB 1.1.

Because USB 2.0 is an evolution of the existing USB 1.1 specification, it will be fully forward and backward compatible with current USB systems and peripherals. Even with the new speed target, USB 2.0 will work with existing cables and connectors.

"Compatibility brings added benefits," Pappas said. "Consumers can continue to use the same peripherals and cables that were purchased for USB 1.1, so their investments are protected. On the other side of the retail counter, peripheral vendors will see additional sales opportunities as they can sell new high-speed peripherals into the entire installed base of USB-capable systems."

What's Next

The USB 2.0 specification is expected to be finalized in the first quarter of 2000. Leading systems and peripherals are anticipated in the marketplace in the second half of 2000, according to the promoter group. More information is available at www.usb.org.

More information is available at www.usb.org.

** Third party marks and brands are property of their respective holders.*

2.0 Frequently Asked Questions

Q: When will USB 2.0 be available for me as a developer?
A: The USB 2.0 specification draft has been released to all USB-IF members that wish to adopt the Spec. It is posted in the Members-only section of the USB-IF website (you will need to input your USB-IF username and password to access it). The final specification is scheduled for release in Q1 2000. Vendors must sign an Adopters Agreement to participate in royalty-free licensing for USB 2.0 compliant products.

Q: When will I be able to develop shippable products for USB 2.0?
A: If you are a USB-IF member you may access the Spec at USB 2.0 specification draft now as described above. Some development may be done based on that early version of the Spec, but you must remember that it is not final and products designed solely to the USB 2.0 specification draft may not be USB 2.0 compliant. The final specification will be published in Q1 2000. We expect systems and peripherals to be shipping by 2nd half of 2000.

Q3: How can I learn more about USB 2.0?
A: Presentations from the USB 2.0 Developers Conference in October 1999 will be available on the Members-only site to help train USB developers on the new spec (you will need to input your USB-IF username and password to access it). Look on this website in the coming months for information about the next USB 2.0 Developer Conference, to be scheduled sometime in early 2000.

USB Technical Documents

These are some resources useful to USB developers.

- Universal Serial Bus Revision 1.1 provides the technical details to understand USB requirements and design USB compatible products (Released September 23, 1998).

- USB Device Class Specifications

Building on top of the USB specifications, there are Device Class Specifications in various stages of development by the Device Working Group. These specifications recommend design targets for classes of devices.

- For HID related information, please go to the HID Web page.

USB Current Adapters

As announced at the USB IF compliance workshop in April, the USB IF is providing a limited number of USB current adapters to USB IF member companies. Click here for details.

Presentations

Presentations from our past conferences (1995 to 1998) are downloadable from this page in case you have not been able to attend one or in case you would like an electronic version of the binder contents which you received at a conference. If you were missing a segment in your binder these will also be useful to you. The presentations from the October 1999 USB 2.0 conference are available in the Members Area.

White Papers

There are USB technical "White Papers" on various topics written by the Spec authors and other industry experts. These are provided as additional guidance and do not constitute official USB 1.0 collateral.

OHCI and UHCI

Both OHCI, and UHCI are USB Spec compatible and provide an interface to different hardware host controller implementations. Multiple implementations of hardware host controllers allows for evolution and creativity within the USB Spec. Details of these two specs are available through these links. (Both links will open up a new window)

***Note**
Many of our documents are Adobe Acrobat encoded to make them readable on both Mac and PC. You must have Adobe Acrobat Reader 3.0 or better to read many of them.

Specs

Available for Download

1. Universal Serial Bus Specification Revision 1.1. This is the released and approved revision 1.1 specification (September 23, 1998), size 2,021 Kbytes in PDF Format. Compliance with this revision of the specification will probably be mandatory by July 1999 (exact date to be determined by 12/01/1998).

1a. Universal Serial Bus Revision 1.1 CB, size 1,962 Kbytes in PDF Format. ***This is for review purpose only. Products should not be developed based on this revision of the specification.*** The Change Barred version is simply provided to highlight changes between revision 1.0 and revision 1.1.

PDF Download

Many of our documents are Adobe Acrobat encoded to make them readable on both Mac and PC. You must have Adobe Acrobat Reader 3.0 or better to read many of them.

Table of Contents

HID Related Specifications

Device Class Definition HID

This document is intended to supplement the USB Specification and provide HID manufacturers with the information necessary to build USB-compatible devices. It also specifies how the HID class driver should extract data from USB devices. The primary and underlying goals of the HID class definition are to:

- be as compact as possible to save device data space
- allow the software application to skip unknown information
- be extensible and robust
- support nesting and collections
- be self-describing to allow generic software applications

HID Usage Tables

This document defines constants that can be interpreted by an application to identify the purpose and meaning of a data field in a HID report.

Usages are also used to define the meaning of groups of related data items. This is accomplished by the hierarchical assignment of usage information to collections.

Usages identify the purpose of a collection and the items it contains. Each Input, Output, Feature, and/or Collection data item within a Collection item can be assigned a purpose with its own usage item. Usages assigned to a collection apply to the items within the collection.

The HID Usage Tables document contains extensions to the tables defined in the USB Device Class Definition for Human Interface Devices. All usages pages, except the Keyboard table, are replicated in the Usage Table document. The Usage Table document identifies the extensions to the Keyboard usage table.

Note: For keyboards, look at the usage table sections in both the HID Specification and the HID Usage Table document!

Usage Tables for Physical Interface Devices

This specification provides information for the development of Physical Interface Devices. These devices include force feedback joysticks, steering wheels, etc. It allows peripheral and driver developers to use a common set of HID report descriptors, device usages and reports to describe the characteristics of a PID class device.

Usage Tables for HID Power Devices
This specification provides information to guide implementers in using the USB logical structures for Power Devices, OS designers, BIOS designers, and peripheral and UPS designers can use the common descriptors, of USB Power Device Usages and Reports.

Monitor Control Class Definition
This document defines how a monitor with a USB Monitor Control interface interacts with a USB-enabled host system.

Microsoft Related HID Documentation
This page contains links to documentation on Microsoft's site geared towards HID implementation, device class support, devices, etc.

HID Resources
HID Descriptor Tool
This tool allows you to create, edit and validate HID Report Descriptors. The tool also supports a variety of output formats (.txt, .inc, .h, etc.). DT uses ASCII based Usage Tables and supports vendor defined pages as well. Included are Usage Table files for the HID Usage Table document 1.0 Release Candidate 1, Monitor Class 1.0 Release Candidate 2, and Power Class Spec. Read the included README.TXT file for more information.

HIDView
This program, found in the USBCheck, requires a physical device to be attached to the system. It validates the HID Report descriptor and allows the user to see data reports generated by the device.

HID White Papers

- An Analysis of Wireless Device Implementations on USB
- HID Parser Error Checking

HID FAQ
A FAQ with questions and answers regarding hid and hid usage.

HID & PID Review Requests
A list of approved and open review requests against the main HID Specification , the USB HID Usage Tables(HUT) and the Physical Interface Device (PID) Specification and detailed information on each.

Vendor Defined HID Informaiton
This page contains URLs that point to Vendor Defined Usage Tables and device information. For instance, a vendor can list their defined Product IDs, Product strings, Usage Tables, etc.

HID allows vendors to define vendor specific usage pages. If you have a vendor defined usage page that you want to make publicly available, an URL to it can be posted on the USB-IF HID web page. The URL on the HID web page points to a *HID Product Page* on your web site. The HID Product Page will in turn, point to *HID Device Pages*.

The *HID Product Page* should list all your USB HID based products. Each product should have an URL that points to the Device Page that contains the appropriate HID related information for the device.

The information on your *HID Device Page* can contain more that just vendor defined usage pages. It can be programming information related to your product, describe idiosyncrasies of the Report descriptor, identify Vendor and Product IDs or strings, model information, work arounds, etc. The important part is that a developer should be able to understand the programming model for your HID device after reading this page.

If the information is only available under NDA or other agreement, please provide an overview of the information that is available (Usage Tables, Application notes, etc.) on your *HID Device Page* and a contact, from which the information can be obtained.

The HID web page URL must point directly to your HID class device documentation! The HID Product Page or HID Device Pages can point to your home page, however the intent of the HID web page URL is to allow HID developers to quickly access pertinent development information from a single point. They should not be forced to search your site for the HID related device information.

Send your URLs Steve McGowan hidcomments@usb.org

Site Search

USB Current Adapters

As announced at the USB IF compliance workshop in April, the USB IF is providing a limited number of USB current adapters to USB IF member companies. The intent is to enable member companies to run power measurement as it is at the USB IF compliance workshops. The goal is to aid member companies in identifying and resolving power issues prior to attending the workshop.

While our supply lasts, each USB IF member company that requests a current adapter by email to admin@usb.org will be provided one adapter at no charge. If you would like to purchase additional current adapters, please contact Richard Hill at IO Systems Inc. by email at richard@fastbus.com.

Supply is limited, so please respond as soon as possible if your company would like to receive a USB current adapter from the USB IF. Again we will be providing one per USB IF member company. Requests will be filled on a first come, first serve basis.

You may download instructions for running Current Measurement at the USB Workshop.

product search

www.usb.org

These lists and search functionality sponsored by USB-IF. Lists are maintained by USB-IF members themselves and USB-IF does not take responsibility for contents. All product listed here have passed a set of tests defined by the creators of USB.

Retail Products

Add-in host adapter Search

Development Products

Connectors/cables Search

Search by Product Name

Search

* Automatic partial name matching:
Eg. 'qu' would match 'quickcam'.

Search By Company

2Wire Corporation

Search

Company list is in alphabetical order. You can skip to the 1st letter of the alphabet by pulling down the menu and choosing that letter. Then you can scroll down further to choose the desired company

Best viewed with Netscape or I.E. versions 4.0 or higher

KAVI web management

developers

www.usb.org

Survey

Do you know that the USB 2.0 specification draft is available to USB IF members?

- Yes
- No

Expires: 11/25/99

vote!

Site Search

Tools
In the tools area, you will find our most current installation utilities. These tools are for Windows 98 only.

Compliance Program
The USB specification defines the product design targets at the level of interfaces and mechanisms. The USB IF has instituted a Compliance Program that provides reasonable measures of acceptability.

Tech FAQ
This FAQ should answer most of the commonly asked questions about USB and USB-related products and developments.

How to Join
This area contains the Implementers Forum members search, the USB Logo with usage guidelines, the link to the members information maintenance page, and the instructions for that page.

Documents
The documents area contains our most current revision of the USB spec, all of the available device class documents, conference presentations (1995 to 1998), whitepapers, and compliance workshop checklists.

USB 2.0
Here you will find an introduction to USB 2.0. Also included is a list of most common questions and answers asked on the USB 2.0 topic and current press releases.

Events
Information about upcoming events. Everything from trade show participation to compatibility workshop schedules to registration forms for upcoming events.

Discussion Groups
The discussion groups area provides a technical forum in html format for USB developers to discuss USB issues.

USB - IF Technical White Papers

Available for Download

White Papers are produced by various USB-IF members companies and are distributed here to help others with USB development. There is no release process for these documents such as the USB spec itself uses, but they have been found to be useful documents to help clarify USB issues and address specific areas design that are not covered by the spec. In most cases these documents provide examples or guidance for one of many possible solutions to USB design tradeoffs.

- Understanding WDM Power Management v1.0
- An Introduction to USB 2.0
  (725kb .pdf file, includes graphs)
- An Introduction to USB 2.0
  (18kb .pdf file, text only version)
- HID Parser Error Checking
- USB Latency Requirements and the Effect of Video Adapter PCI Retry Condition on Maintaining USB Streaming Pipelines
- Using Communication Device Class to encapsulate SIR, MIR, or FIR data from an IR dongle
- The Easy Way to Plug & Play
- An Interview with Jim Pappas
- USB 1.0 Specification Position on Extension Cables and pass-through Monitors
- USB - APM Interactions
- An Analysis of Wireless Device Implementations on USB
- Design Guide for a low speed buffer for USB
- USB Bandwidth Analysis
- Designing a Robust USB Serial Interface Engine (SIE)
- Cyclic Redundancy Checks in USB

Intel 8x930 and 8x931 USB Peripheral Controllers

Product Discontinuance Notification

Intel has recently signed an agreement with Cypress Semiconductors, licensing the technology to manufacture the USB 8x930 and 8x931 devices. Cypress will proliferate a roadmap, thereby extending the available support.

Intel released an end of life (EOL) announcement on 10/1/99, for the Intel 8x930/8x931. Key dates are as followed:

Stage I: Last order date for Intel 8x930/8x931: 12/01/99
Stage II: Last ship date for Intel 8x930/8x931: 03/31/00

Please contact Cypress Semiconductor for ordering inquiries after 12/01/99.

Contact Cypress via the following:
http://www.cypress.com
http://www.anchorchips.com
http://www.ezlinkusb.com

Pete Fowler
Vice President IPD Marketing
Cypress Semiconductor
12396 World Trade Drive
San Diego, CA 92121
Phone 858-613-7901
FAX 858-676-6896
email prf@cypress.com

Intel will continue to play the role of advocate for the USB initiative, while encouraging others to support the USB silicon business.

Industry-wide availability of USB products and developers can be found at the USB industry web site http://usb.org/

For Intel USB application support, customers may send an e-mail to:
applications.usb@intel.com

For Intel USB customer support, including specific product availability contact:
Brian C. Vaughn
Product Marketing Analyst

Intel - USB
brian.c.vaughn@intel.com
Phone: (480) 554-3414

Datasheets:

8x931AA, 8x931HA Universal Serial Bus Peripheral Controller Datasheet
(PDF format - 199801 bytes)
8x931HA Universal Serial Bus Customer Hub Datasheet
(PDF format - 433830 bytes)
8x930Ax Universal Serial Bus Microcontroller
(PDF format - 231830 bytes)
8x930Hx Universal Serial Bus Hub Peripheral Controller
(PDF format - 311792 bytes)

Drivers:

Smart Technology Enablers Offers SmartUSB* Solutions
Phoenix Technologies
Elite Electronics
Phoenix Technologies
CATC (Computer Access Technology)
e-Tek Labs
MCCI (Moore Computer Consultants, Inc.)
USAR Inc.
American Megatrends, Inc. (AMI)

Manuals:

8x931AA, 8x931HA Universal Serial Bus Peripheral Controller User's Manual
8x930Ax, 8x930Hx Universal Serial Bus Microcontroller User's Manual
8x93x Family USB Evaluation Board Manual
8x931 Family USB Adapter Board User's Manual
8x930Hx USB Adapter Board User's Manual

Price Quote and Ordering:

Price Quote and Ordering

Schematics:

8x931Ax/Hx USB Adapter Board Schematics
8x931HA USB Customer Hub Schematics

Specification Updates:

8x931AA, 8x931HA Universal Serial Bus Peripheral Controller Specification Update
8x930Ax (8x930AD, 8x930AE) Specification Update
8x930Hx (8x930HD/HE, 8x930HF/HG) Specification Update

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http://www.cypress.com
http://www.anchorchips.com
http://www.ezlinkusb.com

Pete Fowler
Vice President IPD Marketing
Cypress Semiconductor
12396 World Trade Drive
San Diego, CA 92121
Phone 858-613-7901
FAX 858-676-6896
email prf@cypress.com

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applications.usb@intel.com

For Intel USB customer support, including specific product availability contact:
Brian C. Vaughn
Product Marketing Analyst

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brian.c.vaughn@intel.com
Phone: (480) 554-3414

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(PDF format - 433830 bytes)
8x930Ax Universal Serial Bus Microcontroller
(PDF format - 231830 bytes)
8x930Hx Universal Serial Bus Hub Peripheral Controller
(PDF format - 311792 bytes)

Drivers:

Smart Technology Enablers Offers SmartUSB* Solutions
Phoenix Technologies
Elite Electronics
Phoenix Technologies
CATC (Computer Access Technology)
e-Tek Labs
MCCI (Moore Computer Consultants, Inc.)
USAR Inc.
American Megatrends, Inc. (AMI)

Manuals:

8x931AA, 8x931HA Universal Serial Bus Peripheral Controller User's Manual
8x930Ax, 8x930Hx Universal Serial Bus Microcontroller User's Manual
8x93x Family USB Evaluation Board Manual
8x931 Family USB Adapter Board User's Manual
8x930Hx USB Adapter Board User's Manual

Price Quote and Ordering:

Price Quote and Ordering

Schematics:

8x931Ax/Hx USB Adapter Board Schematics
8x931HA USB Customer Hub Schematics

Specification Updates:

8x931AA, 8x931HA Universal Serial Bus Peripheral Controller Specification Update
8x930Ax (8x930AD, 8x930AE) Specification Update
8x930Hx (8x930HD/HE, 8x930HF/HG) Specification Update

USB Implementers Forum

The USB Implementers Forum is a support organization founded by the group of companies that developed the USB specification. The USB IF was created to promote rapid adoption of USB technology and development of high quality compatible USB devices. This is accomplished through the USB IF compliance program and maintenance of the USB specification. In addition, the USB IF maintains the usb.org web site which is one of the most effective sources of communication and information including product postings by the members of the USB IF, USB "web board", technical documentation, etc.

OpenHCI -- Open Host Controller Interface Specification for USB

Preliminary Publication Date:	September 1995
Version 1.0 Publication Date:	December 1995
Revision 1.0a Date:	October 1996

New OpenHCI and USB information coming soon to this page!

This document is the latest preliminary revision of the OpenHCI (Open Host Controller Interface) Specification, Rev. 1.0a released to the public in October 1996. This version replaces Rev. 1.0 released in December 1995.

This revision of the specification, Rev. 1.0a, is provided "as is" with no warranties whatsoever including any warranty of merchantability, fitness for any particular purpose, or any other warranty otherwise arising out of any proposal, specification, or example.

Download a self-extracting version of the Word document (256KB).

If you need the Microsoft Word for Windows Viewer, you can get it here.

Download this document in Adobe Acrobat pdf format (653 KB).

If you need the Adobe Acrobat Reader, you can get it here.

Universal Host Controller Interface (UHCI) Design Guide

This document describes a Universal Host Controller Interface (UHCI) for a device that implements a Universal Serial Bus (USB) Host Controller. The document is intended for hardware vendors. The UHCI description covers the hardware/software interface between the Host Controller Software Driver and the Host Controller hardware (shaded area in Figure 1). It describes the register-level hardware interface to the USB Host Controller. Hardware developers may take advantage of the standard software drivers written to be compatible with this Universal Host Controller Interface by conforming to the register level interface and memory data structures described in this document.

File Name/Size:

UHCI11D.PDF
524648 bytes

Download From:

U.S. FTP Server (Download within North America)

Mirror FTP Sites (Download from international areas)

U.S. Web Server (Available for byte serving)