USBIO Development Kit

USB Software Development Kit for Windows

The Universal Serial Bus (USB) is supported in all current Windows operating systems. Drivers for USB host controllers and USB hubs are provided as part of the operating system, as are drivers for various standard USB devices. Standard USB devices are those which belong to one of the device classes specified by the USB Implementers Forum, such as the HID class. These are normally supported by device drivers already included in the Windows operating system, and Windows applications communicate with standard devices using the appropriate software interfaces.

In many cases, it is not possible to assign a particular USB device to one of the given device classes, and a custom USB device driver is necessary. This is a kernel-mode driver which conforms to the Windows Driver Model (WDM). Developing such a driver requires specialist knowledge in kernel-mode programming and a deep understanding of operating system internals. The development and debugging process can be very time-consuming. These development efforts can be avoided using the USBIO Development Kit. The kit includes a universal device driver and additional software components, thereby providing a complete development environment for creating USB solutions.

The USBIO Device Driver

The core component of the development kit is the generic device driver USBIO.SYS. It provides Win32 applications with direct access to USB v1.1 and v2.0 devices, enabling application developers to control any kind of USB device available. The USBIO driver provides an extensive programming interface based on standard Windows API functions such as ReadFile, WriteFile, and DeviceIoControl. It supports the complete USB functionality and is optimized for maximum efficiency. Data transfer to or from USB devices is very similar to standard Win32 file I/O operations.

Easy Installation

Using Thesycon's PnP Driver Installer it is very easy to create a specific setup wizard that handles driver installation, un-installation and update in a comfortable and reliable way. For more information on PnP Driver Installer, check out http://www.thesycon.de/pnpinstaller.
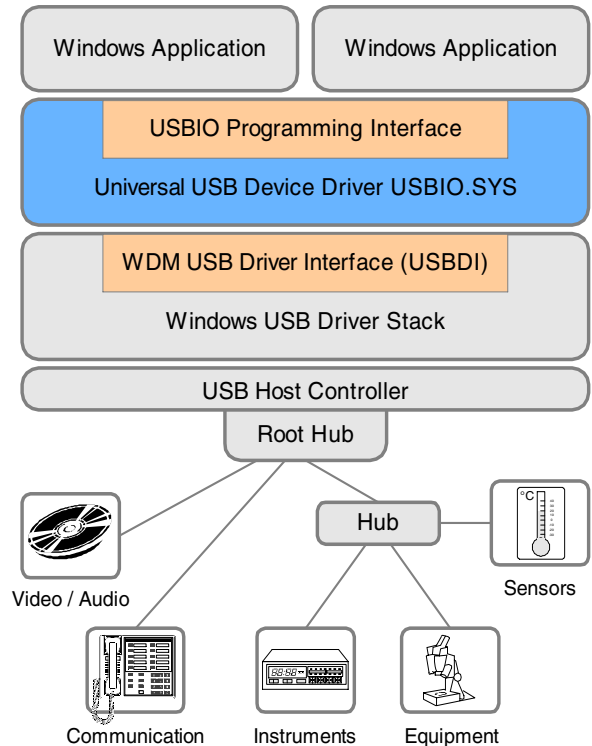
Features

❏ All kernel-mode USB functions are available at the Win32 API level

❏ USBIO device driver provides an intuitive and convenient programming interface, similar to file I/O

❏ Optimized for efficient data transmission

❏ Native programming interface support for C, C++, Delphi, and Java, extended support for C++

❏ Extended support for Visual Basic, Delphi and C# via COM-based high-level programming interface

❏ Supports vendor-specific customization

❏ Microsoft WHQL certification supported

| Supported platforms	x86	x64
Windows 98/ME (USB 1.1)	✔	—
Windows 2000	✔	—
Windows XP	✔	✔
Windows XP Embedded	✔	—
Windows Server 2003	✔	✔
Windows Vista	✔	✔
Windows 7	✔	✔

A similar driver is also available for Windows CE.

USBIO Programming Interfaces

The Win32 native USBIO programming interface is ideal for use in programming languages such as C and C++. The USBIO Development Kit includes a C++ class library, providing an easy-to-use interface. To support Java application development, a Java class library that is based on a JNI DLL is provided.

A high-level programming interface, the USBIO COM interface, is also available. This is based on Microsoft's Component Object Model (COM) technology and provides an extension to the native USBIO programming interface. The COM interface allows the easy integration of USB functionality into Visual Basic, Delphi and C# applications.

Extensive documentation of all the software interfaces is provided in PDF format. Several source code examples demonstrate the usage of the programming interfaces and show how an application controls a USB device.
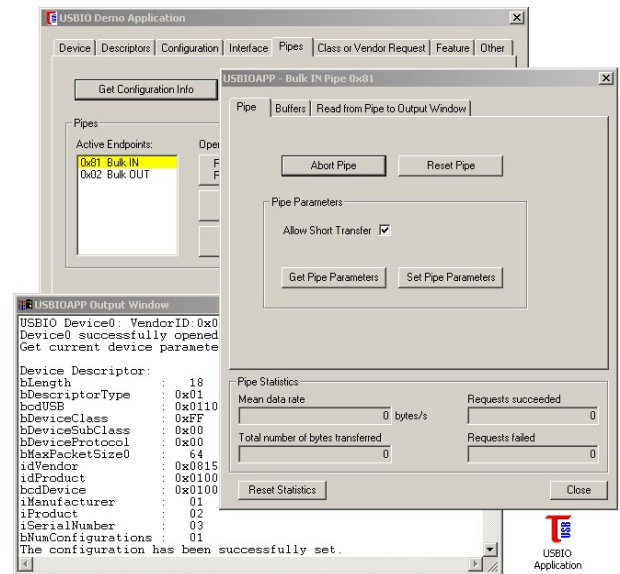
The USBIO Class Library for C++

The USBIO Development Kit includes the source code of a C++ class library, which simplifies the use of the USBIO programming interface in applications. The library provides wrapper classes for all driver functions and some extended functionality, such as management of worker threads. The library can easily be enhanced by additional classes in order to meet the requirements of a particular application.
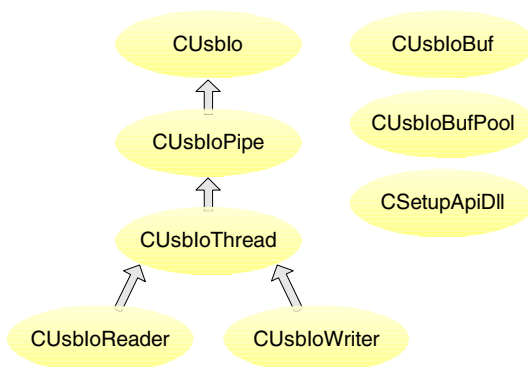
Test and Demo Application

The development kit also includes the source code of a full-featured test application. The application, written in C++ using the MFC, is based on the USBIO class library. It allows interactive testing of individual device functions as well as the set-up of bulk, interrupt, or isochronous data transfer. It is thus a very useful test tool for developing USB devices and firmware.

Free Evaluation

A full functional but time-limited demo version of the USBIO Development Kit is available for download at http://www.thesycon.de/usbio. The demo includes the complete documentation and all source code samples.

Licensing

There are various levels of licensing available:

❏ The Runtime License allows royalty-free redistribution of software components for use with multiple hardware products.

❏ The USBIO Driver Source Code License includes the source code of the USBIO kernel-mode driver.

❏ The USBIOCOM Source Code License includes the source code of the USBIO COM component.

The complete license agreement and a current price list can be found on the Thesycon website.

THESYCON

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