Getting Started

with

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QuickUSB Library Contents

The QuickUSB Library contains all of the necessary documentation, sample applications, and utility programs to get you started with QuickUSB. The following is a quick look of what is installed with the QuickUSB Library:

Software Library

- **Standard Windows DLL and LIB Libraries**
  A standard Windows DLL function library for use with any language that supports standard Windows DLLs (C, C++, VB, Java, Delphi, etc.). Also, a .NET assembly is provided for use with any .NET capable language (C#, VB .NET, etc.).

- **Linux Library**
  Standard Linux libraries (.a and .so) and kernel driver for use on many Linux distributions with kernel v2.6.25 and later.

- **Mac OS X Library**
  A standard Mac library (.DyLib) for use on Mac OS X 10.6 and later.

Documentation

- **QuickUSB User Guide**
  A comprehensive guide on how to use the QuickUSB API, design hardware for QuickUSB, and how to deploy software for QuickUSB.

- **QuickUSB Module Datasheet, Target Interface, and Mechanical Drawings**
  Information regarding the capabilities of QuickUSB, signal interfaces, and mechanical drawings.

- **QuickUSB Software License Agreement (SLA)**
  The software license for using the QuickUSB Library and firmware.

Samples

- **Numerous Sample Projects with Source**
  A number of sample applications with source code and project files written in C, C++, C#, VB6, Python, Delphi, and more. Each sample clearly demonstrates how to program software using QuickUSB.

Utility Applications

- **QuickUSB Diagnostics**
  A utility to view information about QuickUSB Modules, perform read/write command and data transfers, configure GPIO ports, view/edit the QuickUSB settings and defaults, and read/write the RS-232 ports, SPI ports, and I2C port. Use of the application is documented in the QuickUSB Diagnostics User Guide and application source code is provided as samples written in C#, Python, C, and VB6.

- **QuickUSB Programmer**
  The utility used to program QuickUSB firmware into a module. Use of the programmer is fully documented in the QuickUSB Programmer User Guide.

- **QuickUSB Customizer**
  A production level tool used to configure and customize QuickUSB devices with custom USB string descriptors and serial numbers. The tool also generates customized driver packages for devices that need to use a custom USB VID/PID.

QuickUSB Library Installation

Install the Library and Drivers on Windows

Please do not connect the QuickUSB Module to your computer until you have successfully installed the QuickUSB Library. If you are upgrading from a previous version of the QuickUSB Library, uninstall the older version of the library before installing the newer version.

To begin, insert the QuickUSB Library CD into your CD-ROM drive. The setup program should automatically begin and display the QuickUSB welcome screen. If the setup program does not automatically begin navigate to "My Computer", open the CD-ROM drive, and execute the setup.exe file.

The following 10 steps help to quickly guide you through the QuickUSB Library installation process:

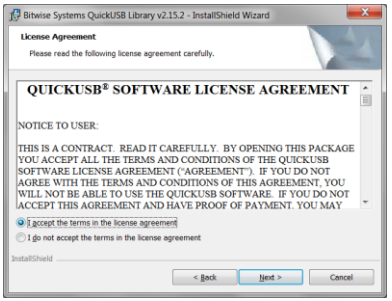
Step 1: QuickUSB Welcome Screen

To continue with the installation, click the "Next" button.

Step 2: Setup Wizard Welcome Screen

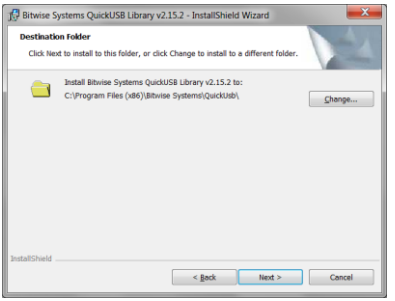
To continue with the installation, click the "Next" button.

Step 3: QuickUSB Software License Agreement



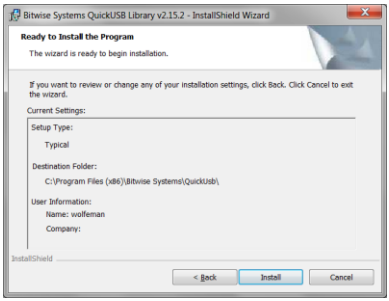
Please take some time to read the SLA and understand the terms of the agreement. If you agree with the license, select "I Agree" and then click "Next".

Step 4: Installation Preferences



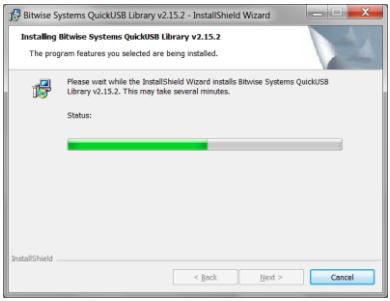
Choose the library installation directory and click the "Next" button to continue.

Step 5: Confirm Installation



Verify all information is correct and the click the "Next" button to begin the installation of the library.

Step 6: Installing Library

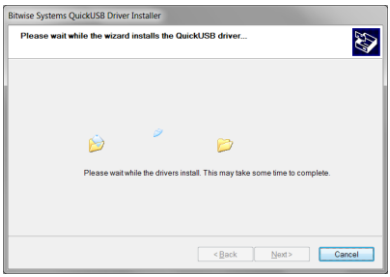


The setup wizard now displays the progress of the QuickUSB Library.

Step 7: QuickUSB Driver Installation

When the wizard is ready to install the QuickUSB drivers, the above screen will pop up. To begin the installation of the drivers, click "Next".

Step 8: Installing Driver

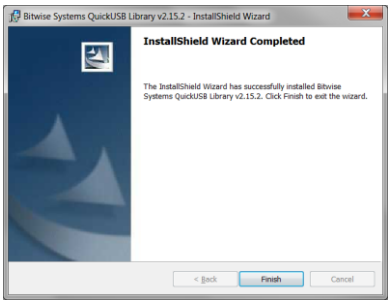


The setup wizard now installs the QuickUSB drivers to your computer.

Step 9: Driver Installation Complete

Once the drivers have been installed, click on the "Finish" button.

Step 10: Library Installation Complete



The installation has successfully completed. Click on the "Finish" button to exit the setup wizard.

Install the Library on Mac OS

If you are upgrading from a previous version of the QuickUSB Library, uninstall the older version of the library before installing the newer version. Run the MacOS installer and perform the following eight steps:

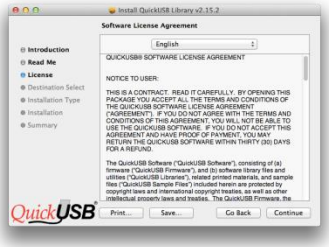
Step 1: QuickUSB Welcome Screen

To continue with the installation, click the “Continue” button.

Step 2: Important Information

The installer displays important information about the library installation.

Step 3: QuickUSB Software License Agreement Confirmation



Please take some time to read the SLA and understand the terms of the agreement. To continue, click “Continue”.

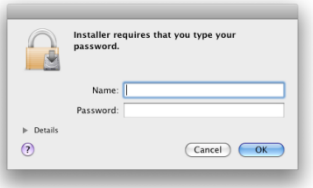
Step 4: Installation Destination

Select the destination drive of the installation and then click “Continue”.

Step 5: Installation Summary

Review the summary of the installation and then click “Install” to begin the installation process.

Step 6: Permissions Request

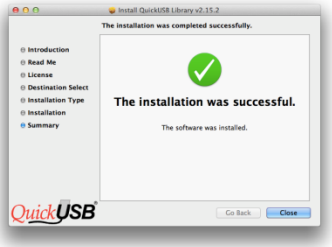


The installation process requires admin permission to install. Enter your user name and password then click “OK”.

Step 7: Installing Library

The installation now displays the progress of the QuickUSB installation.

Step 8: Installation Complete



When QuickUSB has successfully installed the above screen will show. To finish installation, click "Close".

Install the Library on Linux

To begin the QuickUSB Library installation on Linux, open a console and extract the contents of the library tarball. Then, as a super user execute the "install-linux.sh" shell script extracted from the tarball. This script automatically builds and installs the QuickUSB kernel driver module, installs the ".a" and ".so" library files into their appropriate locations, and adds a udev entry to automatically load the QuickUSB kernel object when a device is connected to the computer.

Note that there is a dependency on libaio. This dependency is automatically installed by the script on Debian systems, however additional steps may be required on other flavors of Linux.

The following lines are the commands required for installation on Linux:

```
tar xzf QuickUsbLibrary_v2.15.2_Linux.tar.gz
cd QuickUsbLibrary_v2.15.2_Linux
sudo sh install-linux.sh
```

Running the Linux Installation Script

```
jwolfe@ubuntu:~$ tar xzf QuickUsbLibrary_v2.15.2_Linux.tar.gz
jwolfe@ubuntu:~$ cd QuickUsbLibrary_v2.15.2_Linux/
jwolfe@ubuntu:~/QuickUsbLibrary_v2.15.2_Linux$ sudo sh install-linux.sh
Bitwise Systems Linux QuickUSB Library v2.15.2 Installer
Reading package lists... Done
Building dependency tree
Reading state information... Done
libaio-dev is already the newest version.
0 upgraded, 0 newly installed, 0 to remove and 6 not upgraded.
Installing 64-bit driver
Building x64/qusb_lnx.o
Cleaning up
Inserting kernel object
Installing x64 libraries to /usr/lib
Installing x86 libraries to /usr/lib32
Installing QuickUSB.h to /usr/include
Installing udev rule
QuickUSB Library installation completed successfully!
jwolfe@ubuntu:~/QuickUsbLibrary_v2.15.2_Linux$
```

Connect a QuickUSB Device

You are now ready to connect a QuickUSB device to your computer. Please connect a QuickUSB device to your computer now. In Windows Vista, Windows 7, MacOS X, and Linux there are no additional setup steps to perform as the operating system will automatically associate the correct driver with the QuickUSB device. In that case, you are ready to use your device. Verify this by running the QuickUSB Diagnostics tool that installed with the library.

If you are running Windows XP, additional dialogs may appear prompting for additional driver information when you connect your device to the computer. Follow the next few steps to finalize the installation of the QuickUSB Drivers. Please note that you may have to repeat this process each time the module is plugged into a different USB port on your PC for the first time.

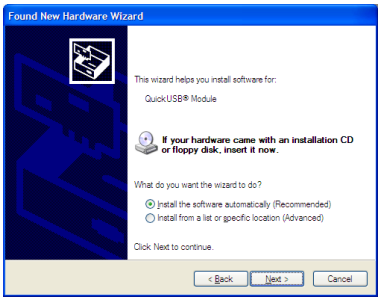
Step 1: Module is detected by Windows

Windows detects the presence of the QuickUSB Module.

Step 2: Found New Hardware Wizard

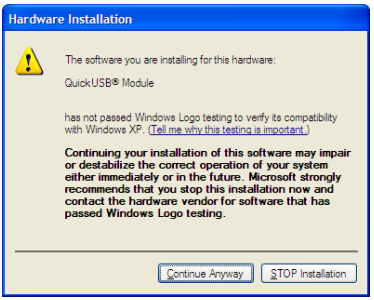
Choose to not have Windows search Windows Update for the drivers by selecting "No, not at this time" and clicking the "Next" button.

Step 3: Driver Location



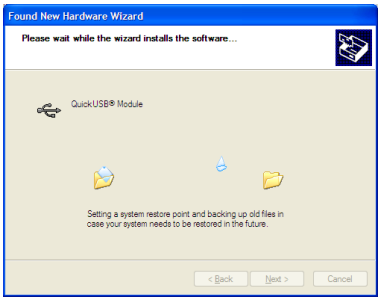
Since the QuickUSB drivers were installed with the library, Windows can locate the drivers automatically. Choose the recommended "Install the software automatically" option and click "Next".

Step 4: Windows Logo Testing



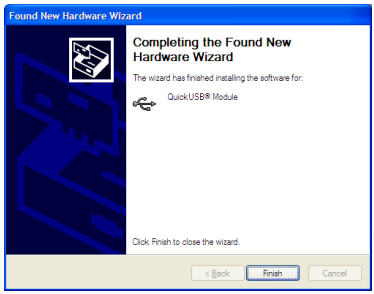
Windows will warn that the QuickUSB drivers have not passed Windows Logo testing. Click "Continue Anyway" to continue with the driver installation.

Step 5: Copying Files



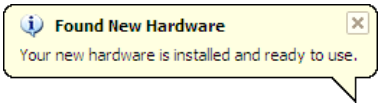
Windows is now installing the QuickUSB driver.

Step 6: Completing Driver Install



The QuickUSB driver has successfully been installed. Click "Finish" to exit the installation wizard.

Step 7: QuickUSB Hardware is Ready



Windows may display a pop-up indicating that the QuickUSB Module has successfully been installed and is ready for use.

Running the Diagnostics Application

Once you have successfully installed the QuickUSB Library, the best way to explore the capabilities of the QuickUSB Module is to run the QuickUSB Diagnostics application. This application allows you to interact with your module without writing any software. Run the Diagnostics application and connect a QuickUSB Module to your computer (if one is not already connected). If everything has properly installed and is working correctly, then the Diagnostics application should detect your connected module and display information about.

The Linux and Mac version of the QuickUSB Diagnostics tool is written in Python and located under "<Installation Directory >\Samples\Python\QuickUsbDiagPy". To run execute the diagnostics tool run "python QuickUsbDiag.py". Note that there is a dependency on wxPython that is not installed with the QuickUSB Library. If wxPython is not installed for the version of Python you are running, go to www.wxpython.org and download then install the latest version of wxPython for your platform.

With this application you are able to perform read/write command and data transfers, configure GPIO ports, view/edit the QuickUSB settings and defaults, and read/write the RS-232 ports, SPI ports, and I2C port. Use of the VB6 version of the diagnostics program is fully documented in the QuickUSB Diagnostics User Guide and application source code is provided as a sample written in C#, Python, C and VB6. The source code for the VB6 diagnostics program is located in the following directory on Windows PC's: "<Installation Directory>\Samples\VB6\QuickUsbDiag".

New in the v2.15.2 Release

- Updated firmware IO model timing diagrams in User Guide.
- Added ability to abort data requests.
- Added QuickUsbWriteDataEx and QuickUsbReadDataEx API functions.
- Added QuickUsbReadBulkDataStartStreamToFile, QuickUsbWriteBulkDataStartStreamFromFile, and QuickUsbGetStreamStatus API functions.
- Added new Statistics API to retrieve information about the USB data transfers.
- Added QuickUsbAllocateDataBuffer and QuickUsbFreeDataBuffer.
- Added Streaming tab to QuickUsbDiag to demonstrate the Streaming API.
- Added a setting to bit 13 of the SETTING_DATAADDRESS setting to automatically have firmware reset the data address to the value in the SETTING_DATAADDRESS setting before every read and write transaction.
- Fixed address bus issues with FIFOHS IO Model.
- Fixed a bug that caused the FPGA type to always switch to Xilinx after any default was written.
- Fixed a bug that caused QuickUsbEpcsErase() to lock up on Linux.
- Corrected a memory leak in the Kernel non-paged memory pool caused when retrieving USB string descriptors in Windows.
- Added calls to QuickUsbGetLastError to QuickUSB Programmer to report error codes on failure for easier debugging.
- Corrected bug in QuickUsbDiagCs where Count button always outputted zero for the last word in word-wide mode.
- Changed QuickUsbDiagCs to not overwrite reserved bits of SETTING_DATAADDRESS when setting the data address on data reads and writes.
- Corrected text alignment issue in QuickUsbDiagCs.

Troubleshooting

- **I've upgrade my QuickUSB Library from a previous version. How can I tell that I am using the latest QuickUSB drivers and DLLs?**

  The easiest way to check what version of QuickUSB drivers and DLLs you are using is to run the QuickUSB Diagnostics or Programmer Application and in the menu bar select "Help" → "About". A dialog will pop up which will tell you the QuickUSB application version, driver version, and DLL version.

- **Why can't I see my module in the Diagnostic or Programmer applications?**

  The most likely reason a module does not appear in the utility applications is that the drivers are not correctly associated with the module. Navigate to "<Installation Directory>\Drivers\v2.15.2" and run the setup.exe file. This program will attempt to install the QuickUSB drivers and DLLs. If you continue to experience issues please customer support at support@quickusb.com.

- **Why is my driver version being reported as v0.0.0?**

  This will occur if you have installed the QuickUSB driver but have not yet connected a module to your PC. Connect a module to your PC and once the OS associates the QuickUSB driver with the device the correct driver version will be reported by the API.