This document provides the application programming interface (API) for the FTD2XX DLL using the Perl programming language.
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1 Preface

The D2XX interface is a proprietary interface specifically for FTDI devices. This document will provide an explanation of how this interface can be accessed using the Perl5 programming language via the Win32::FTDI::FTD2XX wrapper.

The Perl D2XX wrapper was kindly provided by Scott K. MacPherson and is free software licensed under the terms of Perl itself allowing for redistribution and/or modification.

The code examples contained within this document are for demonstration purposes only and FTDI extend no responsibility or guarantees regarding the correctness of this code.
# 2 Overview

FTDI's D2XX library provides an interface to FTDI's USB-UART and USB-FIFO ICs, this library provides additional functions that are not available with standard Windows COM port APIs. Due to the nature of the Perl programming language it is not possible to directly communicate using the D2XX library. The Win32::FTDI::FTD2XX wrapper provides an abstraction between the FTDI D2XX library and Perl. This document will provide an overview for installing the Win32::FTDI::FTD2XX wrapper and also act as a reference for the available functions for interfacing with an FTDI device via the D2XX library.

## 2.1 Prerequisites

To use the Perl D2XX wrapper you must first have ActivePerl v5.8 or greater installed on your system. The latest version (v5.10 at time of writing) of this can be found on the ActiveState website. The FTDI FTD2XX driver must also be installed, the latest version of the D2XX Driver is available from the FTDI website currently at version 2.04.16. Finally, an FTDI device to communicate with is required.

## 2.2 Installing Win32::FTDI::FTD2XX

Perl provides extensions of the language by allowing users to install Perl modules. The Win32::FTDI::FTD2XX is provided to the user as an additional module that must be installed on the system prior to calling any of the functions contained within it.

Installing Perl modules can be a difficult and time consuming process; below is one option that may adopted to install the module but there are possibly other avenues to explore not outlined within. There are plenty of websites available on the internet that give detailed descriptions of installing Perl modules.

The Win32::FTDI::FTD2XX package is available as a free download from the CPAN website. Download the latest version, 1.04, and save the file within the Perl directory of your machine. The subsequent file should have the extension tar.gz, this is a compression format that can be unzipped using third party extraction tools, e.g. WinZip but there are other alternatives available free from the internet. Extract the files into the Perl directory on your machine, in our case it was `C:\Perl`.

The next step is to install nmake on the system; this is available as a free download from the Microsoft Website. Save the file when prompted and run the executable Nmake15.exe. This will extract 3 files into the current directory: NMAKE.ERR; NMAKE.EXE and README.TXT. Paste the files NMAKE.ERR and NMAKE.EXE into the bin folder within your Perl directory `C:\Perl\Bin`.

Back in the Perl directory containing the unzipped Perl FTD2XX package, open the file MAINFEST with notepad to view its contents. This manifest gives a list of the all the files that should have been included with the tar.gz download.

Move the files that were downloaded so that the paths of these files match those within the manifest file. For example, cut the file Win32-FTDI-FTD2XX.t and paste it into the folder `C:\Perl\t'`, cut instp5.dll and paste in the directory `C:\Perl\bin`. Complete this for the remaining 2 files bearing in mind that there needs to be a new folder called `FTDI` created within the Win32 directory.

- `t/Win32-FTDI-FTD2XX.t`
- `bin/instp5dll.pl`
- `lib/Win32/FTDI/FTD2XX.pm`
- `lib/Win32/FTDI/p5ftd2xx.dll`

The module may now be installed; click start->run, type `cmd` and press OK. This will launch the command prompt window.

Browse to the Perl folder within the windows directory using the command prompt window, in this case:

```
CD C:\Perl
```

Now type `perl Makefile.pl`, this command will check to make sure that all the module files are present within their correct respective directories. If an error is encountered stating that some or all of the files are missing then make sure that the module files have been copied into the correct directories as stated in the MAINFEST file above.

Still within the command window type the following commands to install the module:

```
nmake
nmake test
nmake install
```
The Perl module should now be installed, to test that the module is available and working, create a new text file called ftd2xx.pl and paste the following code into it.

```perl
#!/usr/bin/perl
use Win32::FTDI::FTD2XX

Browse to the file, again with the command prompt window, and run the application by typing ftd2xx.pl. The code should run with no compilation errors indicating that the module has been installed correctly and is now available for use.
3 Perl D2XX Functions

3.1 New

Summary
This command creates a new instance of the WIN32::FTDI class; this class instance is then used throughout the program to reference the device. This function must be called at the start of the application to allow communication to a device. The new function has a built in auto-destroy feature that will close a handle to any device as part of Perl’s garbage collection when the program ends.

Definition
Win32::API::FTD2XX->new()

Parameters
None

Return Value
Returns an object instance that is used throughout the program to reference to an FTDI devices.

Example
my $FTDIdevice = Win32::API::FTD2XX->new();
....
my $numDevices = $FTDIdevice->GetNumDevices();
....

3.2 GetNumDevices

Summary
Returns the number of FTDI devices that are currently connected to the host machine.

Definition
GetNumDevices()

Parameters
None

Return Value
Upon successful completion of the function it will return the number of devices connected to the host, otherwise NULL.

Example
my $FTDIdevice = Win32::API::FTD2XX->new();
my $numDevices = $FTDIdevice->GetNumDevices();# Get the number of connected devices.

3.3 OpenByIndex

Summary
Open an FTDI device based on the index ID with which it has been enumerated on the host machine.

Definition
OpenByIndex($devIndex)

Parameters
$devIndex – an integer indicating the index of the device.

Return Value
Returns true if a handle to the specified device has been obtained, false otherwise.

Example
my $FTDIdevice = Win32::API::FTD2XX->new();
my $devToOpen = 0;
my $devOpen = $FTDIdevice->OpenByIndex($devToOpen);
if($devOpen)
{
    print "Device $devToOpen is open!";
}

3.4 OpenBySerial

Summary
Open an FTDI device based on the serial ID of the chip.

Definition
OpenBySerial($devSerial)

Parameters
$devSerial – Device serial number.

Return Value
Returns true if a handle to the specified device has been obtained, false otherwise.

Example
my $FTDIdevice = Win32::API::FTD2XX->new();
my $devToOpen = "FT12345";
my $devOpen = $FTDIdevice->OpenBySerial($devToOpen);
if($devOpen)
{
    print "Device $devToOpen is open!";
}

3.5 GetDeviceInfo

Summary
Used to obtain string descriptors for an open device.

Definition
GetDeviceInfo()

Parameters
None

Return Value
String descriptors for the device are returned in the form of a hash, if the function fails to complete it will return NULL. Please refer to the example below for further details of the hash.

Example
my $FTDIdevice = Win32::API::FTD2XX->new();
my $devInfo = $FTDIdevice->GetDeviceInfo();
if( $devInfo )
{
    my $out = sprintf( " Type:\t\t%d (%s)\n ID:\t\tVID(%04X) PID(%04X)\n Serial:\t\t%s\n Descr:\t\t%s","$devInfo->{TypeID}, $devInfo->{TypeNm}, $devInfo->{VID}, $devInfo->{PID}, $devInfo->{Serial}, $devInfo->{Descr} );
    print "$out";
}
3.6 Close

**Summary**
Closes the handle to any open FTDI device. Please note that there is an auto-destory feature that will close the handle to an open FTDI device as part of the Perl garbage collection.

**Definition**
Close()

**Parameters**
None

**Return Value**
This function will return true if a device has been closed successfully, false otherwise.

**Example**
```perl
my $devClosed = $FTDIdevice->Close();
if($devClosed)
{
    # Operation successful
}
```

3.7 CyclePort

**Summary**
Send a cycle command to the USB port, the effect of this function is the same as disconnecting and reconnecting the device. This can be useful when recovering from fatal errors or forcing the FTDI to read the contents of the EEPROM again. Please note that there is an unspecified wait time for performing this function until the FTDI is stable again. Attempting to communicate during this time may result in an invalid handle from the device.

**Definition**
CyclePort()

**Parameters**
None

**Return Value**
This function will return true on successful completion of the operation, false otherwise.

**Example**
```perl
my $result = $FTDIdevice->CyclePort();
if($result)
{
    # Operation Successful
}
```

3.8 SetBaudRate

**Summary**
Sets the baud rate of the currently open device.

**Definition**
SetBaudRate($baudRate)

**Parameters**
$baudRate

Return Value
Returns true on successful completion, false otherwise.

Example
my $baudRate = 115200;
my $status = $FTDIdevice->SetBaudRate($baudRate);
if($status)
{
    # Operation Successful
}

3.9 SetDataCharacteristics

Summary
Sets the data characteristics of the currently open device. Please refer to the D2XX Programmer’s Guide for a more detailed description of the parameters.

Definition
SetDataCharacteristics($dataBits, $stopBits, $parityBits)

Parameters
$dataBits – the number of bits per word, must be 8 or 7
$stopBits – the number of stop bits, must be 1 or 2
$parityBits - parity

Return Value
Returns true on successful completion, false otherwise.

Example
use constant {
    DATABITS => 8,
    STOPBITS => 1,
    PARITYBITS => 0
};
....
my $status = $FTDIdevice->SetDataCharacteristics(DATABITS, STOPBITS, PARITYBITS);
if($status)
{
    # Operation Successful
}

3.10 SetFlowControl

Summary
Sets the flow control for the currently open device. Please refer to the D2XX Programmer’s Guide for a more detailed description of the parameters.

Definition
SetFlowControl($flowControl, $Xon, $Xoff)

Parameters
$flowControl
$Xon

$Xoff

**Return Value**

Returns true on successful completion, false otherwise.

**Example**

```perl
use constant {
    FLOWCTRL => 256,
    XON => 0,
    XOFF => 0
};

my $status = $FTDIdevice->SetFlowControl(FLOWCTRL, XON, XOFF);
if ($status)
{
    # Operation Successful
}
```

### 3.11 SetDtr

**Summary**

This function asserts the Data Terminal Ready (DTR) control signal.

**Definition**

SetDtr()

**Parameters**

None

**Return Value**

Returns true on successful completion, false otherwise.

**Example**

```perl
my $status = $FTDIdevice->SetDtr();
if ($status)
{
    # Operation Successful
}
```

### 3.12 ClrDtr

**Summary**

This function clears the Data Terminal Ready (DTR) control signal.

**Definition**

ClrDtr()

**Parameters**

None

**Return Value**

Returns true on successful completion, false otherwise.

**Example**

```perl
my $status = $FTDIdevice->ClrDtr();
if ($status)
{
    # Operation Successful
}
```
my $status = $FTDIdevice->ClrDtr();
if($status)
{
  # Operation Successful
}

3.13 SetRts

Summary
This function asserts the Request To Send (RTS) control signal.

Definition
SetRts()

Parameters
None

Return Value
Returns true on successful completion, false otherwise.

Example
  my $status = $FTDIdevice->SetRts();
  if($status)
  {
    # Operation Successful
  }

3.14 ClrRts

Summary
This function clears the Request To Send (RTS) control signal.

Definition
ClrRts()

Parameters
None

Return Value
Returns true on successful completion, false otherwise.

Example
  my $status = $FTDIdevice->ClrRts();
  if($status)
  {
    # Operation Successful
  }

3.15 SetTimeouts

Summary
This function sets the read and write timeouts for the device.

Definition
SetTimeouts($readTimeout, $writeTimeout)
Parameters
$readTimeout
$writeTimeout

Return Value
Returns true on successful completion, false otherwise.

Example
my $status = $FTDIdevice->SetTimeouts(5000, 1000); # Read 5 secs, write 1 sec
if($status)
{
    # Operation Successful
}

3.16 GetTimeouts

Summary
This function gets the read and write timeouts for the device.

Definition
GetTimeouts()

Parameters
None

Return Value
Returns the previously set read and write timeouts for the device, will return null if the operation has been unsuccessful.

Example
(my $readTimeout, my $writeTimeout) = $FTDIdevice->GetTimeouts();
print("Read Timeout: $readTimeout\n");
print("Write Timeout: $writeTimeout\n");

3.17 SetReadTimeout

Summary
This function sets the read timeout for the device.

Definition
SetReadTimeout($readTimeout)

Parameters
$readTimeout

Return Value
Returns true on successful completion, false otherwise.

Example
my $readTimeout = 1000;
my $success = $FTDIdevice->SetReadTimeout($readTimeout);
if($success)
{
    # Operation Successful
}
3.18 SetWriteTimeout

Summary
This function sets the write timeout for the device.

Definition
SetWriteTimeout($writeTimeout)

Parameters
$writeTimeout

Return Value
Returns true on successful completion, false otherwise.

Example
my $writeTimeout = 1000;
my $success = $FTDIdevice->SetWriteTimeout($writeTimeout);
if($success)
{
    # Operation Successful
}

3.19 GetReadTimeout

Summary
This function gets the read timeout for the device.

Definition
GetReadTimeout()

Parameters
None

Return Value
If the operation is successful it will return the read timeout for the current device, null otherwise.

Example
my $readTimeout = $FTDIdevice->GetReadTimeout();
if($readTimeout)
{
    print("Read timeout: $readTimeout");
}

3.20 GetWriteTimeout

Summary
This function gets the write timeout for the device.

Definition
GetWriteTimeout()

Parameters
None

Return Value
If the operation is successful it will return the write timeout for the current device, null otherwise.

Example
my $writeTimeout = $FTDIdevice->GetWriteTimeout();
if($writeTimeout)
{
    print("Write timeout: $writeTimeout");
}

### 3.21 GetModemStatus

**Summary**

Gets the modem status and line status from the device. Please refer to the D2XX Programmer’s Guide for a more detailed description of the return value.

**Definition**

GetModemStatus()

**Parameters**

None

**Return Value**

If the operation is successful it will return the modem status for the current device, null otherwise.

**Example**

```perl
my $modemStatus = 0;
my $lineStatus = 0;
my $status = $FTDIdevice->GetModemStatus();
if($status)
{
    $lineStatus = (($status >> 8) & 0x000000FF);
    $modemStatus = ($status & 0x000000FF);
}
```

### 3.22 WaitForModem

**Summary**

This function can be used to suspend program execution until one or more of the modem status bits is set.

**Definition**

waitForModem($modemStatusBitmask, $timeout, $pollTm)

**Parameters**

$modemStatusBitmask – the modem bit to wait on, defined under Modem Status within the D2XX Programmer’s Guide appendix A.

$timeout – Optional, the wait time in seconds, if blank the device will wait indefinitely.

$pollTm – Optional, this is the time in seconds between polls of the device, default value is 0.25 secs.

**Return Value**

Returns true on successful completion, false otherwise.

**Example**

```perl
# Waits 3 seconds for the CTS line to be asserted.
my $status = $FTDIdevice->waitForModem(0x10, 3);
if($status)
{
    # Operation successful
}
```
3.23 GetQueueStatus

Summary
Gets the number of bytes that are in the receive queue to be read from the device.

Definition
GetQueueStatus()

Parameters
None

Return Value
If the operation is successful it will return the number of bytes in the read queue for the current device, if there are no bytes to read zero will be returned.

Example
```perl
my $rxBytesAvail = $FTDIdevice->GetQueueStatus();
if ($rxBytesAvail) {
    print("$rxBytesAvail bytes to be read from the device.");
}
```

3.24 Read

Summary
Read any data from the device.

Definition
Read($rxBytesAvail)

Parameters
$ rxBytesAvail

Return Value
If the operation is successful it will return the number of bytes read ($bytesReturned_p) and the data ($readBuffer_p) from the device as scalar values.

Example
```perl
my $bytesReturned_p; # packed version of bytes read
my $readBuffer_p; # packed version of read buffer
my $readBuffer; # unpacked version of read buffer

my $rxBytesAvail = $FTDIdevice->GetQueueStatus();
if ($rxBytesAvail) {
    ($bytesReturned_p, $readBuffer_p) = $FTDIdevice->Read($rxBytesAvail);
    $readBuffer = unpack("a*", $readBuffer_p); # Unpack the data from the device
    print("Read: $readBuffer from the device.");
}
```

Note
Data returned from the device is in a raw binary format, the unpack function is required to format the data as an ASCII string.

3.25 Write
Summary
Write data to the device.

Definition
write($writeBuffer, $bytesToWrite)

Parameters
$writeBuffer
$bytesToWrite – optional parameter, if this is not specified 'length($writeBuffer)' is used.

Return Value
If the operation is successful it will return the number of bytes that have been written to the device.

Example
my $writeBuffer = "Hello World!"; # unpacked version of write buffer
my $bytesToWrite = 12; # Size of the write buffer.
my $writeBuffer_p; # packed version of write buffer
$writeBuffer_p = pack("a*", writeBuffer); # pack the write buffer.

my $bytesWritten = $FTDIdevice->Write($writeBuffer_p, $bytesToWrite);
if ($bytesWritten == $bytesToWrite)
{
    print("Data successfully sent to the device.\n");
}

3.26 ResetDevice

Summary
Sends a reset command to the device.

Definition
ResetDevice()

Parameters
None

Return Value
Returns true if the operation has been successful, false otherwise.

Example
my $success = $FTDIdevice->ResetDevice();
if ($success)
{
    # Device Reset
}

3.27 ResetPort

Summary
Sends a reset command to the port.

Definition
ResetPort()

Parameters
None

Return Value
Returns true if the operation has been successful, false otherwise.

Example
```perl
my $success = $FTDIdevice->ResetPort();
if($success)
{
    # Port Reset successful.
}
```

3.28 SetBreakOn

Summary
Sets the break condition for the device.

Definition
SetBreakOn()

Parameters
None

Return Value
Returns true if the operation has been successful, false otherwise.

Example
```perl
my $success = $FTDIdevice->SetBreakOn();
if($success)
{
    # Operation successful.
}
```

3.29 SetBreakOff

Summary
Resets the break condition for the device.

Definition
SetBreakOff()

Parameters
None

Return Value
Returns true if the operation has been successful, false otherwise.

Example
```perl
my $success = $FTDIdevice->SetBreakOff();
if($success)
{
    # Operation successful.
}
```

3.30 GetStatus

Summary
Gets the device status including the number of characters in the receive queue, the number of characters in the transmit queue and the current event status.

**Definition**

GetStatus()

**Parameters**

None

**Return Value**

Returns amount of data in the Rx queue, the amount of data in the Tx queue and the current event status of the device. Please refer to the [D2XX Programmer's Guide](#) for a more detailed description of the event status messages returned from this function.

**Example**

```perl
(my $rxQueue, my $txQueue, my $eventStatus) = $FTDIdevice->GetStatus();
print("Size of receive queue: $rxQueue");
print("Size of transmit queue: $txQueue");
```

### 3.31 Purge

**Summary**

Purges receive and transmit buffers in the device.

**Definition**

Purge($mask)

**Parameters**

$mask

**Return Value**

Returns true if the operation has been successful, false otherwise.

**Example**

```perl
use constant{
    FT_PURGE_RX = 1,
    FT_PURGE_TX = 2
};

# Purge both RX and TX buffers...
my $success = $FTDIdevice->Purge(FT_PURGE_RX | FT_PURGE_TX);
if($success)
{
    # Operation successful.
}
```

### 3.32 SetChars

**Summary**

This function allows for the insertion of specified characters in the data stream to represent events firing or errors occurring.

**Definition**

SetChars($eventCh, $eventChEn, $errorCh, $errorChEn)

**Parameters**

$eventCh – the event character.
$eventChEn – 0 if event character disabled, non-zero otherwise.
$errorCh – the error character.
$errorChEn – 0 if error character disabled, non-zero otherwise.

Return Value
Returns true if the operation has been successful, false otherwise.

Example
my $success = $FTDIdevice->SetChars(0x12, 1, 0x14, 1);
if($success)
{
    # Operation successful.
}

### 3.33 Rescan

Summary
This function can be used to try to recover a device programmatically. This is the equivalent to clicking “Scan for hardware changes” within the device manager. All connected USB devices are scanned as well as FTDI devices.

Definition
Rescan()

Parameters
None

Return Value
Returns true if the operation has been successful, false otherwise.

Example
my $success = $FTDIdevice->Rescan();
if($success)
{
    # Operation successful.
}

### 3.34 Reload

Summary
This function forces a reload of the driver for the devices with a specific Vendor ID and Product ID as specified. If the VID and PID parameters are null, all USB devices connected will reload their drivers. Please note that this function will not work correctly on 64-bit Windows when called from a 32-bit application.

Definition
Reload($VID, $PID)

Parameters
$VID – vendor ID, the FTDI default is 0x0403.
$PID – product ID.

Return Value
Returns true if the operation has been successful, false otherwise.

Example
my $success = $FTDIdevice->Reload(0x0403, 0x6001); # Standard FT232R device.
if($success)
{
    # Operation successful.
}

### 3.35 StopInTask

**Summary**
This function is used to put the driver's IN task (read) into a wait state. It can be used in situations where data is being received continuously, so that the device can be purged without more data being received. It is used in conjunction with the `RestartInTask` function which gets the IN task running again.

**Definition**

```
StopInTask()
```

**Parameters**
None

**Return Value**
Returns true if the operation has been successful, false otherwise.

**Example**
```
my $success;

do {
    $success = $FTDIdevice->StopInTask();
} while (!$success)
    # Do something - for example purge device

do {
    $success = $FTDIdevice->RestartInTask();
} while (!$success)
```

### 3.36 RestartInTask

**Summary**
This function is used to restart the driver's IN task (read) after it has been stopped by a call to `StopInTask`.

**Definition**

```
RestartInTask()
```

**Parameters**
None

**Return Value**
Returns true if the operation has been successful, false otherwise.

**Example**
See `StopInTask` example.

### 3.37 SetLatencyTimer

**Summary**
Set the latency timer value. The timeout is programmable and can be set at 1 ms intervals between 2 ms and 255 ms. This allows the device to be better optimized for protocols requiring faster response
times from the short data packets. This function is not available for the FT8U232AM and FT8U245AM devices which have a hardcoded value of 16 ms.

Definition

SetLatencyTimer($timer)

Parameters

$timer – valid range 2 - 255

Return Value

Returns true if the operation has been successful, false otherwise.

Example

my $timer = 100;
my $success = $FTDIdevice->SetLatencyTimer($timer);
if($success)
{
    # Operation Successful.
}

3.38 GetLatencyTimer

Summary

Get the current value of the latency timer.

Definition

GetLatencyTimer()

Parameters

None

Return Value

Returns the latency timer value if successful, null otherwise.

Example

my $timer = $FTDIdevice->GetLatencyTimer();
if($timer)
{
    # Operation Successful.
}

3.39 GetBitMode

Summary

Get the instantaneous value of the data bus. Please refer to the D2XX Programmer’s Guide for a more detailed description of this function.

Definition

GetBitMode()

Parameters

None

Return Value

Returns the instantaneous value of the data bus if successful, null otherwise.

Example

my $mode = $FTDIdevice->GetBitMode();
3.40 SetBitMode

Summary
Get the current value of the latency timer. Please refer to the D2XX Programmer’s Guide for a more detailed description of this function.

Definition
SetBitMode($mode)

Parameters
$mode – see the D2XX Programmer’s Guide

Return Value
Returns true if the operation has been successful, false otherwise.

Example
my $mode = 1; # Asynchronous bit-bang mode.
my $success = $FTDIdevice->SetBitMode($mode);
if($success)
{
    # Operation successful.
}

3.41 SetUSBParameters

Summary
Set the USB request transfer size. This function can be used to change the transfer sizes from the default size of 4096 bytes to better suit the application requirements. Transfer sizes must be set to a multiple of 64 bytes between 64 bytes and 64 kbytes.

Definition
SetUSBParameters($inTransferSize, $outTransferSize);

Parameters
$inTransferSize
$outTransferSize

Return Value
Returns true if the operation has been successful, false otherwise.

Example
my $inTransferSize = 16384;
my $status = $FTDIdevice->SetUSBParameters($inTransferSize, 0);
if($status)
{
    # Operation Successful
}
4 Code Example

LoopBack

Below is a short example of a loopback test using the Perl D2XX wrapper. The program will list all the devices connected to the host and allow the user to specify which device to open. If a connection to a device has been established the program will attempt to send ‘Hello World!’ then listen for a loopback from the device. To run this application you will need an FTDI device will a loopback connection fitted. Paste the code into a text editor and save this as loopback.pl.

#================================================
#!/usr/bin/perl
# Demonstrate loopback test
#================================================

use strict;
use Win32::FTDI::FTD2XX;
use POSIX;

my $FTDIdevice = Win32::FTDI::FTD2XX->new(); # Create a new instance of the P5D2XX class

# List all the connected devices
print "Checking for connected devices...\n"
my $numDevices = $FTDIdevice->GetNumDevices();
if($numDevices)
{
    print "Found $numDevices device(s) connected to the host.\n"
    for(my $i = 0 ; $i < $numDevices ; $i++)
    { # Loop through each of the connected devices.
        my $devOpen = $FTDIdevice->OpenByIndex( $i );
        # Get device information for that device.
        my $devInfo = $FTDIdevice->GetDeviceInfo(1);
        if( $devInfo )
        {
            print "\n--------- Device $i--------\n"
            my $out = sprintf(" Type:\t\t%d (%s)\n ID:\t\tVID(%04X) PID(%04X)\n Serial:\t\t%s\n Descr:\t\t%s\n", $devInfo->{TypeID}, $devInfo->{TypeNm}, $devInfo->{VID}, $devInfo->{PID}, $devInfo->{Serial}, $devInfo->{Descr} );
            print "$out";
            print "=========================\n";
        } else
        {
            print "Didnt print data\n\n";
            return 0;
        }
    }
    my $devClose = $FTDIdevice->Close();
# Connect to one of the devices.
print "\n";

print "Connect to device number? ");
my $devNum = getchar(); # gets the value from the command line
print "\n";
print "Opening device...\n";
my $devOpen = $FTDIdevice->OpenByIndex($devNum);
if ($devOpen == 1)
{
    print "Connected!\n";
}

# Send some data to the device
print "Sending 'Hello World!' to the device\n";
my $writeBuffer = "Hello World!";
my $writeBuffer_p = pack("a*", $writeBuffer); # Creates a packed version of the buffer.
my $bytesWritten = $FTDIdevice->Write($writeBuffer_p);
# Check to see if all the data has been sent
if ($bytesWritten == length($writeBuffer))
{
    print "Sent all the data\n";
}
sleep(1);
# Check to see if there is any data to read
my $bytesAvail = $FTDIdevice->GetQueueStatus();
# Read any data from the chip
if ($bytesAvail)
{
    (my $bytesRead_p, my $readBuffer_p) = $FTDIdevice->Read($bytesAvail);
    my $readBuffer = unpack("a$bytesRead_p", $readBuffer_p);
    print "Read $bytesRead_p bytes from the device\n";
    print "Read $readBuffer back from the device\n";
    if ($writeBuffer == $readBuffer)
    {
        print "Successful!\n";
    }
    else
    {
        print "Failed, data did not match!";
    }
}
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Appendix A - References

Active State website:  http://www.activestate.com/activeperl/
CPAN website:  http://search.cpan.org/~skmacphe/
Download for nmake:
http://download.microsoft.com/download/vc15/Patch/1.52/W95/EN-US/Nmake15.exe
Appendix B - Revision History

Revision History

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<thead>
<tr>
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</tr>
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