Dewesoft C++ DLL to Trenz Electronic C# DLL

Introduction

How to write C# programs using the new DLL starting from the old DLL.

There are some major differences between the two DLLs.

feature	Dewesoft C++ DLL	Trenz Electronic C# DLL
programming language	C++	C#
architecture	standard (TE0300DLL.dll)	stacked (TE_USB_FX2_CyUSB.dll requires Cypress CyUSB.dll);
Handles	present	absent
structures	embedded	defined in Cypress CyAPI.h
parameters*	less	more
freedom*	less	more
buffer size	2 Kbyte (fixed)	4 Kbyte or more (it can be changed)

Feature of Dewesoft C++ DLL and Trenz Electronic C# DLL

Function translation

Dewesoft C++ DLL	Trenz Electronic C# DLL
HANDLE m_handle = 0;	CyUSBDevice TE_USB_FX2_USBDevice = null; USBDeviceList USBdevList = new USBDeviceList(CyConst.DEVICES_CYUSB); The handles are internally managed by CyUSB.dll and there is no need to expose them to the user. CyUSBDevice TE_USB_FX2_USBDevice take the place of handles for C# programmers.
cout << endl << TE0300_ScanCards() << endl;	int NumberOfCardAttached = TE_USB_FX2.TE_USB_FX2.TE_USB_FX2_ScanCards(ref USBdevList); Console.WriteLine(" {0} ", NumberOfCardAttached);

TE0300_Open (&m_handle, 0)!=0	TE_USB_FX2.TE_USB_FX2.TE_USB_FX2_Open (ref TE_USB_FX2_USBDevice, ref USBdevList, 0) == false **TE_USB_FX2_Open()** In the code, it is possible to call TE_USB_FX2_Open() where TE0300_Open() is used. **TE_USB_FX2_Open() as SelectCard()** TE_USB_FX2_Open(TE_USB_FX2_USBDevice, USBdevList, x) acts more as a SelectCard() function because the list of USB devices is already created in USBdevList. TE_USB_FX2_USBDevice is the selected device number x (0 in this case).
TE0300_Open (&m_handle, 1)!=0	TE_USB_FX2.TE_USB_FX2.TE_USB_FX2_Open (ref TE_USB_FX2_USBDevice, ref USBdevList, 1) == false
TE0300_Close (&m_handle);	TE_USB_FX2.TE_USB_FX2.TE_USB_FX2_Close (ref USBdevListToDispose); **In the code, it is not recommended to call TE_USB_FX2_Close() where TE0300_Close() is used.** This function **di ffers** from its homonym of the previous TE0300DLL.dll in that **it does not close a Handle but disposes (erases) all USB devices in the list USBdevList.** The reason of this behavior is due to the CyUSB.dll as explained by Cypress document CyUSB.NET.pdf, pages 132-133 and pages 139-140: "You should never invoke the Dispose() method of a USBDevice directly. Rather, the appropriate technique is to call the Dispose() method of the USBDeviceList object that contains the USBDevice objects".
TE0300_SendCommand (handle, cmd, cmd_length, reply, &reply_length, timeout)	TE_USB_FX2.TE_USB_FX2.TE_USB_FX2_SendCommand (ref TE_USB_FX2_USBDevice, ref cmd, ref cmd_length, ref reply, ref reply_length, TIMEOUT_MS)

Translation example between the DLLs

Dewesoft C++ DLL	Trenz Electronic C# DLL
void ResetFX2FifoStatus(HANDLE handle) {	static void ResetFX2FifoStatus (CyUSBDevice TE_USB_FX2_USBDevice) {

	if (TE_USB_FX2_USBDevice == null)
	{
	Console.WriteLine("Error,no device is selected");
	return;
	}

cout << endl << "Resetting all FIFOs" << endl;	Console.WriteLine("Resetting all FIFOs");

byte cmd[64], reply[64];
int cmd_length = 64;
int reply_length = 64;
	byte[] cmd = new byte[64];
	byte[] reply = new byte[64];
	int cmd_length = 64;
	int reply_length = 64;

	uint TIMEOUT_MS = 100;
cmd[0] = 0xA4; cmd[1] = 0;//RESET all FIFOs	cmd[0] = (byte)FX2_Commands.RESET_FIFO_STATUS; cmd[1] = 0; //RESET all FIFOs

if (TE0300_SendCommand (handle, cmd, cmd_length, reply, &reply_length, 1000)) cout << "Error" << endl;	if (TE_USB_FX2.TE_USB_FX2.TE_USB_FX2_SendCommand (ref TE_USB_FX2_USBDevice, ref cmd, ref cmd_length, ref reply, ref reply_length, TIMEOUT_MS) == false) Console.WriteLine("Error Send Command Reset all fifos");

cmd[0] = 0xA0;//command INITIALIZE
cmd[1] = 1;//FIFO mode
	cmd[0] = (byte)FX2_Commands.INITALIZE;
	cmd[1] = 1;//FIFO mode

if (TE0300_SendCommand
(handle, cmd, cmd_length, reply,
&reply_length, 1000))
cout << "Error" << endl;
}
	if (TE_USB_FX2.TE_USB_FX2.TE_USB_FX2_SendCommand
	(ref TE_USB_FX2_USBDevice, ref cmd, ref cmd_length, ref reply,
	ref reply_length, TIMEOUT_MS) == false)
	Console.WriteLine("Error Switch Mode Fifo Mode");
	}

Reset FX2 FIFO Status example

Dewesoft C++ DLL	Trenz Electronic C# DLL
void ReadData(unsigned int handle) {	static void ReadData (CyUSBDevice TE_USB_FX2_USBDevice, int BUFFER_SIZE, uint TIMEOUT_MS) {

	if (TE_USB_FX2_USBDevice == null)
	{
	Console.WriteLine("Error,no device is selected");
	return;
	}

int packetlen = RX_PACKET_LEN;
unsigned int packets = 1200;
byte * data;
data = new byte [RX_PACKET_LEN*packets];
unsigned int total_cnt = 0;
unsigned int errors = 0;
	int packetlen = RX_PACKET_LEN;
	int packets = 1200;
	byte[] data = new byte[packetlen*packets];
	byte[] buffer = new byte[packetlen];
	int total_cnt = 0;
	int errors = 0;

	int PI_EP6 = 6;
	bool bResultXfer = false;
	test_cnt = 0;
	total_cnt = 0;

ResetFX2FifoStatus(handle); //starts test SendFPGAcommand(handle, FX22MB_REG0_START_TX);	ResetFX2FifoStatus(TE_USB_FX2_USBDevice); //starts test SendFPGAcommand(ref TE_USB_FX2_USBDevice, MB_Commands.FX22MB_REG0_START_TX, TIMEOUT_MS);

//StopWatch start
ElapsedTime.Start();
	//StopWatch start
	Stopwatch stopWatch = new Stopwatch();
	stopWatch.Start();

for (unsigned int i = 0; i < packets; i++)
{
packetlen = RX_PACKET_LEN;
	for (int i = 0; i < packets; i++)
	{
	packetlen = RX_PACKET_LEN;

if (TE0300_GetData(handle, data+total_cnt,
&packetlen,
PI_EP6,TIMEOUT_MS))
{
	bResultXfer = TE_USB_FX2.TE_USB_FX2.TE_USB_FX2_GetData
	(ref TE_USB_FX2_USBDevice, ref buffer, ref packetlen,
	PI_EP6, TIMEOUT_MS,BUFFER_SIZE);
	
	Buffer.BlockCopy(buffer,0, data, total_cnt, packetlen);
	if (bResultXfer == false)
	{

cout << "Error Get Data" << endl;
errors++;
break;
}
total_cnt += packetlen;
}
//StopWatch timer
TheElapsedTime = ElapsedTime.Stop(false);
 	
//stops test
SendFPGAcommand(handle,FX22MB_REG0_STOP);
 	
delete data;
}
	Console.WriteLine("Error Get Data");
	errors++;
	break;
	}
	total_cnt += packetlen;
	}
	//StopWatch timer
	stopWatch.Stop();
	TimeSpan ts = stopWatch.Elapsed;
	//stops test
	SendFPGAcommand(ref TE_USB_FX2_USBDevice, MB_Commands.FX22MB_REG0_STOP, TIMEOUT_MS);
	//Garbage Collector
	}

Read data example

Dewesoft C++ DLL	Trenz Electronic C# DLL
void WriteData(unsigned int handle) {	static void WriteData (CyUSBDevice TE_USB_FX2_USBDevice, int BUFFER_SIZE, uint TIMEOUT_MS) {

	if (TE_USB_FX2_USBDevice == null)
	{
	Console.WriteLine("Error,no device is selected");
	return;
	}

int packetlen = TX_PACKET_LEN;
unsigned int packets = 1200;
byte * data;
data = new byte [TX_PACKET_LEN*packets];
unsigned int total_cnt = 0;
unsigned int errors = 0;
	int packetlen = TX_PACKET_LEN;
	int packets = 1200;
	byte[] data = new byte[packetlen*packets];
	byte[] buffer = new byte[packetlen];
	int total_cnt = 0;
	int errors = 0;

	int PI_EP8 = 8;
	bool bResultXfer = false;
	test_cnt = 0;
	total_cnt = 0;

ResetFX2FifoStatus(handle);
//starts test
SendFPGAcommand(handle, FX22MB_REG0_START_RX);
	ResetFX2FifoStatus(TE_USB_FX2_USBDevice);
	//starts test
	SendFPGAcommand(ref TE_USB_FX2_USBDevice, MB_Commands.FX22MB_REG0_START_RX, TIMEOUT_MS);

//StopWatch start
ElapsedTime.Start();
	//StopWatch start
	Stopwatch stopWatch = new Stopwatch();
	stopWatch.Start();

for (unsigned int i = 0; i < packets; i++)
{
packetlen = TX_PACKET_LEN;
	for (int i = 0; i < packets; i++)
	{
	packetlen = TX_PACKET_LEN;

if (TE0300_SetData(handle, data+total_cnt, &packetlen, PI_EP6,TIMEOUT_MS))
{
	Buffer.BlockCopy(data,total_cnt, buffer, 0, packetlen);
	
	bResultXfer = TE_USB_FX2.TE_USB_FX2.TE_USB_FX2_SetData (ref TE_USB_FX2_USBDevice, ref buffer, ref packetlen, PI_EP8, TIMEOUT_MS,BUFFER_SIZE);
	
	if (bResultXfer == false)
	{

```
        cout << "Error Set Data" << endl;
        errors++;
        break;
      }
      total_cnt += packetlen;
    }
    //StopWatch timer
   TheElapsedTime = ElapsedTime.Stop(false);

    //stops test
    SendFPGAcommand(handle,FX22MB_REG0_STOP);

    delete data;
}
```

```
        Console.WriteLine("Error Set Data");
        errors++;
        break;
      }
      total_cnt += packetlen;
    }
    //StopWatch timer
    stopWatch.Stop();
    TimeSpan ts = stopWatch.Elapsed;
     //stops test
     SendFPGAcommand(ref TE_USB_FX2_USBDevice,
MB_Commands.FX22MB_REG0_STOP, TIMEOUT_MS);
     //Garbage Collector
}
```

Write data example