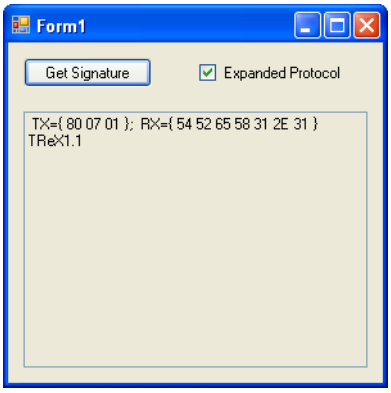
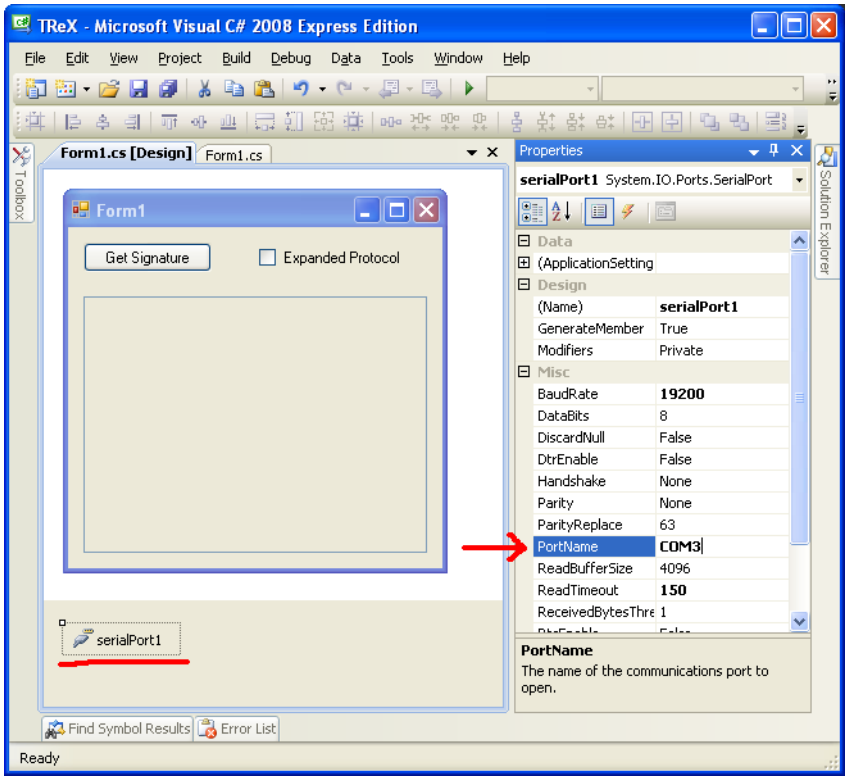
Sample C# Program for Communicating with the TReX and TReX Jr



The following program, written using Visual C# 2008, provides a simple example of how you can send and receive data from the **TReX** **[http://www.pololu.com/catalog/product/777]** or **TReX Jr** **[http://www.pololu.com/catalog/product/767]** using **Microsoft's visual C#** **[http://www.microsoft.com/express/vcsharp/]** and your computer's serial port. It sends the TReX a "get signature" command when the **Get Signature** button is pressed and displays the response from the TReX in the text box.

The `sendCommandPacket` method is a simplified version of the one used by the **TReX Configurator utility** **[http://www.pololu.com/file/download/TReXConfigurator.zip?file_id=0J58]** (297k zip).

You can download the project files here: **trex.zip** **[http://www.pololu.com/file/download/TReX.zip?file_id=0J186]** (60k zip). Don't forget to configure the `serialPort1` object's `portName` property for the COM port to which your TReX or TReX Jr is connected.



Sample C# TReX program: configuring the SerialPort object.

```
using System;
using System.Windows.Forms;

namespace TReX
{
    public partial class Form1 : Form
    {
        int deviceNum = 7;  // default device number for the TReX and TReX Jr
        bool serialEcho;    // does the TReX echo everything you transmit? (true for RS-232)
        byte[] buffer;     // array to hold our command packets and received data

        public Form1()
        {
            InitializeComponent();
            buffer = new byte[32];
        }

        private bool sendCommandPacket(byte[] packet, int sendBytes, int readBytes, ref string str)
        {
            /* This function transmits the specified command packet and then waits to receive
             * the specified number of bytes in response.  Bytes to transmit are provided via the
             * 'packet' array, and received bytes are stored in the 'packet' array.
             * It blocks execution until the desired number of bytes have been received from the
             * the TReX or until the serial read times out (150 ms).
             *   packet - an array of bytes to transmit to the TReX; when the function is through,
             *            this array will contain any bytes received from the TReX, so the size of
             *            this array must be greater than or equal to Max(sendBytes, readBytes)
             *   sendBytes - the number of bytes in the command packet
             *   readBytes - the number of bytes to try to receive from the TReX in response
             *   str - a string that contains information about what was sent and received;
             *         used for debugging/feedback purposes
             */

            int i;
            str = "";

            try
            {
```

```
            // if there are any unread bytes in the read buffer, they are junk
            //  read them now so the buffer is clear to receive anything the TReX
            //  might send back in response to the command
            while (serialPort1.BytesToRead > 0)
                serialPort1.ReadByte();

            str += " TX={ ";
            if (expandedProtocolCheckBox.Checked)
            {
                for (i = sendBytes - 1; i >= 0; i--)
                    packet[i + 2] = packet[i];
                packet[0] = 0x80;
                packet[1] = (byte)deviceNum;
                packet[2] -= 0x80;     // clear MSB of command byte
                sendBytes += 2;
            }

            for (i = 0; i < sendBytes; i++)
                str += packet[i].ToString("X2") + " ";
            serialPort1.Write(packet, 0, sendBytes);
            if (serialEcho)
            {
                str += "};  Echo={ ";
                for (i = 0; i < sendBytes; i++)
                    str += serialPort1.ReadByte().ToString("X2") + " ";
            }
            str += "};  RX={ ";
            for (i = 0; i < readBytes; i++)
            {
                packet[i] = (byte)serialPort1.ReadByte();
                str += packet[i].ToString("X2") + " ";
            }
            str += "}";
        }

        catch (Exception)
        {
            str += " *TIMEOUT*";
            return false;
        }

        return true;
    }

    private void signatureButton_Click(object sender, EventArgs e)
    {
        try
        {
            logTextBox.Text = "";
            serialPort1.Open();
            buffer[0] = 0xFF;
            serialPort1.Write(buffer, 0, 1);   // send the null command
            try
            {
                int data = serialPort1.ReadByte();   // look for an echo
                if (data == 255)
                    serialEcho = true;  // we get here if we are using RS-232
            }
            catch (TimeoutException)
            {
                serialEcho = false;     // we get here if we are using TTL serial
            }

            // read the device signature
            string str = "";
            buffer[0] = 0x81;
            if (!(sendCommandPacket(buffer, 1, 7, ref str)))
                logTextBox.Text += "failure\r\n" + str;
            else
            {
                logTextBox.Text += "" + str + "\r\n";
                for (int i = 0; i < 7; i++)
                    logTextBox.Text += (char)buffer[i];
            }
        }
        catch (Exception)
        {
```

```
                logTextBox.Text += "Exception!";
            }
            if (serialPort1.IsOpen)
                serialPort1.Close();
        }
    }
}
```