FEZ Mini Board

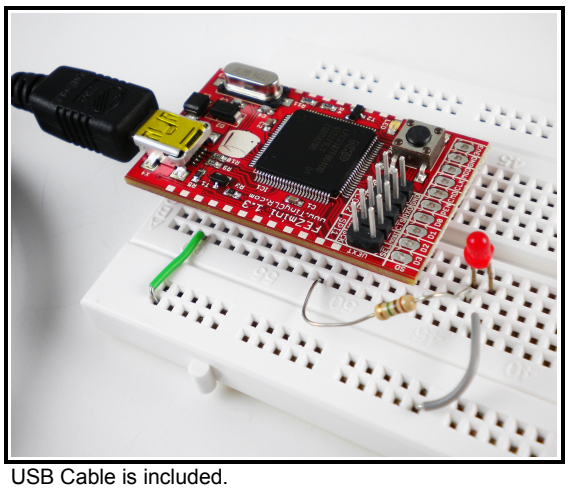
FEZ Mini is a small board running the Microsoft .NET Micro Framework. This means you can write code with greater efficiency using C# programming language and Microsoft's free Visual C# Express edition.

The pin-out is a standard 0.1" header allowing FEZ Mini to plug directly into a bread-board.

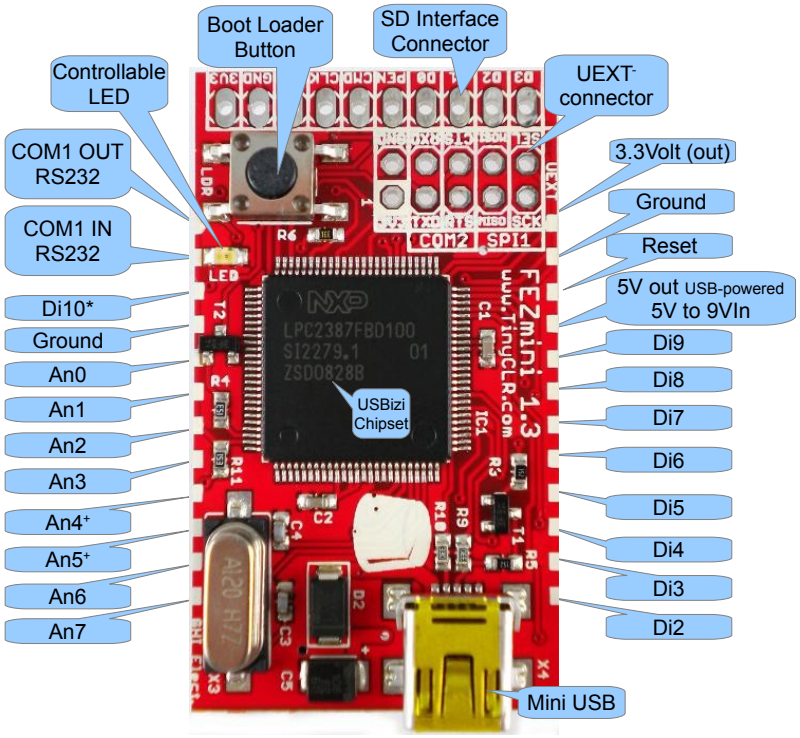
Many libraries come included, such as FAT file system, threading, UART, SPI, I2C, GPIO, PWM, ADC, DAC and more.

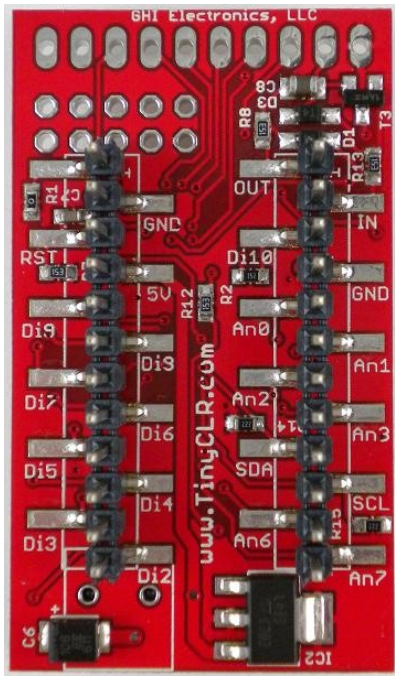
With our starter kit, robot kit and extensions/components, FEZ Mini is simple yet extremely flexible, making it one of the easiest devices to use in the embedded market. Developers, professionals, and hobbyists have the option of creating a multitude of designs using simple plug-in components.

To get started with FEZ, please take a look at the FEZ Tutorial and .NET Micro Micro Framework Beginners Guide available on www.tinyclr.com



USB Cable is included.





* Di10 has 1K resistor in series.
\+ An4 and An5 are open drain pins with 2.2K pull up resistors.
\+ An4 and An5 do not work as analog pins.
\- UEXT .1" header is not included.

FEZ Mini Pins Features

All pins on the the rear headers and UEXT can be used as digital input/output. Some pins have secondary features. Do not attempt to use a pin as digital and as secondary feature simultaneously. For example, when using Di5 as PWM, you cannot use Di5 as a digital I/O until you release the PWM feature (in code).

Pin	Secondary Features	Pin	Secondary Features
Di2*	CAN Channel 1 IN	An0*	Analog Input
Di3	PWM	An1*	Analog Input
Di4*	CAN Channel 1 OUT	An2*	Analog Input
Di5	PWM	An3*	Analog Input/ Analog Output
Di6	PWM	An4*	(Open Drain Pin) I2C SDA
Di7*	COM3 IN	An5*	(Open Drain Pin) I2C SCL
Di8*	COM3 OUT	An6	Analog Input
Di9*	PWM	An7	Analog Input
LED	Controls on-board LED/PWM	Di10	PWM

* These pins can work as interrupt inputs

Remapping COM4

An2 and An3 are special because they can be digital, analog, or remapped to work as COM4, where An2 is COM4 OUT and An3 is COM4 IN. Call the function below to remap COM4

```
// add this on top of your code
using GHIElectronics.NETMF.Hardware.LowLevel;
using System.IO.Ports;
//...
//...
// add this function anywhere
static public void RemapCOM4to_TXAn2_RXAn3(SerialPort ser)
 {
    // call this function **after** you open COM4 port
    if (ser.PortName != "COM4" || ser.IsOpen == false)
       throw new Exception("Only use COM4 and make sure it is open");
    // remap COM4 RX (in)  pin from P4.29/DIO17 to P0.26 (that is An3)
    // remap COM4 TX (out) pin from P4.28/DIO13 to P0.25 (that is An2)
    Register PINSEL9 = new Register(0xE002C024);
    PINSEL9.Write(0);// COM4 is now disconnected from P4.28 and P4.29
    Register PINSEL1 = new Register(0xE002C004);
    PINSEL1.SetBits(0xf << 18);// COM4 is now connected to An3 and An4
 }
```

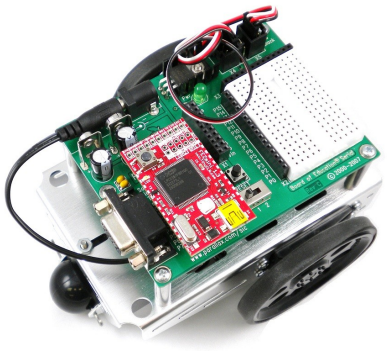
Once the code above is added, you can use COM4 on An2 and An3 as shown below.

```
public static void Main()
{
   SerialPort MyCOM4 = new SerialPort("COM4", 115200, Parity.None, 8, StopBits.One);
   //MyCOM4.ReadTimeout = 1000;
   MyCOM4.Open();
   RemapCOM4to_TXAn2_RXAn3(MyCOM4);
   byte[] helloBytes = Encoding.UTF8.GetBytes("Hello!");
   // write data to COM4 which will be sent out on pin An2
   MyCOM4.Write(helloBytes, 0, helloBytes.Length);
   // .............
   // .............
}
```

Powering FEZ Mini

The easiest way to power FEZ Mini is through the USB cable. When powered from USB, developers can use the 5V pin to supply power to other parts of the design. Alternatively, the same 5V pin can be used to power FEZ Mini.

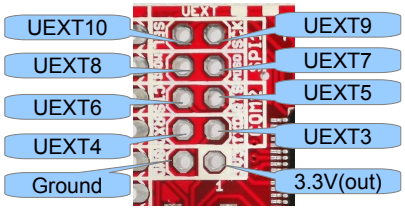
FEZ Mini and Basic Stamp 2 Compatibility



The similarities in form factor between FEZ Mini and Basic Stamp 2 (BS2) allows developers to use most of the available BS2 boards with FEZ Mini. The image to the right shows FEZ Mini mounted on Parallax Board of Education board used on the BOE-BOT.

In comparison, FEZ Mini has far more features, like USB device, threading, analog, PWM and more. With the ease of using Microsoft Visual C# Express and on-device debugging, FEZ Mini offers more capability.

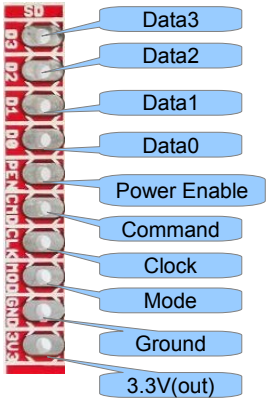
UEXT Connector (Requires Soldering)

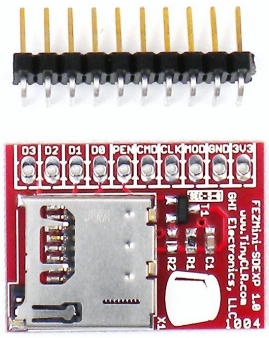


Pin	Secondary Features	Pin	Secondary Features
UEXT10*	None	UEXT9*	SPI1 SCK
UEXT8*	SPI1 MOSI	UEXT7*	SPI1 MISO
UEXT6*	COM2 CTS	UEXT5*	COM2 RTS
UEXT4*	COM2 RX(IN)	UEXT3*	COM2 TX(OUT)

* These pins can work as interrupt inputs

SD Interface Connector (Requires Soldering)





*Micro SD Card Expansion is not included with FEZ Mini.

This connector exposes the necessary signals to connect a SD or micro SD socket. FEZ Mini has the ability to access files on SD memory cards by attaching the Micro SD Card Expansion available on www.tinyclr.com.
Basic soldering experience is needed to attach the included pin header.

This image illustrates the correct orientation of the Micro SD Expansion on FEZ Mini.
You'll also notice that the UEXT header is added so we can benefit from other UEXT expansions like a MP3 decoder.