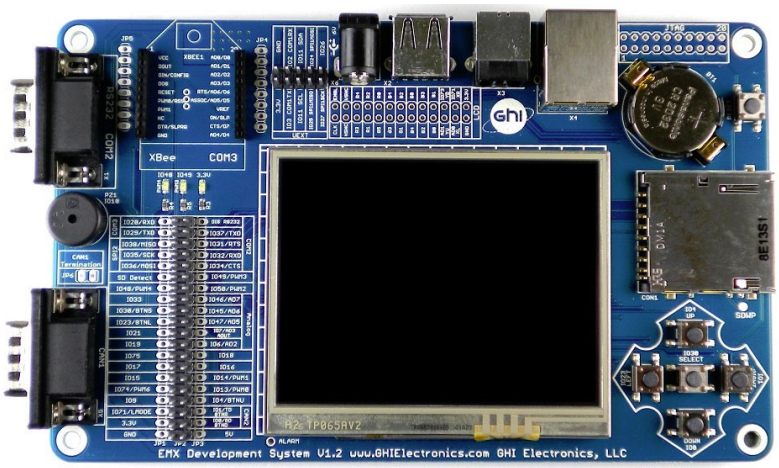
EMX™ Development System



The **EMX™ Development System** is the official kit from GHI Electronics for the EMX module. EMX offers high performance and provides extensive capabilities. This kit exposes the various peripherals and interfaces that make it an ideal starting point for any .NET Micro Framework project. Furthermore, most of EMX module signals such as GPIO, SPI and UART are accessible on a 0.1" header for rapid prototyping.

What is Microsoft .NET Micro Framework?

Microsoft's .NET Micro Framework extends the advantages of .NET and Visual Studio to a class of smaller, less expensive, and more resource-constrained devices than the .NET Compact Framework or the standard .NET framework.

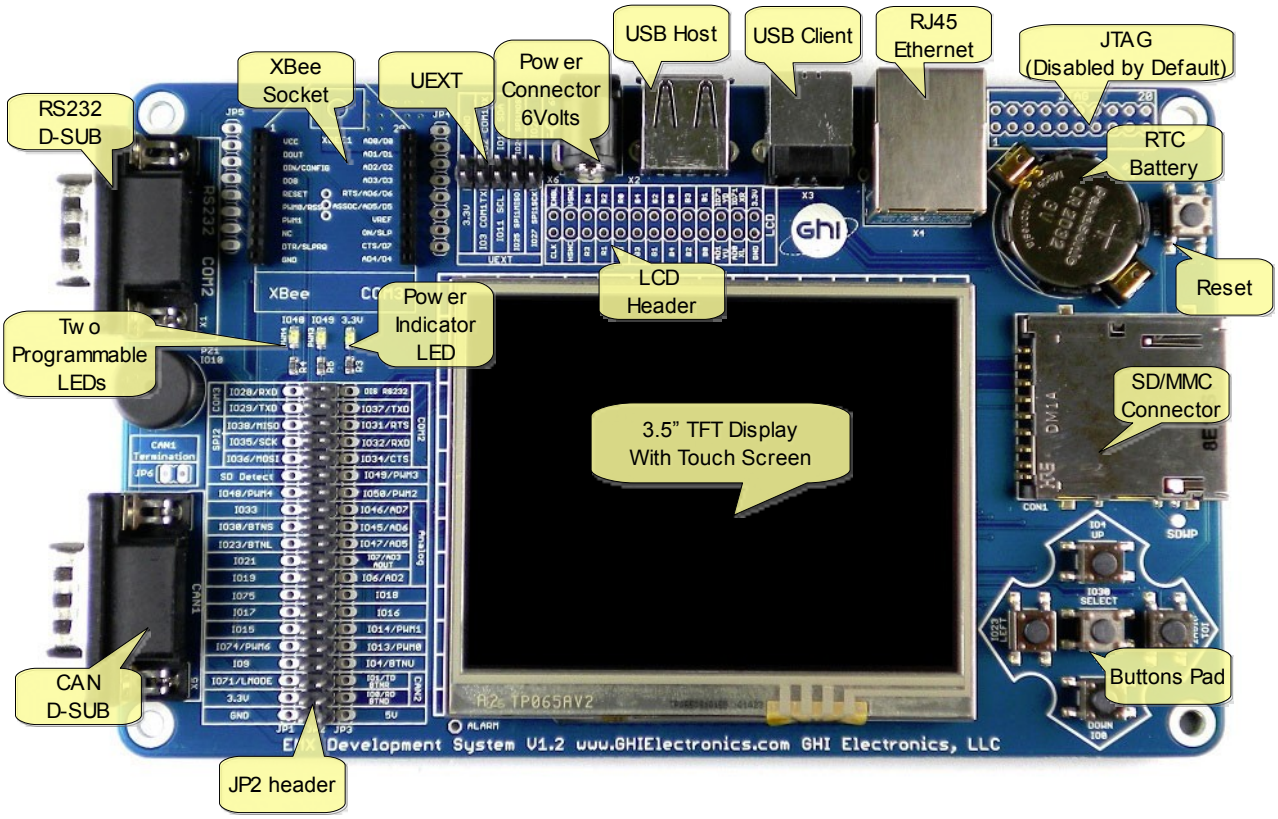
What is the EMX Module?

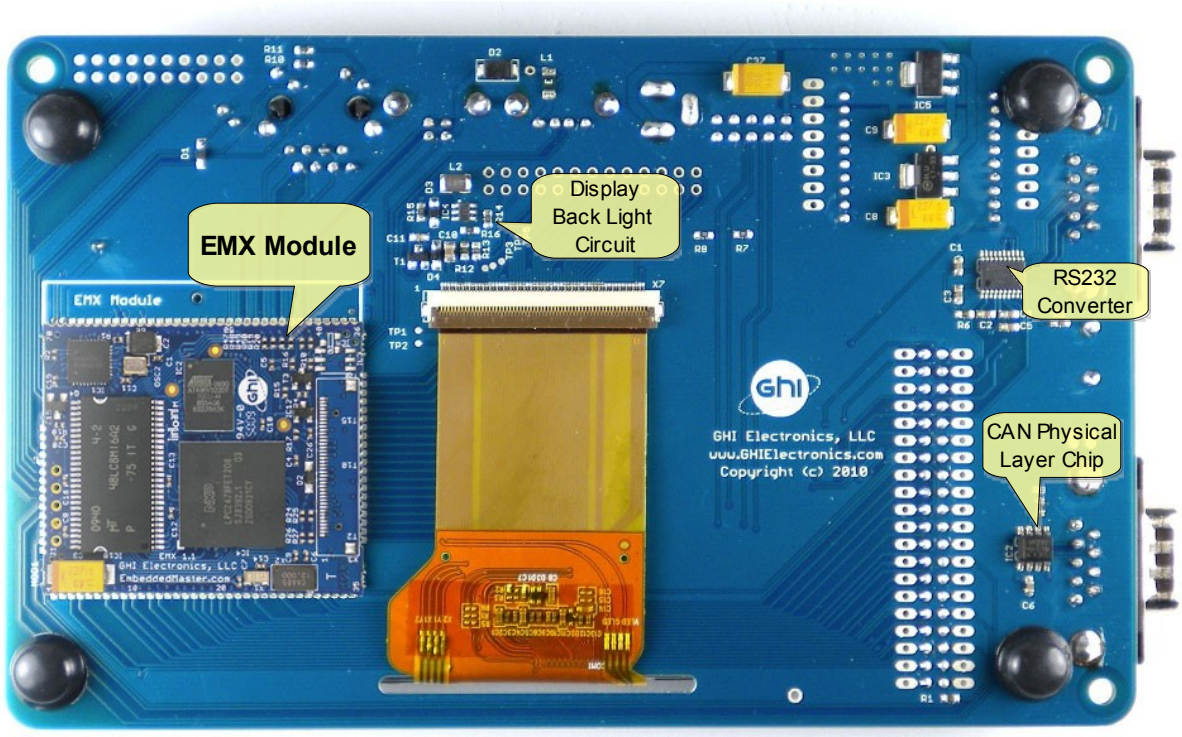
The EMX™ Module implements Microsoft's .NET Micro Framework on a very small (1.55"x1.8") OEM board. On top of the many benefits that .NET Micro Framework has, EMX™ adds many other exclusive software and hardware features such as USB host, and Runtime Loadable Procedure (allowing advanced users to run compiled C/assembly right in C# code). EMX supports WiFi through ZeroG ZG2100 modules. Refer to the EMX Module brochure for full features.

Key Features

- EMX Module with .NET Micro Framework
  - 72 MHz 32-bit ARM 7 Processor
  - 16MB RAM and 4.5MB FLASH
- 320 x 240 3.5" TFT Display with touch screen.
- RJ-45 Ethernet connector.
- GHI NETMF WiFi Expansion compatible.
- Standard JTAG connector (only available for GHI partners).
- TFT signals exposed.
- GPIO signals with interrupts exposed on 0.1" header pins with on-board pin descriptions.
- 2 SPI Master bus (8/16bit).
- I2C interface.
- 4 exposed UART (serial ports), one RS232 interface with hardware handshaking.
- 7 analog inputs (ADC), 2 are used with touch screen.
- 1 analog output (DAC).
- 2 CAN interfaces, CAN 1 is connected to CAN PHY with 9-DSUB interface.
- 6 PWM signals.
- One-wire interface support
- SD/MMC card connector with spring.
- USB Device port
- USB Host port
- XBee module socket.
- UEXT interface for easy expansions such as GPS, MP3 decoder or 3-axis accelerometer.
- Real Time Clock backup battery.
- LEDs and push buttons.
- On-board Piezo.
- Powered by USB or DC power (input 6 volts through 2.1mm power connector).
- RoHS Lead Free

Connectors and Pin-out





JP1 JP2 JP3

COM3	IO28/RXD(IN)	1	2	RS232 Transceiver Disable (disabled when set high)	COM2
	IO29/TXD(OUT)	3	4	IO37*/TXD(OUT)	
SPI2	IO38*/MISO	5	6	IO31*/RTS	
	IO35*/SCK	7	8	IO32*/RXD(IN)	
	IO36*/MOSI	9	10	IO34*/CTS	
SD Detect (from SD socket)		11	12	IO49/PWM3	
IO48*/PWM4		13	14	IO50/PWM2	
IO33*		15	16	IO46*/Analog Input7	Analog
IO30*/Select Button		17	18	IO45*/Analog Input6	
IO23*/Left Button		19	20	IO47/Analog Input5	
IO21*		21	22	IO7*/Analog Input3/Analog Output	
IO19*		23	24	IO6*/Analog Input2	
IO75		25	26	IO18*	
IO17*		27	28	IO16	
IO15		29	30	IO14/PWM1	
IO74/PWM5		31	32	IO13/PWM0	
IO9		33	34	IO4*/Up Button	
IO71/Loader Mode		35	36	IO1*/TD/Right Button	CAN2
3.3Volts OUT		37	38	IO0*/RD/Down Button	
Ground		39	40	5Volts OUT	

UEXT

3.3Volts OUT	1	2	Ground
IO3*/ COM1_TX	3	4	IO2*/ COM1_RX
IO11*/ I2C_SCL	5	6	IO12*/ I2C_SDA
IO25*/ SPI1_MISO	7	8	IO24*/ SPI1_MOSI
IO27*/ SPI1_SCK	9	10	IO26*

*** Interrupt capable input.**

JP5 and JP4 pins are connected directly to XBee socket pins. Consult EMX Development System schematic for more details about connections.

LCD

IO63*/ Enable	IO62*/ Vertical Sync	IO68*/Red4	IO66*/Red2	IO69*/Red0	IO55/Green4	IO53/Green2	IO51/Green0	IO59/Blue3	IO57/Blue1	IO73/ Touch Screen Y-Down	IO72/ Touch Screen X-Right	3.3Volts
2	4	6	8	10	12	14	16	18	20	22	24	26
1	3	5	7	9	11	13	15	17	19	21	23	25
IO61*/ Clock	IO64*/ Horizontal Sync	IO67*/Red3	IO65*/Red1	IO56/Green5	IO54/Green3	IO52/Green1	IO60/Blue4	IO58/Blue2	IO70*/Blue0	Analog Input1/ Touch Screen Y-Up	Analog Input0/ Touch Screen X-Left	Ground

LEDs

LED name	LED1	LED2	3.3V
Connection	IO48	IO49	3.3 Volt supply

Push Buttons

Button name	UP	DOWN	LEFT	RIGHT	SELECT	RESET
Connection	IO4	IO0	IO23	IO1	IO30	System Hard Reset

EMX Development System Kit Includes:

- EMX Development System Main Board
- EMX Module
- 3.5" TFT Display with Touch Screen
- RTC Battery
- USB Cable

Important Note1: WiFi-Expansion is not included with the kit.

http://www.ghielectronics.com/product/126

Important Note2: XBee module is not included with the kit.

XBee modules are available from Digi:

http://www.digi.com/products/embeddedsolutions/zigbeesolutions

For more information:

Related Documents

EMX Module Brochure and Pin out

EMX User Manual

Websites

http://www.ghielectronics.com

Customer Technical Support

http://www.ghielectronics.com/forum

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