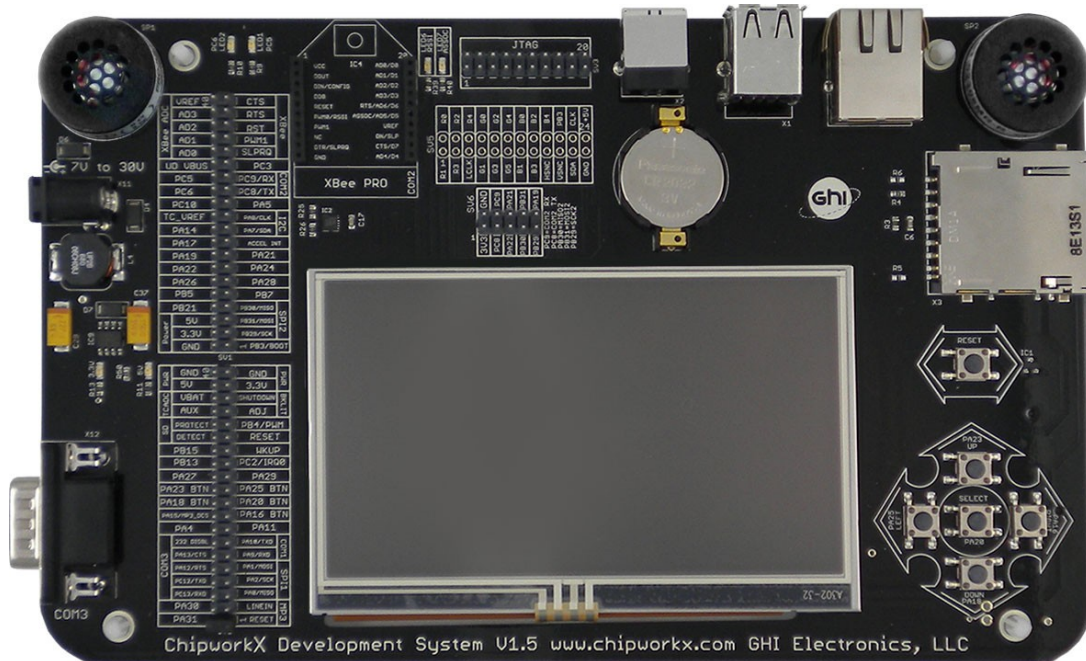


ChipworkX™ Development System



ChipworkX™ Development System is the official kit from GHI Electronics for the ChipworkX™ module. ChipworkX™ 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 ChipworkX™ module signals such as GPIO, SPI and UART are accessible on a 0.1" header for rapid prototyping.

What is .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.

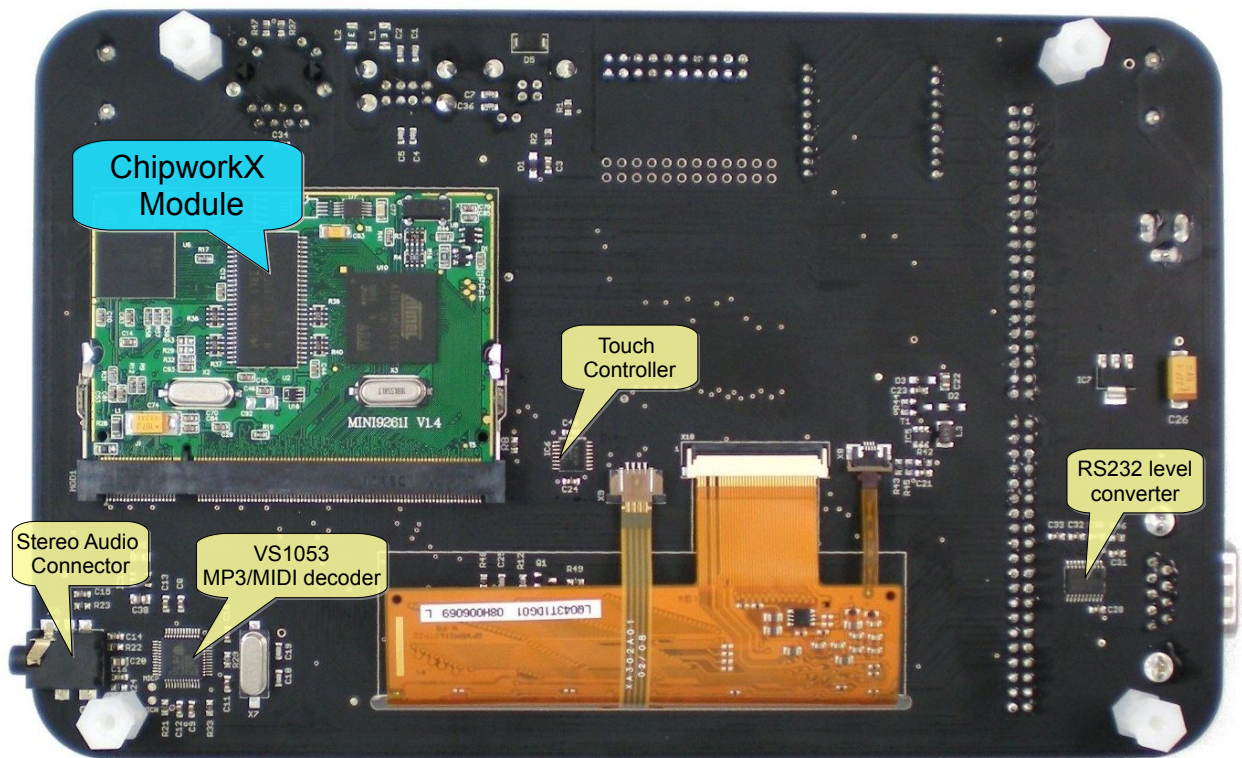
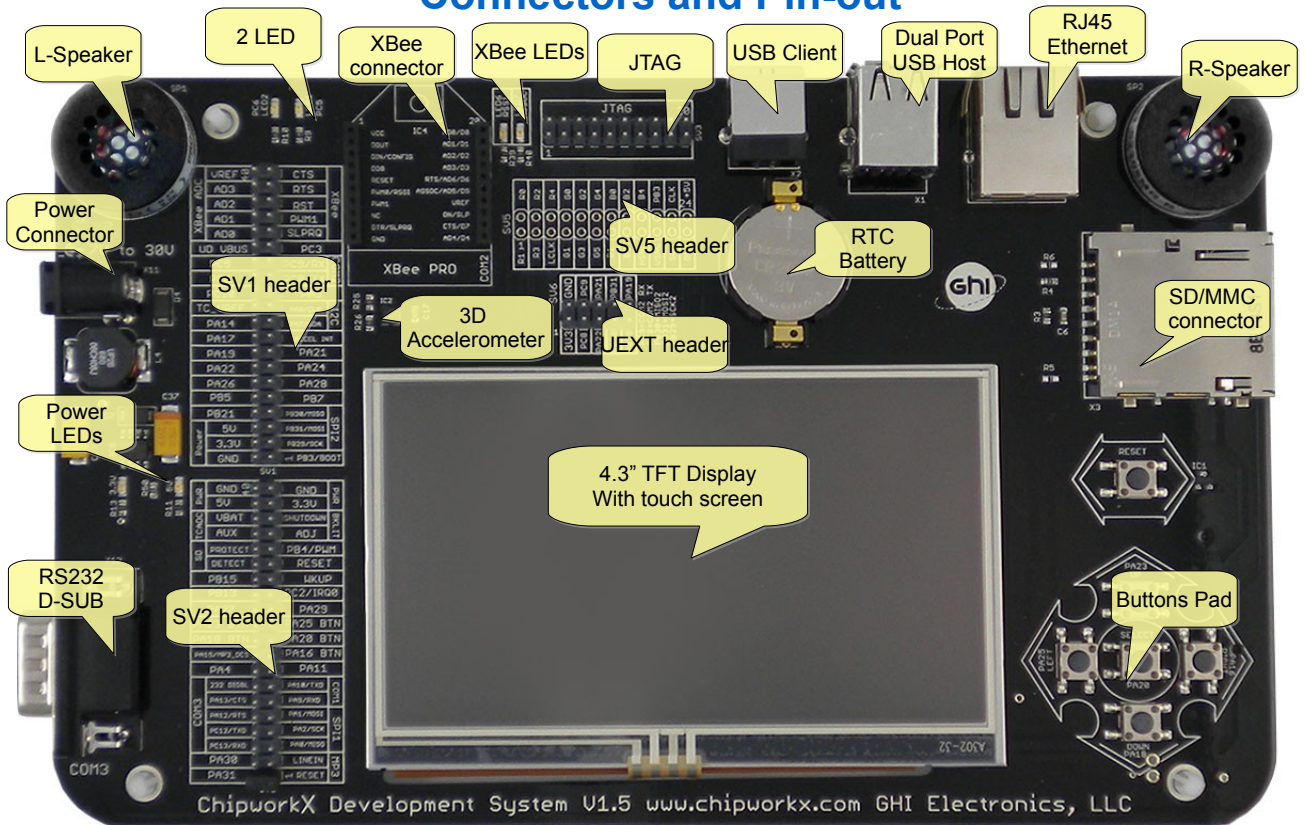
What is ChipworkX Module?

ChipworkX™ implements Microsoft .NET Micro Framework on a small (67.6mm x47mm) OEM board with SO-DIMM200 slot running very high performance ARM9 processor. On top of the many benefits that .NET Micro Framework has, ChipworkX™ adds many other exclusive software and hardware features such as USB host, SQLite database, and Runtime Loadable Procedure (allowing advanced users to run compiled C/assembly right in C# code). ChipworkX™ supports WiFi through ZeroG ZG2100 modules. Refer to the ChipworkX™ Module brochure for full features.

Key Features

- ChipworkX™ Module with .NET Micro Framework:
 - 200 MHz 32-bit ARM 9 Processor
 - 64MB RAM and 8MB FLASH
 - 256MB Internal Flash with File System.
- 480x272 4.3" TFT Display with touch screen.
- GHI NETMF WiFi Expansion compatible.
- RJ-45 Ethernet connector
- Standard JTAG connector
- TFT signals exposed
- GPIO signals with interrupts exposed on 0.1" header pins
- 2 SPI (8/16bit)
- I2C
- 3 UART (serial ports), one RS232 interface with hardware handshaking.
- 1 PWM
- One-wire interface support
- SD/MMC card connector with spring.
- USB Device port
- Dual USB Host ports
- Xbee module connector
- 3D-axis Accelerometer chip BMA020
- MP3\MIDI decoder chip VS1053
- UEXT interface for easy expansions from Olimex such as GPS and RFID Reader.
- Touch screen controller with 2 ADC ports
- Real Time Clock backup battery.
- LEDs and push buttons
- Can be power through USB or 7~30 volt DC power.
- DC power input 7~ 30 volts
- RoHS Lead Free

Connectors and Pin-out



SV1

XBee ADC	VREF	40	39	CTS	XBee
	AD3	38	37	RTS	
	AD2	36	35	RST	
	AD1	34	33	PWM1	
	AD0	32	31	SLPRQ	
UD VBUS		30	29	PC3	COM2
PC5		28	27	PC9/RX	
PC6		26	25	PC8/TX	
PC10		24	23	PA5	I2C
PA6/SDCard_CS		22	21	PA8/CLK	
PA14		20	19	PA7/SDA	
PA17		18	17	Accelerometer Interrupt	SPI2
PA19		16	15	PA21	
PA22		14	13	PA24	
PA26		12	11	PA28	SPI1
PB5		10	9	PB7	
PB21		8	7	PB30/MISO	
Power	5Volts	6	5	PB31/MOSI	MP3
	3.3Volts	4	3	PB29/SCK	
	Ground	2	1	PB3/BOOT	

SV2

PWR	Ground	40	39	Ground	PWR
	5Volts	38	37	3.3Volts	
Touch Controller ADC	VBAT	36	35	shutdown	Back Light
	AUX	34	33	ADJ	
SD	Protect	32	31	PB4/PWM	COM1
	Detect	30	29	RESET	
PB15		28	27	Wake Up	SPI1
PB13		26	25	PC2/IRQ0	
PA27		24	23	PA29	MP3
PA23		22	21	PA25	
PA18		20	19	PA20	
PA15/MP3_DCS		18	17	PA16	COM3
PA4		16	15	PA11	
RS232 Disable		14	13	PA10/TXD	
PA13/CTS		12	11	PA9/RXD	SPI1
PA12/RTS		10	9	PA1/MOSI	
PC12/TXD		8	7	PA2/SCK	
PC13/RXD		6	5	PA0/MISO	MP3
PA30		4	3	Line In	
PA31		2	1	Reset	

SV5

Red0	Red2	Red4	Green0	Green2	Green4	Blue0	Blue2	Blue4	PB3	CLK	5Volts
2	4	6	8	10	12	14	16	18	20	22	24
1	3	5	7	9	11	13	15	17	19	21	23
Red1	Red3	LCD Clock	Green1	Green3	Green5	Blue1	Blue3	H-Sync	V-Sync	SDA	Ground

SV6 (on hardware version 1.5)

3.3 Volts (Out)	1	2	Ground
PC8/COM2_TX	3	4	PC9/COM2_RX
PA22	5	6	PA21
PB30/SPI2_MISO	7	8	PB31/SPI2_MOSI
PB29/SPI2_SCK	9	10	PA19

LEDs

LED name	LED1	LED2	LED6	LED7	3.3V	5V
Connection	PC6	PC5	XBee RSSI	XBee ASSOC	3.3 Volt supply	5 volt supply

Push Buttons

Button name	UP	DOWN	LEFT	RIGHT	SELECT	RESET
Connection	PA23	PA18	PA25	PA16	PA20	System Hard Reset

TFT Display Back Light control: By default, back light is set to maximum illumination and it can be adjusted through PWM signal by closing a jumper between pin SV2-31(PB4/PWM) and pin SV2-33 (ADJ).

Touch Screen Controller with ADC: TSC2046 touch controller chip with 2 analog inputs is used to access touch screen. It is controlled through SPI1. User can utilize the two analog inputs of TSC2046 (VBAT and AUX) as Analog to Digital converters which are exposed on SV2 header. More analog inputs are also available when adding XBee module.

ChipworkX™ Development System Kit Includes:

- ChipworkX™ Development System Main Board.
- ChipworkX™ Module.
- 4.3" TFT Display with Touch Screen.
- RTC Battery.
- USB Cable.

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

[WiFi RS21 Module with UEXT Connector](#)

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

XBee modules are available from Digi:

<http://www.digi.com/products/embeddedolutions/zigbeesolutions/>

For more information:

Related Document

[ChipworkX™ Module Brochure and Pin out](#)

[ChipworkX™ User Manual](#)

Weblinks

MP3/Mini Decoder chip:

<http://www.vlsi.fi/en/products/vs1053.html>

Customer Technical Support

<http://www.ghielectronics.com/support>



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