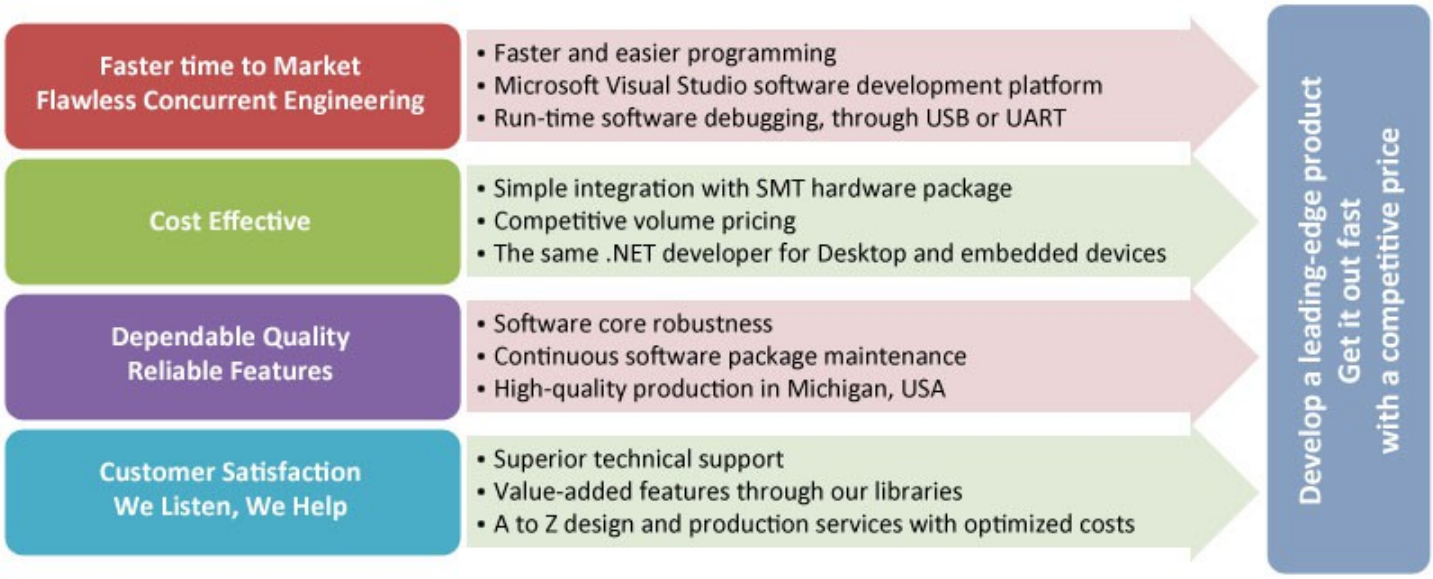
G120 Module Specifications

G120 Module is a surface-mount System on Module (SoM) that runs .NET Micro Framework software platform; a tiny version of Microsoft .NET framework. The value of G120 Module is not only in the hardware capabilities such as the Cortex-M3 processor, memory and peripherals, but also is in the integration between the hardware and the embedded software. This provides high level features such as FAT file system, TCP/IP stack, Graphics and Threading through .NET APIs. Furthermore, the embedded software includes GHI Electronics' extensions such as WiFi, USB Host, SQLite, PPP, and In-Field Update. All are provided royalty-free with the G120 Module.

Benefits



Key Features

NXP LPC17xx Cortex-M3 120MHz Processor
16Mbytes of RAM
4.5Mbytes of Flash
Embedded LCD Controller
USB Host/Device with drivers
4-bit SD card interface

Plenty of essential peripherals such as GPIO, SPI, UART, I2C, CAN, ADC, DAC and PWM.
High level features such as file system, networking (Ethernet & WiFi), PPP, SQLite database, and Graphics.
Low profile SMT SoM
Supports Visual C# and Visual Basic programming languages

Applications

- Graphical Human Machine Interface
- Data Logger
- Hand held testers
- Internet of things applications
- Networked alarm systems
- Automation applications
- Controllers, Robotics

Specifications	
Package	SMT Module 91 pins
Dimensions WxLxH mm	26.67 x 38.1 x TBA
Processor	120MHz 32-bit ARM Cortex-M3
FLASH Available/Free	4.5MB/3.5MB
RAM Available/Free	16MB/14MB
Color TFT Display Controller	Available
Graphics (font/controls)	Complete
Image Decoder	BMP, GIF, JPG
Native Networking Support	Ethernet/WiFi with SSL
Programmable IOs	72
PWM	12
Analog Input	8
Analog Output	1
UART (COM)	5
SPI	3
I2C	Available
CAN	2
One-wire	Supported on all IOs
USB Host	HID, Mass Storage, CDC, Webcam, Raw
USB Client	HID, Mass Storage, CDC, Raw
4bit SDHC/SD/MMC	Supported
Real Time Clock	Available
Piracy Protection	Available
In-Field Update	Available
Operating Temperature	-40° to +85°
Lead Free	Yes
RoHS Compliant	Yes
Load native C/assembly	Runtime Loadable Procedures

G120 Module Specifications

	PWM2	PWM9	LCD Red1	RXD5	LCD Red2	LCD CLK	PWM11	LCD Red0	LCD Blue0	LCD Blue2	Ground	TXD5	LCD Blue3	LCD Blue1	LCD Green5	LCD Green0	LCD Green4	LCD Green3	COM3 OE
		VSync		Red4			HSync					Blue4							
	P1_5	P2_3	P2_6	P2_9	P2_7	P2_2	P2_5	P2_12	P2_13	P1_27		P1_29	P1_28	P1_26	P1_25	P1_20	P1_24	P1_23	P1_19
	91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73

Ground			01
VCC 3.3V			02
PWM10	LCD Enable	P2_4	03
LCD Red3		P2_8	04
CAN1 RD		P0_0	05
COM3 TXD		P0_10	06
ENT1#		P2_11	07
LDR0		P2_10	08
COM3 RXD		P0_11	09
CAN1 TD		P0_1	10
SPI1 MOSI		P0_18	11
COM2 RXD		P0_16	12
SPI1 SCK		P0_15	13
LDR1		P0_22	14
COM2 CTS	SPI1 MISO	P0_17	15
MODE (USB/COM1#)		P2_1	16
COM2 RTS/OE		P0_6	17
COM2 TXD		P2_0	18
SPI2 SCK			19
SPI2 MISO			20
SPI2 MOSI			21
SD D3		P1_12	22
PWM5	SD D2	P1_11	23
PWM4	SD D1	P1_7	24
PWM0	SD CLK	P1_2	25
PWM3	SD D0	P1_6	26
Ground			27

72	P1_21	LCD Green1	
71	P1_22	LCD Green2	
70	P2_21		
69	USB Host D+		
68	USB Host D-		
67	USB Client D-		
66	USB Client D+		
65	P3_24	PWM6	
64	P3_25	PWM7	
63	P0_27	I2C SDA*	
62	P1_31	AD5	
61	P0_28	I2C SCL*	
60	RTC VBAT		
59	**P1_30	AD4	COM4 OE
58	RTC Crystal 2		
57	RTC Crystal 1		
56	P0_12	AD6	
55	P0_13	AD7	
54	P3_26	PWM8	
53	Reset#		
52	P0_23	AD0	
51	P0_25	AD2	
50	P0_24	AD1	
49	P0_26	AD3/AOUT0	
48	P0_2	COM1 TXD	
47	P0_3	COM1 RXD	
46	VCC 3.3V		

	P1_3	P0_5	P0_4	P4_28	P4_29	P1_14	P1_17	P1_16	P1_15	P1_9	P1_10	P1_4	P1_8	P1_1	P1_0	SWD CLK (inaccessible)	SWD IO (inaccessible)	Ground		
	SD CMD	CAN2 TD	CAN2 RD	COM4 TXD	COM4 RXD							SPI3 MISO		SPI3 MOSI	SPI3 SCK					
	PWM1																			
	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45		

LDR0	LDR1	BOOT ACCESS
X	High	Firmware
High	Low	TinyBooter
Low	Low	GHI Bootloader

* Open drain ports

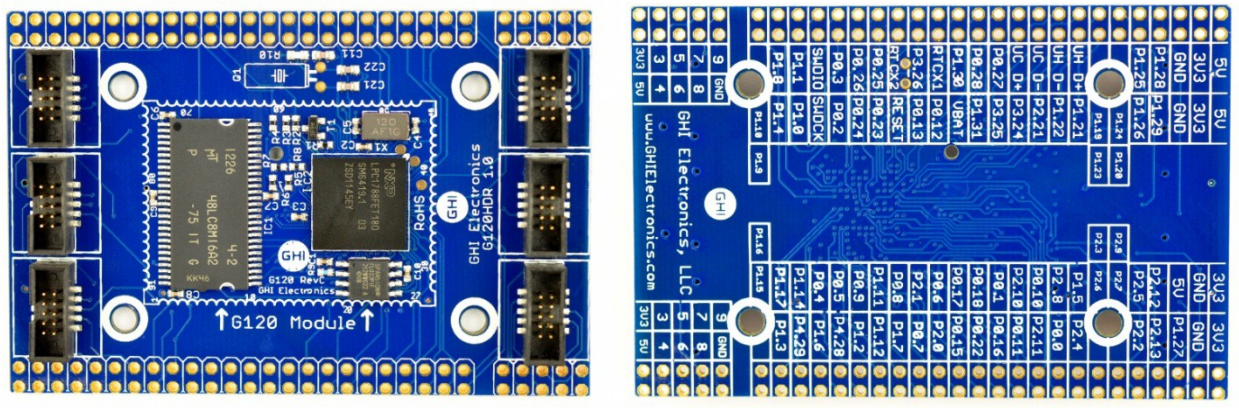
** Pin 59 P1_30 AD4/COM4 OE must NOT be grounded on power-up for GHI Bootloader to function correctly.

GPIOs **P0_x** and **P2_x** are Interrupt Capable.

All pins are 5V tolerant.

G120HDR Module

For convenience, the G120 module is offered in a through-hole version. All signals are exposed on header placements, including display signals. The module only needs 3.3V to operate.



The module also brings the display signals and USB Client to .NET Gadgeteer sockets. This provides an easy way to add one of the Gadgeteer displays and also makes an easy way to add power supply and USB connector through one of the USB client power modules.

For additional flexibility, two .NET Gadgeteer sockets are exposed to pads allowing developers to wire these sockets to any signal which in turn allow the use of one or more .NET Gadgeteer modules. While the G120HDR module was designed as an evaluation tool for the G120 System-On-Module it is not recommended for users inexperienced with .NET Micro Framework; the GHI Electronics's “FEZ” line of .NET Gadgeteer mainboards is recommended for learning .NET Gadgeteer and .NET Micro Framework.

Mouser Electronics

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120H2-SM-431 G120D-SM-533