

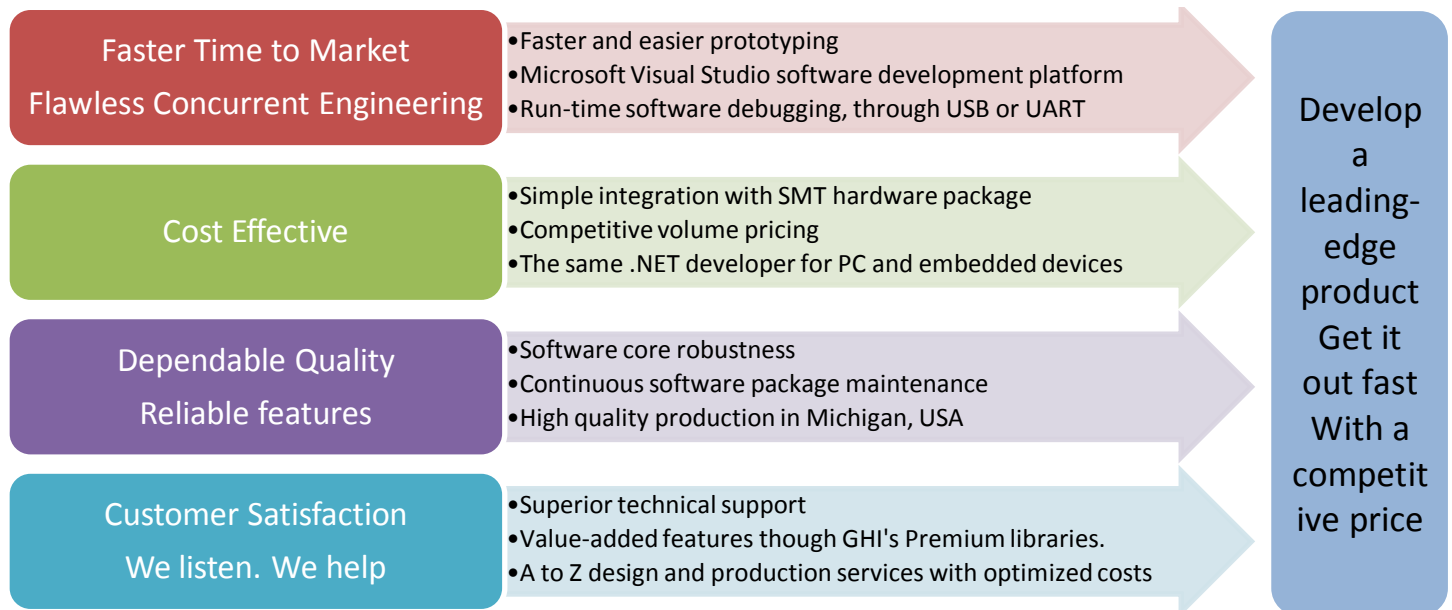
G120 Module



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 to the developer through .NET APIs. Furthermore, the embedded software includes GHI Electronics' [Premium .NET Micro Framework Libraries](#) that adds support to important features such as WiFi, USB Host, PPP, SQLite, and In-Field Update. All are provided royalty-free with 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

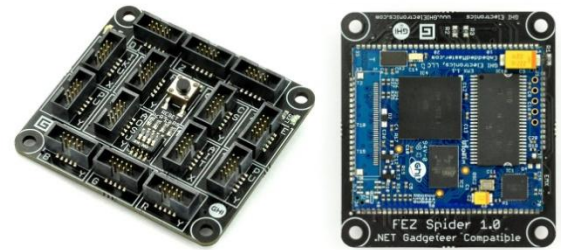
Specifications

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/PPP 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
Extended Library	Premium Library
Load native C/assembly	Runtime Loadable Procedures
Power Consumption	TBD
Sleep/Hibernate	TBD/TBD

Getting Starter Tools

GHI Electronics' FEZ (Fast and Easy) product line offers a wide variety of open-source products that use GHI's Premium SoMs.

[FEZ products](#) are an excellent starting point to evaluate any of GHI's SoMs. FEZ provides a wide variety of Mainboards and peripherals in a standard modular platform that help accelerate your next product's design process, such as WiFi, Ethernet, Motor Drivers, MEMS modules and sensors.



Main Board (with SoM)



WiFi Module



7" Display with Multi-touch Capacitive Screen

G120 Module

Pin-out



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

PWM2	P1_5
VSync PWM9	P2_3
LCD Red1	P2_6
Red4 RXD5	P2_9
LCD Red2	P2_7
LCD CLK	P2_2
HSync PWM11	P2_5
LCD Red0	P2_12
LCD Blue0	P2_13
LCD Blue2	P1_27
Ground	
Blue4 TXD5	P1_29
LCD Blue3	P1_28
LCD Blue1	P1_26
LCD Green5	P1_25
LCD Green0	P1_20
LCD Green4	P1_24
LCD Green3	P1_23
COM3 OE	P1_19



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

* Open drain ports

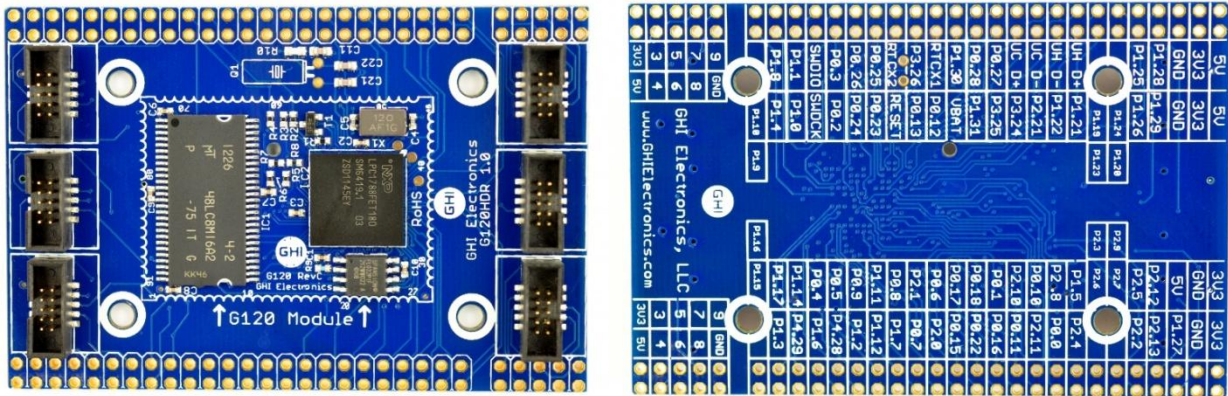
LDR0 LDR1 Boot Access
 X High Firmware
 High Low Tinybooter
 Low Low GHI Bootloader

28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
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			

GPIOs P0_x and P2_x are
Interrupt Capable.
All pins are 5 volt tolerant.

G120HDR Module

For convenience, 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 for the ever expanding list of .NET Gadgeteer modules.