



GS2000 Based Module Software Development Kit

PRODUCT OVERVIEW

The GainSpan® Software Development Kit (SDK) enables firmware engineers to extend networking software provided by GainSpan or develop embedded applications for the GS2000® based modules.

This SDK contains a development board with GS2000 based modules, embedded software (source/binary code), configuration management system, firmware update system, networking software, RTOS, device drivers, an integrated development environment (IDE), and JTAG hardware.

With the basic SDK, software development teams have access to source code for the GainSpan embedded software and can design & run highly customized hostless or Serial to Wi-Fi applications for the GS2000 based modules. Software engineers can use and modify sample applications as a baseline for new ones.

DEVELOPMENT BOARD

GainSpan development board contains the GS2000 based modules, Wi-Fi subsystem and connectors to integrate with a host MCU board or with board-level components like sensors. It enables engineering teams to start software development against functional HW prior to the availability of custom boards.

Connections:

- Mini-USB (2) for terminal program, MCU connection (via UART) with AT command set and/or debug output
- Secure Digital Input Output (SDIO)
- Serial Peripheral Interface (SPI)
- JTAG connector for single-step debugging of embedded firmware and custom device drivers
- Header for daughter board connection for alternate MUX function capabilities
- Headers for access to GS2000 module pins

Buttons:

- Restores SDK to factory default settings
- Resets firmware on the CPU to simulate external reset signal
- Alarm button(s) to simulate external wake-up signals

Switches:

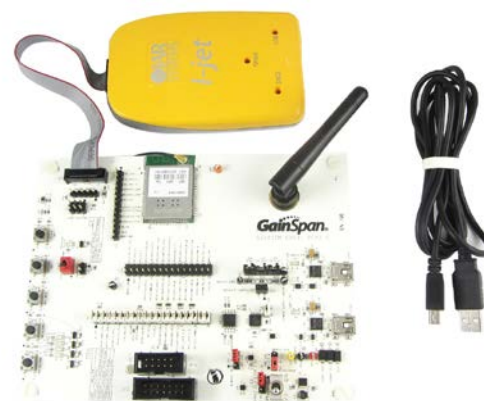
- Flash programming
- SPI/UART select
- JTAG enable/disable

LEDs:

- Program Flash
- GPIO
- Dedicated power indicator

Sensors:

- Temperature and Light sensors (TLS)

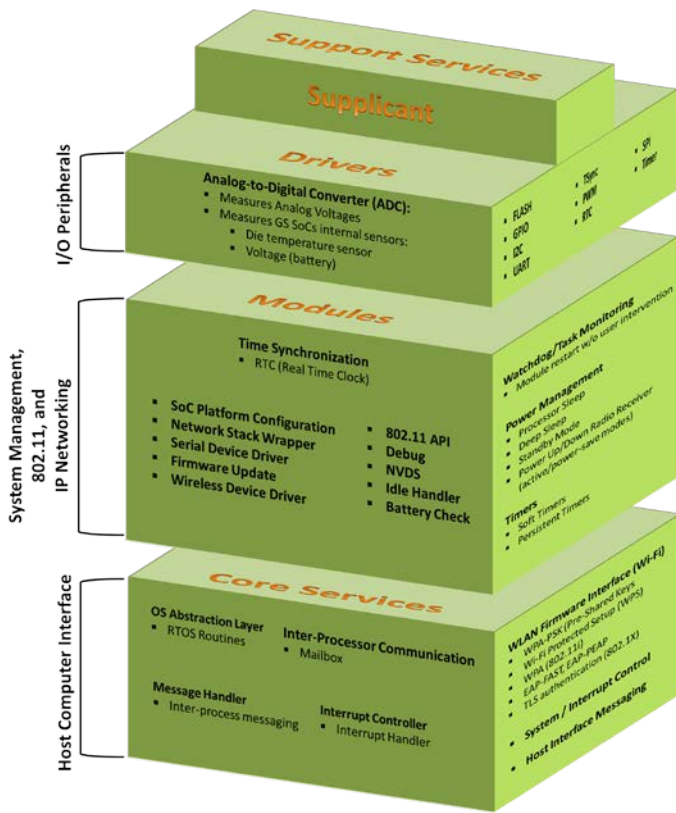


BENEFITS

- Reduces development, testing and certification times, accelerating time to market for embedded application for the GS2000 based modules
- Scalable code-size of embedded software
- Easy smartphone provisioning with Limited AP or Wi-Fi (WPS)
- Graphical interface for Web and Mobile (iOS and Android)
- Over-the-Air Firmware update
- Ultra low power consumption through dynamic power management modes: Standby, Sleep, Deep Sleep

FEATURES

- Source code and binary
 - Serial-to-Wi-Fi interface, TLS applications
 - Configuration web pages
- Source and binary to HTTP server/client, networking software and RTOS
- Complete Wi-Fi & networking services software
- Wi-Fi Security: WPA2, WPA/2-PSK, WPA, WEP
- IDE and JTAG debugging



GAINSPAN EMBEDDED SOFTWARE

GainSpan Embedded Platform Software (GEPS) is networking software that abstracts the HW and provides network services for customer's embedded application. With GEPS, manufacturers can focus development on their value-add application by using comprehensive APIs provided by GEPS. GEPS runs on the RTOS on ARM Cortex M3 networking services core on the GS2000 SoC.

Wi-Fi Firmware executes on the ARM Cortex M3 Wi-Fi core as a Wi-Fi off-load engine that includes Wi-Fi security protocols, Wi-Fi Protected Setup and the 802.11b/g/n MAC/PHY.

SAMPLE EMBEDDED APPLICATIONS

The SDK includes source code and binaries of sample embedded applications.

- Serial-to-Wi-Fi interface software
- Temperature and Light Sensor (TLS)

CONFIGURATION MANAGEMENT

The SDK contains a reference PC application and embedded software that enable OEMs to have a baseline configuration management system. The system is based on SNMP which enables end-users to view and configure:

- IP and Mac addresses
- Wi-Fi device client configuration: Security (WEP, WPA, WPA2)
- Scan list of access points
- Power management with mode selection
- SNMP IP address of management application
- Error logging (read only)

FIRMWARE PROVISIONING

The SDK contains a reference PC application and embedded software that enable OEMs to have a baseline firmware provisioning system. End-users can update (wirelessly or wired) the following:

- Application firmware, middleware and RTOS
- Wi-Fi Firmware

RTOS AND NETWORK STACK

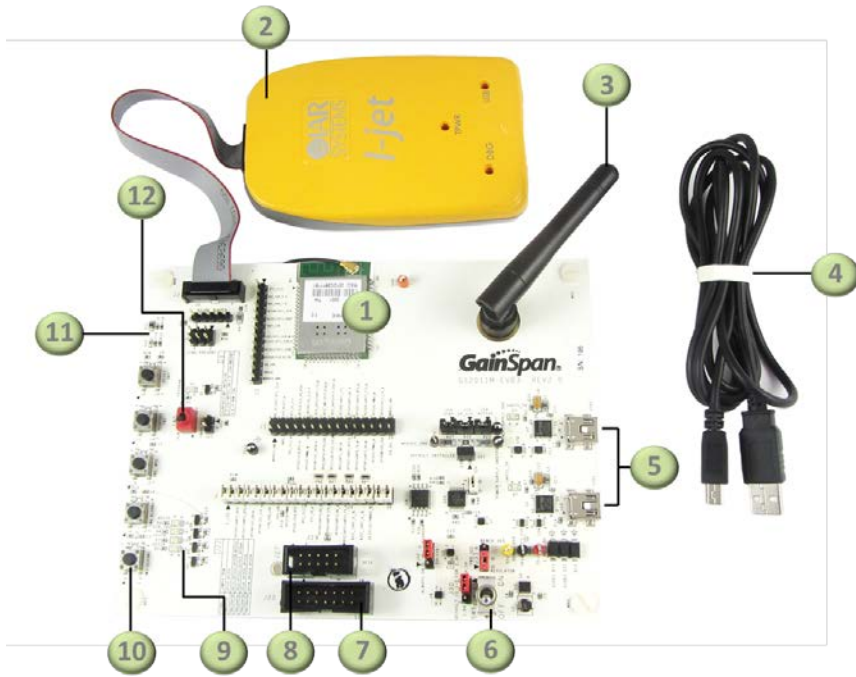
ThreadX by expresslogic is an advanced RTOS (real time operating system) includes the industry's most powerful and proven tools for developing embedded software with maximum reliability, maximum performance, and minimum code size. With the ThreadX sophisticated capabilities, you can develop, debug, and optimize code more quickly, significantly reducing both development cost and

time. NetX by expresslogic is a high performance dual stack IPv4/IPv6 for TCP/IP protocol standards (UDP, ARP, and ICMP).

SOFTWARE DEVELOPMENT KIT OPTIONS

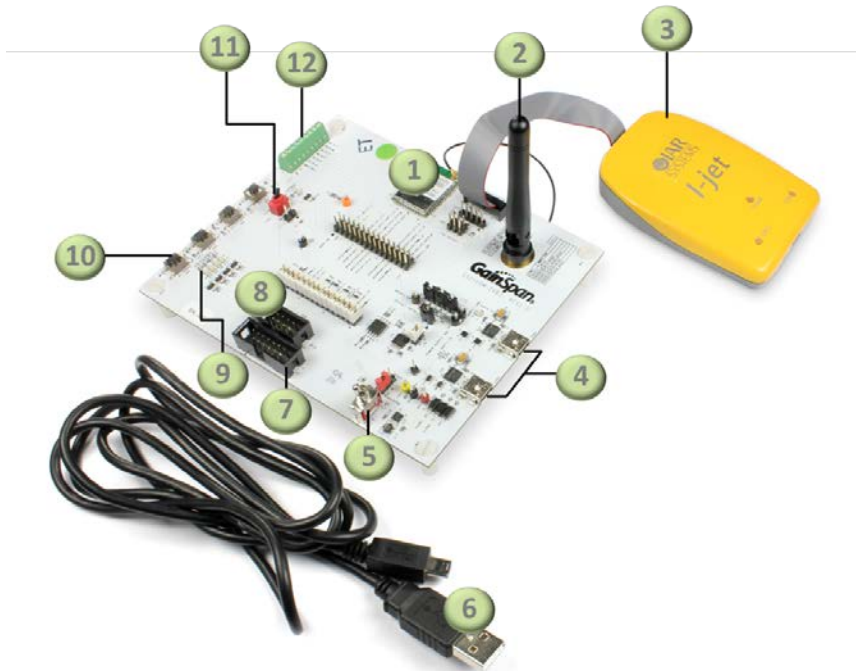
Hardware:	1-year subscription (including board revisions and support)
GS2000 Based Module Serial-to-Wi-Fi Development Board	GS2011M or GS2100M Module
IAR: I-Jet JTAG Debugger w/micro USB and JTAG cables	
Serial Cable (USB to mini-USB)	
Software:	
Wireless (WLAN) firmware	Binary only
GainSpan Embedded Platform Software (GEPS)	ROM Binary libraries and flash memory features in binary: <ul style="list-style-type: none"> ✓ TCP, UDP, HTTP(s), IPv4/IPv6, TLS, DHCP, DNS, mDNS, DNS-SD, xmDNS, DTLS, and power save modes Source code: <ul style="list-style-type: none"> ✓ Serial-to-Wi-Fi application w/AT commands, TLS application, OTAFU (over-the-air firmware update), ADK, Provisioning ADK, driver libraries, web pages, connection manager, provision code, over-the-air firmware update code, RTC memory management, chip power management and the Advanced File System.
ThreadX RTOS	Binary only
NetX Duo IPv4/IPv6 networking stack	Binary only
Tools:	
IAR – Embedded Workbench ARM for Cortex-M series	Full unlimited node locked to a PC. 1 year license.
Optional Items:	
ZigBee IP (802.15.4)	ZigBee IP (802.15.4) PHY/MAC functionality (Including support)
Mobile Applications	Source & Binary for TLS and OTAFU mobile applications for iOS and Android OS. Including support.
IDE Upgrade	<ul style="list-style-type: none"> ✓ IAR Dongle-lock upgrade from PC Lock Embedded Workbench ARM full unlimited. 1 year license. Includes USB Dongle Key that can be used on any PC. ✓ IAR – Floating upgrade from PC Lock Embedded Workbench ARM full unlimited network floating license 1 user. 1 year license.
JTAG Upgrade	<ul style="list-style-type: none"> ✓ JTAGjet-Trace – replace I-Jet with JTAGjet-Trace for Cortex-M ✓ I-jet – remove I-Jet from package
Training:	
Basic Training	GainSpan Facility (1 day) Customer Facility (1 day)

GS2011M MODULE SDK COMPONENTS



No.	Description
1	GS2011M module
2	IAR I-Jet Debugger with JTAG cable
3	Antenna
4	Serial Cable (USB to mini-USB)
5	USB0 and USB1 ports
6	Power ON/OFF switch
7	SDIO connector
8	SPI0 connector
9	LEDs for Program Flash, GPIOs, VIN_3V3, 3V3, and UART Tx
10	Alarm(s), WPS, Factory Restore, and Reset buttons
11	Temperature and Light Sensors
12	Run/Program Switch

GS2100M MODULE SDK COMPONENTS



No.	Description
1	GS2100M module
2	Antenna
3	IAR I-Jet Debugger with JTAG cable
4	USB0 and USB1 ports
5	Power ON/OFF switch
6	Serial Cable (USB to mini-USB)
7	SDIO connector
8	SPI0 connector
9	LEDs for Program Flash, GPIOs, VIN_3V3, 3V3, and UART Tx
10	Alarm, WPS, Factory Restore, and Reset buttons
11	Run/Program Switch
12	Analog to Digital Converter (ADC)