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GainSpan GS1500M Software Development Kit Mrk II

PRODUCT OVERVIEW

The GainSpan Software Development Kit (SDK) Mrk II enables firmware engineers to extend middleware software or develop embedded applications for the GS1500M.

This SDK contains the development board with a GS1500M module, embedded software (source/binary code), configuration management system, firmware update system, networking middleware, RTOS, device drivers, an integrated development environment (IDE) and JTAG hardware. Two SDK options are available: Basic and Professional.

With the Professional SDK, software development teams have access to source code for the GainSpan embedded software and may design and run highly custom applications for the GS1500M modules. Software engineers may use, and modify, sample applications as a baseline for new applications. With most of the GEPS software available in source, software engineers can scale-down the binary size as necessary.

The Basic SDK allows software development teams to expand embedded web pages for device specific configuration (GainSpan provides Wi-Fi and IP network configuration pages) and expand the Serial to Wi-Fi interface software for custom APIs. Software engineers may extend basic capabilities of the firmware on the GS1500M Modules.

DEVELOPMENT BOARD

The GainSpan development board contains the GS1500M, Wi-Fi subsystem and connectors to integrate with a host MCU board or with board-level components, such as sensors. This enables engineering teams to start software development against functional HW prior to the availability of custom boards.

Connection:
- Serial DB9 (2) for terminal program, MCU connection (via UART) with AT command set and/or debug output
- JTAG connector for single-step debugging of embedded firmware and custom device drivers
- Headers for UART and SPI interfaces
- Headers for access to GS1500M modules pins

Buttons:
- External reset button to simulate external reset signal
- Push button for Factory Restore from External Flash
- Alarm 1 & Alarm 2 buttons to simulate external wake-up signals

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

LEDs:
- 3 user-defined
- Dedicated power indicator

Sensors:
- Temperature and light sensors

BENEFITS:

- **Reduces development, testing and certification times, accelerating time to market for embedded application utilizing the GS1500M modules and GS1011 SoC**
- **Reduces time to production with production board options:**
  - **GS1500M Modules**
  - **Reference designs for custom boards with GS1011 SoC**
- **Ubiquitous LAN and internet connectivity**
- **Scalable code-size of embedded software**
- **Rapid device deployment with provisioning options: WPS and embedded web pages for configuration**
- **Over-the-Air Firmware update mechanism from external flash**
- **Low power consumption through dynamic power management**

FEATURES:

- **Source code and binary**
  - **Serial to Wi-Fi interface, TLS and Scan Applications**
  - **Configuration web pages**
- **Source and Binary to GEPS, HTTP Server/Client, Networking Middleware and RTOS (Professional SDK only)**
- **Complete Wi-Fi & Networking Services Software**
- **Wi-Fi Security**
  - **WPA/2- Enterprise**
  - **WPA/2-PSK, WPA and WEP**
- **IDE and JTAG debugging**

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GAINSPAN EMBEDDED SOFTWARE

GainSpan Embedded Platform Software (GEPS) is middleware software that abstracts the HW and provides network services for customer embedded applications. With GEPS, manufacturers are able to focus development on their value-add application by using comprehensive APIs provided by GEPS. GEPS runs on the RTOS on ARM7 networking services core on the GS1011 SoC.

Wi-Fi Firmware executes on the ARM7 Wi-Fi core as a Wi-Fi off-load engine that includes Wi-Fi security protocols, Wi-Fi Protected Setup and the 802.11 MAC.

SAMPLE EMBEDDED APPLICATIONS

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

- Serial to Wi-Fi Interface Software
- Wi-Fi Scan Application

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 enabling 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
  o Mode selection
  o Battery warning level
  o Battery standby
  o Battery checkpoint
- 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

GREEN HILLS IDE AND RTOS

Green Hills Software MULTI Integrated Development Environment (IDE) includes the industry's most powerful and proven tools for developing embedded software with maximum reliability, maximum performance and minimum code size. With the MULTI's sophisticated capabilities, you may develop, debug and optimize code more quickly while significantly reducing both development cost and time.

The μ-velosity real-time microkernel is the smallest of Green Hills Software's family of royalty-free operating systems. It is implemented as a C library so it can be easily ported to a number of target architectures. Its simple design as well as integration with the best-in-class MULTI tools make μ-velosity both easy to learn and simple to use. Both MULTI and μ-velosity are tightly integrated with GainSpan products.

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SDK OPTIONS

SDK Components	Basic	Professional
Software Development Tools:		
Green Hills MULTI IDE	5.0.6	5.0.6
JTAG Debugging	Macraigor	Macraigor
Green Hills Compiler	✔	✔
WireShark Protocol Analyzer	✔	✔
WiLD Configurator	✔	✔
GSDemo	✔	✔
Development board with GS1500M	✔	✔
Wi-Fi Access Point	✔	✔
Source code for drivers for host MCU	✔	✔
Wireless Firmware	Binary only	Binary only
Serial to Wi-Fi application	Source & Binary	Source & Binary
GEPS 3.3	Binary only	Source & Binary
Green Hills uVelosity RTOS	Binary only	Source & Binary
Green Hills Networking Stack	Binary only	Source & Binary
Scan application	Source & Binary	Source & Binary