Product Brief

Intel® Galileo Board

Product Overview

Galileo is a microcontroller board based on the Intel® Quark SoC X1000 Application Processor, a 32-bit Intel Pentium-class system on a chip (SoC). It is the first board based on Intel® architecture designed to be hardware and software pin-compatible with shields designed for the Arduino Uno R3. Digital pins 0 to 13 (and the adjacent AREF and GND pins), Analog inputs 0 to 5, the power header, ICSP header, and the UART port pins (0 and 1), are all in the same locations as on the Arduino Uno R3. This is also known as the Arduino 1.0 pinout.

The Galileo board is also software-compatible with the Arduino Software Development Environment, which makes usability and introduction a snap.

In addition to Arduino hardware and software compatibility, the Galileo board has several PC industry standard I/O ports and features to expand native usage and capabilities beyond the Arduino shield ecosystem. A full sized mini-PCI Express slot, 100Mb Ethernet port, Micro-SD slot, RS-232 serial port, USB Host port, USB Client Port, and 8 MByte NOR flash come standard on the board.

The genuine Intel processor and surrounding native I/O capabilities of the SoC provides for a fully featured offering for both the maker community and students alike. It will also be useful to professional developers who are looking for a simple and cost effective development environment to the more complex Intel® Atom™ processor and Intel® Core™ processor-based designs.

The Galileo board is an open source hardware design. Design schematics, Allegro board files, and bill of materials (BOM) are freely available for download at: www.intel.com/support/go/galileo
Take advantage of the Galileo board's proven design to make your own improvements and enhancements.
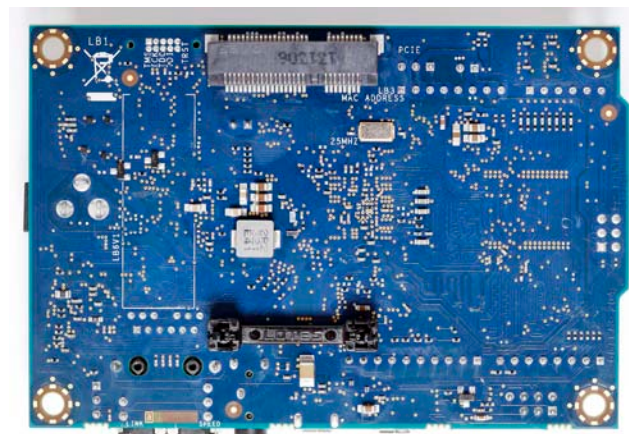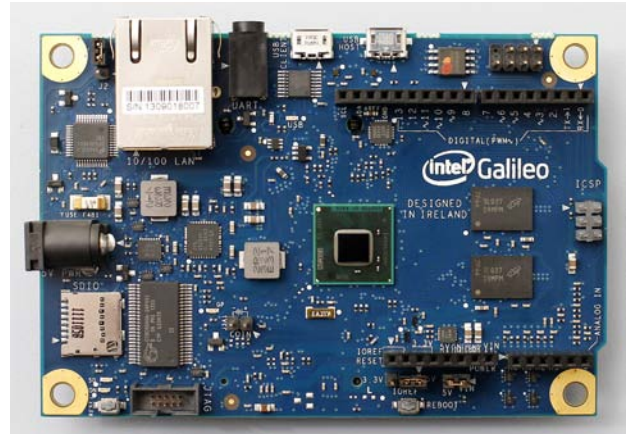
Physical Characteristics

- 10 cm long and 7 cm wide with the USB connectors, UART jack, Ethernet connector, and power jack extending beyond the former dimension.
- Four screw holes allow the board to be attached to a surface or case.
- Standard 10-pin JTAG header for debugging
- Reset button to reset the sketch and any attached shields

Communication

- 10/100 Mb Ethernet RJ45 port
- USB 2.0 Client port
- USB 2.0 Host port
- RS-232 UART port and 3.5mm jack
- Mini PCI Express (mPCIe) slot with USB2.0 Host support

Processor Features

- 400 MHz 32-bit Intel® Pentium instruction set architecture (ISA)-compatible processor
  - 16 KByte L1 cache
  - 512 KBytes of on-die embedded SRAM
  - Simple to program: Single thread, single core, constant speed
  - ACPI compatible CPU sleep states supported
 - Integrated Real Time Clock (RTC), with optional 3V "coin cell" battery for operation between turn on cycles

Storage Options

- 8 MByte Legacy SPI Flash to store firmware (bootloader) and the latest sketch
  - Between 256 KByte and 512 KByte dedicated for sketch storage
- 512 KByte embedded SRAM
- 256 MByte DRAM
- Optional micro SD card offers up to 32GByte of storage
- USB storage works with any USB 2.0 compatible drive
- 11 KByte EEPROM programmed via the EEPROM library

Galileo Target Software

Use the Arduino IDE software to create programs for Galileo called "sketches." To run a sketch on the board, simply connect a power supply, connect Galileo's USB Client port to your computer, and upload the sketch using the IDE interface.

As shown below, the sketch runs on the Galileo board and communicates with the Linux kernel in the board firmware using the Arduino I/O adapter. For complete details on programming your board, see the Intel® Galileo Getting Started Guide.
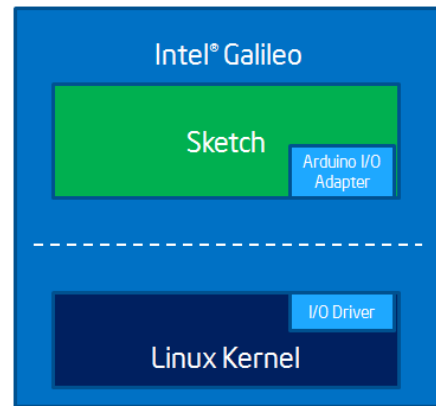
Intel® Quark SoC for Embedded Computing and IoT

Product Variant	Core Speed	Memory Speed	SRAM	Thermal Design Point	Temperature	Package
Intel® Quark SoC X1000	400 MHz	800 MTs	On-die 512 KB	TDP = 1.9W - 2.2W (depends on VR) Tj = 110°C	0 to 70° C (commercial) Extended temperature variants coming soon.	15 mm x 15 mm