

# Intel® Galileo Gen 2 Development Board



The 2nd generation Intel® Galileo board provides a programmable control PCB for the maker community, students, and professional developers. Based on the Intel® Quark™ SoC X1000, a 32-bit Intel® Pentium® processor-class system on a chip (SoC), the genuine Intel® processor and surrounding native I/O capabilities of the Intel Galileo board (Gen 2) provide a fully featured offering for a wide range of applications. The board also provides a simpler and more cost-effective development environment compared to the Intel® Atom™ processor- and Intel® Core™ processor-based designs.

## 2nd Generation Product Enhancements

The Intel Galileo board (Gen 2) delivers improved features and functionality in the following areas:

- 12 GPIOs fully native for greater speed and improved drive strength.
- 12-bit PWM for more precise control of servos and smoother response.
- 12 V Power-over-Ethernet capable.
- Power supplies from 7 V to 15 V are supported.
- Serial console UART header is compatible with FTDI USB converters.
- Console UART1 can be redirected to Arduino\* headers in sketches, which can eliminate the need for soft-serial.

## Arduino Uno R3\*-compatible

Getting familiar with the board and developing applications is a snap because the Intel Galileo board (Gen 2) matches the Arduino 1.0 pinout and is also software-compatible with the Arduino Software Development Environment.

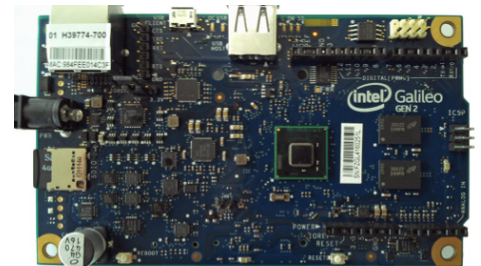
## Open Source Hardware

The Intel Galileo board (Gen 2) is an open source hardware design. Schematics, Cadence Allegro board files, and bill of materials (BOM) are freely available for download.

## Extensive Expandability

In addition to Arduino hardware and software compatibility, the Intel Galileo board (Gen 2) includes the following industry-standard I/O ports and features:

- Full-sized mini-PCI Express\* slot
- 10/100 Mbps Ethernet\* RJ45 port with PoE support
- Micro-SD slot
- TTL UART 6-pin header
- USB 2.0 Host port
- USB 2.0 Client port



## Target Software

Use the Arduino Software Development Environment to create programs for Galileo called “sketches.” To run a sketch on the board:

1. Connect power.
2. Connect the board's USB Client port to a computer.
3. Upload the sketch using the IDE interface.

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® Galileo Gen 2 Development Board

SPECIFICATIONS	
DIMENSIONS	123.8 mm (L) × 72.0 mm (W) USB connectors, RJ45 (Ethernet) jack, and power jack slightly extend beyond these dimensions
ATTACHMENT	Four screw holes 4 mm (diameter) Arduino-compatible headers containing: <ul style="list-style-type: none"><li>• 20 digital I/O (12 fully native speed)</li><li>• 6 analog inputs</li><li>• 6 PWMs with 12-bit resolution</li><li>• 1 SPI master</li><li>• 2 UARTs (1 shared with console UART)</li><li>• 1 I<sup>2</sup>C master</li></ul>
CONNECTORS	6-pin console UART (compatible with FTDI USB converters) 6-pin ICSP 10-pin JTAG for debugging RJ45 Ethernet, Power over Ethernet capable USB 2.0 Host (standard Type A) USB 2.0 Client (micro-USB Type B) Mini-PCI Express* 1x slot Jack with increased range (7 to 15 V)
POWER	Supports Power-over-Ethernet (requires PoE module installation) Header for RTC power
BUTTONS	Reset for sketch and attached shield resets 10/100 Mbps Ethernet Reboot to reset the Intel® Quark™ SoC X1000
COMMUNICATIONS	
PORTS	USB 2.0 Host port (standard Type A) USB 2.0 Client port (micro-USB Type B) TTL UART 6-pin header (compatible with FTDI converters) Mini-PCI Express* (mPCIe*) slot with USB 2.0 Host support
PROCESSOR FEATURES	
MODEL	Intel® Quark™ SoC X1000
SPEED	400 MHz
CORES/THREADS	1/1
INSTRUCTION SET ARCHITECTURE (ISA)	32-bit Intel® Pentium® processor-compatible ISA
L1 CACHE	16 KB
SRAM	512 KB on-die, embedded; 800 MT/s
PACKAGING	15 mm × 15 mm BGA ACPI-compatible with CPU sleep states
TECHNOLOGIES SUPPORTED	Integrated real-time clock (RTC) Optional 3 V coin cell battery for operation between turn-on cycles
STORAGE OPTIONS	
FIRMWARE/BOOTLOADER	8 MB NOR Flash
SRAM	512 KB (embedded)
DRAM	256 MB DDR3
SD CARD (OPTIONAL)	Up to 32 GB
USB	Compatible with any USB 2.0 storage device (USB drive/stick)
EEPROM	8 KB (programmed via the EEPROM library)

This Intel® Galileo design document is licensed by Intel under the terms of the Creative Commons Attribution Share-Alike License (ver. 4), subject to the following terms and conditions. The Intel® Galileo design document IS PROVIDED "AS IS" AND "WITH ALL FAULTS." Intel DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED REGARDING THE GALILEO DESIGN OR THIS GALILEO DESIGN DOCUMENT INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Intel® may make changes to the specifications, schematics and product descriptions at any time, without notice. The Customer must not rely on the absence or characteristics of any features or instructions marked "reserved" or "undefined." Intel® reserves these for future definition and shall have no responsibility whatsoever for conflicts or incompatibilities arising from future changes to them.

Copyright © 2014 Intel Corporation. All rights reserved. Intel and the Intel logo are trademarks of Intel Corporation in the U.S. and/or other countries.

\* Other names and brands may be claimed as the property of others.

MB/BL/0614 ♻ Please Recycle 330736-001

