Intel® Galileo

Galileo is a microcontroller board based on the Intel® Quark SoC X1000 Application Processor, a 32-bit Intel Pentium-class system on a chip (datasheet). It's the first board based on Intel® architecture designed to be hardware and software pin-compatible with Arduino shields designed for the 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.

Galileo is designed to support shields that operate at either 3.3V or 5V. The core operating voltage of Galileo is 3.3V. However, a jumper on the board enables voltage translation to 5V at the I/O pins. This provides support for 5V Uno shields and is the default behavior. By switching the jumper position, the voltage translation can be disabled to provide 3.3V operation at the I/O pins.

The Galileo board is also software compatible with the Arduino Software Development Environment (IDE), 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 8MByte NOR flash come standard on the board.

Communication

Galileo has a number of facilities for communicating with a computer, another Arduino, or other microcontrollers. Galileo provides UART TTL (5V/3.3V) serial communication, which is available on digital pin 0 (RX) and 1 (TX). In addition, a second UART provides RS-232 support and is connected via a 3.5mm jack. The USB Device ports allows for serial (CDC) communications over USB. This provides a serial connection to the Serial Monitor or other applications on your computer. It also enables Galileo to act as a USB mouse or keyboard to an attached computer. To use these features, see the Mouse and Keyboard library reference pages. The USB Host port allows Galileo act as a USB Host for connected peripherals such as mice, keyboards, and smartphones. To use these features, see the USBHost reference pages. Galileo is the first Arduino board to provide a mini PCI Express (mPCIe) slot. This slot allows full size and half size (with adapter) mPCIe modules to be connected to the board and also provides an additional USB Host port via the slot. Any standard mPCIe module can be connected and used to provide applications such as WiFi, Bluetooth or Cellular connectivity. Initially, the Galileo mPCie slot provides support for the WiFi Library. For additional information, see the Intel® Galileo Getting Started Guide. An Ethernet RJ45 Connector is provided to allow Galileo to connect to wired networks. When connecting to a network, you must provide an IP address and a MAC address. Full support of on-board Ethernet

interface is fully supported and does not require the use of the SPI interface like existing Arduino shields. The onboardmicroSD card reader is accessible through the SD Library. The communication between Galileo and the SD card is provided by an integrated SD controller and does not require the use of the SPI interface like other Arduino boards. The Arduino software includes a Wire library to simplify use of the TWI/I2C bus; see the documentation for details. For SPIcommunication use the SPI library.

Programming

Galileo can be programmed with the Arduino software (download). When you are ready to upload the sketch to the board, program Galileo through the USB Client port by selecting "Intel Galileo" as your board in the Arduino IDE. Connect Galileo's port labelled USB Client (the one closest to the Ethernet) to your computer. For details, see the reference,tutorials and Intel® Galileo Getting Started Guide. Rather than requiring a physical press of the reset button before an upload, Galileo is designed to be reset by software running on a connected computer.

When the board boots up two scenarios are possible: If a sketch is present in persistent storage, it is executed. If no sketch present, the board waits for upload commands from the IDE. If a sketch is executing, you can upload from the IDE without having to press the reset button on the board. The sketch is stopped; the IDE waits for the upload state, and then starts the newly uploaded sketch. Pressing the reset button on the board restarts a sketch if it is executing and resets any attached shields.