

# Projects

## USB Host Shield

USB Host Shield is an inexpensive ( [\\$25](#) for the [full-sized board](#) and [\\$20](#) for the [Mini variant](#) ) development board designed to be used in embedded applications which require USB Host functionality. The board supports USB 2.0 full/low speed operation. Primary target platform is Arduino, however, it can also be used with any other micro equipped with SPI interface.

This is a summary page for USB Host Shield project that I started in the spring of 2009. The initial goal of the project was to develop Arduino code supporting USB Host controller in order to communicate with USB peripherals, such as keyboards, joysticks and cameras. This goal has been achieved. The shield exists in configurations compatible with 5V and 3.3V Arduino boards. Current revision of the library (r2.0) supports MAX3421E host controllers, general USB functionality, enumeration of up to 44 devices with USB hub support, and MAX3421 GPIO pins access. The following device classes are currently supported:

- human input device (HID)
- USB to serial converters, including CDC ACM, Prolific PL2303 and FTDI FT232
- Google ADK v.1
- PTP with Canon EOS and Powershot extensions, as well as Nikon DSLR cameras
- Bluetooth RFCOMM and HID (Sony PS3, Nintendo)
- Xbox360 controller over wired USB as well as via a wireless receiver
- Mass Storage Class – USB flash drives, memory card readers, external hard drives/CD-ROMs, smartphones, etc.

Future plans include development drivers for communication devices, such as WiFi and cell phones, and support for other USB Host controllers.

### Hardware information

- [Hardware documentation – schematics, Eagle CAD files, PCB Gerbers](#)
- [USB Host Shield Hardware Manual](#)
- [Hardware troubleshooting article](#)

### Arduino USB Host Code Libraries

- **R2.0**
- [USB Host Library r2.0 announcement](#)
- [GitHub repository](#)
- .
- **Legacy**
- [Legacy USB Host library](#), stable revision. Also, see [this note](#).
- [Development revision](#) of the above
- [Richard Ibbotson's modified USB and PS3 library](#) with extra NAK handling to be used with his PS3 and Nintendo game controller routines
  - [Code demonstration video](#)
  - Code description and applications:
    - [Part 1](#)
    - [Part 2](#)
    - [Part 3](#)

### Application-specific information

- Cell Phones
  - [Introduction to interfacing to cellphones](#)
- Android Open Accessory
  - [Android ADK-compatible library release](#)
- Human Interface Devices
  - [Part 1. Introduction and simple reports.](#)
- Digital Camera Control



USB Host Shield 2.0



USB Host Mini



USB Host Shield r.1.2

- [PTP and camera libraries repository on github](#)
- [GetDeviceInfo output collection](#)
- [Introductory article](#)
- [EOS-specific protocol details](#)
- [PowerShot-specific protocol details](#)
- [Focus Stacking Assistant](#)
- [Legacy PTP Library](#)
- Bluetooth
  - [HCI terminal](#)

#### **Parallel development**

- MIDI
  - [Collin's Lab @ MAKE](#)
- Camera Control
  - [Sandro Benigno's ArduCam @ DIYDrones](#)
- Game Controllers
  - [PS Remote Controller Bluetooth stack](#) by Cubexed