

ODROID-C2

# ODROID-C2

## C2 PCB revision history

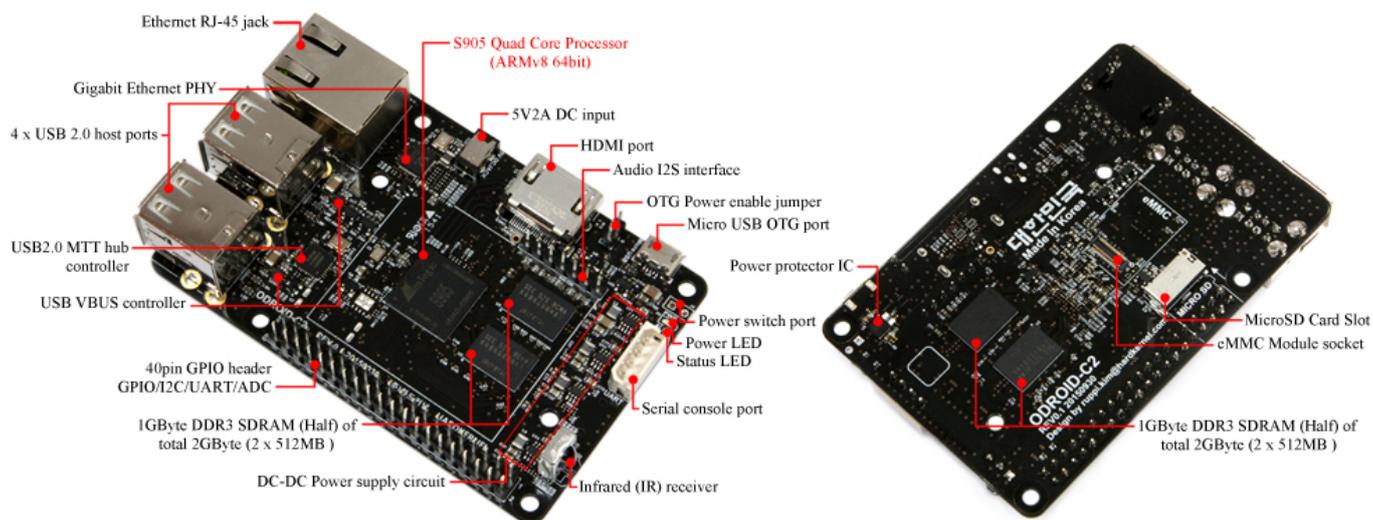
LOT	PCB Revision	Description
EL-1510	rev0.1 20150930	Changed to MP62551 from NCP380 due to component shortage.
EL-1602	rev0.2 20151218	RILIM of MP62551 is 20kΩ.
EL-1604	rev0.2 20160226	RILIM of MP62551 is changed to 12.4kΩ and USB current limits at 1.7A. Added a J8 header holes for easier soldering of alternative power input.
EL-1709	rev0.2 20170830	The schematic is 100% identical to rev0.2 20160226. however, PCB manufacturers are different and some signal patterns were reinforced and modified to improve productivity.
EL-1801	rev0.2 20171114	Added a 0Ω between USB Hub IC and load switches. To disable the USB over-current protection, you need to remove the 0Ω resistor.

## Schematics and drawings

- [Schematics \(PDF format\) & PCB Mechanical drawings \(Auto CAD format\)](#)
- [Amlogic S905 Data Sheet](#)
- [3D Modeling](#)
- [Small Shield board library for EAGLE PCB Design by HeinrichG](#)
- [Large Shield board library for EAGLE PCB Design by HeinrichG](#)
- [Download Fritzing part for ODROID-C2](#)

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## Board Layout



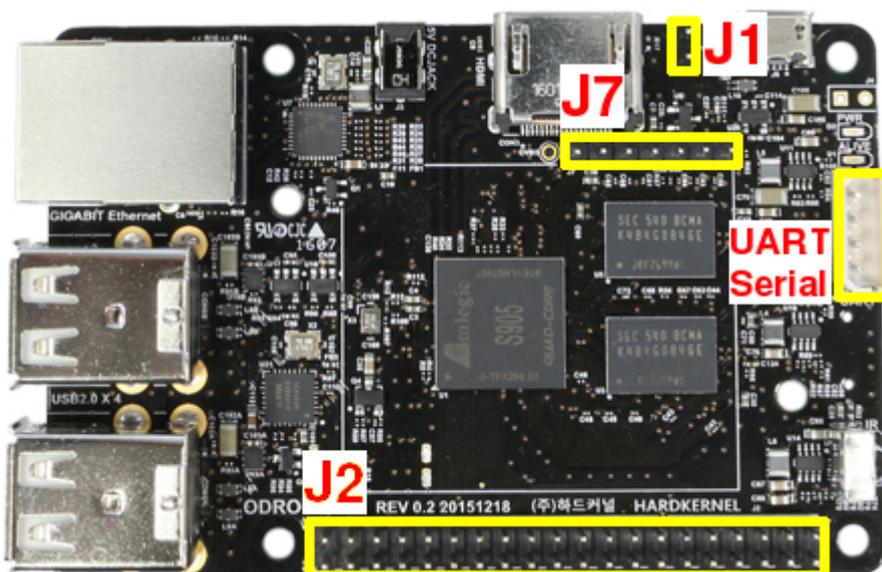
# Specifications

Processor	Amlogic S905 : Quad Core Cortex™ -A53 (ARMv8 64bit) processor with Triple Core Mali-450 GPU
RAM	2GByte DDR3 (32bit / 912Mhz)
eMMC module socket	The eMMC storage access time is 2-3 times faster than the SD card. You can purchase 4 size options: 8GB, 16GB, 32GB and 64GB. Using an eMMC module will increase speed and responsiveness, similar to the way in which upgrading to a Solid State Drive (SSD) in a typical PC also improves performance over a mechanical hard drive (HDD).
Micro Secure Digital (MicroSD) Card slot	There are two different methods of storage for the operating system. One is by using a <a href="#">MicroSD</a> Card and another is using an eMMC module, which is normally used for external storage for smartphones and digital cameras. The ODROID-C2 can utilize the newer UHS-1 SD model, which is about 2 times faster than a normal class 10 card. Note that there are some cards which needs additional booting delay time around 30 seconds. According to our test, most Sandisk Micro-SD cards don't cause the booting delay. We will make a compatibility list soon.
5V 2A DC input	This is for 5V power input, with an inner diameter of 0.8mm, and an outer diameter of 2.5mm. The ODROID-C2 consumes less than 0.8A in most cases, but it can climb to 2A if many passive USB peripherals are attached directly to the main board.
USB host ports	There are four USB 2.0 host ports. You can plug a keyboard, mouse, <a href="#">WiFi</a> adapter, storage or many other devices into these ports. You can also charge your smartphone with it! If you need more than 4 ports, you can use a powered external USB hub to reduce the power load on the main device.
HDMI port	The Type-A standard-HDMI connector is populated on the board. If you use a UHD/4K 60Hz display, your HDMI cable must be compatible with HDMI 2.0 speed.
Ethernet RJ-45 jack	The standard RJ45 Ethernet port for LAN connection supports 10/100/1000Mbps speed. Green LED Flashes when there is 100Mbps connectivity Yellow(Orange/Amber) LED Flashes when there is 1000Mbps connectivity
Status / Power LEDs	The ODROID-C2 has four indicator LEDs that provide visual feedback. Red LED : Power Hooked up to 5V power Blue LED Alive Solid light : u-boot is running Flashing : Kernel is running (heart beat)
Infrared (IR) receiver	This is a remote control receiver module that can accept standard 37.9Khz carrier frequency based wireless data.
Micro USB OTG port	You can use the standard micro-USB connector with Linux Gadget drivers on your host PC, which means that the resources in the ODROID-C2 can be shared with typical PCs. You can also add a micro-USB to HOST connector if you need an additional USB host port. Note that this port can be used for power input if you install a jumper near the HDMI connector.

General Purpose Input and Output (GPIO) ports	<p>These 40pin GPIO port can be used as GPIO/I2C/UART/ADC for electronics and robotics.</p> <p>The 40 GPIO pins on an ODROID-C2 are a great way to interface with physical devices like buttons and LEDs using a lightweight Linux controller.</p> <p>If you're a C/C++ or Python developer, there's a useful library called <a href="#">WiringPi</a> that handles interfacing with the pins. We've already ported the <a href="#">WiringPi v2</a> library to ODROID-C2.</p> <p>Note that all the GPIO ports are 3.3Volt. The ADC inputs are limited to 1.8Volt.</p>
Serial console port	<p>Connecting to a PC gives access to the Linux console.</p> <p>You can see the log of the boot, or to log in to the C2 to change the video or network settings.</p> <p>Note that this serial UART uses a 3.3 volt interface. We recommend the USB-UART module kit from Hardkernel.</p> <p>Molex 5268-04a(2.5mm pitch) is mounted on the PCB. Its mate is Molex 50-37-5043 Wire-to-Board Crimp Housing.</p>
Gigabit Ethernet PHY	<p>Realtek RTL8211F is a highly integrated Ethernet transceiver that complies with 10Base-T, 100Base-TX, and 1000Base-T IEEE 802.3 standards.</p>
USB MTT hub controller	<p>GENESYS LOGIC GL852G is used to implement the 4-port Hub function which fully complies with Universal Serial Bus Specification Revision 2.0.</p>
USB VBUS controller	<p>NCP380 Protection IC for USB power supply from <a href="#">OnSemi</a>.</p>
Power switch port	<p>You can add a slide switch or rocker switch on this port if you want to implement a hardware on/off switch.</p> <p>If this port is closed, the power is off.</p> <p>If this port is opened, the power is on.</p>
Power supply circuit	<p>Discrete DC-DC converters LDOs are used for CPU/DRAM/IO power supply.</p>
Power protector IC	<p>NCP372 Over-voltage, Over-current, Reverse-voltage protection IC from <a href="#">OnSemi</a>.</p>

Due to the limited power output from a computer's USB port, we suggest only powering the ODROID-C2 with a good quality 5V/2A PSU

## Connectors



## Expansion Connectors (J2/J7)

[Expansion Connector Description](#)

### UART Console Connector

UART
Pin 4 - GND
Pin 3 - RXD
Pin 2 - TXD
Pin 1 - VCC
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CON5  
3.3V LVTTTL

### OTG Power Enable Jumper (J1)

[OTG Power Enable Jumper Description](#)

## Regulatory Compliance Documents

- [FCC Certification](#)
- [CE Certification](#)
- [KC Certification](#)
- [ODROID-C2 ROHS DOC](#)
  - [ODROID-C2 ROHS Test Report](#)

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