Products
Amlogic S905
ODROID-C2
Exynos5 Octa
ODROID-XU4
Amlogic S805
ODROID-C1+
ODROID-C0
Display
ODROID-VU5
ODROID-VU7 Plus
ODROID-VU7
16x2 LCD + IO Shield
C1 3.2inch TFT+Touchsc
LED Matrix Shield
ODROID-SHOW2
3.5inch Touchscreen Sh
Power Supply & Battery
RTC Backup Battery
RTC Shield
UPS2 for C1
UPS3
5V/2A Power Supply
5V/2A Power Supply EU
5V/2A Power Supply US
5V/4A Power Supply EU
5V/4A Power Supply Rou
5V/4A Power Supply US
5V/6A Power Supply
3000mAh Battery
750mAh Battery
Cases
ODROID-C2/C1+ Cases
ODROID-XU4 Cases
VuShell for VU7
3.5inch LCD Shield Cas
Connectivity
IR Remote Controller
WiFi Module 0
WiFi Module 3
WiFi Module 4
WiFi Module 5
Bluetooth Module 2
Ethernet Cable CAT6
USB GPS Module
Camera
USB-CAM 720P

Products

Amlogic S805 > **ODROID-C1+ [ODROID-C1+]**

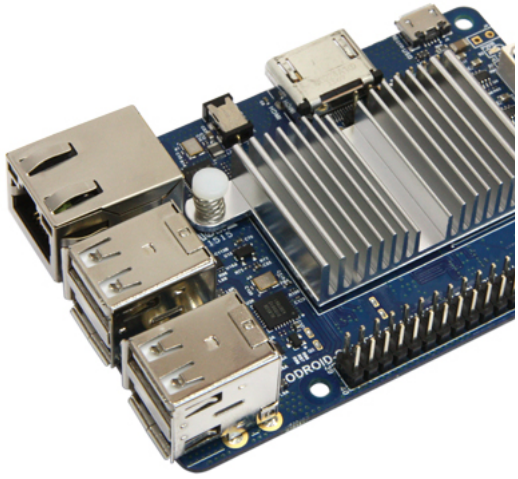
Feature | Technical Detail | FAQs

ODROID-C1+

The ODROID-C1+ is esteemed to be the most powerful low-cost single board computer available, as well as being an extremely versatile device. Featuring a q processor, advanced Mali GPU, and Gigabit Ethernet, it can function as a home theater set-top box, a general purpose computer for web browsing, gaming and compact tool for college or office work, a prototyping device for hardware tinkering, a controller for home automation, a workstation for software development, a

Some of the modern operating systems that run on the ODROID-C1+ are Ubuntu, Android, Fedora, ARCHLinux, Debian, and OpenELEC, with thousands of fre software packages available. The ODROID-C1+ is an ARM device -- the most widely used architecture for mobile devices and embedded 32-bit computing. Th small size, reduced complexity and low power consumption makes it very suitable for miniaturized devices such as wearables and embedded controllers.

* Amlogic ARM® Cortex®-A5(ARMv7) 1.5Ghz quad core CPUs
* Mali™-450 MP2 GPU (OpenGL ES 2.0/1.1 enabled for Linux and Android)
* 1Gbyte DDR3 SDRAM
* Gigabit Ethernet
* 40pin GPIOs + 7pin I2S
* eMMC4.5 HS200 Flash Storage slot / UHS-1 SDR50 MicroSD Card slot
* USB 2.0 Host x 4, USB OTG x 1 (power + data capable)
* Infrared(IR) Receiver
* Ubuntu or Android OS



The C1+ is the latest revision of the original C1.
It replaced the original C1 in July 2015. Compared to the C1 it has :

- Standard Type-A HDMI connector
- An included heat sink on board
- An I2S bus to support HiFi audio add-on boards
- CEC function that doesn't require the RTC backup battery
- A power path from USB OTG port as well as DC barrel connector
- Improved SD-card compatibility

Because of the above changes, the original cases and heat sinks are not compatible.

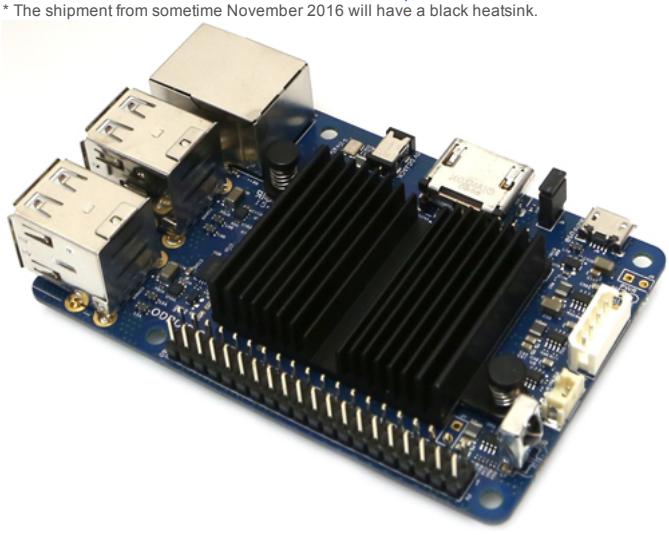
Buy Now
$32.00
Worldwide shipping

구매
38,400원(부가세 별도)
한국 배송(Korean only)

OS Image files and BSP source code are available in our WiKi : http://odroid.com/dokuwiki/doku.php?id=en:odroid-c1

Full User Manual : http://magazine.odroid.com/category/manuals/

* An additional MicroSD card or an eMMC module is required to install the OS. We recommend the eMMC module as it has much higher performance than star
* The shipment from sometime November 2016 will have a black heatsink.



OPTIONAL ACCESSORIES(Click the image to the product page)

- oCam : 5MP USB 3.0 Cam
- oCam-1MGN-U : Global S
- M12 Lens Set : 8/6/3/2
- Tripod mount for oCam

Development

- C Tinkering Kit
- USB-UART Module Kit
- Xprotolab Plain

Sound

- HiFi Shield 2
- HiFi Shield Plus
- USB Audio Adapter
- USB-SPDIF

Connector

- Micro USB-DC Power Bri
- Connector Pack for ODR
- 30pin and 12pin Header

Add-on Boards

- CloudShell for XU4
- Expansion Board
- USB IO Board
- XU4 Shifter Shield
- Universal Motion Joypa
- USB3.0 to SATA Bridge
- U3 IO Shield
- U3 Shield Tinkering Ki

Sensor

- myAHRS+
- Weather Board 2

Cooler

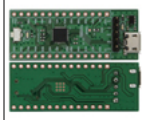
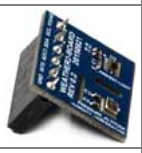
- 40x40x25mm Tall Blue H
- C1 Heat Sink
- Cooling Fan U2
- Cooling Fan U3
- Cooling Fan X
- Cooling Fan XU4 Blue

Cables

- HDMI 2.0 Cable (Type A
- HDMI Cable (Micro, Typ
- HDMI Cable (Type A-A)
- USB3.0 Micro-A to Stan
- Micro USB Cable
- DC Plug Cable Assembly
- DC Plug Cable Assembly
- DC Plug Cable Assembly
- DC Plug Cable Assembly
- USB-DC Plug Cable 2.5m
- USB2.0 OTG Cable

OS Preinstalled Flash Memory

- eMMC Module C2 Linux B
- eMMC Module C2 Android
- MicroSD C2 Linux
- MicroSD C2 Android
- eMMC Module XU4 Linux
- eMMC Module XU4 Androi
- MicroSD XU4 Linux
- eMMC Module C1+/C0 Lin
- eMMC Module C1+/C0 And

							
5V/2A Power Supply	HDMI Cable (TypeA-A)	eMMC Module C1 Linux Black	eMMC Module C1 Android Black	Micro SD UHS-1 C1 Linux	Micro SD UHS-1 C1 Android	USB-DC Plug Cable 2.5mm	ODROID-VU7 (7inch display + Multi touch)
							
ODROID-C1+ Case Black	ODROID-C1+ Case Clear	ODROID-C1+ Case Blue	USB Audio Adapter	RTC Backup Battery	IR Remote Controller	WiFi Module 3	WiFi Module 4
							
USB2.0 OTG Cable	Bluetooth Module2	USB GPS Module	Micro USB Cable	USB IO Board	Universal Motion Joypad	USB-UART Module Kit	DC Plug and Cable 2.5mm
							
Ethernet Cable CAT6	C1 Tinkering Kit	16x2 LCD + IO Shield	myAHRS+	C1 3.2inch TFT+Touchscreen Shield	Weather Board 2	UPS3	LED Matrix Shield
							
VuShell for VU7 SmokyBlue	VuShell for VU7 SmokyWhite	ODROID-SPDIF	USB-CAM 720P	VU7 Plus: 7inch 1024x600 display with Multi touch	Xprotolab Plain	3.5inch Touchscreen Shield	3.5inch LCD Shield Cases
WiFi Module 5							

INTRODUCTION

Hardware Specification

ODROID-C1+ Hardware Introduction

OpenGL ES and XBMC on Ubuntu

MicroSD C1+/C0 Linux
MicroSD C1+/C0 Android
eMMC Module Reader

Obsolete products

ODROID
ODROID-7 Full Package
ODROID-A4 Full Package
ODROID-PC Full Package
ODROID-S
ODROID-T
ODROID-VU
ODROID-A Full Package
ODROID-U3
ODROID-U2
ODROID-X2
ODROID-E7 Full Package
ODROID-Q2
ODROID-XU3 Lite
ODROID-XU3
ODROID-XU
ODROID-X
ODROID-XU Lite
ODROID-C1
ODROID-Q
ODROID-XU+E
Smart Power
HiFi Shield for C2/C1+
ODROID-Show
ODROID-UPS
ODUINO One
UPS2 for U3
Weather Board
ODROID-W

$35 quad core PC : ODROID-C1 Performance

OpenGL ES2.0 with myAHRS+ on Ubuntu

myAHRS+ with Odroid-C1

C Tinkering Kit

ODROID-C1 + Tinkering Kit : DIY Light Level Meter

16x2 LCD+IO Shield

16x2LCD+IO Shield

Make Android Game Station

Tekken6 emulation on ODROID-C1

STORY ABOUT THE ODROID-C1

We had received tons of requests for the following model of ODROID-W. So, we started survey for components for ODROID-W2. Finding out the right CPU was
Our original target was similar cost and similar performance as ODROID-W. But we realised that we cannot make ODROID-W2 once we reached to Amlogic S8
processor. The performance of Amlogic S805 1.5Ghz quad core processor is outperforming Broadcom BCM2835.
We launched the ODROID-C1 in December 2014 and RPi2 was released in February 2015.
The ODROID-C1 was superseded by the ODROID-C1+ in August 2015.

Here is the comparisons to give you better understanding of ODROID-C1.

ODROID-C1+ vs Raspberry Pi2

Both are Linux-friendly, $35 ARM® single-board computers for various applications and purposes.

Hardware Comparison

The ODROID-C1+ has many advantages over the Raspberry Pi. The processor is an S805 1.5GHz Quad-core from Amlogic with 1GByte DDR3 RAM, Gigabit E
receiver. The size of this computer is still only 85 x 56 mm with a weight of 40g, and offers silent operation, 2~3W average power usage, and instant portability,
pocket.

One powerful feature of the ODROID-C1+ is the row of GPIO (general purpose input/output) pins along the edge of the device. These pins are a physical interfa
and the outside world. The 40pin interface header includes SPI, I2C, UART, ADC and GPIO function.

An SD 3.01 standard compatible UHS-1 Micro-SD card, as well as the faster eMMC module, can be ordered with the ODROID-C1+, and arrives with the popula
system already installed. Insert the SD card into the slot, connect a monitor, a keyboard, a mouse, Ethernet and power cable, and that's all you need to do to us
Browse the web, play games, run office programs, edit photos, develop software, and watch videos right away.

The RTC, IR receiver and ADC features on the ODROID-C1+ offer many options for building great DIY projects

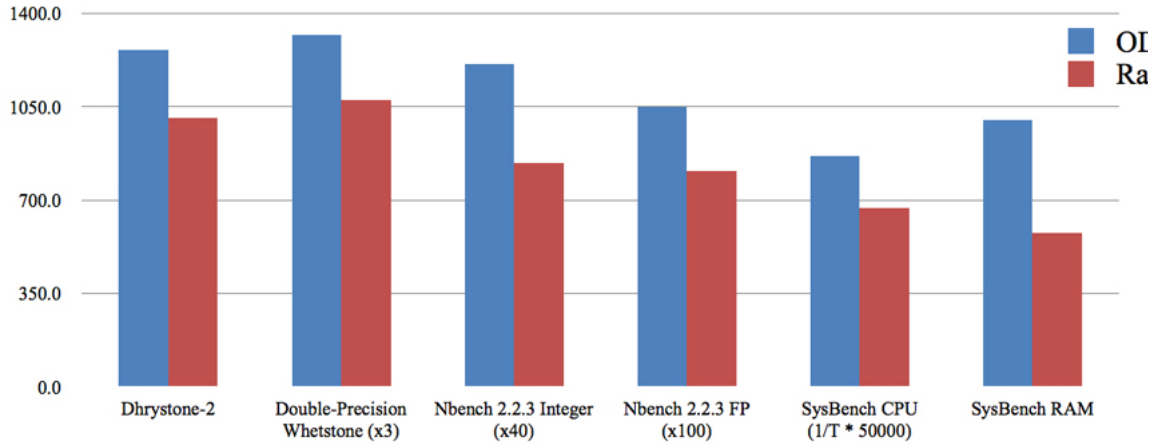
	ODROID-C1+	RPi 2 Model B
	Amlogic S805 SoC	Broadcom BCM2836

CPU	4 x ARM® Cortex®-A5 1.5GHz ARMv7 Architecture @28nm	4 x ARM® Cortex®-A7 900I ARMv7 Architecture @40r
GPU	2 x ARM® Mali™-450MP 600MHz	1 x VideoCore IV 250MHz
RAM	1GB 32bit DDR3 792MHz	1GB 32bit LP-DDR2 400MH
Flash Storage	Micro-SD UHS-1@100Mhz/SDR50 or eMMC storage option	Micro-SD @50Mhz/SDR25, No eMMC s
USB2.0 Host	4 Ports	4 Ports
USB2.0 Device / OTG	1 Port for Linux USB Gadget driver	No
Ethernet/LAN	10/100/1000 Mbit/s	10/100 Mbit/s
Video Output	HDMI	HDMI / Composite RCA
Audio Output	HDMI	HDMI / 3.5mm Jack
Camera Input	USB 720p	MIPI CSI 1080p
Real Time Clock	YES (On-board RTC)	No(unless using an add-on mo
IR Receiver	YES (On-board IR Sensor)	No(unless using an add-on mo
IO Expansion	40pin port (GPIO/UART/SPI/I2C/ADC) 7pin port (I2S) : ODROID-C1+ only	40pin port (GPIO/UART/SPI/I2C
ADC	10bit SAR 2 channels	No(unless using an add-on bo
Size	85 x 56mm (3.35" x 2.2")	85 x 56mm (3.35" x 2.2")
Weight	40g (1.41 oz)	42g (1.48 oz)
Price	$35	$35

Computing performance comparison

We ran a simple, popular benchmark called Unix-Bench, SysBench and N-Bench to compare the performance of the two boards. Tests were done using severa provided images based on a clean install, and the "apt-get update && apt-get upgrade" commands were first run to ensure that both boards was up-to-date.

The RPi2 was clocked at 900Mhz using a Sandisk UHS-1 8GB SDCard running the Raspbian OS. The C1+ was clocked at 1.5Ghz using an 16GB eMMC with units were powered by a 5V/2A power supply and connected to the 1920x1080 HDMI output.



Benchmarks(Index Score)	ODROID-C1+	Raspberry Pi 2	Ratio
Dhrystone-2	1262.8	1006.6	1.25
Double-Precision Whetstone (x3)	1318.8	1076.1	1.23
Nbench2.2.3 Integer (x40)	1208.0	840.0	1.44
Nbench2.2.3	1050.0	809.0	1.30
SysBench CPU (1/T * 50000)	863.6	669.3	1.29
SysBench RAM	998.3	574.7	1.74

The results show that the CPU computing benchmark is about 30% faster on the C1+ and RAM memory access speed is about 75% faster on the C1+. Note that above benchmark scores were converted to make an easier comparison.

Storage I/O comparison

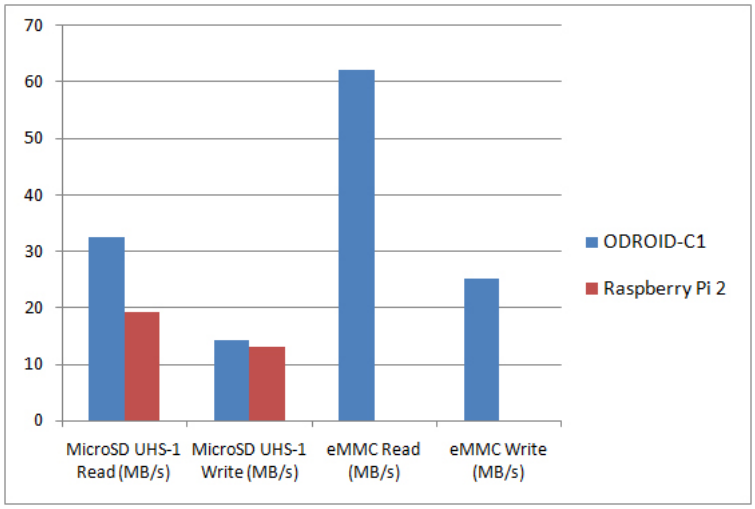
To obtain the results in the storage I/O comparison graph, type the following lines at a command prompt. The first command tests the write speed, and the secor read speed:

$ dd if=/dev/zero of=test.tmp oflag=direct bs=500K count=1024

$ dd if=test.tmp of=/dev/null iflag=direct bs=500K count=1024

Media access performance	RPi2 Model E
eMMC Read (MB/s)	NA
eMMC Write (MB/s)	NA
MicroSD UHS-1 Read (MB/s)	19.2

MicroSD UHS-1 Write (MB/s)	13.1



If you use the eMMC storage, you can get about two to three times faster storage I/O read performance. However, an affordable microSD UHS-1 card can still ac speeds thanks to the advanced SD 3.01 host controller in the S805 processor. The MicroSD card read performance on C1+ is still about 1.7 times faster then RI 1 memory card.

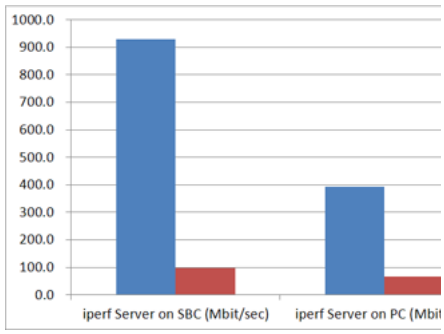
Ethernet IO comparison

To replicate the results in the Ethernet comparison graph, type the following lines at a command prompt:
Server agent on the C1+ and Client agent on the host PC
ruppi@ruppi-desktop:~$ iperf -s 192.168.2.10 -P 10
[SUM] 0.0-10.1 sec 1.10 GBytes 928 Mbits/sec

Server agent on the host PC and Client agent on the C1+
odroid@odroid:~# iperf -c 192.168.2.2 -P 10
[SUM] 0.0-10.0 sec 467 MBytes 392 Mbits/sec

Server agent on the RPi and Client agent on the host PC
ruppi@ruppi-desktop:~$ iperf -c 192.168.2.11 -P 10
[SUM] 0.0-10.3 sec 121 MBytes 98.6 Mbits/sec

Server agent on the host PC and Client agent on the RPi
pi@raspberrypi:~$ iperf -s 192.168.2.2 -P 10
[SUM] 0.0-10.3 sec 81.6 MBytes 66.6 Mbits/sec



Thanks to the Gigabit Ethernet available on the ODROID-C1+, the network performance of C1+ is an impressive six to nine times faster than Raspberry Pi.

As one can see from the testing results, the quad-core 1.5GHz ODROID-C1 can easily outperform the Raspberry Pi 2 board. Many test results show about 140% from the ODROID-C1+ platform. Even though both platforms are Linux-friendly computing devices, the performance to cost ratio is much higher with the ODROI considering a tiny computer for general purpose computing, software development, or as a project platform, the ODROID-C1+ will give you a lot more satisfactio incredible performance for a very low price.

SPECIFICATIONS

Processor	Amlogic S805 SoC ARM® Cortex®-A5 (ARMv7) 1.5GHz Quad Core ARMv7 architecture @28nm wafer
Memory	1Gbyte DDR3 RAM 792Mhz
3D Accelerator	ARM® Mali™-450 MP2 OpenGL ES 2.0 / 1.1
Flash Storage	eMMC Module Socket : eMMC module (option) MicroSD Card Slot : 8 or 16GB MicroSD UHS-1 (option)
USB2.0 Host	High speed standard A type connector x 4 ports
USB2.0 Device/OTG	High speed micro USB connector x 1 port
Ethernet/LAN	10/100/1000Mbps Ethernet with RJ-45 Jack (Auto-MDIX support)
Video Output	HDMI
Audio Output	HDMI
Camera Input	USB 720p(option)
Real Time Clock	On-board RTC function with a backup battery connector
IO Expansion	40pin port (GPIO/UART/SPI/I2C/ADC) 7pin port (I2S)
WiFi	USB IEEE 802.11b/g/n 1T1R WLAN with Antenna (USB module) (option)
Power	5V 2A Power (option)
System Software	Ubuntu 14.04 + OpenGL ES on Kernel 3.10 LTS or latest Android 4.4.x on Kernel 3.10 LTS or latest Full source code is accessible via our Github.
PCB Size	85 x 56 x 18 mm approx. (Weight : 40 gram w/o heat sink, 56 gram with heat sink) PCB Thickness : 1.0mm