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This version (23 Feb 2017 21:48) was *approved* by rgetz.
The Previously approved version (21 Feb 2017 20:58) is available.
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ADALM-PLUTO Prerequisites

To understand what the prerequisites are for using the ADALM-PLUTO (PlutoSDR), you need to understand what you are trying to do, and what software environment you want to do it in. The PlutoSDR is a powerful/flexible device, which can be used both in a standalone mode, or with a host, in multiple different software environments. The one that is *best* is unique to the problem at hand, so we don't specifically recommend a single solution. This page discusses both hardware and software options, and lists the most common[1] configurations:

The PlutoSDR supports USB 2.0 On-The-Go (OTG), and can be used in two different modes:

1. device, where the PlutoSDR communicates directly to a host, and streams data from/to the host.
    - Host with at least one USB 2.0 Port, which can supply 500mA (no self powered hubs), which runs Linux, OS X, or Windows
        - example: Personal Computer, Laptop, Tablet (running Linux), Raspberry Pi, Beagle Board, etc.
2. host, where the PlutoSDR is the "brains" of the system, and communicates to other things via USB Wifi or USB Ethernet.
    - You need a compatible USB dongle, and a USB Power supply.

PlutoSDR as a Device

You can stream data to any of these visualization tools, or SDR frameworks.

IIO Oscilloscope

The IIO Oscilloscope is a simple visualization tool that can be used with the PlutoSDR to control the device and stream data into/output the device.

It can be run on Linux and Windows.

MATLAB / Simulink

1. You need to have a license for MATLAB® and/or Simulink®.
    - Depending on who you are, and where you are, you already may have access to a license.
        - If you are a student or faculty at a post-secondary institution (University, Community College, etc), check out MathWorks Academic [http://www.mathworks.com/academia.html] section. Many schools provide a Total Academic Headcount (TAH) [http://www.mathworks.com//academia/tah-support-

program/eligibility/?s_tid=srctitle] license or some require/ask their students to obtain Student version [http://www.mathworks.com//academia/student_version.html] [2]

- If you are a hobbyist, enthusiast or maker, check out MATLAB Home [http://www.mathworks.com/products/matlab-home.html]
- There are many license options, if you are unsure, check out the MathWorks store [http://www.mathworks.com/store]

- You need to have a host computer, which supports the minimum System Requirements for MATLAB [http://www.mathworks.com//support/sysreq.html].
- No matter which license you have [3], the following toolboxes are required to use MATLAB with the PlutoSDR:
  - DSP System Toolbox [http://www.mathworks.com/products/dsp-system.html]
  - Signal Processing Toolbox [http://www.mathworks.com/products/signal.html]
  - Communications System Toolbox [http://www.mathworks.com/products/communications.html]
- You also will need a supported and compatible compiler [http://www.mathworks.com//support/compilers.html], many which are zero cost, or free.
- We have verified things on a subset of what MATHWORKS supports, including Windows 10, Windows 8.1, Windows 8, Windows 7 Service Pack 1, macOS Sierra 10.12, macOS El Capitan 10.11, macOS Yosemite 10.10, Ubuntu 14.04 LTS and 16.04 LTS, Debian 7.x, 8.x.

GNU Radio

1. GNU Radio is mostly a Linux [http://gnuradio.org/redmine/projects/gnuradio/wiki/InstallingGR] only tool. It can be run on Windows [http://gnuradio.org/redmine/projects/gnuradio/wiki/WindowsInstall], but we have not tested in there.
   - We have verified things on Ubuntu 16.04 LTS, Debian 8.x

PlutoSDR as a host

To use PlutoSDR as a host, there are two different modes:

1. simple, easy, works out of the box
2. complex, difficult, requires you to recompile the firmware running on the PlutoSDR

Either mode requires a power supply plugged into the Power USB connector, which can provide power for both the USB dongle you are plugging in, and the Pluto SDR itself. We recommend at least 5V, 1A or above, depending on the firmware image.

1. AC adapters we have verified:
   - Farnell's 5.1V, 2.5A, Micro USB [http://www.newark.com/stontronics/t5875dv/psu-raspberry-pi-5v-2-5a-multi/dp/77Y6535] with international plugs
   - Adafruit's 5V, 1A USB port [https://www.adafruit.com/products/501] NEMA 1-15 [http://www.worldstandards.eu/electricity/plugs-and-sockets/ab/] plug, requires USB cable
   - Adafruit's 5V, 2.4A Power Supply with MicroUSB Cable [https://www.adafruit.com/products/1995], NEMA 1-15 [http://www.worldstandards.eu/electricity/plugs-and-sockets/ab/] plug
2. Batteries we have verified:
   - Adafruit's USB Battery Pack, 2.2 Ah, 5V @ 1A [https://www.adafruit.com/products/1959]
   - Adafruit's USB Battery Pack, 4 Ah, 5V @ 1A [https://www.adafruit.com/products/1565]
   - Adafruit's USB Battery Pack, 10 Ah, 5V @ 2A [https://www.adafruit.com/products/1566]

Simple Host

The default firmware images support the following USB chipsets (and commercial dongles we have verified)

- chipset 1
- chipset 2
- chipset 3

You should be able to just plug things in with a OTG cable (which supports OTG - many OTG cables don't properly connect the OTG ID signal, and the PlutoSDR has no idea anything is plugged in), and have things work out of the box to stream data over ethernet or Wifi.

If the PlutoSDR finds a mass storage with specific shell or python script, it will begin to save data to the mass storage device (enabling you to do low cost wireless site surveys [http://en.wikipedia.org/wiki/Wireless_site_survey]), which you can load into SDR frameworks later.

Complex hosts

Almost every device which you can plug into a Linux host, you will be able to plug into a PlutoSDR with a kernel re-compile. check out the Developers information.

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[1] not all possible configurations are listed
[2] If you have MATLAB Student edition, you will need the optional Communications System Toolbox [http://www.mathworks.com/products/communications.html]
[3] to check your installed/licensed toolboxes, type the `ver` command [http://www.mathworks.com/help/matlab/ref/ver.html] at a MATLAB command prompt

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