

Analog Discovery 3 Getting Started Guide



(https://digilent.com/reference/_detail/test-and-measurement/analog-discovery-3/analog-discovery-3-unbox-3.png?id=test-and-measurement%3Aanalog-discovery-3%3Agetting-started)

Overview

This guide will get you started with your new Analog Discovery 3, from getting it out of the box to taking your first measurement.

Inventory

- Your new Analog Discovery 3
- A computer, with the WaveForms application (version 3.20.1 or later) installed.
 - Installation instructions can be found in Step 2 of this guide.

Register your AD3 and access the WaveForms installer for your operating system here: [Discover More \(https://digilent.com/discovermore\)](https://digilent.com/discovermore).

Guide

1. Unboxing

The Analog Discovery 3 and its accessories come in a reusable project box.



(https://digilent.com/reference/_detail/test-and-measurement/analog-discovery-3/analog-discovery-3-unbox-1.png?id=test-and-measurement%3Aanalog-discovery-3%3Agetting-started)

Take out your Analog Discovery 3.

- Take note of the 2×15-pin connector, USB Type-C® connector, and barrel jack connector for external power.



(https://digilent.com/reference/_detail/test-and-measurement/analog-discovery-3/analog-discovery-3-unbox-2.png?id=test-and-measurement%3Aanalog-discovery-3%3Agetting-started)

Remove the accessories from the box.

- Included with the Analog Discovery 3 are five 6-pin male headers, one USB Type-C® cable, one 2×15-pin flywire assembly, flywire labels, and info cards.



(https://digilent.com/reference/_detail/test-and-measurement/analog-discovery-3/analog-discovery-3-unbox-3.png?id=test-and-measurement%3Aanalog-discovery-3%3Agetting-started)

2. Download and Install WaveForms

Digilent's WaveForms application provides a user interface to the Analog Discovery 3. Please download the appropriate WaveForms installer for the operating system (Windows, Linux, Mac). You can find WaveForms downloads on the My Products section of this website. Register your AD3 and access your installer here: [Discover More \(https://digilent.com/discovermore\)](https://digilent.com/discovermore).

Click on the appropriate option below for OS-specific installation instructions.

If WaveForms is already installed, please make sure that it is up to date.

Installing WaveForms : Windows

Open the Executable File

Open the executable file that you downloaded.

Download WaveForms Software

Note: On Linux, the Adept Runtime should be installed separately, before installing WaveForms.

WaveForms is Digilent's free USB Test and Measurement software application compatible with all our Discovery family devices. WaveForms takes just under 60 seconds to download and install and provides the user interface for 13 instruments.



The download links for the latest version will be sent to your email address upon submission.

First Name*

Last Name*

Email*

Occupation*

Feedback

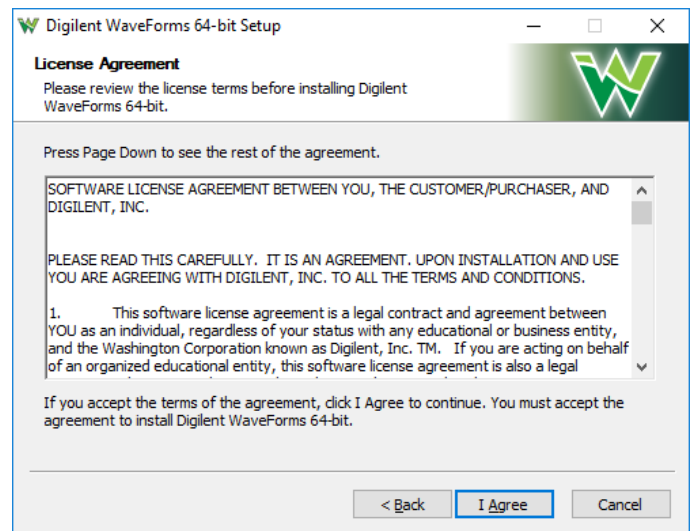
Welcome

Launch the WaveForms installer, by clicking on it in the Downloads folder. Upon launching the WaveForms installer, the welcome page will be seen. Click **Next**.



License Agreement

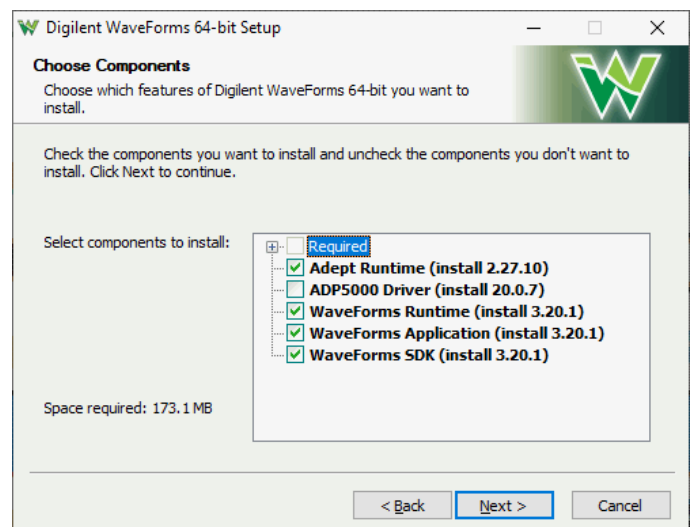
Read the license agreement on this screen, then, if in agreement to it, click **I Agree** to continue.



Choose Components

In the “Choose Components” screen, a list is presented of each of the things that can be installed. In order to use the Analog Discovery 3 with the WaveForms application, the Adept Runtime, WaveForms Runtime, and WaveForms Application are required.

- The Adept Runtime allows WaveForms to communicate with the Analog Discovery 3, Analog Discovery, Analog Discovery



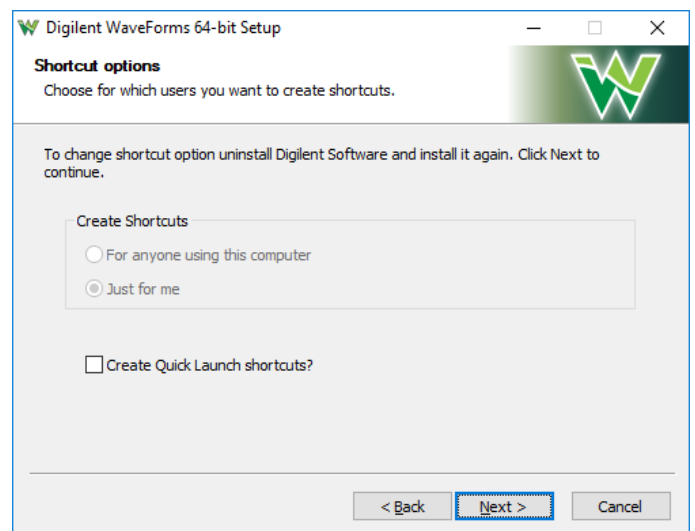
Studio, Digital Discovery, and Electronics Explorer Board.

- The WaveForms Runtime contains a library and device support files needed to run custom applications.
- The WaveForms Application is the Digilent virtual instrumentation interface.
- The WaveForms SDK is the software development kit for creating custom applications

Note: *Even with all components selected, the WaveForms install does not take much hard drive space (<200MB). Digilent recommends that all components are installed.*

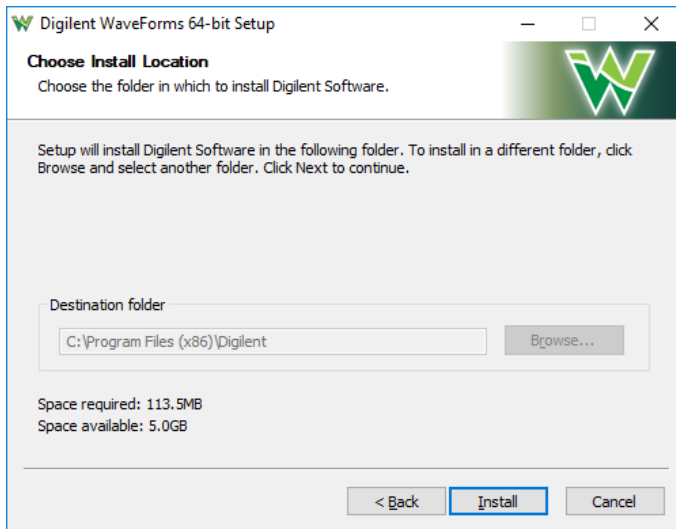
Shortcut Options

Click **Next**.



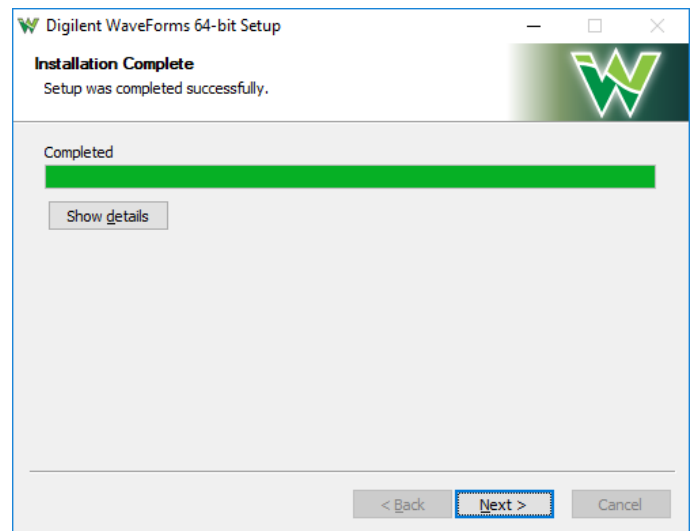
Choose Install Location

- You'll need to choose an installation destination or just leave it at the default.
- Click "Install".



Installing / Installation Complete

- WaveForms will be installed as indicated by the progress bar.
- Click “Next”.



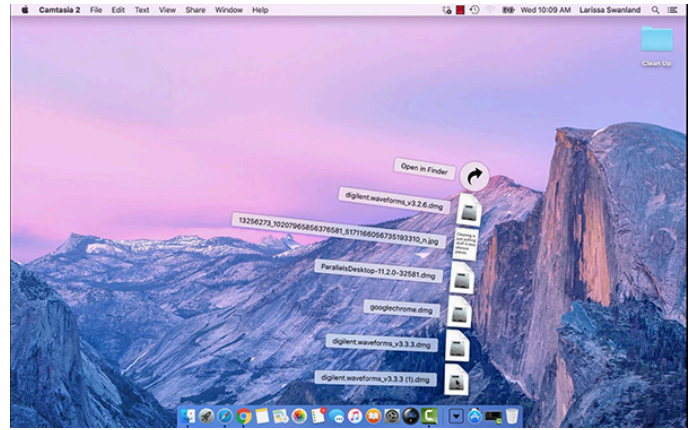
Complete

- Check or uncheck the boxes to open WaveForms and the readme.
- Click “Finish”.

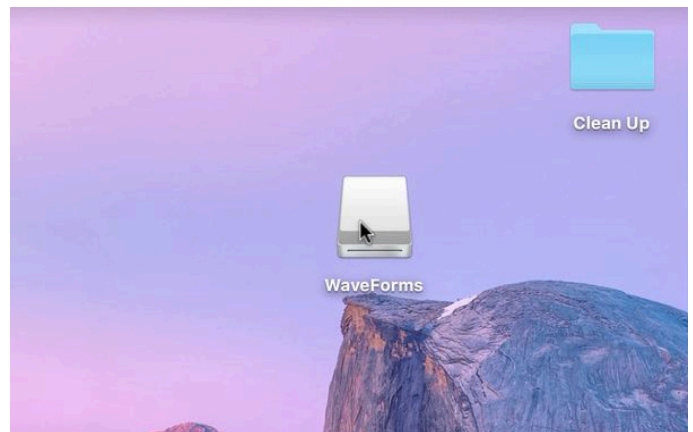


Installing WaveForms : Mac

Expand your downloads and open the **.dmg** file that you have downloaded.



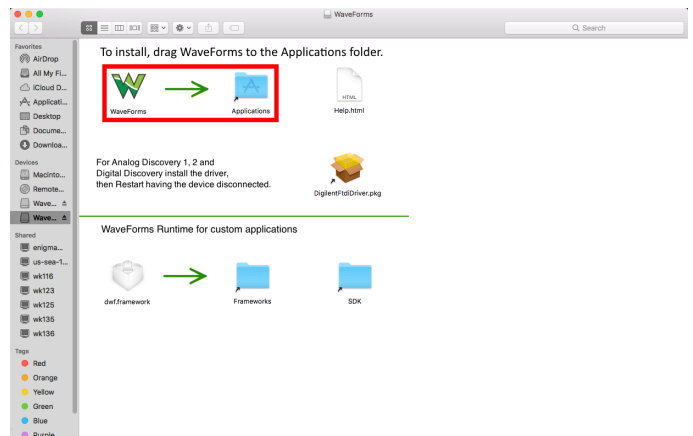
From the desktop, open the **WaveForms** drive.



Drag the **WaveForms** icon into the **Applications** folder.

This will install the following components in Applications:

- **WaveForms Runtime** contains a library and device support files needed to run custom applications.
- **WaveForms Application** is the Diligent virtual instrumentation interface.
- **WaveForms SDK** is the software development kit for creating custom applications

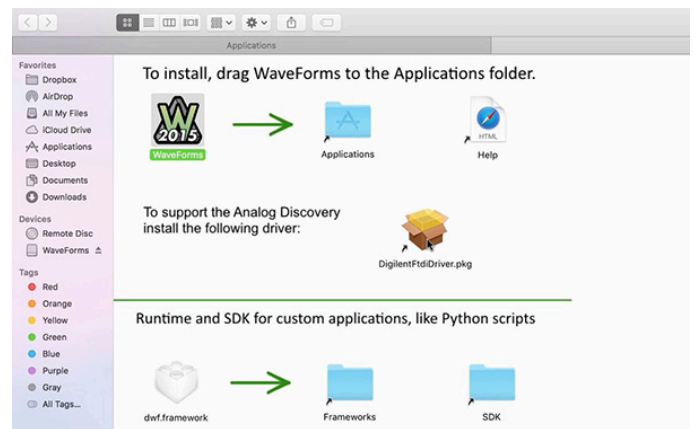


Install Drivers : Only for OS-X 10.13 or earlier

Double click the FTDI driver icon to start the installation process.

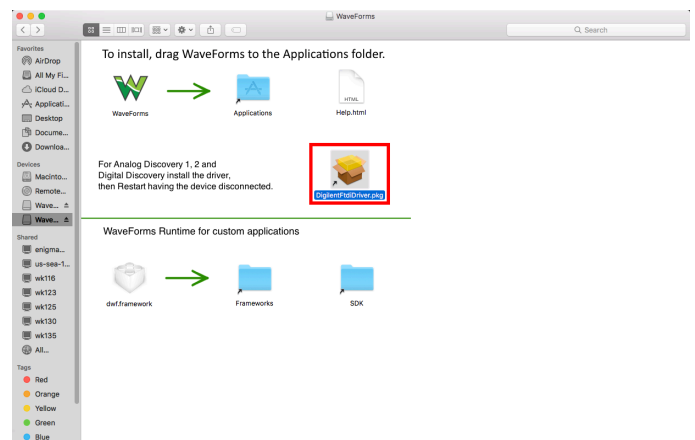
On MacOS (10.13) Sierra High and older versions the device driver should be installed to support Analog Discovery 1 & 2 and Digital Discovery devices.

On MacOS (10.14) Mojave, the device driver is not required. According to some reports, on new MacBook machines the device is not detected if the driver is installed, so uninstall the driver if the device does not connect.

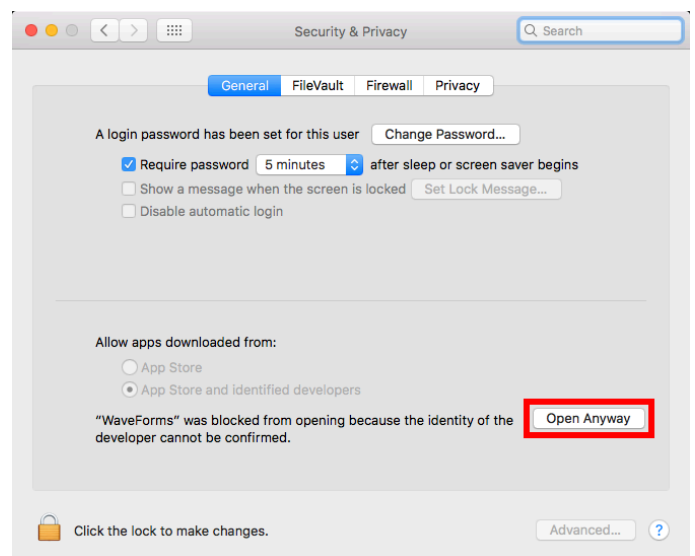


Launch Installer

Double click **DigilentFtdiDriver.pkg** to open the FTDI Driver Installer.

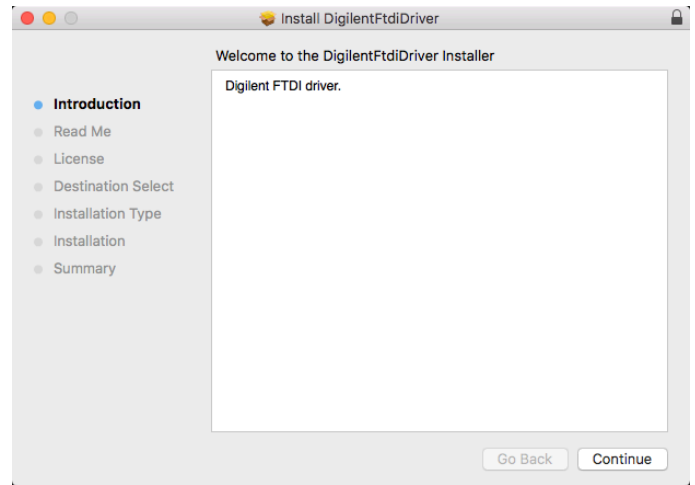


The OS may block the launch of the **driver installer**. If this is the case, go into the System Preferences' Security and Privacy page and click **Open Anyway**.



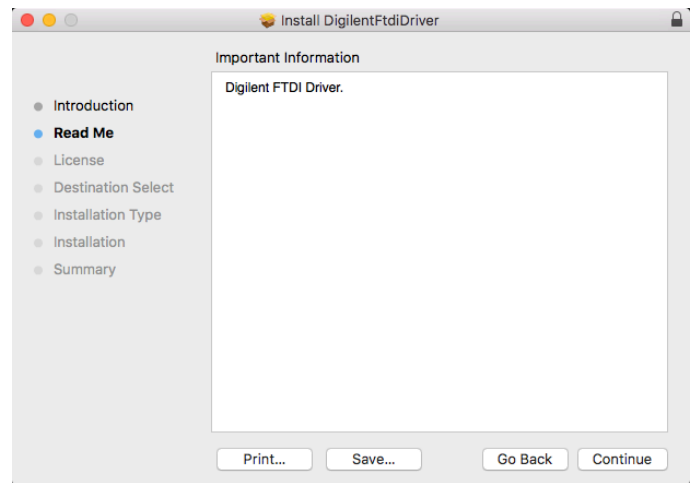
Introduction

Click **Continue**.



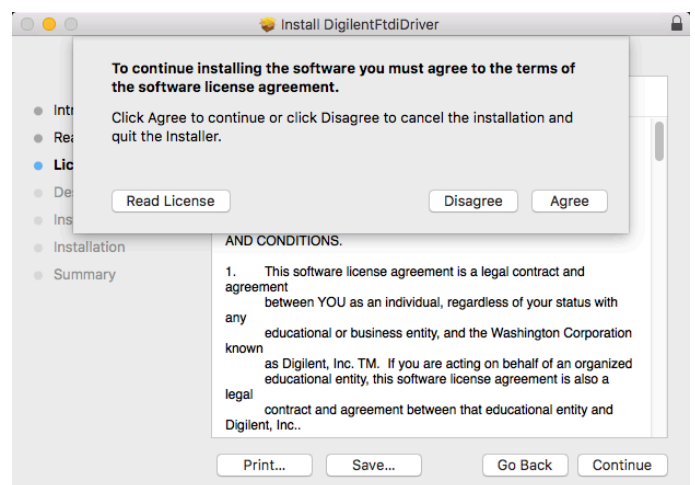
Read Me

Click **Continue**.



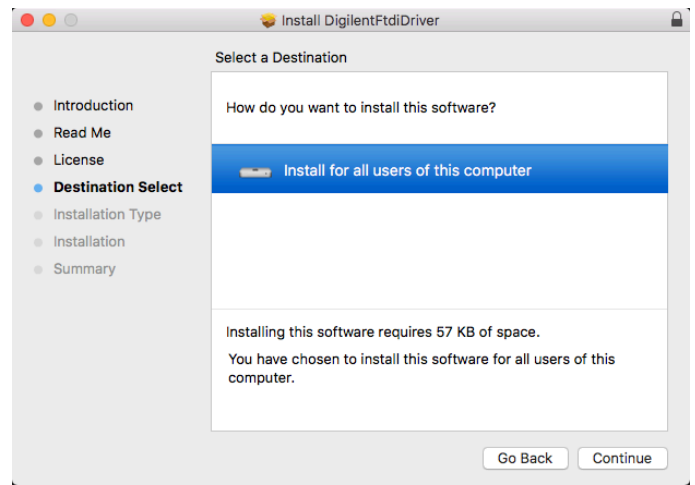
License

Read the license, then if in agreement, click **Continue**, then click **Agree** in the popup.



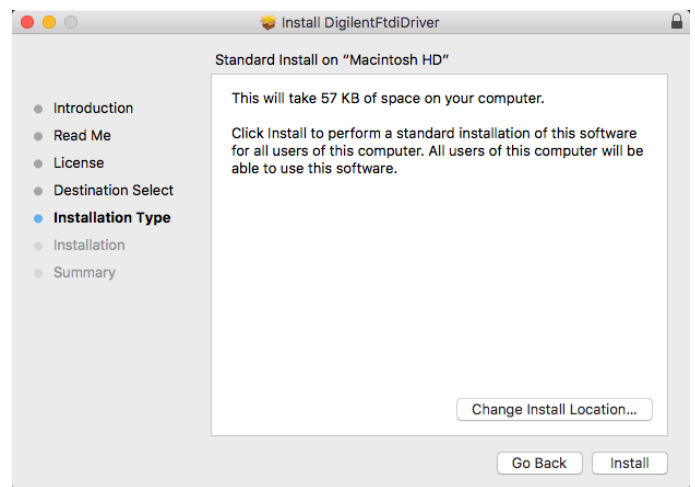
Destination Select

Pick the users to install the drivers for, then click **Continue**.



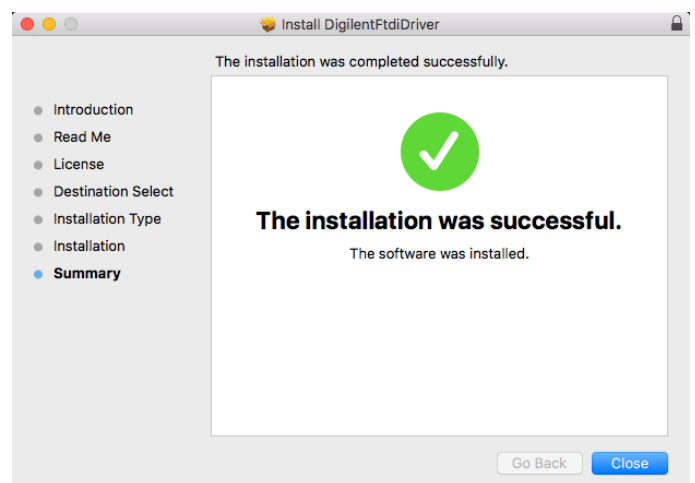
Installation Type

Click **Install**.



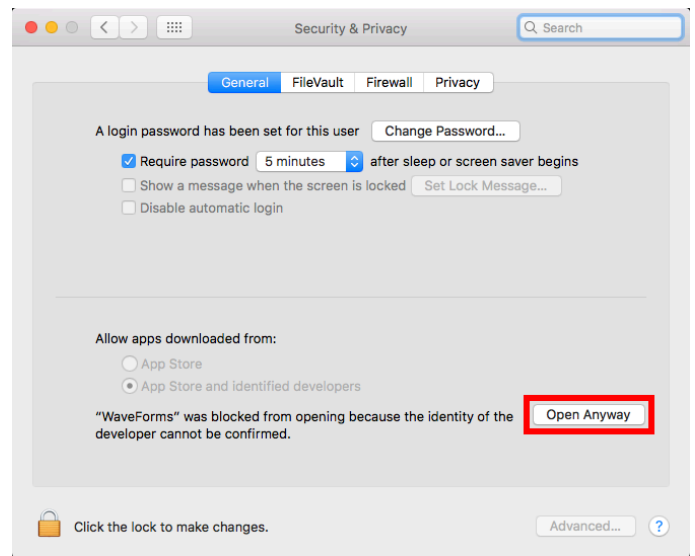
Summary

Once the installation has completed, click **Close**.



The OS may block the launch of the **Waveforms**. If this is the case, go into the System Preferences' Security and Privacy page and

click **Open Anyway**.



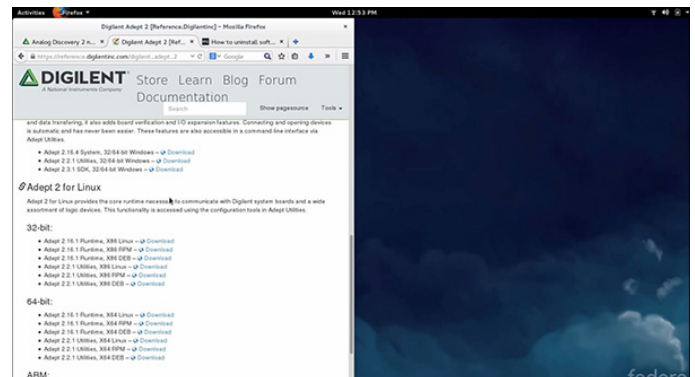
Installing WaveForms : Linux

First, download the package for the Adept Runtime (<https://diligent.com/reference/software/adept/start>). This program is required for WaveForms to connect to the Analog Discovery 3 and must be installed prior to installing WaveForms.

For systems using **.deb packages**, (Ubuntu, Fedora, etc), use the built-in package manager to install the Adept Runtime and then WaveForms - typically, a package manager can be opened by double-clicking on the file in question.

Download Adept Runtime

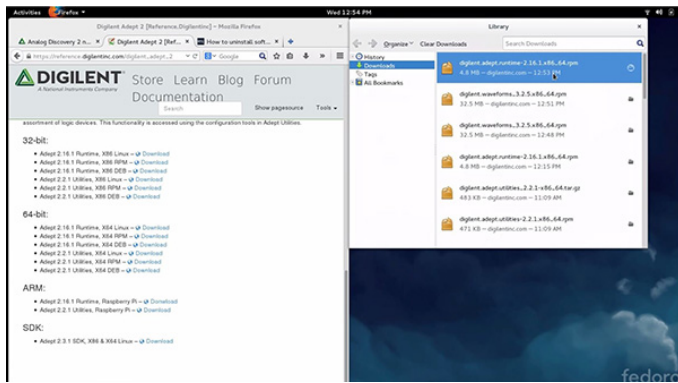
- Download the correct version of Adept. The link for Adept downloads is located [here](https://diligent.com/reference/diligent_adept_2) (https://diligent.com/reference/diligent_adept_2).
- Make sure the version of the Adept install file is the same as WaveForms. I used the 64 bit RPM for WaveForms so I will use the 64 bit RPM for Adept.



Install Files using built-in Package Manager

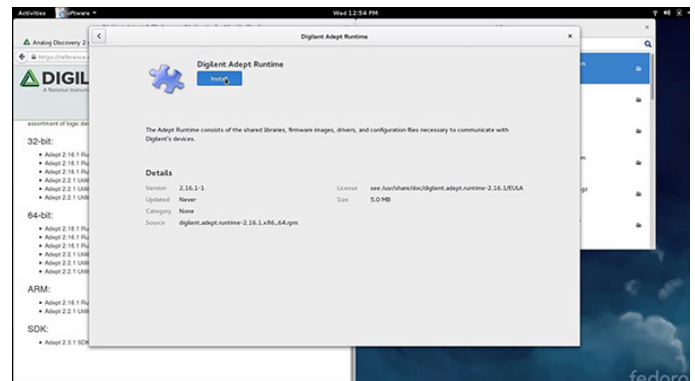
Open the Adept File

Open the file you downloaded for Adept in the previous step.



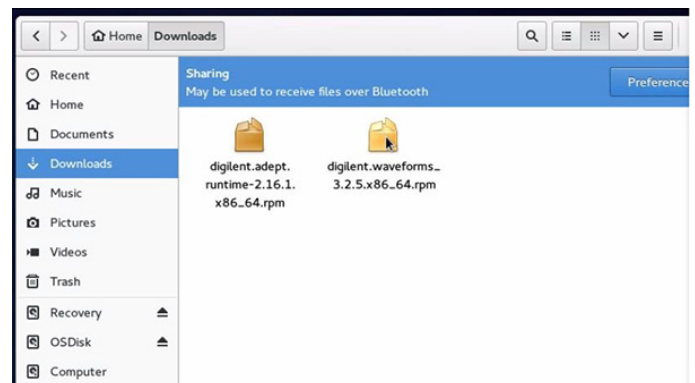
Click Install

Click “Install” on the window that pops up.



Open the WaveForms File

Open the file you downloaded to install WaveForms.

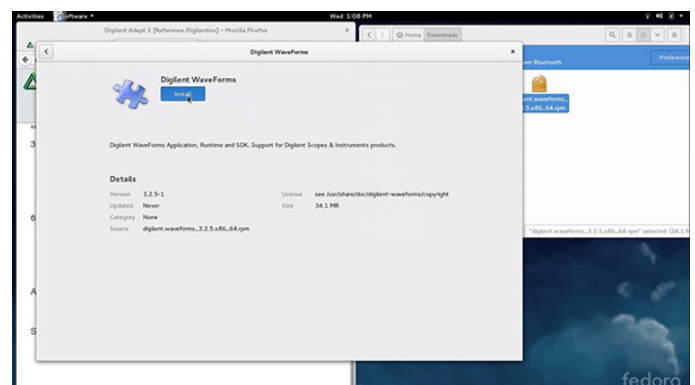


Click Install

Click Install in the window that pops up.

This will install the following components:

- **WaveForms Runtime** contains a library and device support files needed to run custom applications.



- **WaveForms Application** is the Digilent virtual instrumentation interface.
- **WaveForms SDK** is the software development kit for creating custom applications

Install Files using command line

Alternatively, use the following set of commands in the terminal to install the Adept Runtime and WaveForms from the downloaded packages:

```
sudo dpkg -i <path to Adept Runtime .deb file>
sudo dpkg -i <path to WaveForms .deb file>
sudo apt-get install -f
```

For systems using **.rpm packages**, (Red Hat Linux, etc), use the following set of commands in the terminal to install the Adept Runtime and WaveForms from the downloaded packages:

```
sudo rpm -i <path to Adept Runtime .rpm file>
sudo rpm -i <path to WaveForms .rpm file>
```

If WaveForms has already been installed on the system, replace the “-i” flag passed to the rpm command with “-U” to upgrade the existing installation. For technical support with installing WaveForms on various Linux distributions, please visit the Test and Measurement section of the [Digilent Forum](https://forum.digilent.com) (<https://forum.digilent.com>).

3. Take a Measurement

This section walks through using the Analog Discovery 3 for the first time. An analog output pin is connected to an analog input pin, and a waveform is generated and captured via this simple loopback circuit.

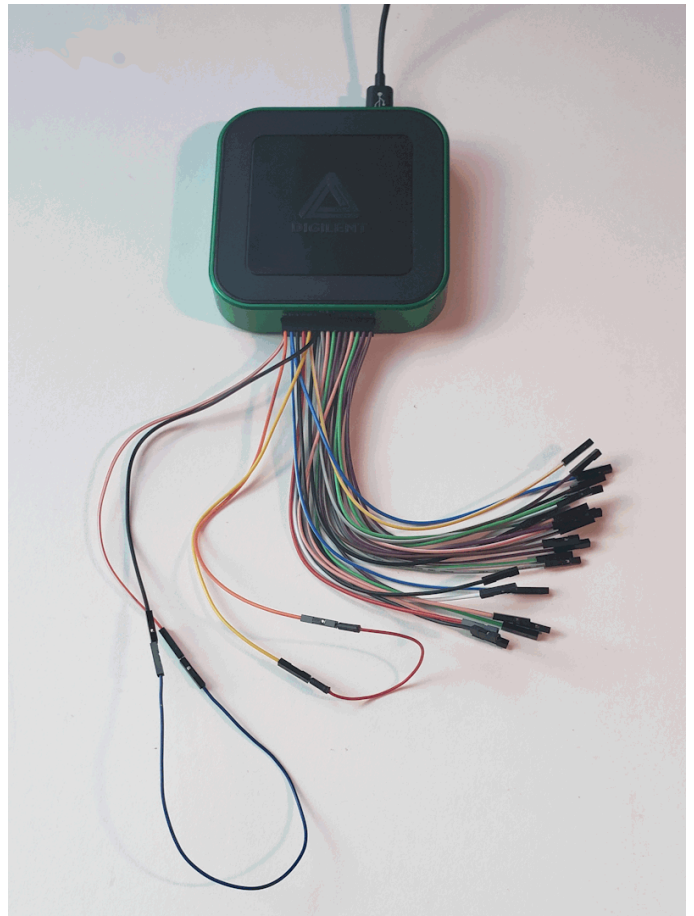
Take a Measurement - Steps

Plug in your Analog Discovery 3

Plug the USB C cable into your computer and Analog Discovery 3.

Set up a Loopback Circuit

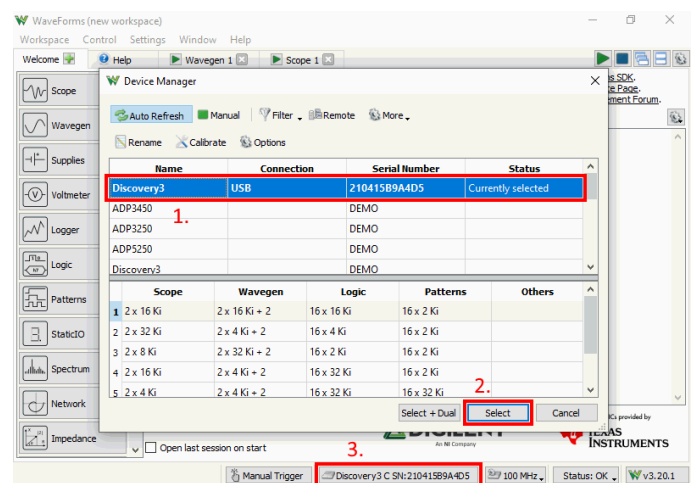
Plug the yellow wire (“W1”, Waveform Generator 1) into the orange wire (“1+”, Oscilloscope Channel 1 Positive) Plug any black wire (down arrow symbol, Ground) into the orange wire with the white stripe (“1-”, Oscilloscope Channel 1 Negative).



(https://digilent.com/reference/_detail/test-and-measurement/analog-discovery-3/first-measurement-hardware-setup.png?id=test-and-measurement%3Aanalog-discovery-3%3Agetting-started)

Launch WaveForms

Launch WaveForms. Upon launch, WaveForms will automatically detect and connect to the Analog Discovery 3. If the Analog Discovery 3 is not connected to the host computer when WaveForms launches, the Device Manager will be launched. Make sure that the device is plugged in and turned on, at which point it will appear in the Device Manager's device list (1). Click on the device in the list to select it, then click the Select button (2) to close the Device Manager.



(https://digilent.com/reference/_detail/test-and-measurement/analog-discovery-3/first-measurement-hardware-setup.png?id=test-and-measurement%3Aanalog-discovery-3%3Agetting-started)

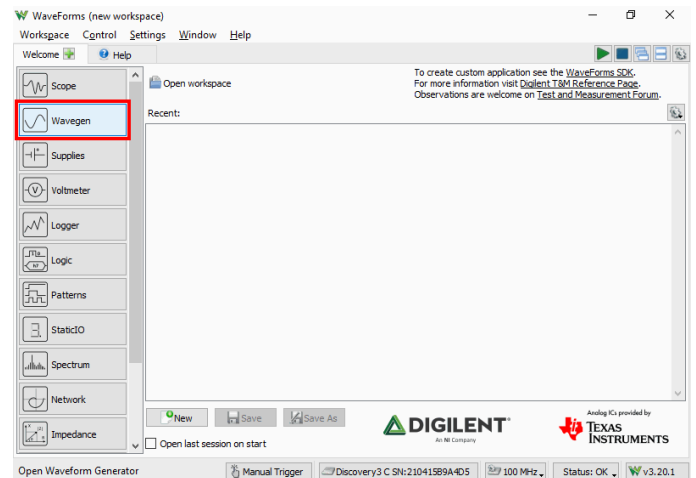
Note: “DEMO” devices are also listed, which allow the user to use WaveForms and create projects without a physical device.

Note: The Device Manager can be opened by clicking on the device identifier button at the bottom of the window (3), or by selecting “Device Manager” from the “Settings” menu at the top of the screen.

Open the "Wavegen" Instrument

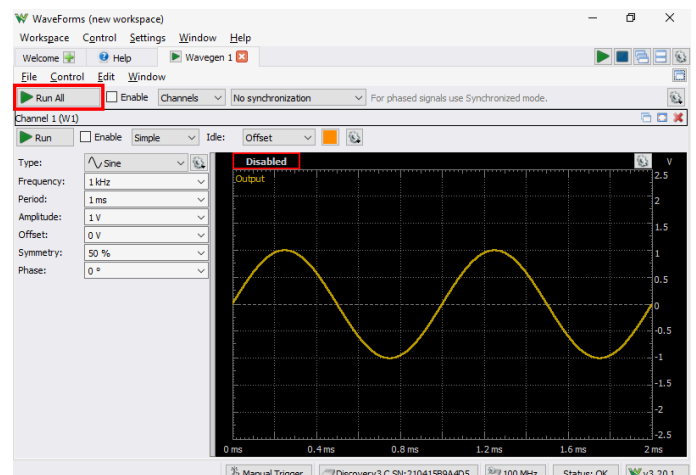
Click on its button in the instrument panel on the left side of the screen.

https://diligent.com/reference/_detail/test-and-measurement%3Aanalog-discovery-3%3Agetting-started



https://diligent.com/reference/_detail/test-and-measurement/analog-discovery-3/first-measurement-open-wavegen.png?id=test-and-measurement%3Aanalog-discovery-3%3Agetting-started

Leave all settings as defaults, and click the green arrow at the top of the window to play the wave.

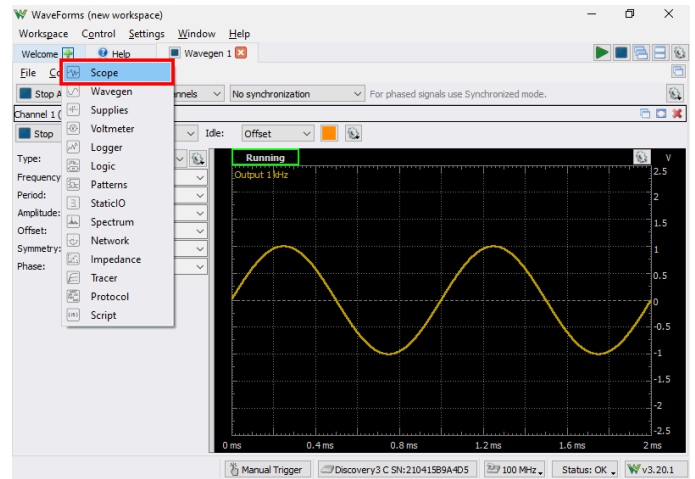


https://diligent.com/reference/_detail/test-and-measurement/analog-discovery-3/first-measurement-open-wavegen.png?id=test-and-measurement%3Aanalog-discovery-3%3Agetting-started

start-wavegen.png?id=test-and-measurement%3Aanalog-discovery-3%3Agetting-started)

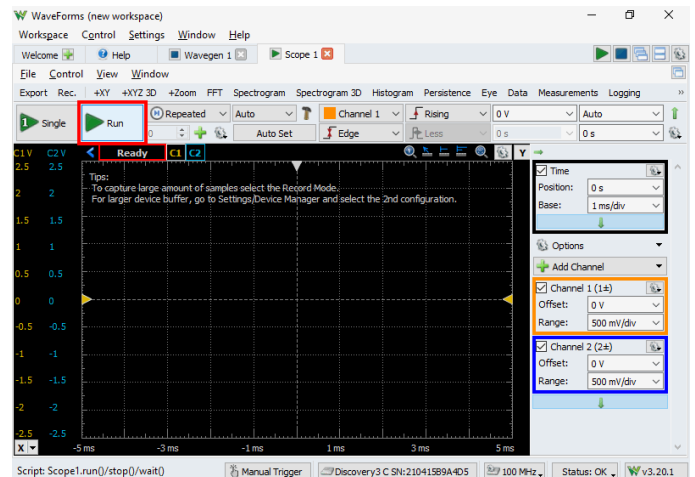
Open "Scope" Instrument

Using the “+” button on the “Welcome” tab, open the “Scope” instrument.



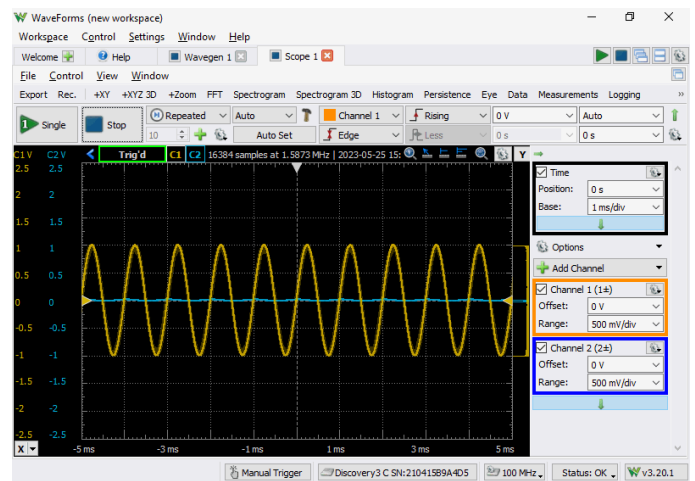
(https://digilent.com/reference/_detail/test-and-measurement/analog-discovery-3/first-measurement-open-scope.png?id=test-and-measurement%3Aanalog-discovery-3%3Agetting-started)

Leave all settings as defaults and click the green play arrow to begin capturing data.



(https://digilent.com/reference/_detail/test-and-measurement/analog-discovery-3/first-measurement-start-scope.png?id=test-and-measurement%3Aanalog-discovery-3%3Agetting-started)

Check it out, you've now got acquired data plotted on the chart!



(https://digilent.com/reference/_detail/test-and-measurement/analog-discovery-3/first-measurement.png?id=test-and-measurement%3Aanalog-discovery-3%3Agetting-started)

Next Steps

To find reference materials and guides on how to use the Analog Discovery 3 and WaveForms, please visit the [Analog Discovery 3 Resource Center \(https://digilent.com/reference/test-and-measurement/analog-discovery-3/start\)](https://digilent.com/reference/test-and-measurement/analog-discovery-3/start).

For detailed steps about how to install and use WaveForms on Raspberry Pi, follow this guide: [Getting Started with Raspberry Pi and a Test and Measurement Device \(https://digilent.com/reference/test-and-measurement/guides/getting-started-with-raspberry-pi\)](https://digilent.com/reference/test-and-measurement/guides/getting-started-with-raspberry-pi).

For technical support, please visit the Test and Measurement section of [Digilent Forum \(https://forum.digilent.com\)](https://forum.digilent.com).

[learn \(https://digilent.com/reference/tag/learn?do=showtag&tag=learn\)](https://digilent.com/reference/tag/learn?do=showtag&tag=learn), [instrumentation \(https://digilent.com/reference/tag/instrumentation?do=showtag&tag=instrumentation\)](https://digilent.com/reference/tag/instrumentation?do=showtag&tag=instrumentation), [tutorial \(https://digilent.com/reference/tag/tutorial?do=showtag&tag=tutorial\)](https://digilent.com/reference/tag/tutorial?do=showtag&tag=tutorial), [analog-discovery-3 \(https://digilent.com/reference/tag/analog-discovery-3?do=showtag&tag=analog-discovery-3\)](https://digilent.com/reference/tag/analog-discovery-3?do=showtag&tag=analog-discovery-3)

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- [!\[\]\(4c625d6c32d16066b13eb52e34c8435a_img.jpg\) \(https://github.com/digilent\)](https://github.com/digilent)
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