## WaveForms Getting Started Guide



### Overview

WaveForms is the virtual instrument suite for Digilent Test and Measurement devices. It configures, calibrates, and controls the devices' various Instruments. (https://digilent.com/reference/test-and-measurement/start)

Go to the WaveForms Resource Center and download the latest version of WaveForms. (https://digilent.com/reference/software/waveforms/waveforms-3/start)

### Guide

Download and Install Waveforms

Windows

Installing WaveForms : Windows

### Open the Executable File

Open the executable file that you downloaded.



### 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.

# ✓ Digilent WaveForms 64-bit Setup ✓ License Agreement Please review the license terms before installing Digilent WaveForms 64-bit. Press Page Down to see the rest of the agreement. SOFTWARE LICENSE AGREEMENT BETWEEN YOU, THE CUSTOMER/PURCHASER, AND PLEASE READ THIS CAREFULLY. IT IS AN AGREEMENT. UPON INSTALLATION AND USE YOU ARE AGREEING WITH DIGILENT, INC. TO ALL THE TERMS AND CONDITIONS. 1. This software license agreement is a legal contract and agreement between YOU as an individual, regardless of your status with any educational or business entity, and the Washington Corporation known as Digilent, Inc. TM. If you are acting on behalf of an organized educational entity, this software license agreement is also a legal If you accept the terms of the agreement, dick I Agree to continue. You must accept the agreement to install Digilent WaveForms 64-bit.

### **Choose Components**

In the "Choose Components" screen, a list is presented of each of the things that can be installed. In order to use your Test and Measurement device with the WaveForms application, the Adept Runtime, WaveForms Runtime, and WaveForms Application are required.

- The Adept Runtime allows WaveForms to communicate with Digilent Test and Measurement devices.
- 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.
- If you have an ADP5250, make sure to check the box for its driver installation, to ensure that your PC will be able to communicate with the device.

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

### W Digilent WaveForms 64-bit Setup × **Choose Components** Choose which features of Digilent WaveForms 64-bit you want to install. Check the components you want to install and uncheck the components you don't want to install, Click Next to continue. Select components to install: Required ÷. 🗸 Adept Runtime (install 2.26.1) ADP5000 Driver (install 20.0.6) WaveForms Runtime (install 3.18.1) WaveForms Application (install 3.18.1) WaveForms SDK (install 3.18.1) Space required: 175,4MB < Back Next > Cancel (https://digilent.com/reference/\_detail/software/waveforms/waveforms-3/newinstall.jpg?id=software%3Awaveforms%3Awaveforms-

3%3Agetting-started-guide)

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Create Shortcuts			
○ For anyone using this computer			
O Just for me			
Create Quick Launch shortcuts?			
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### **Shortcut Options**

Click Next.

### **Choose Install Location**

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

₩ Digilent WaveForms 64-bit Setup	_		×
Choose Install Location		$\Lambda F$	
Choose the folder in which to install Digilent Software.			7
Setup will install Digilent Software in the following folder. To install in a di Browse and select another folder. Click Next to continue.	fferent	folder, cli	:k
Destination folder			
C:\Program Files (x86)\Digilent	Brow	wse	
Space required: 113.5MB Space available: 5.0GB < Back	all	Can	el

### 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".

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	Click Finish to close this wizard.			
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	Show Readme			
	http://www.digilentinc.com			
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### Mac

### Installing WaveForms : Mac

### Download WaveForms

This tutorial will guide you through the steps involved in the installation process on Mac after downloading it.

Analog Discovery 2 Quick-Start: Video1 -Unboxing and Software Download



https://youtu.be/2nAvh28o-t4? si=xrwTasA7fv1Umbkw

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





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



### Install and Run Rosetta: Only for a Mac with Apple Silicon

The WaveForms app has not yet been ported to run on Mac computers with Apple Silicon. Apple has provided a translation framework called Rosetta2 (https://support.apple.com/enus/HT211861) which allows programs like WaveForms that were written for Intel processors to run on Apple Silicon Macs. When you attempt to run WaveForms, you may be prompted to install Rosetta in order to open the app. Click install and enter your username and password to allow the installation process to proceed. Rosetta will then be ready to run the WaveForms application or any other software originally written for Intel processors.



(https://digilent.com/reference/\_detail/reference/software/waveforms/wav 3/rosetta2.jpg?id=software%3Awaveforms%3Awaveforms-3%3Agettingstarted-guide)

### 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.

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

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.

		WaveForms	
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Favorites	To install, drag WaveForms to the	e Applications folder.	
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y <sup>A</sup> ; Applicati ☐ Desktop ☐ Docume	WaveForms Applications	Help.html	
Downloa Devices Macinto Remote Wave	For Analog Discovery 1, 2 and Digital Discovery install the driver, then Restart having the device disconnected.		
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<ul> <li>wk125</li> <li>wk130</li> </ul>	dwt.framework Frameworks	SDK	
🗑 wk135 🛞 All			
Tags Red Orange			
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The OS O 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**.

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A login pa	assword has been set	for this user Cha	ange Password	
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Click the lock	< to make changes.			Advanced ?

	💝 Install DigilentFtdiDriver	
	Welcome to the DigilentFtdiDriver Installer	
Introduction	Digilent FTDI driver.	
Read Me		
<ul> <li>License</li> </ul>		
<ul> <li>Destination Select</li> </ul>		
Installation Type		
Installation		
<ul> <li>Summary</li> </ul>		
	Go Back Continue	)

### Introduction

Click Continue.



### License

Read Me

Click Continue.

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.

### 😺 Install DigilentFtdiDriver Standard Install on "Macintosh HD" This will take 57 KB of space on your computer. Introduction Click Install to perform a standard installation of this software Read Me for all users of this computer. All users of this computer will be License able to use this software. Destination Select Installation Type Installation Summary Change Install Location... Go Back Install

### Summary

Installation Type

Click Install.

Once the installation has completed, click Close.



• • • < > IIII Security & Privacy	Q Search
General FileVault Firewall	Privacy
A login password has been set for this user Change	Password
🗹 Require password 🛛 5 minutes 🛛 📀 after sleep	or screen saver begins
Show a message when the screen is locked Se	et Lock Message
Disable automatic login	
Allow apps downloaded from: App Store • App Store and identified developers	
"WaveForms" was blocked from opening because the id developer cannot be confirmed.	lentity of the Open Anyway
Click the lock to make changes.	Advanced ?

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**.

### Linux

Installing WaveForms : Linux

### Download WaveForms

This tutorial will guide you through the steps involved in the installation process on Linux after downloading it.

Analog Discovery 2 Quick-Start: Video 2c Installing WaveForms on Linux



https://youtu.be/uYc8-HwGNCA? si=JdLSbuPn3I3gA7wf

First, download the package for the Adept Runtime. This program is required for WaveForms to connect to your device 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 the Adept Runtime. All Adept downloads can be found here: Adept's Product Catalog Entry (https://cloud.digilent.com/myproducts/Adept?
   pc=1&tab=2). Make sure to follow the link for Adept Runtime Downloads.
- 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.

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### 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 Oigilent Forum (https://forum.digilent.com).

### Using WaveForms for the First Time

### Windows

### No Device Connected

When WaveForms initially opens, if you have no device plugged in it will give you a warning that no device was detected.



(https://digilent.com/reference/\_detail/learn/instrumentation/tutorials/ad2 waveforms2015-installation-windows/fbzv36lioo5enzj.medium.jpg? id=software%3Awaveforms%3Awaveforms-3%3Agetting-started-guide)

₩ Device Manager	
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🛸 Auto Refresh 🛛 🖉 Manual Refresh 🛛 🌱 Filter 🖕 🎆 Remote Devices 🛛 🚳 Wy device is not listed

ADP	Name	Conr	nection	Serial Number	r	Status	1
	93450			DEMO			
ADP	3250			DEMO			
١DP	95250			DEMO			
Disc	covery2			DEMO			
Disc	coveryStudio		1	DEMO			
Disc	overy		1	DEMO			
DDis	scovery			DEMO			
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	Scope	Wavegen		ogic Pa	itterns	Others	_ ^
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2 1	x 1 M	1 x 16 k	32 x 1 M	-	DE	MO ADP5250	

(https://digilent.com/reference/\_detail/software/waveforms/waveforms-

3/demo.jpg?id=software%3Awaveforms%3Awaveforms-3%3Agettingstarted-guide)

### Oscilloscope in Demo Mode

For example, here is a demonstration of the oscilloscope scoping a square and sine wave.

### Run Demo Mode

X

That's okay, because WaveForms offers a demo mode where you can try out the features without having a compatible device.



(https://digilent.com/reference/\_detail/learn/instrumentation/tutorials/ad2 waveforms2015-installation-windows/fqxbtb1ioo5eo21.medium.jpg? id=software%3Awaveforms%3Awaveforms-3%3Agetting-started-guide)

-	Name		ection		l Number	Status
	0P5250-321D6CE	USB		321D6CE		
	P3450			DEMO		
AE	P3250			DEMO		
AE	P5250			DEMO		Currently selected
Di	scovery2			DEMO		
Di	scoveryStudio			DEMO		
Di	scovery			DEMO		
	Scope	Wavegen		Logic	Patterns	Others
1	2 x 1 M	1 x 16 k	32 x 1 M		-	500MHz 2 Scope
2	1 x 1 M	1 x 16 k	32 x 1 M		-	1GHz 1 Scope Channel

(https://digilent.com/reference/\_detail/software/waveforms/waveforms-3/deviceconnected.jpg?id=software%3Awaveforms%3Awaveforms-3%3Agetting-started-guide)

### Mac

### **Open Demo Mode**

We can run demo mode to get a feel for the interface and capabilities of WaveForms without having a device attached.

Click on "Demo Mode" and then click "Select".



When you plug in your Test and Measurement device it will appear on the device manager and you can then select it to connect to it.



(https://digilent.com/reference/\_detail/learn/instrumentation/tutorials/ad2 waveforms2015-installation-osx/frnqbf9iovpr764.medium.jpg? id=software%3Awaveforms%3Awaveforms-3%3Agetting-started-guide)

### Open Oscilloscope in Demo Mode

Open the oscilloscope tool and select "Play". You can see a square and sine wave being demonstrated.



(https://digilent.com/reference/\_detail/learn/instrumentation/tutorials/ad/ waveforms2015-installation-osx/f812rc7iovpr767.medium.jpg? id=software%3Awaveforms%3Awaveforms-3%3Agetting-started-guide)

### Plug in and Select Device

When you plug in your device it will appear in the Device Manager.



(https://digilent.com/reference/\_detail/learn/instrumentation/tutorials/ad2 waveforms2015-installation-osx/fcovpociovpr768.medium.jpg? id=software%3Awaveforms%3Awaveforms-3%3Agetting-started-guide)

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### Run Demo Mode

The device manager will now open. Click on "Demo Mode", and then click "Select".



(https://digilent.com/reference/\_detail/learn/instrumentation/tutorials/ad2 waveforms2015-installation-linux/fuhj01siovprgxn.medium.jpg? id=software%3Awaveforms%3Awaveforms-3%3Agetting-started-guide)

### Linux

### No Device

If you don't have the device plugged in, a window will pop up with a warning stating that no device was detected. You don't need to have a device to run the software, so go ahead and click "OK" to proceed.

### Demo Mode Oscilloscope

As mentioned previously, if you don't have a Test and Measurement device yet, that's okay. You can still run WaveForms in demo mode and get a feel for the interface and capabilities. The below image is a demo of the oscilloscope displaying a sine and square wave.



(https://digilent.com/reference/\_detail/learn/instrumentation/tutorials/ad2 waveforms2015-installation-linux/ffr5kciiovprgzf.medium.jpg? id=software%3Awaveforms%3Awaveforms-3%3Agetting-started-guide)

### Plug in device

If you plug in your device, a window will pop up indicating that it was detected. Select "OK" to proceed.



(https://digilent.com/reference/\_detail/learn/instrumentation/tutorials/ad2 waveforms2015-installation-linux/frlto0xiovprh01.medium.jpg? id=software%3Awaveforms%3Awaveforms-3%3Agetting-started-guide)

### **Device Manager**

If you open the device manager, or you have the device plugged in when WaveForms is open, the window displayed in the image below will appear. Select your device, for example, just as you did for demo mode.



(https://digilent.com/reference/\_detail/learn/instrumentation/tutorials/ad2 waveforms2015-installation-linux/fzyhbvfiovprh0a.medium.jpg? id=software%3Awaveforms%3Awaveforms-3%3Agetting-started-guide)

### Additional Resources

For additional resources visit the WaveForms Resource Center (https://digilent.com/reference/software/waveforms/waveforms-3/start). There you'll find the reference manuals, tutorials, downloads, and more.

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).