

A2i0

Apple II Wireless Game Port Adapter

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<http://8bitreality.com>

About

The A2io is a wireless Bluetooth game port adapter for the Apple II series of computers. When used in combination with a mobile device (Android/iOS), the adapter allows the usage of wireless Bluetooth controllers, as well as touch & motion input.

FEATURES

A2io Adapter

- X/Y axis analog output + 2 buttons
- Updatable firmware via the A2io mobile application
- Bluetooth BLE 4.0
- Low Power

A2io Application

- Compatible with most wireless Bluetooth controllers*
- Virtual Paddle w/ touch input
- Virtual Tablet w/ touch & pen input
- Motion control
- Gamepad interface including X/Y trim controls
- True diagonals from analog thumb sticks

** Pairing procedures for wireless controllers may differ by mobile device. Instructions for popular wireless controllers are included in this manual.*

Quick Guide

Installing the A2IO adapter

First, ensure your Apple II computer is powered off. Then insert the A2io adapter into the 9pin game port connector on the back of your Apple II series computer.

Never insert/remove the A2io adapter while the computer is powered on!

Power-on your Apple II, and note that the green LED on the A2io adapter is blinking. The LED will blink when the adapter is ready to receive a Bluetooth connection from your mobile device.

Connecting to the A2io adapter from a mobile device

Open the A2io application on your device.

Click the green “**Connect**” button on the main menu of the application.

The application will search for the A2io adapter, and then open a connection. This process will take a few seconds, and is complete when the “*Connect*” button changes to “**Disconnect**”.

If there is a problem connecting to the A2io adapter, an error message will be displayed. Refer to the troubleshooting section at the end of this manual for more information.

How do I use a wireless game controller with the A2io adapter?

The first step is to pair your wireless controller with your mobile device. This procedure may differ between devices, and instructions for popular controllers are provided in the “Game Controllers” chapter of this manual.

Does the A2io application need to be open for the A2io adapter to work?

Yes, the A2io application must be active for the A2io adapter to receive input data from your mobile device. If your device goes to sleep, or the A2io application is placed in the background, the flow of data to the A2io adapter will be interrupted. By default, the A2io application is configured to keep your device “awake” and remain the active application. This can be changed in the settings by clicking on the **Gear** icon. Ensure your device is set to sleep after a long duration if you disable this option.

Will the Apple Pencil or Galaxy S-Pen work with the Virtual Tablet interface?

Yes, active stylus devices will work with the Virtual Tablet interface.

What is the customer support address?

Send feedback and support requests to support@craftymech.com

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1: A2io App

The main menu of the A2io application provides easy access to the four input interfaces, settings, and help screen.



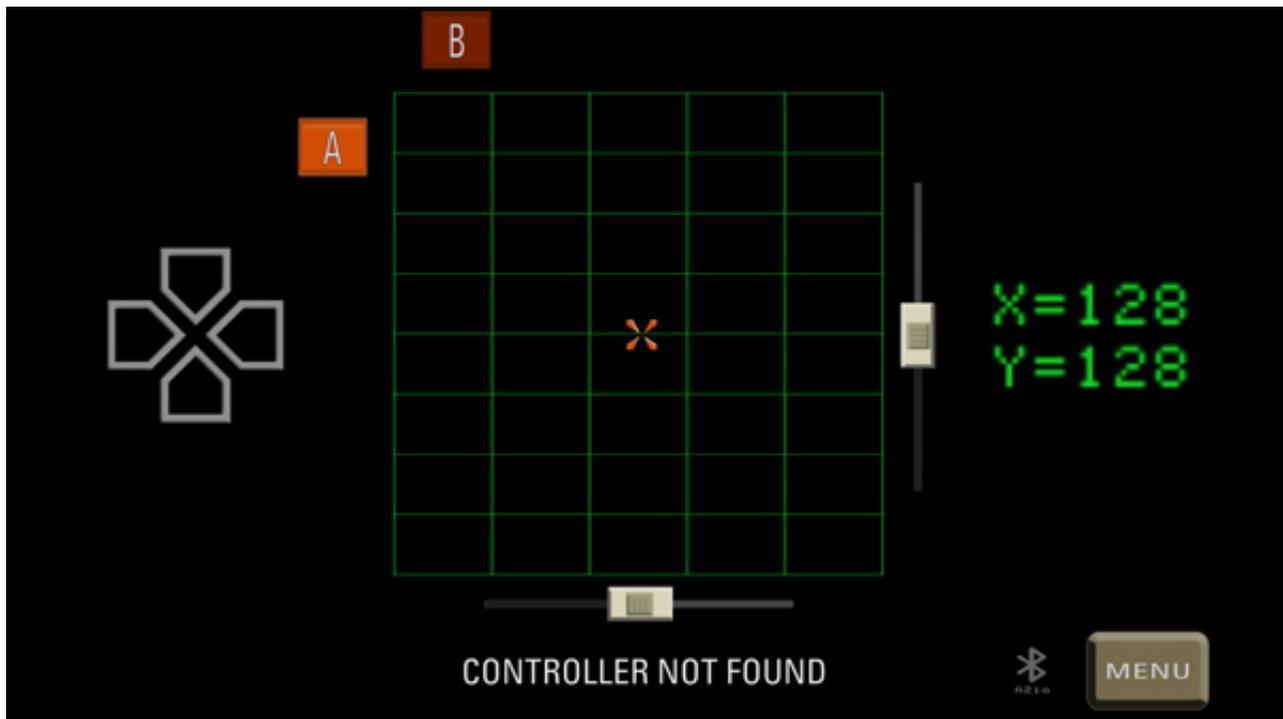
The Help screen can be accessed by tapping the **?** icon in the upper left corner. The application settings are accessed by tapping the **Gear** icon in the upper right corner of the screen.

You do not need to be connected to the A2io adapter to view the four input interfaces. Naturally, no input data will be passed to the A2io adapter until you click the green **“Connect”** button, and the connection is established.

*Note: As soon as your Apple II computer powers up, you may click the **“Connect”** button. You do not need to wait for software to fully load.*

GAMEPAD

This interface is used with wireless Bluetooth controllers that have been paired with your mobile device. For pairing instructions for popular controllers, refer to the “Game Controllers” chapter.



This interface is comprised of a tracking grid, D-Pad, two buttons, and X/Y axis trim controls.

The status text under the grid will indicate if a controller is paired with your device. Moving the left-analog stick of the controller will move the red crosshairs around the tracking grid.

Pressing directions on the controller D-Pad will illuminate the matching directions on the on-screen D-Pad.

Buttons A & B will illuminate when matching buttons on your controller are pressed. Note that the labels on your controller buttons may be different.

On the right side of the interface, the X/Y axis data values are displayed, with a range of 0-255 for each axis. These are the values passed to the A2io adapter. The A2io adapter converts these values into the necessary voltage for input to the Apple II game port.

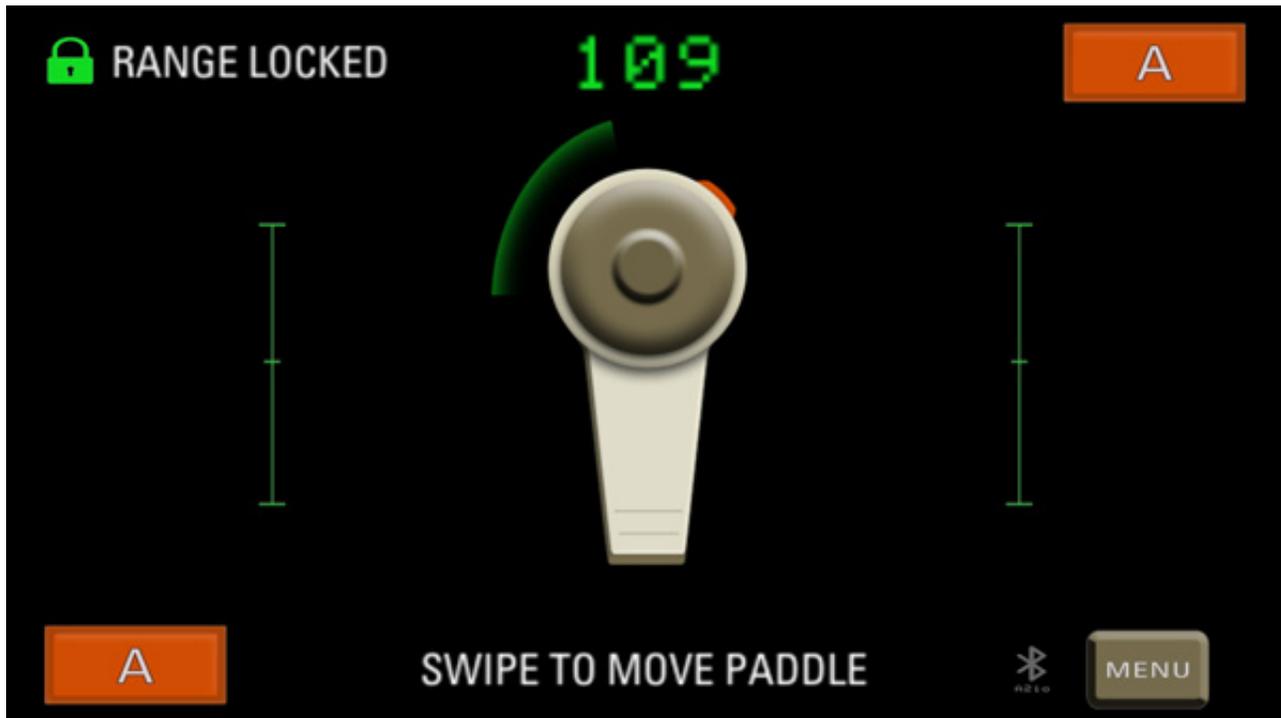
The X/Y trim controls are an analogue to the trim controls found on many Apple II joysticks. Pressing the slider control, while swiping right or left, will change the trim value. A gray crosshair will become visible on the tracking grid, indicating the amount off-center that the tracking has been adjusted. The trim settings alter the data values passed to the A2io adapter, but are not reflected in the X/Y values displayed on the Gamepad interface.



If there is no response to your controller in the Gamepad interface, un-pair and re-pair the controller. Refer to the Game Controllers chapter for pairing instructions for popular controllers.

PADDLE

This interface provides a virtual Paddle that is controlled by swiping left/right on the touch screen of your device.



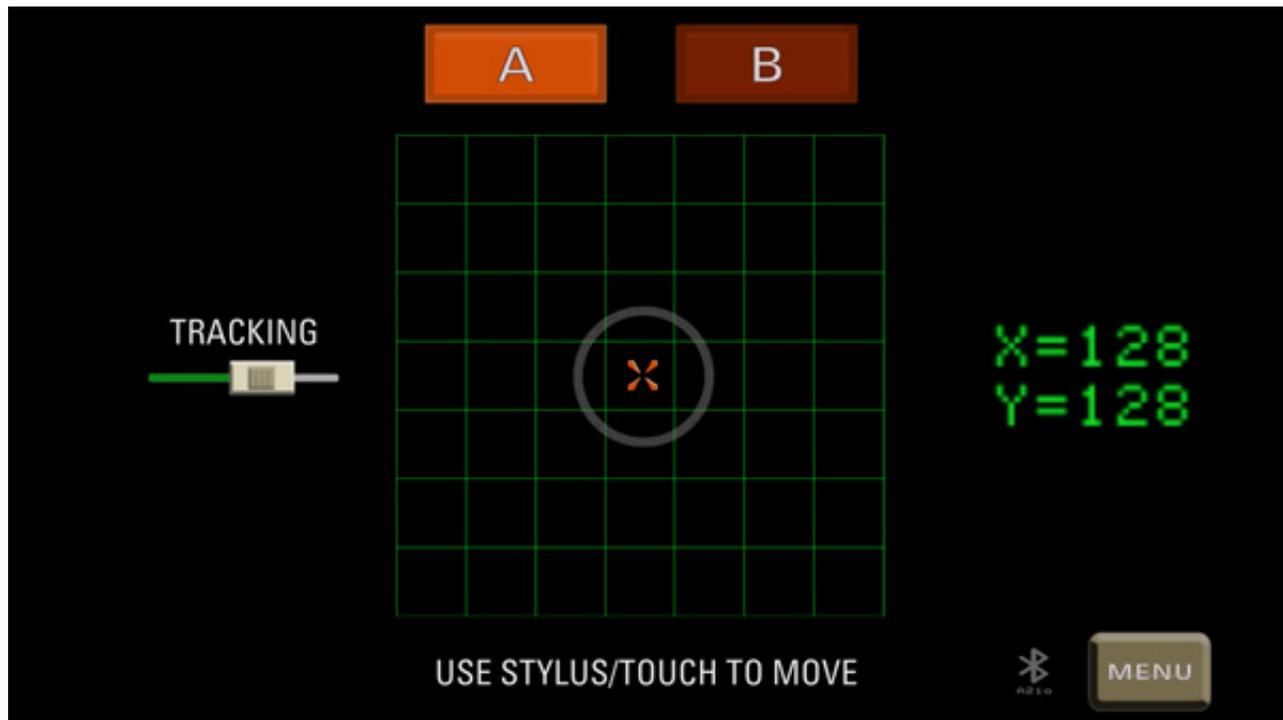
The Paddle button can be “*clicked*” by tapping on either of the button icons in the lower left, or upper right corner of the screen.

The **Range** icon (*padlock*) when tapped allows you to adjust the swipe distance needed to fully “rotate” the Paddle from left to right. Use a pinch or expand gesture to grow/shrink the range, which will move the green indicators towards/away from the Paddle illustration in the center of the screen. Tap the **Range** icon again to lock in the selected range.

Like the Gamepad interface, the number displayed on top of the paddle illustration is the X axis data value that will be passed to the A2io adapter.

TABLET

This interface functions like the *Koala Pad* controller for the Apple II series, providing two buttons and a tracking grid.

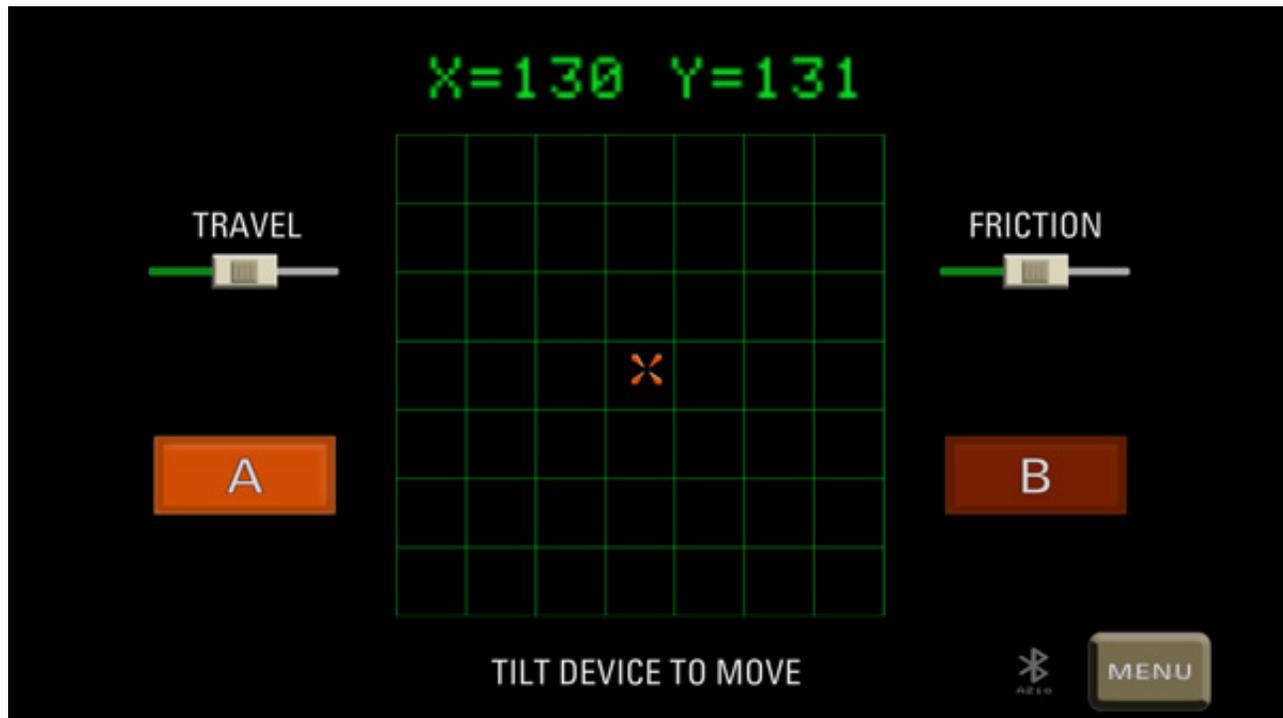


By using touch or stylus input, you can move the cursor around the tracking grid. In Apple II software like *Koala Paint*, this action moves the cursor around the screen, and manipulates the drawing tools. Other drawing software for the Apple II that accepts joystick input will also work with the Tablet interface.

The **Tracking** slider will shrink/enlarge the gray circle around the crosshair. Only touch/stylus input inside the tracking circle will move the crosshair. This prevents stray taps or touches from manipulating the cursor. The smaller the tracking circle, the slower your movement must be to control the crosshair.

MOTION

This interface allows you to tilt your device in order to control the crosshair displayed on the tracking grid. A & B buttons are provided on either side of the tracking grid.



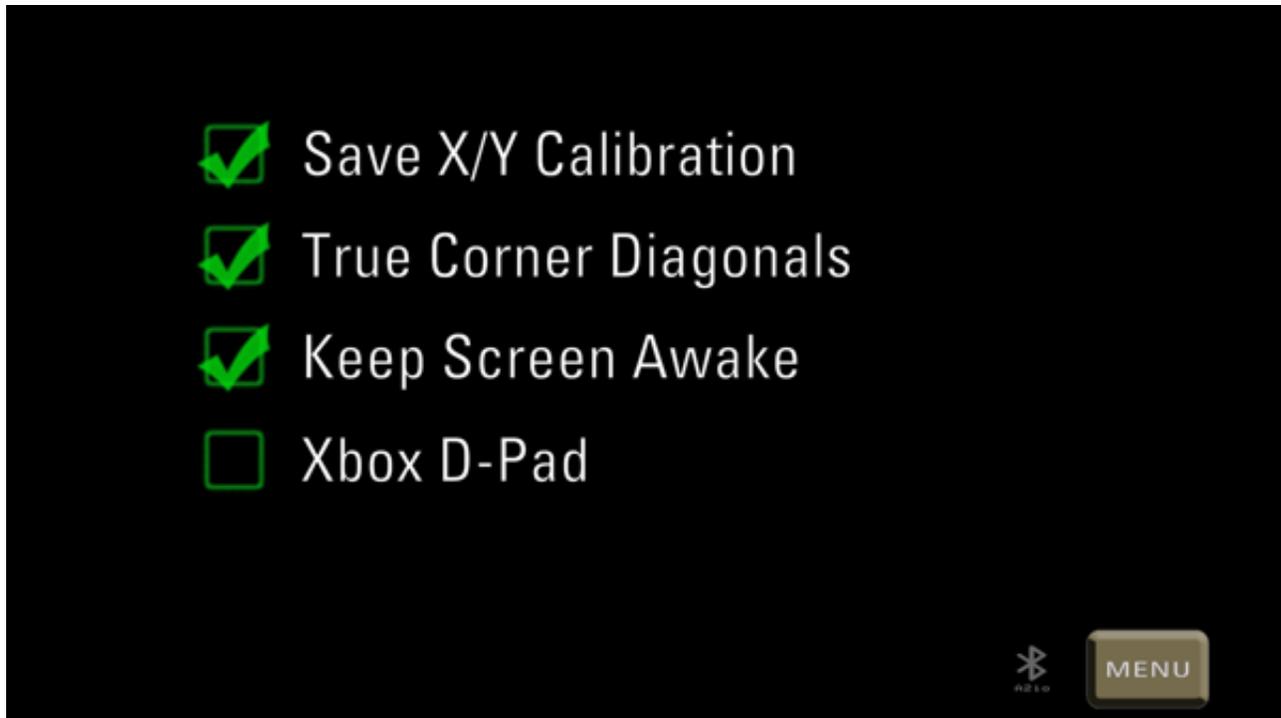
The Y axis is controlled by tilting the device towards or away when you are holding the device in front of you in landscape orientation. The X axis is controlled by tilting one end of the device higher or lower than the other.

The Z axis is not used (rotating the device left or right, as if it was sitting on a table top).

The **Travel** and **Friction** sliders control speed and resistance, respectively. It may take some experimentation to find the best settings for a particular game. The default settings are ideal for *Marble Madness*.

SETTINGS

Changes to options on this screen have an immediate effect.



Save X/Y Calibration - When checked, this option will persist the X/Y trim values that have been set in the *Gamepad* interface. If this option is not checked, the X/Y trim values will be reset to default when starting the application.

True Corner Diagonals - Modern analog thumb sticks are not designed to achieve true corners (such as absolute upper-right). This option when checked will apply an algorithm to controller input in the **Gamepad** interface, achieving true corner diagonals. The algorithm takes maximum effect as the thumb stick approaches a diagonal corner, preserving accuracy over the remainder of the input range.

Keep Screen Awake - This setting when checked prevents your device from going to sleep while the A2io application is running. However, the screen may dim to save power, depending on the energy saving settings of your device. If the device goes fully to sleep (blank screen), then the A2io application may be placed into the background, and this will interrupt the flow of input data to the A2io adapter. It is recommended to always leave this option checked. However, if you would rather not allow the A2io app to prevent your device from sleeping, then make sure you choose a suitably long period of time before your device automatically goes into sleep mode.

Xbox D-Pad - Check this setting if you are using an *Xbox One S Wireless* controller, or the D-pad directions will not map correctly.

2: Game Controllers

The A2io adapter should work with any wireless Bluetooth controller that can be paired with your Android/iOS device. Some legacy wireless controllers paired with iOS as Bluetooth keyboards (such as the older *iCade* arcade sticks) and these devices are not supported.

Popular Controllers

The wireless controllers below are examples of popular controllers that have been tested with the A2io adapter. iOS users are recommended to have iOS 13+. Android users are recommended to have Android 9+. The next section provides pairing instructions for Android/iOS for these controllers.

Playstation 4 Dualshock

Xbox One S Wireless*

8BitDo Gamepads (SN30/PRO, N30/PRO, etc..)

8BitDo AP40 (2017 Kickstarter campaign)



8BitDo gamepads may be identified on iOS as “Dualshock wireless controller”, it varies by model. On Android, 8BitDo gamepads are correctly identified.

** There are various wireless XBox controllers available, but **ONLY** the Xbox One S Wireless controller is Bluetooth compatible!*

PLAYSTATION 4 DUALSHOCK

First place the controller into pairing mode, by pressing and holding the *PlayStation* button and *SHARE* button at the same time. The controller light bar will start flashing when pairing mode is activated.



iOS - Since iOS 13, the Playstation 4 Dualshock controller can be paired via the *Bluetooth* settings menu. Earlier versions of iOS do not support the Playstation 4 controller. For more information: <https://www.playstation.com/en-us/support/hardware/ps4-pair-dualshock-4-wireless-with-apple-devices/>

Android - From the *Settings* application, choose *Connections* and ensure Bluetooth is enabled. Then tap *Bluetooth*, and look for the Playstation controller under *Available Devices*.

XBOX ONE S WIRELESS

Only the Xbox One S Wireless controller is a Bluetooth controller compatible with PC, iOS, and Android. This controller has a seamless faceplate as seen in the photo below. Other next-gen Xbox controllers may also be wireless, but do not use Bluetooth technology.



To place the Xbox One S controller in pairing mode, press and hold the *Enrollment* button for a few seconds, located on the rear side of the controller near the left analog trigger. The Xbox button will start flashing.

iOS - Pair the controller from the Bluetooth settings menu, it will appear in the *Other Devices* list as “Xbox Wireless Controller”. For more information: <https://www.macworld.com/article/3410800/how-to-pair-an-xbox-one-controller-with-iphone-or-ipad.html>

Android - Pair the controller from the Settings application, under *Connections -> Bluetooth*. It will appear in the *Available Devices* list as “Xbox Wireless Controller”. For more information: <https://www.android-central.com/how-use-xbox-one-controller-android>

8BITDO GAMEPADS

There are as many 8BitDo gamepad models as there are stars in the night sky. Generally speaking, all 8BitDo gamepads are compatible with both iOS & Android, and are paired with a button combination.



Depending on the model, 8BitDo gamepads may feature analog thumb sticks + D-Pad, or just a D-Pad. Manuals & firmware can be downloaded here: <https://support.8bitdo.com>

iOS - Open the Bluetooth settings menu. Press and hold Start + A on your controller for a couple seconds. Depending on the controller model, various LEDs will blink. Look for “Wireless Controller”, “Dualshock 4”, or “8BitDo (model name)” to appear in the *Other Devices* List. If your 8BitDo controller will not pair in this manner, try this alternative method: <https://mikeknoop.com/8bitdo-ios13/>



Older 8BitDo gamepads identified as a Bluetooth keyboard to an iOS device. Be sure you have the latest firmware for your controller, so that it pairs as a wireless joystick.

Android - Pairing with Android works like you would expect for a Bluetooth device, isn't that great? Open the Settings application and tap *Connections*, then *Bluetooth*.

On your 8BitDo controller, press and hold START + B for a few seconds. Various LEDs will blink depending on the controller model.

The 8BitDo controller will appear in the *Available Devices* list, tap to pair with your Android device.



8BITDO AP40

The AP40 was a wireless controller compatible with Apple II computers via a Bluetooth game port adapter. Unfortunately, the adapter firmware did not translate the controller input correctly into the voltages expected by the Apple II game port. Fortunately, the AP40 is fully compatible with the A2io (iOS requires an update to the controller firmware).



iOS - The AP40 stock firmware will not work with the A2io. However, if the firmware is upgraded to *N30 PRO v4.1*, the controller will pair correctly as a wireless joystick. The firmware is upgraded with 8BitDo's application found here: <https://support.8bitdo.com/firmware-updater.html>

Note: 8BitDo's firmware update software will not auto-recognize the AP40 controller, so the update must be done in "manual" mode. Follow the on-screen prompts for how to place the AP40 controller in manual update mode, and update the firmware to v4.1.

Caution: Once the AP40 firmware is updated, the controller will most likely not work anymore with the AP40 receiver included with the original Kickstarter reward.

Android - The stock AP40 firmware is compatible with the A2io, and is paired in the same manner as other Bluetooth controllers.

Open the Settings application and tap *Connections*, then *Bluetooth*.

On the AP40 controller, press and hold START + B for a few seconds. The LEDs will blink indicating the controller is ready to be paired.

The AP40 will appear in the *Available Devices* list, tap to pair with your Android device.

3: Troubleshooting

BLUETOOTH

The A2io adapter is not found by the A2io application, or the connection attempt fails.

First ensure the green status LED on the A2io adapter is blinking. This blinking LED indicates that the A2io adapter is ready to receive a Bluetooth connection from your mobile device.

If the A2io status LED is not blinking, power down the computer, wait a couple seconds, then power-on the computer again.

Check the following in order:

- Bluetooth is enabled on your mobile device. For Android, also make sure *Location* is enabled, this is required by the Bluetooth API to scan for the A2io adapter.
- Move other Bluetooth enabled devices (phones, tablets, etc.) other than the device you wish to use with the A2io, to another room temporarily.
- Bluetooth operates at 2.4GHz, which is also used by WiFi routers. If there is a WiFi router in the same proximity, try changing the broadcast channel on the router.
- If you are near a powerful fluorescent light (like a hanging garage dual fixture), turn that light source off and try again.

