Tapio TAP2 USB iOS Switch Interface User Manual

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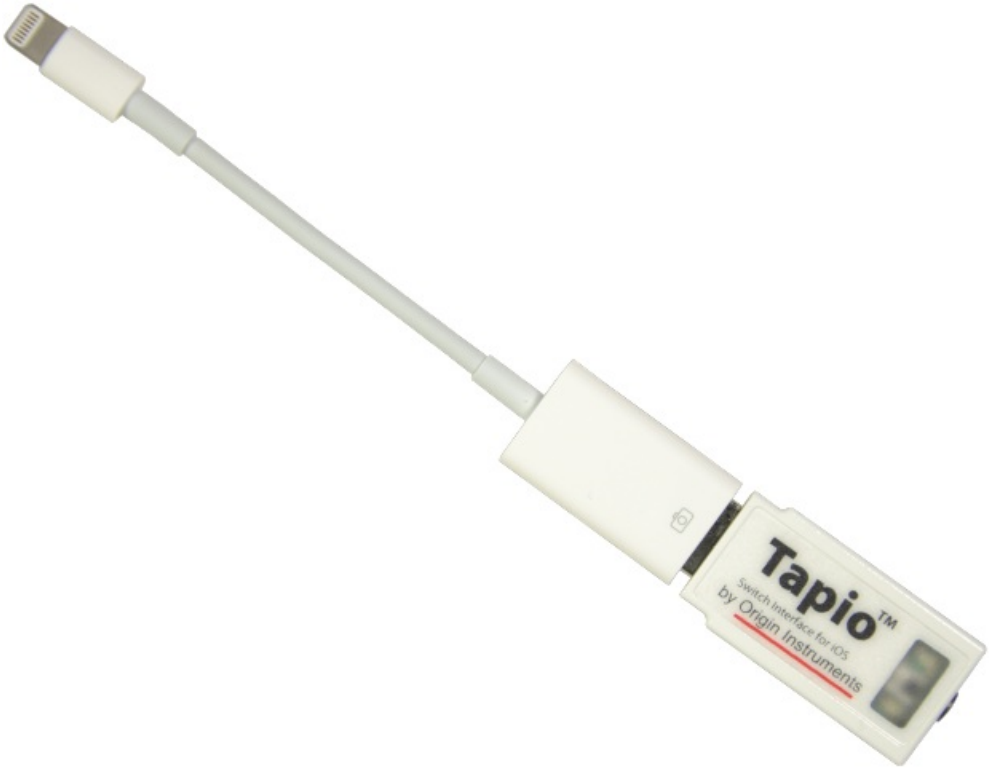
Tapio™

Tapio TAP2 USB iOS Switch Interface



Product Information

Specifications

- **Product:** Tapio iOS and USB Switch Interface
- **Model:** TAP2
- **Manufacturer:** Origin Instruments Corporation

Product Usage Instructions

Initial Setup

- When Tapio is first plugged into a host device, an LED turns on until the host device recognizes Tapio and USB enumeration is complete. Afterwards, an LED will indicate when an adaptive switch is actuated.

Connecting Adaptive Switches

Option 1: Combined switches like Sip/Puff can be connected using a single stereo cable.

Option 2: For two switches with independent cables and connectors, use a dual-mono-to-stereo adapter like the one included in the Swifty Cable Kit.

Connecting to Apple iOS Device

- Tapio is a native USB device. To connect to an iOS Device, use a Camera Interface Adapter from Apple or a third-party supplier. Adapters are available for both the Lightning connector and USB-C.

Choosing Operating Mode

- For Apple Switch Control, use the default keyboard mode. Adjust Tapio settings based on the events your app expects. If a computer app requires mouse buttons, switch to Mouse Mode.

Power Management

- Tapio can wake a host device that supports USB remote wakeup functionality.

Legal Notices

Information in this User Guide is provided “as is” by Origin Instruments, is subject to change without notice, does not represent a commitment on the part of Origin Instruments, and is provided without warranty of any kind, either expressed or implied, including any implied warranties of merchantability or fitness for a particular purpose. No part of this document may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording or information storage and retrieval systems, for any purpose other than the purchaser’s personal use, without the express written permission of Origin Instruments. Origin Instruments is not responsible for any problems caused by unauthorized modification of Tapio and will not be responsible for direct or consequential damages associated with any use of Tapio.

FCC STATEMENT

FCC / CE Notice

Products bearing the CE marking have been tested and are declared by Origin Instruments Corporation of 854 Greenview Drive, Grand Prairie, Texas 75050, USA to conform with the following standards or other normative documents and following the provisions of the Electromagnetic Compatibility Directive, 89/336/EEC:

- EN 55022 Class B Emissions (Radiated Emission)
- EN 61000-4-2, Electrostatic Discharge Immunity
- EN 61000-4-3, Radiated Immunity

Origin Instruments Corporation has tested Tapio and found that it complies with the limits for a Class B digital device, according to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

Operation is subject to the following two conditions:

1. this device may not cause harmful interference, and
2. this device must accept any interference received, including interference that may cause undesired operation.

If this product is suspected of causing interference to a radio or television receiver, remove and apply power to the equipment and determine whether it is the cause of the disturbance. If a problem exists, the user is encouraged to try and correct the problem by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Reorient the equipment cables.

- Consult the dealer or Origin Instruments for additional suggestions.

Origin Instruments is not responsible for any problems caused by unauthorized modification of this equipment.

Application Disclaimer
Tapio is designed for use by people who have limited or no motor capability enabling them to operate switch-activated devices. However, it should not be used in an application where personal injury or property loss could occur if the Tapio failed for some reason. Origin Instruments products are not authorized for use as surgical aids or as part of a system intended to support or sustain life. The user assumes full responsibility for determining the suitability of Tapio for the intended application.

Introduction

Tapio is a compact adaptive switch interface. It is a native USB device that can be connected to an Apple iOS device using an Apple, and some third party Camera Interface Adapters. It accepts industry standard 3.5 mm stereo or mono plugs and directly interfaces up to two adaptive switches to an Apple iOS Device or computer. Tapio is powered from the device and does not require external power. Tapio uses standard USB Human Interface Device (HID) drivers and works with iOS Devices, Windows, Macintosh and Linux computers, and many Alternative and Augmentative Communication (AAC) devices.

Tapio Features

- Extremely Low Latency
- Extremely Low Power
- 3.5-mm (1/8-inch) Stereo Jack
- Accepts Single or Dual Switches (stereo plug)
- Apple Switch Control (iOS7 and newer) Events
- Keyboard Switch Events
- RJ Cooper Switch Events
- Mouse Button Emulation
- Joystick Button Emulation
- Full-Speed USB Device
- Uses Standard USB HID Drivers
- Supports USB Remote Wakeup
- Weighs ½-ounce (14-grams)
- 2- by 0.8- by 0.5-inches (51- by 20- by 13-mm)
- Works with Apple iOS Devices, Windows, Mac and Linux
- Origin Instruments Quality, Reliability and Support

When Tapio is first plugged into a host device an LED turns on until the host device recognizes Tapio and USB enumeration is complete. Thereafter, an LED turns on when an adaptive switch is activated.

FAQ

How do I connect two adaptive switches to Tapio?

Combined switches, such as our Sip/Puff can be directly connected using a single stereo cable. For two

switches with independent cables and connectors, use a dual-mono-to-stereo adapter like the one packaged in our Swifty Cable Kit.

How do I plug Tapio into an Apple iOS Device?

Tapio is a native USB device. To connect to an iOS Device use a Camera Interface Adapter from Apple or a third-party supplier. Adapters are available for the Lightning connector and USB-C.

Should I use mouse, joystick, or keyboard mode?

For Apple Switch Control, use the default eyboard mode. However, set Tapio for the events your app is expecting. If a computer app is looking for mouse buttons then use Mouse Mode.

Will Tapio wake up my Device?

Tapio can wake a host device that supports USB remote wakeup.

Why does the LED flash when plugging Tapio into a host?

When first plugged in, the host goes through a process to determine what has been plugged into its USB port. The first time you plug in Tapio it may load a new USB driver and you may see a message during this process.

Why does the LED come on when I actuate one of my adaptive switches?

This is used to help you determine if the host (computer or iOS Device) has properly numerated Tapio and that Tapio can see the adaptive switch actuation. If you press an adaptive switch and the LED does NOT light, it means one of the following: Tapio is not properly enumerated, the host has removed power, the adaptive switch is defective, or Tapio is defective.

Can I use Tapio while charging my iPad?

Yes, use Apple's Lightning to USB adapter with a power port. Plug your Tapio into the USB port and your

charger into the Lightning port on the adapter. For USB-C, use a powered hub.

DIP Switch Settings

- Tapio integrates a compact four-position DIP Switch for user options. DIP Switch settings can be readily changed using a paper clip. The factory default settings are all DIP Switches ON.
- While viewing Tapio's DIP Switch with its USB connector extending to the left, switches pushed up are ON and switches pushed down are OFF. Switch one is on the left side. After you modify the DIP Switch settings, un-plug and re-plug Tapio to enable the new mode.

DIP Switch			**Mode**	**Outputs**		**Timing**
1	**2**	**3**		**Switch 1**	**Switch 2**	
ON	ON	ON	Tapio-1, (Default)	Space	Enter	Full Duration
OFF	ON	ON	Tapio-2	Space	Enter	Pulse
ON	OFF	ON	RJ	~ 1	~ 3	Pulse
OFF	OFF	ON	Rich	Space 1	Enter 2	Pulse-Pulse
ON	ON	OFF	Mouse	Left	Right	Full Duration
OFF	ON	OFF	Joystick	#1	#2	Full Duration
ON	OFF	OFF	Keyboard-1	Enter	Space	Full Duration
OFF	OFF	OFF	Keyboard-2	1	2	Full Duration

(SW4 is reserved and should be ON.)

- **Outputs** describe the keyboard keys, mouse buttons, or joystick buttons that are sent when the first and second adaptive switches are actuated.
- In most cases, one key is sent in two cases (RJ and Rich Modes) two keys are sent in quick succession.
- **Timing** further describes how keys are sent.
- For Full Duration timing, Tapio holds the keyboard key down as long as the associated adaptive switch is held down.
- For Pulse timing, the key is held down only briefly and released no matter how long the associated adaptive switch is held down.
- For Pulse-Pulse timing, when the adaptive switch is pressed Tapio briefly holds down and releases the first key listed, and when the adaptive switch is released Tapio briefly holds down and releases the second key listed. For example, in Tapio's RICH mode when the adaptive switch is pressed and held Tapio "presses" and immediately releases the SPACE key. Then, when the adaptive switch is released Tapio "presses" and immediately releases the 1 (ONE) key. This allows applications to know exactly when an adaptive switch was pressed and when it was released.
- Knowing the leading and trailing edges of switch actuation allows app developers to employ more efficient scanning techniques.

Modes

- There are eight modes and six involve emulating a USB keyboard.
- The other two modes emulate a USB mouse and USB game controller (joystick).
- Most of the keyboard modes are self-explanatory. However, the RJ and RICH modes are unique in that they send two keyboard keys with every single adaptive switch actuation.
- RICH mode has been described in the previous Pulse-Pulse timing discussion.
- In RJ mode, the table shows that when the adaptive switch is actuated Tapio “presses-and-releases” the ~ (TILDE) key and then immediately “presses-and-releases” the 1 (ONE) key. In other words, for each adaptive switch actuation, Tapio sends two keyboard keys. Since RJ mode uses
- Pulse timing, these two keys are sent when the adaptive switch is first pressed. No matter how long the adaptive switch is held the keys only go out once.
- In Mouse mode, Tapio sends the left and right buttons of a standard mouse. Since mouse mode uses Full Duration timing, Tapio holds the Mouse button down as long as the adaptive switch is held down.
- In Joystick mode Tapio sends the first and second buttons of a standard USB game controller. Since Joystick mode uses Full Duration timing, Tapio holds the joystick button down as long as the adaptive switch is held down.

Optional Cable Kit

- The optional Mono to Stereo Cable Adapter allows two independent switches with mono plugs to be connected to Tapio.
- The Cable Adapter can also be used with other switch-connected devices, like Swifty, HeadMouse® or third party devices.

General Care and Maintenance

1. Do not force Tapio into a USB port or adapter.
2. Do not bend Tapio while plugged into a USB port, it will damage the Tapio or the host device.
3. Tapio may be cleaned with a damp cloth using any household cleaner.
4. Do not allow liquid to enter Tapio.

Customer Support

- Customer support is provided by Origin Instruments during the hours of 8:30 a.m. to 5:30 p.m. Central Time, Monday through Friday.
- If you purchased Tapio through another company please contact that company first, they will be more familiar with your circumstances.
- Please email **support@orin.com** or call 972.606.8740.

Warranty Information

- Origin Instruments warrants that Tapio will be free from defects in materials and workmanship for one (1) year from the date of shipment. If the product proves defective during this warranty period, Origin Instruments will, at its option, repair or replace the defective product.
- To obtain service under the foregoing warranties, the Customer must notify Origin Instruments of the defect before the expiration of the warranty period.
- The foregoing warranties will not apply to any defect, failure, or damage caused by improper use, or improper or inadequate maintenance and care. Origin Instruments will not be obligated to furnish service under these warranties (a) to repair damage resulting from attempts by unauthorized personnel to install, repair, or service the product; (b) to repair damage resulting from improper use or connection to incompatible equipment; or (c) to service a product that has been modified or integrated with other products when the effect of such modification or integration increases the time or difficulty of servicing the product.
- The foregoing warranties are given by Origin Instruments to company products in place of any other warranties, expressed or implied. Origin Instruments disclaims any implied warranties of merchantability or fitness for a particular purpose.
- Origin Instruments' responsibility to repair or replace defective products is the sole and exclusive remedy provided to the customer for breach of any of these warranties. Origin Instruments will not be liable for any indirect, special, incidental or consequential damages irrespective of whether Origin Instruments has advance notice of the possibility of such damage.
- Products no longer covered by warranty may be suitable for repair. Contact Origin Instruments for an estimated repair fee.

Before returning a product for repair, please send an email to: **support@orin.com** or call **972-606-8740** to request a Return Materials Authorization (RMA) Number. Once an RMA number is assigned, the product must be returned postage pre-paid with all components to:

- Origin Instruments Corporation
- ATTN: Customer Service – RMA (insert your number)
- 854 Greenview Drive
- Grand Prairie, TX 75050-2438 USA

For repairs during the warranty period, Origin Instruments will pay for the return of the product to the Customer if the shipment is to a location within the United States. For non-warranty repairs and for warranty repairs outside of the United States, the Customer will be responsible for paying all shipping charges, duties, taxes, and any other charges associated with the return of the product.

CONTACT

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Documents / Resources

	Tapio TAP2 USB iOS Switch Interface [pdf] User Manual TAP2 USB iOS Switch Interface, TAP2, USB iOS Switch Interface, Switch Interface, Interface

References

- Origin Instruments Corporation
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- User Manual