Tapio TAP2 iOS and USB Switch User Manual

TapioTm
User Manual
iOS and USB Switch Interface
Model: TAP2

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Legal Notices

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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 / 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 be in conformity 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, pursuant to
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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:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and the receiver.
3. Reorient the equipment cables.
4. 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 %-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 actuated.

Questions and Answers

How do I connect two adaptive switches to Tapio?

– Switch combinations such as Sip/Puff or Left/Right can directly connect using a single stereo cable. For connecting two switches with independent cables and connectors, use our optional mono to stereo Cable Adapter.

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.

Tapio can emulate a mouse, a joystick, or a keyboard. Which should I use?

– When using an Apple iOS Device with Switch Control, we recommend using the Tapio-1 (Default) keyboard Mode. When using a computer, we recommend Joystick Mode.
– However, you must set Tapio for the events your application is expecting. For example, if the iOS app is looking for RJ Cooper events, then set Tapio for RJ Mode. If a computer application is looking for mouse buttons then use Tapio's Mouse Mode

Will Tapio wake up my Device?

– Tapio can wake a host device that supports USB remote wakeup.
– Tapio will wake most devices.

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 describes 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 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 a period of 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.
In order to obtain service under the foregoing warranties, the Customer must notify Origin Instruments of the defect prior to 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 with respect to company products in lieu 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.

Origin Instruments

TAPIO

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Documents / Resources

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

References

- Origin Instruments Corporation
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