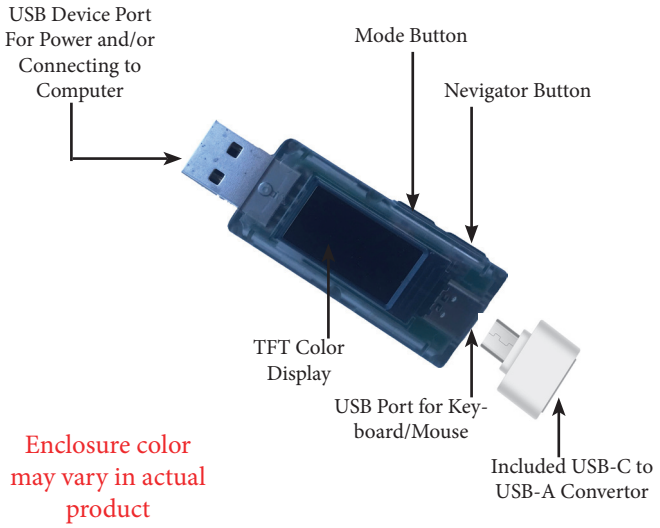
HANDHELD SCIENTIFIC

Bluetooth Adapter for Keyboards and Mice

User Manual v6.0 (Firmware 6.0.x)

Model: BT-600



Main Functions

- Turning a USB keyboard/mouse into a Bluetooth one.
- Acting as a USB to USB bridge. Switching between BT and USB
- Key mappings, macros, timers, layers and output throttling.

Key Features

- Based on Bluetooth 5.2 (Bluetooth Low Energy or BLE) with reduction in power consumption and fast connection time.
- Works with all types of hosts including MacOS, iOS (iPad & iPhone), Android tablets/smartphones, all versions of Windows and Linux as long as they have Bluetooth 4.x and up. Note that Windows 7 or prior supports only BT 2.x so you need at least Windows 8.
- Compatible with all types of USB keyboards including those with a built-in hub. See the Compatibility list on our web site for a list keyboards we have tested. Additional devices connected to a keyboard's built-in hub is not officially supported so it may or may not work.
- Most media keys on keyboard will work including Volume +/-, Mute, Play/Stop, Previous/Next, Browser, Calculator, Home, Help, Search and Sleep. Programmable keys (for example, those marked as G1, G2, … on some Logitech keyboards) will *not* work unless they are configured as standard keys.
- Many keyboard-emulating USB devices will work if they appear as keyboards in the operating system. Those include keypads, foot pedals, bar code readers, magnetic strip readers, and PS2 to USB adapters. Most 2.4G wireless dongles (e.g., Logitech Unifying Adapter, HP wireless keyboard adapter) will also work.
- No keycode pairing: pairing just works without typing in any code. Currently this is the only pairing option. If security is a concern, caution must be taken to make sure the adapter is paired with the

intended host.

- Advanced Firmware Features:
  - o Key mappings: you can map any key to another key, to mouse movement or to a macro (see full manual for limitations). Users can turn a Qwerty keyboard into a Dvorak or Colemak one with a simple command.
  - o Timers: periodically send a key, mouse movement or macro. There can be up to 4 timers.
  - o Macro: a sequence of keys and/or mouse movements used in other commands such as key mappings or timers.
  - o Layer: group a set of settings together so you can switch between them quickly using shortcuts.
  - o Repeat: use a key to toggle on/off to generate fast succession of keystrokes. Useful in gaming.

TFT Color Display

The Adapter incorpotes a 0.96 inch TFT color display. It shows several pages of useful information. The main page shows the status of Bluetooth and USB connectivity, whether they are enabled, connected and activated. There is a screen displaying useful USB information such as voltage and cumulated power consumption.

Nevigation Button & Mode Button

The navigation button switches different screens.

The mode button has 3 functions, depending on how long it is pressed and held.

- short press: can be configured to switch between USB and Bluetooth or send out a key/macro.
- Press and hold for 2 seconds: enter command mode.

- Press and hold for 10 seconds: reset all settings to factory default.

USB-USB Bridging

When plugged into a laptop, the USB male port shows up as a composite keyboard/mouse device. If activated, any keystrokes or mouse movements will be output to this port, effectively bridging the keyboard/mouse to the host computer with all the useful features such as key mapping and layers that are not available in most keyboards.

Quick Start Guide

As soon as the adapter is powered on, if it is not connected to a host, during the first 30 seconds, it will advertise its present and become available for pairing. Follow the process below to pair:

- Turn on the adapter with or without a keyboard connected. Screen should display the VID/PID of the keyboard, or error information if it fails to detect or enumerate the keyboard.
- On the host, search for Bluetooth devices. The name of the adapter is ADAPTER_*nnnn* where *nnnn* is the last 4 digits of its MAC address.
- After the host finds the adapter, select it and click "pair". There is no need for any pairing code. If pairing succeeds, the adapter will then be connected to the host and ready for use. The screen will also show that status.

If you can't find the adapter in the host's list of Bluetooth devices, make sure the host has BT 4.0 and up. If the adapter is listed but fails to pair, make sure the host supports HID keyboard/mouse. Some low-cost smartphones/tablets have Bluetooth but support only earphones not keyboards.

Pairing needs to be done only once. Next time when the adapter is turned on, it will connect to the paired host if it is available.

Once paired, if you would like to pair it with a different host, you *must*

first unpair it from the current one. Erasing all paired devices in the adapter itself (the *device clear* command) is not enough to erase the bonding. If you pair a new host without unpairing the old one first, and if both hosts are present at the same time, the adapter will connect to either of them at random.

Command Mode

Command mode is used to configure adapter features. To use command mode, pair the adapter with a host. Use any app that can display text (i.e., Notes, Notepad, Word, or even a browser input window). Make sure when you type on the keyboard connected to the adapter, the text appears on the app. This can be through either Bluetooth or USB. Press and hold the mode button until the following text is emitted (which will happen in about 2 seconds):

```
Bluetooth Adapter Firmware v5.2.8
Copyright (C) 2019 Handheld Scientific, Inc.
Type help or ?
>
```

Alternatively, you can use the shortcut Ctrl+Alt+Insert to enter command mode, so you don't need to reach to the adapter to press the button. That 3-key combination is similar to the well-known Ctrl+Alt+Del 3-finger solute in Windows. But instead of Del, the Insert (Ins) key is used. In the unlikely event this 3-key combination is used by some other application, so you don't want the adapter to intercept it, you can disable it in settings.

When attempting to enter command mode, if you see funny characters instead of the above text, make sure the language setting of your operating system is English. To exit command mode, press the mode button again, or type *exit* in command line. In command mode, key strokes are intercepted and interpreted by the adapter as commands.

Outputs of the commands are directed to the host. Commands are all lower cases and terminated by *Return* or *Enter*. This is pretty much like the command line in a terminal window in Linux. Type "*help*" or "*?*" for a list of commands, and "*help command*" for help with a specific command. Our goal is to make the help messages concise and comprehensive so one does not need any other reference to understand and use the commands. We appreciate any suggestion for improvements.

The keyboard must be in English layout, otherwise the adapter may not generate the right texts. Most features such as key mappings, timers and layers are disabled in command mode (in other words you have to exit command mode to see them working, or the effect of any changes you make). To exit command mode, press the mode button or type the command *exit*.

The syntax of the commands is very straighforward. Curly brackets {} signify a name that needs to be substituted with the actual value. For example, {*time*} should be 10 or whatever value you want to set. Anything that is not in a curly brackets should be typed as is. Square braces mean the argument is optional. Vertical bar means "or". For example, *dvorak*|*colemak* means *dvorak* or *colemak,* as is without substitution.

The following is a summary of available commands for the current firmware being shipped. Note we add new commands frequently so some commands in the list may not be available in early versions of the firmware.

syntax – Display concise explanation of command syntax.

show – Display useful adapter information such as TFT screen settings (enabled/disabled), throttle interval and interface status.

save – Save changes so they will persist across re-starts. If you don't execute this command, all changes are lost when the adapter is turned off.

exit – Exit command mode. Same as pressing the mode button (so you don't need to move your hand away from the keyboard to press the button)

device clear – Clear paired devices in the adapter. Note you also need to unpair

the adapter from the paired host. This command alone will not rease the bonding between the adapter and the host.

reboot [hard] – Restart adapter so you don't need to disconnect the power. Optional argument *hard* to perform a factory reset.

key name – Print out the list of key names used in key mappings, macros and timers. This is displayed in multiple pages.

set – Set system parameters.

set usb enabled|disabled – Enable or disable the USB interface. Effective upon next reboot. Default is enabled.

set bt enabled|disabled – Enable or disable the Bluetooth interface. Effective upon next reboot. Default is enabled.

set bt name {name}– Set the Bluetooth device name to *name*.

set time throttle {n} – Set throttling time to *n* milli seconds (ms). Throttling time is the delay added between keystokes to slow down the output. This is useful if the output of a keyboard emulating device (e.g, magnetic strip reader) is too fast for Bluetooth to handle.

set ctrlaltins enabled|disabled – Enable/disable the Ctrl-Alt-Ins to enter command mode. Default is enable. Effective immediately.

timer – set up timers used to send out keys periodically. This can be useful in preventing Bluetooth connections from timing out or the host from entering into sleep. This feature was called "*keepalive*" in older firmware versions. You can create up to 4 timers.

timer list – list timers with their periods and keys. By default, all timers are disabled (period = 0)

timer {n} period {m} – set the period of timer *n* (*n*=1-4) to *m* seconds. Setting the period to 0 disables the timer.

timer {n} key {key} – set the key of timer *n* to *key* which can be a single key or a macro.

map – manage key mappings. See full User Manual for detailed explanation of the commands and examples.

map – without any argument, this command lists all key mappings.

map add {source_key} {dst_key} – add mapping from *source_key* to *dst_key*. In the full user manual, there is detailed information on what can be used as

source_key and *dst_key*.

map add dvorak|colemak – add all mappings to turn an ANSI/ISO QWERTY keyboard into a dvorak or colemak keyboard.

map del {key} – delete the mapping specified by source key *key*.

map del all – delete all mappings.

map names – show all the key names that can be used in key mapping (and anywhere a key parameter is expected). Same as the *key names* command.

macro – display and set up macros. A macro is a series of keys, mouse movements and delays in between that can be triggered by a single key.

macro list – list all macros.

macro edit {n} – edit the n^{th} macro where *n*=0-63. There is no need to delete a macro since it has no effect unless used somewhere.

layer – A layer is a group of settings (mappings, timers and macros) that can be switched together quickly using shortcuts. See full manual for details.

repeat – Use a key to toggle on/off to send keystrokes in fast succession. Useful in gaming. See full manual for layer and repeat (due to space limitation in this short manual).

Restore to Factory Defaults

Press and hold the mode button for more than 10 seconds (it will enter command mode after 2 seconds. Ignore that and continue to hold). The device will eventually turn itself off. Upon next reboot, all configurations will be restored to factory defaults. The "*reset hard*" command achieves the same effect.

Further Information

Download the full manual (30+ pages) from the product page: http://handheldsci.com/kb. It has much greater details especially with regarding the commands. We love to hear from our customers. Please send comments/suggestions to support@handheldsci.com. We appreciate your business.

This device complies with Part 15 of the FCC Rules. 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

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.
If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
-- Reorient or relocate the receiving antenna.
-- Increase the separation between the equipment and receiver.
-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
-- Consult the dealer or an experienced radio/TV technician for help.

Warning: changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment

The devices has been evaluated to meet general RF exposure requirement， the device can be used in portable exposure condition without restriction