USB-C-Switch

Industrial USB Type-C Switch

Test the limits*

*of USB and USB-PD

Acroname's USB-C-Switch is an industrial **10 Gbps** USB-C port selector able to connect:

- One of up to four devices to one host
- One device to one of up to four hosts.

This is not a hub – the selected ports form a direct 1:1, bidirectional connection that appears "like a cable" to connected devices, supporting USB alternate modes like **DisplayPort** (up to 4k at 60 Hz).

When combined with an Acroname Universal Orientation Cable (**UOC**), the USB-C-Switch can **emulate a cable flip**, allowing tests of all the connections on a port without the need to manually reinsert the cable.

Fully software managed, USB-C-Switch provides extensive port monitoring and control options via the **HubTool GUI application** and **Brainstem API** for interactive and automated workflows.

Two versions of the USB-C-Switch are available:

Re-Driver Edition— Boosts HighSpeed and SuperSpeed signals to compensate for transmission losses and allow longer cable runs. Best for general connectivity

Passive Edition — Best for measuring device signal-integrity. Good for device functional testing when using short cabling

Applications

Because of its direct switching, USB-C-Switch enables applications beyond the capabilities of normal USB Hubs.

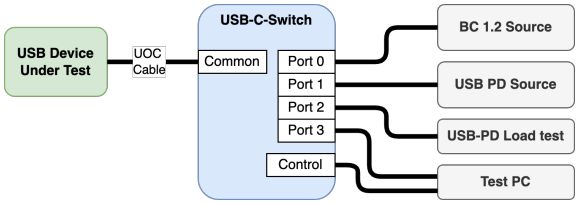
Comprehensive USB-C port testing

- DisplayPort Alt Mode testing
- Virtual "cable flip" — Independently test USB functions on either side of the USB-C connector with optional Universal Orientation Cable (UOC)
- Measure voltage and current for V_{bus}, CC1/2, V_{conn}, and voltage for SBU1/2

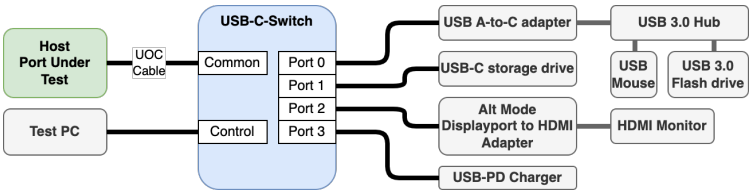
Compliance and Interoperability Testing

Simplify USB-PD compliance and interoperability testing by automating device and lab equipment connections:

- Connect multiple pieces of test equipment sequentially to one device under test



- Connect multiple ports or devices sequentially to one tester



- No-touch cable flip and virtual plug-unplug
- Test Dual Role Data (DRD) and Dual Role Power (DRP) devices

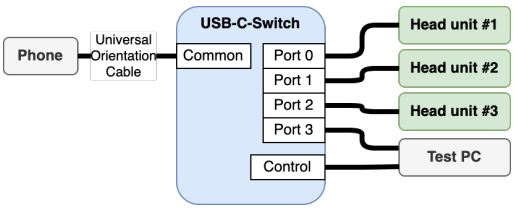
Hot-Plug stress testing

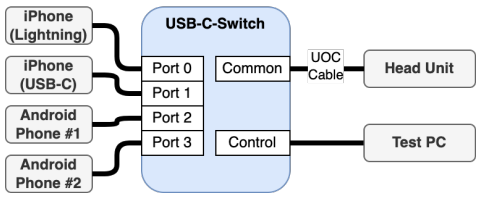
- Automate cable connect/disconnects without physical interaction. Script plug-cycle stress testing

Manufacturing end of line test and provisioning

- Automate firmware load, testing, and battery charging

Apple CarPlay™ and Android Auto™ Testing and Development





- Sequentially test a head unit against iOS and Android phones, test across **multiple head units** or **multiple devices**
- Emulate cable flip and plug-unplug cycles
- Debug USB-PD negotiation and device charging issues

USB-C-Switch

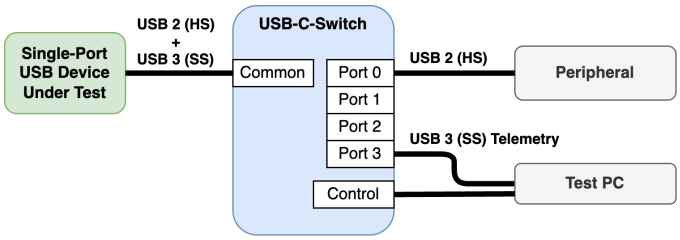
Industrial USB-C Switch

Control everything*

*about USB and USB-PD

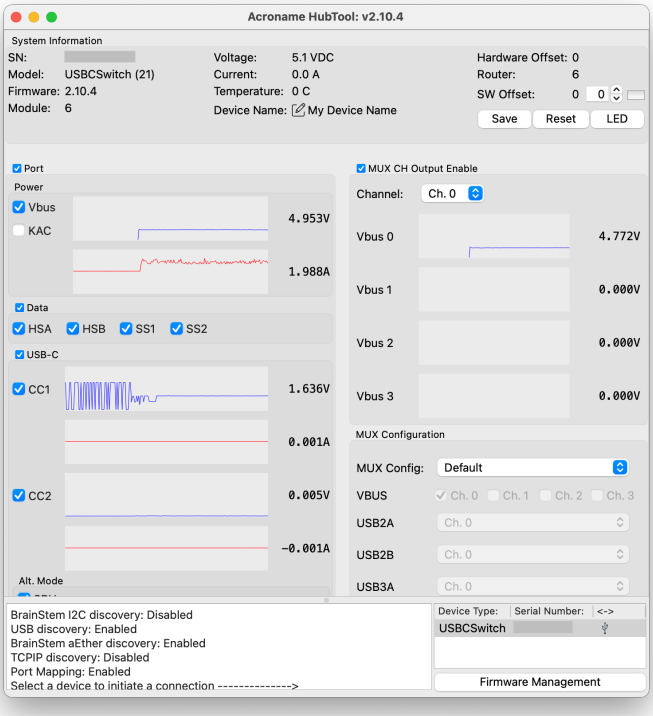
Key Features

- **Fully software-managed** via HubTool application and Brainstem API
- **Dedicated control port** separates host and control functions
- **Keep Alive Charging (KAC)** can provide power to the non-connected mux ports to keep devices powered and charging
- **Channel priority** automatically selects the lowest-numbered mux port where V_{bus} is detected, enabling simple automatic host selection. (USB A-to-C cables only)
- **Split Mode** allows signals to be independently routed to a mux port, and V_{bus} can be applied to any combination of outputs. USB 3 and USB 2 can be split to different ports **Warning — Split Mode can permanently damage connected devices — proceed with caution!**



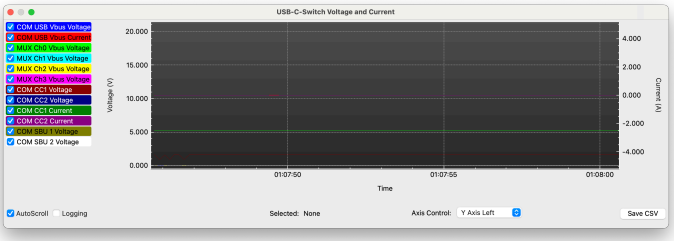
Split mode independently routing USB SS and HS

HubTool Application



The HubTool interface presents a unified dashboard to interactively control and view the state of USB-C-Switch. Free download for Windows, MacOS and Linux distributions.

- Interactively control port switching
- Monitor and plot voltage and current:
  - Voltage and current: V_{bus} (Common side), CC1, CC2,
  - Voltage: V_{bus} (Mux side), SBU1, SBU2 (common side)



Plots can be logged and saved as .CSV files.

BrainStem API

Control and automate all USB-C-Switch functions with the BrainStem API (C, C++, Python, LabView, .NET). Integrate into your test scripts or custom applications.

What's in the box

- USB-C-Switch: Programmable Industrial 4-port USB Switch for USB-C
- USB-C male-to-male full featured, e-marked cable, 1.5 foot C59-USBC-C
- USB-C to A male-to-male cable, 1.5 foot (C40-USBC-A)
- Two Acroname Universal Orientation Cables (UOC), 1.5 foot 1x C67-USB-UOC 1x C70-USB-UOC

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Leaders in USB test automation