# Tableau Forensic Universal Bridge

# Model T356789iu

# Integration Guide

**Tableau Forensic Universal Bridge Integration Guide**
Rev.: 9/11/2019

# INTRODUCTION

This document provides a product summary and integration guidelines for the Tableau Forensic Universal Bridge, model T356789iu. This integrated write blocker mounts in a typical forensic workstation, and supports forensic acquisition of SATA, SAS, PCIe, FireWire, USB, and IDE storage media.



**Note:** In late 2019, a new version of the Universal Bridge was released to resolve a supply-chain availability issue with the SAS host controller component. A custom, FPGA-based SAS host controller solution was implemented, which offers reduced supply chain risk as well as modest performance improvement on the SATA/SAS port. While the new design is meant to be form, fit, and function equivalent to the existing version, there are some subtle differences that system integrators should be aware of, and those are called out in this Installation Guide using the "R2" suffix designator. While the formal marketing model name/number of this bridge will not change, we have chosen to adopt the R2 suffix convention for this major design change, which will be noticeable in certain situations. The main reason for the use of this R2 suffix is to allow easy, in-system determination of which version of the bridge is in a given system, through the use of the Tableau Firmware Update (TFU) program. Please contact OpenText Customer Support with any questions about the differences in these two Tableau Universal Bridge models.

# PRODUCT SUMMARY

The next generation Tableau Forensic Universal Bridge introduces new capabilities and improved performance.

## New Features and Capabilities

- PCIe write blocking, compatible with Tableau TDA7 series of PCIe SSD adapters
- Read/write mode capability for all device ports, controlled via internal DIP switch
- Improved write block and read/write mode visibility via new lock/unlock LED indicators

## Improved Performance

Performance improved for all device ports by at least 10%, with some device ports improving more than 370% compared to the previous generation model, Tableau Forensic Combo Bridge T35689iu. The R2 hardware version of this design (3.0 PCB version or greater, as indicated by the R2 suffix in TFU) has a new, custom-designed SAS host controller, which provides further SAS and SATA performance improvements on the combination SATA/SAS port (Gen 3 SATA and Gen 2 SAS support, both running at 6 Gbps).

# INSTALLATION

## Mechanical and Cabling Considerations

The Universal Bridge fits in a standard half-height computer drive bay, using standard mounting screws. Specific dimensions and weight information is shown in the table below.

| Mechanical Information | |
| --- | --- |
| Dimensions | 5.875 in. (L) x 5.75 in. (W) x 1.625 in. (H) |
| Weight | 11.2 oz. (320g) |

The unit must be powered by two SATA power connectors (denoted 1 and 2 in the image below) from the host computer power supply. Both SATA power connectors can be from the same cable, as long as your power supply provides adequate voltage regulation, but the Universal Bridge should be the only device powered by this cable. If your Universal Bridge does not power suspect devices properly, we recommend using SATA power connectors from two separate power supply cables.

Connect the unit to a dedicated channel of a USB 3.0 controller on the host computer using a high-quality USB interface cable (connector 3 in the image below).
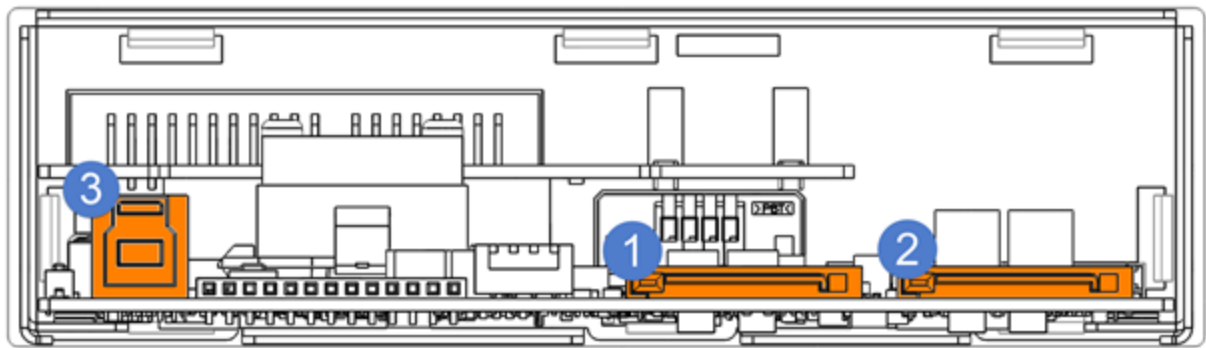


1: SATA power connector 1

2: SATA power connector 2

3: USB 3.0 female connector

The Universal Bridge kit includes the following device cables:

| Model | Description |
|---|---|
| TC2-8-R2 | Molex to 3M drive power cable: 8" |
| TC4-8-R2 | Unified SATA/SAS signal and power cable (3M-style): 8" |
| TC6-8 | IDE cable: 8" |
| TC-USB3 | USB 3.0 A to B cable: 6' |
| TC7-9-9 | FireWire 800 9-pin to 9-pin cable: 6' |

A PCIe device cable is included with optional Tableau PCIe adapters (see the Tableau PCIe Adapters web page at https://www.guidancesoftware.com/tableau/hardware?types=Adapters for more information).

OpenText does not provide SATA power or USB 3.0 host computer cables with the Universal Bridge. The SATA power cables are provided by the computer power supply, and the USB 3.0 host cable varies in length and connector type depending on the size of the computer, the location of the bridge, and the USB 3.0 controller. Care should be taken by the integrator to minimize cable length and to route the USB 3.0 cable away from possible sources of interference.

## Power Requirements

The internal circuitry of the Universal Bridge typically consumes approximately 10.0W of power during normal operation: 8.2W from the +5V rail for internal logic and 1.8W from the +12V rail for the internal cooling fan. Power for external source drive connections is also provided, as shown in the table below.
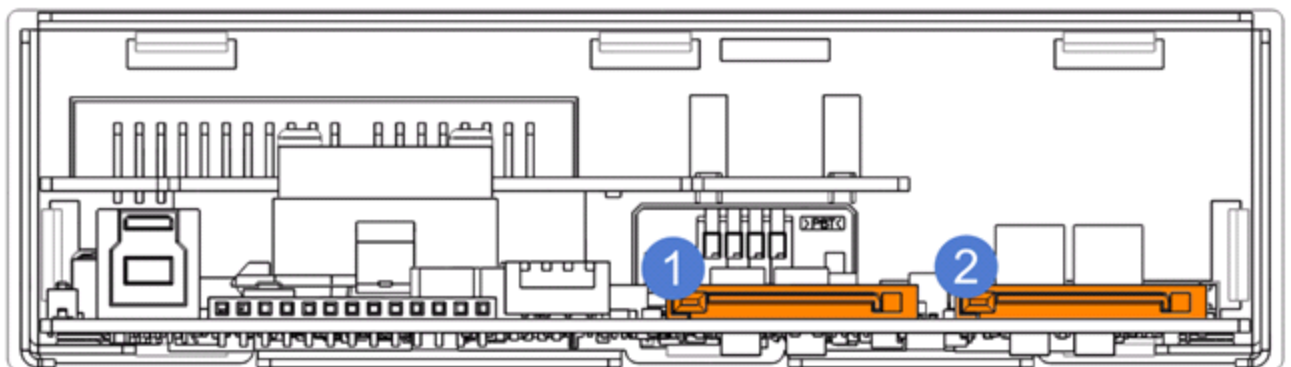
| Power Connector Details | |
|---|---|
| Connector 1 | +5V @ 1.65A (typ): Provides power to internal circuitry<br><br>+12V @ 2.0A (max): Provides power to externally connected PCIe drives (via front-panel PCIe connector) |
| Connector 2 | +5VDC @ 3.9A (max): Provides power to externally connected drives (via front-panel Drive Power connector)<br><br>+12VDC @ 3.1A (max): Provides power to externally connected drives (via front-panel Drive Power connector) and to the internal cooling fan (fan current: 0.15A typ) |

# Thermal Considerations

The maximum ambient operating temperature of the Universal Bridge is 55 degrees Celsius. Note that this is the ambient temperature around the bridge inside the forensic workstation, not the ambient temperature of the room in which the workstation is located. For reference, normal room ambient temperature is approximately 22 C. With an expected temperature rise inside a typical, active forensic system of 10 – 15 degrees C, that puts the typical bridge ambient operating temperature in the range of 32 – 37 degrees C, which is well below the maximum of 55 C.

The environmental requirements for the Universal Bridge are shown in the table below.

| Environmental Requirements | |
|---|---|
| Operating ambient temperature range | 0 to 55 degrees C (no airflow; at bridge inside forensic workstation) |
| Storage ambient temperature range | -20 to 60 degrees C |
| Max relative humidity | Up to 90% (non-condensing) |

Note that systems designed for the original T356789iu design should work without issue when used with the new T356789iu-R2 variant. (See the Introduction section at the beginning of this guide for details on the R2 variant.) The main consideration is to ensure that cables and/or other internal system components do not interfere with the air pocket directly above and around the higher power components on the bridge. Those components are the processor/heatsink/fan setup and the SAS host controller.

The image below is a top view of the R2 PCB assembly, which identifies these two components. The component labeled as 1 is the processor/heatsink/fan assembly. This component has not been moved in the new R2 design. The component labeled as 2 is the SAS host controller FPGA. This component is located slightly

more toward the front of the bridge and to the left than the previous version. Please analyze your forensic system with the new R2 design to ensure these components have as much free air space above and around them as possible to help ensure proper bridge operation.
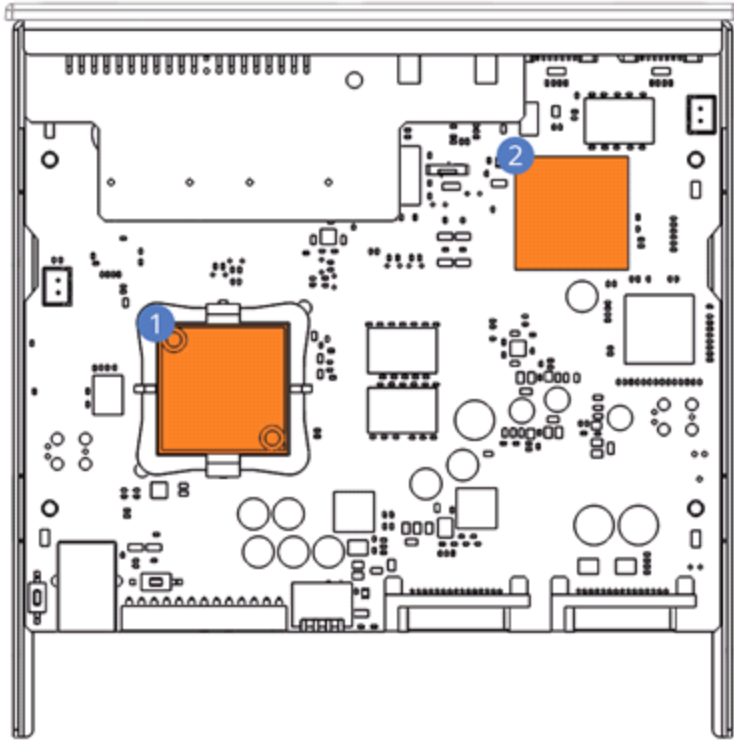
# OTHER CONSIDERATIONS

## Storage Media Supported

The Universal Bridge supports write-blocked acquisitions of up to nine different types of storage media.

| Storage Media | |
|---|---|
| PCIe | One PCIe custom data+power connector (to be used with Tableau PCIe adapters) |
| SATA/SAS | One SATA/SAS data connector capable of the following data rates:<br><br>- SAS Gen 1 (3Gbps)<br>- SAS Gen 2 (6Gbps) - R2 Version only<br>- SATA Gen 2 (3Gbps)<br>- SATA Gen 3 (6Gbps) - R2 version only |
| SATA | One SATA Gen 3 (6 Gbs) data connector (also supports SATA Gen 1 and 2) |
| FireWire | One FireWire 800 9-pin connector (also supports FireWire 400, with adapter) |
| USB 3.0 | One USB 3.0 Type A 9-pin connector (also supports USB 2.0/1.1) |
| IDE | One IDE 40-pin data connector |

# Further Product Specifications

| Host Computer Interface Compatibility | |
|---|---|
| USB 3.0 Controllers | Most USB 3.0 controllers should be compatible.<br><br>**Notes**:<br><br>For the best USB 3.0 performance, ensure the latest host controller driver and BIOS update are applied.<br><br>For best imaging performance, ensure no other devices share the USB 3.0 controller channel in use by the Universal Bridge.<br><br>This product does not support UASP; however, enabling USB 3.0 controller Turbo (or equivalent) mode may still improve performance with certain OS and controller/driver combinations. |
| Host OS | Windows 7, 8, 10<br><br>Macintosh OS X versions<br><br>Modern Linux distributions |

# Indicator Lights

The device power switch is located to the left of the Write Block indicator. Data and power ports are clearly labeled.
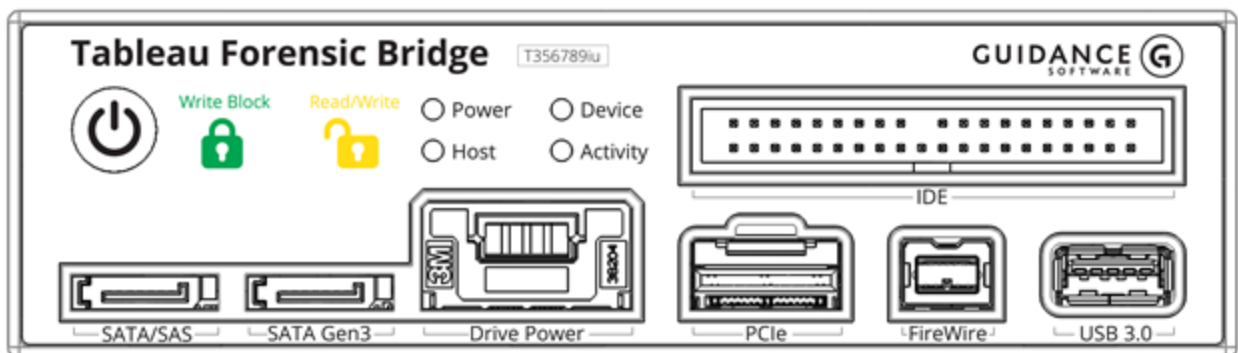


- **Write Block**: (green closed lock) write-block mode (read-only).
- **Read/Write**: (yellow open lock) read/write mode (enabled when DIP switch 1 is on).
- **Power**: when lit, the Universal Bridge is on.
- **Host**: when lit, the host computer is connected.
- **Device**: when lit, the connected device is powered and visible to the Universal Bridge.
- **Activity**: when lit, read or write activity is occurring on the connected device.

# DIP Switch Settings

The Universal Bridge has a four-position DIP switch located on the rear of the unit. The default position for all four switches is OFF. Power off the host computer and bridge before changing the DIP switch settings.
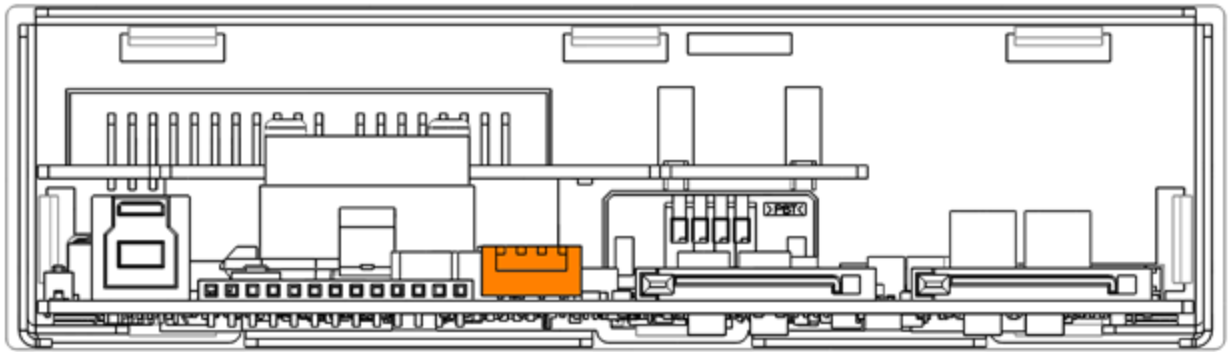


| DIP Switch Settings | | |
|---|---|---|
| Switch Number | OFF (up position) | ON (down position) |
| SW1 | Read-only/Write-blocked mode | Read/Write mode |
| SW2 | Reports write errors to the host | Suppresses write errors to the host |
| SW3 | Reports devices as read-only to the host | Suppresses read-only status |
| SW4 | NOT USED | NOT USED |

# USAGE TIPS

- Only connect one storage device at a time to the Universal Bridge.
- For the most reliable operation, only connect or disconnect storage devices to the Universal Bridge when the unit is powered off.
- Only use high quality data cables (such as the Tableau cables provided with the bridge) to connect devices to the Universal Bridge.
- To ensure reliable operation and maximum performance, consider replacing data cables used with the Universal Bridge at regular intervals.
- Ensure connected devices are stable and secure and away from any sources of heat, or heat-insulating material.
- Device firmware is easily updated with the Tableau Firmware Update utility (see the Tableau Firmware Update web page at https://www.guidancesoftware.com/tableau/download-center).

# WARRANTY

The product comes with a standard one-year warranty. Extended warranties are available for purchase. Please contact your Tableau salesperson for additional information on extended warranties.

# SUPPORT

OpenText is committed to providing our customers with the best user experience possible. If you have product questions, requests for additional features, or problems, please contact your local authorized Tableau reseller or OpenText Customer Support.