

USB-3

High Performance USB Protocol Analysis

PHOTO OF USB-3XT CURRENTLY UNAVAILABLE

Salient Features

- USB-3 product offering provides independent monitoring, triggering, acquisition and display of USB3.0 Superspeed and legacy (high/full/low-speed) bus activity
 - USB-3 product offering combines the USB-3XT and SATA-6G products (the latter with USB3.0-specific firmware)
 - USB-3XT facilitates logic-analyzer-based protocol analysis of USB3.0 legacy bus activity; functions stand-alone or together with SATA-6G
 - USB-3XT forwards USB3.0 Superspeed datastreams to CHS' SATA-6G probe for logic-analyzer-based analysis of Superspeed activity
 - SMA connectors on the USB-3XT and SATA-6G facilitate connection of Superspeed compliance test cabling, as well as oscilloscope monitoring of Superspeed signaling (may eliminate need for power splitters when monitoring RSG test signals)
 - USB-3 product offering facilitates logic analyzer-based protocol analysis of all aspects of USB3.0 signaling
 - Monitors Superspeed and legacy bus utilization and provides real-time link state, bus traffic and USB power-related displays
 - USB power (Vbus) voltage and current (10 MHz analog bandwidth) can be triggered on and acquired together with bus analysis data
 - Proprietary approach guarantees reporting all Superspeed bus information, including tracking reduced-power link state exiting
 - Monitors up to two USB3.0 datapaths *
 - Superspeed spread-spectrum clocking (SSC) frequency-modulation measurements **
 - Superspeed receiver-sensitivity bit error rate (BER) compliance measurements **
 - Probe configuration and control via Windows control application and USB control connection
 - USB-3XT Tektronix logic analyzer requirements: acquisition module having 34/68 channels and 60/120 MHz acquisition capability (minimum/recommended), supports connection of P6860 or P6419 probes
 - SATA-6G Tektronix logic analyzer requirements: 136 channel acquisition module with 250/375 MHz acquisition capability (minimum/recommended) per datapath, supports connection of P6860 or P6419 probes
 - USB-3XT acquires and displays all aspects of legacy USB behavior, including: USB On-The-Go (OTG) sequences; chirp speed negotiation; suspend, resume, and other bus events; packets; transactions; control transfers with targeted device class decoding
 - SATA-6G (with USB3.0-specific firmware, together with USB-3XT) acquires and displays all aspects of Superspeed USB3.0 behavior, including: optionally-acquired undecoded/unscrambled bus data; packets; control transfers with targeted device class decoding
 - Compact 8.66" x 6.50" x 1.20" (220mm x 165mm x 30,5mm) extruded-aluminum cases (USB-3XT, SATA-6G)
- *: Optional functionality **: Anticipated optional functionality

Protocol Analysis Software Features

- Graphical user interface support for complex multi-state logic analyzer trigger programs
- Powerful debug capabilities for triggering on and/or selective storage of legacy USB events, packets and transactions
- Trigger on and/or selective acquisition of real-time bus anomalies as well as normal bus behavior
- System software inherently supports time-coordinated display of multiple listing and waveform windows, along with window-linked cursor control
- Listing window high-level hierarchical display shows legacy USB bus events and packets, transactions or control transfers, and device class decoding
- Support to search acquisitions for information of interest
- Listing display controls affecting legacy USB error, radix, control transfer details, event/packet duration, packet speed, packet direction and packet locality displays are provided
- Address-endpoint-based selective display controls provided (address-endpoint, mask, direction) for legacy USB acquisitions
- Split-transaction-related selective display controls provided (hub address, hub address mask, hub port, hubport mask, endpoint type) for legacy USB acquisitions
- Controls provided to enable/disable display of legacy USB transactions based on the packet types present or absent in the transaction
- Controls allow suppression of display of trailing data bytes of lengthy legacy USB data packets, complementing the hardware-implemented selective storage facility which can suppress the storage of such data bytes
- Controls provided to suppress display of specified types of acquired legacy USB bus events
- System software supports multiple acquisition modules, allowing time-coordinated probing and display of USB activity along with e.g. that of the USB device- or USB host-processor, or another bus on the USB host motherboard
- A number of acquisition-related controls and selections, and numerous display controls and selections, are provided
- Off-line viewing of acquisitions using any Windows system

USB-3 Product Set / Ordering Summary

- USB3.0 Superspeed & legacy analysis, or Superspeed analysis only, require the combination of the USB-3XT probe, and the SATA-6G probe with USB3.0 Superspeed firmware
- USB3.0 legacy analysis only requires just the USB-3XT probe
- Included in the USB-3XT are the probe unit, DC power supply and cables, with documentation, software and related files downloadable from the CHS website (legacy-related product capabilities and functioning are similar to the predecessor USB-2XT-15 (refer to the USB-2XT datasheet))
- Included in the SATA-6G are the probe unit, DC power supply and cables, with documentation, software and related files downloadable from the CHS website; refer to the SATA-6G datasheet for product ordering and options information (including optional support for multiple Superspeed datapaths*, SSC measurements** and BER measurements**); can be used for Superspeed analysis without needing the USB-3XT in situations where Superspeed test signaling can be applied via SMA connection and/or SMA-SATA test fixturing
- The following USB-3 product numbers have been defined to cover typical combinations of component units
- Part number USB-3-A denotes the combination of USB-3XT and SATA-6G-257 for USB3.0 single-datapath probing
- Part number USB-3-B denotes the combination of USB-3XT and SATA-6G-769 for USB3.0 dual-datapath probing
- Other combinations of USB-3XT and SATA-6G units/options can be ordered using individual products' part numbers

Contact Crescent Heart Software

- Internet: www.c-h-s.com; E-mail: sales@c-h-s.com; Voice: (+1)503-232-2232; Facsimile: (+1)503-232-2255
- Crescent Heart Software, a Tektronix® Embedded Systems Tools Partner and a member of the Tektronix® Logic Analyzer Third Party Developer team, is headquartered in Portland, Oregon USA.
- Crescent Heart Software has been a member of the USB Implementer's Forum (USB-IF), and has provided technical consultation and feedback regarding electrical signaling issues to the Version 1.1 and 2.0 USB specification definers.
- Information presented herein is subject to change without notice (advance datasheet Revision H, March 2011)