HD3 Firmware Version 10.20 Overview

HD3 firmware version 10.20 was released on October 15th! This release enables the **HD300USBA USB Analysis application, HD300QJTA Quick Jitter Analysis application, HD300BDLB Ultimate Bundle application, and includes additional enhancements including real-time color grading of signals, math trace color grading, increased number of counters, new demos, and more.**

This launch marks the competition of all key software packages planned for the HD3 since launch. The past six firmware releases since launch have enhanced HD3 strengths, closed gaps, and significantly improved quality and performance. The HD3 datasheet has also been updated to include these new software packages.

Ordering Information
The HD300USBA, HD300QJTA, and HD300BDLB are now available on partner price lists. Customers can purchase the app with their initial HD3 purchase or after-purchase as an immediate license-based upgrade. Always check to make sure your customers have the software they need for their application!

Firmware version 10.20 and the release notes can be downloaded from keysight.com here.

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HD300USBA USB Analysis Software

The HD300USBA USB Analysis Application is now available! This application provides USB 2.0 and USB PD trigger, decode, and search. USB 2.0 supports low-, full-, and hi-speed signaling rates. This application enables a variety of USB analysis capabilities, including the ability to:

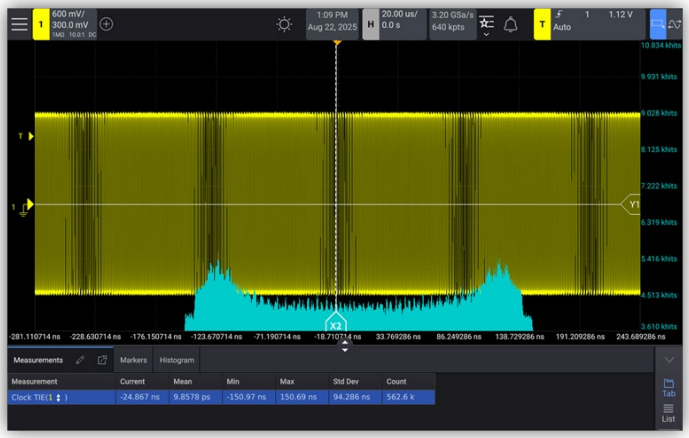
- Verify the analog quality of signals generated by USB hubs, hosts, and devices based on USB-IF compliance standards
- Trigger on various USB packet types including Token, Data, Handshake, Special, as well as various error conditions including PID, CRC, and glitch errors
- Perform dual-bus decoding with time-interleaved protocol lister / table display
- Perform serial decode trace time-correlated with USB waveforms
- Combine USB decoding with segmented memory acquisition, decoding on every captured packet

USB Decoding Software

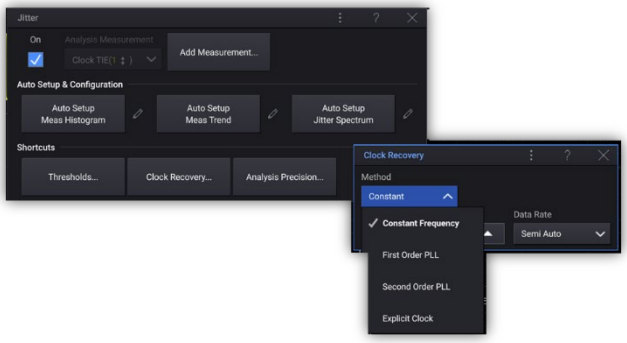
☆ **NEW DEMO!** Firmware version 10.20 includes new internal demos for USB PD and USB 2.00 decoding under the main demo menu.

HD300QJTA Quick Jitter Analysis Software

The HD300QJTA Quick Jitter Analysis software is also available! This package enables jitter analysis and clock recovery capabilities, and is an incredibly competitive price at only ~$500 in US list price!
QJTA is a simple tool for characterizing the behavior or periodic signals, leveraging the precision of the HD3. The application includes one-button setup of essential views and visualization of results using histograms, measurement trends, and measurement spectral views.



Clock TIE measurement using the HD300QJTA software application



Jitter and clock recovery menus

Ultimate Bundle Software Package

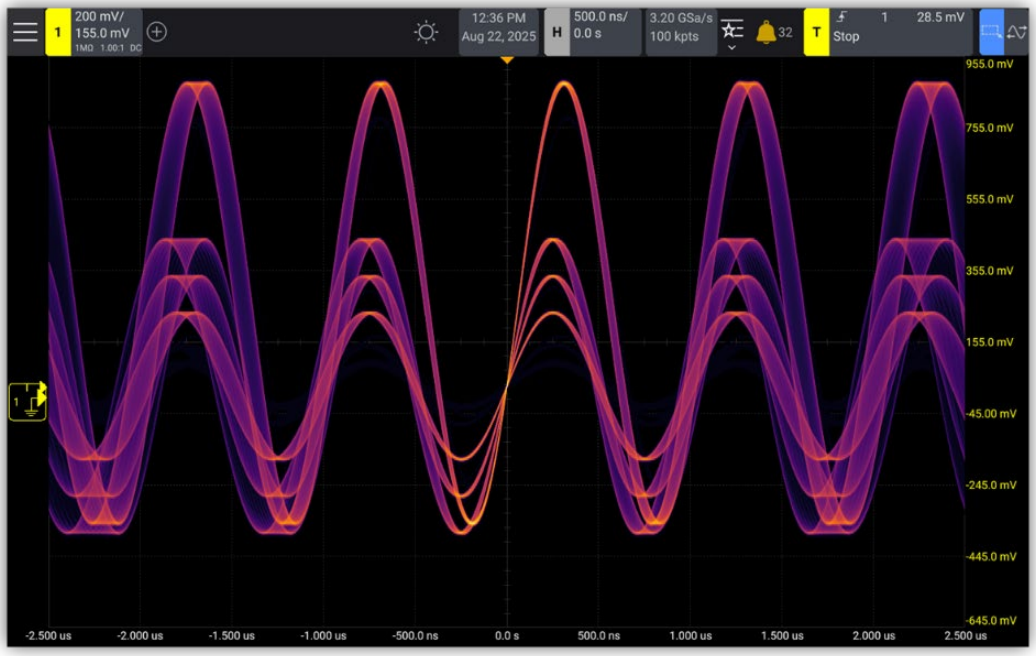
With the completion of the USB and Quick Jitter apps, we also created an updated ultimate bundle to add all available core HD3 software apps: HD300BDLB. This software package is a superset of our existing HD3 software packages, enabling the HD300EMBA Embedded Analysis, HD300AERA Aerospace and Defense, HD300PWRA Power Analysis, HD300AUTA Automotive Analysis, HD300USBA USB Analysis, and HD300QJTA Quick Jitter Analysis.

This will replace the HD300BDLA app, which was launched in 10.15 before the USB and Quick Jitter apps were available. The ultimate bundle is historically our top selling InfiniiVision software application, so it represents an excellent up-selling opportunity!

New Capabilities and Enhancements

Color Graded Persistence Updates

Firmware version 10.20 added real-time color grading of signals and added software color-grading of math traces, including FFT. Before color grading, users had to discern details from intensity grading, which makes it difficult to see detailed changes. Color grading increases the detail you can visually see on screen. Additionally, analog channel color grading is performed in hardware via the MegaZoom 5 ASIC to maintain our fast waveform update rate.



Color graded persistence using the “inferno” color theme

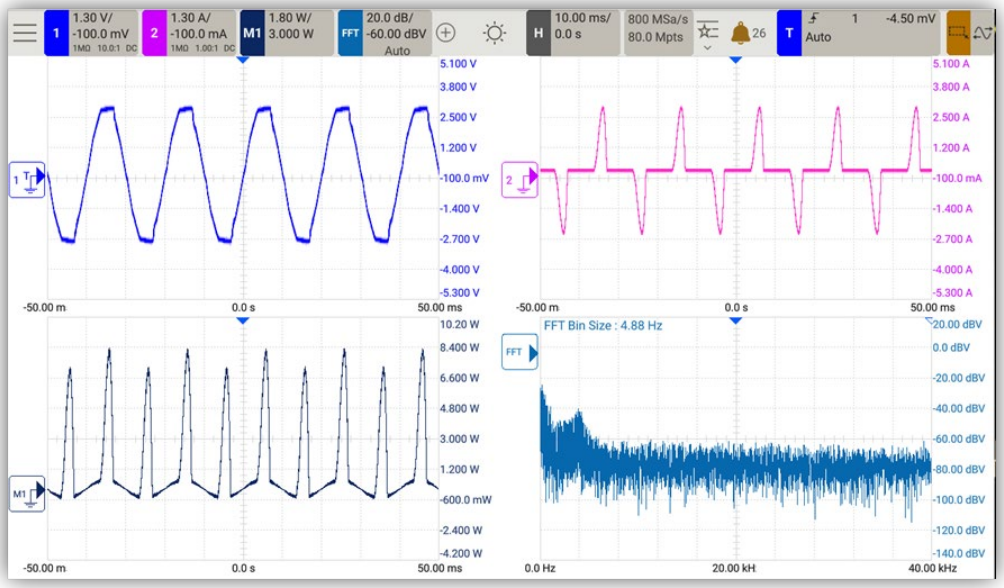
Color graded persistence is also available on math channels. While math color grading is done in software, it is still fast and provides insights that no other scopes can offer- even across other classes of instruments! This color grading makes it easy to see which edges are the most common in the image below.

Color graded persistence on a math channel

☆ **NEW DEMO!** Firmware version 10.20 includes a new internal demo for color graded persistence under the main demo menu.

Inverted Graticule Save

10.20 added the ability to invert colors when printing- a very common customer request! This allows customers to save toner when printing, shifting the color scheme to retain contrast against a white grid.



Inverted graticule color save

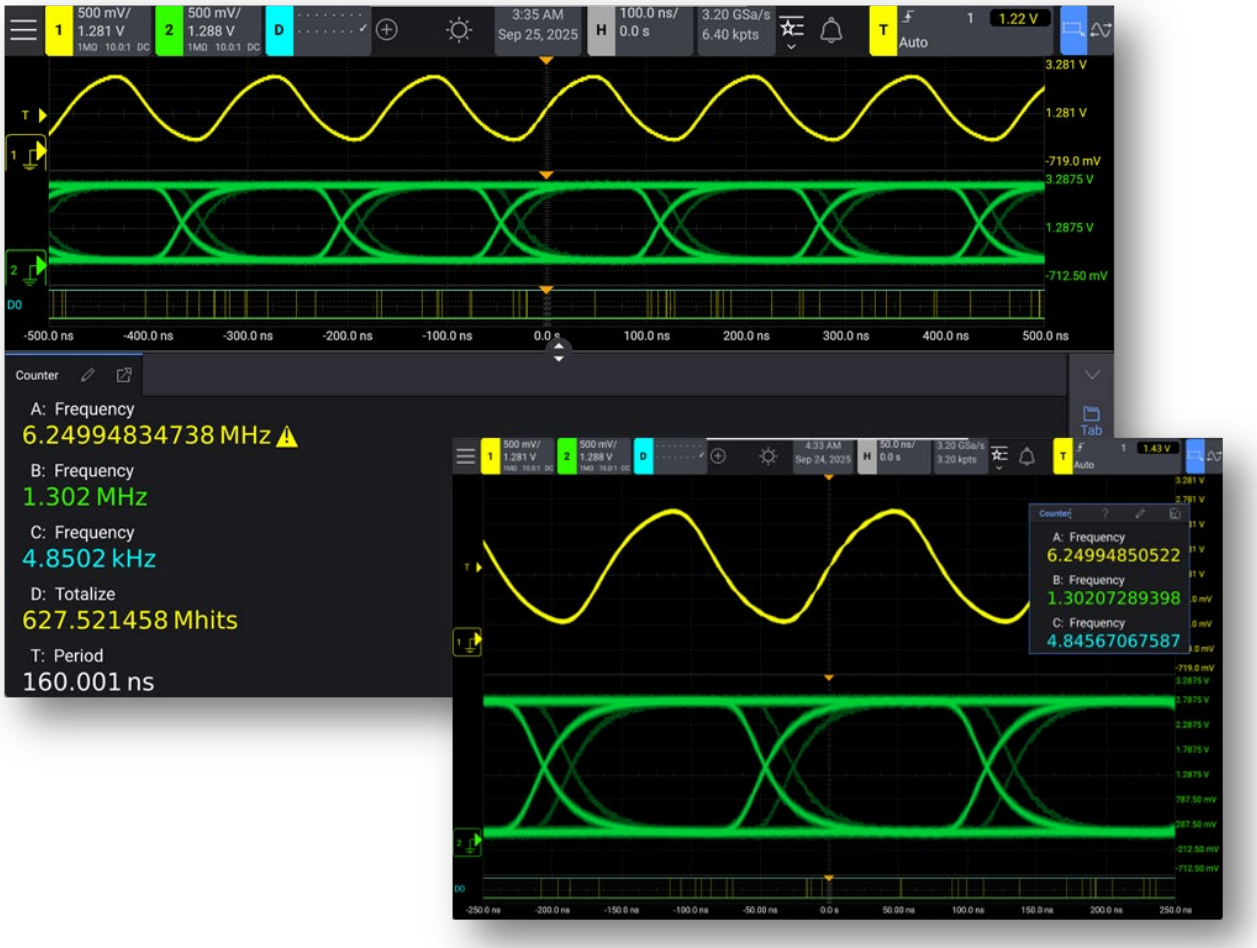
Sample Rate Control with Protocol Capture

While we added manual control of memory depth and sample rate in firmware version 10.07, this capability wasn't available when using the protocol decode feature. With 10.20, we extended this capability to protocol decoding, allowing the maximum HD3 memory to be used more efficiently. In the example below decoding 10 Mbps CAN, switching the sample rate from 3.2 GSa/s to 200 MSa/s increases the number of packets by 30x. You can increase this even further by adding segmented memory, which increases capture time to >30 seconds!

Controlling sample rate with CAN protocol decode

Expanded and Improved Counters

10.20 expanded available counters on the HD3 to four frequency, period, or edge event counters for analog and digital channels, plus a fifth counter for triggers. The number of counter digits of resolution was also extended to 12. Counter sources include analog channels, digital channels, and trigger-out.



Expanded counters

Save on Failure Added to Fault Hunter

The save on failure Fault Hunter functionality has long been available on the Infiniium version of the app, but it was missing from the HD3. With 10.20, this popular capability is now included! Now, customers can automatically view the waveform that caused a test to fail and copy it to trigger.

Fault Hunter Application in top image, waveform view of positive runt test failure in bottom image

Usability Improvements

Firmware version 10.20 also included additional usability improvements, including closing all open dialogs from the main dialog menu. The HD3 screen can easily get cluttered when multiple dialog boxes are open when adjusting multiple features. This capability makes it much faster to close all menus than closing them all individually.

Close all dialog boxes at the same time

Other Enhancements

Other enhancements in 10.20 include:

- Additional New Demos
  - 10.20 includes new demos for color grade, I2C, RS232/UART, Setup & Hold, Edge Then Edge, USB 2.0, USB PD, MIL-STD 1553, CAN FD, and SENT. These internal demos make it easy to explore new HD3 features!
- Added offset to probe external scaling
- Added a “Calibrated” return value for :CHANnel<n>:PROBe:STATus ? for the PS000xA and N2893A probes.
- Increased SPI protocol maximum word size to 32 bits
- Added I2C decode in ASCII format