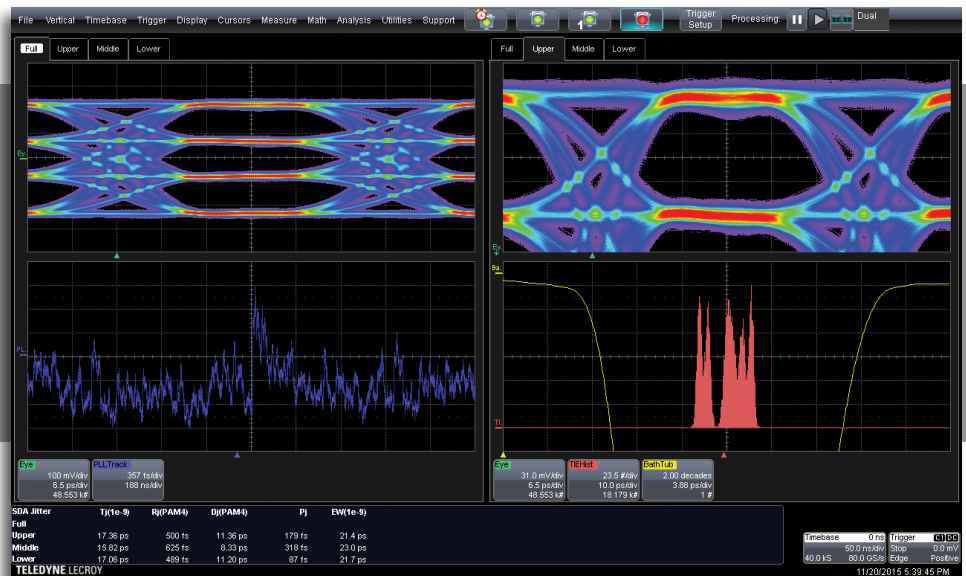


PAM4 Signal Analysis



Key Features

- PAM4 Eye Diagrams
- Eye Height and Eye Width @BER for upper, middle and lower eyes
- Tj, Rj, and Dj Jitter Decomposition
- Tn, Rn, and Dn Noise Decomposition
- IsoBER Contour Plot
- Jitter and Noise Tracks, Histograms, and Spectra
- Level Measurements
- LaneScape™ Mode Comparisons
- Equalization of PAM4 Signals using EyeDoctorII
- Simulation of PAM4 Waveforms with Jitter Sim

PAM4 represents a new step in the evolution of serial data signaling formats, overcoming some fundamental limitations of traditional NRZ signaling. But with new signal types come new measurement needs. Teledyne LeCroy's PAM4 analysis package meets these needs by leveraging industry-leading eye, jitter, and noise analysis capabilities to fully characterize PAM4 signals.

PAM4 signaling is being closely considered by standards organizations as the successor to NRZ signaling for the next generation of communication standards.

As with NRZ signal analysis, engineers working with PAM4 require sophisticated tools to measure how effects such as frequency-dependent losses and ISI impair signals and close the eye openings. But unlike NRZ signaling, the science of measuring PAM4 signals is new and evolving quickly to keep pace with the rapid advances in this technology.

Teledyne LeCroy's PAM4 Signal Analysis gives high-speed design engineers the same familiar NRZ analysis toolkit, but with sophisticated new measurement algorithms specific to the complexities of PAM4.

The PAM4 Signal Analysis package performs a complete analysis of PAM4 waveforms. It analyzes the signals, creates eye diagrams, measures eye closure in voltage and time, and predicts closure as a function of BER. It is fully integrated into Teledyne LeCroy's sophisticated MAUI user interface, allowing for advanced capabilities like channel emulation and de-embedding.



PAM4 Signal Analysis leverages Teledyne LeCroy's revolutionary multi-lane serial data analysis architecture to enable separate views of the upper, middle and lower PAM4 eyes, along with a view of the full eye diagram. Sophisticated new algorithms enable full breakdown of jitter and noise, bathtub curves, and IsoBER visualizations of the eye opening to selectable bit error ratio levels.

1. Eye Diagrams

Independently view the full, upper, middle and lower eye diagrams for a complete view of your PAM4 signal.

2. Clock Recovery

Flexible software clock recovery algorithms allow for user configuration of PLL type and parameters.

3. Jitter Breakdown

PAM4 Signal Analysis automatically calculates total jitter (Tj) and eye width (EW) at any user-specified bit error ratio, and decomposes jitter to the established random and deterministic components (Rj and Dj).

4. Jitter Analysis

Go one step further with comprehensive jitter visualization and analysis, including TIE tracks, histograms, and jitter spectra for all three eyes.

5. Noise Analysis

PAM4's multi-level nature means that understanding the signal's noise characteristics, and its contribution to vertical eye closure, is just as important as jitter analysis. PAM4 Signal Analysis performs Rn/Dn decomposition, Tn and Eye Height @BER extrapolation, as well as comprehensive noise visualizations like histograms, tracks and spectra.

6. Level Measurements

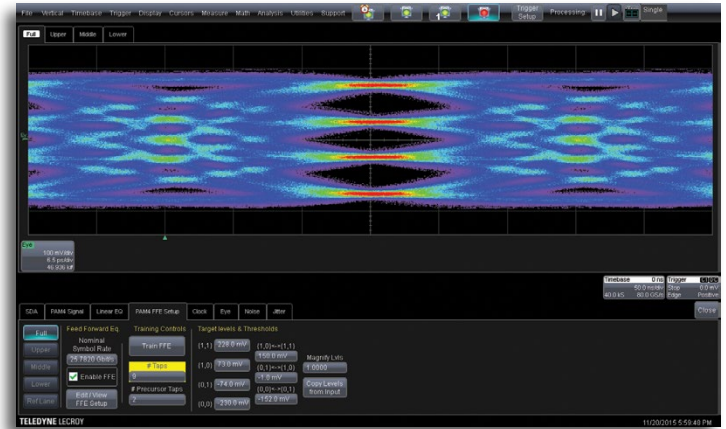
Understanding the relative positions of the four PAM4 signal levels is critical for complete characterization. PAM4 Signal Analysis measures the level positions and reports them as measurement parameters, from where they can be recorded or used in other measurements.

7. IsoBER Contours

For complete understanding and visualization of signal and link performance, PAM4 Signal Analysis creates extrapolated contour plots to illustrate eye opening in both horizontal and vertical directions, down to extremely low BER levels.

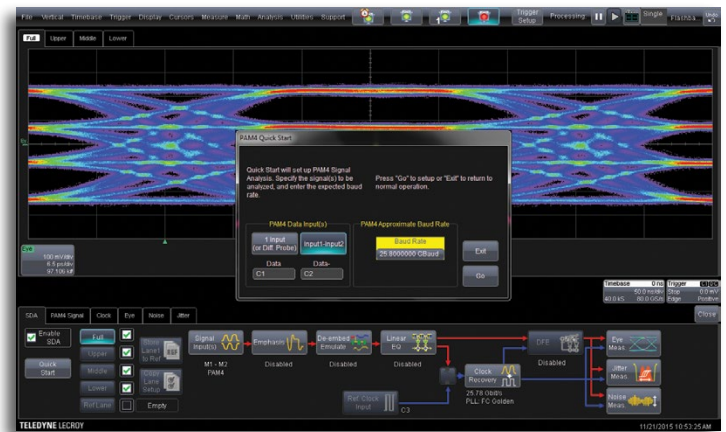
Complete De-embedding and Emulation

The PAM4 Signal Analysis package includes the views of noise and jitter utilized in Teledyne LeCroy's SDAIII-CompleteLinQ software. Enhance understanding of jitter and noise by displaying histograms, spectra, bathtub, and IsoBER curves for each eye opening. PAM4 analysis is fully integrated with EyeDoctorII, allowing users to de-embed channel and fixture effects, emulate a channel, or apply equalization to open up closed eyes.



Intuitive User Interface

PAM4 Signal Analysis gets its user interface design from Teledyne LeCroy's SDAIII-CompleteLinQ, the most intuitive and fully integrated serial data analysis package available. To help with the additional complexities of PAM4 analysis, a simple "Quick Start" dialog gets you up and running in seconds.



Simple Simulation

PAM4 Signal Analysis also adds PAM4 signal generation capability to Jitter Sim, Teledyne LeCroy's built-in serial signal generation tool. This integrated functionality allows easy switching between a real signal under test and a "golden" reference signal, to help understand and diagnose unexpected issues with your test setup.



ORDERING INFORMATION

Product Description

PAM4 Signal Analysis for WavePro 7 Zi Oscilloscopes

PAM4 Signal Analysis for WaveMaster 8 Zi Oscilloscopes

PAM4 Signal Analysis for LabMaster 9 Zi Oscilloscopes

PAM4 Signal Analysis for LabMaster 10 Zi Oscilloscopes

Product Code

WPZi-PAM4

WM8Zi-PAM4

LM9Zi-PAM4

LM10Zi-PAM4

System Requirements

SDAIII Serial Data Analysis framework (included standard on SDA7Zi, SDA8Zi and SDA-MCM-Zi model oscilloscopes)

Customer Service

Teledyne LeCroy oscilloscopes and probes are designed, built, and tested to ensure high reliability. In the unlikely event you experience difficulties, our digital oscilloscopes are fully warranted for three years and our probes are warranted for one year. This warranty includes:

- No charge for return shipping
- Long-term 7-year support
- Upgrade to latest software at no charge



1-800-5-LeCroy
teledynelecroy.com

**Local sales offices are located throughout the world.
Visit our website to find the most convenient location.**