![multiLane logo]

Innovation for the next generation

ML406B

Electrical Sampling Oscilloscope

Ideal for 53.125 GBaud PAM4 and NRZ transceiver testing | Supports 802.3 TDECQ measurements via SSPRQ patterns | Open Eye MSA support
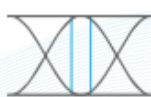
Summary

Introducing the next-generation Electrical Digital Sampling Oscilloscope, specifically designed for the deployment of 800G applications. This cutting-edge oscilloscope offers unparalleled performance and precision in characterizing high-speed data transmission. With its advanced sampling technology and comprehensive software capabilities, it enables accurate measurement and analysis of 800G signals. The oscilloscope is equipped with a user-friendly interface and a range of automation features, making it ideal for efficient testing and validation in production environments. Stay ahead of the technology curve with this state-of-the-art Electrical Digital Sampling Oscilloscope, ensuring optimal performance and reliability in your 800G deployments.
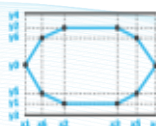
Key Features

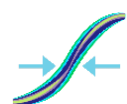|					
Extremely low noise	Fast TDECQ	Comprehensive eye mask library	Extensive library of built-in DSP filters	Brand new user interface	Extremely low jitter

ML406B

Electrical DSO

Introduction

The ML406B is an advanced and highly compact Digital Sampling Oscilloscope characterized by its 70GHz bandwidth. It is primarily utilized for the characterization of transmitters and receivers, and is convenient for dusty environment. The oscilloscope comes equipped with comprehensive software libraries that enable eye measurements, jitter analysis, and processing of NRZ and PAM4 data. Additionally, its extensive set of APIs makes it highly suitable for automated testing and efficient go/no-go production validation.

Key Features

The ML406B DSO boasts an extensive set of features and functions that are unique in the industry. These include:

- A noise floor of 1.2mV at 70Ghz.
- Sensitivity level of -11 dBm for a 25.78 Gbps NRZ signal.
- Up to 50 - 70 MHz sampling rate.
- Less than 10 seconds TDECQ on an SSPRQ pattern.
- FPGA-based architecture enabling TDECQ measurements via capture of SSPRQ and PRBS16 patterns.
- An extensive library of built-in DSP filters such as Bessel-Thomson, CTLE, DFE, FFE, de-embedding, and component emulation, all available free of charge in the standard GUI.
- Comprehensive eye mask library.
- Individual impulse response calibration performed at factory.
- Compact instrument footprint with a ruggedized enclosure and handle.
- Comprehensive set of APIs and associated sample scripts to accelerate automation development under Linux and Windows, supporting Python, LabView, Matlab, and C#.

Typical Electrical Applications

- TP1a stress calibration.
- SERDES characterization.
- Receiver electrical output characterization.
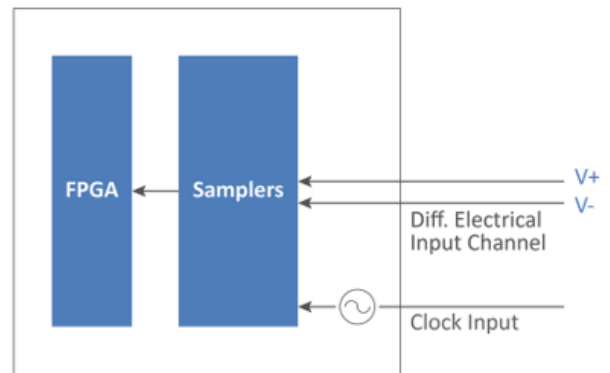- Benchtop characterization of electrical circuits.

Figure 1: Schematics of the ML406B

Electrical Specifications

Parameter	Specifications
Electrical amplitude	< 600 mV SE and < 1200 mV Diff
Electrical bandwidth	70 GHz
Intrinsic jitter	200 fs rms
Electrical channel Connectors	2.92 or 2.4 mm
Analog Sampling Hardware Resolution	14 bits
Clock input bandwidth	0.1 - 20 GHz
Clock input swing	225 - 1800 mVpp
Clock input connector	K 2.92 (f), 50 Ω
Pattern capture	> 8 M Samples
Sampling frequency	50 - 70 MHz
Memory	8 MSa
Pattern Lock	Up to PRBS16, SSPRQ
Temperature range	0 - 75 °C
Line Power	100 - 240 V AC, 50 / 60 Hz

Minimum PC Specifications	
OS	Windows 7 64-bit
Processor	Core i5 / Ryzen 5
Memory	4 GB
Storage	2 GB

Recommended PC Specifications	
OS	Windows 10 64-bit
Processor	Core i7 / Ryzen 7
Memory	8 GB
Storage	10 GB

Supported Measurements

Coding	Measurement
PAM4	TDECQ
	SNDR
	Open Eye MSA
	RLM
	OMA_{outer}
	Eye Height by BER
	Eye Width by BER
NRZ	Top & Base
	Min & Max
	One & Zero
	Transition Time
	Crossing %
	OMA
	Mask
	Peak to Peak
	Eye Amplitude
	Eye Height
	Eye Width
	Jitter
	SNR
	VEC
	Vrms
	DJ & RJ
	Noise

Supported DSP Functions

- Frequency response correction
- Nth-Order Bessel-Thomson.
- CTLE adaptive or manual.
- FFE adaptive or manual.
- DFE adaptive or manual.
- De-embedding or embedding of four-ports (.s4p) and two-ports (.s2p) files.
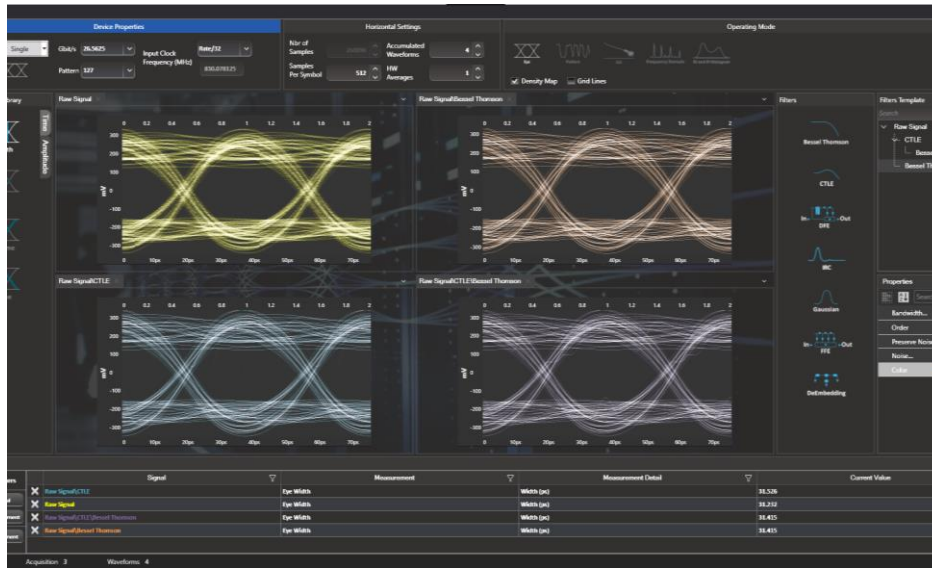- Moving average.
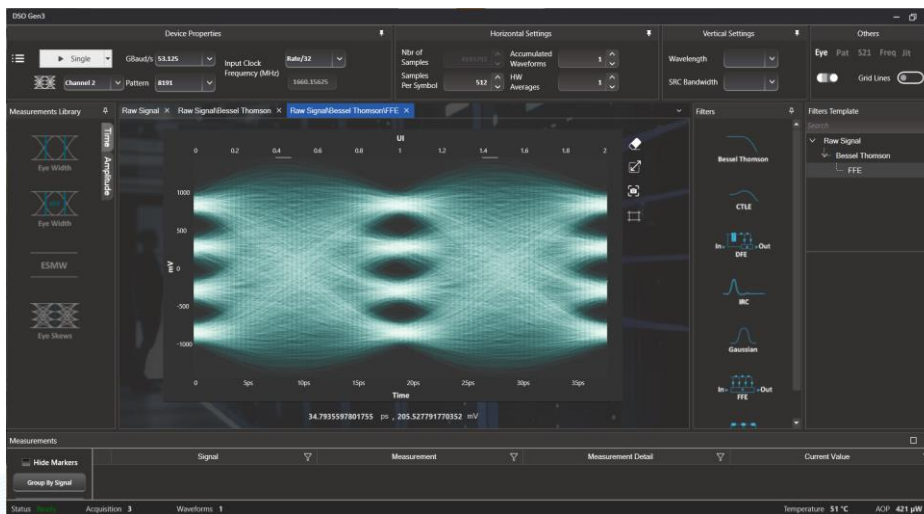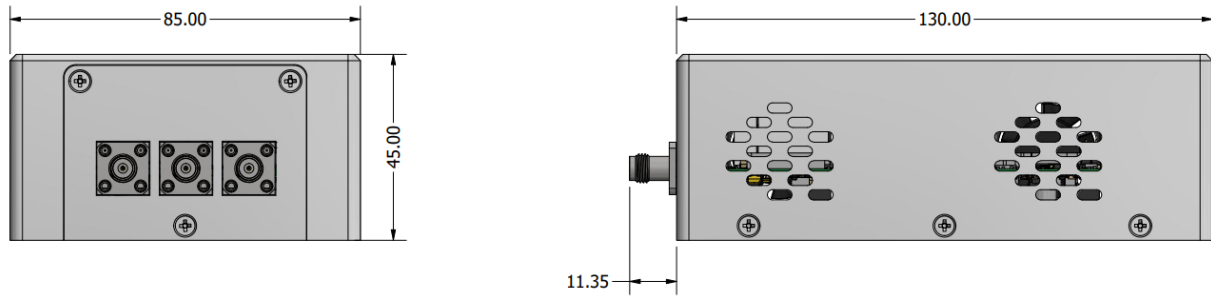

Figure 2: Multi-Signal Display Feature

Figure 3: 53.125 GBaud Electrical Eye Diagram – Bessel Thomson + FFE

Mechanical Dimensions

85.00

45.00

130.00

11.35

Please contact us at sales@multilaneinc.com.