multiLane

PRELIMINARY DATASHEET

Innovation for the next generation

ML8008FX-SIA

8-Lane Signal Integrity Analyzer

SCD21 and S-Parameter Capable | TDR Testing | 224Gbps Pattern Generator | Scalable to 1000+ Pairs | Lowest TCO | Test XTALK within seconds

Summary

In today's highly competitive and fast-paced industry, time and scalability are critical resources. Every second saved translates to a competitive advantage. At MultiLane, we are committed to delivering high-performance, automated, and throughput-optimized solutions. By revolutionizing large-scale production testing, MultiLane provides scalable and cost-efficient testing systems capable of testing thousands of 224Gbps pairs within seconds.

Our state-of-the-art solutions are fully automated and meticulously engineered to offer customers highly scalable and efficient cable characterization and production testing. These solutions enable low test times, high-density and simultaneous testing, and a low total cost of ownership (TCO), all while delivering accurate and reliable measurements.

MultiLane's ML8008FX-SIA is a standout addition to our diverse portfolio of Signal Integrity Analyzers (SIA). It supports 224Gbps testing for NRZ and PAM4 eye diagram measurements, skew analysis, impedance characterization, and S-parameter evaluation.

ML8008FX-SIA

1.6T, 8x 224G Signal Integrity Analyzer

Introduction

The ML8008FX-SIA is a cutting-edge Signal Integrity Analyzer designed for high-throughput and cost-effective 224G passive and linear active copper testing, offering a low Total Cost of Ownership. This ultra-fast specialty instrument is ideal for switch-based Flyover Cables, DACs, ACCs, Backplane Cartridges, and Cable Trays. It can function as a standalone benchtop unit or be linked with multiple units to enable ultra-fast, high-density, multi-terabit validation. The system also supports quick connector changeovers across various types.

Equipped with an extensive software library, the ML8008FX-SIA delivers precise eye-diagram analysis, impedance profiling, reflection loss measurements, S-parameters, and crosstalk analysis, all performed simultaneously across eight channels.

Key Features

- High-resolution TDT Single-Ended and Differential measurements
- 7 ps Rise Time, Time Domain Reflectometry / Transmission optimized for high-speed tests and measurements
- Identifies Cable assembly manufacturing variations during the cable stripping process
- Modular & Scalable 8-Lane[1] system per instrument
- Optimized for High Volume Manufacturing
- Extremely fast throughput (sub-second)
- Fast Changeover across connector types

[1] A Lane consists of 1 Analog input, 1 Tx, and 1 Rx, all differential

Use Cases

- High Density Backplane Cartridges, Cable Trays, and Cables
- DAC, AEC, ACC Cables

Number Of Units Needed to Test			
8 Diff Pairs	16 Diff Pairs	32 Diff Pairs	64 Diff Pairs
1	2	4	8

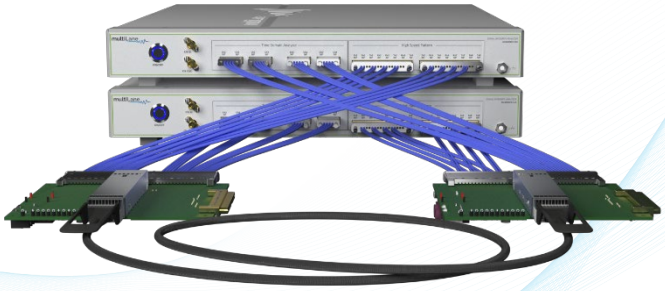

Figure 1: 2x ML8008FX-SIA for testing 16 differential pairs DUT

Signal Integrity Analyzer Parameters

S-parameters

- Common Mode Conversion
- Return loss
- Insertion loss
- Crosstalk

Time Domain parameters

- Impedance Profile Measurement
- Eye Measurements
- Jitter
- Skew
- TDR/TDT

Transmit Parameters

- Supports Gray coding.
- 21-tap linear FFE
- Multi-pattern capable
- 224Gbps, 112Gbps … 25Gbps

Receive Parameters

- DFE Equalization & Reflection Canceler (RC)
- 15-FFE Taps monitor
- Independent PLL per lane
- Error-detection on the following patterns:
    - PRBS 7/9/11/15/16/23/31
    - PRBS13Q
- LOS indicators

Supported Measurements

Function	Measurements
S - Parameter	SCD21
	Single Ended and Differential Insertion Loss (SDD21, S21)
	SDD11 & SDD22
	Xtalk NEXT & FEXT
	ICN
	COM (v3.1)
	Insertion Loss Deviation (ILD)
Eye Diagram	Eye Height & Eye Width
	Rise time & Fall time
	Jitter
TDR	Impedance Profile
	Skew (intra and Inter pair skew)
BER	Real time BER
	Loss of RX lock (LOS)

Specifications

Parameters	Specifications
Time Domain Analyzer	
Signaling Mode	PAM-4 & NRZ
Intrinsic Jitter	TBD
Max Input Amplitude	600 mV SE and 1200 mV Diff
ADC Resolution	14 bits
ENOB	TBD
SFDR	TBD
Noise Floor	1.5 mVrms
Channel Bandwidth	TBD
Input Connector	2x 1x4 SMPX
TDR Pulse Rise Time	7 ps
Input Channel Coupling	AC Coupled
Pattern Capture	Up to PRBS-16
Memory Depth	34 MSamples/Channel
Input Impedance	50 Ω Single Ended, 100 Ω Differential
High Speed Pattern	
Bit Rates	224G, 112G and 56G PAM4 and 25G NRZ and their derivative dynamic rates.
Patterns	PRBS 7/9/11/13/15/16/23/31/58/9_4 SSPRQ
Bit Rate Tunning	100 kbps steps
Differential TX Amplitude	0-800 mVpp
TX Amplitude Adjustment	Steps of 1 mV
Equalizing Filter Resolution	1000 steps
Equalizing Filter Spacing	1 UI
Pre and Post Emphasis	6 dB
Random Jitter RMS	<300fs
Coding	PAM-4 Gray and none-gray coding, NRZ
Error Detector Input Range (RX)	50 – 800 mV Differential
Connector	1x16 SMPS
Diff Input Return Loss	TBD
Input Impedance	TBD
Clock Characteristics	
Input Clock Range	100 MHz to 4.4GHz
Output Clock Range	TBD
Input Clock Amplitude	800 – 1600 mV Single Ended
Output Clock Amplitude	TBD

Environmental	
Specification Valid at Room Temperature range	18 to 30 C
Operating Temperature range	0 to 45 C
Storage Temperature Range	0 to 70C
Power Requirements	TBD

Ordering Information

Option	Description
ML8008FX-SIA	224G Signal Integrity Analyzer
3YW	Total 3-year warranty
CAL	Single factory calibration
3YWC	Total 3-year warranty with 3 annual factory calibrations

Recommended Accessories

TBD			

Please contact us at sales@multilaneinc.com.

This equipment contains ESD sensitive components and may become damaged when contacted with an electrostatic charge. To prevent equipment damage, please use proper grounding techniques.