MA-4000 Module Analyzer

ALL-IN-ONE BER TESTER-MCB FOR 100G/400G OPTICAL TRANSCEIVERS



The all-in-one solution for transceiver qualification on the production floor, including a bit-error-rate tester, module compliance board (MCB) and power supply.

KEY FEATURES

8 channels, 10 - 28 GBd supporting PAM4 and NRZ

Integrated MCB (no RF cable required)

High flexibility supporting the most popular transceivers. Daughter cards available: QSFP-DD, OSFP, QSFP28, SFP28, SFP-DD

Future-proof design with replaceable MCB

Built-in power supply for four-corner testing

I²C control function supported

Pre-FEC and post-FEC BER

Featuring FEC distribution (codewords vs symbol errors)



MA-4000 Module Analyzer

SMART MCB DESIGN

Superior SI performance and long insertion life

- Uses daughter board system (no external MCB required)
- Supports QSFP-DD, OSFP, QSFP28, SFP-DD, SFP28 (direct connection)
- · Easy to replace after connector insertion life cycle to ensure reliability
- · No RF connector on MCB to minimize thermal chamber size
- · One-fifth thermal cycling time compared to external MCB

FEC SIMULATION SOFTWARE

Powerful function for Burst Error Analysis

- · PRBS error check and correction
- Pre-FEC and post-FEC BER
- · KP4/KR4 and low latency FEC protocols
- · FEC lane striping function
- · FEC symbol error distribution plot: codewords vs. symbol errors
- · FEC margin auto-calculation

LOOPBACK BOARD

Excellent signal integrity (SI)

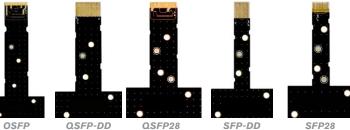
- · Supports most of MSA
- · High-performance signal integrity
- · Smart design that requires no housing
- · Easy plug and unplug



Easy-to-replace MCB in direct contact with BERT



Minimized thermal chamber for industry's fastest thermal cycling







All specifications are typical at 23 °C \pm 2 °C unless otherwise specified.

Module AnalyzerNumber of channels8Data rate per lane (GBd)\$2,78125,26.5625,27.95,28.05,28.125,28.9 (PAM4/NRZ) 9,95328,10,10.3125,10.709,11.3176,12.5,14.025,21,24.33024,25 (NRZ only)Data rate adjustment (ppm)0 to ±300ModulationNRZ/PAM4PatternPRBS 7/9/11/13/15/23/31,PRBS7Q-310 (PPG and ED) PRBS 16, SSPRQ, user-defined pattern (PPG only)Maximum amplitude (mV _{per})1500 (typical)Maximum amplitude (mV _{per})1500 (typical)Rise time / Fall time (ps)15/15 (20% to 80%, typical)Jitter rms (fs)500 (typical)Sonoi (Vpical)17 cero hit, typical)Sensitivity (mV _{per})00 to 8000 (PAM4 26.5625 GBd, typical) to to 1000 (NRZ 25.78125 GBd, typical)Clock output ratio00 to 8000 (PAM4 26.5625 GBd, typical) to to 1000 (NRZ 25.78125 GBd, typical)Clock output ratio8/16,/32, /64Power suppl10Output voltage (V)3.13 to 3.465Adjustable step (mV)5Adjustable step (mV)5Adjustable step (mV)15Adjustable step (mV)5At power (W)15At power (W)5At power (W)5 <tr< th=""><th colspan="4"></th></tr<>				
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Daughter card (MCB)	Max power (W)	15		
-	Current monitoring	Supported		
Built-in I ² C and I/O control	Daughter card (MCB)			
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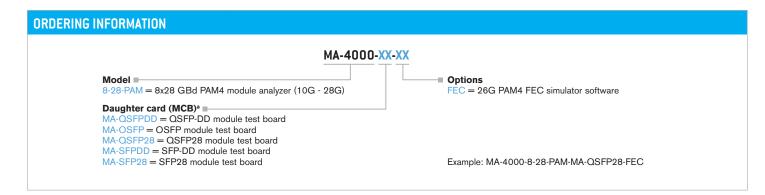
GENERAL SPEC	IFICATIONS	
Size (H x W x D)		114 mm x 220 mm x 517 mm (4.5 in x 8.7 in x 20.4 in)
Weight		≤10 kg (22 lb)
Temperature	Operating Storage	5 °C to 40 °C (41 °F to 104 °F) –20 °C to 70 °C (–4 °F to 158 °F)
Relative humidity		20% to 80%
Power ^a		100/120 Vac (50/60/400 Hz) 220/240 Vac (50/60 Hz) 60 W typical/80 W max.
Access interface		Gigabit Ethernet (RJ45 port)

ACCESSORIES	
LB-QSDD	QSFP-DD loopback board
LB-OSFP	OSFP loopback board
LB-QS28	QSFP28 loopback board
LB-SFDD	SFP-DD loopback board
LB-SF28	SFP28 loopback board
MA-9000-ESD	Electrical screwdriver

a. Operate with supply voltage fluctuations up to $\pm 10~\%$ of the nominal voltage.



EXEO



a. Loopback board included

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