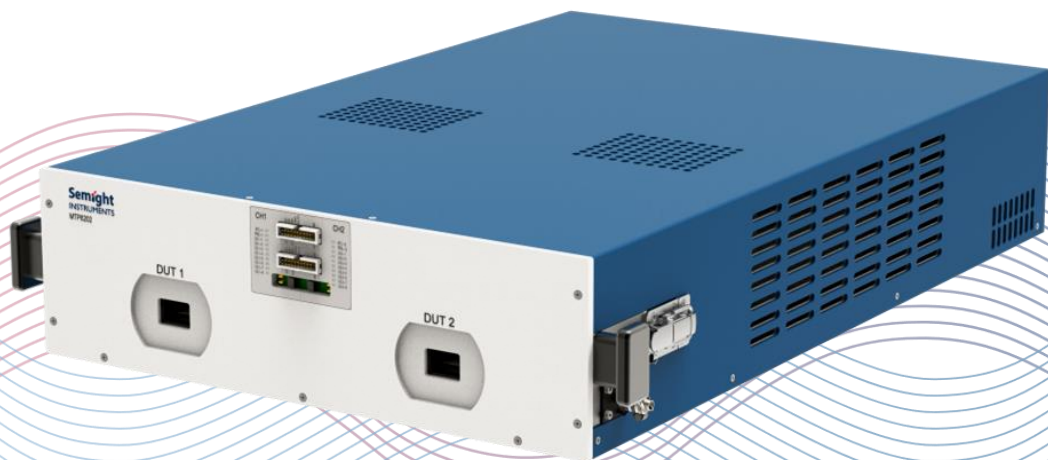


# MTP8102

800G Transceiver Test Head

Version 1.1



## Product Description

Semight Instruments MTP8102 series, is an integrated optical port BER analyzer (BERT), temperature control system as a comprehensive BER test system. Realize the BER test of 800G high-speed optical modules, such as 800G OSFP, 800G QDD optical modules, etc.; integrated MCB test card, to achieve flexible and fast DUT plug-in test.

The MTP8102 series integrates two 800G module jacks (OSFP/QDD) with internal BERs for physical layer characterization and conformance testing. With support for 4-level pulse-amplitude modulation (PAM4) and non-return-to-zero (NRZ) signals, and symbol rates up to 60 Gbaud (equivalent to 120 Gbps), it covers all emerging 200/400/800GbE and CEI-112G standards. Excellent signal quality (fast rise/fall time and low jitter), rich functionality (support for true FEC error correction code analysis) features, flexible option configuration and ultra-high overall integration provide powerful performance and flexibility guarantees for high-speed serial circuit product pre-research, design, and production testing. Meanwhile, the Programmable Pattern Generator (PPG) can provide 3Tap/7Tap pre-emphasis adjuster to flexibly compensate for signal loss during transmission and improve signal quality. The bit error detector (ED) has a built-in equalization circuit, eliminating the need for an external active or passive signal conditioning circuit to ensure the signal integrity of the link, while the built-in fast locking clock recovery module ensures the stability of the link during bit error testing, as well as the accuracy of bit error testing in harsh and complex test environments.

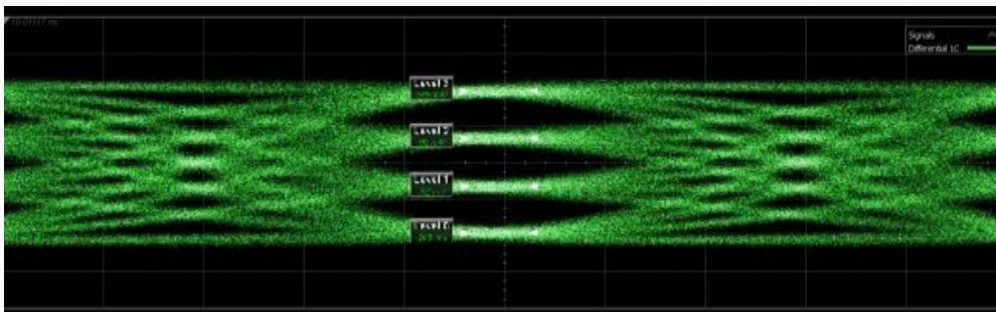
## Key Features

- High performance 112 Gbps/Ch bit error ratio tester, supporting up to 8 groups of channels;
- Fast rising edge, low inherent jitter;
- Support real FEC generation and test analysis;
- Each channel can be independently configured for NRZ or PAM4 signal format;
- Support symbol rate range: 24.33~60 Gbaud;
- Support code type: PRBS 7/9/11/13/15/16/23/31, PRBS7~31Q;
- Support rich test code type, SSPRQ/JP03A/JP03B/LIN/SW/CJT/custom code type (64 bits length), etc.;
- Support CTLE receiver-side equalization modulation;
- Support pre-emphasis and de-emphasis modulation at the transmitter in 3-TAP/7-TAP mode;
- Support BER injection and input/output polarity switching;
- Trigger signal can be divided into frequency output (4 divided frequencies ~ 128 divided frequencies);
- Powerful and flexible database management functions to assist R&D in deep analysis of data;
- External API (LabVIEW, C#) can be called through Ethernet port or USB control interface to flexibly program and control the product;

## Product Model

Category of 800G Transceiver Test Head			
Product Name	PN	Type of Modules	Qty of DUT
800G Transceiver Test Head	MTP8102-DT-N	800G OSFP	2
		800G QDD	2
<p><b>INS:</b></p> <p>ST: Single-side temperature control was performed with TEC</p> <p>DT: Double-side temperature control was performed with TEC</p> <p>G: With Golden Light interface</p> <p>N: Without Golden Light interface</p>			

## Technical Specifications



\*Code type: SSPRQ@53.125 Gbaud, differential eye diagram @ Keysight DCA 1092C

<b>Code Generator</b>	Output Type	Differential PAM4/NRZ
	Termination	Differential 100Ω, single-ended 50Ω; AC coupling
<b>Indicators</b>	Data patterns	PRBS 7/9/11/13/15/23/31, PRBS7~31Q
		SSPRQ, JP03A/03B, LIN, CJT, SW
		Customer Defined Pattern (64bits length)

	Data symbol rate (Gbaud) <sup>①</sup>	24.33/24.8832/25/25.78125/26.5625/27.89/27.95/28.05 /28.125/28.2/28.9/30/48.66/49.7664/51.5625/53.125/56 /56.25/56.4/57.8/60
	Frequency accuracy (Typical)	± 50 ppm
	Maximum output amplitude (differential) <sup>②</sup>	600 mVp-p
	TR(20%–80%) <sup>③</sup>	<10 ps
	TF(20%–80%) <sup>③</sup>	<10 ps
	Data output RMS jitter	<350 fs
	Connector	1.85 mm female, 50 Ω

① Support more expansion rates in the future

② Net measured value of transmitting port

③ Measured with 56.25 Gbps NRZ signal

<b>Trigger Output Indicators</b>	Output amplitude	>300 mVp-p
	Output type	AC coupled, single-ended
	Frequency division ratio (settable)	4/8/16/32/128
	Connector	2.92 mm female, 50 Ω
	Trigger output	Support RF switch switching A/B each 4 groups trigger switching

<b>Error Detector</b>  <b>Indicators</b>	Input type	Differential PAM4 / NRZ
	Termination	AC
	Input Impedance	100 Ω
	Receiving amplitude (differential) <sup>①</sup>	100 ~ 600 mVp-p
	Receiving sensitivity (differential) <sup>②</sup>	100 mVp-p
	Data patterns	PRBS 7/9/11/13/15/16/23/31, PRBS7~31Q;
	Data symbol rate (Gbaud)	24.33/24.8832/25/25.78125/26.5625/27.89/27.95/28.05 /28.125/28.2/28.9/30/48.66/49.7664/51.5625/53.125/56 /56.25/56.4/57.8/60
	SNR Test	Support
	Clock mode	Built-in clock recovery
	Synchronization type	Auto Synchronization (level/phase)
	Connector	1.85 mm female, 50 Ω

① The measured value is the net input value at the receiving end

② When the input amplitude is <100 mVp-p, the corresponding BER may reach e-3 or even LOS

<b>Temperature control index</b>	Temperature control method	Contact TEC temperature control
	Rising and falling temperature range	TEC set temperature (-10~85 °C) Module report temperature (-5~85 °C)
	Stability	Single channel ±1 °C
	Control accuracy	±0.1 °C
	Communication Interface	RS232

	Lifting and cooling efficiency	1) Depends on the use of the site temperature environment 2) Type of module to be tested 3) Water cooler cooling power
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<b>Optical module voltage modulation (Pull-off test)</b>	Output Range (V)	3.069 ~ 3.5
	Adjustment gear (non-linear)	128
<b>General indicators</b>	Environment	Use in indoor environments
	Work	0°C to +55°C, 30% to 80% relative humidity non-condensing
	Storage	-30°C to 70°C, 10% to 90% relative humidity non-condensing
	Elevation	Working height: 0m to 2000m, storage height: 0m to 4600m
	Power	【MTP8102】 : Voltage range: 100-240 VAC, Frequency range: 50/60 Hz Maximum power: 500 W, fuse specification: F10AL 250 VAC
	Warm-up time	10 min
	Dimensions (D * W * H)	132 mm × 445 mm × 684.4 mm
	Weight	Net weight ≤10.0 kg

## Ordering Information

MTP8102	OSFP; QDD;	
Standard Accessories	USB control cable, power cable, installation software U flash drive	
Air-cooled fans	Accessories to provide air-cooled heat dissipation for the light module to be measured	
Standard light source module interface		
Optional Parts		
MCB fixture options <sup>①</sup>	QSFP-DD	Yes
	OSFP	Yes
Temperature control options	TEC	TEC temperature cycling kit (can support -20 ~ +70 °C temperature cycling range)
	TS	Heat flow meter mechanism kit (can be connected to heat flow meter air duct/air hood) supports -40 °C
Water cooler	3 kW cooling capacity water cooler	
Modulation type option	PAM	Support PAM4, 41.25 ~ 60 Gbps
	NRZ	Support NRZ, 20.625 ~ 30 Gbps
Function Options	RFSW	Built-in RF switching trigger output
	HPO	Built-in high power output mode >1200 mVp-p Code generator output
	FEC	FEC simulation analysis (KP4/KR4 protocol)
	EDR	Expanded rate options to accommodate more NRZ rate requirements

①Expandable to support more optical module types in the future.

## Contact us

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\*This information is subject to change without notice.