Eye-Checker™

NEW Picosecond Optical Sampling Scope

EYE-2000C

Key Features

- 1 picosecond sampling resolution
- Low sampling jitter <100fs
- Very high bandwidth >500GHz
- High signal sensitivity
- Low polarization dependency
- Software clock recovery without external clock
- Real-time algorithm with fast refresh rate
- Option for advanced tunable sampling rates
- Dual-channel option for phase-shift-keying data

The Eye-Checker™ (EYE-2000C) optical sampling scope is a low-cost alternative to the conventional optical sampling oscilloscope, which requires an external electrical clock for synchronisation. The EYE-2000C employs an advance software algorithm, CODESYNC™, to accomplish clock-recovery on any optical signal without the need for an external clock. The software also includes eye-diagram analysis, Q-factor and BER performance prediction, to data bit pattern unravelling, sequence recognition and visualisation.

The EYE-2000C offers a dual optical channel option for syncrhonous measurement of two optical channels. The dual channel version allows measurement of phase-shift keying data formats such has DPSK when used together with an external 1-bit delayed interferrometer. Time delay between the two optical channel can also be adjusted with a built-in optical delay line.

Although external syncrhonization is not required, an external electrical clock can also be supported as an option, to provide timing information for syncrhonisation of high multiplexed bit-rate data to the reference electrical clock.

A further option for an advanced sampling laser with tunable repetition rate can also be integrated to address ocassional sub-optimal sampling conditions associated with non-synchronous sampling systems, such as the frequency-hole phenomenon, and recovery of RZ signals or data with a high duty-ratio.

The Eye-Checker™ incorporates a proprietary, highly reliable carbon-nanotube-based pulsed laser with an ultra-low jitter enabling a truly bit-rate independent measurement of any data format at bit-rates >500Gb/s.

Applications

- Opti!cal eye-diagram measurement
- High-speed OTDM performance monitor
- Short pulsed source evaluation
- Picosecond pulse-shape characterisation
- Eye-penalty, Q-factor and BER analyses
- Data pattern visualisation and recognition
- Real-time optical network diagnosis
- Characterization of 40Gbps, 80Gbps, 160Gbps transmitter.

Specifications

Category	Parameter	Specification	Unit
Optical (Single/Dual Channel)	Wavelength range	1525 to 1560	nm
	Power sensitivity (peak power)	<2.5	mW
	Polarization dependency	<0.5	dB
	Bandwidth	>500	GHz
	Modulation format	NRZ, RZ, CSRZ, D/QPSK , Pulse	
Temporal	Short term jitter (rms)	<100	fs
	Sampling resolution	<1	ps
Signal-to-Noise	SNR	>20	dB
Data	Record length	64 K (upgradeabe to 128 K)	point
	Display length (eye-diagram)	8,192 / 16,384 / 32,768	point
	PRBS length	Eye Diagram : > 2^{31} -1	
		Data sequence : > 2^{7} -1 (2^{17} -1 possible)	
Software	Refresh Rate	10 (typical)	Hz
Electrical	External Clock (option)	0.001 ~ 12.5	GHz
	Interface	14bit DAQ with USB 2.0	
	Power supply	AC 100 ~ 240 (50~60Hz)	Vac
Operating Conditions	OperatingTemperature	+18 ~ +30	
	Humidity (non-condensing)	< 80	% R.H.
Physical	Dimensions (W x H x D)	485 x 135 x 375	mm x mm x mm
	Weight	12	kg

Measurement Examples

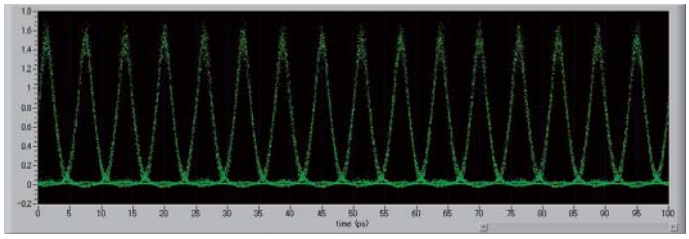

Fig. 1 Characterizing a160Gb/s RZ eye-diagram.

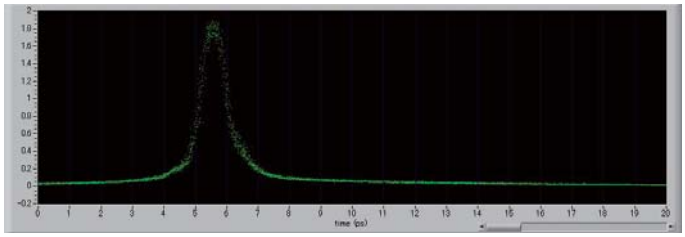

Fig. 2 Measuring 1ps optical pulse from a fiber laser.

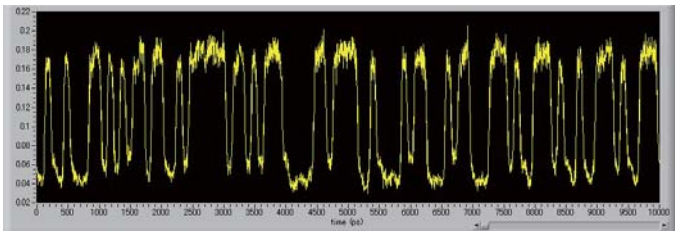

Fig. 3 Visualizing a distorted 10Gb/s NRZ singal pattern.

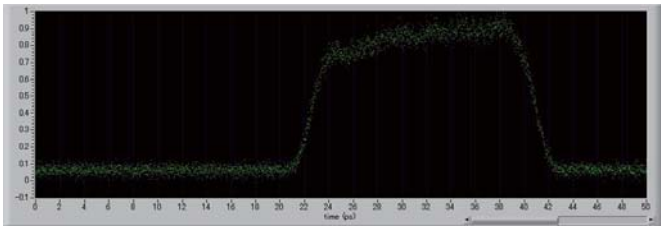

Fig. 4 Analysing an optical square pulse with 1 ps rise-time.

Ordering Information

EYE-2000C - F I S Q - F S

Sampling Laser Option	External Clock Option	Dual Channel Option	Record Length Option	Connector Type
F: Fixed Repetition Rate (Standard)	I: Internal Clock (Standard)	S: Single Channel (Standard)	Q: 640,000 pts (Standard)	FS: FC/SPC SS: SC/SPC
T: Tunable Repetition Rate	E: External Electrical Clock	D Dual Channel	R: 1,280,000 pts	FA: FC/APC SA: SC/APC

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