

Our commitment to performance and value ....

Centellax delivers low-cost, high-performance test instruments, test accessories, and electronic components for high-speed communication and signal integrity applications.

The Centellax technical staff combines the best in microwave and millimeter-wave engineering and high-speed digital design.

At Centellax, we leverage our microwave and digital IC design capabilities to provide our customers with technologically advanced, compact, and low-cost test solutions.

**PRODUCT**  
**TG1B1-A / 10G BERT**

500Mbps to 12.5Gbps Pattern Generator and Error Detector system with internal 9.85 to 11.35GHz clock system includes standard 1-year warranty.

**OPTIONS**

**TG1B1-A-OPT001 / 1-year Extended Warranty**

Adds one year to the standard warranty.

**TG1B1-A-OPT002 / 19-inch Rack Mount**

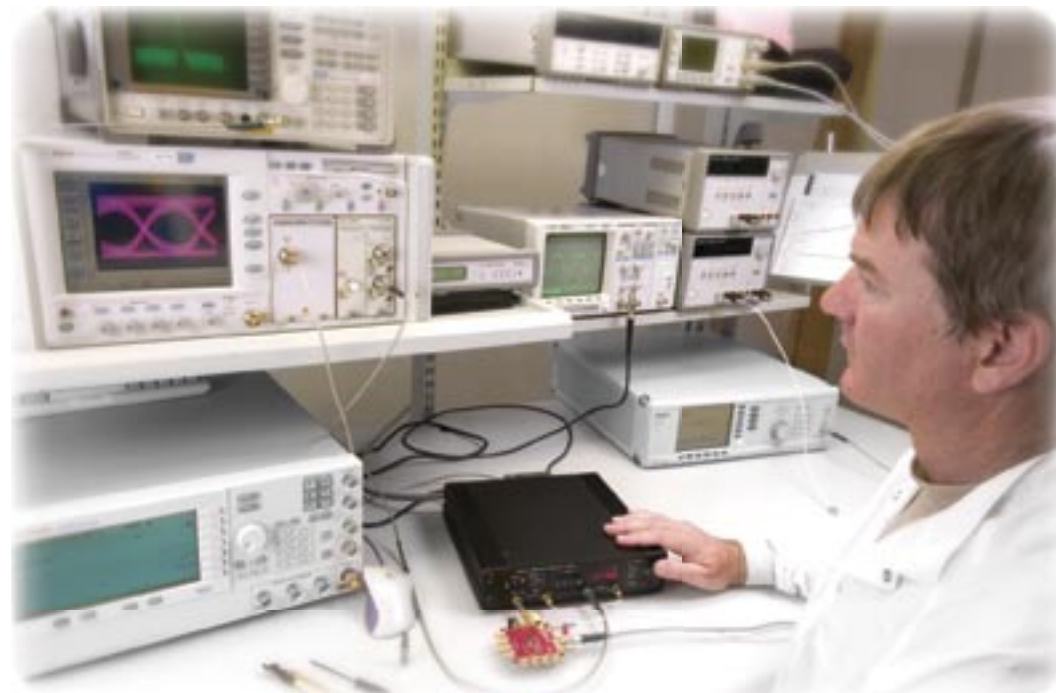
Includes a rack-mount kit for a standard 19" rack.

**TG1B1-A-OPT003 / Internal Clock to 11.5GHz**

Increases range of the internal clock system; operates from 9.85 to 11.5GHz.

**TG1B1-A-OPT004 / Output Amplitude from 10mV**

Changes output amplitude control; operates from 10mV to 800mVpp per side.



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**TG1B1-A**

**10G BERT**

The Lowest Cost  
Production Test Solution



For additional product information visit [www.centellax.com](http://www.centellax.com)

## Enabling 10G BER measurements on a budget ....

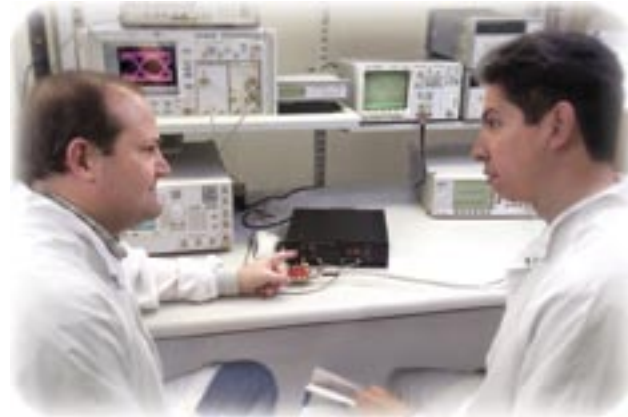
The TG1B1-A 10G BERT gives you what you need:  
Simplicity · High Performance · Low Cost

### » Programmable output amplitude control

To directly drive your DUT with a large voltage swing, and for sweeping amplitude for DUT sensitivity threshold testing.

### » High-UI jitter injection

Frequency modulate a sinusoid, Gaussian noise source, or even an uncorrelated bit pattern for stressed eye and clock wander compliance testing.



### » Internal and external clock system

For an integrated stand-alone measurement system with the flexibility to accommodate different clock inputs over a broad operating range.

### » Multiple clock and pattern triggers

With a high-speed trigger for a low-jitter precision timebase, a low-speed trigger for standard oscilloscope measurements, and a pattern trigger for viewing individual bit transitions.



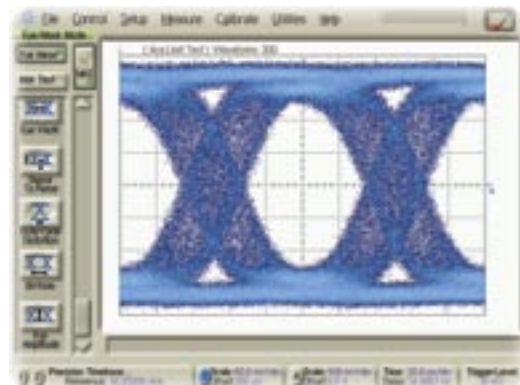
Select from a range of PRBS patterns: from the short 127-bit PRBS7 to the 2-billion bit PRBS31.

### » Selectable PRBS pattern length and mark-space density

Test your device under a wide range of stressful patterns, including PRBS7, 10, 15, 23, and 31 patterns with 1/2, 1/4, and 1/8 mark-space density.

### » Differential or single-ended input and output

For testing a wide range of DUTs under different operating conditions.



STRESSED EYE PRBS output with a 2 MHz sinusoid applied to the jitter input port.

### » Compact and lightweight

Approximately the size and weight of a phone book—fits in a briefcase and travels easily.

### » Front-panel push-button and remote GPIB track interface

Enabling flexible lab bench prototyping, and fully automated GPIB test system control.



#### <7.5G Signal Integrity Test Applications

STORAGE	COMPUTING
Fibre Channel, 1.0625G	Gigabit Ethernet, 1.25G
Serial-ATA, 1.5G	Serial-ATA, 1.5G
2xFibre Channel, 2.125G	PCI Express, 2.5G
Serial-ATA2, 3G	Serial-ATA2, 3G
Serial-ATA3, 6G	RapidIO, 1.25–3.125
TELECOM	NETWORKING
OC-12, 0.622G	Gigabit Ethernet, 1.25 G
OC-48, 2.488G	Athens, 3.125G
CEI, 6G+	Athens2, 6.25G

#### 10G Signal Integrity Test Applications

SONET / SDH	OC192: STS-192 / STM-64	9.95328 Gbps
ITU-T	G.709 with FEC (OTU2)	10.719 Gbps
OIF	CEI (SONET compliant)	11G+
Ethernet	10GbE (10 Gigabit Ethernet)	10.3125 Gbps
IEEE 802.3ae	10G Fibre Channel	10.519 Gbps
Transponder MSAs	XFP/XFI/Xenpak, XGP SFP, XPAK	many

# Providing test and measurement capability with a simple interface ....



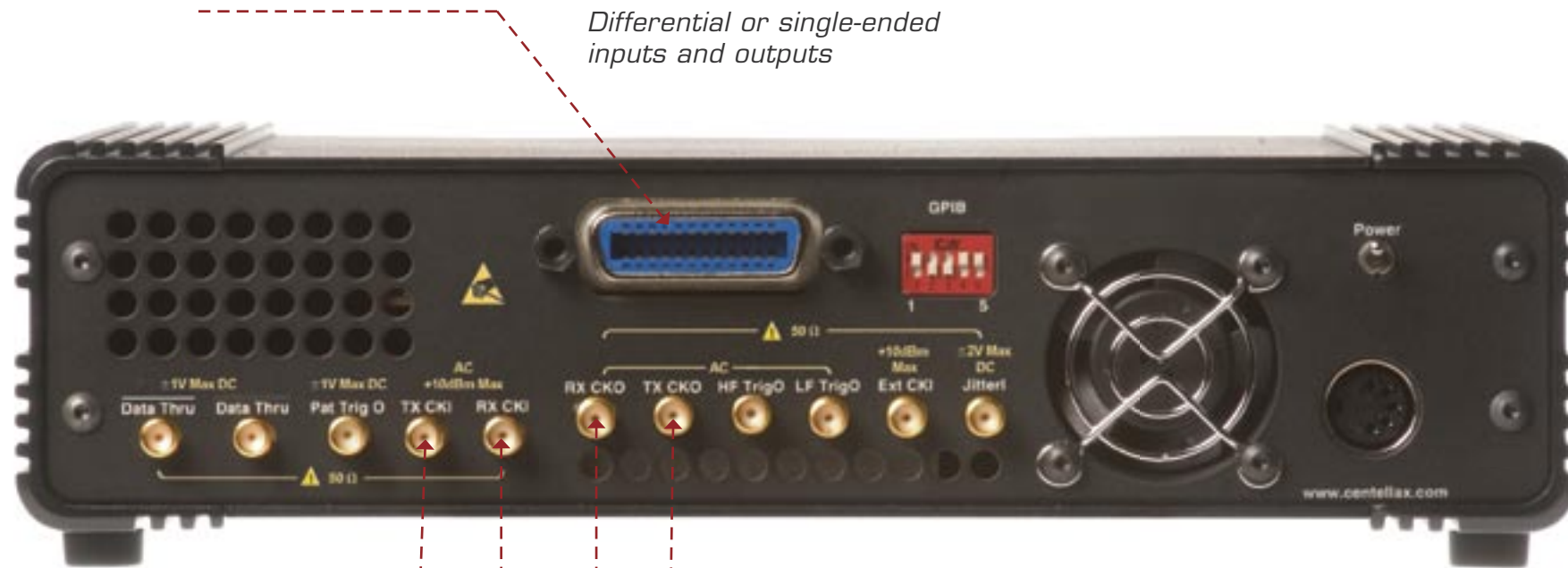
Optionally inject jitter to the PRBS output by frequency modulating the clock with a sinewave, noise source, or uncorrelated PRBS7 signal for compliant stressed eye testing.



The BERT can be used to test a wide variety of devices, including components (ROSAs, TOSAs, driver MMICs), connectors and backplanes, and even complete transceivers (receiver, transmitter, CDR).



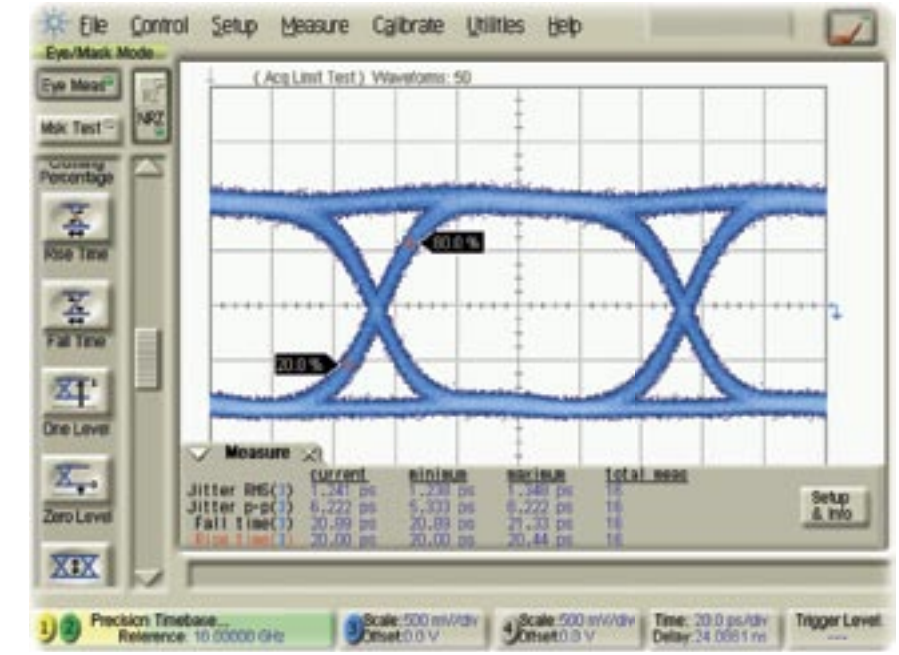
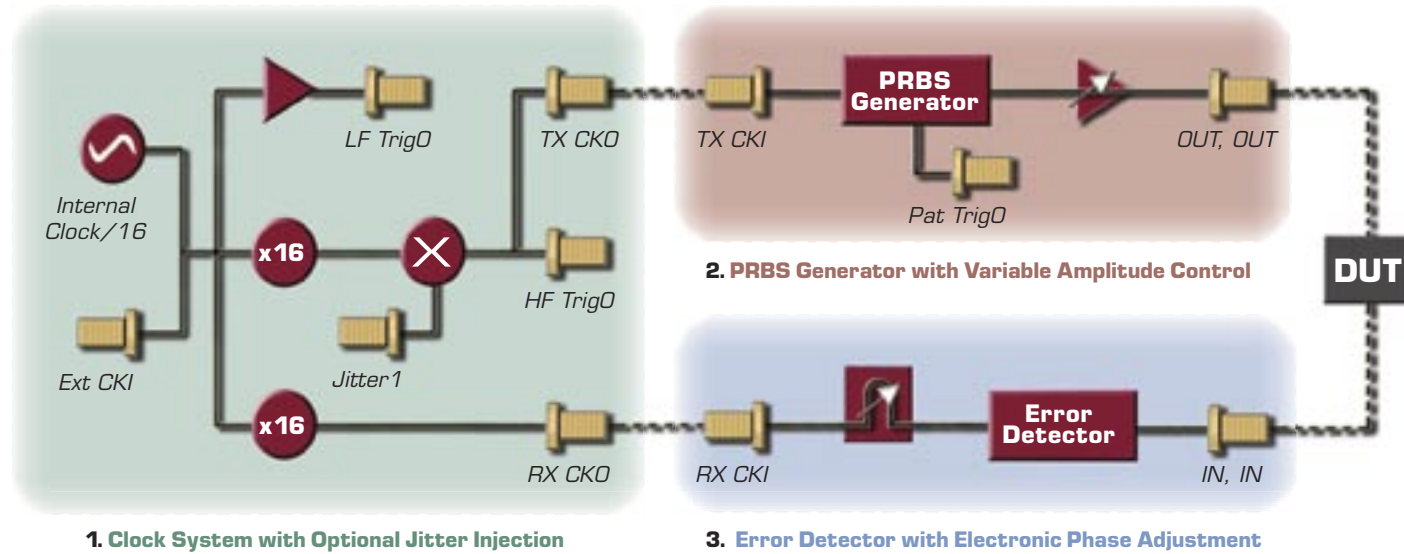
Use the BERT PRBS output with a high-speed sampling oscilloscope for performing a transmitter eye-mask test, and view 0-to-1 bit transitions using the Pat Trig0 output.



The front-panel interface allows comprehensive control functionality through the push-button menu system. All front-panel controls are accessible through GPIB control.

Internal and external clock system

# Low jitter, large amplitude, fast rise/fall times – Eyes wide open!



Typical performance, measured with 70GHz heads and a 10GHz precision timebase.

## 1. Clock System

High-frequency clock outputs (TX CKO, RX CKO)	Range	9.85 to 11.35GHz
	Resolution	10MHz front-panel, 1MHz GPIB
	Jitter RMS	typ 1.5ps
	Interface	AC coupled, 50ohm nominal, female SMA
High-frequency trigger (HF TrigO)	Range	9.85 to 11.35GHz
	Output	+6dBm (1.3Vpp)
	Interface	AC coupled, 50ohm nominal, female SMA
Low-frequency trigger (LF TrigO)	Range	615.625 to 709.375MHz
	Output	+1dBm (0.7Vpp)
	Interface	AC coupled, 50ohm nominal, female SMA
Optional jitter injection (JitterI)	Bandwidth	DC to 100MHz
	Input	0 to 2Vpp; UI varies linearly with voltage
	Jitter	max 15UI <100kHz, 0.4UI >10MHz
	Output	TX CKO, HF TrigO jittered, RX CKO unjittered
	Interface	DC coupled, 50ohm nominal, female SMA

## 2. PRBS Generator

Operation	Bit Rate	0.5 to 12.5Gbps
	Patterns	PRBS7, 10, 15, 23, 31
	Mark Density	1/2, 1/4, 1/8
Data outputs (OUT, notOUT)	Jitter RMS	typ 1.4ps, max 2.2ps
	Rise/fall Time	typ 20ps, max 25ps (20%-80%)
	Amplitude	300 to 1800mVpp single-ended
	Resolution	10mV
	Interface	AC coupled, 50ohm nominal, female 2.92mm
Clock input (TX CKI)	Range	0.5 to 12.5GHz
	Input	typ +4dBm (1Vpp)
	Interface	AC coupled, 50ohm nominal, female SMA

## 3. Error Detector

Operation	Bit Rate	0.5 to 12.5Gbps
	Patterns	PRBS7, 10, 15, 23, 31
	Mark Density	1/2, 1/4, 1/8
Data inputs (IN, notIN)	Sensitivity	min 100mVpp, max 1Vpp single-ended
	Interface	DC coupled, 50ohm nominal, female SMA
Clock input (RX CKI)	Range	0.5 to 12.5GHz
	Input	typ+4dBm (1Vpp)
	Interface	AC coupled, 50ohm nominal, female SMA

Note: Specifications measured with 70GHz remote sampling heads, 10GHz precision timebase, with TG1B1-A internal clock at 10.000GHz.