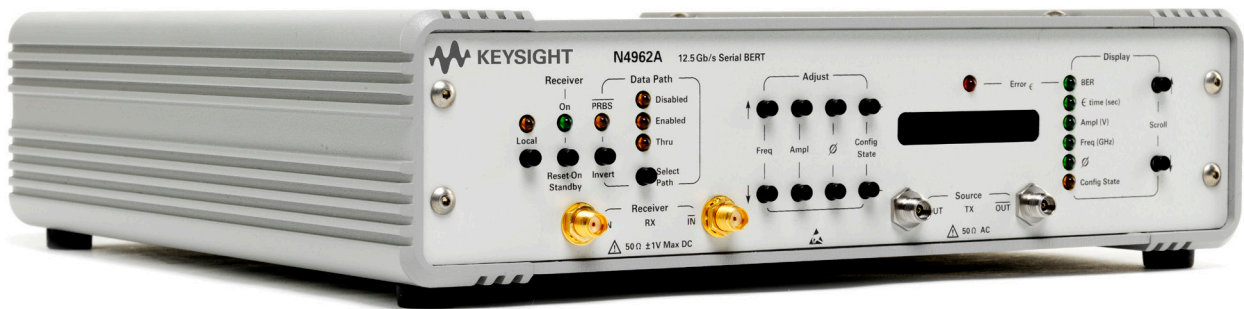


Keysight N4962A

Serial BERT 12.5 Gb/s



Data Sheet

Features

- Internal and external clock system
- 0.5 to 12.5 Gb/s operation
- Multiple clock and pattern triggers
- Differential or single-ended input and outputs
- Programmable output amplitude control
- Selectable PRBS pattern length, mark-space density
- Local push-button and GPIB remote interface

The Keysight Technologies, Inc. N4962A serial BERT 12.5 Gb/s is a small size, high-performance 0.5 to 12.5 Gb/s pseudo-random bit sequence generator and bit error rate tester designed for automated production-line testing, manufacturing and R&D lab use.

This GPIB controllable BERT, with its small size, is ideal for mounting close to the device under test and minimizes cabling. The internal synthesizer offers performance from 9.90 to 11.35 Gb/s. When used in conjunction with an external clock (e.g., N4963A), operation from 0.5 to 12.5 Gb/s is possible. The BERT offers 5 PRBS patterns for stressing different types of data networks. In addition, the jitter injection capabilities allows frequency modulation with DC-100 MHz bandwidth, for inducing a stressed eye for receiver measurements.

Block diagram

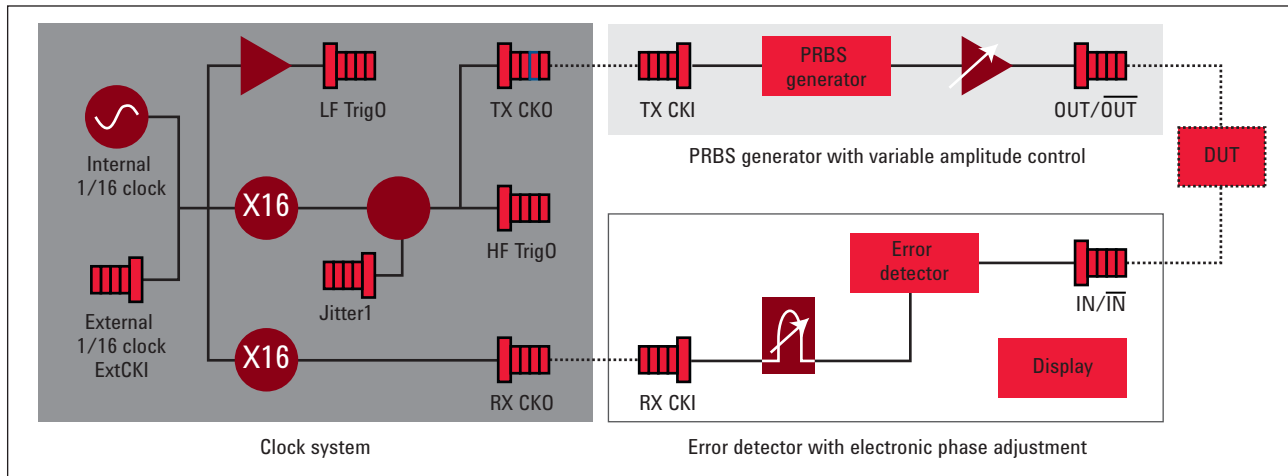


Figure 1. Block diagram

Clock system specifications

	Specification
TXCKO, RXCKO high frequency clock output	9.90 to 11.35 GHz , (overprogrammable to 9.85 GHz) ¹
TXCKO, RXCKO output amplitude	1 V _{pp} typical
TXCKO, RXCKO external interface	AC coupled female SMA 50 Ω
Frequency resolution	1 MHz when GPIB controlled 10 MHz when front panel controlled
HF TrigO frequency range	9.90 to 11.35 GHz
HF TrigO output amplitude	1.3 V _{pp} typical
HF TrigO external interface	AC coupled female SMA 50 Ω
LF TrigO frequency range (1/16)	618.75 to 709.375 MHz
LF TrigO output amplitude	0.5 V _{pp} typical
LF TrigO external interface	AC coupled female SMA 50 Ω
ExtCKI external 1/16 clock input frequency range	618.75 to 709.375 MHz ²
ExtCKI input amplitude	2 V pp max
ExtCKI external interface	AC coupled female SMA 50 Ω
Jitter1 external jitter input frequency range	DC to 100 MHz
Jitter1 external jitter input voltage	2 V _{pp} max
Jitter1 external Interface	DC coupled female SMA 50 Ω
Jitter amplitude (applied to TXCKO and HF TrigO outputs)	Up to 5 UI at modulation frequencies of ≤ 2 MHz Up to 0.15 UI at modulation frequencies of ≥ 10 MHz

1. Internal clock is over-programmable down to 9.85 GHz, but performance below 9.90 GHz is not guaranteed

2. Operation with external 1/16 clock down to 615.625 MHz is possible but operation below 618.75 MHz is not guaranteed

	Units
PRBS generator	
Data rate	0.5 to 12.5 Gb/s
PRBS patterns	$2n - 1$, $n=7, 10, 15, 23, 31$
Mark space density	1/2, 1/4, 1/8
Pattern invert	available for all patterns
Error injection	selectable uniform rate
Error injection rates	1 x10n errors per second, n = 1, 2, 3, 4, 5, 6, 7
Data output amplitude	300 to 1800 mVpp (single-ended)
Data output amplitude resolution	10 mV
Data output jitter	1.1 ps rms typical at 10 Gb/s
Data output rise/fall time (20% to 80%)	18 ps typical, 23 ps maximum
Data output external interface	Differential; AC coupled, 50 Ω nominal, female 2.92 mm (May be operated single end without unused output terminated into 50 Ω)
TXCKI clock input frequency range	0.5 to 12.5 GHz
TXCKI clock input amplitude range	0 to +5 dBm (630 mVpp to 1.1 Vpp)
TXCKI clock input external interface	AC coupled, 50 Ω nominal, female SMA
Error detector	
Data rate	0.5 to 12.5 Gb/s
PRBS patterns	$2n-1$, $n = 7, 10, 15, 23, 31$
Data input sensitivity (single ended)	0.1 Vpp typical
Data input voltage range	2 Vpp max (single-ended) ± 0.5 V DC common mode voltage max
Data input phase adjust	0 to 360°
Data input phase adjust resolution	2° for data rates ≥ 5 Gb/s 90° for data rates < 5 Gb/s
Data input external interface	Differential; DC coupled, 50 Ω nominal, female SMA (May be operated single end without unused input terminated into 50 Ω)
RXCKI clock input frequency range	0.5 to 12.5 GHz
RXCKI clock input amplitude range	0 to +5 dBm (630 mVpp to 1.1 Vpp)
RXCKI clock input external interface	AC coupled, 50 Ω nominal, female SMA

	Description
General and mechanical parameters	
Operating temperature	+10 °C to +40 °C
Storage temperature	-40 °C to +70 °C
Power requirements	42 W external AC adaptor (included) 100 to 240 V AC, 47 to 63 Hz
Physical dimensions	Width: 254 mm (10 in), height: 63.5 mm (2.5 in), depth: 254 mm (10 in)
Weight	3.4 kg (7.5 lbs)
Regulatory standards	
EMC	
Complies with European EMC Directive 2004/108/EC	IEC/EN 61326-1 CISPR Pub 11 Group 1, class A AS/NZS CISPR 11 ICES/NMB-001 This ISM device complies with Canadian ICES-001
	ICES-001 This ISM device complies with Canadian ICES-001 Cet appareil ISM est conforme a la norme NMB-001 du Canada.

Ordering information

All accessories required for operation are shipped with the system including those listed in the accessory table below and do not need to be purchased separately.

N4962A Accessories		
Part number	Qty	Description
11571-006	1	Power adapter
12310-023	1	Cable pair, data loop-back
12310-024	1	Cable, clock loop-back, outside
12310-025	1	Cable, clock loop-back, inside
N4960-60026	2	Cable, 2.92 mm M-F, 5.5 in
N8990-01910	4	Adapter, 2.92 mm M-2.92 mm F

N4962A serial BERT 12.5 Gb/s: 0.5 to 12.5 Gb/s PRBS pattern generator and error detector system with internal 9.90 to 11.35 GHz clock system.

For operation outside the range of 9.9 to 11.35 Gb/s an external clock source is required. Recommended model is N4963A Clock Synthesizer 13.5 GHz

Calibration service

For calibration service information, contact your local authorized Keysight distributor or Keysight sales department.

Ordering contact

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