Keysight Technologies
# N4968A Clock and Data Demultiplexer 44 Gb/s

Data Sheet



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## Features

- Clock and data demultiplexer for lower-rate BER measurements
- 3.5 to 44 Gb/s operation
- Demux-by-2 or demux-by-4
- Integrated phase shifter for highspeed clock and data alignment
- Differential or single-ended input
- Adjustable sub-rate clock output

## Description

The Keysight N4968A clock and data demultiplexer 44 Gb/s is a small highperformance 3.5 to 44 Gb/s clock and data demultiplexer, designed to simplify the process of making highbitrate BER measurements at half-or quarter-rate speeds. The N4968A clock and data demultiplexer 44 Gb/s is capable of operating in demux-by-4 up to 44 Gb/s data rate or in demuxby- 2 up to 22 Gb/s data rate with an adjustable sub-rate clock output for triggering BER testers, oscilloscopes, logic analyzers, or other instruments.

## N4968A Clock and Data Demultiplexer specifications

| Data Input | |
|---|---|
| Data rate | 3.5 to 44 Gb/s |
| Data amplitude | 150 to 1000 mV p-p single-ended. Maximum DC voltage ± 0.5 V |
| Interface | Differential. DC coupled, 50 Ω nominal, 1.85 mm female connectors. |
| | Can be used single-ended if unused input is terminated with 50 ohm load |
| **Data Output** | |
| Data rate | 0.875 to 11 Gb/s |
| Data amplitude | > 210 mV p-p typical |
| Interface | Single-ended outputs. AC coupled, 50 Ω nominal, 2.92 mm female connectors |
| **Clock Input** | |
| Type | Half-rate clock for demux-by-4 mode. Full-rate clock for demux-by-2 mode. |
| Frequency | 1.75 to 22 GHz for demux-by-4 mode[1] 3.5 to 22 GHz for demux-by-2 mode[2] |
| Clock amplitude | +2 to +10 dBm (0.8 to 2 V p-p) |
| Interface | Single-ended input. AC coupled, 50 Ω nominal, 2.92 mm female connector |
| **Divided Clock Outputs** | |
| Division ratios | 1, 2, 4, 8, 16, 32, and 64 |
| Clock amplitude | > −5 dBm (355 mV p-p) typical |
| Interface | Differential outputs. AC coupled, 50 Ω nominal, SMA mm female |
| | connectors. Can be used single-ended if unused input is terminated with 50 ohm load |

1. Demux-by-4 mode data rate is 3.5 to 44 Gb/s
2. Demux-by-2 mode data rate is 3.5 to 22 Gb/s

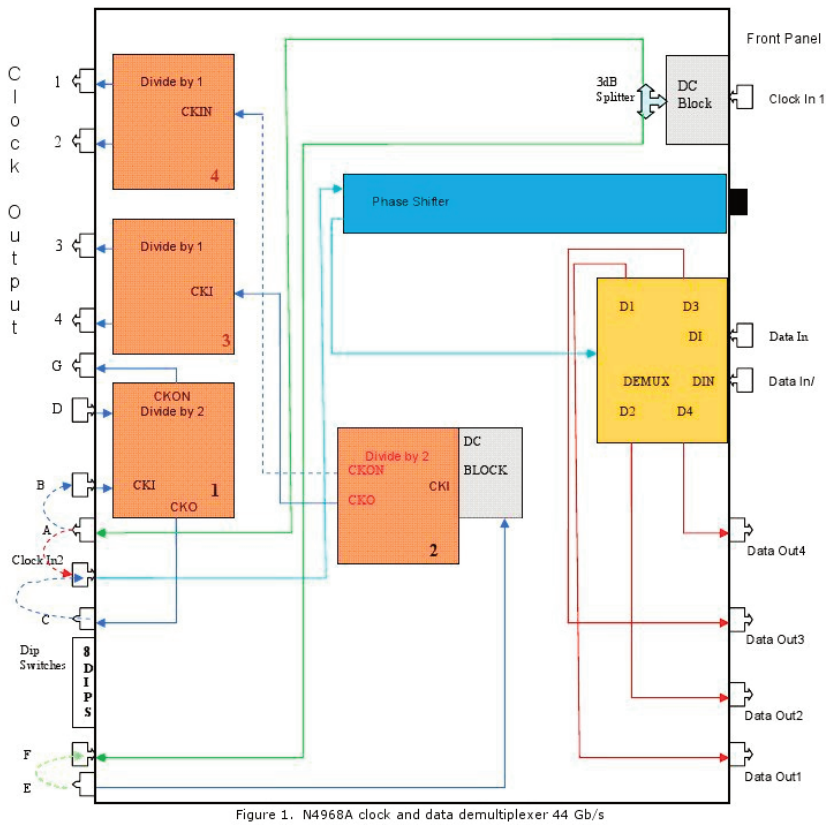# N4968A Clock and Data Demultiplexer

## Block diagram



Figure 1. N4968A clock and data demultiplier 44 Gb/s

## Demux-by-4 Example with 40 Gb/s Data Input

1. Configuration:

   – Data input = 40 Gb/s
   – Clock input = 20 GHz
   – Data output = 4 x 10 Gb/s
   – Clock output = 10 GHz

2. Loop A to Clk2 (provide 20 GHz half-rate clock to Demux).
3. Loop E to F.
4. Set Divider 2 to ½.
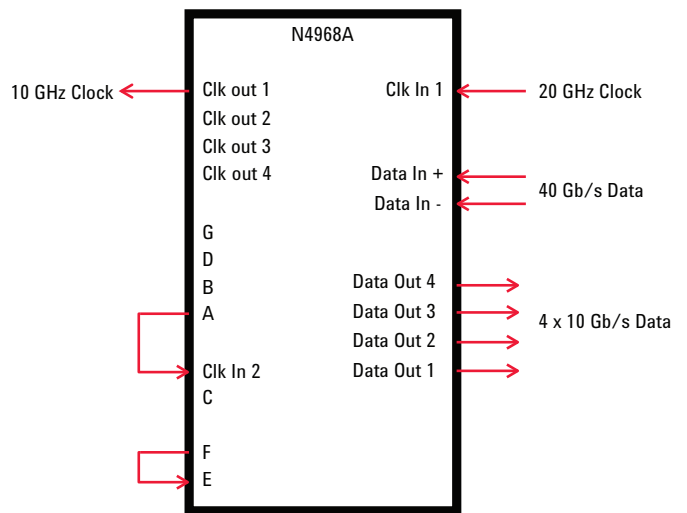5. Set Divider 3 and 4 to 1 (provides 10 GHz clock output).



Figure 2. Demux-by-4 with 40 Gb/s data input

## Demux-by-2 Example with 20 Gb/s Data Input with Full Rate Clock

1. Configuration:

   – Data input = 20 Gb/s
   – Clock input = 20 GHz
   – Data output = 2 x 10 Gb/s
   – Clock output = 10 GHz

2. Loop A to Clk2 (provide 20 GHz full-rate clock to Demux).
3. Loop E to F.
4. Set Divider 2 to ½.
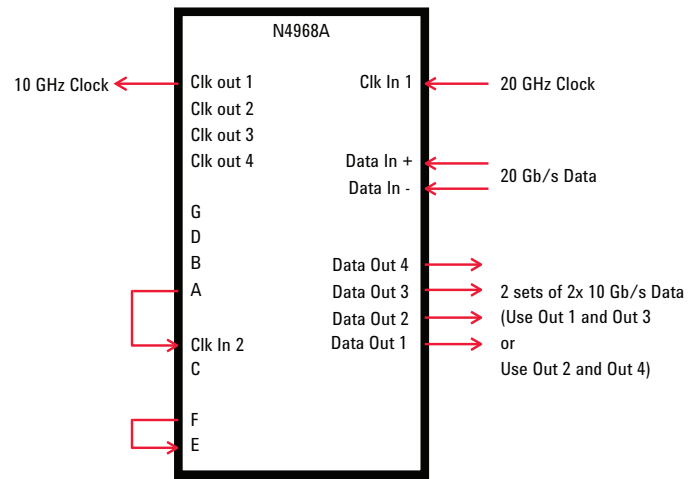5. Set Divider 3 and 4 to 1 (provides 10 GHz clock output).

Figure 3. Demux-by-2 with 20 Gb/s data input

## Specifications

| General and Mechanical Parameters | |
|---|---|
| Operating temperature | +10 to +40 °C |
| Storage temperature | –40 to +70 °C |
| Power requirements | 42 W External AC Adaptor (included) |
| | – 100 to 240 V AC, 47 to 63 Hz, 1.35 A |
| Physical dimensions (W x H x D) | 25.4 x 6.35 x 25.4 cm (7 x 2.5 x 10 inches) |
| Weight | 3.2 kg (7 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.
Cet appareil ISM est conforme a la norme NMB-001 du Canada.

## Ordering information

N4968A clock and data demultiplexer 44 Gb/s. Includes standard 3-year warranty.

## Warranty and Calibration Service

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

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