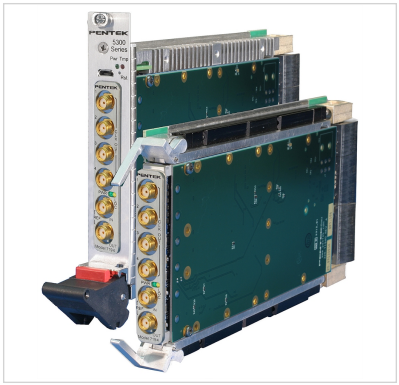
Model 5294

High-speed clock generator 3U VPX board

Provides sample clock for up to four Cobalt, Onyx, or Jade boards

- Enables synchronous sampling, playback and timing for a wide range of multichannel high-speed data acquisition applications
- Locks to user-supplied 10 MHz reference clock or on-board reference
- OCXO provides an exceptionally precise clock



The Model 5294 High-Speed Clock Generator provides fixed-frequency sample clocks to PCIe Cobalt, Jade, and Onyx boards in multi-board systems. It enables synchronous sampling, playback and timing for a wide range of multichannel high-speed data acquisition and software radio applications.

SAMPLE CLOCK SYNTHESIZER

The 5294 uses a high-precision, fixed-frequency, PLO (Phase-Locked Oscillator) to generate an output sample clock. The PLO accepts a 10 MHz reference clock through a front-panel SMA connector. The PLO locks the output sample clock to the incoming reference. A power splitter then receives the sample clock and distributes it to four front panel SMA connectors.

The 7894 is available with sample clock frequencies from 1.4 to 2.0 GHz.

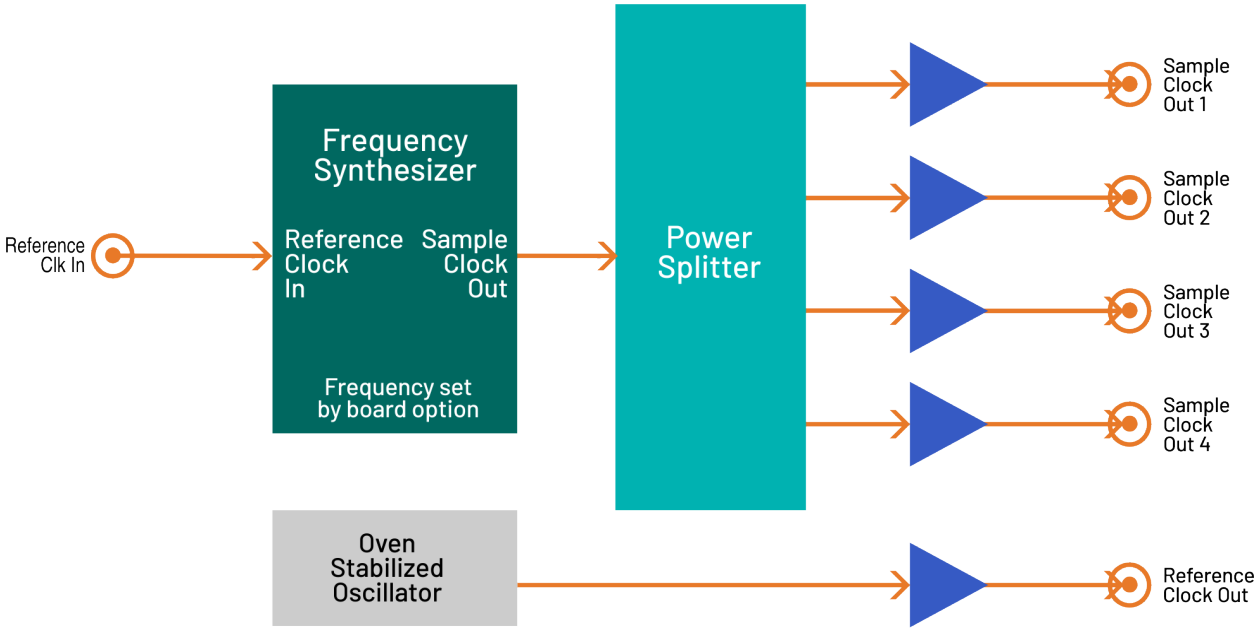
ON-BOARD REFERENCE CLOCK

In addition to accepting a reference clock on the front panel, the 5294 includes an on-board 10 MHz reference clock. The reference is an OCXO (Oven-Controlled Crystal Oscillator), which provides an exceptionally precise frequency standard with excellent phase noise characteristics.

PHYSICAL CHARACTERISTICS

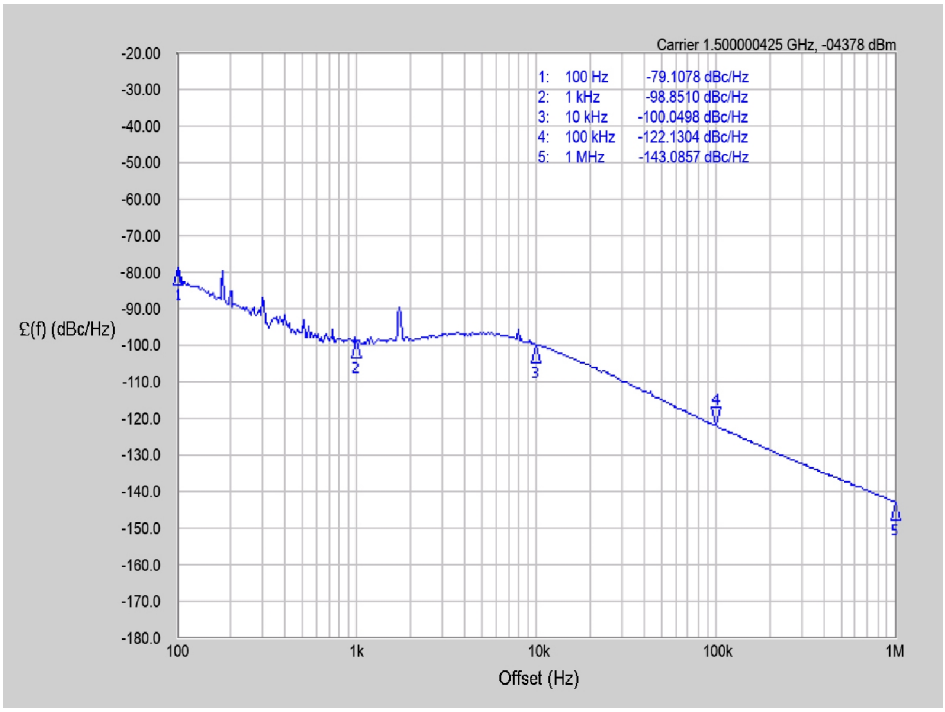
The 5294 is a standard 3U VPX board. The board does not require programming and the PCIe interface connector is used solely for power. The board can be optionally configured with a PCIe-style 6-pin power connector allowing it to be used in virtually any chassis or enclosure.

BLOCK DIAGRAM



SAMPLE CLOCK PHASE NOISE

Phase Noise {1 Hz DW, typical)

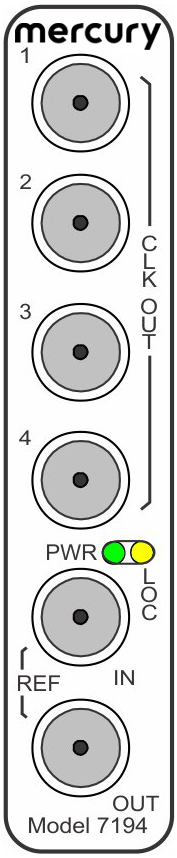


Phase Noise 10.00 dB/Ref -20.00 dBc/Hz

FRONT PANEL CONNECTIONS

The front panel includes one SMC connector for input of an optional external reference clock, four SMC connectors for sample clock output, one SMC connector for OCXO reference clock output, and two LEDs.

A 6–inch SMC cable is provided with this product. This cable is used to loop the 10 MHz reference clock output (**REF OUT**) back into the board's 100 MHz reference clock input (**REF IN**).



- **Sample Clock Output:** Four SMC connectors, labeled **CLK OUT 1**, **2**, **3**, and **4**, are used to provide sample clock output to Cobalt, Jade, or Onyx boards.
- **Power LED:** A green LED labeled **PWR** illuminates when a +5VDC is applied to the board.
- **Lock Detect LED:** A yellow LED labeled **LOC** illuminates when the PLO locks the output sample clock to the incoming reference.
- **Reference Clock Input:** An SMC connector, labeled **REF IN**, is used for an optional reference input.
- **Reference Clock Output:** An SMC connector, labeled **REF OUT**, is used to provide reference clock output. The reference is an Oven Controlled Crystal Oscillator (OCXO).

SPECIFICATIONS

Sample Clock Frequency

Fixed, 1.4 to 2.0 GHz by ordering option

Sample Clock Outputs

Type: Four front panel female SMA connectors

Output Level: +10 dBm, nominal, sine wave

Reference Clock In

Type: Front panel female SMA connector

Frequency: 10 MHz

Input Impedance: 50 ohms

Input Level: 0 dBm to +10 dBm, sine wave

Reference Clock Out

Type: Front panel female SMA connector

Center Frequency: 10 MHz

Output Impedance: 50 ohms

Output Level: +10 dBm, nominal, sine wave

Frequency Stability vs. Change in Temperature: 50.0 ppb

Frequency Calibration: +1.0 ppm

Aging

- Daily: +10 ppb/day
- First Year: +300 ppb

Total Frequency Tolerance (20 years): +4.60 ppm

Phase Noise

- 1 Hz Offset: -67 dBc/Hz
- 10 Hz Offset: -100 dBc/Hz
- 100 Hz Offset: -130 dBc/Hz
- 1 KHz Offset: -148 dBc/Hz
- 10 KHz Offset: -154 dBc/Hz
- 100 KHz Offset: -155 dBc/Hz

PCI Express Interface

PCIe Bus: x4, power only

Environmental

- Operating Temp: 0° to 50° C
- Storage Temp: -20° to 90° C
- Relative Humidity: 0 to 95%, non-cond.

Size

3.937 in. x 6.717 in. (100 mm x 170.6 mm)

ORDERING INFORMATION

Model	Description
5294	High-Speed Clock Generator - 3U VPX

ACCESSORY PRODUCTS

Model	Description
106	PCIe 6-pin connector (Power only)
150	1.500 GHz sample clock
180	1.800 GHz sample clock
2891	Timing bus cables

LIFETIME SUPPORT

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