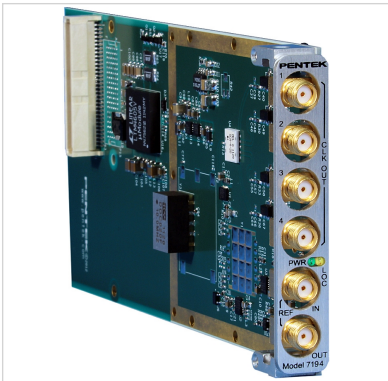


# Model 7194

## High-speed clock generator PMC/XMC module

Provides sample clock for up to four separate XMC modules

- Enables synchronous sampling, playback and timing for a wide range of multichannel high-speed data acquisition applications
- OXC0 provides an exceptionally precise clock
- Locks to user-supplied 10 MHz reference clock or on-board reference



**Model 7194 High-Speed Clock Generator provides fixed-frequency sample clocks to Cobalt and Onyx modules in multiboard 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 7194 uses a high-precision, fixed-frequency, PLL (Phase-Locked Oscillator) to generate an output sample clock. The PLL accepts a 10 MHz reference clock through a front-panel SMA connector. The PLL 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 7194 is available with sample clock frequencies from 1.4 to 2.0 GHz.

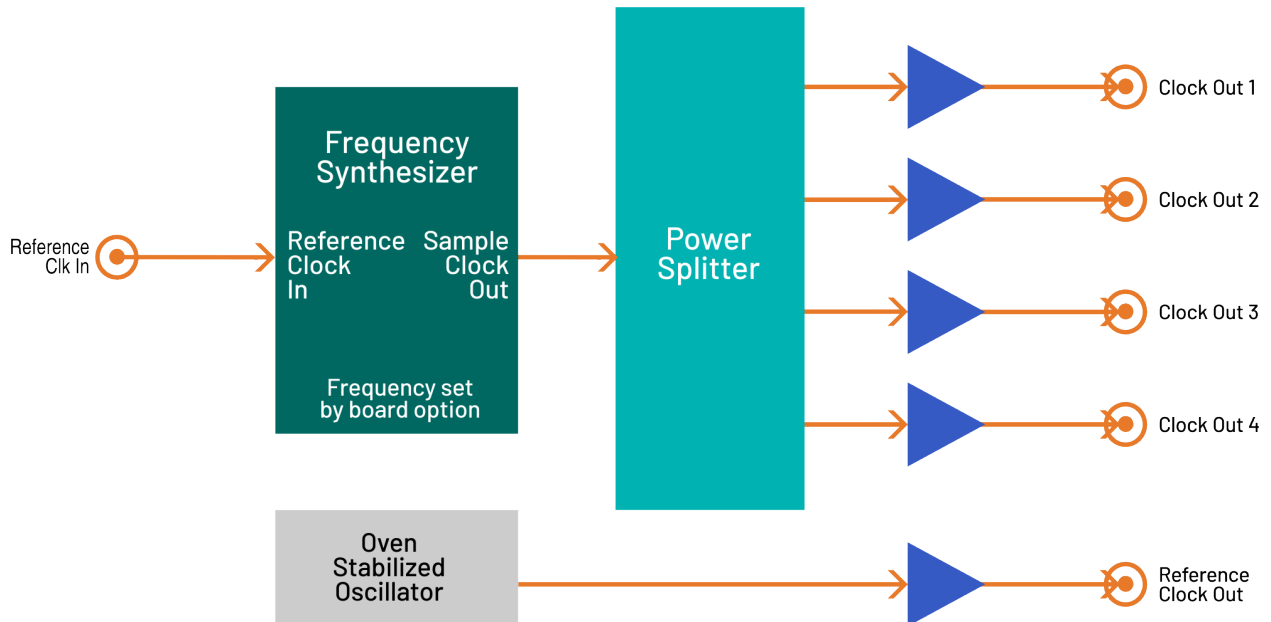
### ON-BOARD REFERENCE CLOCK

In addition to accepting a reference clock on the front panel, the 7194 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

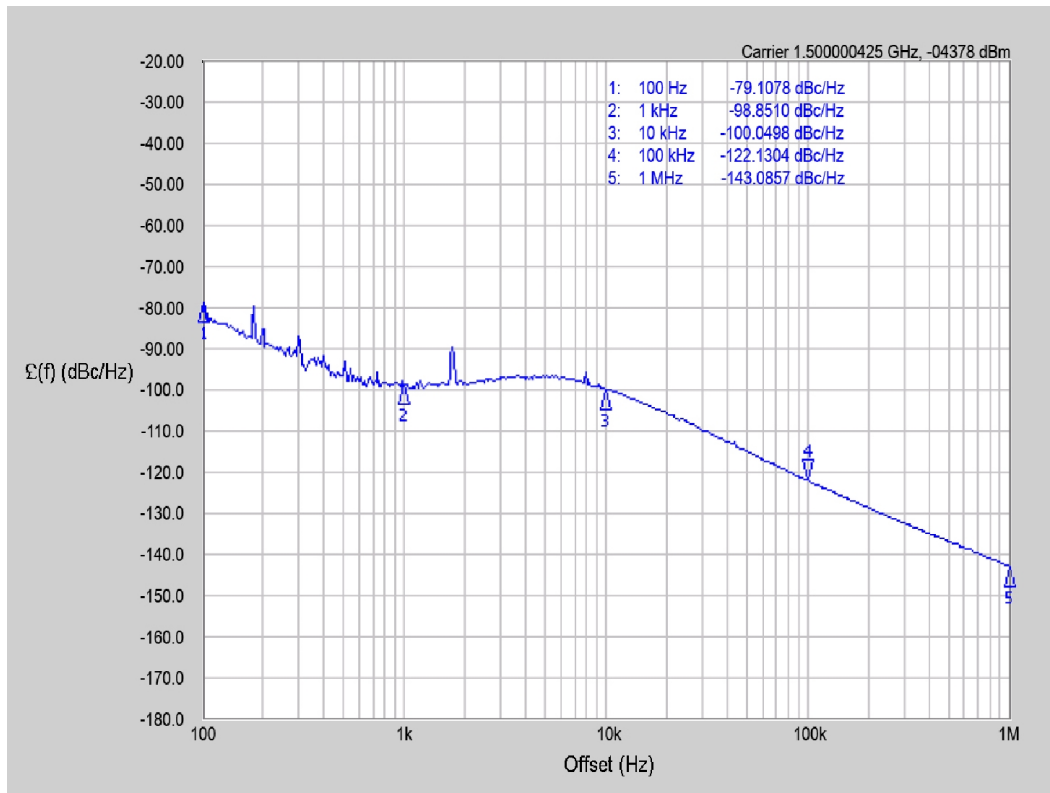
The 7194 is a standard PMC/XMC module. The module does not require programming and the PMC P14 or XMC P15 connector is used solely for power. The module can be optionally configured with a PCIe-style 6-pin power connector allowing it to be used in virtually any chassis or enclosure.

BLOCK DIAGRAM



SAMPLE CLOCK PHASE NOISE

Phase Noise {1 Hz DW, typical)

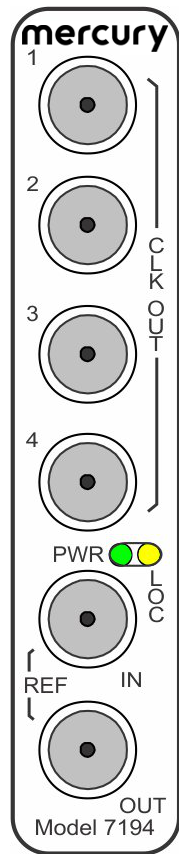


Phase Noise 10.00 dB/Ref -20.00 dBc/Hz

**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

**PMC/XMC Interface**

Power only on PMC P1 or XMC P15

**Environmental**

- Operating Temp: 0° to 50° C

- Storage Temp: -20° to 90° C

- Relative Humidity: 0 to 95%, non-cond.

**Size**

Standard PMC module: 2.91 in. x 5.87 in.

**ORDERING INFORMATION**

Model	Description
7194*	High-Speed Clock Generator - PMC/XMC

Option	Description
-104	PMC P14 (Power only)
-105	XMC P15 (Power only)
-106	PCIe 6-pin connector (Power only)
-150	1.500 GHz sample clock
-180	1.800 GHz sample clock

\*Contact Mercury for additional sample clock options.

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