

# Model 9192

## High-speed system synchronizer unit - 1U rackmount chassis

Synchronizes up to twelve separate I/O modules

- Locks to user-supplied 10 MHz reference clock or on-board reference.
- Synchronizes sampling and data acquisition for multichannel systems
- Clock rates up to 1.8 GHz
- Rear panel  $\mu$ Sync connectors compatible with a range of Mercury's Cobalt, Onyx, Flexor, and Jade modules



**The 9192 Rackmount High-Speed System Synchronizer Unit synchronizes multiple Cobalt, Onyx, Flexor, and Jade modules within a system.** It enables synchronous sampling and timing for a wide range of multichannel high-speed data acquisition, DSP, and software radio applications.

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Up to twelve boards can be synchronized using the 9192, each receiving a common clock along with timing signals that can be used for synchronizing, triggering and gating functions.

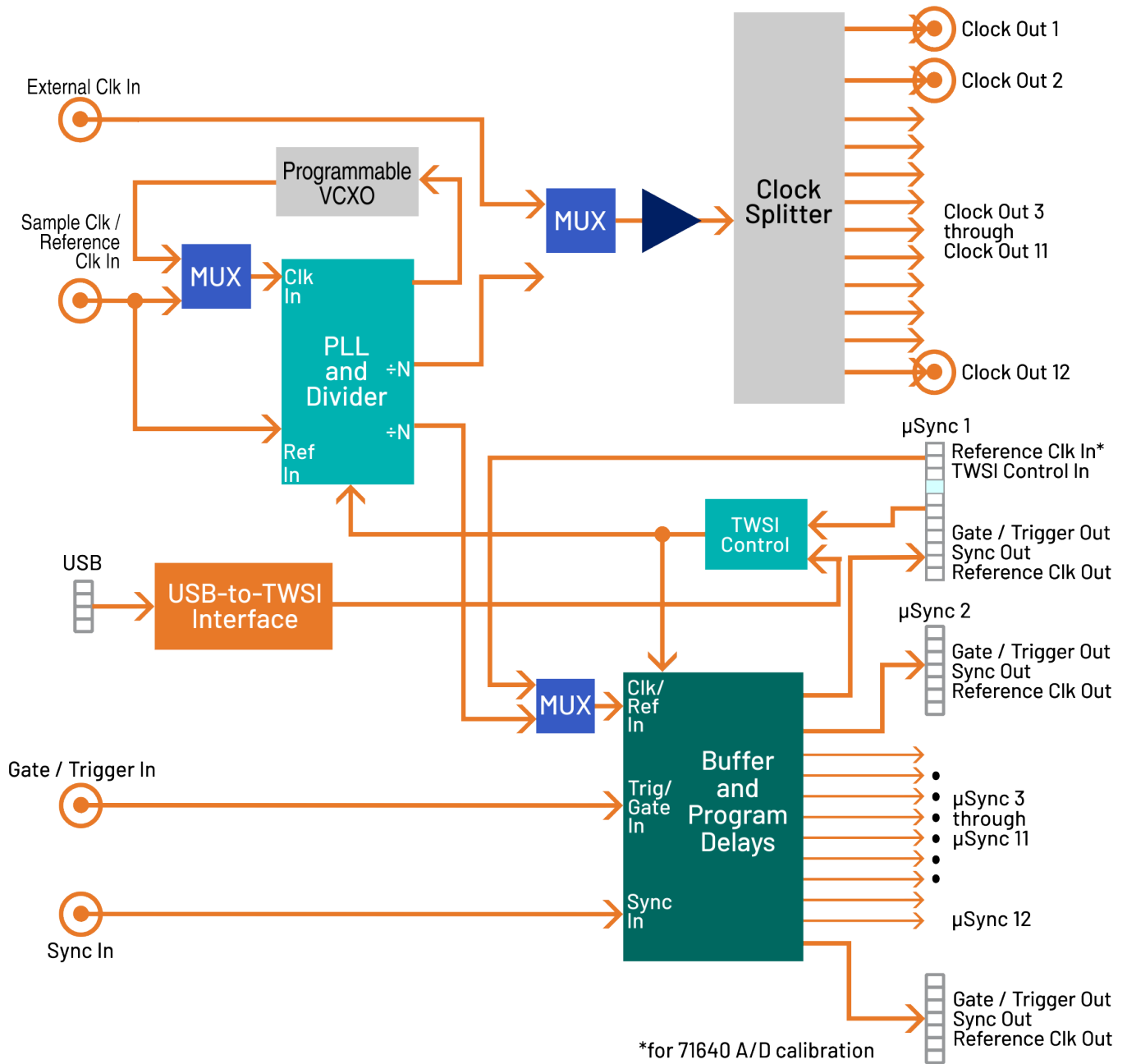
### INPUT SIGNALS

The 9192 provides four rear panel SMA connectors to accept input signals from external sources: two for clock, one for gate or trigger and one for a synchronization signal. Clock signals can be applied from an external source such as a high performance sine-wave generator. Gate/trigger and sync signals can come from an external system source. In addition to the SMA connector, a reference clock can be accepted through the first rear panel  $\mu$ Sync output connector, allowing a single Cobalt, Onyx, Flexor, or Jade board to generate the clock for all subsequent boards in the system.

### OUTPUT SIGNALS

The 9192 provides four rear panel  $\mu$ Sync output connectors, compatible with a range of high-speed Cobalt, Onyx, Flexor and Jade boards. The  $\mu$ Sync signals include a reference clock, gate/trigger and sync signals and are distributed through matched cables, simplifying system design.

BLOCK DIAGRAM



## CLOCK SIGNALS

The 9192 can accept a user supplied external clock on its rear panel SMA connector. As an alternative to the external clock, the 9192 can use its on-board programmable voltage controlled crystal oscillator (VCXO) as the clock source. The VCXO can operate alone or be locked to a system reference clock signal delivered to the rear panel reference clock input.

The on-board or external clock can operate at full rate or can be divided and used to register all sync and gate/trigger signals as well as providing a reference clock to all connected boards. In addition, the clock is available at twelve Clock Out SMAs as a sample or reference clock for other boards in the system.

## GATE AND SYNCHRONIZATION SIGNALS

The 9192 features separate inputs for gate/trigger and sync signals. A programmable delay allows the user to make timing adjustments on the gate/trigger and sync signals before they are sent to buffers for output through the  $\mu$ Sync output connectors.

## CALIBRATION

The 9192 features a calibration output specifically designed to work with the xx640, xx641, xx741 and xx841 3.6 GHz A/D XMC modules to provide a signal reference for phase adjustment across multiple A/Ds.

## SUPPORTED PRODUCTS

The 9192 is compatible with the high-speed Cobalt, Onyx and Jade boards, and all Flexor products. See the complete list of supported products on the [Model 9192](#) web pages.

## SOFTWARE

If you are using a Cobalt, Onyx, or Flexor board in conjunction with 9192, software support is provided by Mercury's ReadyFlow® Board Support Packages (BSP). There is a ReadyFlow BSP to support 9192 and a separate ReadyFlow BSP to support the Cobalt, Onyx, or Flexor board.

If you are using a Jade board in conjunction with 9192, software support is provided by Mercury's Navigator® Board Support Package (BSP). In addition to supporting the Jade board, Navigator BSP supports 9192 via the I2C interface on the Jade board.

## PROGRAMMING

The 9192 allows programming of operation parameters including: VCXO frequency, clock dividers, and delays that allow the user to make timing adjustments on the gate and sync

signals. These adjustments are made before they are sent to buffers for output through the  $\mu$ Sync connectors.

The 9192 is programmed via a rear panel USB connector or a TWSI control interface on the first  $\mu$ Sync connector. The control interface is compatible with the front panel  $\mu$ Sync connectors of all high-speed Cobalt, Onyx, Jade and Flexor modules, thereby providing a single cable connection that carries both control and timing signals.

## SPECIFICATIONS

### Rear Panel Sample Clock/Reference Input

Connector Type: SMA

Input Impedance: 50 ohms

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

Sample Clock Frequency: 100 MHz to 2 GHz

Reference Frequency: 5 to 100 MHz

### Rear Panel Gate/Trigger & Sync Inputs

Connector Type: SMA

Input Level: LVTTTL

### Rear Panel $\mu$ Sync Inputs/Outputs

Quantity: 12

Connector Type: 19-pin  $\mu$ HDMI

Signal Level: CML

Signals ( $\mu$ Sync connector 1): Reference Clock In, TWSI control In, Reference Clock Out, Gate/Trigger Out, Sync Out

Signals ( $\mu$ Sync connectors 2-12): Reference Clock Out, Gate/Trigger Out, Sync Out

### Rear Panel Clock / Calibration Output

Quantity: 12

Connector Type: SMA

Output Impedance: 50 ohms

Output Level: +6 dBm nominal at 1400 MHz, sine wave

Sample Clock Frequency: 100 MHz to 1.8 GHz

### Programmable VCXO

Frequency Ranges: 10-945 MHz, 970-1134 MHz, and 1213-1417.5 MHz

Tuning Resolution: 32 bits

Unlocked Accuracy:  $\pm 20$  ppm

**PLL, Divider & Jitter Cleaner**

Type: Texas Instruments CDCM7005  
Frequency Dividers: 1, 2, 3, 4, 6, 8 and 16

**Power**

120VAC

**Environmental**

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

**Size**

19" W x 1.75" H (1IU) x 10" D

**LIFETIME SUPPORT**

Mercury offers worldwide customers shorter development time, reliable, rugged solutions for a variety of environments, reduced costs, and mature software development tools. We offer free lifetime support for this product from our engineering staff, which customers can depend on through phone and email, as well as software updates. Take advantage of our 40 years of experience in delivering high-performance radar, communications, SIGINT, EW, and data acquisition MIL-Aero solutions worldwide.

**ACCESSORY PRODUCTS**

Model	Description
12 ea. 18" μSync cables are supplied; additional cables may be ordered:	
2892-018	μSync cable - 18"
2892-036	μSync cable - 36"



**Corporate Headquarters**

50 Minuteman Road  
Andover, MA 01810 USA  
**+1 978.967.1401** tel  
**+1 866.627.6951** tel  
**+1 978.256.3599** fax

**International Headquarters**

**Mercury International**  
Avenue Eugène-Lance, 38  
PO Box 584  
CH-1212 Grand-Lancy 1  
Geneva, Switzerland  
**+41 22 884 5100** tel

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