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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 µSync 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.

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.
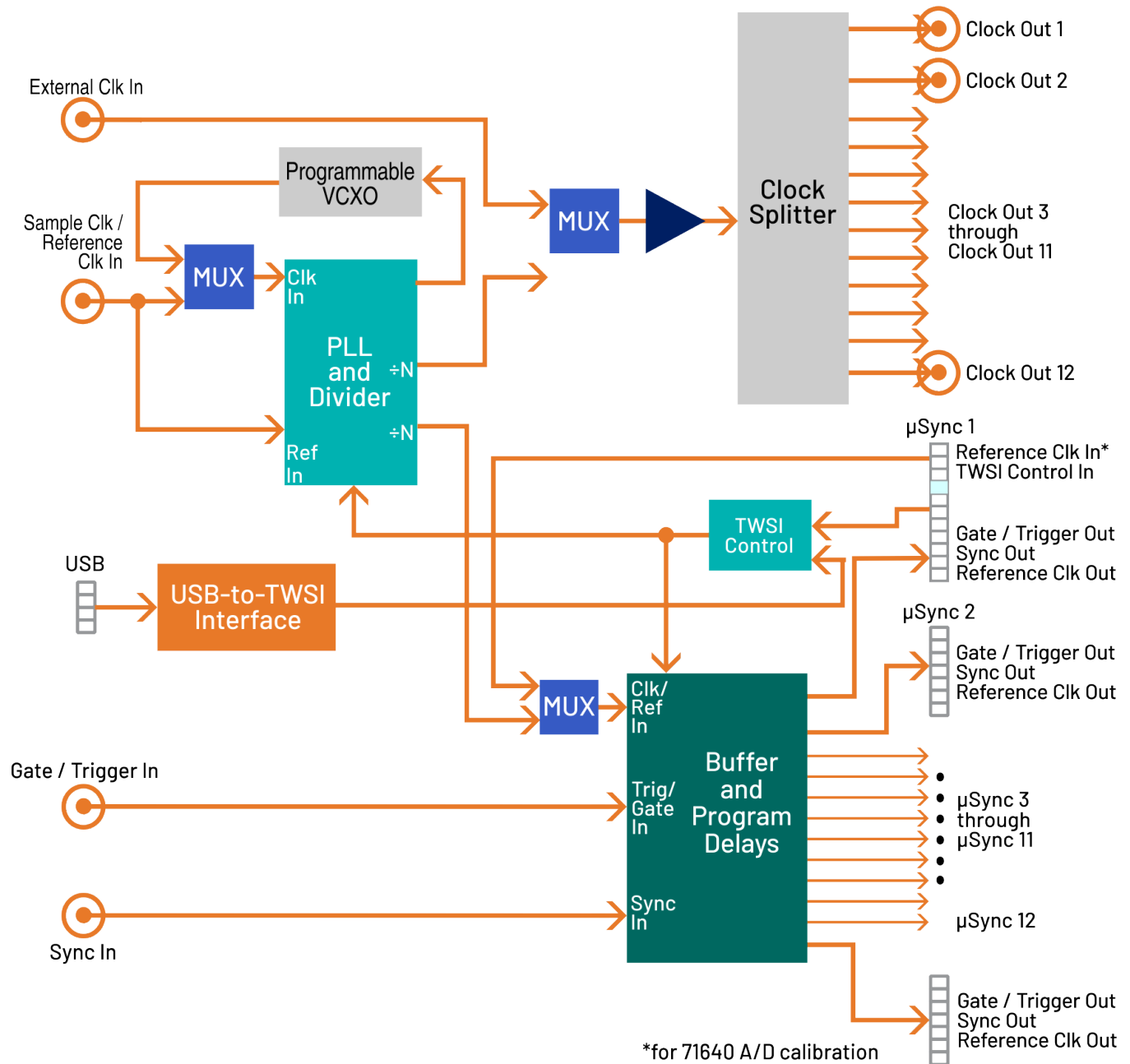
INPUT SIGNALS

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 µSync 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 µSync output connectors, compatible with a range of high-speed Cobalt, Onyx, Flexor and Jade boards. The µSync signals include a reference clock, gate/trigger and sync signals and are distributed through matched cables, simplifying system design.

Innovation That Matters®

BLOCK DIAGRAM

External Clk In

Sample Clk /
Reference
Clk In

Programmable
VCXO

MUX

Clk
In

PLL
and
Divider

÷N

Ref
In

÷N

MUX

Clock
Splitter

Clock Out 1

Clock Out 2

Clock Out 3
through
Clock Out 11

Clock Out 12

µSync 1

Reference Clk In*
TWSI Control In

TWSI
Control

Gate / Trigger Out
Sync Out
Reference Clk Out

USB

USB-to-TWSI
Interface

µSync 2

Gate / Trigger Out
Sync Out
Reference Clk Out

MUX

Clk/
Ref
In

Buffer
and
Program
Delays

Gate / Trigger In

Trig/
Gate
In

µSync 3
through
µSync 11

Sync In

Sync
In

µSync 12

*for 71640 A/D calibration

Gate / Trigger Out
Sync Out
Reference Clk Out

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 µSync 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 µSync connectors.

The 9192 is programmed via a rear panel USB connector or a TWSI control interface on the first µSync connector. The control interface is compatible with the front panel µSync 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: LVTTL

Rear Panel µSync Inputs/Outputs

Quantity: 12

Connector Type: 19-pin µHDMI

Signal Level: CML

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

Signals (µSync 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: ±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

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"

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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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Visit: mrcy.com/go/MP9192

For technical details, contact:
mrcy.com/go/CF9192

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