

Models 5792 and 5892

High-speed synchronizer and distribution board – 6U VPX

Simultaneous synthesis of up to four or eight high-speed boards

- Synchronized sampling and data acquisition
- Synchronizes gating and triggering functions
- Clock rates up to 1.8 GHz
- Front panel MMCX connectors for input signals



The 5792 and 5892 High-Speed Synchronizer and Distribution 6U VPX boards synchronize multiple Mercury Cobalt or Onyx boards within a system. They enable synchronous sampling and timing for a wide range of multichannel high-speed data acquisition, DSP, and software radio applications.

Up to four or eight boards can be synchronized using these models, with each receiving a common clock along with external signals that can be used for synchronizing, triggering and gating functions.

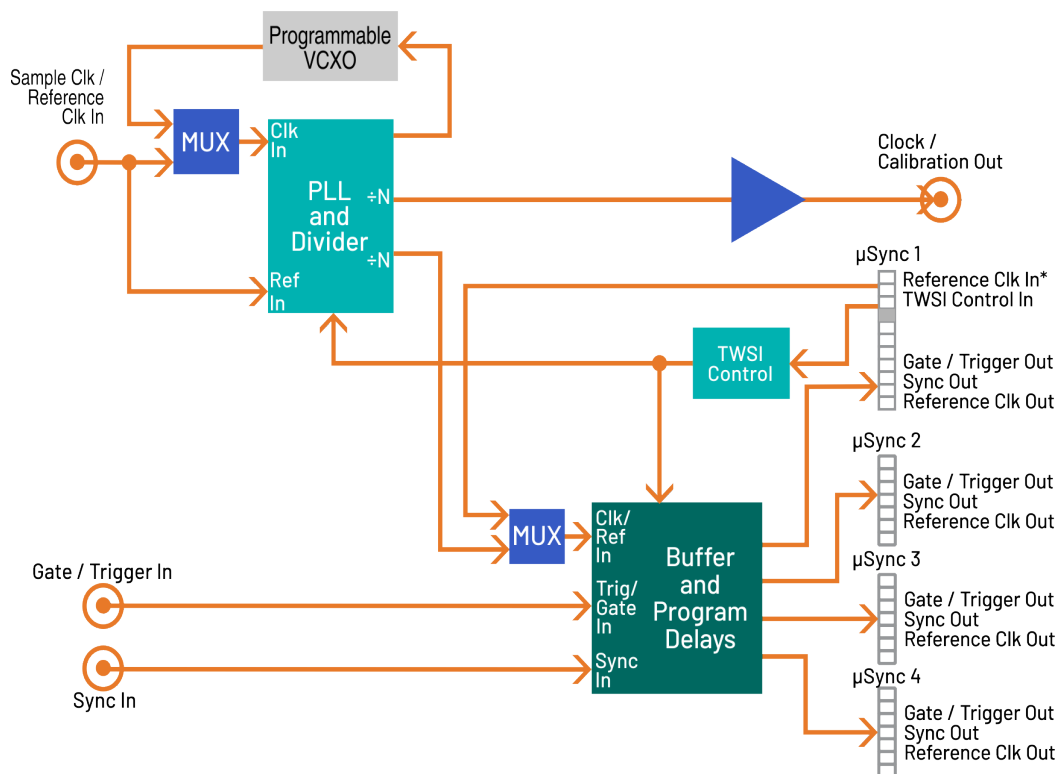
INPUT SIGNALS

These models provide three front panel MMCX connectors to accept input signals from external sources: one 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 MMCX connector, a reference clock can be accepted through the first front panel μ Sync output connector, allowing a single Cobalt, Onyx, and Jade board to generate the clock for all subsequent boards in the system.

OUTPUT SIGNALS

These models provide four front panel μ Sync output connectors, compatible with a range of high-speed Cobalt, Onyx, and Jade boards. The μ Sync signals include a reference clock, gate/trigger and sync signals and are distributed through matched cables, simplifying system design.

BLOCK DIAGRAM



Model 5892 doubles all resources.

CLOCK SIGNALS

These models can accept a user-supplied external clock on their front panel MMCX connector. As an alternative to the external clock, they can use the 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 front panel reference clock input.

The external or on-board clock can operate at full rate or 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 the Clock Out MMCX as a sample or reference clock for other boards in the system.

GATE AND SYNCHRONIZATION SIGNALS

These models feature 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

These models feature a calibration output specifically designed to work with the 52640 or 52740 3.6 GHz A/D board and provide a signal reference for phase adjustment across multiple D/As.

PROGRAMMING

These models allow programming of operating 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.

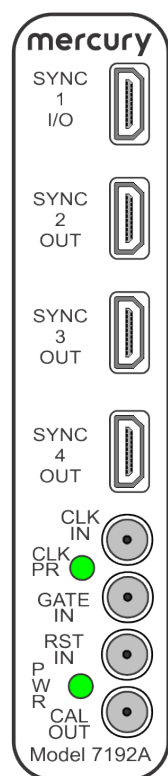
Both models are programmed via a TWSI control interface on the first μSync connector. The control interface is compatible with the front panel μSync connectors of all high-speed Cobalt, Onyx, and Jade modules, thereby providing a single cable connection that carries both control and timing signals.

SUPPORTED PRODUCTS

These models support all high-speed models in the Cobalt and Onyx families including the 57630 and 58630 1 GHz A/D and D/A 6U VPX boards; the 57730 and 58730 1 GHz A/D and D/A 6U VPX boards; the 57640 and 58640 3.6 GHz A/D 6U VPX boards; the 57740 and 58740 3.6 GHz A/D 6U VPX boards; the 57670 and 58670 four-channel 1.25 GHz, 16-bit D/A 6U VPX boards; the 57670 and 58670 four-channel 1.25 GHz, 16-bit D/A 6U VPX boards; and the 57770 and 58770 four-channel 1.25 GHz, 16-bit D/A 6U VPX boards.

FRONT PANEL CONNECTIONS

The front panel includes four μ Sync input/output connectors, four MMCX connectors, and two LEDs. Note that the μ Sync output connectors are custom-wired and NOT compatible with standard μ HDMI cables. Use the cables described in Accessories.



- **Synchronization In/Out:** A μ Sync 19-pin connector, labeled **SYNC I/O**, provides a reference clock input and TWSI control input; and sync, reference clock, and gate outputs for synchronizing multiple boards. This connector includes TWSI (I2C) bus pins which allow a Cobalt or Onyx board to control the 7192.
- **Synchronization Outputs:** Three front-panel μ Sync 19-pin connectors, labeled **SYNC 2 OUT**, **SYNC 3 OUT**, and **SYNC 4 OUT**, provide sync, reference clock, and gate outputs for synchronizing multiple Cobalt or Onyx boards.
- **Sample Clock / Reference Input:** An MMCX connector, labeled **CLK IN**, is used for a sample clock or reference input.
- **Clock Present LED:** A green LED labeled **CLK PR** illuminates when the sample clock is working.
- **Gate/Trigger Input:** An MMCX connector, labeled **GATE IN**, is used for a gate/trigger

LVTTL input (do not exceed 3.3V).

- **SYNC Input:** An MMCX connector, labeled **SYNC IN**, is used for a sync LVTTL input (do not exceed 3.3V).
- **Power LED:** A green LED labeled **PWR** illuminates when a +5VDC is applied to the board.
- **Clock/Calibration Output:** An MMCX connector, labeled **CAL OUT** is used for clock/calibration output.

SPECIFICATIONS

Front Panel Sample Clock/Reference Input

Connector Type: MMCX

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

Front Panel Gate/Trigger and μ Sync Inputs

Connector Type: MMCX

Input Level: LVTTL

Front Panel Gate/Trigger and μ Sync Inputs/Outputs

Quantity: 5792: four; 5892: eight

Connector type: 19-pin μ HDMI

Signal Level: CML

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

Signals (μ Sync connectors 2–4): Reference Clock Out, Gate/Trigger Out, Sync Out

Front Panel Clock / Calibration Output

Connector Type: MMCX

Output Impedance: 50 ohms

Output Level: +6 dBm nominal, sine wave

Sample Clock Frequency: 100 MHz to 1.8 GHz

Programmable VCXOs

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

Tuning Resolution: 32 bits

Unlocked Accuracy: +20 ppm

PLL, Divider and Jitter Cleaner

Type: Texas Instruments CDCM7005

Frequency Dividers: 1, 2, 3, 4, 6, 8 and 16

PCI Express Interface

PCI Express Bus: x4, x8, power only

Environmental

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

Size

233 mm x 160 mm (9.173 in. x 6.299 in.)

ORDERING INFORMATION

Model	Description
5792	High-Speed Synchronizer and Distribution Board - 6U VPX Single Density
5892	High-Speed Synchronizer and Distribution Board - 6U VPX Double Density

ACCESSORY PRODUCTS

Model	Description
	4 ea. 18" μ Sync cables are supplied; additional cables may be ordered:
2192-018	μ Sync cable - 18"
2192-036	μ Sync cable - 36"



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