Quartz 5903

3U VPX high-speed synchronizer and distribution board

Synchronizes up to 64 channels across eight Quartz® boards

- High-bandwidth data streaming
- Waveform signal generator
- Communication receiver and transmitter
- Electronic Warfare transponder
- Analog I/O for digital recording and playback
- Sensor interfaces

The Quartz 5903 high-speed synchronizer and distribution board synchronizes multiple Mercury Quartz family boards within a system. It enables synchronous sampling and timing for a wide range of multichannel high-speed data acquisition, DSP, radar, EW and software radio applications.

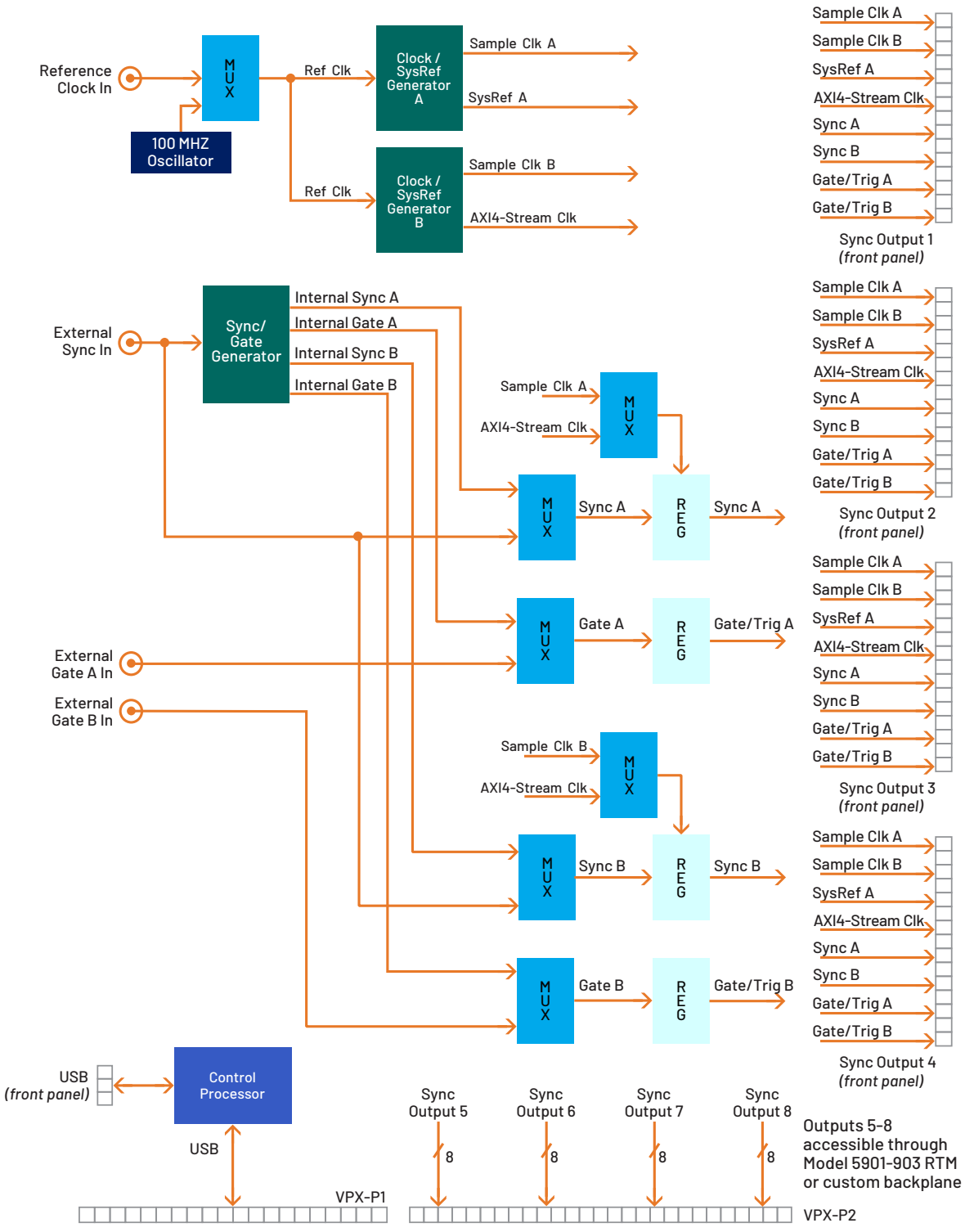
An on-board programmable clock generator creates the sample clock along with the required complimentary clocks. Up to eight Quartz RFSoC boards can be synchronized using the 5903, with each receiving a common clock along with timing signals that can be used for synchronizing, triggering and gating functions.

FEATURES

- Synchronizes up to 64 channels across eight Quartz® boards
- Synchronizes sampling and data acquisition for multichannel systems
- Provides single sample accurate synchronization between multiple channels and multiple boards
- Synchronizes gating and triggering functions
- Free lifetime applications support

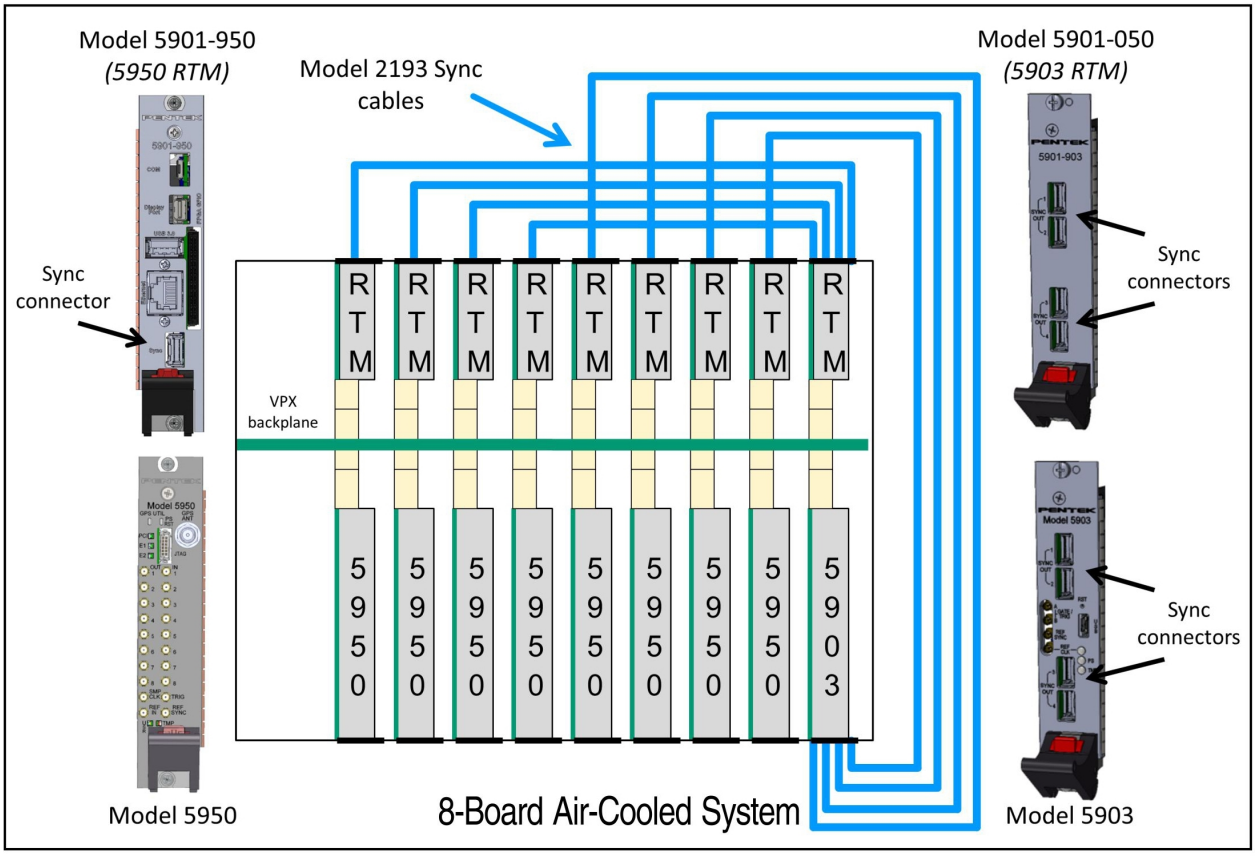
5903 BLOCK DIAGRAM

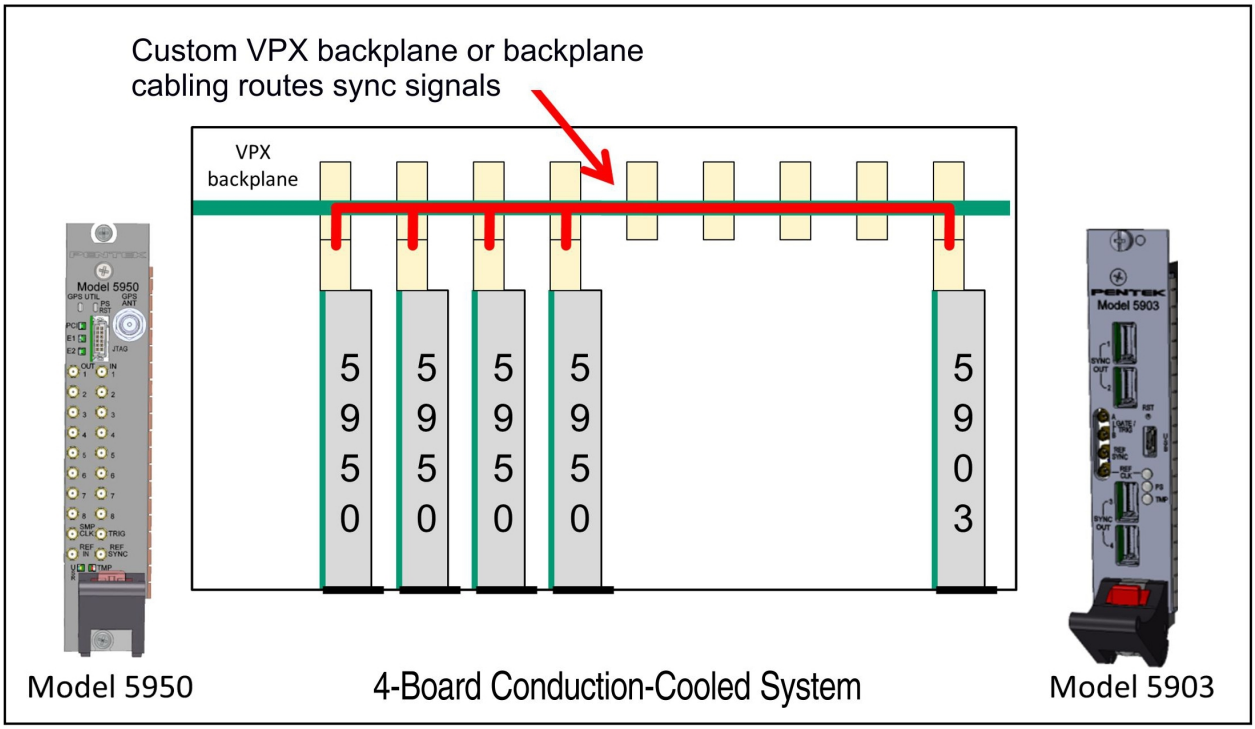
Click on a block for more information.



Model 5903 Quartz Synchronization 3U VPX Board

SYSTEM CONFIGURATIONS





INPUT SIGNALS

The 5903 provides four front panel MMCX connectors to accept input signals from external sources: one for reference clock, one for sync, and two for gate/trigger signals. The 5903's internal programmable clock generator can create sample clock frequencies from 1 to >5 GHz. The sample clock can be locked to the board's internal 100 MHz reference or locked to an external reference received on the reference clock connector. Similarly, sync and gate/trigger can be generated on-board via software or received from external sources through the sync and gate/trigger connectors.

CONFIGURATION AND OPERATION

All board modes and operations are controlled by an on-board processor. Commands to this processor are sent via USB either through a front panel port or through the Rear Transition Module (RTM).

OUTPUT SIGNALS

Model 5903 can synchronize up to eight Quartz products. A multisignal sync interface is provided to each board to be synchronized containing sample clocks, reference clocks, and gate/trigger and sync signals. Four sync interfaces are provided on the board's front panel and four are provided on a RTM. Connections between the 5903 and the Quartz boards are facilitated through precision matched multisignal cables.

SPECIFICATIONS

Front Panel Reference Input

Connector Type: MMCX

Input Impedance: 50 ohms

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

Reference Clock Frequency: 10 MHz to 100 MHz

Front Panel Gate/Trig 1, 2 & Ref Sync Inputs

Connector Type: MMCX

Input Level: LVTTL

Front Panel Sync Outputs

Quantity: 4

Connector Type: Samtec ARC6 series

Signal Level: CML

Signals: Sample Clock A, Sample Clock B (not used for Quartz boards), SysRef A, AXI4 Stream Clock, Sync A, Sync B, Gate/Trig A, Gate/Trig B

VPX-P2 Sync Outputs

Quantity: 4

Signal Level: CML

Signals: Sample Clock A, Sample Clock B (not used for Quartz boards), SysRef A, AXI4 Stream Clock, Sync A, Sync B, Gate/Trig A, Gate/Trig B

Programmable VCXO:

Frequency Ranges: 1 GHz to >5 GHz

Tuning Resolution: 32 bits

Unlocked Accuracy: ±20 ppm

Environmental

Operating Temp: 0° to 50° C

Storage Temp: -20° to 90° C

Relative Humidity: 0 to 95%, non-condensing

Physical

Dimensions:

- Depth: 170.61 mm (6.717 in)
- Height: 100 mm (3.937 in)

Weight: 13.8 oz. (390 grams).

Typical Power Consumption: ~25 watts

ORDERING INFORMATION

Model	Description
5903	High-Speed Synchronizer and Distribution Board

Options	Description
-050	Support for Quartz products
-763	Conduction-cooled, Level 3

Contact Mercury for compatible option combinations and complete specifications.

ACCESSORY PRODUCTS

Model	Description
5901-903	Rear Transition Module - 3U VPX (provides 4 additional sync connections)
2193-018	Quartz sync cable - 18"
2193-036	Quartz sync cable - 36"

Four 36" Quartz sync cables are supplied. Additional cables may be ordered.

COMPATIBLE PRODUCTS

Model	Description
5550	3U VPX SOSA Aligned 8-Channel A/D & D/A Zynq UltraScale+ RFSoC Processor
5950	3U VPX 8-Channel A/D & D/A Zynq UltraScale+ RFSoC Processor
7050	PCIe 8-Channel A/D & D/A Zynq UltraScale+ RFSoC Processor

LIFETIME SUPPORT FOR QUARTZ PRODUCTS

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 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.

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