

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.

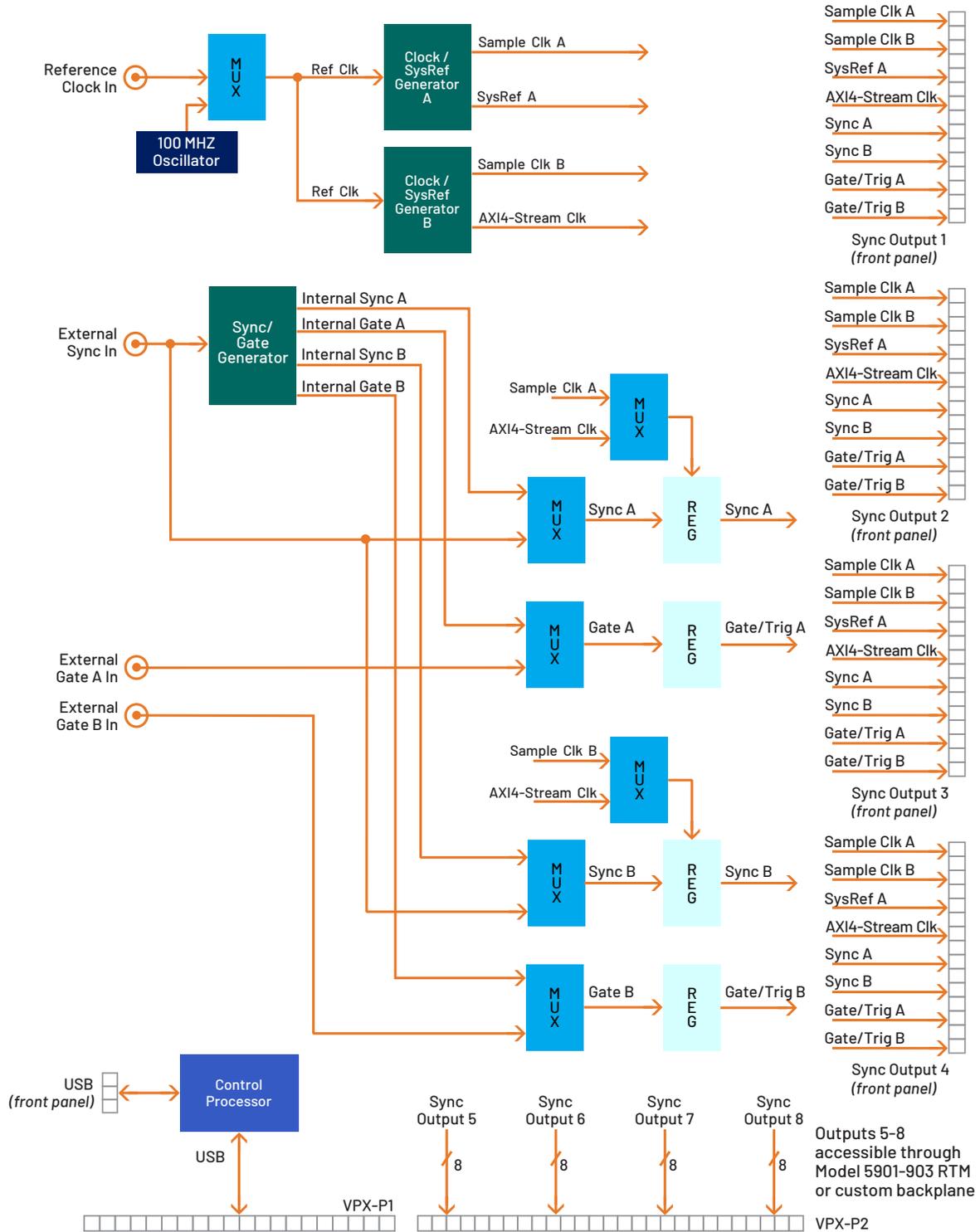
An on-board programmable clock generator creates the sample clock along with the required complimentary clocks. Up to eight Quartz RFSoc boards can be synchronized using the 5903, with each receiving a common clock along with timing signals that can be used for synchronizing, triggering and gating functions.

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

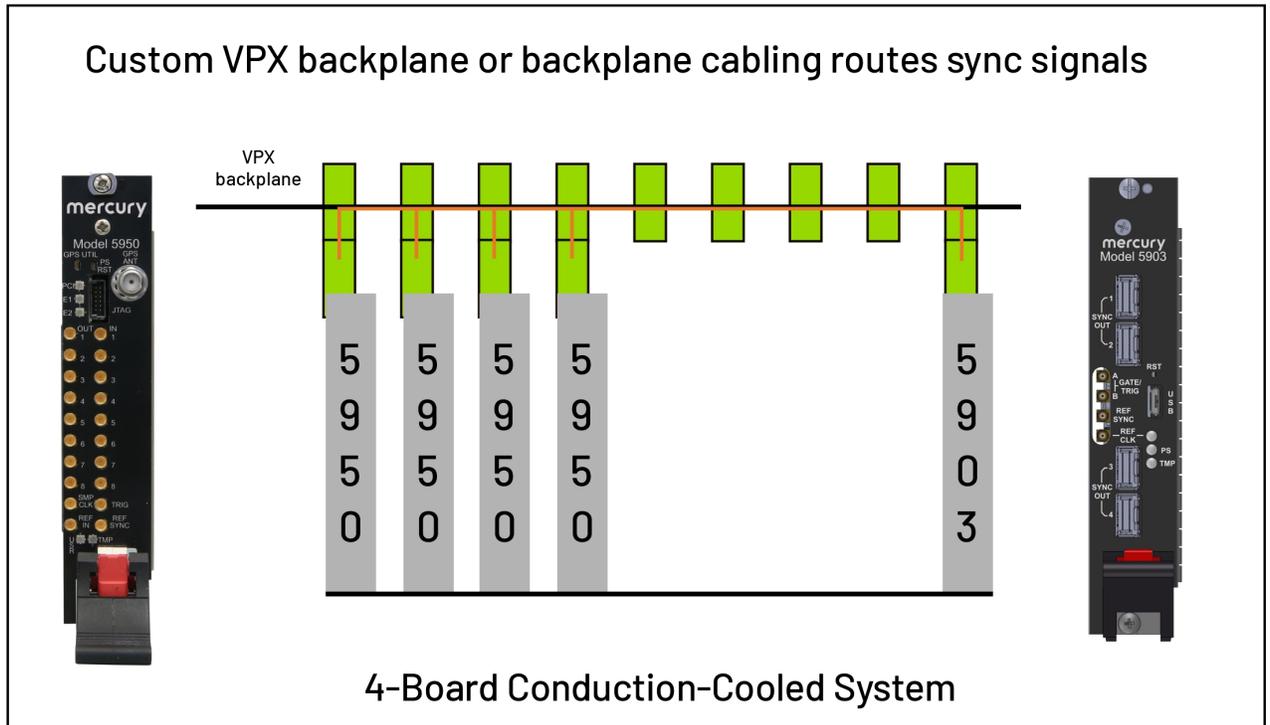
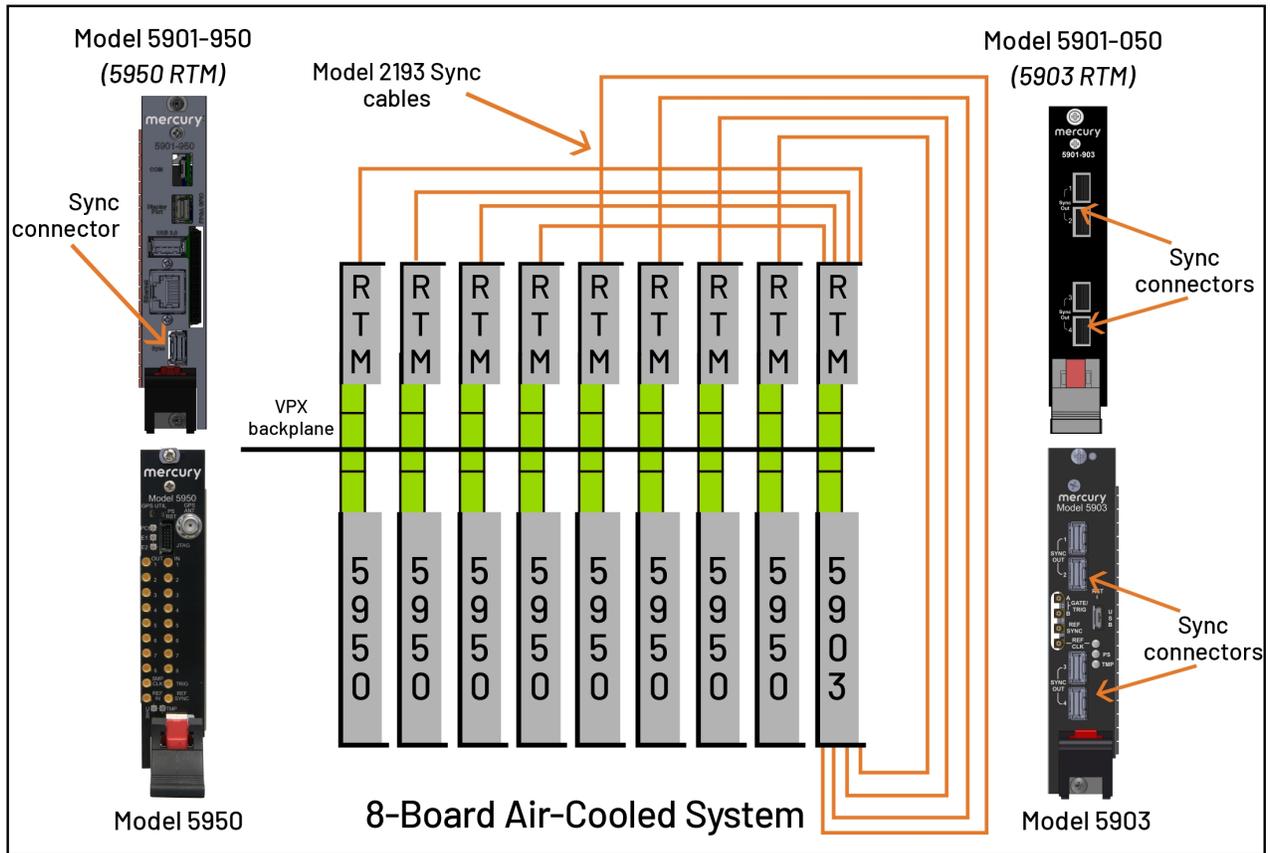
5903 BLOCK DIAGRAM

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: LVTTTL

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



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