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

General Information

The Model 5903 High-Speed Synchronizer and Distribution Board synchronizes multiple Pentek 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.

Input Signals

Model 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.
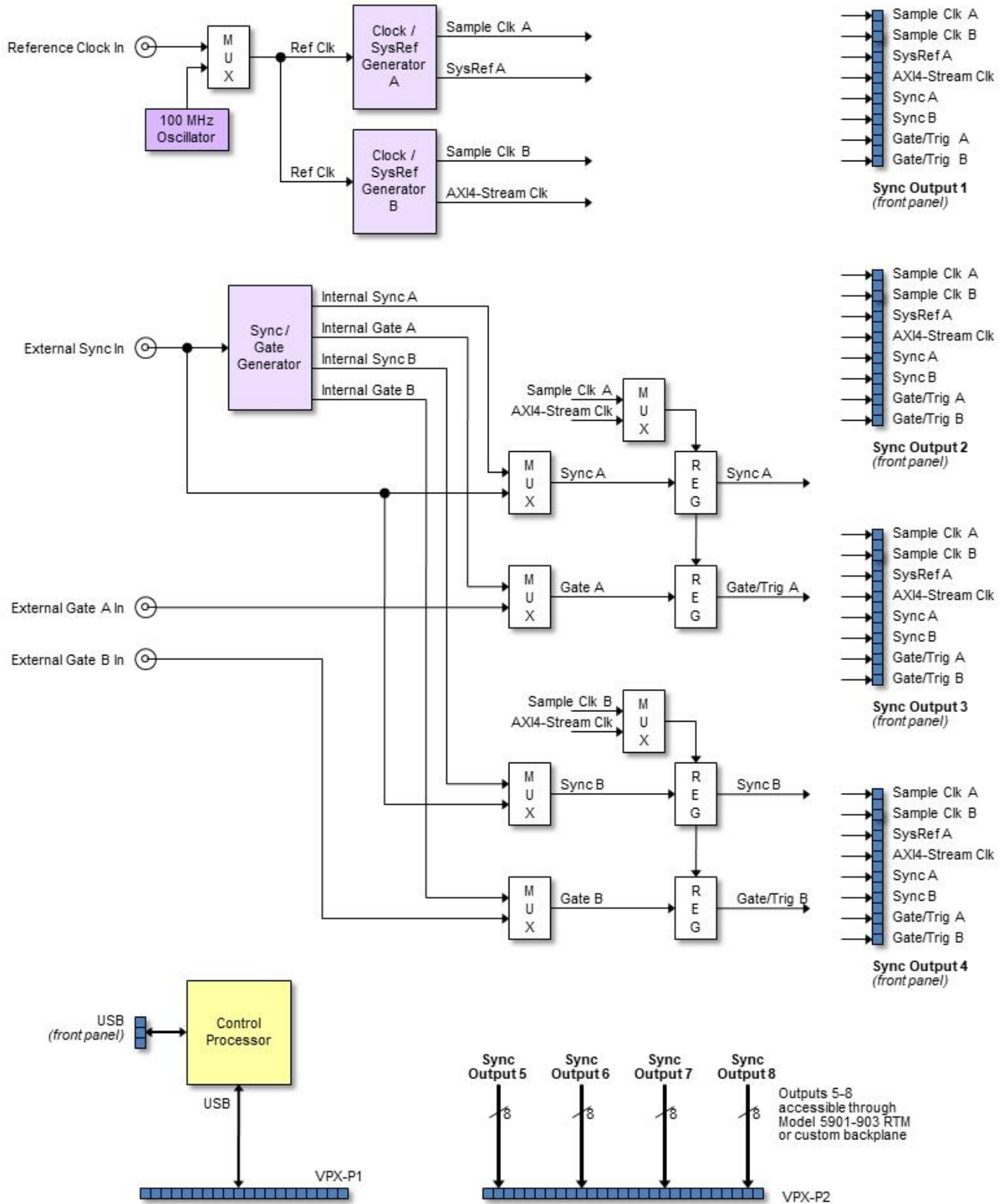
Configuration and Operation

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).
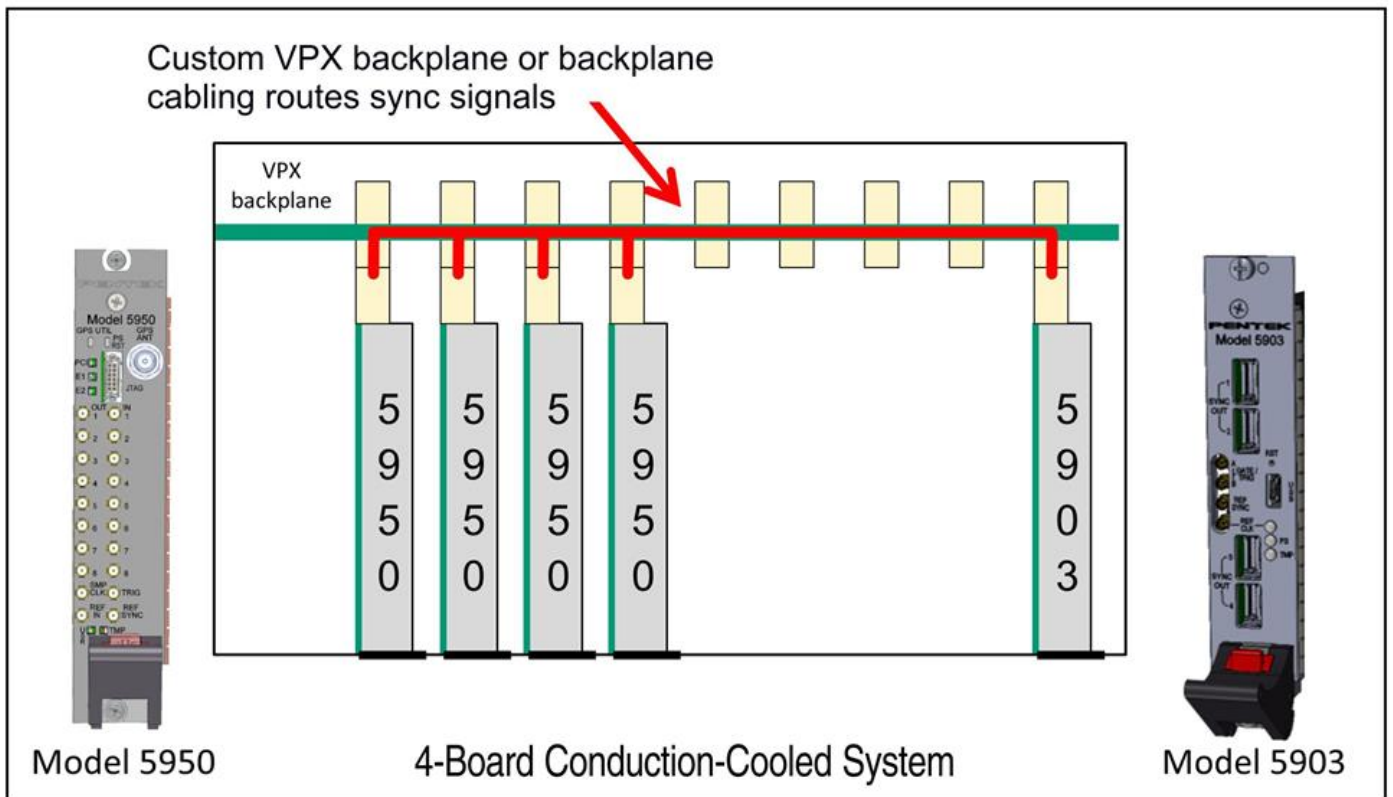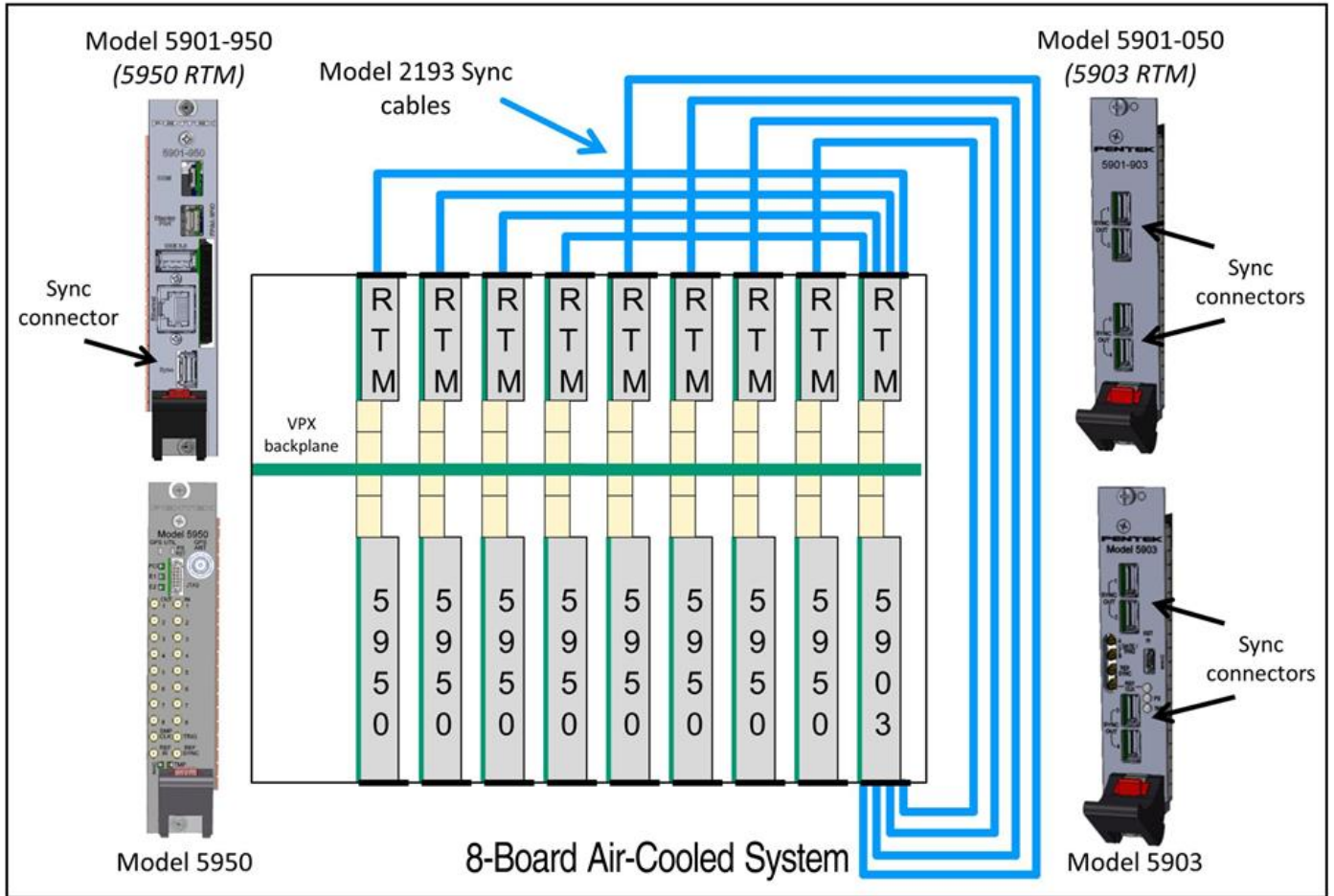
Output Signals

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.

5903 Block Diagram

Model 5903 Quartz Synchronization 3U VPX Board

System Configurations

Model 5901-950
(5950 RTM)

Model 2193 Sync cables

Model 5901-050
(5903 RTM)

Sync connector

Sync connectors

VPX backplane

Model 5950

8-Board Air-Cooled System

Model 5903

Sync connectors

Custom VPX backplane or backplane cabling routes sync signals

VPX backplane

Model 5950

4-Board Conduction-Cooled System

Model 5903

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).

Ordering Information

Model	Description
5903	High-Speed Synchronizer and Distribution Board

Options:	
-050	Support for Quartz products
-763	Conduction-cooled, Level 3
Contact Pentek for compatible option combinations and complete specifications of rugged and conduction-cooled versions. Storage and general options may change, so be sure to contact Pentek for the latest information.	

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"
4 each 36" Quartz sync cables are supplied; additional cables may be ordered.	

Compatible Products

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

Pricing and Availability

To learn more about our products or to discuss your specific application please contact your local representative or Pentek directly:

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