Model 5503

SOSA aligned high-speed synchronizer and distribution 3U VPX board

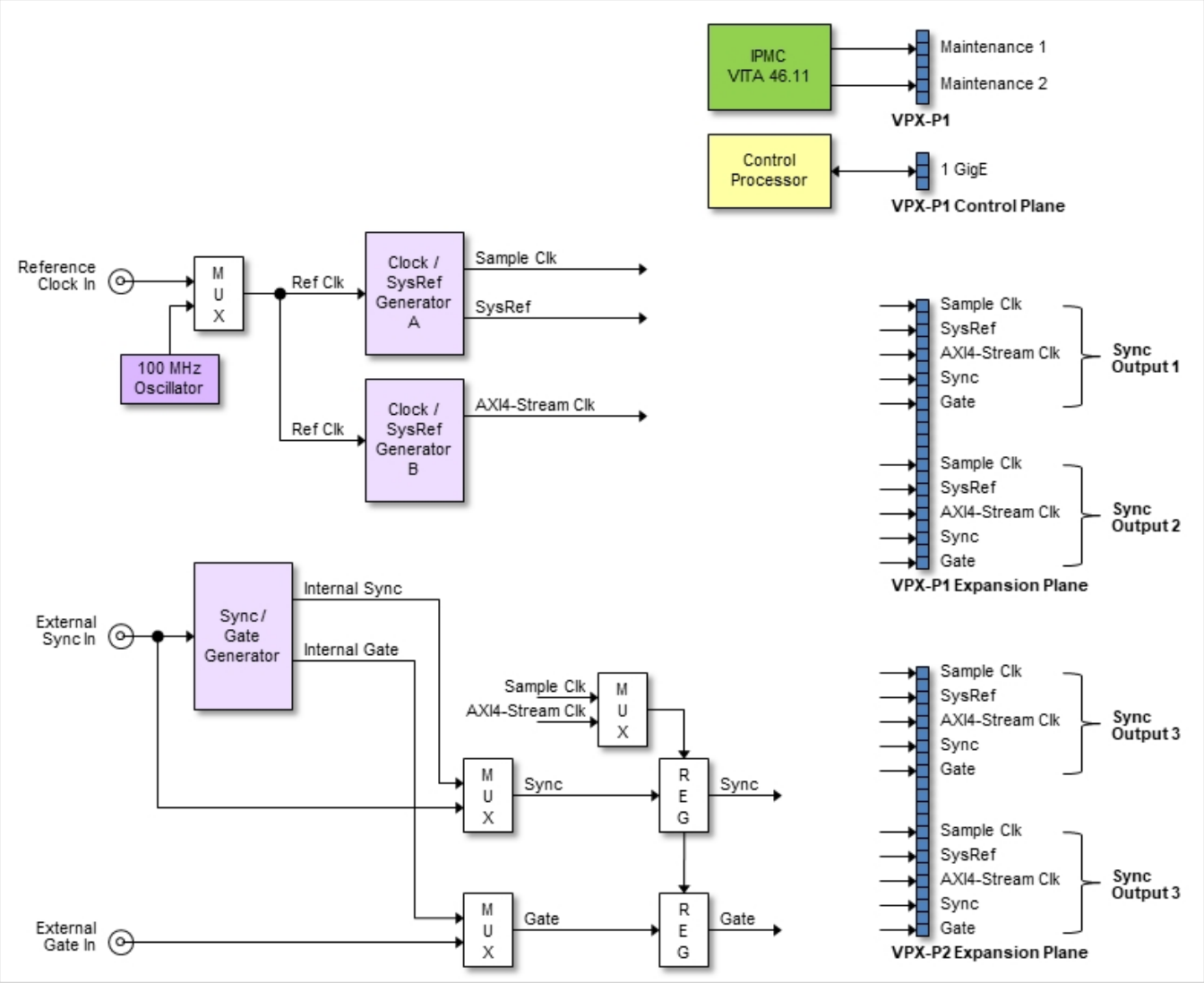
Synchronizes up to 32 channels across four Quartz® boards

- Synchronizes sampling and data acquisition for multichannel systems
- Synchronizes up to 32 channels across four Quartz® boards
- Provides single sample accurate synchronization between multiple channels and multiple boards
- Synchronizes gating and triggering functions

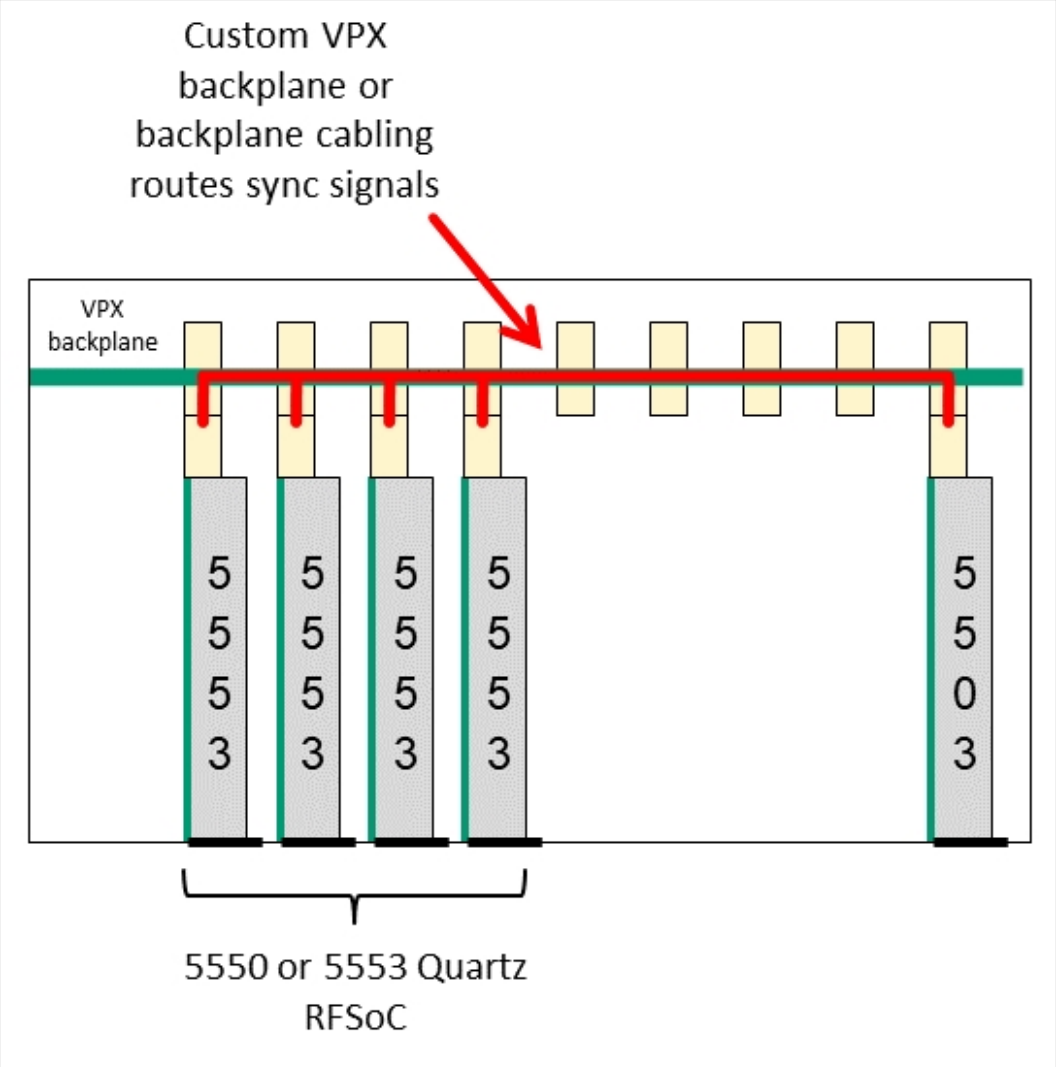
The Model 5503 SOSA aligned high-speed synchronizer and distribution board synchronizes multiple Mercury Quartz family boards within a system. It enables synchronous sampling and timing for a wide range of multichannel high-speed data acquisition, DSP, radar, EW and software radio applications.

An on-board programmable clock generator creates the sample clock along with the required complimentary clocks. Up to four Quartz RFSoC boards can be synchronized using the 5503, with each receiving a common clock along with timing signals that can be used for synchronizing, triggering and gating functions.

5503 BLOCK DIAGRAM



SYSTEM CONFIGURATIONS



INPUT SIGNALS

Model 5503 provides three RF input signals via the VITA 67.3 D connector to accept signals from external sources: one for reference clock, one for sync, and one for gate/trigger signals. The 5503'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 a 1 GigE control plane interface on P1.

OUTPUT SIGNALS

Model 5503 can synchronize up to four 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 in the VPX expansion plane, Two on P1 and two on P2. Connections between the 5503 and Quartz boards are provided through custom VPX backplanes or through backplane cables.

INTELLIGENT PLATFORM MANAGEMENT CONTROLLER

The Model 5503 uses Crossfield Technology LLC's Intelligent Platform Management Controller (IPMC) to provide a fully compliant and flexible management solution for Field Replaceable Units (FRU) that support the VITA 46.11 standard required by HOST and SOSA architectures. The IPMC provides a standardized implementation of FRU management interfaces, control signals, and sensor monitoring. The IPMC provides the Chassis Manager and higher-level System Management Software (SMS) access to FRU information, FRU control signals, and sensor monitoring functions so that they can identify, activate/deactivate, reset, and monitor health of the card and take appropriate system control actions.

The IPMC also provides a low-level path for configuration management and FRU maintenance through both IPMI messages and a Maintenance Port (MP) serial interface. The maintenance port provides a terminal mode command-line interface and supports monitoring, data uploads, and FRU level troubleshooting.

SPECIFICATIONS

Reference Input

Connector Type: VITA 67.3D
Input Impedance: 50 ohms
Input Level: 0 dBm to +10 dBm, sine wave
Reference Clock Frequency: 10 MHz to 100 MHz

Gate/Trig & Ref Sync Inputs

Connector Type:VITA 67.3D
Input Level: LVTTL

Sync Outputs

Quantity: 4
Connector Type: two on VPX-P1 expansion plane, two on VPX-P2 expansion plane
Signal Level: CML
Signals: Sample Clock, SysRef , AXI4 Stream Clock, Sync, Gate/Trig

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

OpenVPX Compatibility

The Model 5503 is compatible with the following module profile, as defined by the VITA 65 OpenVPX Specification:
SLT3-PAY-1F1U1S1S1U1U4F1J-14.6.13-n

ORDERING INFORMATION

Model	Description
5503	SOSA Aligned 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.

COMPATIBLE PRODUCTS

Model	Description
5550	8-Channel A/D & D/A Zynq UltraScale+ RFSoC Processor - SOSA Aligned 3U VPX
5553	8-Channel A/D & D/A Zynq UltraScale+ RFSoC Gen 3 Processor - SOSA Aligned 3U VPX

LIFETIME SUPPORT FOR QUARTZ PRODUCTS

Mercury offers the worldwide military embedded computing community 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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Learn more

Visit: https://pentek.com/products/detail.cfm?model=5503

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