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SX-124

PACIFIC DEFENSE

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SX-124

Assured Positioning, Navigation, Timing Card

Integrated Multi-Mission Comms/EW/C5ISR Solutions

The SX-124 is a U.S. Army CMOSS 3U OpenVPX™ plug-in card designed in alignment with The Open Group Sensor Open Systems Architecture™, or SOSA™, Technical Standard to provide assured positioning, navigation, and timing (A-PNT) information. The SX-124 can accept external resources or use its onboard GNSS receivers as reference inputs for timing and position data. It distributes eleven 100 MHz outputs and eleven 1PPS outputs in a phase coherent manner, provides network and precision timing information, time of the day, holds over timing reference in the GPS denied environment and synchronizes time stamps. The SX-124 also provides enhanced location information and can be connected to external IMU as well as a CRPA antenna. With an ability to provide timing and positioning information in a GPS-denied environment through multiple sensors utilizing pntOS open sensor fusion software framework, the SX-124 is an ideal fit for next generation Cyber / EW / SIGINT / Comms ecosystem for use on Air, Land and Sea platforms.

Centered around a leading-edge high-performance Multiprocessor System-on-Chip (MPSoC) from Xilinx's Zynq® UltraScale+™ family of devices, the SX-124 combines processor scalability with real-time control. The SX-124 is designed to the ANSI VITA 48.2 mechanical standard for VPX REDI conduction cooling and ECC3 environmental class per VITA 47 standard. The SX-123 is a scaled down version used for timing reference distribution.

KEY FEATURES

- Built to CMOSS, SOSA™, and OpenVPX™ standards
- 3U VPX form factor
- 1PPS/100MHz Reference Timing Source
- Phase-coherent outputs
  - 11 slot 100 MHz Clock Reference
  - 11 slot 1 PPS Reference
- Xilinx Zynq UltraScale+ MPSoC
- Internal 6-Axis IMU
- Supports additional external IMU
- Time/Frequency Holdover from internal Rubidium Miniature Atomic Clock (Rb MAC)
- High-precision Timestamps
- Dual VICTORY control plane interfaces supported
- Optional GB-GRAM-M and ALTNAV receivers
- Slot profiles
  - SLT3x-TIM-2S1U22S1U2U1H-14.9.2-1
  - Supports other aperture options
- Conduction cooled

General Characteristics

- Phase-coherent outputs to within ±0.1 ns
- 11x 1 PPS outputs to the backplane via VPX P1 connector for radial AUX_CLK distribution
- 11x 100MHz outputs to the backplane via VPX P1 connector for radial REF_CLK distribution
- 100 MHz and 1 PPS external inputs and locally generated respective outputs are also supported through the backplane VITA 67.3 coaxial connector
- Gigabit Ethernet providing IEEE 1588 PTP, NTP and Location data through the backplane
- Enhanced GPS/IMU position accuracy
- GPS Antenna Port through the backplane VITA 67.3 coaxial connector
- Control Pattern Radiation Antenna (CRPA) Port through RS485/RS422 from the front panel
- Bi-directional connection to an external IMU through RS485/RS422 from the front panel
- Intelligent Platform Management Controller (IPMC)
- External DAGR input and output via Com Port RS232 from the front panel
- External DAGR 1 PPS Input from the front panel
- GPS synchronized time stamps to within 10 ns resolution
- Timing reference holdover accuracy better than 1 µsec for 24 hours
- Superior (low) phase noise performance
- Temperature compensated VCXO
- VBAT supported time of the day
- Dual VICTORY control plane interfaces supported
- Standard VICTORY shared PNT services
  - Time Synchronization
  - Position
  - Orientation
  - Direction of Travel
  - GPS Receiver

Applications

- Assured Positioning, Navigation, and Timing
- Parallel and Distributed Network Processing
- Edge Computing
- Cyber Security Solutions
- Sensor Fusion
- Electronic Warfare
- Signal Intelligence
- Communication
- Other low power embedded signal processing solutions

INNOVATIVE

DEFENSE & COMMERCIAL SOLUTIONS

CMOSS SOSA™ Sensor Open Systems Architecture MEMBER OpenVPX™

Pacific Defense is designed to support the DoD's disciplined movement to modular open standards and to mirror the way military services address EMS warfare – holistic mission planning and execution. The company's approach inherently enables what it refers to as a rapid prototyping paradigm – embedding a commercial mentality into the defense industry. Products are designed from the outset for modern, AI-driven autonomy and CMOSS and SOSA-aligned hardware and software solutions. This includes state-of-the-art processing that can readily follow the evolution of commercial technology with complete data sharing across networks and platforms.

Headquartered in El Segundo, California, Pacific Defense takes an organic, commercial-minded approach to military-use electromagnetic spectrum technologies, and solutions. Focus areas include autonomous systems, command and control, communications, cyber operations, intelligence collection, and electronic warfare. Spectranetix, Perceptronics, and Spear Research are part of the Pacific Defense family, specializing in highly-advanced RF spectrum technologies, and engineering with innovative AI-backed algorithms.

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