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SDR4320VP

PACIFIC DEFENSE

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SDR4320VP

Ultra-Wideband SDR Transceiver

Integrated Multi-Mission Comms/ EW/C5ISR Solutions



The SDR4320VP is a U.S. Army CMOSS high performance, quad-channel ultra-wideband software defined radio (SDR) transceiver aligned with The Open Group Sensor Open Systems Architecture™, or SOSA™, Technical Standard that operates up to 18 GHz frequency. This 3U OpenVPX plug-in card has 1 GHz instantaneous analog bandwidth with narrower bandwidths achievable via digital processing. The SDR4320VP comes with significant onboard FPGA resources and data rates up to 100 Gbps for high performance real-time processing. Optimized for SWaP-constrained payloads, the SDR4320VP seamlessly integrates into existing EW / SIGINT / Radar / Comms mission systems, autonomous platforms, and distributed sensor network applications for use on Air, Land and Sea Platforms.

Centered around a leading-edge high-performance Radio Frequency System-on-Chip (RFSoC) from AMD's Zynq™ UltraScale+™ family of devices, the SDR4320VP facilitates a software defined signal chain enabling rapid deployment of new waveforms, jamming techniques, radar modes, and adaptive DF algorithms - without hardware changes. In its default configuration, the SDR4320VP is compliant to the ANSI VITA 48.2 mechanical standard for VPX REDI conduction cooling and ECC3 environmental class per VITA 47 standard.

KEY FEATURES

- Built to CMOSS, SOSA™, and OpenVPX™ standards
- 3U VPX form factor
- Independent TX and RX channels
- Supports multi-card, phase coherency for geolocation and beamforming
- Backplane support of 100GBASE-KR4, 10GBASE-KR, and PCIe Gen3
- Targets architecture based on a single security enclave only
- Zynq UltraScale+ RFSoC design combines heterogeneous processing and scalability with real-time control
- Programmable DDCs
- MORA transport layer
- 100 GbE ML2B real-time bus
- 8 GB of total DDR4 memory
- Slot profiles
  - SLT3-PAY-1F1U1S1S1U1U2F1H-14.6.11-4
  - Supports other aperture options
- Conduction cooled

General Characteristics

- 2x RX and 2x TX independent channels
- Frequency range 10 - 18000 MHz
- Instantaneous bandwidth dependent on the RF input frequency
  - 1000 MHz for RF input greater than 2000 MHz,
  - 250-500 MHz (variable) for RF input from 10-2000 MHz in a bypass path
- 14 bits I/Q ADC/DAC resolution
- DDC/DUC tuning resolution <1 Hz
- Noise figure <12dB
- Max input power +20 dBm without damage
- Output power +8 dBm (nominal)
- Power adjustment range 36 dB in 1 dB steps
- Software configurable LO distribution for independent or coherent channel operation and master/slave LO for coherency between multiple modules
- Intelligent Platform Management Interface (IPMI)
- Power 80 W (typical estimate)
- Weight 1.6 lbs (approx. in default configuration)
- Default configuration VITA 48.2 conduction cooled with 14-contact VITA 67.3 RF block
- Configurable as a quad-channel receiver only – contact Factory for details

Bundled CPU Software (ARM Processors)

- CMOSS MORA software to verify operation in any CMOSS or SOSA chassis
- CMOSS/SOSA™ MORA messages software library
- AMD Zynq US+ RFSoC PetaLinux operating system

Software Development Kit

- Black Server MORA Software Development Kit
- High level functions for rapid application development
- High level API for MORA device acquisition, control, context, and data
- Project files and development environment
- Example applications with source code

Bundled Firmware (FPGA Image)

- Base Zynq US+ FPGA infrastructure image providing access to all I/O and AXI-4 compliant cores
- Small footprint image
- Complete control of SDR Transceiver card

Embedded Development Kit

- Provides the ability to modify the base FPGA source code
- Vivado project and build scripts included

Applications

- Multi-Function Communication
- Radar/Electronic Warfare
- Signal Intelligence
- Networking
- Cyber Security Solutions
- Satellite Data Link
- Sensor Fusion
- Other SWaP 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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