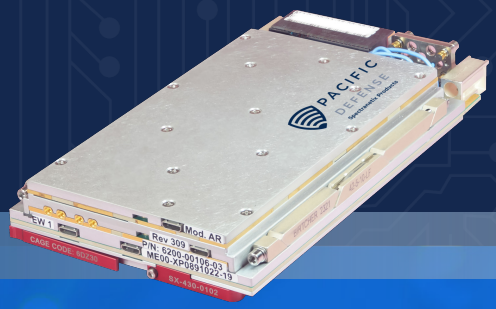
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PACIFIC DEFENSE

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SX-430

Wideband SDR Transceiver

Integrated Multi-Mission Comms/EW/C5ISR Solutions



The SX-430 is a U.S. Army CMOSS high performance dual-channel 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 160 MHz instantaneous analog bandwidth with narrower bandwidths achievable via digital processing. The SX-430 comes with significant onboard FPGA resources for high performance real-time processing in two physically separated enclaves (Red/Black), accelerating security certification. With such characteristics and data rates up to 40 Gbps supported on the Data Plane, the SX-430 is an ideal fit for most Cyber / EW / SIGINT / Comms applications 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-430 combines processor scalability with real-time control. In its default configuration, the SX-430 is compliant to the ANSI VITA 48.2 mechanical standard for VPX REDI conduction cooling and ECC3 environmental class per VITA 47 standard and designed with a provision for VITA 48.8, air flow through configuration. The SX-454 is a scaled down, receiver-only version of the SX-430.

KEY FEATURES

- Built to CMOSS, SOSA™, and OpenVPX™ standards
- 3U VPX form factor
- Dual independent TX and RX channels
- Supports multi-card, phase coherency for geolocation and beamforming
- Backplane support of 40GBASE-KR4, 1000BASE-X, and PCIe Gen3
- Two physically separated enclaves to facilitate security certification
  - Zynq UltraScale+ ZU4EG (Red)
  - Zynq UltraScale+ ZU19EG (Black)
- Programmable DDCs
- VICTORY and MORA transport layers with built-in Red/Black separation
- Supports 40 GbE ML2B real-time bus
- 16 bits I/Q ADC/DAC resolution
- Up to 12 GB of total DDR4 memory
- Slot profiles
  - SLT3-PAY-1F1U1S1S1U1U2F1H-14.6.11-4
  - Supports other aperture options
- Conduction or air flow through cooled

General Characteristics

- Frequency range 5-18000 MHz
- Instantaneous bandwidth 160 MHz
- DDC/DUC tuning resolution 1 Hz
- Internally generated spurs lower than -72dBFS across the entire frequency range (better than -80dBFS in most cases)
- Noise figure <12dB (f<= 6GHz), <16 dB (f>6GHz)
- Max input power +20 dBm without damage
- Output power 0 dBm (nominal)
- Power adjustment range 30 dB in 1 dB steps
- Intelligent Platform Management Interface (IPMI)
- Power 95 W (typical)
- Weight 900g (default configuration)
- Default configuration VITA 48.2 conduction cooled with 14-contact VITA 67.3 RF block

Bundled CPU Software (ARM Processors)

- CMOSS (VICTORY/MORA) software to verify operation in any CMOSS or SOSA chassis
- CMOSS/SOSA MORA messages software library
- Xilinx Zynq US+ MPSoC Petalinux operating system
- VICTORY Server and Client example implementation

Software Development Kit

- Black Server MORA Software Development Kit
- Red 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
- FFT Channel core
- Programmable 2K-32K point FFT core
- Windowing, Averaging, Linear-to-Log Conversion
- 4x DDCs per RF channel
- 2x to 1024x decimation
- 16-bit DDS for fine tuning
- Small footprint image
- Complete control of SDR Transceiver card

EDK-2020 Embedded Development Kit

- Provides the ability to modify the base FPGA source code
- Vivado project and build scripts included
- Includes Xilinx licensing for cores (40 GbE)

Applications

- Multi-Function Communication
- 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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