3U VPX Module SDR 4T4R/8T8R SOSA Aligned

Overview

PanaTeQ's VPX3-SDR-A/B is a 3U VPX SOSA RF aligned module based on the ZynQ UltraScale+ MultiProcessor SoC device from Xilinx and one ADRV9029 (Model A) or two ADRV9029 (Model B) RF Wide-band Transceivers/Receivers from Analog Devices for a broad range of applications such as Software Defined Radio, MILCOM, massive MIMO, Phase Array Radar and Electronic Warfare.

The two ADRV9029 are phase and frequency synchronized to provides up to 8 TX/RX channels at the frond-end or rear-io RF interfaces VITA 67.3.

The baseband processor is a Zynq UltraScale+ MPSoC that integrates a Quad-core ARM Cortex-A53 based Application Processing Unit (APU), a Dual-core ARM Cortex-R5 based Real-Time Processing Unit (RPU), an ARM MALI-400 based Graphic Processing Unit (GPU) and an UltraScale+ Programmable Logic (PL) in a single device. It also in-cludes on-chip memory, external memory interfaces, and a rich set of peripheral connectivity interfaces.

The board can be ordered with different versions of the ZynQ UltraScale+ MPSoC family of devices, coupled with up to 8GB 64-bit DDR4-2400 Processing Memory with 8-bit ECC.

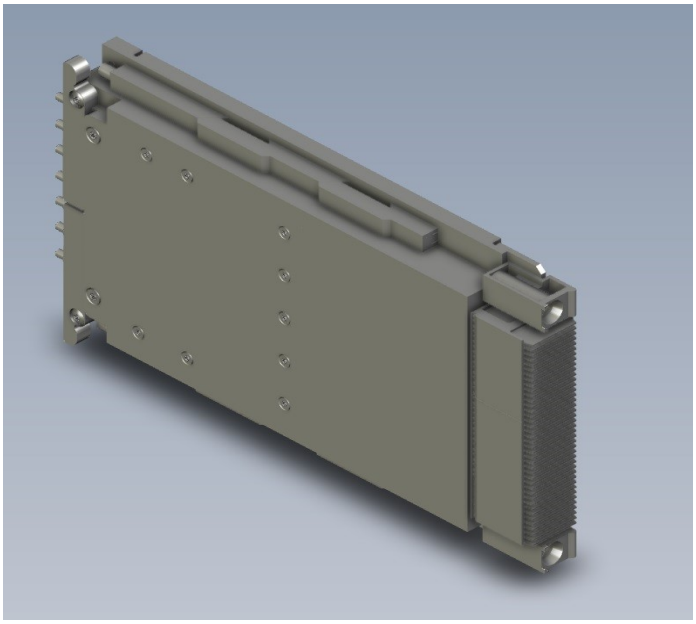
Up to 8GB 64-bit of DDR4-2400 is also available as the Programmable Logic Memory, allowing data streaming applications such as video CODEC and signal processing. 128GB of soldered eMMC managed NAND Flash is available for local data storage.

The VPX3-SDR-A/B provides frond-end RF I/O interfaces using high density RF connectors nano RF VITA 67.3.

A large number of the ZynQ Ultrascale+ MPSoC PS peripherals are available on the on-board connectors:

1x ETH 1000Base-T, USB,2x RS232/422/485, GPIO,.

The VPX3-SDR-A/B is delivered with a PetaLinux BSP and a reference HDL/SW design as standard.



Key Features

- 3U VPX SOSA RF Aligned module
- SOSA Profil: Please contact us
- **Model A:** 4T4R 1x **ADRV9029** RF Wideband Transceiver
- **Model B**: 8T8R 2x **ADRV9029** RF Wideband Receivers
- 4T4R (Model A) and 8T8R (Model B) coherent channels syn-chronized in frequency and phase
- Wide tuning range 75MHz to 6GHz
- Max Receiver iBW 200MHz per channel.
- Max Transmitter synthesis BW 450MHz
- Xilinx **Zynq UltraScale+ MPSoC** as the Baseband Processor
- ZU7Cx and ZU11EG FFVC-1156 Package
- 20x GTH at up to 16.3 Gb/s Transceivers
- Up to 8GB DDR4-2400 64-bit PS memory with 8-bit ECC
- Up to 4GB DDR4-2400 32-bit PL memory
- eMMC 128GB (V4.51) muxed with microSD card slot, MRAM 512KB
- 1x ETH 1000Base-T ZynQ MPSOC
- ZynQ PS-UART USB console
- BMC UART BMC console
- USB 2.0, GPIOs
- 2x RS.232/422/485
- Board Management Controller ARM Cortex-M3 based
- Air Cooled and Conduction Cooled

Typical Applications

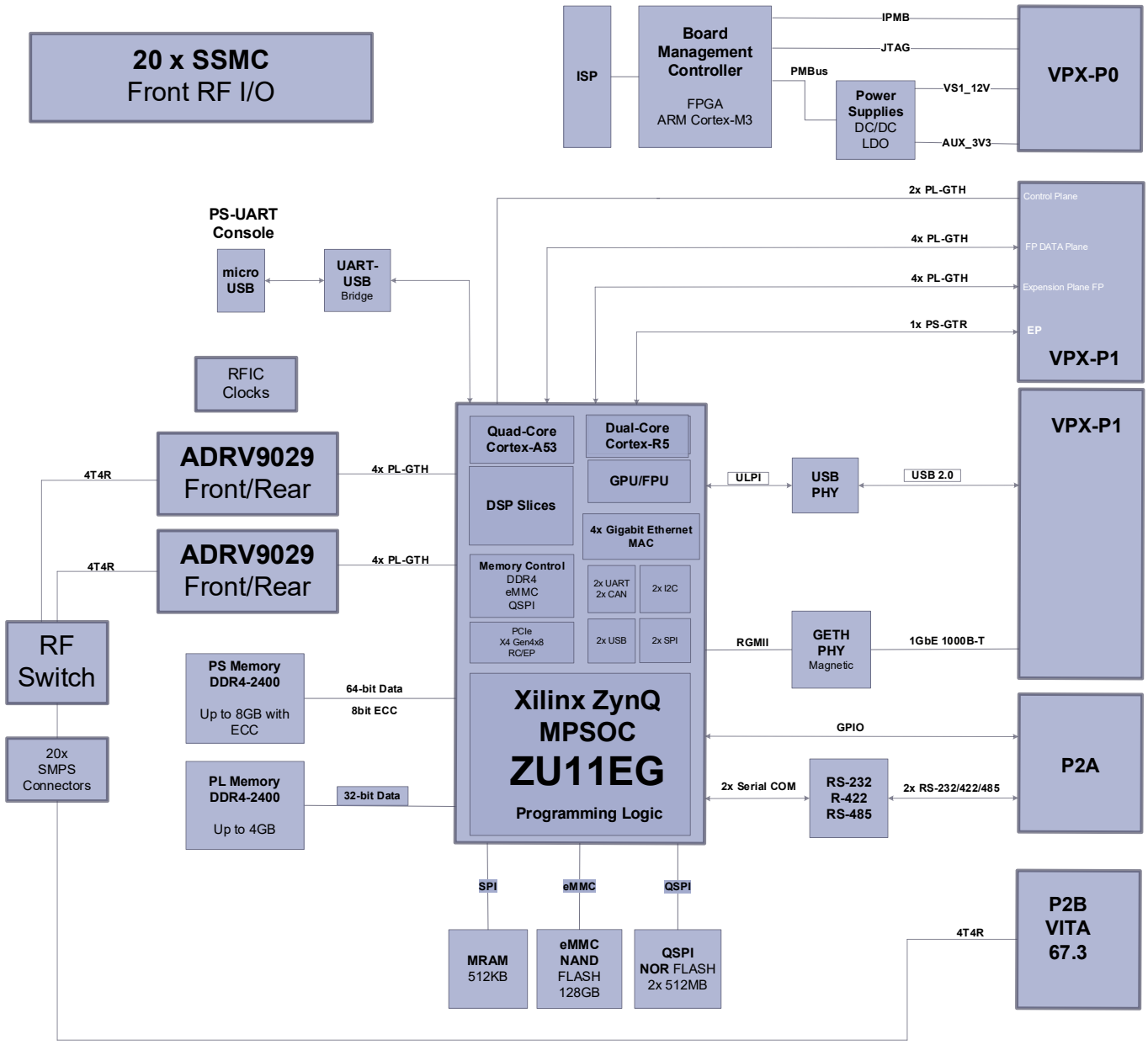
- MILCOM
- Software Defined Radio
- MIMO
- Electronic Warfare
- Signal Intelligence
- Radar

SOSA™ Sensor Open Systems Architecture

ANALOG DEVICES AHEAD OF WHAT'S POSSIBLE™ ASSOCIATE PARTNER

VITA Open Standards, Open Markets

Block Diagram



Board Specifications

3U VPX Interfaces

- VITA 46.0/46.4/65.0 VPX/OpenVPX Specifications compliant
- 8x MGT connected to/from Zynq MPSoC MGT
- 2x1000BASE-X/SGMII links on VPX Control Plane
- 1x1000BASE-T, 2x RS-232/422/485, 1x USB 2.0, GPIOs
- Board Management Controller (BMC) Interface. VITA 46.11 Ready
- System Controller capability
- JTAG

Xilinx Zynq MPSoC

- Supported Devices:**ZU7CG/ZU7EG/ZU7EV** and **ZU11EG** FFVC1156 Package (Speed Grade –1/2/3)
- Processing System : Quad-Core ARM A53, Dual-Core ARM R5, 2x SATA, 2x USB, 4x GETH MACs
- Programmable Logic: 508 (ZU7) or 653K (ZU11) Logic Cells
- On-Chip Memories: 30,8 (ZU7) or 43,6Mb (ZU11)
- DSP Slices: 1728 (ZU7) or 2928 (ZU11)
- High Speed Serial Links: 20 full duplex, high performance, GTH Multi-Gigabit Tranceivers (MGT) @ up to 16.3 Gb/s
- Supported by PanaTeQ's FPGA Development System (**PAN-PSDK**)

External Memories

- Up to 8GB of DDR4-2400 Processor System (PS) memory, 64-bit data, 8-bit ECC
- Up to 4GB of DDR4-2400 Programmable Logic (PL) memory, 32-bit data, no ECC
- 128GB eMMC of managed NAND Flash memory. HS200 support @ up to 100MB/s
- 512KB of SPI MRAM (NVRAM)
- 2x 1Gb of QSPI NOR Flash memory for booting Zynq MPSoC Programmable Logic and Firmware Processing System

ADRV9029 RF Channel Performances (per device/channel)

- 4T4R
- RF coverage 75MHz to 6.0GHz
- Tx synthesis bandwidth to 450MHz
- Rx bandwidth up to 200MHz

Board Management Controller (BMC)

- .Based on Microsemi SmartFusion Customizable System-on-Chip (**cSoC**) with on-chip ARM Cortex-M3 at up to 100MHz
- Real-Time Monitoring+Alarms: Voltages, Currents, Temperatures, 6-Axis Accelerometer, Magnetometer and Humidity
- Reset Management, Power-Up and Power-Down Sequencing. Buit-In Test (**BIT**)
- Watchdogs (Avionics type)
- Large private 32MB Event Log Flash Memory.
- UART communication with host using RTM-VERSA1 Rear-Transition Module
- Smart Power Management using Linear Technology DC/DC modules with Digital Power System Management
- Hardware Ready for full Vita 46.11 compliance

Environnemental Specifications

- Compliant with VITA 47 specification. Please contact PanaTeQ for more information

Product Codification

The VPX3-SDR can be assembled with different versions and various amounts of memory storage. The cooling technique et rug-gedization level are also available options. The following table shows the product coding for all these options.

VPX3-SDR-A– A 1 N – AS

	Device	RF / IO
A	1x ADRV9029	4T4R
B	2x ADRV9029	8T8R

	Device	ARM A53 Cores	GPU	VCU	DSP Slices	System Logic Cells	Memory
A	ZU7CG	2	No	No	1728	504	38.0 Mb
B	ZU7EG	4	Yes	No	1728	504	38.0 Mb
C	ZU7EV	4	Yes	Yes	1728	504	38.0 Mb
D	ZU11EG	4	Yes	No	2928	653K	43.6 Mb

	Device Speed Grade
1	Slowest
2	Mid
3	Fastest

	PS / PL Memory Size
N	4GB/2GB
M	8GB/4GB

	Ruggedization Level	VITA 47
AS	Air Standard	EAC4
AR	Air Rugged	EAC6
CC	Conduction Cooled	ECC3
CR	Conduction Rugged	ECC4

Ordering Information

The following product references are offered by Panateq as standard products. Other combinations of devices, speed grade, memory and cooling can be specially ordered. Please contact us for details

Reference	Device	RF IO	Memory PS/PL	Ruggedization Level
VPX3-SDR-A-D1N-AS	ZU11EG-1FFVC1156E	4T4R	4GB/2GB	Air Standard

Reference	Description
RTM-SDR-A	Rear Transition Module for VPX3-SDR-A
VPX3-SDR-A-D1N-PSDK	VPX3-SDR-A-D1N-AS System Development Kit

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Available from: