

VPX3-ZU1-SDR-C 3U VPX Zynq Ultrascale+ ADRV9009 SDR System Development

Overview

The **VPX3-ZU1-SDR-C** is a 3U OpenVPX System Development based on PanaTeQ's VPX3-ZU1 Zynq Ultrascale+ and FMC-ZU2RF-A modules for Software Defined Radio applications.

The kit includes the following items:

- An air-cooled 4U desktop chassis with 5-slots VPX Full-Mesh backplane with 250W PSU.
- VPX3-ZU1-B1M-AS: 3U OpenVPX Zynq Ultrascale+ with FMC Site module.
- RTM-ZU1: Rear Transition Module for the VPX3-ZU1.
- FMC-ZU2RF-A-W1A-AS: FMC Wideband RF Transceiver **ADRV9009** based.
- A PetaLinux Linux BSP
- The PanaTeQ FPGA Design Kit (**PAN-FDK**)
- Cables.



System Features

VPX3-ZU1-B1M-AS module

- 3U OpenVPX module, Air-Cooled
- Xilinx Zynq Ultrascale+ ZU9G-1FFVC900E
- 4GB PS DDR4-2400 memory 64-bit, 8-bit ECC
- 1GB PL DDR4-2400 memory 16-bit, no ECC
- 64 GB eMMC managed NAND Flash
- FMC HPC site with 10x MGTs @ up to 16.3Gb/s
- For other options, please contact us

FMC-ZU2RF-A-W1A-AS module

- Fully ADRV9009 evaluation board compatible
- Dual Transmitter (Tx), Dual Receiver (Rx)
- Observation Receiver (ORx) with 2 inputs
- RF Ext LO Input/Output
- Reference Clock Input
- Dual GPIO (3.3V) In and Out to/from FMC connector
- RF Coverage 75MHz to 6.0 GHz
- Tx Synthesis Bandwidth (BW) to 450MHz
- Rx Bandwidth: Up to 200MHz
- On-Board VCXO @ 122.88MHz.
- For other options, please contact us

RTM-ZU1

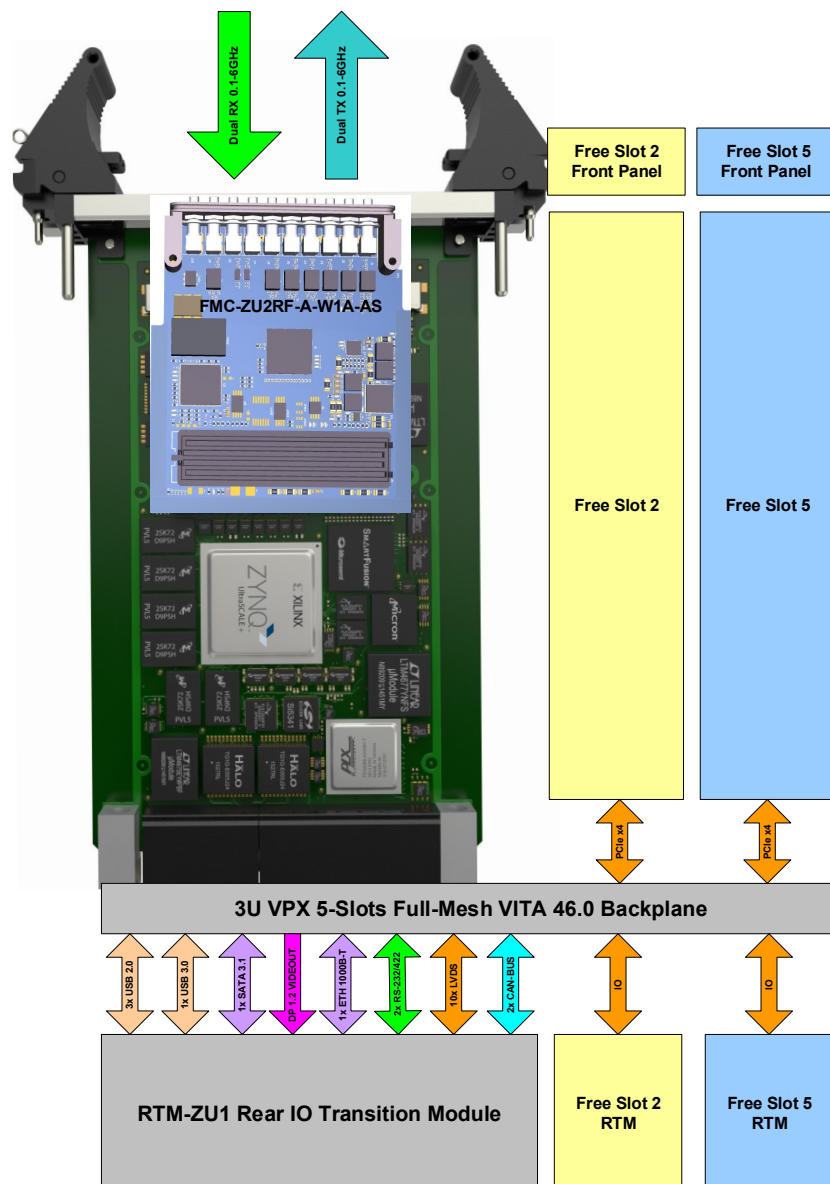
- Rear Transition Module for VPX3-ZU1 module
- 2x 100/1000Base-T RJ-45
- 2x USB 2.0 Type-A, 2x USB 3.0 Type-A
- 1x STATA 3.1, 1x mini DisplayPort

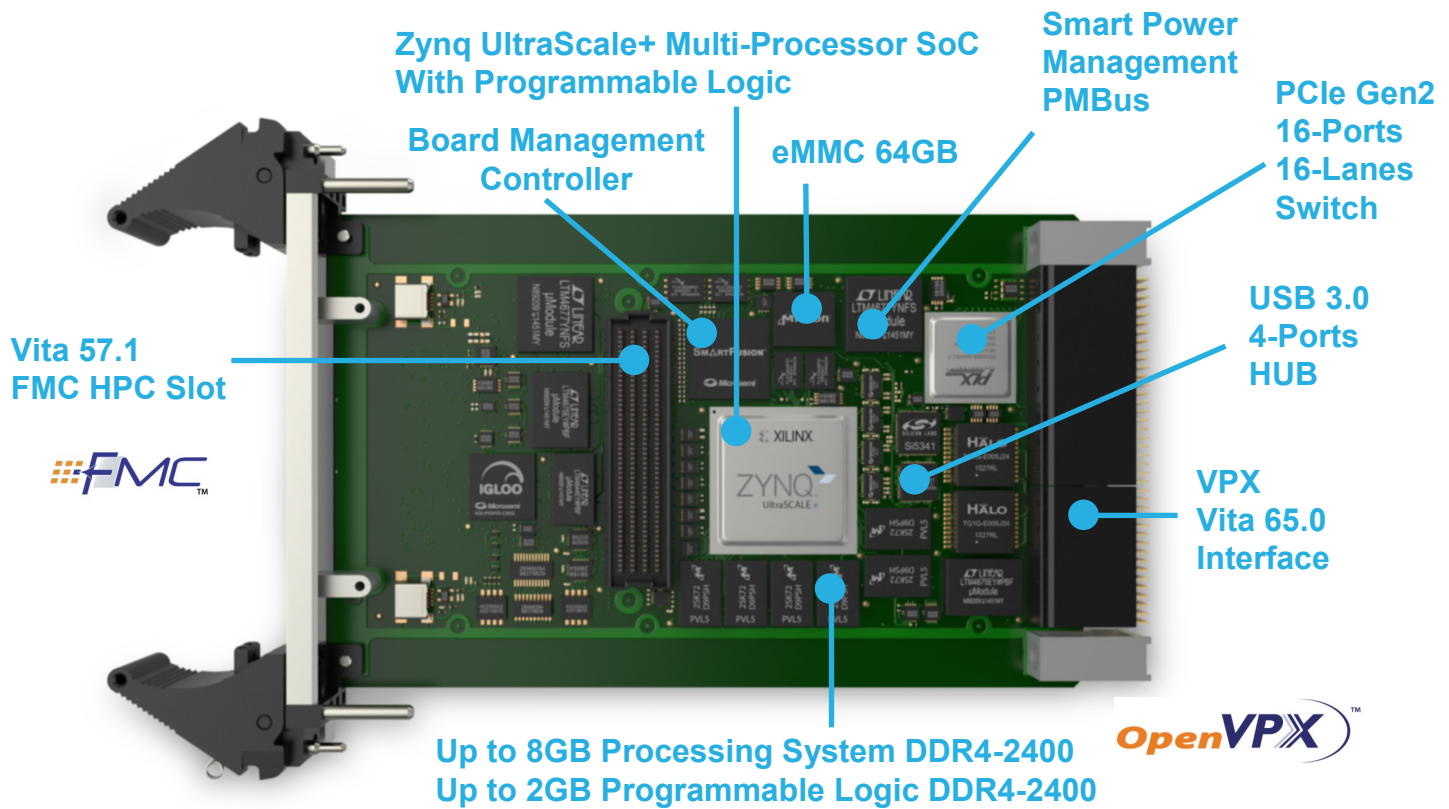
Desktop Chassis

- 4U Compact Desktop Chassis
- AC/DC Input PSU 250W, Air Cooled
- 5-Slots VPX Vita 46.0 Full-Mesh backplane.
- 0.8 Inch Slot Pitch
- Support Rear I/O Through RTMs on each Slots
- For other options, please contact us

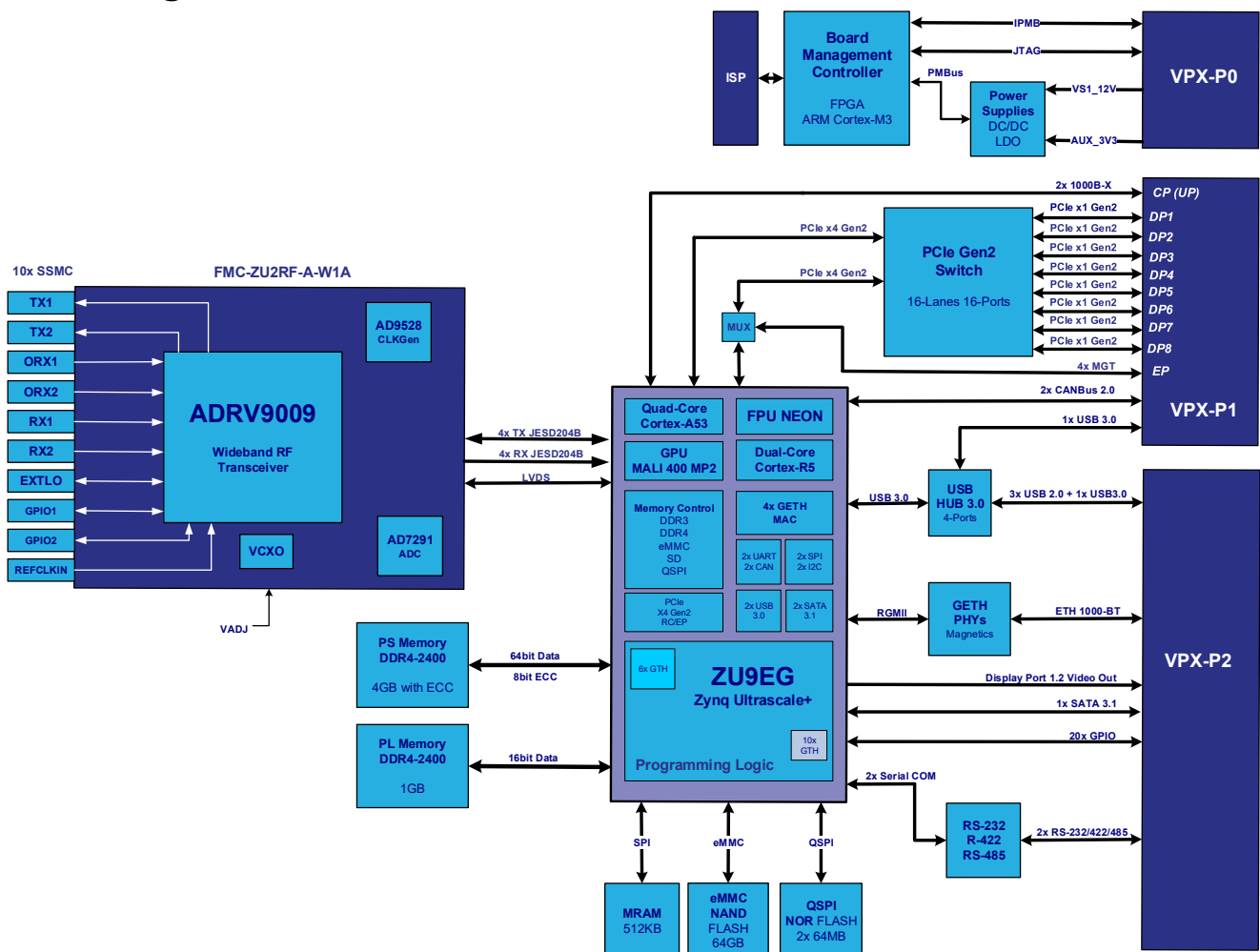
Software & VHDL Support

- PetaLinux BSP
- PanaTeQ FPGA Design Kit (PAN-FDK)





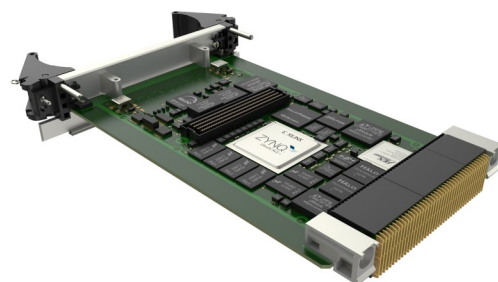
Bloc Diagram



System Specifications

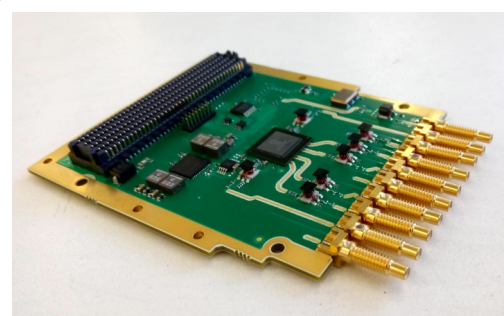
VPX3-ZU1-B1M-AS

- VITA 46.0 65.0 VPX/OpenVPX specifications compliant
- Xilinx Zynq Ultrascale+ ZU9G, FFVC900, Speed Grade -1
- 4GB PS DDR4-2400 memory 64-bit, 8-bit ECC
- 1GB PL DDR4-2400 memory 16-bit, no ECC
- 64GB eMMC managed NAND Flash
- 1x1000BASE-T, 2x RS-232/422/485, 2x USB 2.0, 2x USB 3.0 on VPX
- 1x SATA 3.1, 2x CAN 2.0B, 2x RS-232/422/485 on VPX
- 1x Display Port 1.2 Video Out on VPX
- VITA 57.1 FMC HPC site, 10x MGT, 45 Diff Pairs (LA[33:0] + HA[10:0])
- Board Management Controller (BMC) Interface VITA 46.11 Ready



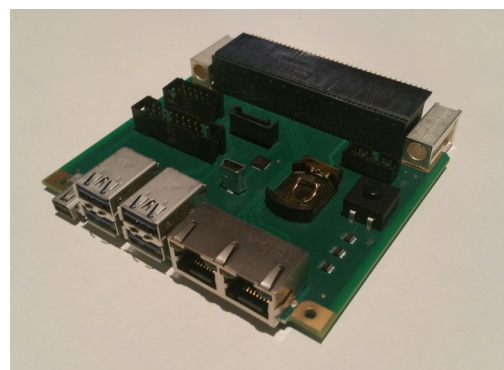
FMC-ZU2RF-A-W1A-AS

- FMC HPC based on ADRV9009 Wideband RF Transceiver from Analog Device Inc.
- Fully ADRV9009 evaluation board HW/SW compatible
- Dual Transmitters (Tx), Dual Receivers (Rx)
- Observation Receiver (ORx) with 2 inputs
- RF Ext LO Input/Output
- Reference Clock Input
- Dual GPIO (3.3V) In and Out to/from FMC connector
- RF Coverage 75MHz to 6.0 GHz
- Tx Synthesis Bandwidth (BW) to 450MHz
- Rx Bandwidth: Up to 200MHz
- On-board VCXO : 122.88 MHz (For other values, please contact us)



RTM-ZU1

- 1x 100/1000BaseT RJ-45 with Link Activity Leds Rear Panel connectors
- 1x mini Display Rear-Panel connector
- 4x USB 3.0/ 2.0 Type-A dual-stacked Rear-Panel connectors
- 1x SATA 3.1 vertical on-board connector
- 2x CANBus 2.0B pin-header on-board connector
- 20x GPIO 3M flat-cable on-board connector
- 2x RS-232/422/485 pin-header on-board connector



Desktop Chassis

- Mechanical: W=180mm, H= 4U, D= 275mm
- Cooling: Air Cooled
- 5-Slots Vita 46.0 Full-Mesh 0.8 inch pitch backplane
- RTM support, 250W PSU, Air Cooled
- For other VITA 65.0 Backplane profile and PSU, please contact us

Software & VHDL

- PetaLinux BSP
- PanaTeQ FPGA Design Kit (PAN-FDK)

Cables

- Video mini DisplayPort to standard HDMI adaptator, SATA, USB
- Digilent JTAG-HS3 Programming cable



Product Codification

The VPX3-ZU1 can be assembled with different versions of the Zynq Ultrascale+ devices and various amounts of memory storage. The cooling technique et ruggedization level are also available options. The following table shows the product coding for all these options.

VPX3-ZU1-SDR-C-A 1 M-AS

	Device	ARM A53 Cores	GPU	System Logic Cells	DSP Slices	Memory
A	XCZU6EG	4	Yes	469K	1973	25.1 Mb
B	XCZU9EG	4	Yes	600K	2530	32 Mb
C	XCZU15EG	4	Yes	747K	3528	57.7 Mb
D	XCZU6CG	2	No	469K	1973	25.1 Mb
E	XCZU9CG	2	No	600K	2530	32 Mb

	Device Speed Grade
1	Slowest
2	Mid
3	Fastest

	PS / PL Memory Size
N	2GB/512MB
M	4GB/1GB
P	8GB/2GB

	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	Speed Grade	Memory PS/PL	Ruggedization Level
VPX3-ZU1-SDR-C-A1N-AS	ZU6EG	-1	2GB/512MB	Standard Air Cooled
VPX3-ZU1-SDR-C-A1N-CC	ZU6EG	-1	2GB/512MB	Conduction Cooled
VPX3-ZU1-SDR-C-A1M-AS	ZU6EG	-1	4GB/1GB	Standard Air Cooled
VPX3-ZU1-SDR-C-A1M-CC	ZU6EG	-1	4GB/1GB	Conduction Cooled
VPX3-ZU1-SDR-C-B1N-AS	ZU9EG	-1	2GB/512MB	Standard Air Cooled
VPX3-ZU1-SDR-C-B1N-CC	ZU9EG	-1	2GB/512MB	Conduction Cooled
VPX3-ZU1-SDR-C-B1M-AS	ZU9EG	-1	4GB/1GB	Standard, Air Cooled
VPX3-ZU1-SDR-C-B1M-CC	ZU9EG	-1	4GB/1GB	Conduction Cooled
VPX3-ZU1-SDR-C-C1N-AS	ZU15EG	-1	2GB/512MB	Standard, Air Cooled
VPX3-ZU1-SDR-C-C1N-CC	ZU15EG	-1	2GB/512MB	Conduction Cooled
VPX3-ZU1-SDR-C-C1M-AS	ZU15EG	-1	4GB/1GB	Standard, Air Cooled
VPX3-ZU1-SDR-C-C1M-CC	ZU15EG	-1	4GB/1GB	Conduction Cooled