



### Applications

- RF Signal Sampling/Generation
- Radar
- Beamforming
- MIMO (5G) communications Tx and Rx
- Signal Detection/Jamming

### Summary

The ADA-VPX3-9R1 is a high performance System On Module (SOM) based on the Xilinx Zynq Ultrascale+ RFSoc, which combines FPGA Fabric, ADC and DAC interfaces and ARM CPU cores in a single low-power device.

The assembly is provided in rugged VPX 3U format and is available in Industrial temperature grades with Air- or Conduction Cooling.

### Board Features

- On-board microcontroller accessible via USB

### Target Devices

Xilinx Zynq Ultrascale+  
XCZU27DR-2, XCZU28DR-2, XCZU47DR-2,  
XCZU48DR-2 (FFVE1156 or FSVE1156)

### FPGA Specification

Logic Cells = 930k DSPs = 4272  
BRAM = 38Mb(38Mb) URAM = 22.5Mb  
(22.5Mb)

- 4x ARM® Cortex™-A53 MPCore™ - 1.5GHz
- 2x ARM® Cortex™-R5 MPCore™ - 533MHz
- 8x 12 bit 4/5 GSPS RF-ADC
- 8x 14 bit 6.5/10 GSPS RF\_DAC
- 8x SD-FEC cores (ZU28/ZU48 only)
- 1x PCIe Gen3x8 in Fabric
- 1x PCIe Gen2x4 to ARM PS

### Application Data Memory

- 1x 16Gb DDR4 - 32bits wide (to PS)
- 2x 8Gb DDR4 - 8bits wide (to PL)
- 1x microSD

### Configuration Memory

QSPI 2x512Mb Flash Memory

### Configuration Modes

PS - Configured via QSPI or uSD

### Deliverables

ADA-VPX3-9R1 Board  
One Year Warranty  
One Year Technical Support

### Host Interface

- PS - PCI Express Gen2 x4 (P5)
- PL - PCI Express Gen3 x8 or 10 Gigabit Ethernet (P6)

### Input/Output Interfaces

#### High-Frequency Analogue Inputs

12-bit 4/5GSPS RF-ADC

Resolution: 14-bit  
Max Sample Freq: 4/5Gsp  
Connector: CMM Micro connectors

#### High-Frequency Analogue Outputs

14-bit 6.5/10GSPS RF-DAC

Resolution: 14-bit  
Max Sample Freq: 6.5/10Gsp  
Connector: CMM Micro connectors

#### Low-Speed Digital IO

GPIO (19 single ended or 5 differential pairs and 9 single ended)

#### High-Speed Serial IO

1 Gigabit Ethernet

#### Low-Speed Serial IO

USB Interfaces  
Serial Comms Ports

#### High-Speed Serial IO

HSSIO Links - 10G Ethernet or PCI Express Gen3 x8

#### Onboard USB Comms

USB Interface

**Support**

ARM centric Targeted Reference Design and Board Support Package  
Gen3x8 example PCIe reference design (via P6) compatible with the  
ADXDMA driver and API for Windows and Linux.

**Board Format**

3U VPX (OpenVPX Compliant)

**Environmental Specification**

Cooling Option	Operating Temperatures		Storage Temperatures	
	Min	Max	Min	Max
AC1	-40°C	70°C	-55°C	100°C
CC1	-40°C	70°C	-55°C	100°C

Operating Humidity : Up to 95% (non-condensing)

**EMC Standards**

FCC 47CFR Part 2  
EN55022:2010 Equipment ClassB

**Conformal Coating Options**

Acrylic or Polyurethane  
Contact sales for specification of coatings.

**Ordering Information**

**Order Code: ADA-VPX3-9R1(d)(c)(a)**

Option	Code	Description of Options
Device	d	/Z27 = XCZU27DR-2, /Z28 = XCZU28DR-2, /Z47 = XCZU47DR-2, /Z48 = XCZU48DR-2
Cooling	c	/AC1 = air cooled industrial, /CC1 = conduction cooled industrial
Conformal Coating	a	blank = no conformal coating, A = Acrylic, P = Polyurethane

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