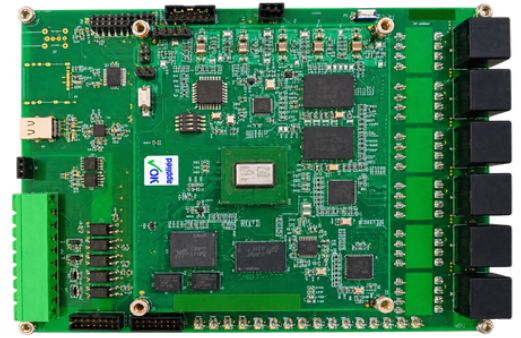


## VL-ZYNQ-ULTRA

# Zynq UltraScale+ MPSoC with Carrier Development Board



## FEATURES

- Powered by ARM® Quad-Core Cortex™A53 MP Core
- Based on Xilinx's high-end Zynq MpSoC Series All-Programmable SoC
- Support Zynq devices ZU1, ZU2, ZU3 CG / EG series 484 Pin package devices
- 95 mm x 75 mm board size Compact form factor
- Available in Production ready with industrial temperature range
- Linux BSP, tool chain and 24x7 Technical Support
- Combines Flexibility of SBC with the FPGA configurability
- Industrial Grade, Rugged platform to optimize overall BOM cost
- On module required power supplies for efficient power management.
- Linux board support package along with Root file system enables seamless integration
- Customized Carrier boards for instant board bring-up and quick prototyping

## SPECIFICATIONS

### SYSTEM-ON-MODULE — Zynq MpSoC Series



#### Processor

- EG - Quad-core Arm Cortex-A53 MPCore up to 1.5GHz and Dual-core ARM Cortex-R5 MPCore up to 600MHz
- Enhanced NEON Extension and Single & double precision FPU

- CG -Dual-core Arm® Cortex®-A53 MPCore™ up to 1.3GHz and Dual-core Arm Cortex-R5F MPCore up to 533MHz
- 64KB Unified L2 Cache
- 32KB Instruction and Data L1 cache
- 256KB On-chip Memory for application core

#### Memory

- 4 / 8GB LPDDR4 Support
- 16Gb/32Gb eMMC
- 16MB/32MB QSPI support

#### FPGA

- Xilinx ZynqMP Advanced low power FPGA fabric
- Up to 154K Logic Cells (approximately 141K Flops)
- Upto 360 programmable DSP slices

#### Power Supply

- 12V
- 7W (Max)

#### Power supply sequencer

- ATMEGA328P Power supply sequencing & monitoring

#### Boot Support

- JATG / QSPI / uSD/eMMC

#### Ethernet - 4 Nos

- 2 x 1Gbps VSC8211 Optical Ethernet Modules
- 4 x 10/100/1000 BASE-T KSZ9031 Ethernet module

#### USB

- 1 x USB 2.0 OTG

#### Display

- Through LVDS Interface / Display Port

#### Additional Interfaces

- CAN 2.0 / UART (Optional on IOs assignments )
- 170 FPGA IO's
- Analog Inputs (Multiplex and Shared)

#### MicroSD

- 1 x MicroSD support upto 32GB

#### Form Factor

- 90 mm x 70 mm
- 2 x 100 Pin High Speed Connectors

#### Software Support

- Linux, BSP

#### On Board Unique Encryption ID support

**On Board RTC, Battery Support on Carrier Card**  
**On Board Unique MAC ID support**

## SiEN - Carrier Card

### Key Specs

- User GPIO Monochrome LEDs
- On board RS485 interface
- On Board isolated 2 x DI and 2 x DO
- On Board RTC, Battery
- On Board additional GPIO interface
- On Board Unique MAC ID support
- On board 4 x RJ45 & 2 x SFP Connector
- On-board JTAG and UART debug interface
- User Slide Switch and Push Button I/O

### Additional Interfaces

- CAN 2.0 / UART (Optional on IOs assignments )
- 170 FPGA IO's
- Analog Inputs (Multiplex and Shared)

### Power Supply

- 5V

### USB

- 1 x USB 2.0 OTG

### Ethernet - 4 Nos

- 2 x SFP Optical Ethernet Connector
- 4 x RJ45 Copper Connector

### MicroSD

- 1 x MicroSD support upto 32GB

### Display

- Through LVDS Interface / Display Port

### Serial

- 1 x UART, 1 x I2C, 1X CAN2.0

### Form Factor

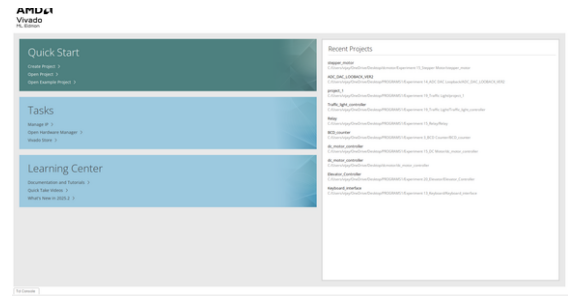
- 1600 mm x 125 mm
- 2 x 100 Pin High Speed Connectors

## SOFTWARE

- AMD Vivado Design Suite and the AMD Vitis Software Platform are powerful tools made by AMD (formerly Xilinx) for designing systems on FPGAs (Field Programmable Gate Arrays) and adaptive SoCs (System on Chips).

### AMD Vivado

- Hardware-centric design:
- Core tasks: Handles design entry (writing Verilog, VHDL, or block diagrams),
- Output: Generates the hardware bitstream file,
- Design Entry: Write hardware code using VHDL or Verilog, or use visual block diagrams via the IP Integrator.



### AMD Vitis

- **Software-centric design:** Used for writing the software that runs on the processors (like Arm cores) inside your SoC or managing high-level synthesis (HLS).
- **Core tasks:** Developing bare-metal/standalone drivers, Free RTOS, or embedded Linux applications.
- **Integration:** You import the XSA file exported from Vivado into Vitis to let the software environment know what hardware peripherals and memory maps are available.
- Testing codes provided for the board involves testing codes, testbenches with verifying pin functionality, and checking the peripheral communication.

