

Cheetah VNX+

Development Platform

VITA 90 FPGA Card Module



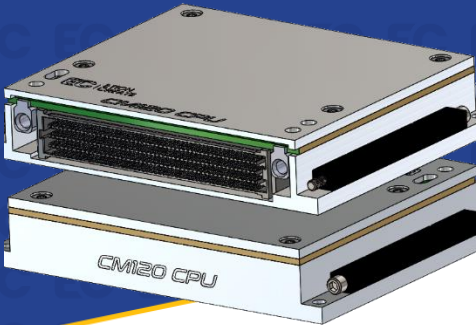
FPGA Card Overview

The **VNX+ Development Platform FPGA Card** is the routing and processing engine of the VITA-90 VNX+ Router Module, built around an Intel/Altera Agilex 5E System-on-Chip FPGA with an integrated Hard Processor System (HPS) and Secure Device Manager (SDM). The card hosts dual-channel LPDDR4 SDRAM, Active-Serial configuration flash and HPS eMMC storage.

A single high-density backplane connector carries up to 19 SGMII lanes, USB 3.0 SuperSpeed, three USB 2.0 ports and IEEE 1588 PTP timestamping between the FPGA Card and the rest of the router. The card mates directly to the FPGA Base Card to form the complete Router Module.

Key Specifications

Parameter	Specification
FPGA	Intel/Altera Agilex 5E SoC (HPS + SDM + multi-bank transceivers)
Configuration & Memory	Active-Serial NOR flash + HPS eMMC + dual-channel LPDDR4 SDRAM
Ethernet Lanes	Up to 19x SGMII SERDES lanes to backplane
USB & Timing	1x USB 3.0 SuperSpeed, 3x USB 2.0, IEEE 1588 PTP TX/RX
On-Card Power Rails	0.75 V / 1.0 V / 1.1 V / 1.2 V / 1.8 V / 3.3 V, sequenced with PGOOD/EN
Backplane Connector	High-density VITA-90 connector (220 positions per side)



Cheetah FPGA Card provides the Agilex 5E SoC FPGA routing and processing engine at the heart of the VNX+ Development Platform.

Key Features

- Intel/Altera Agilex 5E SoC FPGA with integrated Hard Processor System (HPS)
- Secure Device Manager (SDM) with Active-Serial configuration flash boot
- Dual-channel LPDDR4 SDRAM
- HPS eMMC embedded flash storage
- Up to 19 SGMII SERDES lanes to the backplane
- USB 3.0 SuperSpeed plus three USB 2.0 ports (4-port hub, dual ULPI PHY)
- IEEE 1588 PTP timestamping (TX/RX lanes)
- On-board clock generation and jitter attenuation
- Six sequenced, monitored on-card power rails (0.75 V - 3.3 V)
- Three-zone thermal monitoring
- Identification EEPROM (E-Label)

Standards Compliance

- VITA-90 VNX+ (module interface)
- IEEE 1588 (PTP timestamping)
- MIL-STD-810G (environmental)
- MIL-STD-461F (EMC)

Management Interface

- SMA I2C bus for board monitoring and identification
- Dedicated I2C bus for temperature sensors and E-Label EEPROM
- HPS and SDM JTAG debug chains
- HPS UART0 debug console