iG-G58V®

Agilex™ 5 SOSA-aligned 3U VPX Plug-in Module (Payload Profile)

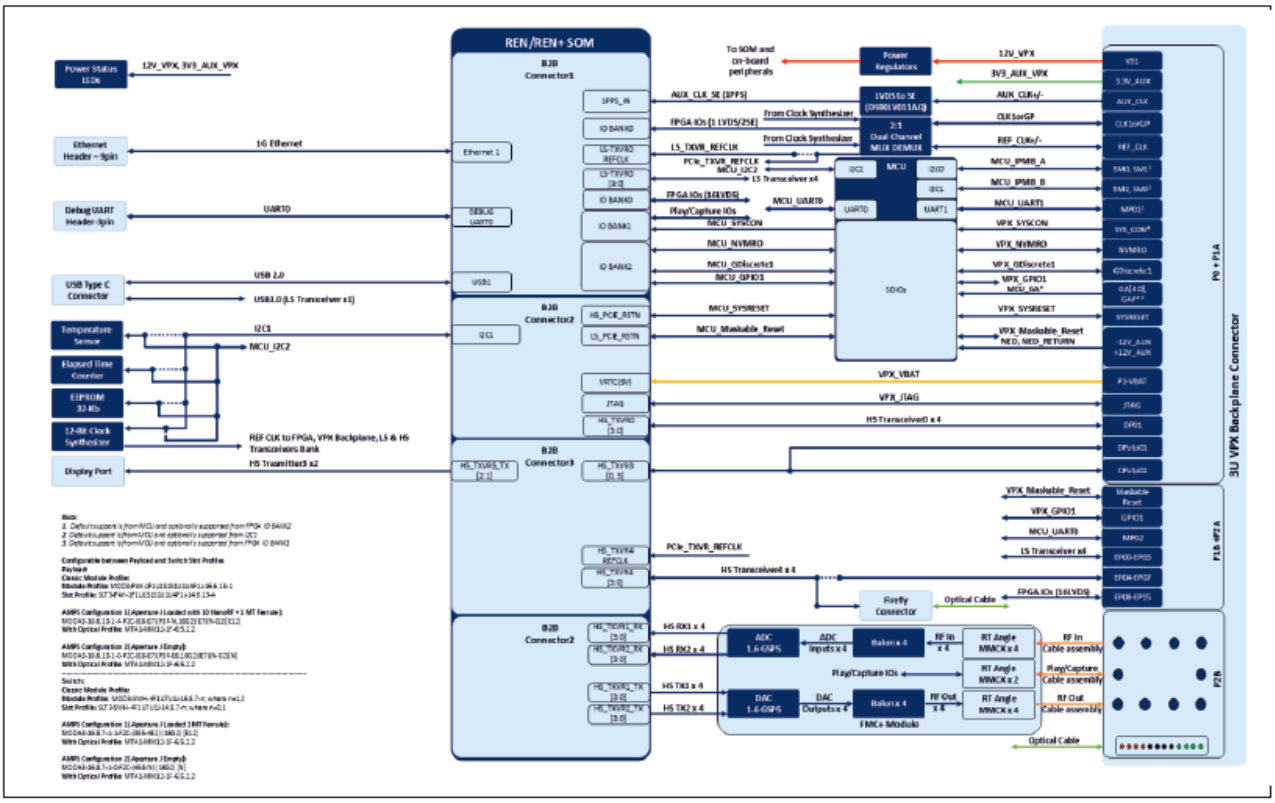
iWave's Agilex™ 5 SOSA-aligned 3U VPX plug-in module is a high-performance FPGA-based computing platform designed for next-generation aerospace, defense, and mission-critical applications. Built on a standardized 3U VPX form factor and aligned with SOSA architecture, it enables seamless interoperability, scalability, and faster system integration.

The module combines advanced FPGA processing with high-speed interfaces and rugged design, making it ideal for demanding workloads such as radar, electronic warfare, and real-time signal processing. Its modular architecture and support for open standards help reduce development complexity while ensuring long-term system flexibility and deployment readiness.

Highlights

- Agilex 5 E-Series SoC FPGA with Compatible – Agilex A5E 065A, A5E 052A, A5E 043A, A5E 028A, A5E 013A, A5E 065B, A5E 052B, A5E 043B, A5E 028B, A5E 013B, A5E 008B
- Up to 656k Logic cells
- Supports 40GBASE-KR4/10GBASE-KR/PCIe Gen 3/GPLVDS
- MT Ferrule Connector for Optical Transceiver
- ADC x4 & DAC x4 with sampling rate up to 1.6GSPS

Block Diagram



Technical Specifications

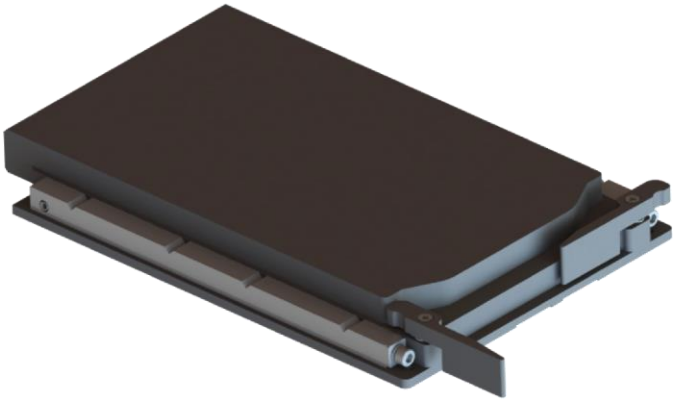
SoC	• Agilex 5 E-Series SoC FPGA • Up to 656k Logic elements • Dual core 64-bit Arm Cortex-A76 up to 1.8 GHz • Dual core 64-bit Arm Cortex-A55 up to 1.5 GHz
Memory & Storage	• 2GB LPDDR4 with ECC for HPS • 2 x 2GB LPDDR4 with ECC for FPGA • 32GB eMMC (Exp. up to 128GB) • 1Gb QSPI Flash (Exp. up to 2Gb)
IPMC	• Arm® 32-bit Cortex®-M0+ CPU up to 80 MHz • On chip 64KB of flash and 4KB of SRAM • One 12-bit 1.68-MSPS analog-to-digital converter (ADC)
VPX Front Panel features	• Gigabit Ethernet Header • USB 2.0 & 3.0 through USB Type-C Connector • 3-pin Debug UART Header • Display Port • ADC x4 & DAC x4; Sampling rate up to 1.6GSPS

VPX On board features	• On Board Clock Generators • Temperature Sensor x1 • Elapse Counter x1 • EEPROM x1
3U VPX Backplane: Connector – P0	Utility Plane • System Control Signals (GA[0:4], P, SYSRESET, NVMRO) • System Reference Clocks (REF_CLK, AUX_CLK) • IPMB-A, B & JTAG • Power Input (12V VDC, 3.3V_AUX)
3U VPX Backplane: Connector – P1A +P1B	Data Plane Port-01 • DP01[3:0] – 40GBASE-KR4 Data Plane Port • DPutp01 – 10GBASE-KR Control Plane Port • CPutp01 – 10GBASE-KR Expansion Plane Port • EP[0:3] – PCIe Gen3 • EP[4:7] – 40GBASE-KR4 System Control Signals Maintenance Port MP01 & MP02 Power Input
3U VPX Backplane: Connector – P2A	MT Ferrule Module – MM12F – 12 Fibre ports, NanoRF -10

Profile Specification	• Profile: SLT3-PAY-1F1U1S1S1U1U4F1J-14.6.13-4 • Profile: SLT3-PAY-1F1U1S1S1U1U4F1J-14.6.13-0 • MODA3p-16.6.13-1-4-F2C-(E8-E7) (P3F – N, 16G2) (E7) (N-G2) [E12]

General Specification	Slot Pitch: 1 inch Conduction Cooled BSP Support: Linux Form Factor: 160mm X 100mm Environment Specification: RoHS & REACH Compliant

Thermal & Mechanical



Thermal Solutions

For any highly integrated FPGA VPX Plug-in Module, thermal design is a very important factor. iWave supports a VITA 48.2 compliant 3U Conduction Cooled Heat Spreader.

Applications

- **Industrial**

The Altera Agilex 5 is used in industrial applications like robotics, edge computing, Motor drive, computer numerical control (CNC) and machine vision and AI.

- **Video and Vision**

Video and Vision Processing provides robust capabilities for AI-driven computer vision, low-latency video analytics, and real-time object detection making it ideal for edge computing, automotive and industrial applications that require high-quality video and vision processing.

- **Military and Secure Communication**

Altera Agilex 5 FPGAs facilitate advanced military communication systems by enabling waveform adaptability, software updates, enable modular communication system for voice and data, efficient in multi waveforms and channels processing and energy-efficient radios.

- **Wireless**

Altera Agilex 5 FPGAs power advanced wireless systems by enabling efficient 5G signal processing, flexible waveform adaptability, and low-latency communication for modern networks.

A Global Leader in Embedded Systems Engineering and Solutions

Since 1999, we have pioneered leadership in embedded systems technology, establishing ourselves as a strategic embedded technology partner for advanced solutions. Our comprehensive portfolio encompasses ARM and FPGA System on Modules, COTS FPGA solutions, and ODM solutions which include Telematics, Gateways & HMI Solutions.

Beyond our robust product ecosystem, we provide comprehensive ODM support with specialized custom design and manufacturing capabilities, enabling customers to accelerate and optimize their product development roadmaps. With a strategic focus on industrial, automotive, medical, and avionics markets, we deliver innovative technology solutions to global clients.

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