VPX6U-P5200E-DUAL-SDI-16IO

WOLF ADVANCED TECHNOLOGY

Chip-Down NVIDIA Quadro Pascal GP104, 16 SDI I/O & Analog I/O

KEY FEATURES

- Dual NVIDIA GP104, 17.4 TFLOPS, GPGPU/Inference
- Chip-down WOLF design and fabrication meets military and aerospace specifications
- 3G-SDI: up to 16 inputs and 16 outputs
- Analog: up to 8 analog inputs and/or outputs
- 32 GB GDDR5 memory with NVIDIA GPUDirect™ DMA technology
- Operating power configurable hard cap: 140 – 340W

ADDITIONAL FEATURES

- Up to 4 DisplayPort 1.4 digital video outputs:
  - □ support for High Dynamic Range (HDR) video
  - □ 4K at 120Hz or 5K at 60Hz with 10-bit color depth
- Pascal GPGPU parallel processing:
  - □ 5120 CUDA® cores
  - □ CUDA Toolkit 9, CUDA Compute version 6.1
  - □ OpenCL™ 1.2, DirectX® 12, OpenGL 4.5, Vulkan
- Memory width: 256-bit width to each GPU
- Maximum memory bandwidth: 243 GB/s
- NVENC/NVDEC accelerator for HEVC (H.265) and AVC (H.264) hardware encode/decode
- PCIe x16 Gen3
- Windows and Linux drivers

SPECIFICATIONS

- Manufactured in North America with full component traceability
- Component derating meets or exceeds NASA and Rome Labs specifications for reliability
- High level of ruggedization:
  - □ Rugged air-cooled (AC) or conduction-cooled (CC)
  - □ Operating temperature: -40° to +85°C (CC), -40° to +71°C (AC)
  - □ Vibration (sine wave): 10G peak, 5 - 2000Hz
  - □ Shock: 40g peak 11ms half-sign shock pulses
- Front I/O and Rear I/O configurations
- Supported VPX configurations:
  - □ VPX-REDI (ANSI/VITA 48.x)
  - □ OpenVPX (ANSI/VITA 65)

OVERVIEW

The VPX6U-P5200E-DUAL-SDI-16IO module uses a WOLF chip-down design which includes dual advanced NVIDIA® Quadro® Pascal™ GPUs and WOLF's Frame Grabber eXtreme (FGX). This module accepts up to 16 simultaneous 3G-SDI inputs and CVBS/STANAG inputs. The video data can be routed to the Pascal GPUs for processing or encoding. Video can be output in several formats, including up to 16 3G-SDI, CVBS/STANAG, and optionally to DisplayPort, HDMI or DVI.

These modules are designed and manufactured specifically for use in the harsh environments encountered in military and aerospace applications. They have been designed to pass MIL-STD-810 and DO-160 environmental tests. They have been manufactured to IPC-A-610 CLASS 3 and IPC 6012 CLASS 3 for high reliability electronic products. They are compliant with IPC J-STD-001 soldering standards.
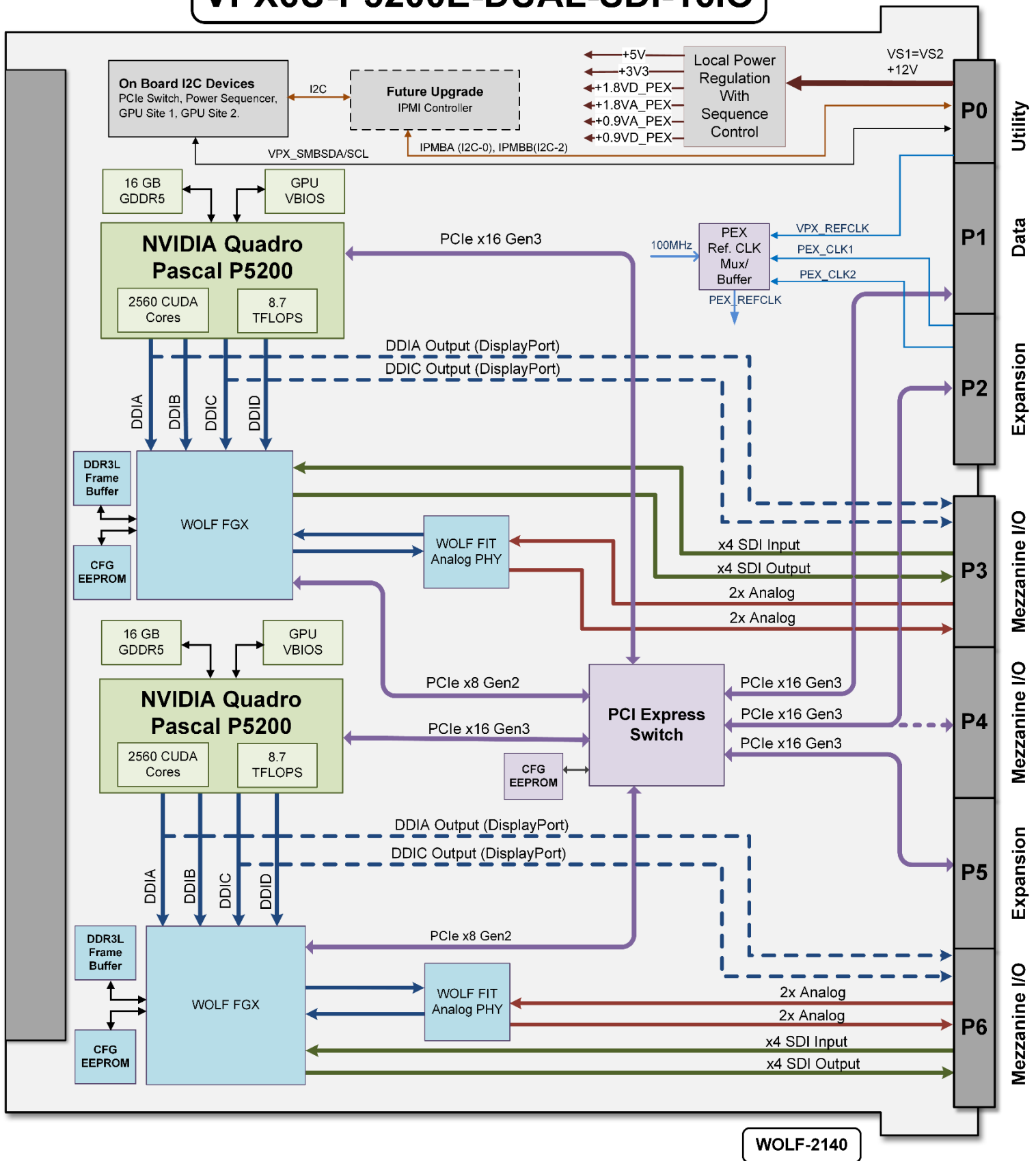
The WOLF Frame Grabber eXtreme (FGX) is the engine that provides video data conversion from one standard to another, with input and output options for cutting-edge digital I/O and legacy analog I/O. The FGX has direct memory access (DMA) to the Quadro Pascal's GPU memory for GPU processing and complex analysis. By including both the versatile FGX and a high performance Quadro Pascal GPU on one board WOLF's I/O and processing solution avoids the data rebroadcast traffic jams that commonly occur with a 2-board solution.

WOLF-2140 Chip-Down VPX Module

WOLF ADVANCED TECHNOLOGY

VPX6U-P5200E-DUAL-SDI-16IO

On Board I2C Devices
PCIe Switch, Power Sequencer, GPU Site 1, GPU Site 2.

I2C

Future Upgrade
IPMI Controller

VPX_SMBSDA/SCL

IPMBA (I2C-0), IPMBB(I2C-2)

+5V
+3V3
+1.8VD_PEX
+1.8VA_PEX
+0.9VA_PEX
+0.9VD_PEX

Local Power Regulation With Sequence Control

VS1=VS2 +12V

P0 — Utility

16 GB GDDR5

GPU VBIOS

NVIDIA Quadro Pascal P5200

2560 CUDA Cores

8.7 TFLOPS

PCIe x16 Gen3

100MHz

PEX Ref. CLK Mux/ Buffer

VPX_REFCLK
PEX_CLK1
PEX_CLK2

PEX_REFCLK

P1 — Data

DDIA Output (DisplayPort)
DDIC Output (DisplayPort)

DDIA DDIB DDIC DDID

P2 — Expansion

DDR3L Frame Buffer

WOLF FGX

CFG EEPROM

WOLF FIT Analog PHY

x4 SDI Input
x4 SDI Output
2x Analog
2x Analog

P3 — Mezzanine I/O

16 GB GDDR5

GPU VBIOS

NVIDIA Quadro Pascal P5200

2560 CUDA Cores

8.7 TFLOPS

PCIe x8 Gen2

PCIe x16 Gen3

PCI Express Switch

CFG EEPROM

PCIe x16 Gen3
PCIe x16 Gen3
PCIe x16 Gen3

P4 — Mezzanine I/O

DDIA Output (DisplayPort)
DDIC Output (DisplayPort)

DDIA DDIB DDIC DDID

PCIe x8 Gen2

P5 — Expansion

DDR3L Frame Buffer

WOLF FGX

CFG EEPROM

WOLF FIT Analog PHY

2x Analog
2x Analog
x4 SDI Input
x4 SDI Output

P6 — Mezzanine I/O

WOLF-2140

WOLF-2140 Chip-Down VPX Module

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ORDERING CODES FOR VPX6U-P5200E-DUAL-SDI-16IO

Part Number	Description
21402x-F.0***VPX6v10	VPX 6U, Air Cooled, Dual NVIDIA Quadro P5200, Chip-Down design, WOLF FGX, SDI, Digital and Analog I/O, PCIE x8 Gen3, Operating Temp -40C to +71C (system dependent)
21403x- F.0***VPX6v10	VPX 3U, Conduction Cooled, Dual NVIDIA Quadro P5200, Chip-Down design, WOLF FGX, SDI, Digital and Analog I/O, PCIE x8 Gen3, Operating Temp -40C to +85C (system dependent)

* Contact Sales for full part number definition.
  Options can include: Conformal Coating, Modified Power Cap, PCIe configuration, Analog I/O config, other

MANUFACTURING AND QUALITY ASSURANCE

WOLF stress tests to MIL-STD-810 (United States Military Standard for Environmental Engineering Considerations and Laboratory Tests) and MIL-HDBK-217 (Reliability Prediction of Electronic Equipment); Alternately will stress test to RTCA DO-160 (Environmental Conditions and Test Procedures for Airborne Equipment) on request.

WOLF products are manufactured to the following quality standards:

- IPC-A-610 CLASS 3 (Acceptability of Electronic Assemblies)
- IPC 6012 CLASS 3 (Qualification and Performance Specification for Rigid Printed Boards, Class 3 for High Reliability Electronic Products)
- IPC J-STD-001 Certified (Requirements for Soldered Electrical and Electronic Assemblies)

WOLF is certified for:

- ISO 9001:2015 (Quality management systems)
- SAE AS9100D (Quality Management System - Requirements for Aviation, Space and Defense Organizations)
- SAE AS5553 (Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition)

WOLF-2140 Chip-Down VPX Module