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Find the *Curtiss-Wright VPX3-4731* at our website: ***Click HERE***

VPX3-4731

NVIDIA Pascal GPU with SDI and Analog Interfaces

CURTISSWRIGHTDS.COM



Key Features

- NVIDIA Pascal P5000 Graphics Engine
  - + 2048 CUDA cores, up to 6.2 TFLOPS
  - + 16 GB GDDR5 256-bit graphics memory
- 4 x simultaneous video outputs selectable from:
  - + 2 x DDI outputs configured as DisplayPort++ for up to 5K resolution
    - › DVI configurations supporting up to 1920x1200 also available
  - + 4 x HD/3G-SDI for 720p and 1080p resolutions
- 6 x Video Capture channels
  - + 4 x HD/3G-SDI for digital captures
  - + 2 x analog composite CVBS inputs
- Hardware codec for H.264/H/265 encode & decode
- 8-lane PCIe Gen3 interface
- Powerful NVIDIA software drivers for Linux and Windows
  - + CUDA, OpenCL, OpenGL, Vulkan

Applications

- High performance video ingest, processing and display
- Video capture, analysis and surveillance
- Ground, naval and aerospace graphics applications

Overview

The VPX3-4731 is a rugged NVIDIA® Quadro® Pascal P5000 based video processing module designed for high-performance video ingest, processing, and display applications.

The 3U VPX module can capture up to six simultaneous video streams from analog and digital sources, and provides up to four simultaneous display outputs to DisplayPort™, DVI, HD/3G-SDI or analog CVBS output interfaces.

NVIDIA Quadro Pascal P5000

The Pascal P5000 GPU provides an enormous leap in processing capability compared to the previous Maxwell generation GPU, with 2048 CUDA® cores offering up to 6.2 TFLOPS of CUDA processing at modest power levels. With 16 GB of high-speed 256-bit GDDR5 memory, the VPX3-4731 is an excellent choice for aerospace and defense applications with high-performance video data processing requirements such as video stabilization, image processing, terrain analysis, object tracking or 3D visualization of geospatial data.

NVIDIA software drivers support Linux® and Windows® applications with OpenGL and Vulkan graphics APIs, as well as CUDA and OpenCL™ to accelerate data processing algorithms. Hardware codecs provide H.264 and H.265 video encode/decode functionality.

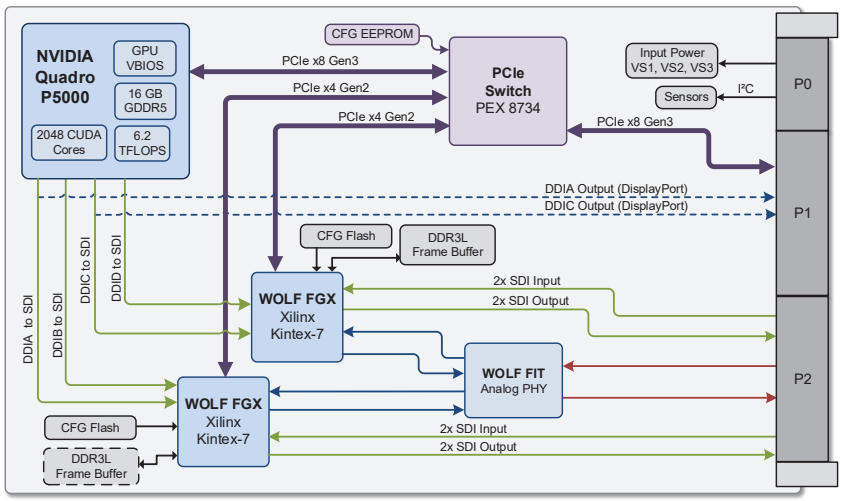


Figure 1: VPX3-4731 block diagram

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Video Interfaces

The VPX3-4731 provides four independent display channels from the Pascal GPU with output formats selectable from the following physical interfaces:

- 2 x DisplayPort++ outputs offering up to 5K resolution, or factory configurable as DVI ports supporting up to 1920x1200 resolution
- 2 x SDI serial digital, supporting HD-SDI for 720p60 or 1080p30, and 3G-SDI for 1080p60 resolution
- 2 x analog composite CVBS for NTSC, PAL or STANAG 3350B/C

Video Capture

Six input channels are offered, supporting analog and digital interfaces. Four digital inputs support 720p and 1080p video signals on HD-SDI and 3G-SDI interfaces. Two analog inputs support composite CVBS for NTSC and PAL capture. FPGA pre-processing and color-space conversion and high-speed DMA interfaces reduce processing overhead required for capture channels.

Ruggedization

The VPX3-4731 is available in air-cooled and conduction-cooled rugged formats.

Features and Specifications

Form Factor

- 3U OpenVPX, supporting MOD3-PAY-2F

Graphics Processor

- NVIDIA Quadro Pascal P5000
  - 2048 CUDA cores, 6.2 TFLOPS
  - 16 GB GDDR5 graphics memory, 256-bit
- Host interface: 8-lane PCI Express® (PCIe) Gen3

Video Outputs

4 x independent simultaneous outputs

- 2 x DisplayPort++ 1.4 supporting up to 4K @ 120 Hz or 5K @ 60 Hz with 10-bit (HDR) color depth
  - Bit rate will depend on signal integrity of the end-to-end interface
  - HBR1 = 2.7 Gbps per lane, max 2560x1440 @ 75 Hz or 3840x2160 @ 30 Hz
  - HBR2 = 5.4 Gbps per lane, max 3840x2160 @ 75 Hz or 5120x2880 @ 30 Hz
  - HBR3 = 8.1 Gbps per lane, max 5120x2880 @ 60 Hz
- 4 x HD/3G-SDI supporting 720p and 1080p resolutions
  - Signals are 100 ohm differential signals. For SMPTE 292/424 interfaces, an external cable driver is required
- 2 x analog composite CVBS supporting NTSC, PAL, and STANAG 3350B/C

Video Capture Inputs

6 x simultaneous capture streams

- 2 x HD/3G-SDI supporting 720p and 1080p resolutions
  - Signals are 100 ohm differential signals. For SMPTE 292/424 interfaces, an external receiver is required
- 2 x analog composite CVBS
  - NTSC, PAL, STANAG 3350B/C

Power

- +5V (Vs3) main power, +3.3V_AUX also required
- Configurable GPU power cap from 50 - 120W
  - Typical: 40-60W
  - Maximum: TBD (preliminary)

Environmental

- Air-cooled L100 temperature range: -40 to +71°C air temp
- Conduction-cooled L100 temperature range: -40 to +71°C card edge
- Other environmental specifications are per WOLF Advanced Technology

Weight

- Air-cooled <TBD>
- Conduction-cooled <TBD>

Software Support

- NVIDIA drivers supporting Linux and Windows
  - OpenGL 2.0 to 4.1 with GLX extensions
  - Vulkan, DirectX graphics
  - CUDA, OpenCL 1.2 compute
  - NVENC/NVDEC accelerator for HEVC (H.265) and AVC (H.264) hardware encode/decode
- Video capture driver from Curtiss-Wright / WOLF supports V4L2 under Linux

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Rear Transition Module

For building systems in the lab environment, Curtiss-Wright provides a Rear Transition Module (RTM) that plugs into the back side of the VPX3-4731's backplane and provides access to most of the board connections on industry standard connectors.

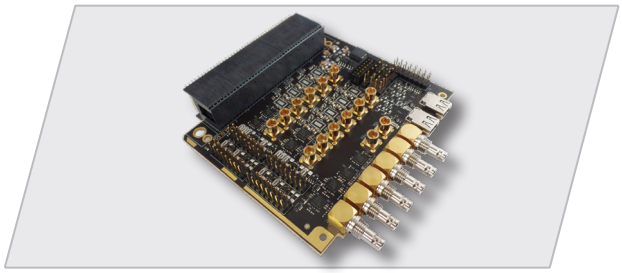


Figure 2: VPX3-4731 RTM

Ordering Information

The following VPX3-4731 models are available:

TABLE 1 Ordering Configurations

PART NUMBER	DESCRIPTION
VPX3-4731-A141-000	3U VPX graphics module with NVIDIA Quadro Pascal P5000 › 2048 CUDA Cores, 16 GB GDDR5, 6.2 TFLOPS › 8-lane PCIe Gen3 with dual FGX K7 Capture › 4 display outputs selectable from 2x DisplayPort++, 4x HD/3G-SDI, 2x analog CVBS › 6 capture inputs: 4x HD/3G-SDI, 2x analog CVBS › Air-cooled, L100 temperature range (-40 to +71°C), Configurable power 50-120W
VPX3-4731-C141-000	3U VPX graphics module with NVIDIA Quadro Pascal P5000 › 2048 CUDA Cores, 16 GB GDDR5, 6.2 TFLOPS › 8-lane PCIe Gen3 with dual FGX K7 Capture › 4 display outputs selectable from 2x DisplayPort++, 4x HD/3G-SDI, 2x analog CVBS › 6 capture inputs: 4x HD/3G-SDI, 2x analog CVBS › Conduction-cooled, L100 temperature range (-40 to +71°C), Configurable power 50-120W
DSW-4731-6000	Linux video capture driver
RTM3-4731-0000	3U VPX Rear Transition Module for VPX3-4731 › Provides access to most board I/O on popular connectors for lab development use only

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