XMC-TK1-FGX

Chip-Down Design

NVIDIA Tegra K1 Video Processing Unit, Includes SDI Input / Output

Preliminary Information

Key Features

- NVIDIA® Tegra® K1 Embedded ARM processor
- Chip-down rugged design, MIL-STD-810
- 2× HD-SDI inputs or 1x 3G-SDI input
- 2× HD-SDI outputs (SMPTE-292M)
- Operating power tunable as low as 20 Watts

Additional Features

- 2× CVBS (NTSC/PAL/SECAM) inputs
- 1× HDMI video output
- APU accelerated H.264 encoding, AAC encoding
- Complex processing with Tegra K1 APU
  - 4 GB DDR3L memory
  - 64 GB eMMC
  - Kepler 192-core GPGPU
  - 325 GFLOPS CUDA and OpenCL programming
- 1× GigE Ethernet
- 3× USB 2.0 interfaces
- 2× UART interfaces
- FGX and Tegra-K1 allows for customer-programmable FPGA options
- Non-Transparent Bridging to PCIe bus
- DMA between module and host system
- Windows and Linux drivers

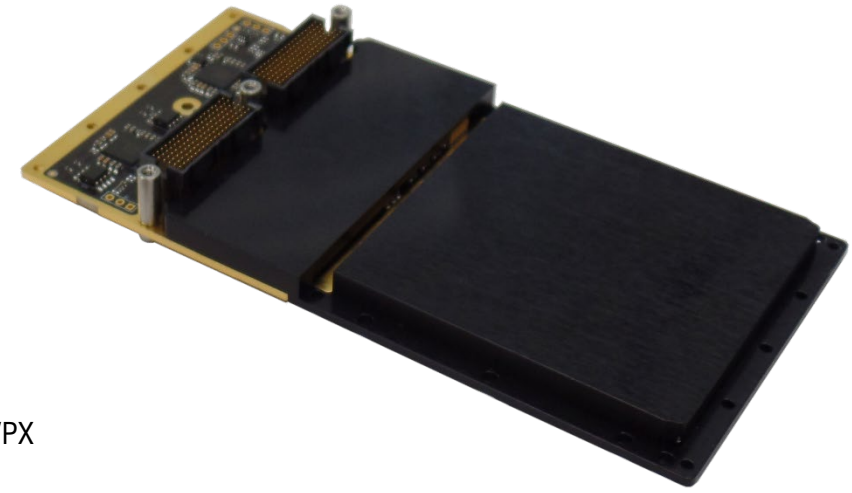
Specifications

- High level of ruggedization:
  - Rugged air-cooled or conduction-cooled
  - Operating temperature: -40° to +85°C
  - Vibration (sine wave): 10G peak, 5 - 2000Hz
  - Shock: 30G peak for air-cooled, 40G peak for conduction-cooled
- VITA 46.9 I/O compliant mapping for 3U and 6U VPX configurations
- Available as XMC 1.0 or XMC 2.0 configurations
- VPWR auto-switching +5V or +12V

Overview

WOLF's XMC-TK1-FGX is an image capture and processing module for aerospace and defense. It includes both an NVIDIA Tegra K1 APU and WOLF's Frame Grabber eXtreme (FGX). The FGX can capture two HD-SDI inputs and two CVBS analog inputs. The video data can be routed to the Tegra K1 for processing and the processed data can be output as HD-SDI, HDMI or an encoded H.264 stream. The WOLF Frame Grabber eXtreme (FGX) provides conversion of video data from one standard to another, with video input and output options for both cutting-edge digital I/O and legacy analog I/O. The FGX uses a Xilinx Artix-7 FPGA to capture video without using the host system.

The XMC-TK1-FGX provides GPU-assisted parallel processing and complex analysis, performing precision intensive operations, such as image processing, video stabilization, filtering, terrain analytics, 3D visualization of geospatial data, object recognition and tracking. By including both the FGX and the Tegra K1 on one board this flexible solution captures and processes images without transferring data between boards, thereby avoiding the SBC data rebroadcast traffic jams that can occur when using a 2-board solution.

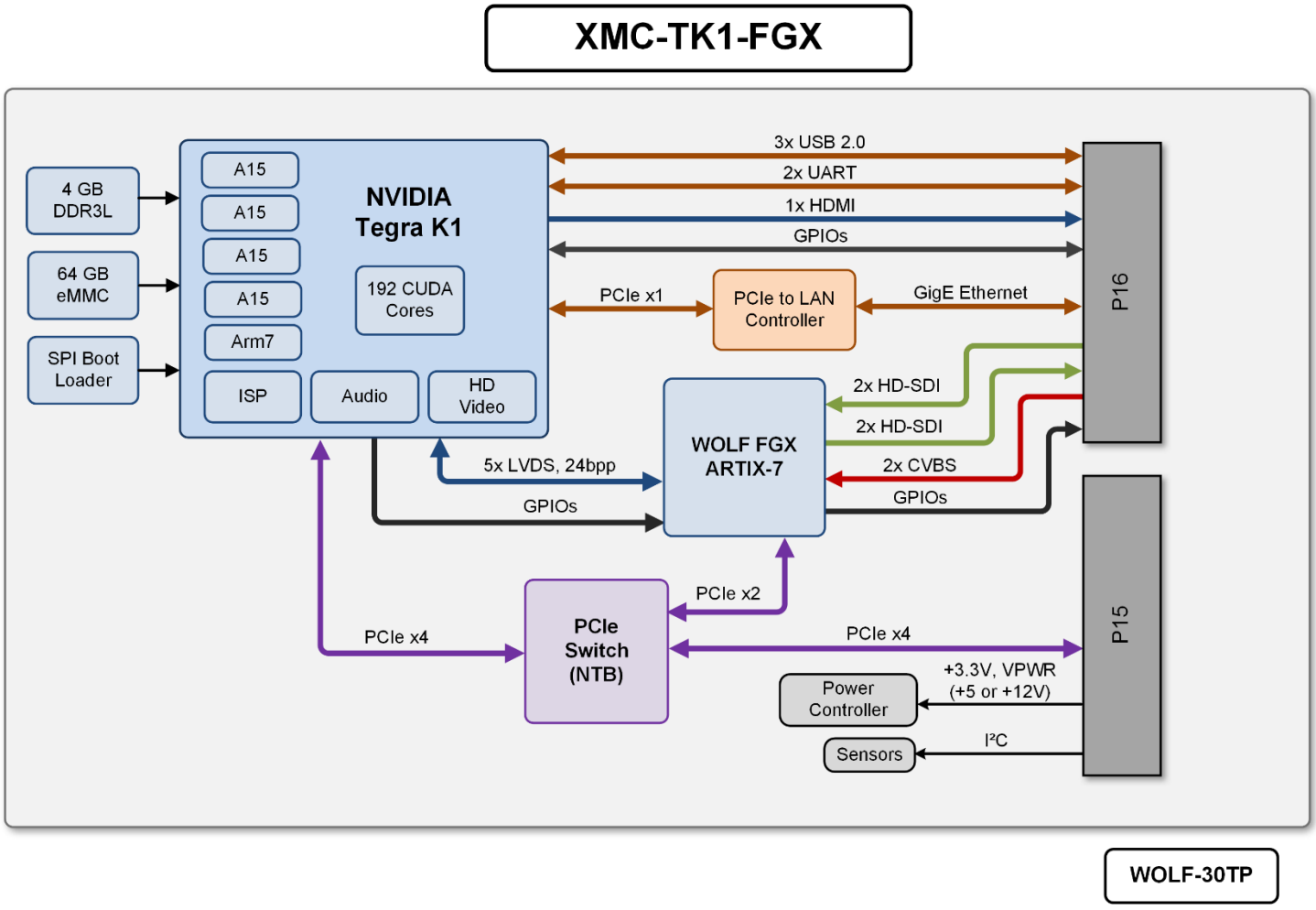


This is preliminary and subject to change.

WOLF- 30TP XMC Module

sales@wolf-at.com | International: +1 (905) 852-1163 | USA Toll-Free: 1 (800) 931-4114

PRELIMINARY INFORMATION



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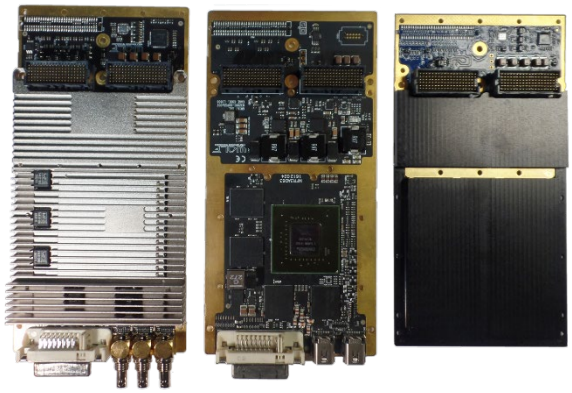
WOLF- 30TP XMC Module

XMC-TK1-FGX

PRELIMINARY INFORMATION

DESIGNED FOR SYSTEM INTEGRATION

The XMC architecture is diverse, spanning custom carrier cards, VPX platforms and differing input / output methodologies. That is precisely why WOLF modules come with factory configuration options to solve virtually all system integration challenges. Typical options include PMC or XMC rear connectors, thermal dissipation threshold, and module coating, to name a few.



This module automatically detects and supports VPWR of +5V or +12V, comes with configurable power control options, and is configurable for ANSI VITA 42 (XMC 1.0) or ANSI VITA 61 (XMC 2.0).

Further options are possible, such as pin mapping changes, PMC rear connector, enhanced cooling technologies and alternate video interfaces.

MANUFACTURING AND QUALITY ASSURANCE

WOLF designs modules to pass the following environmental standards:

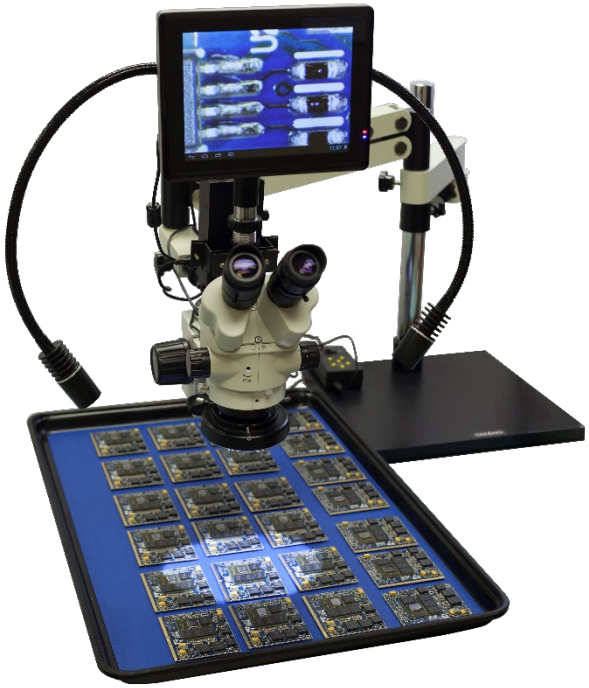
- MIL-STD-810 (United States Military Standard for Environmental Engineering Considerations and Laboratory Tests)
- MIL-HDBK-217 (Reliability Prediction of Electronic Equipment)
- RTCA DO-160 (Environmental Conditions and Test Procedures for Airborne Equipment) on request

WOLF complies with the following quality management systems:

- ISO 9001:2015: Quality management systems (certified)
- SAE AS5553: Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition (compliant)
- SAE AS9100D: Quality Management System - Requirements for Aviation, Space and Defense Organizations (preparing for certification in 2019)

Boards are manufactured to meet the following 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 (Requirements for Soldered Electrical and Electronic Assemblies)



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