VT971

FPGA High speed Digital Signal Processing utilizing Xilinx VU13P with Integrated Layer 3 Managed Switch

VT971

Key Features

- High speed DSP processing
- Xilinx Ultrascale+ VU13P FPGA
- Quad-core ARM processor at 1.4GHz per core
- Managed Layer 3 GbE/10GbE Switch
- 24xGbE + 2x40GbE Egress Ports (or any protocol such as Aurora)
    - The 40GbE could run as 8x 10GbE
- Triaxial, digital gyroscope
- Rugged conduction cooled module

Benefits

- Design utilizes proven VadaTech subcomponents and engineering techniques
- Electrical, mechanical, software, and system-level expertise in house
- Full system supply from industry leader
- AS9100 and ISO9001 certified company

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The VT971 is a rugged conduction cooled module which follows the VITA specification for environmental (see ordering options). The module accepts 32 high-speed SERDES to the FPGA, which is supported by two 64-bit wide banks for DDR4 memory for the total of 16GB of memory. The FPGA is integrated with a Layer 3 Managed Gbe/10GbE Ethernet Switch, which provides 26 Egress port via front of the module. The module supports 24 GbE through RJ-45 (10/100/1000Base-T) and dual 40GbE or any protocol such as Aurora via QSFP+.

The VT971 has a quad core ARM processor utilizing four Cortex-A53 cores running at 1.4GHz. The CPU manages the layer three switch and interfaces to the FPGA via PCIe.

The VT971 is ideal for application where the signals are digitized at a remote location and processed at a different site.

The module has a Triaxial, digital gyroscope, which provides digital accelerometer, delta angle, delta velocity, angular random walk, etc.

The module comes only in conduction cool and operates with input power of 10-36V DC.

Figure 1: VT971 Front View

Chassis Layout

Figure 2: VT971 Multiple Views

Block Diagram

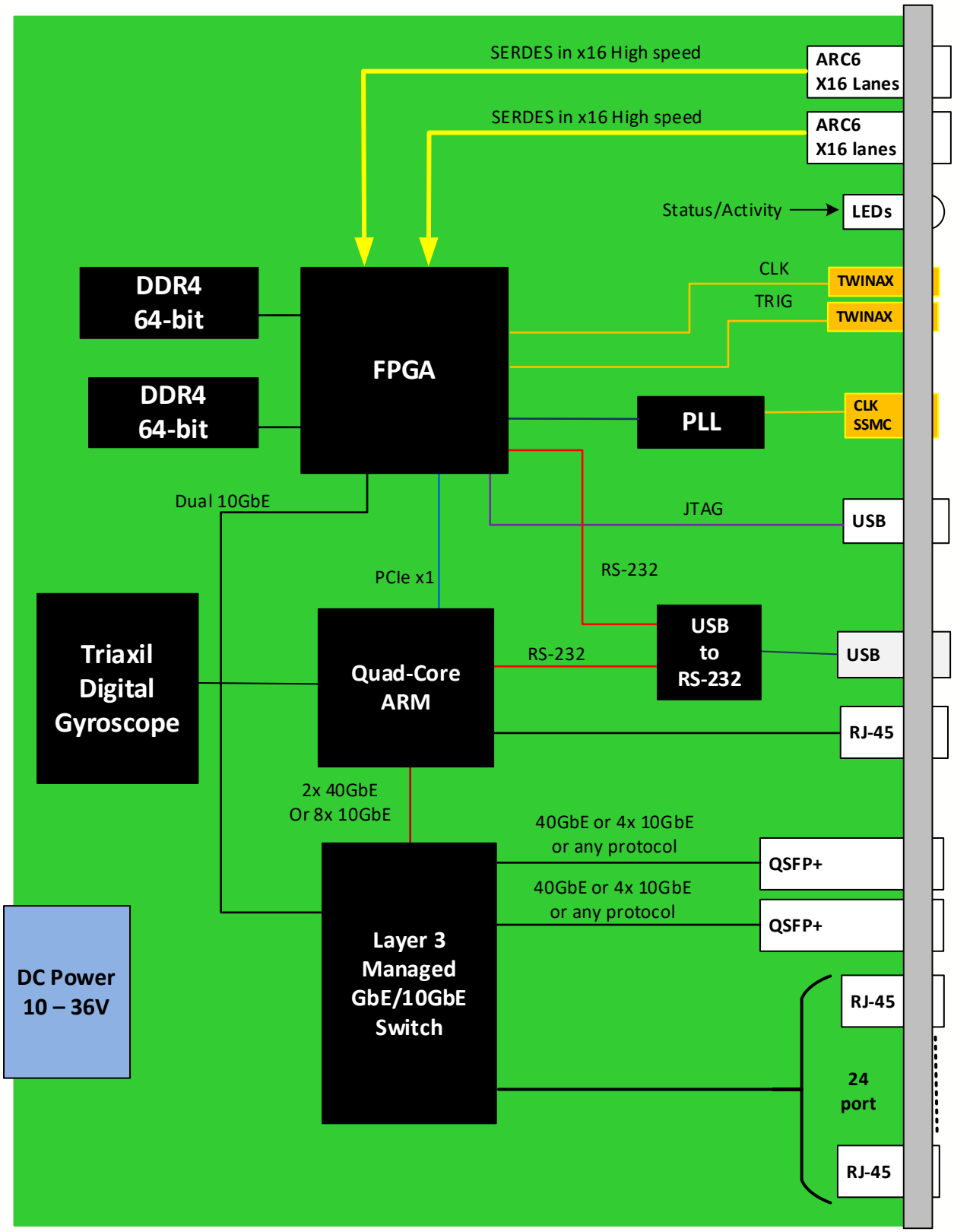

Figure 3: VT971 Functional Block Diagram

Specifications

Architecture		
Physical	**Dimensions**	Width: 18.5”
		Depth: 7.5”
		Height: 1.5”
Type	**Conduction Cooled**	Per VITA Specification for environmental
Configuration		
Power	**VT971**	90W FPGA dependent load (10-36V DC power input)
Environmental	**Temperature**	See Ordering Options
		Storage Temperature: –40° to +90°C
	Vibration	Operating 9.8 m/s^2 (1G), 5 to 500 Hz on each axis
	Shock	Operating 325G/2 ms, 160G/1 ms
	Relative Humidity	5 to 95% non-condensing
Front Panel	**Interface Connectors**	Dual ARC6-16 high-speed serial data
		24x RJ-45 for GbE
		2x QSFP for 40GbE (could run any protocol such as Aurora for low latency)
		RJ-45 for ARM Mngt port
		2x Twinax for clock/trigger inputs and one SSMC for sine wave clock input to the PLL
		USB for Serial and JTAG
	Mechanical	Custom conduction cool
Software Support	**Operating System**	Linux
Other		
MTBF	MIL Hand book 217-F@ TBD hrs	
Certifications	Designed to meet FCC, CE and UL certifications, where applicable	
Standards	VadaTech is certified to both the ISO9001:2015 and AS9100D standards	
Warranty	One (1) year, see VadaTech Terms and Conditions	

INTEGRATION SERVICES AND APPLICATION-READY PLATFORMS

VadaTech has a full ecosystem of OpenVPX, ATCA and MTCA products including chassis platforms, shelf managers, AMC modules, Switch and Payload Boards, Rear Transition Modules (RTMs), Power Modules, and more. The company also offers integration services as well as pre-configured Application-Ready Platforms. Please contact VadaTech Sales for more information.

Ordering Options

VT971 – A0C-000-0HJ

A = QSFP+ TXCVRs (two)		
0 = None 1 = 40G-SR 2 = 40GBASE-LR (1KM) 3 = 40GBASE-LR (10KM) 4 = 40G-CWDM 5 = Reserved		
		H = Environmental
		See Environmental Specification
C = Clock Input for Synchronization		**J = Conformal Coating**
0 = AC coupled up to 250MHz (sinusoidal) 1 = DC coupled for 1PPS or low frequency		0 = No coating 1 = Humiseal 1A33 Polyurethane 2 = Humiseal 1B31 Acrylic

Environmental Specification

			Conduction Cooled		
Option H			**H = 2**	**H = 3**	**H = 4**
Operating Temperature			CC1* (0°C to +55°C)	CC3* (-40°C to +70°C)	CC4* (-40°C to +85°C)
Storage Temperature			C1* (-40°C to +85°C)	C3* (-50°C to +100°C)	C3* (-50°C to +100°C)
Operating Vibration			V3* (0.1 g2/Hz max)	V3* (0.1 g2/Hz max)	V3 (0.1 g2/Hz max)
Storage Vibration			OS2* (40g)	OS2* (40g)	OS2* (40g)
Humidity			95% non-condensing	95% non-condensing	95% non-condensing

Notes:

* Nomenclature per ANSI/VITA 47. Contact local sales office for conduction cooled (H = 2, 3, 4).

Related Products

VT878

- Conduction cooled two-module chassis
- Compact and robust design
- Designed for bulkhead mount in ground or air vehicle

VPX007

- Versatile Layer 2 managed Ethernet switch
- Total of 24 Ports of 10GbE
- Up to eight SFP+ Ports on the front panel

VT988

- 16 ADC for synchronous capture
- Xilinx Virtex-7 XC7VX485T FPGA
- NVidia Jetson TX2 System on Module

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