VPXI Expansion Chassis

2/13/11

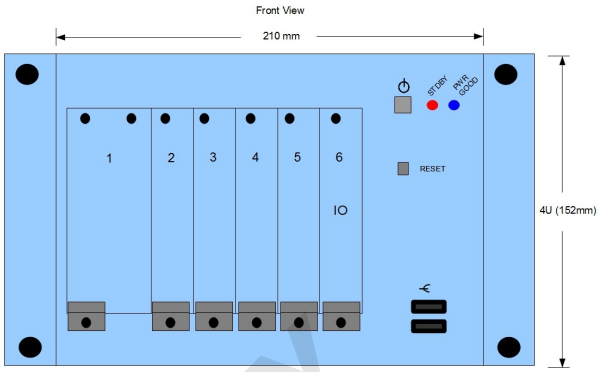
Five Slot 3U OpenVPX Expansion Chassis with x8 Cable PCI Express Host Connection

FEATURES

- VPX for Instrumentation
  - Expansion chassis for VPX using Cabled PCI Express
  - 3U OpenVPX modules
- Six slots total
  - 5 OpenVPX Peripheral Slots
  - IO Slot
- Performance architecture supports multiple data planes and timing/triggering features
  - Centralized control IO plane
  - Centralized data plane
  - Ring topology mesh
  - Timing/triggering features
- Rear Terminal Modules for peripherals
- Half-rack, 4U enclosure
- Forced air cooling with upper and lower fans
- Optional high precision GPS option
- Integrated 500W power supply

APPLICATIONS

- VPX system expansion
- Embedded instrumentation
- Remote IO
- Distributed data acquisition
- Signal Processing Clusters



VPXI System Chassis (Front View)

DESCRIPTION

The VPXI enclosure is a six-slot system for 3U VPX cards that provides a performance architecture for instrumentation, signal processing and embedded computing applications. The VPXI system provides multiple, high performance data planes employing both centralized and ring topologies. Slot 6 provides an IO slot for system IO and is not integrated in the communications planes.

The VPXI Expansion chassis has a x8 Cabled PCI Express connection to the host, supporting >1GB/s sustained data rates with X6 and X5 series cards. The chassis has an integrated PCI Express packet switch that supports 5 slots (x8, x4, x4, x1, x1 lanes, Gen2).

The system also supports private communications between cards using private links constituting two data planes. A centralized data plane to slot 1 is provided with a x1 lane to each slot. The second plane has a ring topology using x2 lane connections so that each slot is connected to all others.

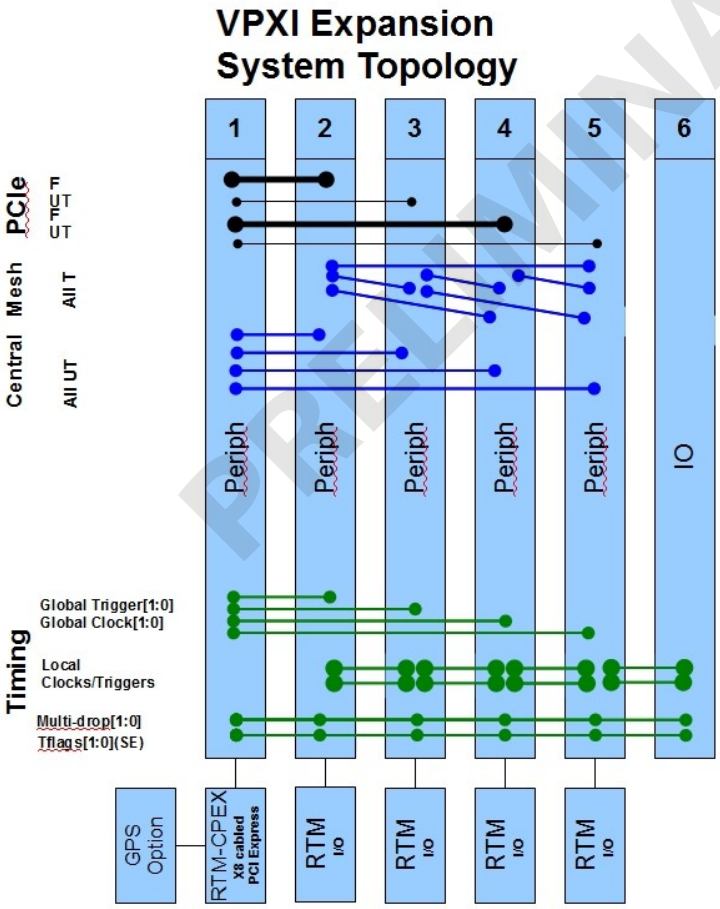
Integrated timing and triggering features support instrumentation and signal processing applications that require low noise, high performance clock and trigger features. Each peripheral slot receives a dedicated clock and trigger input, as well as lower speed coordination signals. These signals are used by VPX-COP, X6 and X3 IO card families and support simultaneous and coordinated sampling.

The VPXI enclosure integrates a 500W power supply. Upper and lower fan assemblies provide forced air cooling for all cards.

VPXI System Expansion Chassis

ORDERING INFORMATION

Product	Part Number	Description
VPXI Expansion Chassis	90277-0	VPXI Expansion System - VPX chassis with Cable PCI Express link, RTM-CPEX rear terminal IO module (80277), 5 peripheral slots, IO slot, backplane, fan assemblies, 500W power supply (32013) (specify locale), no GPS; no VPX IO cards included.
GPS Options		
Precision GPS + antenna	90197-1	GPS receiver module, Trimble Mini-T. Mounts in VPXI Expansion Chassis (90277-0). Includes Trimble 53110-15, 5V Bullet III antenna and interface cable.



Features

VPX VITA 65 5-slot system Expansion
Cabled PCI Express x8 connection to host Controller with 5Payload + HDD/IO
Control Plane: PCIe: Central, 2 x4, 2 x1
Data Plane:
- Central, x1 to all peripherals
- Ring Mesh, x2 connects all peripherals

Timing and Triggers
- Global Triggers – 1 per slot LVDS
- Global Clocks – 1 per slot LVDS
- Local Clock and Trigger per slot LVDS
- Multi-drop – 2 MLVDS pairs to all slots
- Flags – 2 single-ended daisy chain

Individual slot resets
System Reference
- 10MHz Stratum3
- GPS input option

500W ATX power supply

Slot	PCIe	DP	Timing
1	Root 2 UT, F, F	4 UT	Global Clk[3:0] Global Trig[3:0] Local Trig Local Clock
2	F	2 T	Global Clk Global Trig Local Trig Local Clock
3	UT	2 T	Global Clk Global Trig Local Trig Local Clock
4	F	2 T	Global Clk Global Trig Local Trig Local Clock
5	UT	2T	Global Clk Global Trig Local Trig Local Clock
6	SATA ONLY		Local Trig Local Clock

UT = x1 lane
T = x2 lanes
F = x4 lanes

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Standard Features

VPX Slots	
Standards	OpenVPX VITA 65 Slots
Number	5
Card Size	3U VPX
Slot Pitch	Slot 1: 8HP Slots 2-6: 4HP
Power	80W per slot maximum
Rear Terminal Slots	
Standards	OpenVPX VITA 65 Rear Terminal Modules
Number	5
Card Size	3U VPX RTM
Expansion Connection to Host	
Cabled PCI Express	x8 lane (2.5Gbps full duplex) PCIMG PCI Express Cable Specification 1.0
Cable Length	Up to 5 meters
PCI Express Packet Switch	x8 Link to Host x4, x4, x4, x1, x1 to slots, Gen2
Fans	Upper an lower fan assemblies

GPS Option	
Type	12 satellite, parallel tracking
Outputs	PPS, 10 MHz
Phase Noise	-120 dBc @ 10 Hz -135 dBc @ 100 Hz -145 dBc for 1kHz and higher
Accuracy	1.16×10^{-12} (one day average)
Maker	Trimble Electronics, model MINI-T
Interface	Serial interface to FPGA (PCI device peripheral to COM Ex CPU)

Timing and Triggering Support Features	
Sample Clock Sources	PLL, external
PLL Range	0.125-1000 MHz
PLL Reference	10 MHz reference or optional GPS-disciplined clock
Trigger Modes	Software, GPS-synchronized, GPS Time, external input
Trigger Outputs	One per VPX peripheral slot, LVDS
Clock input	Use as sample clock or PLL Reference SMA on RTM
Clock Outputs	One per peripheral slot, LVDS One SMA output on RTM
Peripheral Synchronization	Simultaneously trigger all slots Matched clock and trigger lengths
System Synchronization	Output clock and trigger

Power Supply	
Input	110 to 220V VAC
Total Power	500W

Reliability	
MTBF	75,000 Hours

Physicals	
Dimensions (LxWxH)	4U, ½ rack 9.8 x 8.3 x 6.0 in [250 x 210 x 152 mm]
Weight	TBD
Hazardous Materials	Lead-free and RoHS compliant

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