

VT959

1U MTCA Chassis Platform with 6 AMC Slots



VT959

Key Features

- MicroTCA 1U 19" rackmount chassis platform
- Supports up to six single mid-size modules
- Full Layer 2 or 3 managed Ethernet switch
- Direct slot to slot connection for high speed module to module communication
- Management can run as Shelf/MCMC or MicroTCA Carrier Management Controller (MCMC)
- Removable Fan Tray and Power supply located in the rear of the chassis
- AMC.1, AMC.2, AMC.3 and AMC.4 compliant
- Front to back airflow
- Lightweight aluminum construction

Benefits

- Advanced GPS clocking/receiver options including IEEE 1588, SyncE, and NTP clocking
- Electrical, mechanical, software, and system-level expertise in house
- AS9100 and ISO9001 certified company
- Full system supply from industry leader



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VT959

The VT959 is a 1U chassis used in applications that require direct high-speed communication between the modules. The lightweight aluminum construction provides 6 single module mid-size AMC slots. The unit offers a single removable fan tray and power module from the rear of the chassis.

The front-to-rear cooled chassis utilizes the VadaTech 3rd generation MCH (UTC004) for its shelf manager, crossbar clocking for low jitter, GPS/IEEE1588/SyncE/NTP, etc.

The VT959 allows Ports 12-15 on slots B1/B3 to be routed as LVDS to the front panel or the Ports to be connected to each other as point to point. The LVDS input/outputs signals are accessible through the front panel RJ-45 connectors

Power Supplies

The VT959 offers a single AC or DC power supply that is removable from the rear of the chassis.

Cooling and Temperature Sensors

The VT959 has intelligent Cooling Units that are built into the removable power supply trays. The cooling airflow is from front to back. Temperature sensors throughout the chassis monitor intake and outtake air temperature.

Base/Fabric Channel Ethernet Switch

The VT959 provides a standard GbE base channel switch which includes two 10GbE uplink 100/1000/10G RJ45 Ports. This switch is fully Layer 2 or Layer 3 managed enabling a comprehensive enterprise-grade routing and switching feature set. It supports Synchronous Ethernet (SyncE) and IEEE1588.

Scorpion™ Software

VadaTech's Scorpionware™ software can be used to access information about the current state of the shelf or the carrier, obtain information such as the FRU population, or monitor alarms, power management, current sensor values, and the overall health of the shelf. The software GUI is very powerful, providing a Virtual Carrier and FRU construct for a simple, effective interface.



Figure 1: VT959 Chassis Front View



Figure 2: VT959 Chassis Rear View

Chassis



Figure 3: VT959 Front View



Figure 4: VT959 Rear View

Chassis Layout



Figure 5: VT959 Front Panel

GPS and General-Purpose Clocks

The MTCA specification defines a set of clocks for telecom and non-telecom applications. The VadaTech VT959 has the most sophisticated clocking distribution in the market to meet the most stringent requirements such as wireless infrastructure, high speed A/D, etc. The VT959 supports the following GPS and general-purpose clocking features:

- Low-jitter/low-skew backplane crossbar clock routing matrix for TCLKA(CLK1)/TCLKB(CLK2)/TCLKC/TCLKD for all AMCs
- FCLKA is provided as a 100 MHz HCSL clock
- Clock disciplining with arbitrary clock frequency output and holdover (Stratum-3 option) including 1PPS regeneration and holdover
- Flexible integration and synchronization between GPS, IEEE1588/SyncE, and NTP clocking enabling Grand Master clock functionality
- 'Any Frequency' high-quality clock generation/jitter cleaning for up to two user clocks
- Supports hitless automatic clock failover for improved reliability
- Optional built-in GPS receiver enables direct time/clock synchronization to the GPS satellite constellation.

The VT959 supports flexible front panel clock port ordering options:

- Two DC-coupled LVCMOS Inputs/Outputs, or two AC-coupled Sine-wave Inputs, or one of each
- Built-in GPS receiver for time/location/clock synchronization plus a DC-coupled LVCMOS Input/Output.

GPS Receiver Enabled Features

The VT959 can be ordered with a GPS Receiver option. The receiver disciplines an onboard high-quality DPLL which is phase/frequency aligned to the atomic clocks in the GPS satellite constellation. The onboard clock synthesis/jitter cleaning capability can be utilized to convert this frequency into any frequency desired while still remaining locked to the GPS atomic clocks.

When the GPS Receiver option is purchased the VT959 has the capability to re-transmit the incoming GPS data via Ethernet to other nodes in the network in the Trimble TSIP binary protocol format. This GPS data is also sent out the front panel GPS RS-232 serial port in the standard NMEA format for use by external equipment.

IEEE1588 PTP and NTP Grand Master Clock

The VT959 can provide Ethernet time services to the chassis networks on both the GbE fabric. It can be subordinate to an external PTP or NTP master server or when the GPS receiver option is purchased can act as a Grand Master clock utilizing the precision timing information provided via the GPS receiver and onboard disciplined oscillator.

Synchronous Ethernet

The VT959 provides a Synchronous Ethernet (SyncE) on the GbE fabric port. With this feature, ports on the 1G Ethernet switch can be designated as master or slave ports and the Ethernet fabrics within the chassis can be synchronized from end-to-end with external equipment. This feature utilizes advanced telecom-grade network synchronization PLLs to provide exceptional SyncE performance.

JTAG Master/JTAG Via Ethernet Virtual Probe

The VT959 provides JTAG Master Capability to send out configuration data streams via the chassis JTAG Switch Module (JSM) to configure arbitrary JTAG Slave devices on AMC cards. Virtual Probe services are also available to provide JTAG via Ethernet for specific vendors such as Xilinx and Altera. This allows for standard development tools such as Xilinx iMPACT/ChipScope and Altera Programmer/SignalTap to treat the MCH/JSM combination as if it was a standard JTAG probe. This approach frees the developer from having to attach JTAG probes directly to the AMC or JSM which can be difficult when systems are already fully assembled. It also allows for remote debugging across long distances when required without the need to install additional JTAG equipment on-site. The Master test/configuration port is easily accessible via the front panel header.

Block Diagram

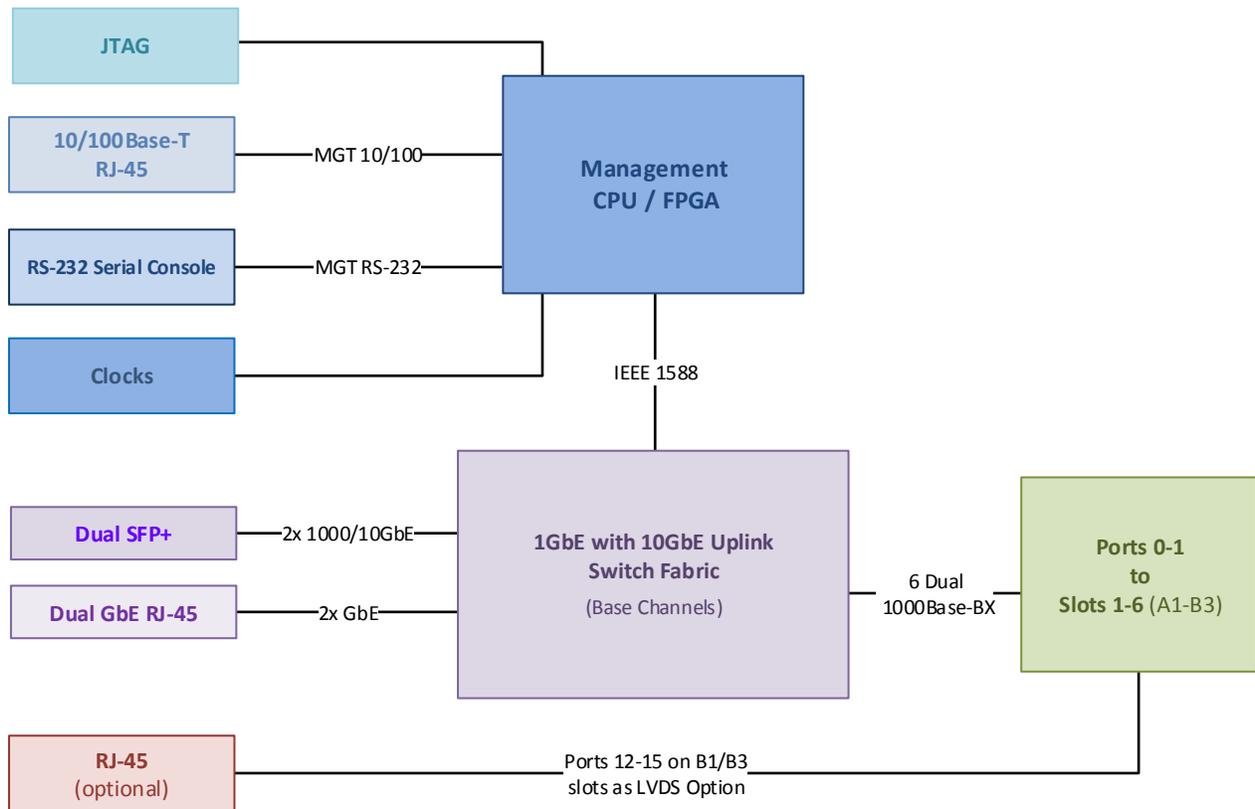


Figure 6 VT959 Block Diagram

Backplane Connections

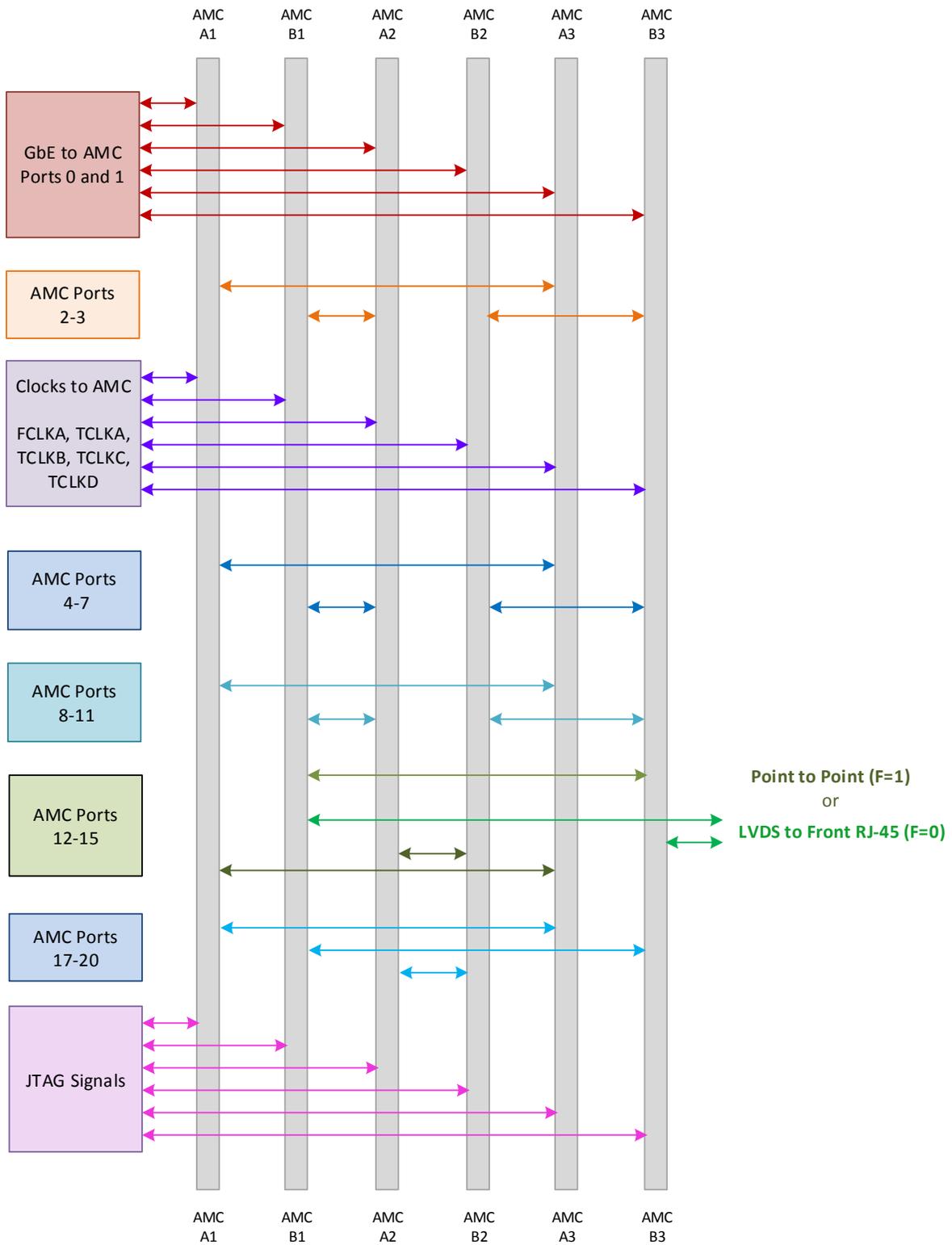


Figure 7: VT959 Backplane Connections

Specifications

Architecture		
Physical	Dimensions	Width: 19"
		Depth: 16.5"
		Height: 1U
Type	MTCA Chassis	6 AMC.0 single module, (mid-size slots)
Standards		
AMC	Type	AMC.0, AMC.1, AMC.2, AMC.3 and AMC.4
MTCA	Type	PICMG 3.0 Rev 3.0
Configuration		
Power	VT959	500W (Universal AC power input) or 460W DC (-36V to -75V or +18V to +36V)
Environmental	Temperature	See Ordering Options
		Storage Temperature: -40° to +85°C
	Altitude	10,000 ft operating
		40,000 ft non-operating
	Relative Humidity	5 to 95% non-condensing
Front Panel	Interface Connectors	MGT 10/100 and MGT RS-232
		JTAG, Clocks, GbE/10 GbE via Dual SFP+
		Dual GbE and LVDS via quad RJ-45
	LEDs	IPMI Management and Activity
Software Support	Operating System	Linux (Consult VadaTech for other options)
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

VT959 – ABC-DEF-G0J

A = Power Supply 0 = AC Universal 500W 1 = DC -36V to -75V, 460W 2 = Reserved	D = Clock Holdover Stability 0 = Standard (XO) 1 = Stratum-3 (TCXO)	G = SFP+ TXCVR 0 = No TXCVRs 1 = Fibre SX 2 = Fibre LX 3 = Copper 10000-BaseT 4 = Copper 1000-BaseT
B = JSM 0 = No JSM 1 = JSM	E = JTAG Virtual Probe 0 = No JTAG Virtual Probe 1 = JTAG Virtual Probe	
C = Front Panel Clocking 0 = No FP Clocking (Backplane Clocking only) 1 = Dual LVCMOS Clock In/Out 2 = Sine Wave In + LVCMOS In/Out 3 = Built-in GPS receiver + LVCMOS In/Out 4 = Dual Sine Wave In 5 = GPS receiver + Sine Wave In 6 = Sine Wave In (up to 17dBm) +TTL/LVCMOS In	F = Ports 12-15 on Slots B1/B3 0 = As LVDS to Front RJ-45 1 = Point to Point between the slots	J = Temperature Range and Coating 0 = Commercial (-5° to +55°C), No coating 1 = Commercial (-5° to +55°C), Humiseal 1A33 Polyurethane 2 = Commercial (-5° to +55°C), Humiseal 1B31 Acrylic 3 = Industrial (-20° to +70°C), No coating 4 = Industrial (-20° to +70°C), Humiseal 1A33 Polyurethane 5 = Industrial (-20° to +70°C), Humiseal 1B31 Acrylic

Related Products

AMC592



- AMC FPGA carrier for FMC per VITA 57
- Xilinx UltraScale™ XCKU115 FPGA
- Supported by DAQ Series™ data acquisition software

AMC754



- Processor AMC Intel® 5th Gen Xeon D-1520, D-1548 or D-1577 (Broadwell) SoC
- PCIe Gen3 x4 options on Ports 4-7 and 8-11 option or Single PCIe x8 on Ports 4-11 (AMC.1)
- GbE to Ports 0 and 1 (AMC.2)

VT950



- MicroTCA rugged 1U 19" rackmount chassis platform
- Meets MIL-STD-810F, MIL-STD-901D for shock/vibration
- Meets MIL-STD-461E for EMI

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