IPnexus® AMP5072 PRODUCT SHEET

1U MicroTCA® Application-Ready System

FEATURES

Innovative, Cost-Effective, Highly Integrated, 1U MicroTCA®-Compliant Platform Supports Six AdvancedMC™ Modules

Designed for Deployments in Wireless, Telecom, Aerospace, and Defense

Application-Ready System Configured with:
- PT's AdvancedMC™ Modules
- NexusWare® Linux-based Distribution

1Gbps Ethernet and 4x Serial RapidIO® Fabrics

Optional Stratum 3 System Timing Module with OCXO Holdover

Onboard MicroTCA® Carrier and Shelf Managers with NexusWare® Portal

High Reliability Via Redundant & Hot Swappable Cooling and Power Supplies (AC or DC)



The AMP5072 is part of PT's family of IPnexus® Application-Ready Systems. It is a highly reliable, high-performance, and highly integrated 1U MicroTCA®-compliant platform that maximizes payload slot density in a 1U form factor. PT's IPnexus® Application-Ready Systems offer a highly integrated and comprehensive COTS-based hardware and software solution to rapidly develop and deploy value-added capabilities to embedded applications for demanding operating environments such as wireless, telecom, aerospace, and defense. The integrated Serial RapidIO® switch provides high performance interconnectivity for AMC payload such as embedded processors, FPGAs, and DSPs, as well as dual uplinks to chain systems together.

High-Reliability, High-Performance, and Highly Integrated Architecture

The AMP5072 supports up to six AdvancedMC™ module payload slots in a 1U shelf. High reliability is achieved with redundant and hot-swappable power supplies and fan trays. Its cost-effective and innovative architecture integrates non-payload functions, such as the Ethernet switch, Serial RapidIO switch, and carrier/shelf manager into the rear of the chassis, thus eliminating the high overhead costs associated with standard MCH modules. The AMP5072 features dual 1 GbE Ethernet to each slot plus quad uplinks, and the Serial RapidIO switch supports one 4x port to four slots, dual 4x ports to two slots, and dual 4x uplinks. Storage is accommodated by direct SATA/SAS slot-to-slot connections between the AMC sites. A comprehensive suite of system management interfaces also increase availability and reduce cost-of-ownership when systems are deployed.

IPnexus® Application-Ready Systems

Equipment manufacturers and providers can immediately begin development of their application on receipt of Application-Ready Systems, eliminating the time and costs normally associated with integrating, troubleshooting, and configuring building blocks from one or more vendors. Application-Ready Systems come integrated with an operating system, drivers, APIs, and other value-added software options. The configurable components include a MicroTCA-based platform, AMC modules (such as compute, storage/video, and communications controllers), and the NexusWare® family of Linux® software products ideal for solutions such as LTE, WiMAX, media gateways, managed WAN gateways, voice over IP (VoIP), lawful intercept, radar servers, and signaling gateways. The NexusWare Software Suite is made up of the following products:

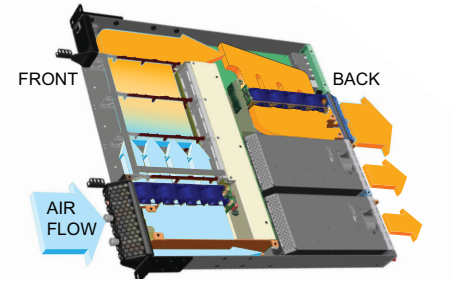
- **NexusWare Core** is a complete Carrier Grade Linux (CGL) distribution, with web-based management, GUI-based IDE, and Image Builder
- **NexusWare SIP** is an installable Session Initiation Protocol (SIP) stack and API software package
- **NexusWare C7** is a comprehensive SS7 MTP-2 installable software package
- **NexusWare WAN** protocols provides a wide range of WAN protocols

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AMP5072 Application-Ready System Configuration Options

DESCRIPTION	PLATFORM OPTIONS	PROCESSOR OPTIONS	OPERATING SYSTEM	STORAGE OPTIONS	ACCESS OPTIONS
Freescale™ MPC8641D PowerPC w/NexusWare® Linux®, MTCA Platform	**PT-AMP5072-12432** 1U MTCA Platform, 6 AMC Sites, AC Input, 4x SRIO, Dual 1 GbE/Site **PT-AMP5072-12433** 1U MTCA Platform, 6 AMC Sites, DC Input, 4x SRIO, Dual 1 GbE/Site **PT-AMP5072-12434** 1U MTCA Platform, 6 AMC Sites, AC Input, 4x SRIO, Dual 1 GbE/Site, System Timing Module **PT-AMP5072-12435** 1U MTCA Platform, 6 AMC Sites, DC Input, 4x SRIO, Dual 1 GbE/Site, System Timing Module	**PT-AMC131-12420** Processor AMC, Dual Core 8641D PPC, SRIO (ports 4-7), 1.0 GHz, 2 GB DDR **PT-AMC131-12423** Processor AMC, Dual Core 8641D PPC, SRIO (ports 8-11), 1.0 GHz, 2 GB DDR	**PT-NXWPPC-12236** NexusWare® Core Right To Use License	**PT-MSD4G-12293** MiniSD Card, 4 GB, Class 4 **PT-MSD8G-12397** MiniSD Card, 8 GB, Class 6	**PT-AMC304-12339** AMC Four Port T1/E1/J1 Controller **PT-AMC305-12340** AMC Four Port T1/E1/J1 Controller with I-TDM **PT-AMC335-12289** AMC Four Port Sync. Serial Controller (RS232) **PT-AMC335-12258** AMC Four Port Sync. Serial Controller (RS422/449) **PT-AMC335-12287** AMC Four Port Sync. Serial Controller (V.35)
x86 Intel® Core™ 2 Duo w/NexusWare® Linux®, MTCA Platform		**PT-AMC121-12208** Processor AMC, Core 2 Duo, 1.5 GHz, 2 GB DDR **PT-AMC121-12280** Processor AMC, Core 2 Duo, 1.5 GHz, 4 GB DDR **PT-AMC122-12318** Processor AMC, Core 2 Duo, 2.16 GHz, 4 GB DDR	**PT-NXWX86-12235** NexusWare® Core Right To Use License	**PT-AMC590-12360** AMC Storage w/ 120 GB SATA HDD **PT-MSD4G-12293** MiniSD Card, 4 GB, Class 4 **PT-MSD8G-12397** MiniSD Card, 8 GB, Class 6	
x86 Intel® EP80579 Integrated Processor 1.2 GHz w/NexusWare® Linux®, MTCA Platform		**PT-AMC123-12337** Processor AMC, EP80579, 1.2 GHz, 1 GB DDR **PT-AMC123-12338** Processor AMC, EP80579, 1.2 GHz, 2 GB DDR	**PT-NXWX86-12235** NexusWare® Core Right To Use License	**PT-AMC590-12360** AMC Storage w/ 120 GB SATA HDD **PT-UDM4G-12376** USB Disk Module Kit, 4 GB **PT-SDM4G-12377** SATA Disk Module Kit, 4 GB	



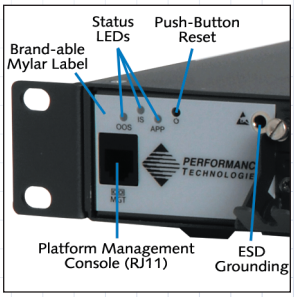
Front-to-Back Cooling Subsystem

The AMP5072 features front-to-back cooling, critical in NEBS specified installations. The hot-swappable fan tray (4 fans) in the front pushes air through the AMCs, while an identical hot-swappable fan tray in the back pulls the air through the chassis and exhausts out the back. This fan configuration offers a 7+1 redundancy, such that if one fan fails, the other 7 continue to cool the system until the fan tray can be replaced. Some of the air intake is routed to the power supplies that have their own fans. The removable air intake grills allow for routine replacement of NEBS specified filters. Each slot receives an ample airflow of 1500 LFM to ensure cooling of up to 40 W per mid-size slot.

Power Subsystem

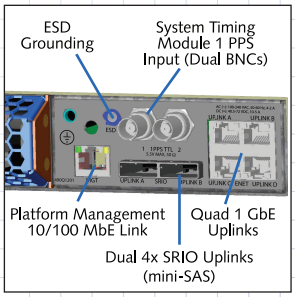
The system power is provided by dual, redundant and hot-swappable 300 W intelligent power supplies that are monitored by the platform management subsystem. The load-sharing supplies deliver up to 40 W of 12 V payload power and 3.3 V management power to each AMC site. AC and DC input options are available. An inhibit switch located in the back disables the power supply output.

Front Panel I/O



The front I/O panel features LEDs (in-service, out-of-service, and user-defined), a reset switch, and a platform management console port.

Back Panel I/O



The back panel has quad 10/100/1000 Mb Ethernet uplink ports, dual 4x Serial RapidIO® uplinks, a 10/100 Mb Ethernet out-of- band platform management port, power input, and a power switch.

Ethernet Subsystem

The onboard Ethernet Switch provides dual 1 Gb SERDES Ethernet links to Port 0 and Port 1 of each AMC site. Four 10/100/1000Mb Ethernet uplink ports are available on the back panel (RJ45). Via the Command Line Interface, Ethernet Switch functions can be configured, including:

- Port-Based VLANs
- 802.1Q VLANs
- Port Trunks (Up to four in the uplink ports and/or the port pairs to the AMC sites)
- Port Speed, Duplex, Pause Configuration on the uplinks
- Packet Thresholds (Broadcast Storm Suppression)
- Quality of Service
- Jumbo Frame Support
- BPDU Packet Forwarding Control
- Configuration Storage and Recovery

Serial RapidIO® Subsystem

The Fat Pipes Ports 4-7 support one 4x port of Serial RapidIO Gen 1.3 to four AMC sites. Two AMC sites on the top tier support one 4x port on ports 4-7 and a second 4x port on ports 8-11. These two slots were chosen such that they can support full size AMC modules. Within the 4x SRIO, several 1x SRIO options are supported. Two 4x port uplinks are available in the back panel I/O via dual mini-SAS connectors. Dual QSFP SRIO uplinks are available as an alternative option (contact PT sales for more information).

System Timing Module

An optional mezzanine module provides system timing to all AMCs in the platform. It receives a reference signal, such as a 1 PPS signal from a GPS receiver via BNC connectors on the back panel IO or from one of the internal AMC cards. It delivers a user-defined output frequency (e.g., 1PPS, 10MHz, or 30.72MHz) that is phase-synchronized to the selected reference clock, in accordance to Telcordia's GR-1244-Core for Stratum 3. An OCXO crystal supports holdover in the absence of a reference clock for a 24-hour period with a quality of 15 ppb (parts per billion).

SAS/SATA Storage Subsystem

The AMP5072 supports up to four storage AMC modules such as the AMC590 Storage AdvancedMC® Module. SATA/SAS channels are directly connected between the AMC sites from ports 2 and 3 on the right-hand slot to port 2 on slots 1 and 2 of their respective tier.

Comprehensive Platform Management Subsystem

The carrier manager monitors, manages, and controls the AMC payload boards and the active platform functions: Ethernet, PCI Express®, Telco clock, and power and cooling subsystems. The shelf manager communicates with the carrier manager and interfaces to external management systems via an out-of-band 10/100 Mb Ethernet port located in the rear of the chassis.

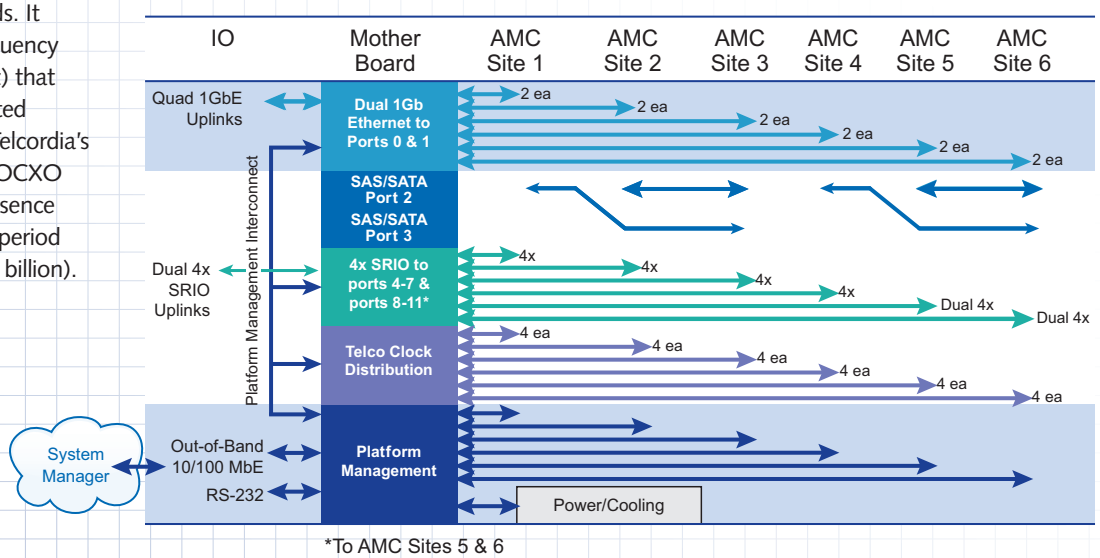
Five management interfaces are available:

A. User-based Interfaces:

- NexusWare® Portal – a web-based GUI development and management tool that provides remote management and monitoring (LAN Interface)
- I/O Front Panel – offers visual information via LEDs
- Command Line Interface (CLI)

B. Programmatic-based Interfaces:

- Remote Management Control Protocol (RMCP) (LAN Interface – via OOB management port)
- Simple Network Management Protocol (SNMP) (LAN Interface – comprehensive platform management via AMC Processor)



*To AMC Sites 5 & 6

AMP5072 Interconnect Diagram

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Technical Specifications

ORDERING INFORMATION

PT-AMP5072-12432
1U MicroTCA®, 6 AMC sites, AC input, 4x SRIO, Dual 1 GbE/site

PT-AMP5072-12433
1U MicroTCA, 6 AMC sites, DC input, 4x SRIO, Dual 1 GbE/site

PT-AMP5072-12434
1U MicroTCA, 6 AMC sites, AC input, 4x SRIO, Dual 1 GbE/site, System Timing Module

PT-AMP5072-12435
1U MicroTCA, 6 AMC sites, DC input, 4x SRIO, Dual 1 GbE/site, System Timing Module

Accessories and FRUs

PT-MTC5140-12300
4HP, Single, Filler Panel

PT-MTC5131-12301
4HP, Single, Air Management Blade

PT-MTC5132-12302
2HP, Single, Air Management Blade

PT-MTC5133-12358
4HP, Single, Adjustable Airflow Blade

PT-MTC6201-12307
300 W, AC Removable Power Supply

PT-MTC6211-12308
300 W, DC Removable Power Supply

PICMG® Specifications
- Full Compliance with MicroTCA.0, AMC.0, AMC.2, AMC.3, AMC.4
- Supports mid or full and single or double size AdvancedMC™ modules

AdvancedMC Interconnects and Specifications
- AMC.2 (ports 0-1): Dual 1 Gb Ethernet
- AMC.3 (ports 2): 1 SATA/SAS port (see diagram)
- AMC.4 (port 4-7 & 8-11): 1 4x port to AMC sites 1-4 and dual 4x ports to AMC sites 5 & 6
- AMC.0: IPMB-L management interface

Front Panel Interfaces
- LEDs
  - In-Service
  - Out-of-Service
  - User Defined
- Serial Console Port
- Reset Switch
- Brand Label is Customizable

Back Panel Interfaces
- Quad 1 Gb Ethernet Uplink Ports
- Dual 4x SRIO Uplink Ports
- Dual System Timing Module BNC connectors (Optional)
- 10/100 Mb Out-of-Band Shelf Manager Port
- Chassis Grounding

Power
- AC input: 100 to 240 V AC, 50 to 60 Hz, 4 to 2 A
- DC input: -40.5 to -60 V DC, 10 to 5 A

Mechanical
- Height: 1U, 44 mm (1.75 in.)
- Width: 442 mm (17.4 in.) without rack-mount flanges. Rack-mount flanges allow mounting to 19 in. racks
- Depth: 470 mm (18.5 in.)
- Weight: 9.06 kg (20 lbs) with 2 power supplies 8.12 kg (17.9 lbs) with 1 power supply

Environmental
- The AMP5072 system (enclosure, fan trays, and Motherboard) is designed for harsh environments. The system features sturdy steel construction with a durable powder coat finish.
- Operating: 5 to 40°C (41 to 104°F), up to 55°C (131°F) for 96 hours for both AC and DC power supplies
- Storage: -40 to 70°C (-40 to 158°F)
- Relative humidity: 5 to 85%, up to 90% for 96 hours, non-condensing

NOTE: To provide proper cooling of the AMP5072, each unused AMC slot in the chassis must be populated with the proper filler panel or Air Management Blade. Refer to "MicroTCA Air Management" White Paper.

MTBF
TBD

Agency Certifications (Pending)

Safety
- UL/cUL 60950 Safety for Information Technology Equipment
  - UL File Number E170533
- EN/IEC 60950 Safety for Information Technology Equipment
- CB Certificate and Report Scheme

EMC Test Regulations
- FCC, Class A
- CE Declaration of Conformance

Network Equipment-Building System (NEBS)
- Designed for NEBS Level 3 and ETSI installations
- GR-1089-CORE Issue 4
- GR-63-CORE Issue 3

CONTACT US

www.pt.com
E-mail: sales@pt.com

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