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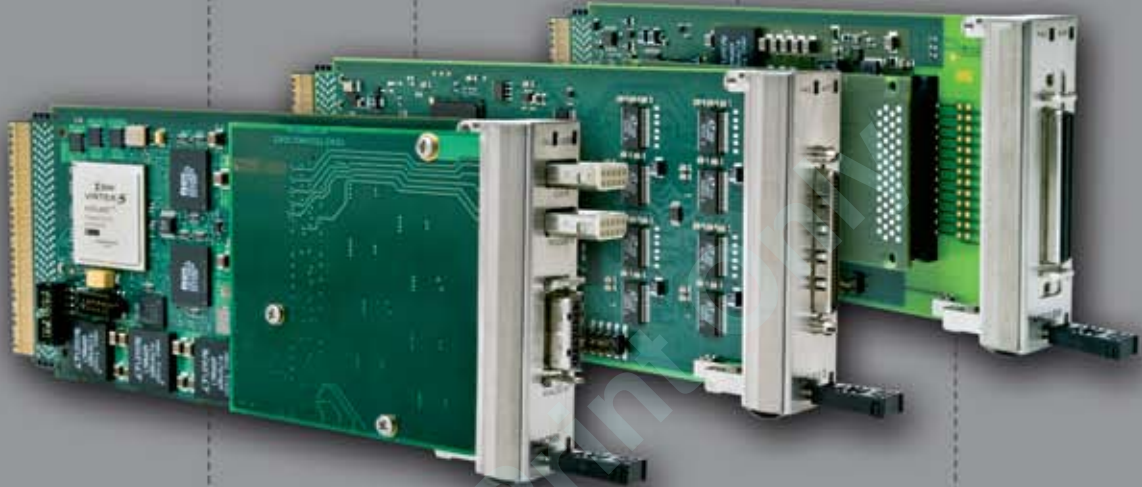
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EDITOR'S FOREWORD



By **JOE PAVLAT**

Chances are you are reading this issue of *CompactPCI and AdvancedTCA Systems* at the Embedded Systems Conference (ESC). This conference and trade show remains an important one for our industry, and it always seems to be the case that in uncertain economic times embedded computer customers turn to new technologies that are more powerful and cost-effective to push their companies forward. ESC is a great place to see what's new and game-changing. OpenSystems Media, publishers of a number of print and online publications for the embedded industry, including *Embedded Computing Design*, will have editorial directors on hand to spot the latest ideas and put emerging trends into perspective.

And while we are on the subject of singing the praises of embedded computing industry shows, it is worth noting that for many years PICMG has put together a pavilion booth at the SUPERCOMM trade show. This is a sizable show aimed squarely at the global telecommunications market. PICMG rents a large space and subdivides it into smaller "mini-booths" where member companies exhibit their wares. Dubbed the PICMG Technology Showcase, it's both an affordable way for members to exhibit and a venue that brings home the broad acceptance of PICMG embedded computing standards and the critical mass of available products.

Because of the increasing interest from the military market in high availability PICMG technologies such as AdvancedTCA and MicroTCA, PICMG decided in 2008 to host a Technology Showcase at the annual MILCOM show, held in San Diego October 17-19. Sponsored by the Association for Communications, Electronics, Intelligence, and Information Systems Professionals (AFCEA), this show combines a comprehensive technical program, including classified and

unclassified conference tracks, and a conventional trade show. I say conventional, but due to the large number of high-level military personnel present, ATF agents leading bomb-sniffing dogs were a common sight. Eleven PICMG member companies participated, showing AdvancedTCA, MicroTCA, AdvancedMC, CompactPCI, and VME products.

While it made sense after a little thought, I was initially surprised at the similarity between commercial communications technologies, architectures, and products and their military counterparts. Sure, a lot of the gear was in large portable equipment cases or on vehicles painted green, but the underlying technologies are the same. Different names and abbreviations are used, but one could clearly see the focus on the wireless communication of packetized data anywhere and anytime throughout the global military chain of command. The military market seems to be somewhat like the telecom market five years ago, with many vendors and customers interested in open standards but not knowing much about newer ones.

Never too cool for school

Thermal design is becoming a front and center issue for designers of embedded systems. The computing power of many of today's advanced platforms is often limited by how much heat can be dissipated. The desire for bigger systems with more and more memory means that this issue will become ever more critical. David Wright of Advanced Platforms (www.advanced-platforms.com), who is a recognized expert in this area and contributed much to the thermal characteristics of AdvancedTCA, has agreed to do a series of tutorial columns for us. This issue, our annual resource guide, is a great place to debut a column that will enable all of us to learn from David's thoughtful analysis.

As we know, signaling speeds for today's switched serial interconnects just keep getting faster. The system-level design of 10 Gbps channels includes board and backplane design considerations and careful connector selection. Characterizing the entire transmission channel through simulation and testing is becoming essential. Winging it doesn't work anymore. Markus Witte from HARTING Technology Group knows a great deal about this subject, and is a key contributor to several current PICMG efforts in this area. In this issue he gives us an excellent overview of the issues surrounding what is commonly referred to in our industry as signal integrity. It's a good read.

For those of you interested in the evolution of MicroTCA, don't miss the OpenSystems Media upcoming April 8 E-cast. Contributors include Emerson Network Power Embedded Computing, Performance Technologies, Elma, and Hybricon. To sign up, go to <http://ecast.opensystemsmedia.com/microtca>.

Joe Pavlat, Editorial Director





TUTORIAL: THERMAL MANAGEMENT

By DAVID WRIGHT

Cooling 400 W boards in AdvancedTCA (and other platforms)

David introduces a series of columns on forced convection cooling of shelf-mounted high-power boards.

In recent years, AdvancedTCA, along with many other industry sectors, has seen the need for more powerful processors. With this ever-increasing demand for greater processing power comes the inevitable side effect of higher thermal dissipation. AdvancedTCA is by no means alone in allowing boards up to 400 W dissipation and above.

This tutorial series will cover design requirements, qualification testing, and life cycle issues. Although much exciting and challenging work addresses liquid cooling, these tutorials will focus on the substantial number of convection-cooled products, both in the field and planned for deployment. Applications continue to benefit from the simplicity and low cost of convection cooling. The aim of these articles is to formalize much of the wide amount of existing expertise in convection cooling in the belief that even 400 W should not be considered a ceiling.

We will set baselines for system design. In addition, we will look at common terms and definitions and remove variables to make life simpler for board, shelf, and system designers and integrators.

Three heat transfer mechanisms – conduction, convection, and radiation – govern equipment cooling. In practice radiation can be ignored, as it depends on a predictable temperature difference between objects; there are many cases in which that predictable temperature difference cannot be relied upon.

The disciplines and tools for conduction cooling are relatively straightforward when applied to the heat transfer path from heat sources (e.g., silicon) to the dissipative structures (e.g., packaging and heat sinks) that will transfer the heat energy into the wider environment. Conduction is the mechanism that takes the heat energy in solid materials and passes it to the gas molecules that are the main mechanism of convection heat transfer. Convection cooling is the most effective way of moving heat out of a system. Forced convection using air movers (i.e., fans or impellers) is (almost) essential for high-power systems but requires the complexities of fluid dynamics involving both thermal and airflow boundary conditions as well as the solution of the Reynolds number and the dimensionless Prandtl and Nusselt numbers. Many of these complexities are handled by modeling, but the user should be aware of their significance at the higher flow rates needed for higher powers.

One of the significant disadvantages of forced convection cooling is acoustic noise caused by the fans and the airflow across the



boards and through the shelf enclosure. Managing noise is a system issue and requires close co-operation between shelf and board design engineers and the system integrators.

For any custom or standards-based project, the boards must be designed to promote adequate cooling within the given shelf environment. Equally important, the shelf needs to be designed to cool the expected boards residing within its card cage. These specifications need to be in place “up-front” and must cover all of the requirements before any design work can be carried out. PICMG 3.0 was released in December 2002, and the current Revision 3 was released in March 2008. The cooling requirements covered in Section 5 and the subsequent additions and reviews throughout this time period demonstrate the considerable effort and expertise invested to ensure a viable cooling specification.

From component to office

Thermal engineers work with several cooling definitions when moving from component cooling to the shelf, rack, and office. Component cooling is molecular in nature, as energy is passed from the device to a fluid, usually air. The cooling air velocity is usually given as Linear Feet per Minute or LFM (the “linear” is superfluous). The heat energy moves to the air, and the cooling capacity of the air is used to determine a volumetric measure of Cubic Feet per Minute (CFM). However, it is the molecules that move the energy, hence it is the fluid mass flow that needs to be

determined. Fluid mass is independent of air temperature, pressure, and humidity. Table 1 shows the commonly used measurement units.

	English	SI	PICMG 3.0
Velocity	LFM	m/s	–
Volume	Foot ³	M ³	–
Volumetric flow	CFM	M ³ /s	CFM & m ³ /m
Mass	Slug	Kg	–
Mass flow	Lb/s	Kg/s	–

Table 1

We will demonstrate in these tutorials how to work with component velocity (LFM) cooling requirements, shelf volumetric requirements (CFM), and varying air characteristics.

Providing adequate cooling of a shelf populated with 400 W boards will require us to revisit some fundamental principles. We will look carefully at the fluid dynamics involved at the component, board, and shelf levels. In addition, we will examine the effects of temperature, humidity, altitude, and weather, and how these effects can be covered by more rigorous yet simpler requirement specifications. We shall review the acoustic noise implications, discover what causes airflow to be noisy, and examine how this noise can be reduced at the board and shelf levels.

Thermal management is a key component of the system integration process. This process can be time-consuming, with many test cases needing to be simulated as part of the system-level design verification test protocol. The specifications previously mentioned, and the subsequent steps of thermal conformance testing, are all necessary to ensure adequate cooling performance and will be discussed in more detail.

Moving the bar above 400 W

Interoperability conformance testing of individual AdvancedTCA elements is now an active development area. This started with the “AdvancedTCA Backplane SI Test Plan” in March 2004 and now covers several interoperability areas. We will look at some of the thermal interoperability issues, particularly where they apply to boards with extended power dissipation levels.

The series of articles will conclude with some solutions that will be compatible with both AdvancedTCA and other standards and specifications, as well as existing and planned convection-cooled products and could “move the bar” considerably above the perceived 400 W ceiling.

David Wright has been involved in AdvancedTCA since 2001, and in practical electronics and mathematical modeling for much longer. After working for multinational companies GEC Ltd., MEL, a division of Philips NV, CTS Corp., and Hybricon, Inc. David operated as a consultant for nine years before co-founding Wickenby Ltd. in Israel. After significant investor involvement the company has been renamed as Advanced Platforms Ltd. David functions as the AdvancedTCA, ATCA300 and MicroTCA Systems Architect. Advanced Platforms Ltd. provides third-generation products and services.

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Signal integrity in high-speed connectors –

*the need for
more accurate
channel simulation and
characterization measurement*

 By **MARKUS WITTE**



Channel characterization has become a major Signal Integrity (SI) issue, and manufacturers of high-speed components are finding they must show their equipment performs as specified for target applications by coming up with comprehensive and empirical SI test data.

The need for speed is everywhere. The Internet Protocol (IP) has become tremendously important for combining data, voice, and video in the same data stream. Different networks such as the Internet Protocol Multimedia Subsystem (IMS), Voice over Internet Protocol (VoIP), Mobile VoIP, and others use the same protocol for these data packages, a phenomenon referred to as *converging networks*. Mobile data services require a higher aggregate bandwidth for network elements found in base stations, radio network controllers, and core networks, which have to accommodate this increased data traffic.

What started as a gradual trend to higher bit rates accelerated dramatically in 2004 with the introduction by Intel of the PCI Express standard. Following this lead, the majority of chip-to-chip connection standards underwent an architectural shift from parallel buses to SERIALIZER/DESERIALIZER (SERDES) links, called *lanes*.

With the IP-based infrastructure in place, new standards, including IEEE 802.3ap, evolved for higher data rates, especially for Ethernet over the backplane assembly. However other standards like RapidIO and PCI Express also address higher data rates. Typical data rates are in the range of 3.125 gigabaud (Gbaud) per lane and some interconnects already support 10.3125 Gbaud lane rates. Different protocols are used for the data transport, and each link technology has different requirements for the channel. However, some limits and electrical requirements are defined in the relevant specification.

While IEEE 802.3ap is being adopted for new designs, the Ethernet task force is developing IEEE 802.3ba for 40 Gbps and 100 Gbps for future data networks. AdvancedTCA, for instance, the largest specification effort in the history of the PCI Standard, targets next-generation carrier grade communications equipment needs. This series of specifications incorporates the latest trends in high-speed interconnect technologies and next-generation processors, promising improved reliability and availability.

But these large bit rate increases come at a cost. At multigigabit per second data rates with channel flight times longer than a bit period, signal integrity is compromised. High-speed analog effects can impair the signal quality and degrade the Bit Error Rate (BER) of the link. To ensure optimum performance of high-speed connectors, simulation and characterization analysis needs to be performed – comprehensively and empirically – to establish and adhere to uniform standards.

Cleaner signals are key

Signal integrity concerns high-speed circuit design and enabling cleaner signals to travel the designs. Cleaner signals, in turn, allow engineers to identify and minimize sources of distortion in data transmission, which could otherwise disrupt timing of the digital logic.

The ability to effectively transmit a signal is related to the ratio of signal to interference that is presented to the receiver. Many challenges must be addressed in developing a system where any channel can support transmitting a signal serially at 10 Gbps. At multigigabit per second data rates, link designers must consider reflections at impedance changes, noise induced by densely packed neighboring connections (cross talk), and high-frequency attenuation. Other significant issues of concern for signal integrity that can plague modern

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digital products and interfere with the detection of the output signal are ringing, ground bounce, and power supply noise.

Comprehensive signal integrity tests of connectors in backplane applications have been conducted by HARTING, as well as concurrently supporting standardization subcommittees within PICMG and within the Open Base Station Architecture Initiative (OBSAI). Appendix 69B of the IEEE 802.3ap standard, which defines the informative limits of the channel, defines a confidence level, but this is neither normative nor a guarantee that the channel works or does not work without a BER failure.

It is obviously very challenging to define normative parameters, especially for lane rates beyond 3.125 Gbaud, due to the need for signal conditioning. Separating the channel with defined reference points helps to isolate specific areas of the transmission path. However, cascading the signal elements later requires careful calibration and de-embedding techniques, especially between the reference transition points.

The PICMG Interconnect Channel Characterization Committee (ICCC) is developing a document with ground rules and definitions for channel characterization. Taking it a step further and considering the signal propagation path from the cable connector makes the challenge the ICCC is facing even more difficult. For example, 10 Gbps Small Form Factor Pluggable (SFP+) modules and hosts are well defined within the latest SFF draft specifications with specific electrical requirements and test procedures.

While focusing mainly on the physical layer, the transmission of signals between transmitter and receiver can be from chip-to-chip on the same board or chip-to-chip between different boards. When the signal is between different boards, the physical connection could be a PCB, cable, or connector. Figure 1 illustrates a data transmission path with an arbitrary assignment of different connector types.

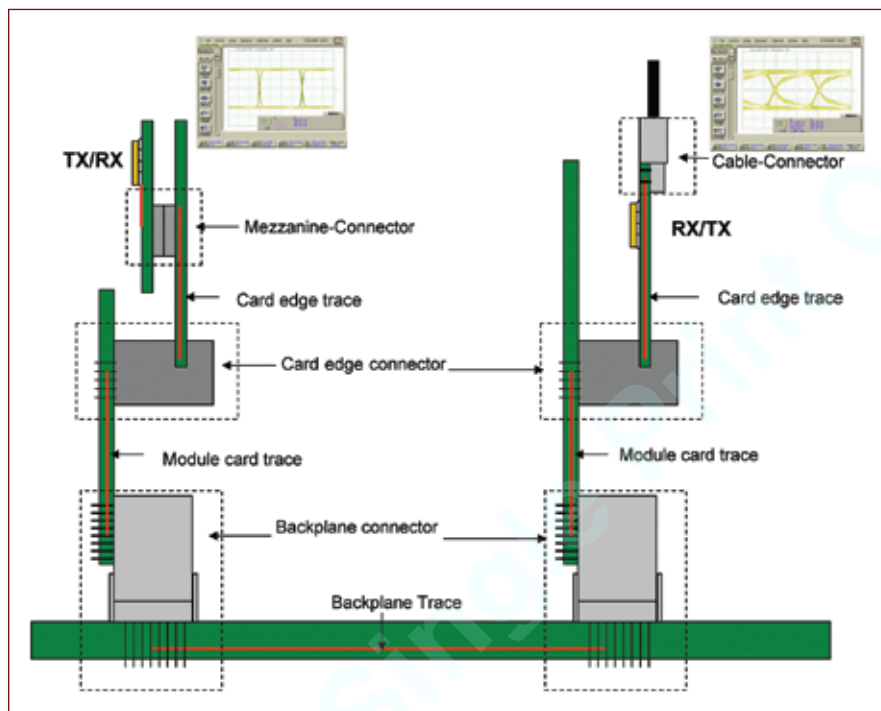


Figure 1

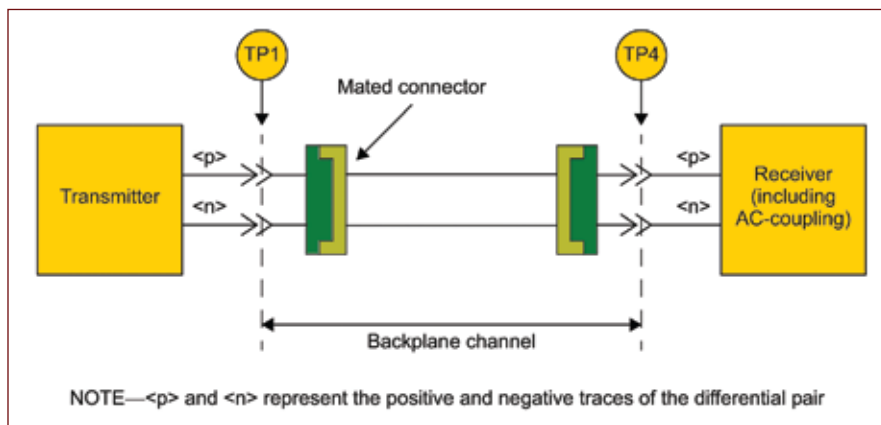


Figure 2

PCB and cable signal traces carry much more current than their on-chip counterparts. This larger current induces cross talk primarily in a magnetic, or inductive, mode, as opposed to a capacitive mode. To combat this cross talk, digital PCB designers must remain acutely aware of not only the intended signal path for every signal, but also the path of returning signal current for every signal. The signal itself and its returning signal current path are equally capable of generating inductive crosstalk.

The measurement of the signal between the chips is not trivial, and the test fixture and measurement procedure have a strong impact on the results. Comprehensive documentation with all details of the test fixture and instrument settings is mandatory for the interpretation, reproducibility, and comparison of the results.

The backplane channel in IEEE 802.3ap is defined between Transmitter and Receiver test points TP1 and TP4 (see Figure 2, the IEEE 802.3ap interconnect reference model).



THE MEASUREMENT OF THE SIGNAL BETWEEN THE CHIPS IS NOT TRIVIAL, AND THE TEST FIXTURE AND MEASUREMENT PROCEDURE HAVE A STRONG IMPACT ON THE RESULTS.

Test Parameters

- Characteristic impedance
- Fitted attenuation
- Insertion loss
- Insertion loss deviation
- Return loss
- Cross talk
- Power Sum differential Near-End Cross Talk (PSNEXT)
- Power Sum differential Far-End Cross Talk (PSFEXT)
- Power sum differential cross talk
- Insertion loss to Cross talk Ratio (ICR)

Table 1

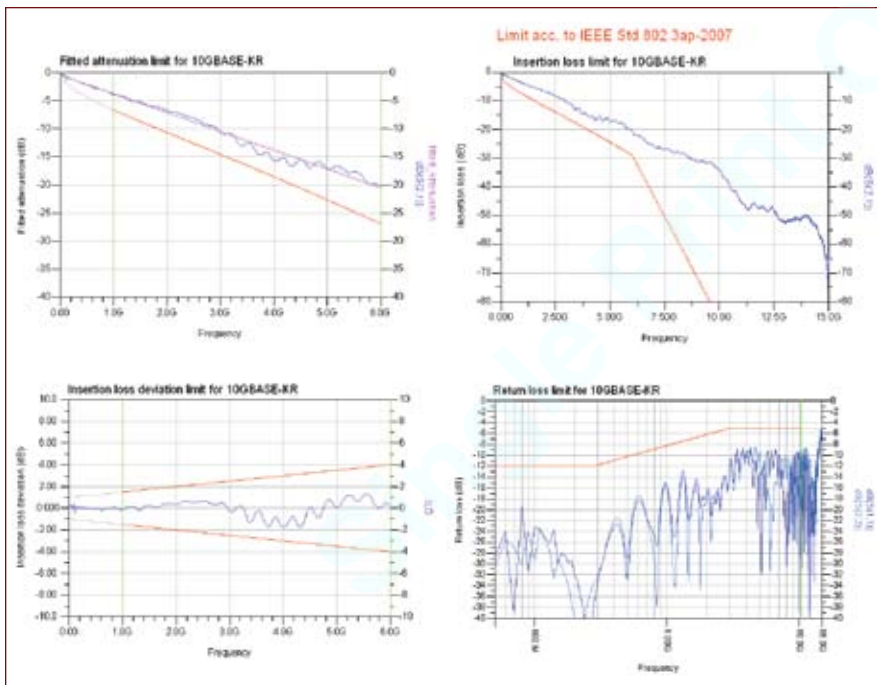


Figure 3

Channel test and simulation parameters

TP1 and TP4 are reference test points in IEEE 802.3ap. Informative channel parameters between these two test points are defined in Annex 69B for 1000BASE-KX at 1.25 Gbaud, 10GBASE-KX4 at 3.125 Gbaud, and 10GBASE-KR at 10.3125 Gbaud. Table 1 lists the test parameters, and Figure 3 shows the channel limits of a measured backplane.

At these new multigigabit per second bit rates, the bit period is shorter than the flight time and echoes of previous pulses can arrive at the receiver on top of the main pulse and corrupt it. In signal integrity engineering this is called an eye closure – a reference to the clutter in the center of a type of oscilloscope trace called an eye diagram – representing the results of a simulation driven by a long, multicycle sequence, which superimposes each bit period over the top of others.

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In IEEE 802.3ap the test parameters are informative only, and the results do not guarantee that the channel finally works without bit error rates. Other standards like RapidIO or OIF-CEI-02.0 agreement use tools such as Stateye for compliance testing. (Figure 4 shows a Stateye eye run.) However, the correct measurement of the data is a strong concern in the industry.

A characterization challenge

The characterization of the passive channel is not trivial. The data transmission through the channel (refer again to Figure 1) is very complicated. Coax connectors, typically 2.4 mm/2.92 mm/3.5 mm, terminate the measurement instrument's cables (Figure 5). Access to the component edges is difficult, requiring four measurement test fixtures. The test fixture has a strong impact on the results. An error correction is required to remove these effects from the measurement data. To avoid the rise time degradations and reflections due to the launch connector transition, the use of a high-precision probe such as the HARTING Probe Station is recommended.

The launch of the connectors for the instrument cables (most likely SMA termination) to the PCB has to be very smooth. Figure 6 depicts a connector launch with SMA termination. A 3D dynamic field solver optimizes the transition from the board mount coax connector to the PCB trace. The production process of the test cards is very critical, and special attention has to be paid to make sure the impedance match of the test fixture, including the connector transition, is very accurate.

Scattering (S)-Parameters are measured with a Multiport Vector Network Analyzer. The S-Parameters can capture the reflection and transmission from junctions in backplanes. It's also important to control the isolation between signals in order to avoid interference from adjacent channels.

The data can also be gained with a time domain instrument, when time domain to frequency domain transformation is required. While selecting the best software tools and measurement equipment is important for performing channel characterization, the operator's skill in using the software and test equipment properly is the key to accurate results.

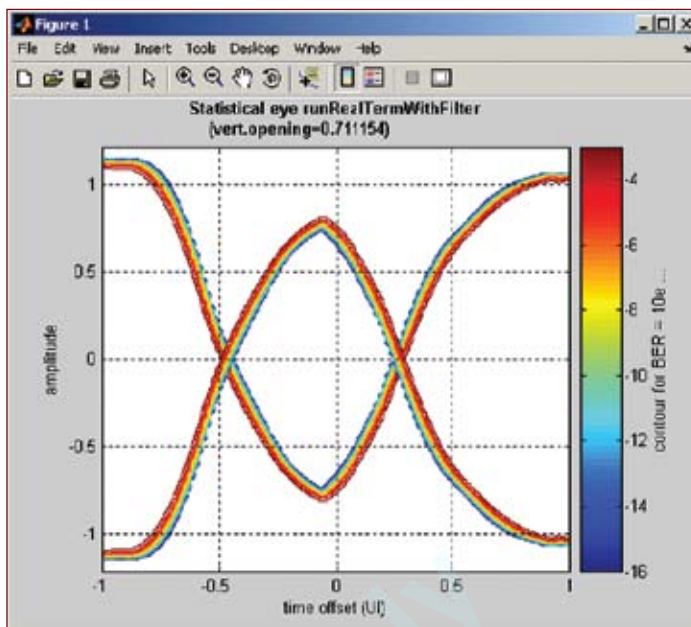


Figure 4

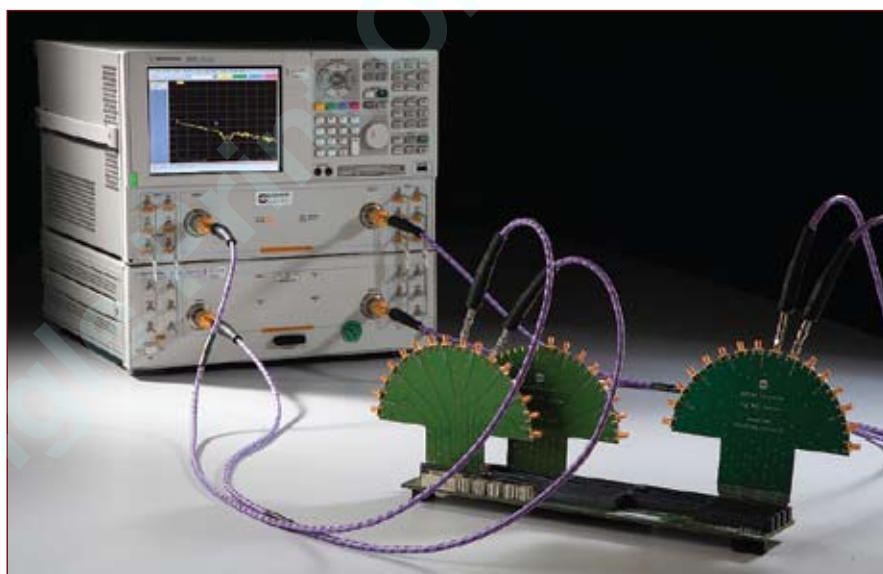


Figure 5

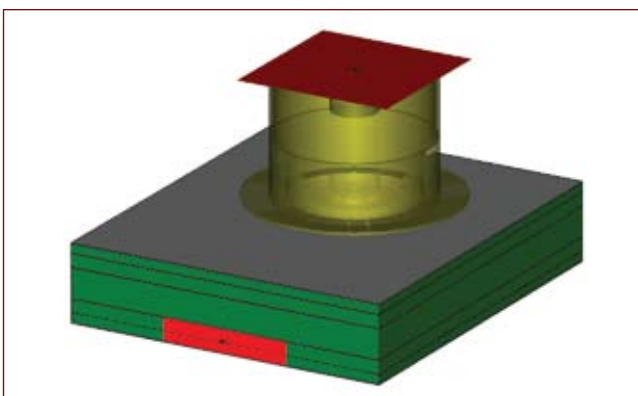



Figure 6



High-speed connection must-haves

As systems are developed to continually support greater high-speed capacities, the design, simulation, measurement, and analysis of connectors to optimize channel signal integrity will need to be even more exacting.

The requirements demanded of high-frequency and high-speed connections are considerable. They must be compact, able to withstand hard mechanical knocks, and compensate for tolerances between the daughter card and the backplane. What's more, they must not cause any significant signal reflections or attenuation and must guarantee a reliable contact for at least 15 years.

Such tried and tested connection standards should be expected, and demanded, by both component manufacturers and those that integrate them. Only in this way can a truly functional mega-gigabit system that supports computing, storage, control, media, and packets become widely functional. 

Markus Witte has 10 years experience in the connector industry. He is the Signal Integrity Manager within HARTING Technology Group and responsible for System and Application Management. Markus graduated from the University of Applied Sciences, Osnabrueck, Germany in 1998 with a Bachelor of Science in Electrical Engineering. He has authored and co-authored technical papers for DesignCon, and is supporting standardization subcommittees within PICMG and OBSAI.

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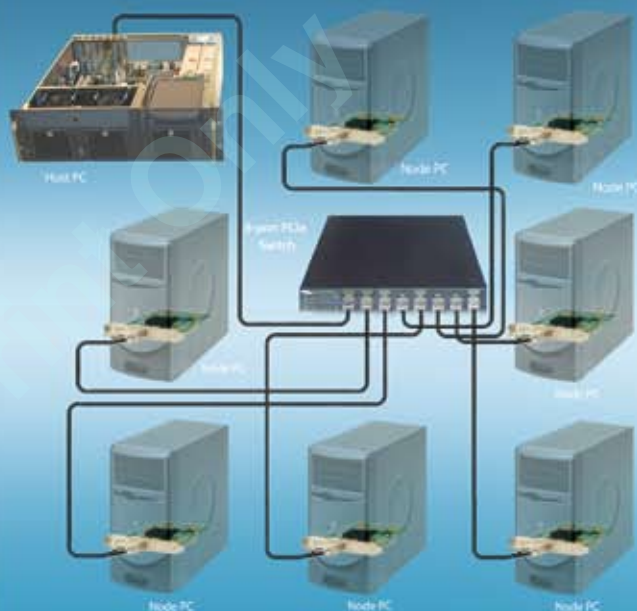
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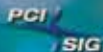
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Welcome aboard.

In-flight entertainment: Designers get on board with COMs and CompactPCI

➤ By DAVID PURSLEY AND CHRISTINE VAN DE GRAAF

The general public's passion for sophisticated electronic communications is an accepted part of day-to-day life, and is translating deeper and deeper into the world of travel. Complex and advanced in-home entertainment systems are becoming common, if not universal, and travelers have come to expect a much higher level of comfort, access, and (let's face it) entertainment in their traveling experience. As a result, high-bandwidth entertainment applications are appearing on planes. In-flight personal video screens, video games, destination maps, Internet access, and interactive seat-to-seat messaging are either here or on the horizon.

David and Christine explain that even as technology boundaries are pushed to develop new levels of in-flight entertainment, the demanding physical restrictions of the plane remain the same. Limited space, thermal requirements, shock and vibration, and altitude considerations – all must be addressed in a cost-effective, high availability solution. As a result, designers are working with both Computer-On-Modules (COMs) and 3U CompactPCI to deliver extensive computing power and rock solid communications in an airplane's server-like, bandwidth-hungry environment.

In-flight entertainment was once a very basic airplane accessory much like peanuts or pillows. Until recently, in-flight entertainment architects did not aim to deliver a real *wow* experience to the passenger – and the options at hand definitely met that expectation. Passenger expectations, however, began to shift dramatically in recent years, building and growing along the same path as advances in home entertainment, along with the public's almost universal acceptance of personal electronic communications. Passengers began to expect their own screens at the very least, and from there, a few more options in terms of their in-flight programming choices. Now those options are more expansive, interactive, and potentially more graphics-based than anybody could have imagined, all in mid-air. The airlines in turn are getting more and more creative in terms of the systems they want to deploy – going beyond being competitive and ultimately turning greater levels of passenger entertainment into new streams of in-flight revenue.

Today, all those program options live on a plane's entertainment database and are delivered on command, seat by seat. And in addition to weighing the bandwidth

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options, designers must address some very specific considerations – size, weight, and power, shock and vibration, upgradeability, seat electronics, and even the configuration of the aircraft itself – as they affect installation complexity.

COMs and CompactPCI

3U CompactPCI, well established in avionics with powerful I/O, rugged features, and small form factor, is a prevailing choice of architecture for an airplane's entertainment server. An extensive range of software is PCI-compatible, and even newer software engineers are familiar with PCI-based programming. So CompactPCI's staying power is not only strong but growing, based on its ability to deliver rear I/O in a smaller 3U form factor, powerful industry support, and the latest processing technology available on CompactPCI boards.

COMs put an entire computer's host-complex power on a small form factor module, essentially offering each airline seat all generic PC functions, such as graphics, Ethernet, sound, COM and USB ports, and other system buses. The COM works in conjunction with a custom-designed carrier board, complementing these features with any additional functionality required for a particular in-flight application.

COMs are highly appropriate for designs that include extensive application-specific customization and can afford a two-board solution (module plus custom carrier board). COMs help in-flight designers achieve scalability from generation to generation but also within a single generation. For example, customizations designed into a COM's accompanying carrier board can last for generations with various CPU cores, simply by swapping out one for the next.

Ethernet-based in-flight entertainment

In what may be today's traditional in-flight entertainment system, a single powerful 3U CompactPCI unit typically controls a plane's entertainment database and delivers the various program elements as passengers make their entertainment choices. Programming is typically received by a box containing a COM solution that controls the passenger display. One box per row is on each side of the aisle, meaning planes typically rely on a single COM solution to control at least three displays.

This type of system including both COMs and CompactPCI is an example of Ethernet-based entertainment distribution. An ETXexpress-CD module is at each seat box controlling the monitors in the system and talking to the plane's entertainment server. (See Figure 1, courtesy of Kontron.) For the designer of in-flight entertainment systems the goal is to create an entertainment environment for each passenger similar to what the individual would consider *at-home* entertainment.

COMs are at the heart of the personal control units and use Intel Core 2 Duo processing technology and the 945GME chipset. The integrated graphics capabilities of the chipset are excellent, however they must share the resources of the system memory. Graphics capabilities can be enhanced if the design moves up to the ETXe-PC platform, which includes greater graphics capabilities and uses a higher performance platform.

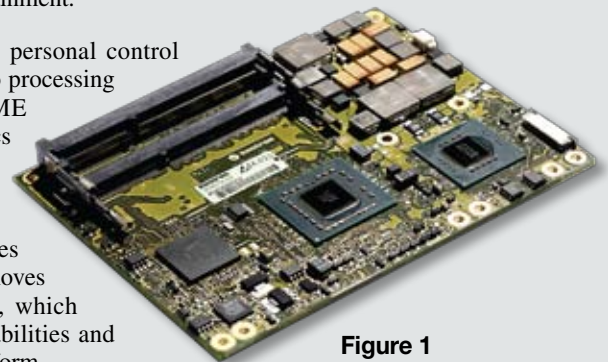


Figure 1

Additionally, the system could be upgraded to add the Universal Graphics Module (UGM)-M72 into the design to control more displays and alleviate the bottleneck of sharing the CPU modules' system memory. UGM is a dedicated graphics module that offers significant improvements and benefits to the COMs' management of graphics – including a simple connector, accelerated HD video, and no fan requirement, along with long-term availability as an embedded component.

To make these designs more low power in the future or allow the control box size to be reduced, integration of the microETXexpress form factor is an option as well. This is a result of its compatibility to the COM Express pin-out Type 2 already employed in the solution. As new multi-core solutions become available, options for utilizing hyper-threading and platform management for system security will also become broadly available as enhancements to these types of in-flight entertainment solutions.

3U CompactPCI and fiber optics

Another design option involves 3U CompactPCI working in conjunction with fiber optics throughout the aircraft. A centralized system combines multiple CompactPCI units – each working with as many as 15-20 seats – into a server, which then feeds back entertainment data into fiber optics run to each seat. This server can also allow Digital Signal Processing (DSP) and other I/O boards to be connected to each processor blade. In turn, these blades are networked via Gigabit Ethernet to allow secure communication for traffic such as credit card transactions. Larger planes may have 200 or more seats, and so would require seven or eight CompactPCI systems functioning together as one entertainment server.

For example, a system using Kontron's CP307 CompactPCI board (Figure 2) as its foundation would have low power consumption through its Intel L2400 Core Duo processor and high memory density with up to 4 GB dual channel DDR2 667 MHz

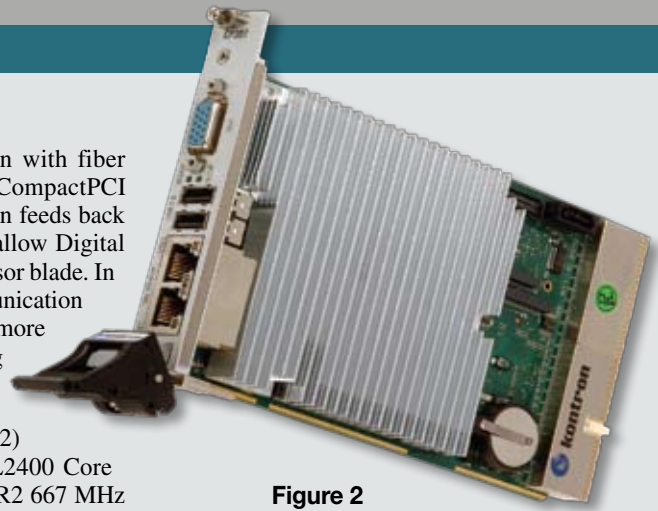


Figure 2

memory. With the broad and growing range of processors on the market, a system can have as much or as little computing power as needed. And with multiple systems connected as a single entertainment server switch unit, hardware is kept to a minimum, and passengers have access to super high bandwidth at more than a gigabit per second per seat. High-performance CompactPCI blades provide the computing resources that give users faster access to all entertainment options available. This means passengers wait less time between changing channels and loading movies, music, or video games – allowing for a better overall experience.

Today's CompactPCI systems deliver notably improved graphics performance and a 25 percent higher data transfer rate compared to previous platform designs. Direct soldered processors accommodate the higher levels of shock and vibration found in an aircraft. Also, the comprehensive I/O connectivity supports future-oriented interfaces (Gigabit Ethernet and fiber optics) beyond the typical desktop environment interfaces, which include USB, VGA, DVI, SATA, CompactFlash, and onboard PCI Express.

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With this large range of onboard features, systems can be easily upgraded to accommodate the latest entertainment options. Further, from a design perspective, CompactPCI is very widely supported, with a broad range of rugged chassis available for the form factor.


This solution offers excellent size, weight, and power management by using little or no hardware at each seat – only touchscreens. Airlines save fuel based on these calculations, and that equates to a significant bottom-line benefit, especially from a system that also generates customer revenue in mid-air.

The centralized location of this type of system allows easy maintenance of a specific area designed to handle necessary shock and vibration, and functions as a rugged enclosure for the system. Bandwidth is exceptionally high through the use of fiber optics, so very high-level entertainment can be offered – even high-definition video for example, which has powerful revenue-generating potential for today’s airlines. The system provides enough bandwidth to handle games, pay-per-view movies, or functions such as ordering meals or snacks.

What’s on the horizon

Ultimately, in-flight entertainment is likely to follow a path similar to gaming, where personalization forms the foundation for loyalty programs and traveler incentives. Personalization not only makes loyal flying customers, but again means that airlines can consider entertainment as a part of their revenue picture today and moving forward into more and more exciting applications.

In-flight messaging, for example, means travelers can communicate with their friends who opted to skip first-class or keep working with their business associate a few rows back. To be sure, the social media model is coming soon to an aircraft near you. Along with in-flight movies, personal television, moving maps in a range of languages, Wi-Fi, high-definition video games, and pay-per view features are on the way.

Of course the rugged communications required for in-flight entertainment applications present unique challenges and demands in choosing an embedded architecture. But perhaps even more importantly, travelers are defining what they want and expect, and technology is working hard to keep up. No matter the design’s architecture, seamless embedded solutions are what it takes to make high availability entertainment a simple part of the journey. 

David Pursley is an Applications Engineer with Kontron. He is responsible for business development of Kontron’s MicroTCA, AdvancedTCA, CompactPCI, and ThinkIO product lines in North America and is based in Pittsburgh, PA. Previously, he held various positions as a Field Applications Engineer, Technical Marketing Engineer, and Marketing Manager.



David holds a Bachelor of Science in Computer Science and Engineering from Bucknell University and a Master’s degree in Electrical and Computer Engineering from Carnegie Mellon University.



Christine Van De Graaf is the Product Marketing Manager for Kontron America’s Embedded Modules Division located in Silicon Valley. Christine has more than seven years of experience working in the embedded computing technology industry and holds an MBA in Marketing Management from California State University, Hayward, CA.

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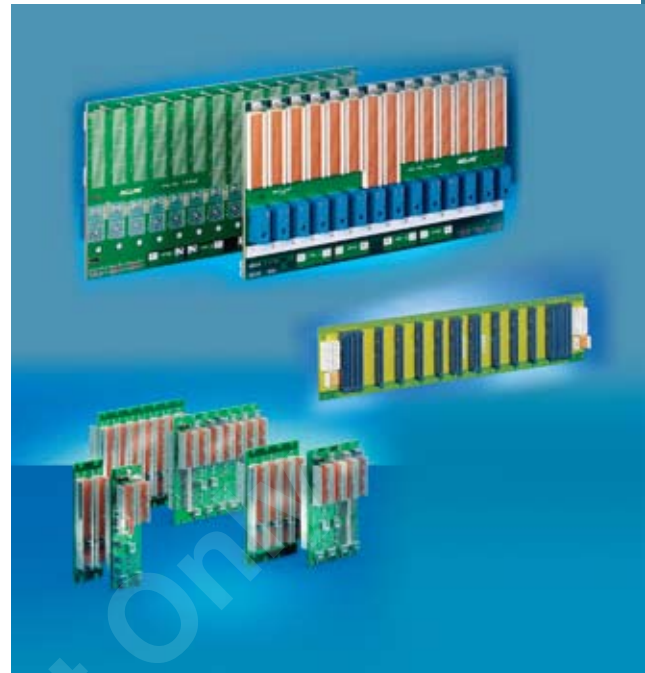
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**ATCA-7350 Multi-core Processor Blade**

The Emerson Network Power ATCA-7350 compute blade combines performance and flexibility to help drive the successful implementation of next-generation telecom networks.

Featuring two Quad-Core Intel® Xeon® processors, the ATCA-7350 processor blade delivers the highest processing performance in an AdvancedTCA form factor. Its fabric interface is PICMG® 3.1 compliant with 10 Gigabit Ethernet (10 Gbps) capability for those applications requiring higher network throughput in the backplane. Gigabit Ethernet (1 Gbps) interfaces to the PICMG 3.0 base interface and the PICMG 3.1 fabric interface are in a dual star configuration. Several other network configurations are also available.

An array of main memory options and two local mass storage options add to its performance and flexibility.

**FEATURES**

- › High-performance processor blade with SMP support
- › Two Quad-Core Intel® Xeon® processors LV (2.13 GHz)
- › Multiple software packages including operating system
- › PICMG 3.0 Gigabit Ethernet base interface support
- › PICMG 3.1, Option 1 and 9 fabric interface support
- › Two onboard 2.5" form factor hard disk bays supporting hot swap and RAID 0/1
- › Multiple disk options including SAS hard drives, SATA drives with extended temperature range, and solid state disks
- › Designed for NEBS and ETSI compliance

For more information, contact: EmbeddedComputingSales@Emerson.com

RSC# 37855 @ www.compactpci-systems.com/rsc

Kontron

14118 Stowe Drive • Poway, CA 92064-7147
1-800-526-ATCA
www.kontron.com

**AT8020 and AT8030**

Kontron, a world leader in the design and manufacturing of AdvancedTCA IA multi-core processor blades, offers:

AT8020 – featuring Dual Intel® Dual-Core Xeon® with 2 AdvancedMC slots and up to 16GB of DRAM. Rely on this node blade for the transcoding of live multimedia mobile content, or configure it for the concurrent processing of subscriber data on HLR systems, and much more. Available with the RTM8020, a single slot (6HP) AdvancedTCA rear transition module.

AT8030 – featuring Triple Intel® Core™2 Duo processors plus AdvancedMC support and integrated switch for 10GbE on fabric. The Kontron AT8030 provides equipment manufacturers many design options for IMS-based broadband applications that require the seamless delivery of video and data content in IPTV or VoD and server-storage networks.

**FEATURES**

- › AT8030
 - Triple Intel® Core™2 Duo;
 - Dedicated SDRAM memory per CPU core
 - 10GbE on the fabric
 - 1 x mid-size AdvancedMC bay
 - Integrated GbE switch for 10GbE on FI
- › AT8020
 - Dual Intel® Core Duo Xeon®
 - Support up to 16GB of DDR2
 - 2 x mid-size AdvancedMC bays

For more information, contact: info@us.kontron.com

RSC# 41258 @ www.compactpci-systems.com/rsc

Kontron

14118 Stowe Drive • Poway, CA 92064
1-800-526-ATCA
www.kontron.com

**kontron****AT8904**

For design engineers of media server applications, the Kontron AT8904 offers exceptional flexibility with two (2) AdvancedMC slots to host any of the following: Processor AdvancedMC modules as main controllers; storage AdvancedMC modules (including the new AM4510 with a solid state Flash SSD) as mass storage devices for Processor AMCs; and dual 10 GbE uplink AdvancedMCs to interlink the Fabric.

Kontron offers the AT8904 hub with the AM4310 Mid-Size 10GbE Interlink AMC module for a redundant Interlink of multiple AdvancedTCA chassis. The Kontron AT8904 is designed with built-in Layer 3 routing support and non-blocking Layer 2 switching with VLANs. It also supports full IPv6 routing and a line rate switching capacity of 200 Gbps, which makes it the ideal hub for high-traffic broadband media server network elements.

**FEATURES**

- > 10 GbE service to redundant hub board
- > 10 GbE service to payload slots 2-15
- > 1x 1000BASE-T uplink on front panel
- > Non-blocking Layer 2 switching with VLANs
- > Supports comprehensive set of IP routing and Ethernet/Bridging protocols
- > AM4310 Mid-Size AMC uplink module offers 2x 10 GbE connections for both available AMC slots for redundant interlink of multiple AdvancedTCA chassis

For more information, contact: info@us.kontron.com

RSC# 41092 @ www.compactpci-systems.com/rsc

PDSi – Pinnacle Data Systems, Inc.

6600 Port Road, Suite 100 • Groveport, OH 43125
614-748-1150 fax 614-748-1209
www.pinnacle.com

**Pinnacle
Data
Systems,
Inc.****ATCA-RT01 Video+Storage Rear Transition Module**

The ATCA-RT01 from PDSi provides high reliability SAS storage, VGA video output, as well as additional Ethernet and USB I/O for AdvancedTCA x86 processor blades from PDSi (ATCA-F1) or Sun Microsystems (Netra™ CP3220). With its industry-standard Zone 3 interface, this RTM also operates with Sun's UltraSPARC® T2-based CP3260 blade. For systems requiring a mix of these compute blades, the ATCA-RT01 can provide a convenient single RTM solution.

The robust ATCA-RT01 RTM has been thoroughly tested and successfully deployed in critical systems including military applications. The 2.5-inch SAS HDD provides local storage with front-panel connection to secondary or redundant storage arrays. Additional ports include VGA video output and USB I/O for convenient local monitoring. In combination with PDSi's ATCA-F1 blade, the ATCA-RT01 RTM has also been validated and is hardware-compliant with the VMWare® ESX Server virtualization platform.

**FEATURES**

- > Compatible with x86 and Sun SPARC front blades, including PDSi dual AMD Opteron™ ATCA-F1, Sun Netra CP3220 (single AMD Opteron), and Sun Netra CP3260 (UltraSPARC® T2)
- > High-resolution VGA video output
- > Onboard SAS storage
- > 2 x 10/100/1000BASE-T Ethernet ports
- > 1 x serial port
- > 2 x USB ports
- > VMWare-compliant
- > Pigeon Point IPMC management
- > Customization welcomed, extended availability assured

For more information, contact: rob.ellis@pinnacle.com

RSC# 39363 @ www.compactpci-systems.com/rsc

PDSi – Pinnacle Data Systems, Inc.

6600 Port Road, Suite 100 • Groveport, OH 43125

614-748-1150 fax 614-748-1209

www.pinnacle.com**Pinnacle
Data
Systems,
Inc.****ATCA-F1 Dual AMD Opteron Processor Blade**

This industry-proven ATCA-F1 server blade features two AMD Opteron™ dual-core or quad-core processors for the absolute maximum performance available in a general-purpose AdvancedTCA® compute board. Now offered with a full 32 GB of memory and the benchmark-setting AMD “Shanghai” quad-core CPUs, this blade provides the extra level of computing horsepower and built-in virtualization support demanded by the next generation of COTS-integrated architectures. With its robust design, the ATCA-F1 blade has been thoroughly tested and successfully deployed in military and critical systems.

The ATCA-F1 blade features a standard Zone 3 interface for connection to PDSi’s ATCA-RT01 RTM, which adds SAS storage, video, Ethernet, and USB resources. The ATCA-F1 and ATCA-RT01 RTM combination has been validated and is hardware-compliant with the VMWare® ESX Server virtualization platform.

FEATURES

- › 2 x AMD Socket F (1207 pin) CPU sockets
- › Dual-core or “Shanghai” quad-core Opteron CPUs
- › Zone 3 RTM interface (to ATCA-RT01 RTM)
- › 4 DIMM sockets, up to 32 GB DDR2 Memory
- › Ethernet Base & Fabric Interfaces
- › 2 x Gb Ethernet links (Front panel)
- › 2 x USB 2.0 (Front panel)
- › 1 x AMC.1 slot (Mid-size)
- › VMWare-compliant
- › Pigeon Point IPMC management
- › Customization welcomed, extended availability assured

For more information, contact: rob.ellis@pinnacle.comRSC# 39364 @ www.compactpci-systems.com/rsc**Scalability for Convergence
in Communications**

Advantech's Blade Computing and Network Application platforms provide the technology, modularity and performance needed for the design of the next generation of telecom and networking platforms.

Advantech offers a wide range of CompactPCI, AdvancedTCA and MicroTCA blade based solutions, low-profile appliance servers and multi-blade systems, all available with a selection of the latest Intel® x86 and Cavium® network processors. At Advantech we simplify convergence.

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E-mail: ECGinfo@advantech.com

Trusted ePlatform Services

ADVANTECH

Renesas Technology America, Inc.

450 Holger Way • San Jose, CA 95134

408-382-7500

www.renesas.com



H8S/2100 BMCs

If your design requires a board management controller for AdvancedTCA, AMC, and MicroTCA applications, including IPMCs, MMCs, MCMCs, and EMMCs, Renesas has the device for you. Renesas has the world's broadest range of BMCs, enabling you to develop optimal design solutions.

For example, we offer low-cost 16-bit devices with LPC and 16550 capability in our H8S/2100 and H8S/2400 series, some of which include PECE, Ethernet, USB, and SPI functions. The new H8S/2153 offers a space saving (10x10mm, 112-pin BGA) second-generation microcomputer with a 25 MHz H8S/2600 CPU, 40KB of SRAM, 256KB of flash, 4 channels of I2C, and LPC, plus other key peripherals with field-proven functional modules from the H8S/2168 family. The software compatibility of the H8S/2153 makes it easy to port firmware from our first-generation solutions; its SRAM memory map is identical too. The fully featured H8S/2472 family member adds 10/100 Ethernet MAC, USB, PECE, and SPI to the peripheral set.

Comprehensive board management software applications for these Renesas controllers are available from the leading third-party AdvancedTCA, AMC, and MicroTCA application-package suppliers.

For more information on these or other Renesas products, contact webmaster.america@renesas.com or visit our website: www.renesas.com.

H8S BMC Feature Overview

BMC Feature	H8S/2168, 67, 66	H8S/2153	H8S/2164	H8S/2462	H8S/2472
Package - Pins	TQFP-144	BGA-112	TQFP-144	LQFP-144	BGA-176
Clock Freq	33MHz	25MHz	34MHz	34MHz	34MHz
CPU	H8S/2000	H8S/2600	H8S/2600	H8S/2600	H8S/2600
On-chip SRAM Size	40KB	40KB	40KB	40KB	40KB
Flash Size	256K, 384K, 512K	256K	512K	512K	512K
User Boot Flash Size	8KB	16KB	16KB	16KB	16KB
I2C channels	6	4	6	6	6
External bus width (for SRAM)	16-bit	None	16-bit	16-bit	16-bit
Glueless External Bus I/F	No	-	Selectable	Selectable	Selectable
16550 with Snoop	None	None	Yes	Yes	Yes
SCI serial	3 ch @ 115.2Kb	2 ch @ 115.2Kb	2 ch @ 115.2Kb	2 ch @ 115.2Kb	2 ch @ 115.2Kb
Total Serial Channels Available	3 ch	2 ch	3 ch	3 ch	3 ch
SPI	none	none	No	Yes	Yes
10/100 Ethernet MAC	No	No	No	1 ch	1 ch
USB Full-speed Function Interface	No	No	No	No	EP0-EP3
PECE 2.0 Support	No	No	No	Yes	Yes
H/W Multiplier	No	Yes	Yes	Yes	Yes
14-bit PWM	4 ch	4 ch	4 ch	4 ch	4 ch
LPC	3 ch	2 ch	3 ch	3 ch	3 ch
E10A-USB Debugger	Yes	Yes	Yes	Yes	Yes

H8S/2153 Module Management Controller

H8S/2600 CPU		Clock-pulse Generator
RAM 40KB	Flash ROM 512KB	LPC
DTC	EVC 8 channels	WDT x 2
Interrupt Controller	A/D Converter 8 channels	PWM 14-bit x 4
SCI-1, SCI-3	JTAG	I2C x 4
FRT	Timers 8-bit x 4	CRC Calculator

H8S/2472 Board Management Controller

H8S/2600 CPU	RAM 40KB	Flash ROM 512KB
External Bus Controller		
Clock-pulse Generator	EtherC with E-DMAC	LPC
DTC	EVC 16 channels	WDT x 2
Interrupt Controller	A/D Converter 8 channels	PWM 14-bit x 4
SCI-1, SCI-3	JTAG	I2C x 6
FRT	SPI x 1	Timers 8-bit x 4
16550	CRC Calculator	USB FS Function
		PECE 2.0

For more information, contact: webmaster.america@renesas.com

RSC# 35977 @ www.compactpci-systems.com/rsc

Schroff

170 Commerce Drive • Warwick, RI 02886

Toll-free 800-451-8755

www.schroff.us**Schroff**[®]**AdvancedTCA[®] Front Panel with IEA-R Handle**

Schroff[®] is revolutionizing the way that front panels are assembled by introducing a NEW die-cast base assembly for sheet metal panels. The new base integrates the alignment pin and thumbscrew into the die-cast, eliminating the need for secondary operations during the manufacturing process. The uniquely designed die-cast base attaches to the end of the front panel, providing strength and durability to what is commonly referred to as the weakest part of a sheet metal front panel. The new die-cast base not only strengthens the front panel but also provides a dedicated surface area for customized logos.

A new spring-loaded IEA-R handle is compatible with the die-cast base and features a robust die-cast metal latch to stand up to "ruggedized" applications. The IEA-R handle has unique customization features allowing for serial numbers, logos, or board identification labels to be placed directly onto the handle. The IEA-R handle now ships fully assembled – the bushing block, spring, and handle are held in the fixed, final assembled position for quick and easy installation to the PCB.

In addition to AdvancedTCA products, Schroff offers a full line of AdvancedMC carriers and front panel assemblies that support Quad or Tri light pipe configurations. All AMC products are expertly designed to fully comply to the AdvancedMC specification.

AdvancedTCA and AMC Custom Panels:

- Quick turn prototyping
- Plating, Powder Coat, Silk Screening, and Overlays
- Component kitting and full assembly
- Online 3D models and drawings
- Seamless migration from prototype to low-, mid-, and high-volume production
- Worldwide manufacturing facilities

By logging on to www.a-tca.com, system designers can access an extensive library of downloadable drawings for both AdvancedTCA and AMC front panel products. The drawings are available in a variety of formats, including IGS, STEP, eDrawing, DXF, PDF, and JPG files. The CAD drawings give designers an effective starting point in the development process and can be modified to meet specific system requirements.

For more information, visit www.a-tca.com/bettergrip.

**FEATURES**

- › Adds strength and durability to the panel
- › Integrates the alignment pin and thumbscrew into die-cast base
- › Reduces hidden assembly costs
- › Simplifies board assembly
- › Compatible with various industry standard AdvancedTCA handles
- › Increased reliability
- › Label area for logo or customization

For more information, contact: info@pentair-ep.com

RSC# 40725 @ www.compactpci-systems.com/rsc

Southco

P.O. Box 0116, 210 N. Brinton Lake Road • Concordville, PA 19331
610-459-4000
www.southco.com/ATCAresource

**Faceplate Hardware**

Southco AdvancedTCA access and alignment hardware provides the total solution of all faceplate hardware needed for complete PICMG 3.0 compliance.

These ergonomic Southco handles secure AdvancedTCA faceplates. The handles also ensure proper interface with microswitches to signal a graceful power-down sequence during hot-swap operation. All Southco AdvancedTCA-compliant hardware can be tailored to user-specified configurations. Optional custom-color powder-coated handles are available to enhance aesthetics or color-code components.

All of these Southco solutions provide finishes that are RoHS-compliant and other attributes gained from years of Southco access hardware experience – such as robust die-cast construction, ergonomic molded handle grips, and precision machining to ensure precise fit.

**FEATURES**

- › Push-to-close handles actuate microswitches, while spring-loaded secondary catches lock boards in position
- › Narrow handle design takes minimal space, yet provides ample ergonomic grip for easy board removal
- › Handles fit faceplates from 0.8 mm to 2.5 mm thick and accommodate lever-, plunger-, or custom-microswitches
- › Captive screws are available in multiple styles for easy manual tightening, including color-coated knobs
- › Alignment/grounding pins in multiple lengths feature smooth bullet-nose design for easy alignment/insertion
- › Alignment and keying modules in multiple pin/receptacle configurations are economical and extremely durable

For more information, contact: info@southco.com

RSC# 21498 @ www.compactpci-systems.com/rsc

XTech

80 Trim Way • Randolph, MA 02368
781-963-7200
www.xtech-outside.com

**Complete Line of Carriers, Faceplates, and Assemblies**

The most complete line of AdvancedTCA, MicroTCA, and AMC carriers, faceplates and assemblies – from XTech.

XTech offers one of the most comprehensive lines of AdvancedTCA faceplates, AMC faceplates and carriers, and additional mechanical accessories to support a wide range of applications. XTech's AdvancedTCA and AMC products are available in both standard and customized profiles, and manufactured with lightweight extruded aluminum or stainless steel.

XTech supports all your product needs – from prototype through full production – anywhere in the world. XTech also offers an extensive range of value-added services.

XTech's complete product catalog is available for you at www.xtech-outside.com/productcatalog, or by calling 781-963-7200.

**FEATURES**

- › In-house design assistance for custom assemblies
- › Component kitting and full assembly
- › Custom machining, fabrication, and rapid prototyping

For more information, contact: inquiry@xtech-outside.com

RSC# 40991 @ www.compactpci-systems.com/rsc

Emerson Network Power

5810 Van Allen Way • Carlsbad, CA 92008
 1 (888) 412-7832 or 1 (760) 930-4600
www.PowerConversion.com

**ATC210**

The Emerson Network Power ATC210 dual-input bus converter is a fully integrated power conversion and power management module for use on latest generation telecom cards. It provides AdvancedTCA board designers with a compact and optimized front-end power solution for space-constrained blades and AdvancedMCs.

FEATURES

- › Optimized footprint for high-density AdvancedTCA applications
- › Accepts inputs from -48 V
- › I2C serial bus interface for monitoring and reporting
- › Programmable alarm thresholds via I2C bus
- › Hardware alarms via optoisolators for loss of A or B Feeds
- › Comprehensive protection circuitry – current, voltage and temperature

For more information, contact: 760-930-4600

RSC# 32838 @ www.compactpci-systems.com/rsc

Emerson Network Power

5810 Van Allen Way • Carlsbad, CA 92008
 1 (888) 412-7832 or 1 (760) 930-4600
www.PowerConversion.com

**ATC250**

The Emerson Network Power ATC250 dual-input bus converter is a fully integrated power conversion and power management module for use on latest generation telecom cards. It provides AdvancedTCA board designers with a compact and optimized front-end power solution for space-constrained blades and AdvancedMCs.

FEATURES

- › Optimized footprint for high-density AdvancedTCA applications
- › Accepts inputs from -48 V
- › I2C serial bus interface for monitoring and reporting
- › Programmable alarm thresholds via I2C bus
- › Adjustable Hold-Up Voltage from 50-80 Vdc
- › Integrated EMI filter
- › Hardware alarms via optoisolators for loss of A or B Feeds

For more information, contact: 760-930-4600

RSC# 40994 @ www.compactpci-systems.com/rsc

Sun Microsystems, Inc.

4150 Network Circle • Santa Clara, CA 95054
 1-800-786-0404 or International 1-650-960-1300
<http://sun.com/atca>

**Comprehensive ATCA Systems Portfolio**

Sun Microsystems has provided innovative technologies for the telecommunications market for over two decades. The Netra Systems NEBS Level 3 Server product portfolio is the broadest carrier-grade server offering in the market today highlighting Sun's commitment to the communications and media industry. Only Sun can offer an AdvancedTCA portfolio that includes the complete product life-cycle requirements such as WW field service and support, integration services, NEBS-certified storage, and complementary Telco infrastructure software.

You can choose the processor that's best for your application based not just on your performance requirements, but also on power consumption, cooling efficiency, and multithreading capabilities. The Netra ATCA systems offer an unprecedented choice of processors: from the x64 high-performance, highly energy efficient processors such as Intel's Xeon and AMD's Opteron, to Sun's most advanced CMT processors, such as UltraSPARC. While the Solaris OS is the top choice of global Service Providers, Sun also provides and fully supports the other popular carrier-grade OS choices such as Linux and Windows. These carrier-grade ATCA blade servers provide ultra-dense horizontal scalability, allowing you to mix the processors and operating systems within a blade chassis, delivering flexibility and built-in 10G switch fabric support.

Sun is the largest contributor of open source software, such as OpenSolaris, Java, MySQL, GlassFish, and is the technology leader in the communications and media market with innovations such as the 10 GbE networking technology, Chip Multithreading Technology, virtualization solutions, and the Data Plane software suite. Sun's Communications and Media customers can take advantage of these advanced carrier-grade solutions to accelerate the deployment, and to drastically reduce the start-up costs of their next generation voice, video and data services.

For more information, check out <http://www.sun.com/netra> and for more on the ATCA systems portfolio check <http://www.sun.com/atca>.

**FEATURES**

- › Sun Netra CT900 ATCA Blade Server with 12 slots to mix-and-match various blades, and support for 1G or 10G Switch Fabric
- › Sun Netra CP3250 ATCA Blade Server based on the low-power Intel Xeon quad-core processors with up to 8 CPU cores in a single blade. Solaris, Linux, and Windows Server 2003
- › Sun Netra CP3260 ATCA Blade Server utilizing the world's fastest single socket processor – UltraSPARC T2
- › Sun Netra CP3220 ATCA Blade Server; single socket dual-and quad-core AMD Opteron processor and 10G support. Solaris, Linux and Windows Server 2003
- › Carrier-Grade Systems Software for System Management, High Availability and Data Plane
- › Choice of Operating Systems: Solaris 10, Linux and Windows Server 2003
- › NEBS Level 3 FC and SAS-based storage arrays with Sun supported AMC and ARTM HBAs

C&K Components

15 Riverdale Ave • Newton, MA 02458
617-969-3700
www.ck-components.com

**MDS and SDT Series**

MDS Series switch is the first surface-mountable snap-acting detect switch available for AdvancedTCA use. The MDS Series micro-miniature snap-acting detect switch is available in vertical or right angle PCB-mount styles. The switch features a long total travel of 2.9mm. Contact rating is 0.3A @ 6VDC, with a contact resistance of 200m. Mechanical and electrical life has been extended to 10,000 operations.

SDT Series pendulum style construction allows the switch to be actuated from the top or side. The switch features a low profile and sits only 3.3mm off the PC board and features a maximum actuation force of 30g. Contact rating is 1mA @ 5 VDC, with a maximum contact resistance of 1m. Minimum mechanical and electrical life for the pendulum style switch is 100,000 cycles.

**FEATURES**

› MDS Series

- First surface-mountable snap-acting detect switch for AdvancedTCA use
- Available in vertical or right angle PCB mount
- Long total travel of 2.9mm

› SDT Series

- Low profile – only 3.3mm off the PC board
- Top or side actuation
- Low actuation force (30 grams max)

For more information, contact: allison.turner@coactive-tech.com

RSC# 41273 @ www.compactpci-systems.com/rsc

C&K Components

15 Riverdale Ave • Newton, MA 02458
617-969-3700
www.ck-components.com

**Wide Range of Detect Switches for AdvancedTCA Applications**

C&K Components, a leading supplier of tact switches, toggle, rocker and pushbutton switches has developed a variety of detect switches for use in AdvancedTCA applications. Designated the MDS Series, SDS Series, SDT Series and HDT Series, the detect switches are implemented on the server blade as a safety mechanism to guarantee the blade is powered down, while ensuring no data is lost.

C&K has added a full line of surface mount products, which provides our customers with greater design flexibility and allows us to extend the terminals to provide a more robust assembly to the PC board. The extended offering of detect switches allows C&K to meet the expanded temperature ranges and vibration requirements as AdvancedTCA applications continue to grow in popularity in the military and medical arenas.

**FEATURES**

- › MDS Series micro snap-acting detect switch available in vertical and right-angle PCB mount, with 2.9mm travel
- › SDS Series side actuated detect switch with low 2mm profile and 2mm overtravel
- › SDT Series micro mini pendulum detect switch with top or side actuation and low 3.3mm profile
- › HDT Series micro mini detect switch with top or side actuation and low 3.35mm profile

For more information, contact: allison.turner@coactive-tech.com

RSC# 41274 @ www.compactpci-systems.com/rsc

Kontron

14118 Stowe Drive • Poway, CA 92064
1-800-526-ATCA
www.kontron.com

**kontron****ATCA INTEGRATED OM PLATFORMS**

Kontron pre-validates, pre-tests and, of course, provides the flexibility to integrate third-party AdvancedTCA/AMC hardware and HA middleware. Kontron offers GbE and 10GbE AdvancedTCA and AMC platform elements, plus integration services that includes third-party hardware and carrier-grade OS and HA middleware solutions.

Available ATCA Integrated "NEP-Ready" Platforms

OM9140 – AdvancedTCA 14-slot, 13U Integrated Platform, ideal for exceptional transaction processing performance with low latency and High Availability (HA) in a redundant N+1 configuration

OM9060 – AdvancedTCA 6-slot, 5U Integrated GbE/10GbE Platform: target applications with high transaction processing demands

OM9020 – AdvancedTCA 2-slot, 2U Integrated 10GbE Platform: solves the price vs. performance concerns for non-redundant systems for edge and access applications used in data center, regional CO, and enterprise networks.

**FEATURES**

- › 13U height, 19" rack-mount +2 x GbE switches, 10 GbE options
- › 12 x slots for GbE or 10GbE processor and/or carrier nodes
- › 2 x AMC modules on switch blade – 1 x system controller and 1 x storage +Customization with multiple AMCs (SATA/SAS, Processor, IO, Security) +14 x RTMs 2 x shelf managers; 1 x shelf alarm panel
- › Transcoding/encoding processing with high-performance, low latency and high availability
- › Call Servers, Media Gateway
- › Controllers, IMS-SCSF, HLR/HSS
- › Operating Support Systems (OSS)
- › Billing Support Systems (BSS)
- › Digital Rights Management System (DRM)

For more information, contact: info@us.kontron.com

RSC# 41093 @ www.compactpci-systems.com/rsc

Rittal/Kaparel

97 Randall Drive, Unit B • Waterloo, ON NV2 1C5 Canada
519-725-0101
www.kaparel.com

**AdvancedTCA Enclosure Family**

Rittal's AdvancedTCA and MicroTCA portfolio is sure to impress with 99.999% system availability, high-speed backplanes and systems designed for full redundancy backed up by Rittal's vast library of deployed "fail-safe" systems.

Rittal/Kaparel are actively involved in PICMG standardization efforts and offer an extensive product range for AdvancedTCA, MicroTCA, CompactPCI, VME-64ext backplanes, Shelf Management, Power Modules and fully assembled and tested shelf solutions.

One supplier, one manufacturer, one quality standard. As the leading system supplier, Rittal/Kaparel is your one-stop partner for electronic know-how and a reliable promise of all-inclusive competence – worldwide.

**FEATURES**

- › High-speed backplanes up to 10 Gbps, designed for advanced switching, Ethernet, InfiniBand, Serial RapidIO and StarFabric
- › AdvancedTCA System solutions are available in 5U, 12U and 13U configurations
- › RiCool intelligent blowers are hot swappable with internal speed control and flame sensors providing cooling up to 245 W/slot
- › Dual Star, Full Mesh or Replicated full Mesh topology
- › Designed for dual shelf managers (Pigeon Point-500) Dual Star
- › AdvancedTCA 5U System Platform available with AC or DC input
- › Variety of accessories are offered to complete your AdvancedTCA and MicroTCA system

For more information, contact: kdubois@kaparel.com

RSC# 30136 @ www.compactpci-systems.com/rsc

RadiSys Corporation

5445 NE Dawson Creek Drive • Hillsboro, OR 97124

503-615-1100

www.radisys.com/products/ATCA-AdvancedTCA.cfm

RadiSys

THE POWER OF WE

Promentum SYS-6010 Application Ready Platform

The RadiSys Promentum® SYS-6010 is an industry first application ready platform enabling 10-Gigabit Ethernet fabric connectivity. It is a 10-Gigabit Ethernet (GE) platform and integrates a multitude of state-of-the-art building blocks such as 10 GE switch and control module, multi-core compute blades, SAS/FC storage modules, STM-1/OC-3, PDH and Gigabit line card modules and platform software.

The SYS-6010 enables TEMs to meet their requirements for applications such as RNC/BSC, Media Gateways, IMS (CSCF, application and media servers) elements and IPTV and LTE infrastructure. The application ready platform is complete with the right best in class building blocks, hardware and software, to meet performance requirements for these target applications. Such a carrier grade platform enables the TEMs to concentrate on their key value add – application software – while relying on comprehensive system engineering and integration by RadiSys.

The application ready platform is designed to be a common managed platform for multitude of network elements and accelerates time-to-market. It incorporates the modularity of the Advanced Mezzanine Cards (AMCs) to enable configuration flexibility.

The platform is pre-integrated with validated RadiSys AdvancedTCA blades to create various configurations to meet the specific application. Some of the validated blades and modules (not all inclusive) include ATCA-2210, ATCA-4310, MPCBL0050, ATCA-7220, ATCA-9100 and the ATCA-7400, These can be configured in either the ATCA-6000, ATCA-6006, or ATCA-6016 shelves. The configured AdvancedTCA blades include AMCs – AMC-3201/2/3 delivering flexible storage technology options and the Cavium OCTEON based AMC-7211.

**FEATURES**

- › Application-ready platform to address next generation requirements for RNC/BSC, Media Gateways, IMS and IPTV infrastructure.
- › Accelerate time-to-market with the fully integrated and validated managed platform integrating best in class building blocks including:
 - 13U/12U/5U/2U shelf
 - 10 Gigabit switching
 - Multi-core compute blades
 - STM1/OC-3 and GE line cards and more.
- › Meet capacity and throughput requirements easily with advanced technologies such as 10-Gigabit Ethernet, multi-core processing, NPU-based wire-speed, 10 Gbps line cards and data path software.
- › Improve economies of scale and reduce development expense with common managed platform with flexible configuration options for building blocks and software to enable multiple applications with single-platform architecture.
- › SA Forum HPI 1.1 compliant APIs enable platform-independent middleware and applications.
- › NEBS-certified, highly redundant architecture eliminates any single point of failure and enables 5-nines or 6-nines availability.

Schroff

170 Commerce Drive • Warwick, RI 02886

Toll-free 800-451-8755

www.schroff.us**Schroff**®**AdvancedTCA® Systems**

Schroff® AdvancedTCA® System solutions integrate key technologies – power entry, thermal management, high-speed backplane design, and shelf management – to bring today's system integrators with leading edge solutions for the communications market. High-performance thermal solutions handle the 200+ W per slot required for the newest generation of blades for chassis from 2-16 slots. With data speeds pushing 10 Gbps on the high-speed fabric interface backplane design is a critical element of an AdvancedTCA system. Schroff provides a range of topologies from dual star to triple replicated mesh – featuring leading edge techniques such as backdrilling and quad routing. Shelf Management is the control and management infrastructure for high availability AdvancedTCA systems. Leveraging Pigeon Point technology, Schroff has developed a cost-effective management infrastructure in our chassis that combines I²C for managing FRUs, with IPMB for Blade interface. In addition, we offer both bused and radial IPMB topology options standard in the family of Schroff AdvancedTCA system solutions. A common shelf manager carrier is interchangeable in all Schroff AdvancedTCA product platforms.

Available products include:

- 2-slot 15X replicated Mesh AC and DC systems for enterprise and development applications.
- 5/6-slot AC and DC systems with triple replicated mesh backplanes for both carrier grade telecom and enterprise requirements; features include optional shelf management and shelf alarm panel.
- 14/16-slot 12U & 13U dual star and full mesh DC systems are available in radial or bused IPMB – these NEBS-ready solutions target the Telecom market. A 14-slot AC version is available for enterprise applications.

**FEATURES**

- › Broadest range of 2- to 16-slot AdvancedTCA systems
- › AC and DC options for both NEBS Telco and cost-sensitive Enterprise requirements
- › Backplane topology options including dual star, full mesh, and triple replicated mesh with bused or radial IPMB
- › Proven high-performance thermal solutions for 200 W per slot and beyond
- › Schroff Shelf Management Architecture based on Pigeon Point ShMM-500 technology
- › Full range of accessory products including air baffles, front panels, test boards, and cabinets
- › Engineered custom configurations to meet your exact requirements

Annapolis Micro Systems, Inc.

190 Admiral Cochrane Drive, Suite 130 • Annapolis, MD 21401

410-841-2514

www.annapmicro.com**Four Channel Clock Synchronization Board**

The Four Channel Clock Distribution Board distributes a common clock and synchronized control signal triggers to multiple cards in the system. This 6U VME64X/VXS board provides four high-speed, ultra-low jitter, ultra-low skew differential bulkhead mounted clock outputs, two ultra-low skew differential vertical SMA on-board clock outputs, and four ultra-low skew and clock synchronized single-ended bulkhead mounted control signal triggers.

A jumper set at board installation time or via optional P2 Serial Port determines which one of the 2 installed clock sources is active. Manufacturing options for Clock Source 0 are Single Ended or Differential External Clock, a PLL ranging from 700 MHz to 3 GHz with an On-Board Reference Oscillator, or a PLL ranging from 700 MHz to 3 GHz with a 10 MHz External Reference. Manufacturing options for Clock Source 1 are a PLL ranging from 700 MHz to 3 GHz with an On-Board Reference Oscillator, a PLL ranging from 700 MHz to 3 GHz with a 10 MHz External Reference or an On-Board Low Frequency Oscillator ranging up to 800 MHz.

The four control trigger outputs can originate from a high-precision external source via front panel SMA, from a manual pushbutton on the front panel, or from software via an optional Backplane P2 Connector Serial Port. These trigger outputs are synchronized to the distributed clock to provide precise output timing relationships.

Annapolis Micro Systems is a world leader in high-performance, COTS FPGA-based boards and processing for RADAR, SONAR, SIGINT, ELINT, DSP, FFTs, communications, Software-Defined Radio, encryption, image processing, prototyping, text processing, and other processing-intensive applications.

Annapolis is famous for the high quality of our products and for our unparalleled dedication to ensuring that the customer's applications succeed. We offer training and exceptional special application development support, as well as more conventional support.

**FEATURES**

- › Four Synchronized Differential Front Panel Clock Outputs up to 3 GHz with Typical Skew of 5 ps
- › Ultra-low Clock Jitter and Phase Noise – 275fs with 1280 MHz PLL and external 10 MHz Reference
- › On-board PLL's Manufacturing Options provide Fixed Frequencies of 700 MHz to 3 GHz, Locked to Internal or External Reference
- › On-board Low Frequency Oscillator provides Fixed Frequencies up to approximately 800 MHz
- › Four Synchronized Trigger Outputs, always Synchronized with the Output Clock, with Typical Skew of 5 ps
- › Jumper Selectable Trigger Output Levels of 3.3V PECL, 2.5V PECL, or 1.65V PECL
- › Source Trigger from Front Panel SMA, Pushbutton, or Optional P2 Serial Port
- › Cascade boards to provide up to 16 sets of outputs
- › Compatible with standard VME64X and VXS 6U backplanes
- › Universal clock input supports wide range of signal options, including signal generator sine wave
- › Differential clock input permits multiple standards including: LVDS, 3.3V PECL, 2.5V PECL, and 1.65V PECL
- › Clock and Trigger Outputs Compatible with all Annapolis Micro Systems, Inc. Wildstar™ 2 PRO I/O Cards and Wildstar™ 4/5 Mezzanine Cards

Lyrtech

2800 Louis-Lumière St., Suite 100 • Quebec City, Quebec G1P 0A4
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www.lyrtech.com

**ADACSync**

The ADACSync is a 6U CompactPCI, GPS-based, precision, low-jitter clock generator featuring 12 buffered output channels, five programmable clocks, the possibility of an external or onboard reference clock, and a high-precision GPS reference clock option. These features make the ADACSync perfect in synchronizing multichannel system clocks.

The first programmable clock of the ADACSync (CLK0) is buffered and distributed to eight phased-synchronous output channels, which allows synchronizing several digitizer boards or daisy chaining ADACSyncs for even more channels (with an external input clock). The four other programmable clocks (CLK1-CLK4) are independent, single-channel buffered outputs. CLK4's delay can also be adjusted to perform precise phase adjustments. The ADACSync is also equipped with a GPS module, providing a 10 MHz reference clock.

FEATURES

- › Five independent programmable clock outputs
- › Four independently buffered outputs
- › Output range from 31.25 MHz to 350.00 MHz
- › Less than 0.1 ppm, onboard VCxO, and GPS-matched, precision reference
- › Distribution buffer with eight phased-aligned channels (programmable CLK0)
- › Reference clocks – External, onboard, or GPS
- › Drives 50- , single-ended loads
- › Reference clock and 1-pps GPS outputs
- › GPS time/position-stamp at GPIO-32 output
- › Stand-alone configuration through onboard EEPROM

For more information, contact: info@lyrtech.com

RSC# 40724 @ www.compactpci-systems.com/rsc

Tundra

603 March Road • Ottawa, ON K2K 2M5 Canada
613-592-0714
www.tundra.com

**Tsi620™ Multi-Standard RapidIO Switch**

The Tsi620 is a multi-standard RapidIO switch. Its RapidIO interface includes configurable port modes: up to three ports in 4x mode, and up to six ports in 1x mode running data at 1 to 10 Gbps. The FPGA interface, which is optimized for use with low-cost non-SerDes FPGA, supports 1 Gbps to 10 Gbps of data rate running RapidIO over an XGMII physical layer. The PCI interface includes 32/64-bit addressing, 32-bit data, and up to 66 MHz operation. It supports message signal interrupts, PCI master, and PCI target capability. Tsi620's hardware RapidIO to PCI bridge features non-transparent bridging between RapidIO ports and up to four PCI devices, and the Switch also leverages Tsi57x low-power technology at 120-200 mW per RapidIO port, and typical power at full operation is less than 4 W.

FEATURES

- › 3x4 or 6x1 RapidIO ports @ up to 10 Gbps data rate per port
- › RapidIO to PCI hardware bridging
- › 10 Gbps FPGA port running RapidIO over XGMII
- › Interface to non-SerDes FPGA for BOM reduction
- › 50 Gbps of non-blocking full duplex bandwidth
- › Lower power @ 120-200 W per x1 port, 4 W typical
- › In production now

For more information, contact: sales@tundra.com

RSC# 39327 @ www.compactpci-systems.com/rsc

KineticSystems

900 North State St. • Lockport, IL 60441
 1-800-DATA-NOW
www.kscorp.com/cp246

**CP246 ADC**

The CP246 is a single-width, 6U, CompactPCI/PXI module with 8 channels of Bridge Signal Conditioning feeding 8 independent 16-bit Analog to Digital Converters (ADC). This single-width solution incorporates both signal conditioning and ADC to eliminate the need for complex field wiring.

In addition to the signal conditioning and ADC functionality, the CP246 provides 16 multi-function digital I/O channels. Any of these channels can be configured as a digital input, a digital output or selectively attached to a frequency-in, counter-in, or timer-out channel. The CP246 is available immediately starting at \$400 USD per channel with delivery in 4-6 weeks.

**FEATURES**

- › Single slot solution for bridge conditioning and ADC
- › 16-bit 250 KS/s ADC per channel with differential inputs
- › Bridge Completion for 1, 2, or 4 active arms; programmable bridge balance.
- › Programmable shunt calibration, gain and excitation per channel
- › 6 pole, low-pass filter with programmable cutoff from 20 to 50 kHz
- › 16 multi-function digital I/O channels

For more information, contact: mkt-info@kscorp.com

RSC# 41270 @ www.compactpci-systems.com/rsc

Lyrtech

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www.lyrtech.com

**VHS-ADC/VHS-DAC**

The VHS-ADC and VHS-DAC are high-speed, multichannel conversion platforms. They are equipped with eight phase-synchronous ADCs/DACs capable of maximum rates of 105 MSPS/480 MSPS and a high-capacity Virtex-4 FPGA for high-speed processing. They also come with SDRAM for data storage and expansion connectors to add input or output channels, or several gigabytes of DDR2 SDRAM for simultaneous, full-speed recording. This capability makes the platforms perfect for multichannel IF processing (AC-coupled option) or baseband processing (DC-coupled option), among other things.

When combined with other Lyrtech DSP-FPGA processing platforms, VHS-ADCs/VHS-DACs become complete and very-high-performance IF/baseband solutions. In addition, VHS-ADCs and VHS-DACs can be combined to become an end-to-end chain for high-speed processing on up to 16 or more channels.

**FEATURES**

- › Onboard, 8-channel, 105 MSPS/480 MSPS, 14-bit ADCs/DACs on 6U CompactPCI
- › Mezzanine expansion site to support more channels or memory
- › Outstanding clock synchronization
- › Onboard, high processing speed LX/SX Virtex-4 FPGA
- › Sustained 8 Gbps raw data RX/TX RapidCHANNEL ports (one each)
- › Front panel data port (FPDP-I/II)
- › Recording/Playback software tools
- › Stand-alone configuration through the onboard flash memory
- › Support for MATLAB model-based design flow

For more information, contact: info@lyrtech.com

RSC# 40722 @ www.compactpci-systems.com/rsc

Hartmann Elektronik GmbH

Motorstra. 43 • Stuttgart, D-70499 Germany
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www.hartmann-electronic.com

**4-slot Power Backplanes**

Hartmann Elektronik Intelligent 4-slot Power Backplanes for CompactPCI and VME applications feature an integrated and configurable microprocessor. The backplanes detect the status from each power supply and use the ACFAIL signal to report to the system.

If every power supply unit is properly inserted, there is automatic control. All settings and addresses can be configured by using DIP switches. Current capacity is up to 128 A with a temperature range from -40 °C to +85 °C.

**FEATURES**

- › Intelligent Power Backplane with integrated and configurable microprocessor
- › Detecting the status from each power supply and reporting to the system by using the ACFAIL signal
- › Automatic control if every power supply unit is properly inserted
- › All settings and addresses can be configured by using DIP switches
- › Current capacity up to 128 A
- › Temperature range from -40 °C to +85 °C

For more information, contact: info@hartmann-elektronik.de

RSC# 41289 @ www.compactpci-systems.com/rsc

Rittal/Kaparel

97 Randall Drive • Waterloo, Ontario N2V 1C5, Canada
 519-725-0101
www.kaparel.com

**AdvancedTCA and CompactPCI Backplanes**

Rittal/Kaparel is the recognized leader in CompactPCI and AdvancedTCA backplane designs. Whether it is a standard off-the-shelf, modified standard, or totally custom backplane, we can provide a solution for your system platform requirements. AdvancedTCA backplanes come in Dual Star, Full Mesh for 14 slots, or Replicated Full Mesh topology in 2 and 6 slots. CompactPCI backplanes conform to PICMG 2.0 R3.0 specification and are available in 32-bit or 64-bit versions. Additionally we offer PICMG 2.16 R1.0 backplanes and bridges. This will allow the easy configuration of CompactPCI systems from 2 to 21 slots, due to the backplanes' modular design and connection of the individual segments via CompactPCI or H.110 bridge modules. Each backplane segment contains between 2 and 8 slots and may operate in stand-alone mode in conjunction with a CPU board and a PSU. For assembling larger systems, several segments may be joined together via PCI low profile bridge modules fitted on the backplane's rear side.

**FEATURES**

- › CompactPCI backplanes designed to accommodate rear mount, low profile bridge modules
- › CompactPCI – PICMG 2.16 Ethernet Packet Switching Backplane specification
- › CompactPCI – PICMG 2.17 Star Fabric Specification
- › CompactPCI – CompactPCI H.110
- › AdvancedTCA – Compliant to PICMG 3.0 Rev 1.0 specification
- › High-speed backplanes up to 10 Gbps, designed for advanced switching, Ethernet, InfiniBand, Serial RapidIO, and StarFabric
- › AdvancedTCA – Dual Star, Full Mesh, or Replicated Mesh configurations

For more information, contact: kdubois@kaparel.com

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Curtiss-Wright Controls Embedded Computing

741-G Miller Drive, SE • Leesburg, VA 20175

613-254-5112

www.cwembedded.com



SCP/DCP-1201 3U cPCI Intel Core 2 Duo SBC

The SCP/DCP-1201 from Curtiss-Wright is a multifunctional 3U CompactPCI board built to meet the diverse needs of the evolving embedded community. This single board computer can operate as a system controller, peripheral processor, or I/O processing node.

As a system controller the SCP/DCP-1201 is available in both single- or two-slot configurations for chassis that have left system controller expansion slots. The addition of a USB hard drive or SATA along with a PMC video card makes the SCP/DCP-1201 a full-featured platform.

In addition to running Windows, the SCP/DCP-1201 also runs VxWorks, LynxOS SE, Solaris 10, and Wind River GPP Linux 2.6 operating systems.

The SCP/DCP-1201P board provides PICMG 2.3 compliance and 64 PMC signals routed to the backplane.



FEATURES

- > Intel® Core 2 Duo Processor 1.5 GHz @ 15 W (ultra low voltage) and 4 MB L2 cache
- > Up to 1 GB ECC DDR2 SDRAM
- > 1 GB USB NAND
- > Two Gigabit Ethernet ports
- > Additional I/O including (3) USB ports, (5) COM ports, (1) SATA port, and (7) GPIO lines
- > One PMC site with 64-bit PCI-X
- > Ruggedized, air- or conduction-cooled
- > Windows, VxWorks 6.x, Solaris 10, or Wind River GPP Linux 2.6 BSPs

For more information, contact: sales@cwembedded.com

RSC# 34872 @ www.compactpci-systems.com/rsc

Curtiss-Wright Controls Embedded Computing

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www.cwembedded.com



SCP/DCP-124 3U cPCI MPC7447A/7448 SBC

Designed to address space-constrained applications, the SCP/DCP-124 is the next generation of 3U CompactPCI single board computers offering increased processing power with an impressive industry leading I/O complement. Based on the Freescale Power Architecture MPC7447A and 7448 processors, the SCP/DCP-124 runs at a clock speed of 1000/1200 MHz.

In conjunction with its processing power, the SCP/DCP-124 offers a full 64-bit onboard PMC site that allows developers to integrate CWCEC or third-party PMCs directly onto the 124. A rich complement of I/O is also available on the 124 including up to 2 Gigabit Ethernet ports, up to 4 serial channels (2 x RS-232, 2 x RS-422/485), up to 14 bits discrete digital I/O, and a Universal Serial Bus (USB) 2.0 port.

The SCP/DCP-124P is available as an option and provides a peripheral-only version of the card.



FEATURES

- > Freescale MPC7447a/7448 PowerPC processor with clock speed of 1000/1200 MHz
- > CompactPCI system controller and peripheral (auto-detected) supporting 3.3 V or 5 V signaling @ 33 or 66 MHz operation
- > 64-bit, 100 MHz PCI-X PMC expansion site
- > Memory: Up to 1 GB of DDR1 SDRAM with ECC at 133 MHz, 256 MB nonvolatile flash, flash for Permanent Alternate Boot Site (PABS), and 128 KB nonvolatile RAM
- > I/O: 2 x 10/100/1000BASE-T Ethernet ports, 2 x RS-232 serial ports, 2 x HDLC/SDLC-capable EIA 422/485 serial channels (both synchronous), 1 x USB 2.0, 4 x general purpose DMA controllers, up to 14 bits discrete I/O, up to 8 bits differential discrete I/O (4 inputs, 4 outputs), and a real-time clock

For more information, contact: sales@cwembedded.com

RSC# 31800 @ www.compactpci-systems.com/rsc

Dynatem, Inc.

23263 Madero, Suite C • Mission Viejo, CA 92691
 949-855-3235
www.dynatem.com

CRD Conduction-cooled Core2 Duo based CompactPCI SBC

The CRD is a 6U single-slot CompactPCI compatible platform based on the Intel® low-power Core2 Duo processor. The CRD takes advantage of the L7400 Core2 Duo's low power consumption as a rugged SBC. Versions supporting the T7400 2.16 GHz Core2 Duo are also available.

The CRD is a conduction-cooled module with wedge locks and a full-board heat sink for high shock/vibration environments and temperature extremes. Extended temperature and versions with conformal coating are available.

Shock and vibration immunity were major goals in the CRD design. All major components including processor, chipset and memory are BGA based. The only socketed devices on board are the optional CompactFlash and optional battery, both of which are securely fastened when required.

**FEATURES**

- › Intel Pentium Core™2 Duo Processor @ 1.5 GHz or 2.16 GHz
- › E7520 Chipset for PCIe support, high memory bandwidth and ECC support
- › On-board SVGA Controller
- › Two Bb Ethernet ports routed to the backplane in compliance with PICMG 2.16. As a special option two more Gb Ethernet available from the front
- › Supports two PMC sites, one of which optionally supports XMC modules
- › Available with conformal coating
- › All boards thermally tested prior to shipment
- › Support for Windows, VxWorks, Linux, QNX Solaris, and LynxOS

For more information, contact: sales@dynatem.com

RSC# 41290 @ www.compactpci-systems.com/rsc

Emerson Network Power

2900 South Diablo Way, Suite 190 • Tempe, AZ 85282
 1-800-759-1107 or 1-602-438-5720
EmersonNetworkPower.com/EmbeddedComputing

CPCI7200 Multi-core CompactPCI SBC

The Emerson Network Power CPCI7200 single-board computer (SBC) uses the Intel® Core™ 2 Duo processor and E7520 + 6300ESB chipset. Its single-slot configuration makes it ideal for thermally constrained environments, and the SBC includes dual Gigabit Ethernet interfaces, plus dual channel 3.2 GBps high-speed, double data rate DDR2, for a combined maximum bandwidth of 6.4 GBps.

The CPCI7200 is a low-power, high-performance SBC that offers full hot swap compliance per PICMG® 2.1 and supports the PICMG 2.9 System Management and PICMG 2.16 CompactPCI® Packet Switching Backplane open specifications. In addition to the PICMG 2.16 variants, the CPCI7200 offers other value-added features including the PLX6466 PCI-to-PCI bridge (PPB) for universal CompactPCI system- or peripheral-slot functionality.

**FEATURES**

- › 1.06 or 1.5 GHz Intel® Core™ 2 Duo processor
- › 533 or 667 MHz frontside bus
- › Intel® E7520 + 6300ESB dual channel 3.2 GBps memory controller
- › 2 GB ECC-protected DDR2-400
- › Dual on-board Gigabit Ethernet interfaces
- › Support for PICMG 2.16 CompactPCI Packet Switching Backplane spec
- › Full PICMG 2.1, R2.0 Hot Swap spec compliance
- › PICMG 2.9 System Management spec support
- › One or two PCI Mezzanine Card (PMC) sites
- › PLX6466 PCI-to-PCI bridge technology

For more information, contact: EmbeddedComputingSales@Emerson.com

RSC# 36476 @ www.compactpci-systems.com/rsc

EUROTECHwww.eurotech.com**A6pci7508**

The A6pci7508 is a high-performance CompactPCI single board computer with an onboard PowerPC G4 MPC7447A processor by Freescale.

The A6pci7508 can use either a CompactPCI system slot or a peripheral slot with automatic slot recognition.

For very high processing loads, multiple CPU boards can be added to increase the computational performance.

The A6pci7508 is available with a CPU frequency of 600 MHz or 1 GHz and memory sizes of 512 MB or 1 GB.

**FEATURES**

- › Freescale MPC7447A @ 600 MHz/1 GHz processor
- › Tundra Tsi108 Host Bridge
- › Front panel I/O: 1 channel RS-232C serial ports, 2 channels Gigabit Ethernet
- › One onboard CompactFlash socket, two PCI Mezzanine Card (PMC) slots
- › External Bus I/F: Bridge chip PLX PCI6254
- › 6U single-slot width

For more information, contact: cpcci@eurotech.com

RSC# 41314 @ www.compactpci-systems.com/rsc

Kontron

14118 Stowe Drive • Poway, CA 92064
888.294.4558
www.kontron.com

**CP6016 & CP6923**

In today's demanding world, designers need smart solutions. The Kontron 6U CompactPCI CP6016 and CP6923 were designed with exactly that in mind. The CP6016 features the latest Intel® Core™2 Duo 2.53 GHz (T9400) processor and is a perfect fit with the CP6923 PICMG 2.16 rugged Ethernet switch board.

The CP6016 features new technology such as Trusted Platform Module (TPM), which provides enhanced hardware and software security for highly sensitive applications. And the CP6923 is available in three rugged levels: R1-Standard, R2-Rugged Air-Cooled, R3-Conduction-Cooled. (Shown here is the R3-Conduction-Cooled version).

Together, these 6U CompactPCI boards provide a cost-effective solution for high-performance systems.

**FEATURES**

- › CP6016: Dual Core 2.53 GHz processor, 45nm process
- › CP6016: High Ethernet performance – 5x GbE ports
- › CP6016: Serial ATA II RAID, greater speed 300 MBps, now with RAID 0/1/5/10
- › CP6016: Up to 8 GB RAM with ECC @ 667 MHz
- › CP6923: 24x Gigabit Ethernet ports
- › CP6923: Non-blocking layer 2 & 3 switching and routing
- › CP6923: Copper, optical, rear I/O version – Hot Swap, IPMI – Comprehensive firmware package
- › CP6923: Leading edge technology based on BCM5650X chip

For more information, contact: info@us.kontron.com

RSC# 41094 @ www.compactpci-systems.com/rsc

LCR Electronics

9 South Forest Avenue • Norristown, PA 19401
 (610) 278-0840
www.lcr-inc.com

**ATCA, μ TCA, and CompactPCI Custom Chassis**

LCR Electronics' complete line of rugged AdvancedTCA, μ TCA, and CompactPCI chassis for military and aerospace applications comes in a number of flexible configurations to meet special customer requirements: EMI shielding levels, numerous power options including hot swap and redundancy, backplane configurations such as Dual Star or Mesh (AdvancedTCA and μ TCA), and wire-rope isolators to shock-isolate the card cage. Chassis can be designed to meet a variety of applicable military shock and vibration specifications such as MIL-STD-167 and MIL-S-901 (ship-board) as well as MIL-STD-810 (airborne). All chassis feature forced-air convection cooling to dissipate heat and a front panel on/off switch.

**FEATURES**

- › Cost-effectively built to your custom requirements
- › Complete turnkey systems
- › Various slot configurations and backplane options
- › Air flow: front to rear, top to bottom or side to side
- › 19" rack mountable, handles or stand alone
- › Complete EMI shielding and filtering
- › Designed to meet mil-spec shock and vibration standards

For more information, contact: sales@lcr-inc.com

RSC# 41098 @ www.compactpci-systems.com/rsc

MEN Micro Inc.

24 North Main Street • Ambler, PA 19002
 215-542-9575
www.menmicro.com/products/cpci,3,02F216-.html

**F216 Single-slot, 8-channel, 3U CompactPCI I/O Board**

MEN Micro now offers a single-slot, 3U CompactPCI I/O board with eight 16550D-compatible UARTs. With the physical layers integrated on the board, each channel on the new F216 can be individually configured as single-end RS232 or as differential RS422 or RS485 for added system flexibility. Each channel also has its own 500 V isolation to decrease interference between channels.



The F216 provides exceptionally high data transfer rates of up to 921,600 bits/s plus a 60-byte transmit and receive buffer, making the board useful in systems with large FIFO requirements. The operating temperature of -40 °C to +85 °C (-40 °F to +185 °F) enables the F216's use in rugged mobile applications.

FEATURES

- › Octal 16550 UART
- › RS232/422/485, isolated
- › Large receive and transmit FIFOs
- › Very high data rates up to 921,600 bits/s
- › Full handshake support
- › Hardware flow control for RS485 half duplex
- › -40 °C to +85 °C with qualified components

For more information, contact: sales@menmicro.com

RSC# 38937 @ www.compactpci-systems.com/rsc

PDSi – Pinnacle Data Systems, Inc.

6600 Port Road, Suite 100 • Groveport, OH 43125

614-748-1150 fax 614-748-1209

www.pinnacle.com**Pinnacle
Data
Systems,
Inc.****CP86-N1 Intel® Core™ 2 Duo Processor Blade**

This powerful compute board is the newest member of the PDSi ComputeNode™ family of carrier-grade CompactPCI solutions and offers the highest performance and dependability in its class. The blade, which is PICMG 2.16 compliant, provides a high-performance, robust general-purpose platform built around Intel's latest "Penryn" Core 2 Duo T9400 processor and server-class 5100 MCH chipset.

The CP86-N1 blade includes a standard PMC/XMC site for I/O expansion offered in two alternate models, one featuring an onboard SATA hard drive plus high-resolution graphics, the other providing a second PMC expansion site. Rear I/O capability covers a very broad range of interfaces that can be accessed through one of PDSi's companion rear transition modules (RTMs). Two 1000BASE-T Ethernet ports provide the PICMG 2.16-compliant fabric interfaces, making the PDSi CP86-N1 fully compatible with any cPSB chassis.

**FEATURES**

- › Server-grade CompactPSB compute blade
- › Intel T9400 Core 2 Duo 2.53 GHz with 5100 MCH / ICH9R
- › Up to 8 GB Registered ECC DDR2 667 memory
- › 1 PMC/XMC mezzanine site standard
- › 2 alternate models, offering 2nd PMC site, or ATI Radeon™ graphics & 2.5" SATA HDD
- › 2 x 1 Gb Ethernet links (front panel)
- › 2 x USB 2.0 (front panel)
- › Rear I/O interfaces
- › Optional USB Flash drive
- › Customization welcomed, extended availability assured

For more information, contact: rob.ellis@pinnacle.comRSC# 40980 @ www.compactpci-systems.com/rsc**Tracewell Systems**

567 Enterprise Drive • Westerville, OH 43081

800-848-4525

www.tracewell.com**Tracewell Systems****Tracewell S42**

The Tracewell S42 is an ultra-performance computing platform for rugged applications requiring small size and extreme low weight, and is able to deliver unparalleled performance for air or ground-mobile applications. The S42 is a light and rigid platform that can withstand 30 gs, meets MIL-STD-461 shielding, features MIL-STD-704 compatible modular power, and includes up to five 900W power supply modules that plug directly into the backplane. The cooling system cools >200W/slot at sea level, and >85W/slot at 10,000 ft. An Ethernet-based monitor manages start-up and provides remote power control and real-time power, cooling, and temperature status. Operating temperature is +50 °C to -40 °C. The S42 supports multiple backplane architectures.

**FEATURES**

- › Rugged ultra-low weight at just 45 lbs
- › 4500W power is MIL-STD-704 compatible
- › EMI shield per MIL-STD-461
- › Over 200W cooling per slot at sea level, 85W per slot at 10,000 ft.
- › Shock and vibrate per MIL-STD-810 and DO-160
- › Architectures available VME/VXS/VPX/CompactPCI

For more information, contact: sales@tracewell.comRSC# 25192 @ www.compactpci-systems.com/rsc

EUROTECHwww.eurotech.com**A3pci1546**

3U CompactPCI 2-channel 100BASE-TX/10BASE-T Ethernet board.

Ideal to expand the networking capabilities of CompactPCI systems.

**FEATURES**

- › Controller: 2x Intel 82559ER controllers
- › Transmission speed: 10 Mbps, 100 Mbps (Duplex)
- › Connector: Two RJ-45 connectors with LED
- › Hot Swap
- › Bus: 32-bit 33MHz CompactPCI bus
- › Signaling voltage: 3.3/5 V (supports both voltages)
- › Power requirements: 5 V
- › Board size: 3U single-slot width

For more information, contact: cpci@eurotech.com

RSC# 41317 @ www.compactpci-systems.com/rsc

EUROTECHwww.eurotech.com**A3pci1550**

The A3pci1550 is a 4-channel serial interface board.

This compact, hot swap 3U board is equipped with two National Semiconductor PC16552 serial controllers that permit the expansion of CompactPCI systems with four additional TIA/EIA-232E serial channels.

**FEATURES**

- › No. of channels: 4 channels
- › Communication system: Asynchronous
- › Signal level: TIA/EIA-232E standard compliant
- › UART: Two National Semiconductor PC16552DV, clk= 18.432 MHz
- › Baud rate: Up to 115.2 kbps
- › Connector: Half-pitch Dsub 50-pin female connector
- › Control line: DCD, DSR, CTS, DTR, RTS, RI
- › Bus: 32-bit CompactPCI interface
- › Power requirements: 5 VDC \pm 5%
- › Board size: 3U single-slot width

For more information, contact: cpci@eurotech.com

RSC# 41321 @ www.compactpci-systems.com/rsc

Hybricon Corporation

12 Willow Road • Ayer, MA 01432

978-772-5422 ext.261

www.hybricon.com**CompactPCI Technology Series****Forced Air Conduction-Cooled**

- 1-ATR tall long conduction-cooled chassis
- 6U x160 dip brazed card cage with folded fin heat sinks
- Dissipate 230W to an ambient of +60°C with a wall thermal interface of +75°C
- Front to rear airflow
- Rugged military fans for extended operating temperature
- Sealed internal compartment offering protection against foreign matter
- Rugged integrated fan monitoring system
- 8-slot backplane
- 400W 28V MIL-STD-704F conduction-cooled power supply (MIL-STD-1295 option available)
- EMC Designed to meet MIL-STD-461E
- Operating temperature: -32°C to +50°C

Rack-mount Forced Air Convection-Cooled

- 5U rugged 8.72" H x 19.15" D x 19.0" W
- Front to rear cooling w/ EMI honeycomb and removable air filter
- 1 CFM per slot cooling airflow @ 21,000-feet altitude
- 18-slot 3U air-cooled card cage
- 16-slot 3U backplane
- 600W 28VDC power supply
- Vibration per MIL-STD-810
- Operating temperature: -5°C to +55°C

ATR Forced Air Convection-Cooled

- 3/4 ATR tall long front to rear cooling with EMI honeycomb and removable air filter
- 5-slot 6U backplane
- System monitor (fan control, voltage monitor, temperature monitor, etc.)
- 600W 28VDC power supply MIL-STD-704F
- EMC designed to meet MIL-STD-461E
- Vibration per MIL-STD-810
- Operating temperature: -10°C to +60°C

**14-Slot CompactPCI Backplane**

- > 6U Height: 10.317"+0/-0.012"
- > Length: 16.761"+0/-0.012"
- > Conforms to latest PICMG specifications
- > 10-layer, high-performance, low noise stripline design
- > Backplane material: FR4
- > Jumperable geographic address
- > Type AB rear shrouds on RP3, RP5 prevent rear transition module alignment problems
- > Temperature ranges: Operation: -40°C to +85°C
- > Flammability rating: UL94-V0

Mapsuka Industries

No. 23 Ching Shyang St. • Tu Chen 236, Taipei Hsien, Taiwan
 +886-2-22690567
www.mapsuka.com.tw

cPCI Chassis: 1U-9U

Since 1997, Mapsuka has been developing its series of CompactPCI components and supplying OEM front panels and PMC bezels. Beyond its electro-mechanical endeavors, Mapsuka rolled out a full line of CompactPCI card cages and accessories in 2003. With vast achievements as a professional engineering group and a variety of configurations within its product family, Mapsuka has now gone further to provide standardized and custom CompactPCI platform solutions. All of its CompactPCI products meet PICMG specifications, IEEE 1101.10/11, Eurocard and EMI shielding requirements.

Choose Mapsuka as your CompactPCI partner and gain the flexibility your company needs to maintain a leading edge:

- Card Rack Hardware: extrusions, flanges, card guides, strips, etc.
- 19" Subrack
- CompactPCI Chassis and Backplanes
- CompactPCI Front Panels and Ejector Handles
- PMC Bezels and Gaskets
- Customization

We look forward to becoming your dependable source in the near future. Mapsuka will always value the opportunity of being your service provider!

**FEATURES**

- › Standard or Custom Chassis, 1U-9U
- › Aluminum enclosure
- › Horizontal and Vertical configurations are available.
- › Front cage: 2-21 slots, 6U x 160mm
- › Rear I/O: 2-21 slots, 6U x 80mm
- › Backplanes: PICMG2.0 R3.0 or PICMG 2.16 compliance
- › Power Supply: ATX PSU or CompactPCI hot-swappable PSU
- › Options: Device holders for HDD, CD-ROM, filler panels, front panels and ejector handles
- › Custom chassis and components are welcome and available.

Rittal/Kaparel

97 Randall Drive • Waterloo, Ontario, N2V 1C5
519-725-0101
www.kaparel.com

**Slim-Box Vario**

Rittal/Kaparel has extended its range of Slim-Box products that reflect the trend for smaller and more efficient systems. The 300 mm deep Slim-Box Vario enclosures are designed for horizontal installation of CompactPCI, CompactPCI Express, and VME64x boards. The technical features offered by the enclosures are truly impressive: The high-density electronic packaging solutions feature 2 slots per 1U of height front and rear. The options, available as standard configurations, include provision for rear I/O transitions, plug-in hot swap or ATX power supplies, and "neutral" systems without a backplane for greater customer choice. Excellent heat dissipation from left to right due to a fan tray fitted on the left. The enclosure is supplied fully assembled and includes the power supply and backplane. Enclosures can be configured individually using standard components as an extra option.

**FEATURES**

- › Rack-mount enclosure 482.6 mm (19") for horizontal installation
- › Front and rear slots (2-slots per U) for CompactPCI, CompactPCI Express, VME
- › EMC and ESD compatible design
- › Includes filtered fan tray (up to 4 fans per system) and additional cooling for rear I/O
- › Complies with IEC 60 297-3, -101, -102, -103
- › Made from sheet steel, spray-finished (black)
- › PSU options include hot swap plug-in or ATX power supplies
- › Configurable with rack mounting flanges, as desk or bench top system
- › Options: Mounting for Storage (hard drives) and CD-ROMs

For more information, contact: kdubois@kaparel.com

RSC# 41087 @ www.compactpci-systems.com/rsc

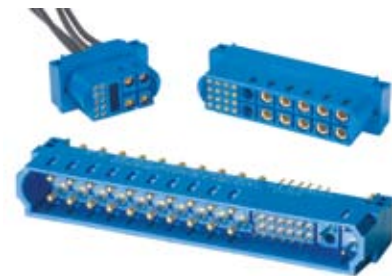
Positronic Industries, Inc.

423 N. Campbell Avenue • Springfield, MO 65806
800-641-4054
www.connectpositronic.com

**Scorpion High Current Density Power Connector****Modular Power, Signal and Shielded Contact Connectors**

Positronic Industries is proud to announce the latest addition to our power connector line – the Scorpion series.

This innovative product's "Next Generation" features provide solutions for today's power interface applications. In addition, the Scorpion's modular tooling allows for quick turnaround of a wide variety of customer-specified variants.

**FEATURES**

- › High current density, high density package
- › Connectors can be configured using modules for size 8, 12, and 16 power contacts, and size 22 signal contacts
- › Blank modules available to increase voltage performance
- › Ventilation option for increased cooling
- › Blind mating options include float and panel mount
- › Available in board-to-board, cable-to-cable, and crimp contact panel mount termination styles
- › Integral locking system for cable connectors

For more information, contact: info@connectpositronic.com

RSC# 40981 @ www.compactpci-systems.com/rsc

Lyrtech

2800 Louis-Lumière St., Suite 100 • Quebec City, Quebec G1P 0A4
Canada • 418-877-4644
www.lyrtech.com

**SignalMaster Quad/Dual**

These CompactPCI boards are specifically designed to help develop and test digital signal processing algorithms through their combination of FPGA and DSP devices. Each comes with a complete board software development kit to reach development goals quickly and efficiently. It is also possible to simultaneously design and test in a real-time environment through the boards' integration to the model-based design software tools for Simulink.

The SignalMaster Quad is designed around two clusters of one Virtex-4 LX FPGA and two TMS320C6416 DSPs. (The SignalMaster Dual has one such cluster.) The clusters can yield up to 16,000 MIPS/MMACS of DSP processing power and 48 GMACS of FPGA-based DSP processing power – unrivalled might at your fingertips.

FEATURES

- › 6U, CompactPCI, DSP-FPGA hybrid architecture
- › Virtex-4 LX FPGAs offering excellent capabilities and high-performance logic
- › 1 GHz C6416 DSPs for unparalleled processing power
- › LYRIO+ very-high-speed expansion sites
- › 128 MB external SDRAM per DSP and per FPGA
- › Several onboard 8 Gbps RapidCHANNEL links
- › Highly scalable
- › Compatible with an array of Lyrtech add-on modules for various applications
- › Support for MATLAB model-based design flow

For more information, contact: info@lyrtech.com

RSC# 40723 @ www.compactpci-systems.com/rsc

Active Silicon

17 Wilson Street, Suite 13 • Chelmsford, MA 01824
978-244-0490
www.activesilicon.com

**Phoenix-D48CL-CPCI**

Active Silicon designs and manufactures frame grabbers and customized vision systems. The company's technology has been used and proven in applications that range from scientific research, medical imaging and security, to avionics and space robotics.

The Phoenix range of high-performance digital frame grabbers includes 3U and 6U CompactPCI boards supporting image acquisition from Camera Link sources. They are designed to interface to today's demanding cameras with support for multi tap, high-bit depth and high-speed pixel clock settings.

The Phoenix Software Developers Kit has been specifically designed for OEM integration with a common API across all supported operating systems, which include Windows, Linux, MAC OS X, QNX, DOS and VxWorks.

FEATURES

- › Dual base/single Medium Camera Link acquisition
- › Optional conduction cooled assembly
- › Wide range of Linescan and Areascan cameras supported
- › -40 °C to +85 °C operating temperature range
- › Extensive Opto-isolated, TTL and LVDS triggering and I/O lines
- › Support for PoCL including SafePower

For more information, contact: info@activesilicon.com

RSC# 32055 @ www.compactpci-systems.com/rsc

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+44 (0) 1353 659500
www.ampltd.com

**Advanced Micro Peripherals**

THE EMBEDDED VIDEO EXPERTS

**MPEG4CPCI**

The MPEG4CPCI is a 3U CompactPCI 4-channel MPEG4 Codec. It provides high-performance capturing and compression of up to four concurrent analog NTSC or PAL video and audio inputs to MPEG4 for storage or further processing at full resolution and full frame rates. The MPEG4CPCI can also decompress and play back MPEG4 recordings from storage. Additionally, incoming video can be viewed on the host screen. This multiple simultaneous functionality is enabled by the MPEG4CPCI's 32-bit PCI architecture.

High-performance MPEG4 video data compression and reduced bus utilization allows multiple MPEG4CPCI cards to be deployed within a CompactPCI system for multi-channel video recording and streaming applications.

The MPEG4CPCI has a suite of Windows, Linux, and QNX drivers.

FEATURES

- › Four asynchronous live NTSC/PAL inputs
- › 4 x D1 size MPEG4 encode at full frame rate
- › MPEG4 decode/playback
- › Text overlay – time and date stamp
- › Video preview to system VGA, NTSC/PAL
- › Multiple MPEG4CPCI cards per system

For more information, contact: sales@ampltd.com

RSC# 33487 @ www.compactpci-systems.com/rsc

Meilhaus Electronic GmbH

Fischerstrasse 2 • 82178 Puchheim/Germany
Phone: ++49-89-8901660 • FAX: ++49-89-89016677
www.meilhaus.com/medaq

**ME CompactPCI Series**

Meilhaus Electronic offers a complete series of DAQ, control and interface boards for the 3U CompactPCI/PXI bus. The models with analog inputs can measure voltages, currents, sensor signal etc. The analog outputs are used to control actuators or for the simulation of signals, e.g. in test stands. The digital channels can be used for switching, to interface with PLCs, or to acquire or output digital signals. The complete galvanic isolation of many models offers high reliability, security and noise immunity in industrial environments. Interrupt control allows event-based operation. The CompactPCI boards are compatible with the standard PCI and PCI Express versions. They can also be used in the Ethernet with the ME-Synapse LAN, or at the USB with the ME-Synapse USB. All ME boards are supported by a consistent software driver system (the ME-IDS) for Windows and Linux. Furthermore, isolated serial interface boards for CompactPCI are available for retail, POS and datacom applications.

**FEATURES**

- › DAQ, measurement and control boards for 3U CompactPCI/PXI.
- › Many models also available for standard PCI and PCI Express, and with ME-Synapse for Ethernet/LAN and USB.
- › 16-bit isolated A/D and D/A boards, digital I/O and relay boards.
- › High quality and reliability for industrial environments, process automation, automotive, control, labs and more.
- › Driver support for Windows and Linux and for the software development environments C, Visual Basic, Delphi, Python, VEE Pro, LabVIEW.
- › Serial interface boards (RS232, RS422/485, mix) with complete galvanic isolation.
- › Custom specific modifications and designs on request.

For more information, contact: sales@meilhaus.com

RSC# 41271 @ www.compactpci-systems.com/rsc

North Atlantic Industries

110 Wilbur Place • Bohemia, NY 11716
631-567-1100
www.naii.com

**78CS2 cPCI Multifunction I/O Board**

The 78CS2, a single-slot, multifunction, 6U CompactPCI board, serves applications requiring Digital-to-Synchro/Resolver (D/S) stimulus output, as well as I/O and Communication functions. The 78CS2 provides up to 10 separate D/S channels with multiple programmable features. The enhanced motherboard can accommodate five independent function specific modules, which allows the users to mix and match a variety of functions to meet their specific application requirements. The 78CS2 can be configured for 10 D/S channels, or D/S in combination with I/O and Communication functions such as A/D, D/A, Discrete I/O, TTL I/O, Resistance Temperature Detection (RTD), Synchro/Resolver-to-Digital and Linear Variable Differential Transformer to Digital (LVDT/D). In addition, the 78CS2 board incorporates serial communication modules such as RS-232/422/485 and ARINC 429. The 78CS2 Multifunction Board can be controlled via CompactPCI or 10/100/1000BASE-T Ethernet. This unique design eliminates the need for specialized, single function cards by providing a broad assortment of functions on one single card. This approach increases packaging density, resulting in:

- Reduced overall card count
- Lower power consumption
- Higher reliability
- Lower overall system cost

Automatic background BIT testing, an important feature, is always enabled and continually checks the health of each channel. There is no need to guess or make assumptions about system performance. A fault is immediately reported and the specific channel is identified. This capability is of tremendous benefit because it identifies and reports a failure, without the need to shut down the equipment for troubleshooting. Testing is totally transparent to the user, requires no external programming, and has no effect on the standard operation of the card.

**FEATURES**

- › Multiple I/O and serial communication functions on a single-slot 6U CompactPCI card.
- › Up to 10 separate D/S channels.
- › User can specify five different function modules.
- › Control via CompactPCI or Ethernet.
- › Automatic background BIT testing continually checks and reports health of each channel.
- › FIFO Buffering/Trigger (select modules).
- › Optional onboard 5VA programmable reference supply.
- › Connections via front panel, rear connector or both.
- › Designed for Commercial or MIL applications.
- › Convection- and conduction-cooled versions.
- › Software Support Kit and Drivers available.

Available Module Functions

- › A/D Converter
- › D/A Converter
- › Digital-to-Synchro/Resolver Simulation
- › Digital-to-LVDT/RVDT Simulation
- › Discrete I/O
- › TTL I/O
- › Differential Transceiver
- › Synchro/Resolver-to-Digital Measurement
- › LVDT/RVDT-to-Digital Measurement
- › Resistance Temperature Detection
- › ARINC 429
- › RS-232/422/485
- › Reference Supply

EUROTECHwww.eurotech.com**A6pci8019**

The A6pci8019 is an Intel® Pentium® M 745 (1.8 GHz) CompactPCI CPU board.

The board supports up to 2 GB PC2700 SO-DIMM and one 64-bit/66 MHz PCI-X PMC slot.

Five Gigabit Ethernet ports, two on the front panel and 3 on the rear support a variety of network connection configurations.

Additionally, the board provides a very complete set of interfaces, including video, USB 2.0, CompactFlash, 2.5 inch HDD, Serial ATA, PS/2, serial.

The A6pci8019 is PICMG 2.16 compliant.

**FEATURES**

- › Fanless Intel® Pentium® M 745 @ 1.8 GHz processor
- › Up to 2 GB PC2700 SO-DIMM
- › Serial port: 3x TIA/EIA-232E (1x RJ-45 front)
- › Ethernet: 5x 10/100/1000BASE-T (2x RJ-45 front)
- › Graphics: D-sub15
- › 4x USB 2.0 (2x front), 2x SATA 1.0 (rear), 2x PS/2: (rear)
- › 1x PMC PCI-X 64-bit/66 MHz
- › 1x CompactFlash, 1X UltraATA/100
- › Power requirements: 5.0 Vdc ±5% max. 7 A; 3.3 Vdc ±5% max 5 A
- › PICMG 2.0 R3.0 CompactPCI Specification
- › 6U, single-slot width

For more information, contact: cpcci@eurotech.com

RSC# 41319 @ www.compactpci-systems.com/rsc

EUROTECHwww.eurotech.com**A3pci7512**

The A3pci7512 is a CompactPCI bus CPU board with a Freescale® PowerPC® G4 Processor MPC7447A (1 GHz).

The board supports up to 1 GB DDR2-400 SO-DIMM; additional features include a Gigabit Ethernet (2 channels), RS-232C serial ports (2 channels), and a miniSD memory card socket.

The A3pci7512 provides a 512 KB boot flash memory, a battery-powered backup of 32 KB SRAM and a 256-byte serial EEPROM.

**FEATURES**

- › Freescale® PowerPC® G4 Processor MPC7447A, 1 GHz
- › Tundra Tsi108™ bridge
- › GbE (2 channels)
- › RS-232C serial port (2 channels)
- › miniSD memory card socket
- › 3U (single-height), single-slot width
- › Powered by 5 V or 3.3 V

For more information, contact: cpcci@eurotech.com

RSC# 35853 @ www.compactpci-systems.com/rsc

EUROTECHwww.eurotech.com**A3pci8024**

The A3pci8024 is a CPU board equipped with the new Intel® EP80579 System on Chip (SoC) that integrates various functions, including the memory and I/O controllers.

The CPU core is a Pentium™ M processor running at 1.066 GHz. The A3pci8024 CPU board can support 2 GB of PC2-4200-compatible SO-RDIMM main memory (ECC capable) and provides one onboard miniSD card slot.

The A3pci8024 front panel provides one Gigabit Ethernet port, one USB 2.0 port and one VGA port; the rear provides four USB 2.0 ports, two serial ATA ports, and one PCI Express x4 port and can be used in system and peripheral slots.

**FEATURES**

- › Intel® EP80579 Integrated Processor, 1.066 GHz
- › DDR2 SDRAM SO-RDIMM, max 2 GB, ECC support
- › 1x Gigabit Ethernet
- › 5x USB 2.0
- › 2x SATA 1.0 A
- › miniSD memory card socket
- › 1 port PCI Express x4
- › PICMG 2.0 Rev 3.0 compliant
- › 3U size, single-slot width

For more information, contact: cpci@eurotech.comRSC# 41292 @ www.compactpci-systems.com/rsc**EUROTECH**www.eurotech.com**A6pci7504A**

The A6pci7504A is a PowerPC® G4 (400 MHz or 500 MHz) CompactPCI CPU board with a high performance GT-64260 system controller.

The rich set of features includes two 10/100BASE-TX Ethernet ports, two serial ports, SDRAM with ECC support (128 MB/512 MB), a CompactFlash socket, FlashROM, SRAM, and EEPROM.

Additional functions can be implemented using the PMC slot.

This hot swap board can operate in a system slot or a peripheral slot and supports PICMG 2.16.

**FEATURES**

- › Freescale® MPC7410 processor up to 500 MHz
- › Marvell® GT-64260 chipset
- › 2x 100/10BASE-TX Ethernet PICMG 2.16 support
- › 2x RS-232C
- › 1x PMC slot
- › 1x Type I or Type II CompactFlash socket
- › Real-time clock, watchdog timer
- › DMA controller, 8x timers/counters
- › Powered by 5.0 Vdc ±5% or 3.3 Vdc ±5%
- › Hot swap
- › 6U, single-slot width

For more information, contact: cpci@eurotech.comRSC# 41316 @ www.compactpci-systems.com/rsc

EKF Elektronik GmbH

Philipp Reis Str. #4 • 59065 Hamm Germany
 (+49) 23816890-0
www.ekf.com

**CCM-BOOGIE**

The CCM-BOOGIE is a versatile 4HP/3U CompactPCI® CPU board, equipped with an Intel® Core™ 2 Duo processor at up to 2.26 GHz clock. The EKF CCM-BOOGIE has been designed especially for systems which require dual core high performance at moderate power consumption. The chipset is based on PCI Express® technology and has a powerful integrated graphics accelerator. The CCM-BOOGIE is equipped with a set of local expansion interface connectors, which can be optionally used to directly attach a suitable (application-specific) mezzanine companion side board, e.g. for audio and legacy support, PCI Express based I/O (among others with CompactPCI Express Master) circuitry, and a secondary DVI video output. Most mezzanine cards can accommodate in addition a 2.5-inch SSD/HDD.

**FEATURES**

- › Intel® Core™ 2 Duo processor with up to 2.26 GHz clock, and up to 8 GB dual channel capable DDR3 RAM (4 GB soldered)
- › Able to run as a CompactPCI Express system slot controller by a sideboard
- › 4 native 3 Gbps RAID capable Serial ATA channels for mass storage I/O, plus 2 from a further RAID controller
- › Two Gigabit Ethernet controllers are provided for high-speed connectivity (one of them IEEE 802.1as TimeSync compliant)
- › Wide range of system expansions by standard or customized mezzanine sidecards
- › DVI-I front panel connector enables dual screen video operation

For more information, contact: sales@ekf.de

RSC# 41291 @ www.compactpci-systems.com/rsc

AMTELCO

4800 Curtin Drive • McFarland, WI 53558
 800-356-9224, 608-838-4194
www.xds.amtelco.com/h110.htm

**AMTELCO XDS CTI Boards**

AMTELCO XDS offers a complete line of H.110 CompactPCI boards to meet your specific application needs. The XDS H.110 CompactPCI boards utilize the proven XDS Infinity series processor and feature a H.110 compliant CT bus, a CompactPCI compliant host processor bus and H.110 mechanical form factor. AMTELCO software driver packages are distributed free of charge to XDS customers, with open source code for the driver and all supporting applications. Software drivers are available for most common operating systems, including Microsoft Windows, 2000/XP/NT, Linux, UnixWare, and Solaris. Each XDS H.110 CompactPCI board is equipped with a processor that can control lower level functions. The XDS analog port boards include Loop Start, E&M, and Station/Operator.

**FEATURES**

- › XDS H.110 CompactPCI 32-Port Loop Start Board – includes Caller ID and internal DSPs for voice processing
- › XDS H.110 16-Port E&M Board – has configurable ports; 2- or 4-wire (Type I or Type V) and 2- or 4-wire audio
- › XDS H.110 32-Port BRI Board – provides BRI network connections; drives ISDN phones; PBX switch connections
- › XDS H.110 32-Port Station Board – functions as an interface to analog phones; can be programmed per port
- › XDS H.110 512-Port Conference Board – is ideal for larger conference applications with enhanced conferencing
- › XDS H.110 MC-3 Multi-Chassis Interconnect Board – connects 20+ PC chassis with fully dynamic timeslot switching

For more information, contact: xds@amtelco.com

RSC# 34994 @ www.compactpci-systems.com/rsc

Agilent Technologies Inc.

5301 Stevens Creek Blvd. • Santa Clara, CA 95051
 1-800-829-4444
www.agilent/find/u1056b

**Agilent Technologies****Agilent U1056B - Acqiris High-Speed Data Converter Systems**

The U1056B configured systems provide a complete data acquisition system with a combination of PXI and CompactPCI high-speed data converter modules. Each system includes a choice of PC interfaces or embedded SBCs, with crates and software to create a turnkey system with up to 80 digitizer acquisition channels. 8-, 10-, and 12-bit resolution cPCI digitizers provide bandwidths to 3 GHz and sampling rates to 8 GS/s.

High-speed cPCI digitizers with on-board FPGA technology provide up to 2 GS/s sampling rates. These can be ordered with either a real time FFT processing firmware, or a firmware development kit (FDK) that opens the FPGA to custom algorithms for real time processing, and data streaming with the modules optional fiber optic data ports.

Applications include plasma physics, nuclear physics, EW/SIGINT, ATE, RADAR and LIDAR.

FEATURES

- › Turnkey solutions for measurement and analysis of 1 to 80 high-speed signals in a single system.
- › Mix and match data acquisition modules to build tailor-made instrumentation for specific applications.
- › Synchronization of multiple cards as one single instrument.
- › Interface to laptop or desktop PC, or operation as a standalone system.
- › Optional turnkey software for easy control of multiple channels and multiple systems.
- › Device drivers for multiple O/S and application code examples for MATLAB®, C/C++, Visual Basic, LabVIEW, and LabWindows/CVI.

For more information, contact: acqiris_info@agilent.com

RSC# 41104 @ www.compactpci-systems.com/rsc

Agilent Technologies Inc.

5301 Stevens Creek Blvd. • Santa Clara, CA 95051
 1-800-829-4444
www.agilent/find/u1056b

**Agilent Technologies****Agilent U1065A - Acqiris High-Speed cPCI Digitizers**

Agilent Acqiris U1065A high-speed cPCI digitizers can achieve a dazzling single-channel sampling rate of 8 GS/s, and offers a choice of front-end input mezzanines including up to 3 GHz input bandwidth or switchable high impedance input coupling. The high-density design of the digitizer allows it to be used in a variety of systems where from one to several hundred channels of high-speed data acquisition is required. For example, a single 8-slot chassis can house up to 7 modules (plus a PC interface) to make a bench-top, multi-channel, rack-mountable data acquisition system (U1056B).

The front-end flexibility, coupled with astounding data conversion performance, makes this digitizer ideal for implementation in applications such as high-resolution RADAR and LIDAR, as well as semiconductor test and large-scale physics research experiments.

FEATURES

- › Quad-, dual- and single-channel 10-bit digitizers with up to 8 GS/s sampling rate.
- › Choice of mezzanine front-ends with input protection, with up to 3 GHz analog bandwidth.
- › Large acquisition memory from 256 kSample to 1 GSample (optional).
- › Multi-module synchronization with auto-synchronous bus for distribution of trigger and clock signal.
- › High-speed 64-bit/66 MHz PCI bus transfers data at sustained rates up to 400 MB/s to host PC.
- › Device drivers for multiple O/S and application code examples for MATLAB®, C/C++, Visual Basic, LabVIEW, and LabWindows/CVI.

For more information, contact: acqiris_info@agilent.com

RSC# 41105 @ www.compactpci-systems.com/rsc

Tundra Semiconductor Corporation

603 March Road • Ottawa, ON K2K 2M5 Canada
613-592-0714
www.tundra.com

**Tsi382™ PCI to PCI Express Bridge**

Ideal for applications needing to bridge from PCI Express (PCIe) to conventional 32-bit PCI devices, the Tsi382 is a small form-factor high performance PCI Express bridge that connects a single-lane PCI Express (x1 PCIe) interface to the PCI bus standard. RoHS compliant, the Tsi382 comes in a 10 mm x 10 mm 0.8 mm ballpitch BGA package that is rated for industrial temperature operation from -40 °C to +85 °C. A 20 mm x 20 mm LQFP package option is available for cost-sensitive applications. Transparent, opaque, and nontransparent bridging are supported.

**FEATURES**

- › Fully PCIe base spec. 1.1 compliant x1 PCIe to PCI bridge
- › 3.3V PCI I/Os with 5V tolerance, 25-, 33-, 50-, and 66-MHz operation
- › Clock and arbitration pins to support 4 PCI devices
- › Supports 4 external PCI bus masters through an integrated arbiter
- › Support for external PCI bus arbiter to support more than 4 devices
- › Unique performance enhancing features such as short-term caching
- › 1.2V core and 3.3V I/O power supplies with no power sequencing restrictions
- › Packaged in 10 x 10 mm, 144-pin PBGA; industrial temp; LQFP package option

For more information, contact: sales@tundra.com

RSC# 39328 @ www.compactpci-systems.com/rsc

Rittal/Kaparel

97 Randall Drive • Waterloo, Ontario, N2V 1C5, Canada
519-725-0101
www.kaparel.com

**PicoTCA Chassis System**

The Rittal/Kaparel PicoTCA chassis is a modular 19" stainless steel chassis in 2U design supporting up to 12 AdvancedMCs and an MCH in full-size and compact form factors, and as an option also in "double full-size." The integrated 90-264 VAC power pack supplies the necessary voltages of 3.3 V for the IPMI and 12 V for the AMCs.



PicoTCA was developed for laboratory and field environments and reflects essentially the specifications of PICMG MicroTCA 0.R1.0. Existing and new applications can be migrated to this MicroTCA platform both quickly and cost effectively. This represents a decisive benefit for developers of industrial systems.

FEATURES

- › Complies with PICMG MicroTCA 0.R1.0 and AMC 0.R1.0
- › NEBS and RoHS compliant
- › Hot Swap compatible
- › 19" rack-mount, 482.6mm, 2U, 254-mm deep
- › Includes 2 hot swappable fan trays and exchangeable air filter
- › Stainless steel construction provides excellent corrosion resistance
- › Accommodates up to 12 AMCs and 1 MCH
- › AC/DC power supply, max. 450 watts, input voltage 90 VAC max 264 VAC with PFC
- › Support for up to 12.5 Bb/s
- › Full range of faceplates and filler panels

For more information, contact: kdubois@kaparel.com

RSC# 41089 @ www.compactpci-systems.com/rsc

High Performance Packet Processors

BSC/RNC

xCSCF GGSN MSC

HLR/HSS

MSC

Softswitches

ASN Gateway



Edge/Access Routers

Messaging Servers

ASN Gateway

DSLAM & CMTS

Media Servers

Session Border Controller

31K G2
Quad AMC Carrier



36CA
Ocieon Plus
Packet Processor AMC



36MC1
Quad GE Packet Processor
AMC



36MC2
Single/Dual 10 GE Packet
Processor AMC



56MC2
Single/Dual 10 GE Packet
Processor PCI-e

IMS

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WiMAX

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Broadband

IPTV

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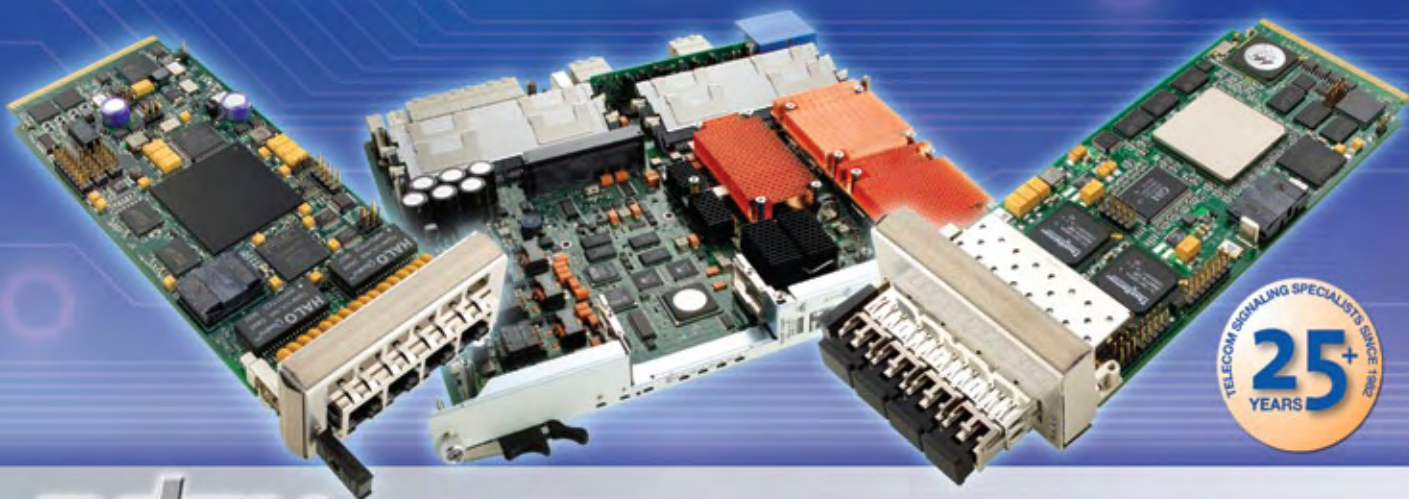


INTERPHASE

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ATCA Foundations for Converging Networks

Foundations for Converging Networks

Application Areas

- Signaling Nodes
- Signaling Gateways and IP Signaling Points
- Softswitches
- Value Added Services Applications
- GPRS, 3G Nodes, IMS and NGN Nodes
- Simulation, Monitoring and Billing Systems

About Adax

Specializing in foundations for converging networks, Adax offers a complete set of protocol controllers, integrated software and signaling gateways. Adax high performance products are available for SS7, ATM and IP protocols for PSTN, GPRS, 3G and IMS networks.

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Cost Effective Expanded Capacity High Performance **AMCs**



HDC3 8 Trunk SS7/ATM Controller

- > 2, 4 or 8 software selectable trunks of full E1, T1 or J1
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- > Simultaneous support for MTP2 LSLs, HSLs and SS7 ATM AAL5
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- > AMC, PMC, PCI-X, PCIe and Low Profile PCIe board formats supported from a single driver



ATM4 ATM - IP Interworking Controller

- > 4 x OC3 / STM-1 or 2 X OC12 / STM-4 trunks
- > On board IP to AAL2, IP to AAL5 interworking
- > ATM AAL2 and AAL5 on a single trunk
- > AAL2 and AAL5 termination and switching
- > Uses state-of-the-art Wintegra WinPath 2 Processor



Adax Signaling Gateway SS7/IP Interworking on a Blade

- > SS7/IP and IP/IP Interworking
- > SS7/IP switching, routing, tunneling and backhaul
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- > SS7 & SIGTRAN protocols including M2PA, M2UA, M3UA and SUA
- > IP enables any legacy SS7 node

Interphase

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www.iphase.com

iSPAN® 36CA

The iSPAN® 36CA AdvancedMC™ 4-port Gigabit Ethernet Packet Processor delivers a high-capacity line rate engine for use in AdvancedTCA, MicroTCA, and other proprietary form factors to address the needs of IPSEC acceleration, policy management and routing, and deep packet inspection in the emerging 3G/4G, IMS, and Voice over IP infrastructure application elements.

The iSPAN 36CA is an AdvancedMC implementation of the Cavium Networks 58xx multi-core OCTEON Plus Processor family. With AMC.1 and AMC.2 connectivity and optional RDRAM for pattern matching, this AdvancedMC can be used on SBCs and carriers in AdvancedTCA, MicroTCA, and proprietary platforms.



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**FEATURES**

- › Cavium Networks OCTEON 58xx onboard processor up to 600 MHz with support for 4 to 12 cores
- › 4x GbE interfaces on front panel
- › 4x GbE (AMC.2) plus 4x PCI Express (AMC.1) interfaces to the AMC connector with management support across either
- › Up to 1 GB of DDR2 SDRAM and optional RDRAM for pattern matching and fast lookup
- › Available 6WindGate™ software toolkit, a full-featured, ready-to-use and customizable networking solution

For more information, contact: fastnet@iphase.com

RSC# 34882 @ www.compactpci-systems.com/rsc

Interphase

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214-654-5000
www.iphase.com

iSPAN® 3639

The iSPAN 3639 AdvancedMC™ 4- or 8-port T1/E1/J1 communications controller from Interphase delivers a comprehensive high-capacity connectivity solution for use with AdvancedTCA and MicroTCA platform solutions to deliver a wide range of Voice over IP, Wireless, and IP Multimedia Subsystem (IMS) infrastructure application elements.

The iSPAN 3639 incorporates the Freescale PowerQUICC III communications processor to deliver high performance and high capacity processing of signaling traffic. With the addition of an optional FPGA with support for TDM switching and I-TDM protocol conversion, together with ISDN or CAS signaling protocol support, the 3639 can be used for full capacity media termination and media switching applications.



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**FEATURES**

- › Four or eight individually software selectable T1/E1/J1 interfaces, with front or rear access connectivity options
- › Onboard support for SS7 MTP-2 (LSL/HSL), ATM, SAAL, ISDN, CAS, Frame Relay, HDLC, I-TDM and more; 4x GbE interfaces on front panel
- › Complete Linux Software Development Suite (iWARE) with firmware, host driver, API, tools and samples
- › Single-width, mid-size, or full-size; PICMG AMC.0 R2.0 compliant
- › PCI Express (AMC.1) and Gigabit Ethernet (AMC.2) connectivity
- › Telecom clocks TCLKA/B/C/D support
- › Freescale™ PowerQUICC III™ onboard processor at 833 MHz

For more information, contact: fastnet@iphase.com

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www.iphase.com

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iSPAN® 55CA

The Interphase iSPAN® 55CA PCI-X™ 4-port Gigabit Ethernet Packet Processor solution is designed for use with PCI-X enabled rackmount server platform solutions. The iSPAN® 55CA addresses the growing need for wire-speed IPSEC acceleration, policy management and routing and deep packet inspection in the emerging 3G/4G, IMS, and Voice over IP infrastructure application elements.

The iSPAN® 55CA is a PCI-X™ implementation of the Cavium Networks 58xx multi-core OCTEON Plus Processor family with optional RLDRAM for pattern matching.

**FEATURES**

- › PCI-X card suitable for use in rack-mount server form factor
- › Cavium Networks high-performance OCTEON Plus 58xx family of processors with 4-16 cores at 750 MHz
- › 4x GbE interfaces on front panel
- › Up to 4 GB of DDR memory
- › High-bandwidth PCI-X host connectivity
- › Available 6WindGate™ software toolkit, a full-featured, ready to use and customizable networking solution

For more information, contact: fastnet@iphase.com

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iSPAN® 36MC2 OCTEON Plus AdvancedMC Packet Processor

The Interphase iSPAN® 36MC2 AdvancedMC™ Packet Processor Card extends the broad portfolio of communication processing and network processing solutions to address the growing need for 10 GE wire-speed packet processing solutions for the delivery of broadband services in the 3G Wireless, Voice over IP and IMS network infrastructure.

The 36MC2 is based on the Cavium OCTEON Plus 56xx high-performance multi-core processor architecture, which provides:

- A pin-compatible chip that can support 8 to 12 cnMIPS® Plus MIPS 32/64 architecture compatible cores
- Per-core hardware acceleration for packet processing and security including addition of support for Kasumi for wireless security
- Integrated co-processors for packet I/O, compression/decompression, IDS and anti-virus

**FEATURES**

- › AMC.0 R2.0 mid-size or full-size AdvancedMC
- › Cavium Networks high-performance OCTEON Plus 56xx family of packet processors
- › 4x GE or 10 GE XAUI (AMC.2) plus PCIE x4 (AMC.1) to carrier
- › Front panel I/O options: 1x or 2x 10 GbE SFP+

For more information, contact: www.fastnet@iphase.com

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iSPAN® 36MC1 OCTEON™ Plus AdvancedMC™ Packet Processor

The Interphase iSPAN® 36MC1 AdvancedMC™ Packet Processor Card extends the broad portfolio of communication processing and network processing solutions to address the growing need for GE wire-speed packet processing solutions for the delivery of broadband services in the 3G Wireless, Voice over IP and IMS network infrastructure.

The 36MC1 is based on the Cavium OCTEON Plus 56xx high-performance multi-core processor architecture, which provides:

- A pin-compatible chip that can support 8 to 12 cnMIPS® Plus MIPS 32/64 architecture compatible cores
- Per-core hardware acceleration for packet processing and security including addition of support for Kasumi for wireless security
- Integrated co-processors for packet I/O, compression/decompression, IDS and anti-virus

**FEATURES**

- › AMC.0 R2.0 mid-size or full size AdvancedMC
- › Cavium Networks high-performance OCTEON Plus 56xx family of packet processors
- › 4x GE (AMC.2) plus PCIe x4 (AMC.1) to carrier
- › Front panel I/O: 4x GbE SFP or RJ-45

For more information, contact: www.fastnet@iphase.com

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Driven by our motto **Innovation in Communication** we have extended our portfolio of solutions for (tele-) communication core and infrastructure applications by a complete μTCA product line. N.A.T.'s product range includes turnkey systems, comprehensive

software support and board level products, such as the NAT-MCH and various sophisticated AMC modules. For more information visit our web site at www.nateurope.com or call us at +49-2241-3989-0



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**MCP6792**

Trenton's MCP6792 is an AdvancedMC processor card designed for insertion directly into MicroTCA™ backplanes or the AMC slots of an AdvancedTCA® blade or carrier card. The full- or mid-size front panel configuration of the AdvancedMC provides support for a broad array of MicroTCA and AdvancedTCA chassis styles and applications. The AMC's Small Form Factor (SFF), dual-core processor options deliver impressive MCP6792 performance. The long-life, embedded Intel® Core™ 2 Duo Processor SL9400 and the Mobile Intel® GS45 Express Chipset are featured on the AMC to enable card features such as 4 GB of DDR3 memory, configurable PCI Express® backplane links and Gigabit Ethernet fabric backplanes. Trenton's AMC card features a built-in TPM to support Trusted Computing applications.

FEATURES

- › Single-width, full-size and single-width, mid-size versions with an Intel® Core™ 2 Duo Processor
- › Intel® GS45 Express Chipset supports DDR3-1066 memory via two plug-in SO-DIMMs and dual SATA II 300 interfaces
- › Two USB 2.0, one video, COM and 10/100/100BASE-T Ethernet front panel ports on full-size front panel version
- › Card edge interfaces feature x4 PCIe link or four x1 PCIe links and dual 1000BASE-BX Ethernet interfaces
- › Supports IPMI, Trusted Platform Module (TPM) 1.2 and Intel® Trusted Execution Technology (Intel® TXT)
- › Compatible with all relevant PICMG® AMC, MicroTCA, AdvancedTCA specs, and the PCI Express® Base Specifications

For more information, contact: info@TrentonTechnology.com

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Interphase

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iSPAN® 56MC2 Single/Dual 10 GE PCIe Packet Processor

The Interphase iSPAN® 56MC2 PCIe Packet Processor Card extends the broad portfolio of communication processing and network processing solutions to address the growing need for 10 GE wire-speed packet processing solutions for the delivery of broadband services in the 3G Wireless, Voice over IP and IMS network infrastructure.



The 56MC2 is based on the Cavium OCTEON Plus 56xx high-performance multi-core processor architecture, which provides:

- A pin-compatible chip that can support 8 to 12 cnMIPS® Plus MIPS 32/64 architecture compatible cores
- Per-core hardware acceleration for packet processing and security including addition of support for Kasumi for wireless security
- Integrated co-processors for packet I/O, compression/decompression, IDS and anti-virus

FEATURES

- › Cavium Networks high-performance OCTEON Plus 56xx family of packet processors
- › Front panel I/O options:
 - 2x 10 GE SFP+ with PCIe x4
 - 1x 10 GE SFP+ with PCIe x8
- › Application support includes:
 - TCP/IP off-load
 - Wire-speed IPSEC acceleration
 - SRTP off-load
 - IPv4/IPv6 L2/L3 wire-speed forwarding

For more information, contact: www.fastnet@iphase.com

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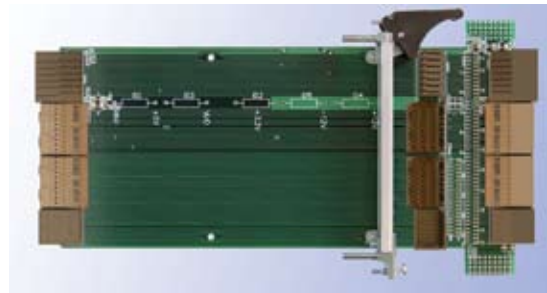
AZ-Com, Inc.

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CompactPCIe Protodev

CompactPCI Express extender and development board. The CompactPCIe board is designed to aid development test and debugging of CompactPCI cards and systems. It allows access to the both sides of the DUT for monitoring and probing. An optional R/A connector enables plugging probes directly under DUT. Power load option allows power consumption of up to PICMG EXP.0 R1.0 specified limits. Monitoring option allows remote monitoring of all three voltages, currents and temperatures via RJ-45 connector. Prototyping contains 0.1" and 2 mm hole patterns.

For other related products and custom configurations please visit www.az-com.com or call AZ-Com sales at 925-947-1000.

**FEATURES**

- > PICMG EXP.0 R1.0 compliant
- > Matched impedance for minimum signal distortion
- > Available for System, Type1, Hybrid, and Switch slots
- > Load settings - 12 V -> 15 A max, 3.3 V -> 7.8 A max,
- > 5 V -> 7.8 A max, 5 -> Vaux 1 A
- > 3U and 6U versions available

For more information, contact: sales@az-com.com

RSC# 35855 @ www.compactpci-systems.com/rsc

EUROTECH

www.eurotech.com

A6EXP8021

The A6EXP8021 is a high-performance Intel® Core™ Duo L2400 (1.66 GHz) or Intel® Core™ 2 Duo L7400/T7400 processor (1.5 GHz).

The board supports up to 4 GB dual channel PC2-3200 Reg DIMM (SEC/DED/x4 SDDC).

The front panel provides a complete set of interfaces, including SATA, USB, VGA, serial and Gigabit Ethernet, while the rear CompactPCI Express bus is configured with 4 x4 or 2 x8 lanes.

**FEATURES**

- > CompactPCI Express-compatible RoHS advanced system board
- > Supports Intel® Core™ Duo L2400 or Core™ 2 Duo L7400/T7400
- > Main memory: 2 DDR2 DIMM sockets (dual channel). Supports PC2-3200 Registered DIMM, max 4 GB
- > Bus standard: PICMG EXP.0 R1.0 Specification
- > Interfaces: GbE (2 ports), Serial ATA (2 ports) and USB 2.0 (4 ports), CompactFlash
- > Passive heatsink, fanless
- > 6U, 2-slot width

For more information, contact: cpce@eurotech.com

RSC# 35854 @ www.compactpci-systems.com/rsc

EUROTECHwww.eurotech.com**A3EXP1563**

The A3EXP1563 is a Gigabit Ethernet equipped with two 10/100/1000BASE-T Ethernet ports.

The board is compatible with $\times 4$ and $\times 1$ lanes and provides advanced features including 48kB transceiver packet buffers, support for 9kB jumbo frames, auto MDI-X and Wake On LAN

**FEATURES**

- › Two 10/100/1000BASE-T Ethernet ports
- › Intel® 82571EB Ethernet controller
- › Integrated 48kB transceiver packet buffer (for each channel)
- › Supports 9kB jumbo frames
- › Supports auto MDI-X
- › Supports WOL
- › Front panel compatible with 6U and 3U, 1-slot width

For more information, contact: cpce@eurotech.comRSC# 41293 @ www.compactpci-systems.com/rsc**EUROTECH**www.eurotech.com**AdRC-EXP1**

The AdRC-EXP1 is a sub rack that allows mixing a CompactPCI Express CPU board with CompactPCI Express and CompactPCI peripheral boards.

Thanks to the A3EXP1565 cPCIe/cPCI bridge board, CompactPCI Express and CompactPCI peripheral boards can coexist in the same system.

The AdRC-EXP1 is designed to store up to three CompactPCI Express peripheral boards (Type 2) and up to six CompactPCI peripheral boards.

This sub rack is ideally suited for our CompactPCI Express CPU board A6EXP8021.

**FEATURES**

- › 9-slot CompactPCI/CompactPCI Express sub rack
- › 1 CompactPCI Express system slot (single or double)
- › 1 CompactPCI Express/CompactPCI bridge slot
- › 3 CompactPCI Express Type 2 or CompactPCI peripheral slots
- › 3 CompactPCI peripheral slots
- › Form factor: 320 mm \times 355 mm \times 305 mm (W \times H \times D)
- › Input power supply: 85 264VAC 5A 47 63 Hz
- › Compliance: PICMG EXP.0 R1.0 / PICMG 2.0 R3.0

For more information, contact: cpce@eurotech.comRSC# 41320 @ www.compactpci-systems.com/rsc

EUROTECHwww.eurotech.com**Adbc8025**

The Adbc8025 is a Computer-On-Module (COM) equipped with the Intel® EP80579.

Coupled to an application specific carrier board, this PICMG COM.0 R1.0-compatible board allows you to freely design a variety of embedded systems.

The Intel® EP80579 is a SoC (System on Chip) that integrates various functions including the memory and I/O controllers with the CPU core, based on a 1.066 GHz Pentium™ M processor.

The Adbc8025 allows up to 2 GB of PC2-4200-compatible SO-RDIMM (with ECC support).

**FEATURES**

- › COM module complying with COM Express standard (440 pin, Type3)
- › Intel® EP80579 Integrated processor 1.066 GHz
- › DDR2 SDRAM SO-RDIMM 2 GB maximum, ECC support, 2 MB Flash memory
- › 1 port SXGA: 1280 x 1024 at 24-bit
- › 2 ports SATA 1.0a
- › 5 ports USB 2.0
- › 3 ports 10/100/1000BASE-TX
- › 2 serial ports, 2 ports CAN 2.0b
- › 1 PCI Express x4 (or 4 x1), PCI: 32 bits/33 MHz, 3.3 V

For more information, contact: cpci@eurotech.com

RSC# 41323 @ www.compactpci-systems.com/rsc

EUROTECHwww.eurotech.com**Adbc8022**

Adbc8022 is a COM Express module, powered by an Intel® Core™ Duo processor L2400 or Core™ 2 Duo processor L7400/T7400 (optional).

This RoHS COM module provides all the components required to build a complete CPU board. By adding a carrier board it's possible to customize quickly and simply the application.

The module has a COM Express Type 2 (extended) form factor and includes many features, including: 5 PCI Express 1.0a x4 links, 2 SATA interfaces, up to 4 GB RAM and Gigabit Ethernet.

**FEATURES**

- › COM module complying with COM Express standard (440 pin, Type2)
- › Intel® Core™ Duo L2400 or Core™ 2 Duo processor L7400/T7400
- › DDR2 DIMM socket 2 (dual channel) up to 4 GB, PC2-3200 Registered, 1 MB Flash memory
- › 1 VGA: 1280 x 1024 at 24-bit
- › 2 SATA 1.0a, 1 IDE Ultra ATA/100 interface
- › 4 port USB 2.0
- › 1 Ethernet 10/100/1000BASE-T
- › LPC, SMBus, I2C
- › 5 PCI Express x4 links
- › 1 PCI Local Bus 2.2 32 bits/33 MHz, 5 V/3.3 V

For more information, contact: cpci@eurotech.com

RSC# 41322 @ www.compactpci-systems.com/rsc

Annapolis Micro Systems, Inc.

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**WILDSTAR 5 for IBM Blade**

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Ultimate Modularity – From zero to six Virtex-5 processing FPGA/memory modules, and two Virtex-5 I/O FPGAs. Accepts one or two standard Annapolis WILDSTAR 4/5 I/O mezzanines: Quad 130 MSps through Quad 500 MSps A/D, 1.5 GSps through 2.2 GSps A/D, Quad 600 MSps DAC, InfiniBand, 10 Gb Ethernet, SFPDP.

Fully Integrated into the IBM Blade Management System – Abundant power and cooling for maximum performance.

Annapolis Micro Systems, Inc. is a world leader in high-performance COTS FPGA-based processing for radar, sonar, SIGINT, ELINT, Digital Signal Processing, FFTs, communications, software radio, encryption, image processing, prototyping, text processing, and other processing intensive applications. We support our board products with a standardized set of drivers, APIs, and VHDL simulation models.

Develop your application very quickly with our CoreFire™ FPGA Application Builder, which transforms the FPGA development process, making it possible for theoreticians to easily build and test their algorithms on the real hardware that will be used in the field. CoreFire, based on data-flow, automatically generates distributed control fabric between cores. Our extensive IP and board support libraries contain more than 1,000 cores, including floating point and the world's fastest FFT. A graphical user interface for design entry supports hardware-in-the-loop debugging, and provides proven, reusable, high-performance IP modules.

WILDSTAR 5 for IBM Blade, with its associated I/O cards, provides extremely high overall throughput and processing performance. The combination of our COTS hardware and CoreFire allows our customers to make massive improvements in processing speed, while achieving significant savings in size, weight, power, person-hours, dollars, and calendar time to deployment.

Achieve world-class performance; WILDSTAR solutions outperform the competition.

**FEATURES**

- › From two to eight Virtex-5 FPGA processing elements – LX110T, LX220T, LX330T, FX100T, FX130T, or FX200T. Six are pluggable with power module and memory
- › Up to 10.7 GB DDR2 DRAM per WILDSTAR 5 for IBM Blade Board
- › 144 x 144 crossbar. 3.2 Gb per line. Two external PPC 440s – 1 per each I/O FPGA
- › Full CoreFire Board Support Package for fast, easy application development
- › VHDL model, including source code for hardware interfaces and ChipScope access
- › Available in both commercial and industrial temperature grades
- › Proactive thermal management system – board-level current measurement and FPGA temperature monitor, accessible through Host API
- › Includes one-year hardware warranty, software updates, and customer support
- › Blade management controller. USB, RS-485, Ethernet, KVM, 16 RIO, Switch to 1 GbE over backplane
- › Save time and effort. Reduce risk with COTS boards and software
- › We offer training and exceptional special application development support, as well as more conventional support
- › Famous for the high quality of our products and our unparalleled dedication to ensuring that the customer's applications succeed

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**2.0 GSps 10-bit A/D**

The Annapolis Single Channel 2.0 GSps A/D I/O Card provides one 2.0 GHz A/D input with a resolution of 10 bits. The board has one e2v AT84AS004 that is fed by an onboard analog input circuit, which converts the single ended 50 ohm SMA input into differential signals for the ADC. There is a universal single ended 50 ohm SMA clock input and a high-precision trigger input allowing multiple A/D I/O cards to be synchronized together. Synchronization of A/D I/O cards can be facilitated by the Annapolis 4 or 8 Channel Clock Distribution Boards.

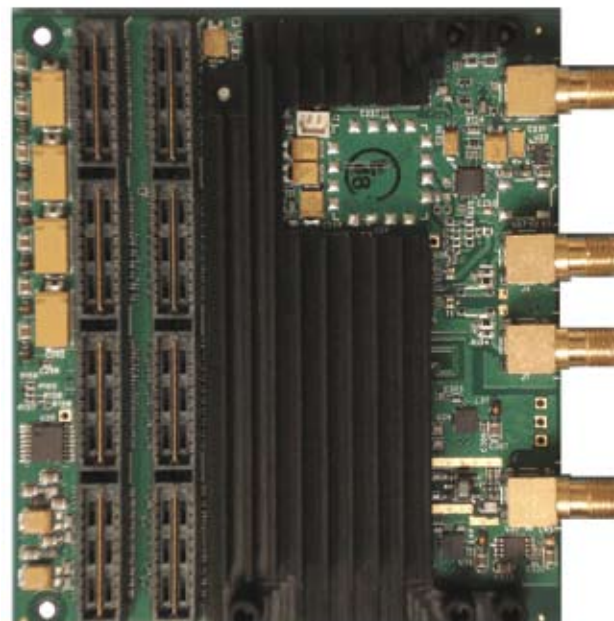
In concert with the WILDSTAR 4 or WILDSTAR 5 FPGA processing main boards, this mezzanine board supplies user-configurable real-time continuous sustained processing of the full data stream. Up to two A/D and up to two Serial I/O cards can reside on each WILDSTAR 4 or WILDSTAR 5 VME/VXS or IBM Blade main board or up to one A/D and up to one Serial I/O card on each PCI-X or PCI Express main board.

Our boards run on many different operating systems. We support our board products with a standardized set of drivers, APIs, and VHDL simulation models. VHDL source is provided for the interfaces to A/Ds, D/As, DRAM/SRAM, LAD bus, I/O bus, and PPC Flash. CoreFire™ users will have the usual CoreFire Board Support Package.

The combination of our COTS hardware and our CoreFire FPGA Application Development tool allows our customers to make massive improvements in processing speed, while achieving significant savings in size, weight, power, person-hours, dollars, and calendar time to deployment.

Annapolis Micro Systems, Inc. is a world leader in high-performance COTS FPGA-based processing for radar, sonar, SIGINT, ELINT, Digital Signal Processing, FFTs, communications, software radio, encryption, image processing, prototyping, text processing, and other processing intensive applications.

Annapolis is famous for the high quality of our products and for our unparalleled dedication to ensuring that the customer's applications succeed.

**FEATURES**

- › One e2v AT84AS004 (2.0 GHz, 10-bit) A/D
- › Four SMA front panel connectors: one 50 ohm analog input, one single ended 50 ohm clock input, or differential 1.65 V LVPECL clock input
- › One high-precision trigger input with Fs precision. High-precision trigger input – 1.65 V LVPECL, 2.5 V LVPECL, 3.3 V LVPECL
- › Analog input bandwidth is 100 KHz-3.0 GHz
- › I/O card plugs onto WILDSTAR 4 or 5 VME/VXS/PCI-X/PCI Express/ IBM Blade main boards
- › JTAG, ChipScope, and Serial Port access
- › Full CoreFire Board Support Package for fast, easy application development
- › VHDL model, including source code for board level interfaces
- › Proactive thermal management system
- › Includes one-year hardware warranty, software updates, and customer support
- › We offer training and exceptional special application development support, as well as more conventional customer support
- › Designed and manufactured in the USA

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**Quad 600 MSps 16-bit DAC**

The Annapolis Quad 600 MSps 16-bit DAC I/O Card provides up to four 16-bit output streams at up to 600 MSps each. The board has four Max 5891 16-bit DACs. Use the high-precision trigger to synchronize the four onboard DAC channels or to synchronize DACs between multiple boards (<1 Fs period).

The Quad 600 MSps board has six SMA front panel connectors: four single-ended DAC outputs, a high precision trigger input with Fs precision, and a universal single-ended 50-ohm clock input. It has excellent SFDR and IMD performance, ultra-low skew and jitter saw-based clock distributions, and mainboard PCLK sourcing capability.

In concert with the WILDSTAR 4 or WILDSTAR 5 FPGA processing main boards, this mezzanine board supplies user-configurable real-time Analog to Digital conversion and digital output. Up to two A/D or D/A and up to two Serial I/O cards can reside on each WILDSTAR 4 or WILDSTAR 5 VME/VXS or IBM Blade main board, or up to one A/D or D/A and up to one Serial I/O card on each PCI-X or PCI Express main board.

Our boards run on many different operating systems. We support our board products with a standardized set of drivers, APIs, and VHDL simulation models. VHDL source is provided for the interfaces to A/Ds, D/As, DRAM/SRAM, LAD bus, I/O bus, and PPC Flash. CoreFire users will have the usual CoreFire Board Support Package. The combination of our COTS hardware and our CoreFire FPGA Application Development tool allows our customers to make massive improvements in processing speed, while achieving significant savings in size, weight, power, person-hours, dollars, and calendar time to deployment.

Annapolis Micro Systems, Inc. is a world leader in high-performance COTS FPGA-based processing for radar, sonar, SIGINT, ELINT, Digital Signal Processing, FFTs, communications, software radio, encryption, image processing, prototyping, text processing, and other processing intensive applications.

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**FEATURES**

- > Four 16-bit Analog to Digital Converters: Max 5891
- > Six SMA front panel connectors: four single-ended DAC outputs, one high-precision trigger input with Fs precision, and one universal single-ended 50-ohm clock input
- > High-precision trigger input manufacturing options – 1.65 V LVPECL, 2.5 V LVPECL, 3.3 V LVPECL
- > I/O card plugs onto WILDSTAR 4 or 5 VME/VXS/PCI-X/PCI Express/IBM Blade main boards
- > JTAG, ChipScope, and Serial Port access
- > Full CoreFire Board Support Package for fast, easy application development
- > VHDL model, including source code for hardware interfaces and ChipScope access
- > Industrial temperature range
- > Proactive thermal management system
- > Save time and effort. Reduce risk with COTS boards and software
- > Achieve world-class performance; WILD solutions outperform the competition
- > Includes one-year hardware warranty, software updates, and customer support; training available

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**SFPDP UNI6 I/O**

Annapolis Micro Systems Inc.'s FPGA-based WILDSTAR family provides 24 SFPDP channels per VME slot.

The Annapolis SFPDP cards (UNI3 or UNI6) come with an easy to use Serial FPDP interface supporting up to 12 lanes of 2.5 Gb full duplex data. Three frame types are supported: Normal Data Fiber Frame, Sync Without Data Fiber Frame, and Sync with Data Fiber Frame in Point-to-Point Mode.

The card has three individually configurable, industry-standard 4X connectors, providing four lanes per connector, with dedicated signal conditioners to ensure clean communication. It supports up to 7.5 GB full duplex per I/O card and a wide variety of readily available copper and fiber cables.

Up to two serial I/O cards and two LVDS I/O cards can reside on each WILDSTAR 4 or WILDSTAR 5 VME/VXS main board, with half that number for the PCI-X or PCIe. The SFPDP card (UNI6) supports RocketIO protocol at up to 75 Gb full duplex per I/O card, three ports of 10 G full duplex InfiniBand per I/O card, or 10 G full duplex Ethernet per I/O card.

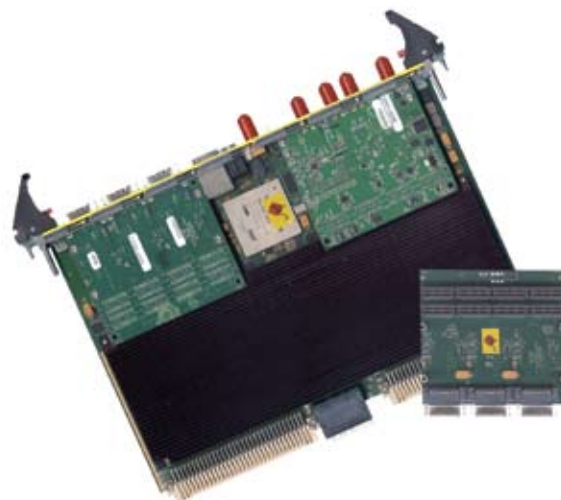
No other FPGA board vendor can match the volume of data we can send straight into the heart of the processing elements and then straight back out again.

An FPGA-based high-performance processing engine thrives on data streaming in and out at high rates of speed. The FPGAs should be part of a balanced and unified system architecture, providing maximum performance, with memory, processing power, and I/O speeds designed and integrated for performance, scalability, and growth.

Annapolis Micro Systems, Inc.'s WILDSTAR 4 (Xilinx Virtex-4 based) and WILDSTAR 5 (Xilinx Virtex-5 based) families of FPGA-based processing boards also support an extensive set of extremely high-quality A/D and D/A boards.

Annapolis Micro Systems, Inc. is a world leader in high-performance COTS FPGA-based processing for radar, sonar, SIGINT, ELINT, Digital Signal Processing, FFTs, communications, software radio, encryption, image processing, prototyping, text processing, and other processing-intensive applications.

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**FEATURES**

- › Three individually configurable 4X connectors – four lanes per connector
- › Up to four 2.5 Gb full duplex Serial FPDP ports per connector
- › Up to 25 Gb full duplex RocketIO per connector
- › Up to 10 Gb full duplex InfiniBand per connector
- › Up to 10 Gb full duplex Ethernet per connector
- › Optional onboard oscillators for other line rates like Fibre Channel
- › I/O card plugs onto WILDSTAR 4 or 5 VME/VXS/IBM Blade Chassis/PCI-X/PCI Express main board
- › JTAG, ChipScope, and Serial Port access
- › Proactive thermal management system. Available in both commercial and industrial temperature grades
- › Includes one-year hardware warranty, software updates, and customer support
- › We offer training and exceptional special application development support, as well as more conventional customer support
- › Full CoreFire Board Support Package for fast, easy application development
- › VHDL model, including source code for hardware interfaces

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**WS4 1.5/2.3/4.0 GSps 12-bit DAC**

The Annapolis Dual Channel 1.5/2.3/4.0 GSps D/A I/O Card provides one or two 12-bit digital output streams at up to 4.0 GSps.

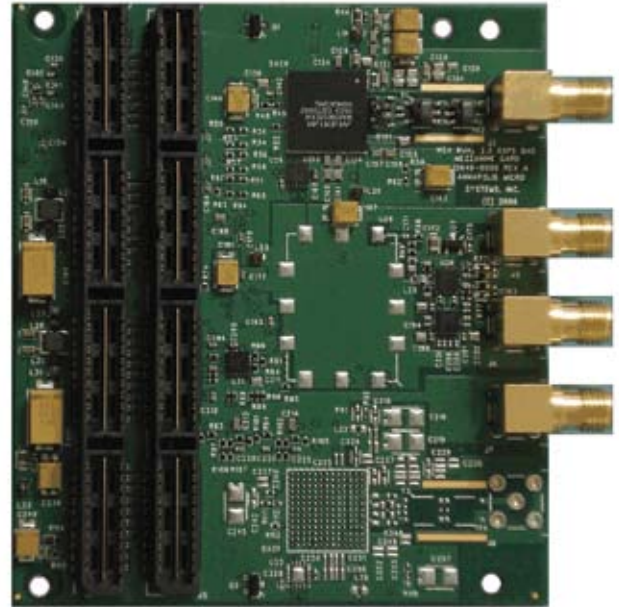
The board has one or two Max 19693 for 4.0 GSps, Max 19692 for 2.3 GSps, or Max 5859 for 1.5 GSps. The Dual Channel DAC board has five SMA front-panel connectors: two single-ended DAC outputs, a high-precision trigger input with F_s precision, and a universal single- or double-ended 50-ohm clock input. It has excellent gain flatness in the first three Nyquist zones, ultra-low skew and jitter saw-based clock distributions, and main board PCLK sourcing capability. In concert with the WILDSTAR 4 or WILDSTAR 5 FPGA processing main boards, this mezzanine board supplies user-configurable real-time Analog to Digital conversion and digital output. Up to two A/D or D/A and up to two Serial I/O cards can reside on each WILDSTAR 4 or WILDSTAR 5 VME/VXS or IBM Blade main board, or up to one A/D or D/A and up to one Serial I/O card on each PCI-X or PCI Express main board.

Our boards run on many different operating systems. We support our board products with a standardized set of drivers, APIs, and VHDL simulation models. VHDL source is provided for the interfaces to A/Ds, D/As, DRAM/SRAM, LAD bus, I/O bus, and PPC Flash. CoreFire™ users will have the usual CoreFire Board Support Package.

The combination of our COTS hardware and our CoreFire FPGA Application Development tool allows our customers to make massive improvements in processing speed, while achieving significant savings in size, weight, power, person-hours, dollars, and calendar time to deployment.

Annapolis Micro Systems, Inc. is a world leader in high-performance COTS FPGA-based processing for radar, sonar, SIGINT, ELINT, Digital Signal Processing, FFTs, communications, software radio, encryption, image processing, prototyping, text processing, and other processing-intensive applications.

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**FEATURES**

- › One or two 12-bit Analog to Digital Converters: Max 19693 for 4.0 GSps, Max 19692 for 2.3 GSps, or Max 5859 for 1.5 GSps
- › Five SMA front panel connectors: two single-ended DAC outputs, one high precision trigger input with F_s precision, and one universal single- or double-ended 50-ohm clock input
- › High-precision trigger input manufacturing options – 1.65 V LVPECL, 2.5 V LVPECL, 3.3 V LVPECL
- › I/O card plugs onto WILDSTAR 4 or 5 VME/VXS/PCI-X/PCI Express/IBM Blade main boards
- › JTAG, ChipScope, and Serial Port access
- › Proactive thermal management system. Available in industrial temperature range
- › Full CoreFire Board Support Package for fast, easy application development and technology refresh
- › VHDL model, including source code for hardware interfaces
- › Includes one-year hardware warranty, software updates, and customer support. Reduce risk with COTS
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**WS4 Quad 250/400/500 MSps A/D**

The Annapolis Quad Channel 250/400/500 MSps A/D I/O Card provides four A/D inputs with converter speeds of up to 250, 400, or 500 MHz and resolutions of 13, 14, or 12 bits, respectively. The board has four A/D converters from TI (ADS5444, ADS5474, or ADS5463) fed by onboard analog input circuits that convert the single-ended, 50-ohm SMA input into differential signals for the ADC.

There is an onboard ultra-low jitter and skew clock distribution circuit to allow all four channels on a single A/D I/O board to be synchronized together. There is also an external clock input and a trigger input allowing multiple A/D I/O cards to be synchronized together. Synchronization of A/D I/O cards can be facilitated by the Annapolis 4 or 8 Channel Clock Distribution Boards.

In concert with the WILDSTAR 4 or WILDSTAR 5 FPGA processing main boards, this mezzanine board supplies user-configurable real-time continuous sustained processing of the full data stream. Up to two A/D I/O cards can reside on each WILDSTAR 4 or WILDSTAR 5 VME/VXS or IBM Blade main board or reside on one A/D I/O card on each PCI-X or PCI Express main board.

Annapolis Micro Systems, Inc. is a world leader in high-performance COTS FPGA-based processing for radar, sonar, SIGINT, ELINT, Digital Signal Processing, FFTs, communications, software radio, encryption, image processing, prototyping, text processing, and other processing intensive applications.

Our boards run on many different operating systems. We support our board products with a standardized set of drivers, APIs, and VHDL simulation models. VHDL source is provided for the interfaces to A/Ds, D/As, DRAM/SRAM, LAD bus, I/O bus, and PPC Flash. CoreFire™ users will have the usual CoreFire Board Support Package.

The combination of our COTS hardware and our CoreFire FPGA Application Development tool allows our customers to make massive improvements in processing speed, while achieving significant savings in size, weight, power, person-hours, dollars, and calendar time to deployment.

**FEATURES**

- › Four TI A/D converters of one of the speed and bit size types: ADS5444 250 MSps 13-bits, ADS5474 400 MSps 14-bits, ADS5463, 500 MSps 12-bits
- › Analog input bandwidths of up to: 500 MHz for the 250 MSps A/D board, 1,400 MHz for the 400 MSps A/D board, 2,000 MHz for the 500 MSps A/D
- › Six SMA front panel connectors: four 50-ohm analog inputs, one single-ended 50-ohm clock input, one trigger input
- › Onboard ultra-low jitter and skew clock distribution circuit to allow synchronization of all four channels on a single I/O card
- › I/O card plugs onto WILDSTAR 4 or 5 VME/VXS/PCI-X/PCI Express/IBM Blade main boards
- › JTAG, ChipScope, and Serial Port access
- › Proactive thermal management system. Available in both commercial and industrial temperature ranges
- › Full CoreFire Board Support Package for fast, easy application development and technology refresh
- › VHDL model, including source code for hardware interfaces
- › Includes one-year hardware warranty, software updates, and customer support. Reduce risk with COTS
- › We offer training and exceptional special application development support, as well as more conventional customer support
- › Annapolis is famous for the high quality of our products and for our unparalleled dedication to ensuring that customers' applications succeed

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**WILDSTAR 5 for PCI Express**

Annapolis Micro Systems, Inc. is a world leader in high-performance COTS, FPGA-based processing for radar, sonar, SIGINT, ELINT, Digital Signal Processing, FFTs, communications, software radio, encryption, image processing, prototyping, text processing, and other processing intensive applications.

Twelfth generation WILDSTAR 5 for PCI Express uses Xilinx Virtex-5 FPGAs for state-of-the-art performance. It accepts one or two I/O mezzanine cards, including Single 1.5 GHz 8-bit ADC, Quad 250 MHz 12-bit ADC, Single 2.5 GHz 8-bit ADC, Quad 130 MHz 16-bit ADC, Dual 2.3/1.5 GSps 12-bit DAC, Quad 600 MSps 16-bit DAC, Universal 3 Gbit Serial I/O (RocketIO, 10 Gb Ethernet, InfiniBand), and Tri XFP (10 Gb Fibre Channel, 10 Gb Ethernet, OC-192). Our boards work on a number of operating systems, including Windows, Linux, Solaris, IRIX, ALTIX, and VxWorks. We support our board products with a standardized set of drivers, APIs, and VHDL simulation models.

Develop your application very quickly with our CoreFire™ FPGA Application Builder, which transforms the FPGA development process, making it possible for theoreticians to easily build and test their algorithms on the real hardware that will be used in the field. CoreFire, based on dataflow, automatically generates distributed control fabric between cores.

Our extensive IP and board support libraries contain more than 1,000 cores, including floating point and the world's fastest FFT. CoreFire uses a graphical user interface for design entry, supports hardware-in-the-loop debugging, and provides proven, reusable, high-performance IP modules.

WILDSTAR 5 for PCI Express, with its associated I/O cards, provides extremely high overall throughput and processing performance. The combination of our COTS hardware and CoreFire allows our customers to make massive improvements in processing speed, while achieving significant savings in size, weight, power, person-hours, dollars, and calendar time to deployment.

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**FEATURES**

- > Up to three Xilinx Virtex-5 FPGA I/O processing elements – LX110T, LX220T, LX330T, or FXT
- > Up to 7 GB DDR2 DRAM in 12 memory banks per WILDSTAR 5 for PCI Express board or up to 2 GB DDR2 DRAM in two memory banks and up to 40 MB DDRII, QDRII SRAM, or up to 1.4 GB RDRAM
- > Programmable Flash for each FPGA to store FPGA image
- > 8x PCI Express bus. High-speed DMA multichannel PCI controller
- > Supports PCI Express Standard External Power Connector
- > Available in commercial or industrial temperature ranges
- > Full CoreFire Board Support Package for fast, easy application development
- > VHDL model, including source code for hardware interfaces and ChipScope access
- > We offer training and exceptional special application development support, as well as more conventional support
- > Includes one-year hardware warranty, software updates, and customer support
- > Proactive thermal management system – board-level current measurement and FPGA temperature monitor, accessible through Host API
- > Save time and effort. Reduce risk with COTS boards and software
- > Achieve world-class performance; WILD solutions outperform the competition

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**WILDSTAR 4 for VXS**

Annapolis Micro Systems is a world leader in high-performance, COTS FPGA-based processing for radar, sonar, SIGINT, ELINT, DSP, FFTs, communications, Software-Defined Radio, encryption, image processing, prototyping, text processing, and other processing intensive applications. Our tenth-generation WILDSTAR 4 for VME64x/VXS uses Xilinx's newest Virtex-4 FPGAs for state-of-the-art performance. It accepts one or two I/O mezzanine cards in one VME64x or VXS slot, including Quad 250 MHz 12-bit ADC, Single 2.5 GHz 8-bit ADC, Quad 130 MHz 16-bit ADC, Dual 2.3/1.5 GSps 12-bit DAC, Quad 600 MSps 16-bit DAC, Universal 3 Gbit Serial I/O (RocketIO, 10 Gb Ethernet, InfiniBand), and Tri XFP (OC-192, 10G Fibre Channel, 10 Gb Ethernet). Our boards work on Windows, Linux, Solaris, IRIX, ALTIX, VxWorks, and others. We support our board products with a standardized set of drivers, APIs, and VHDL simulation models.

Develop your application very quickly with our CoreFire™ FPGA Application Builder, which transforms the FPGA development process, making it possible for theoreticians to easily build and test their algorithms on the real hardware that will be used in the field. CoreFire, based on dataflow, automatically generates distributed control fabric between cores.

Our extensive IP and board support libraries contain more than 1,000 cores, including floating point and the world's fastest FFT. With a graphical user interface for design entry, hardware-in-the-loop debugging, and proven, reusable, high-performance IP modules, WILDSTAR 4 for VME64x/VXS, with its I/O cards, provides extremely high overall throughput and processing performance. The combination of our COTS hardware and CoreFire allows our customers to make massive improvements in processing speed, while achieving significant savings in size, weight, power, person-hours, dollars, and calendar time to deployment.

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**FEATURES**

- › Four Virtex-4 FPGA processing elements – two XC4VFX100 or XC4VFX140, and two XC4VSX55 or XC4VLX40, LX80, LX100, or LX100
- › Up to 6 GB DDR2 DRAM in 12 banks or up to 2 GB DDR2 DRAM and up to 64 MB DDRII or QDRII SRAM
- › Available for either VME64x or VXS backplanes
- › High-speed DMA multichannel PCI controller
- › Programmable Flash to store FPGA images and for PCI controller
- › Full CoreFire Board Support Package for fast, easy application development
- › VHDL model, including source code for hardware interfaces and ChipScope access
- › Host software: Windows, Linux, VxWorks, and more
- › Available in both commercial and industrial temperature grades/ Integrated heatsink for cooling and stiffness
- › Proactive thermal management system – board-level current measurement and FPGA temperature monitor, accessible through Host API
- › Save time and effort. Reduce risk with COTS boards and software
- › Achieve world-class performance; WILD solutions outperform the competition
- › Includes one-year hardware warranty, software updates, and customer support; training available

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**CoreFire**

Develop your application very quickly and easily with our CoreFire™ FPGA Application Builder, which transforms the FPGA development process, making it possible for theoreticians to easily and quickly build and test their algorithms on the real hardware that will be used in the field.

Use CoreFire's graphical interface to drag and drop library elements onto the design window. Modify your input and output types, numbers of bits, and other core variables by changing module parameters with pull-down menus. The modules automatically provide correct timing and clock control. Insert debug modules to report actual hardware values for hardware-in-the-loop debugging. Hit the Build button to check for errors and as-built core sizes and to build an encrypted EDIF file. Use the Xilinx ISE tool to place and route each FPGA design. Modify and use the jar file or the C program created by the CoreFire Build to load your new file into your WILDSTAR and I/O card hardware. Use the CoreFire Debugger to view and modify register and memory contents in the FPGA and to step through the dataflow of your design running in the real physical hardware.

Our extensive IP and board support libraries contain more than 1,000 proven, reusable high-performance cores, including FIR and CIC filters, a channelizer, and the world's fastest FFT. We support conversion between data types: bit, signed and unsigned integers, single precision floating point, integer and floating point complex, and arrays. A few of the newly added array cores include array composition and decomposition; slice, parallelize, serialize, repack, split, merge, reorder, rotate, and concatenate transformations; matrix math, sliding windows, and convolutions.

The combination of our COTS hardware and CoreFire enables our customers to make massive improvements in processing speed while achieving significant savings in size, weight, power, person-hours, dollars, and calendar time to deployment.

**FEATURES**

- › Dataflow-based – automatically generates intermodule control fabric
- › Drag-and-drop graphical interface
- › Work at high conceptual level – concentrate on solving algorithmic problems
- › Hardware-in-the-loop debugging
- › More than 1,000 modules incorporate years of application experience
- › Reduce risk with COTS boards and software
- › Save time to market
- › Save development dollars
- › Easily port completed applications to new technology chips and boards
- › Training and custom application development available
- › Achieve world-class performance; WILD solutions outperform the competition
- › Annual node locked or networked license; includes customer support and updates

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ATM4

The ATM4 is a high-performance AMC controller designed for use in all aspects of telecom networks. The ATM4 includes support for ATM host termination, switching and L2/L3/L4 or higher interworking between GbE interfaces and ATM interfaces. With support for AAL2 and AAL5, the ATM4 truly enables real-time voice and video over AAL2, as well as signaling and IP over AAL5 in 3G networks. The ATM4 enables development flexibility in building the next generation infrastructure and can be configured in many different ways, depending on customer specifications and preferred architecture.

Application Examples:

- 3G RNC, MSC, SGSN, and Node B
- Voice over packet and video streaming
- Broadband networks
- ATM to IP gateways
- Femtocell access controllers

**FEATURES**

- › 4 x OC-3/STM-1 or 2 x OC-12/STM-4 trunks
- › ATM AAL2 and AAL5 interworking
- › Onboard IP to AAL2 & IP to AAL5 interworking
- › AAL2 and AAL5 termination and switching
- › AMC form factor for next-generation AdvancedTCA and MicroTCA platforms
- › Uses state-of-the-art Wintegra WinPath2 Network Processor

For more information, contact: sales@adax.com

RSC# 40985 @ www.compactpci-systems.com/rsc

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www.adax.com


HDC3

The Adax HDC3 is an eight trunk SS7/ATM signaling controller providing a high-density, high-performance solution for next generation and IMS networks. Designed to exceed your system requirements, the HDC3 provides superior scalability, flexibility, and price performance ratios, making it the perfect choice for your SS7/ATM signaling needs. The HDC3 is available in PMC, AMC, PCI-X, PCIe Full-Height and Low-Profile form factors, all of which share a common software driver and have a consistent API for application portability.

Application Examples

- Signaling gateways
- Media gateway controllers
- SGSN, GGSN, MSC, HLR, VLR, and BSS nodes
- VAS applications such as SMS, roaming, and billing
- Test and measurement applications
- Simulation and monitoring systems

**FEATURES**

- › 2, 4, or 8 software selectable trunks of full E1, T1, or J1
- › A combination of up to 248 MTP2 LSLs and 8 MTP2 HSLs
- › Simultaneous support for MTP2 LSLs, HSLs, and SS7 ATM AAL5
- › Supports up to 128 channels of Frame Relay or a combination of 248 channels of HDLC, X.25, and LAPB/D/F/V5 protocols
- › PMC, AMC, PCI-X, PCIe Full-Height and Low-Profile board format supported from a single driver

For more information, contact: sales@adax.com

RSC# 40986 @ www.compactpci-systems.com/rsc

Emerson Network Power

2900 S. Diablo Way, Suite 190 • Tempe, AZ 85282
1-800-759-1107 or 602-438-5720

EmersonNetworkPower.com/EmbeddedComputing

**AMC-9210 Multi-core AMC Module**

The Emerson Network Power AMC-9210 AdvancedMC (AMC) packet processor module extends the broad portfolio of communication and network processing solutions to address the quickly growing demand for wire-speed packet processing solutions targeting the delivery of broadband services in the 3G Wireless, Voice over IP and IP Multimedia Subsystem (IMS) network infrastructure.

The AMC-9210 is based on the Cavium OCTEON Plus high-performance multi-core processor architecture, which provides a pin compatible chip that can support 8 or 12 cnMIPS Plus MIPS 32/64 architecture compatible cores; per core hardware acceleration for packet processing and security including addition of support for Kasumi for wireless security; and integrated coprocessors for packet I/O, compression/decompression, IDS and anti-virus.

FEATURES

- › Cavium Networks high-performance OCTEON Plus CN58XX family of packet processors
- › AMC.0 R2.0 Mid-size and Full-size AdvancedMC module
- › 4x GbE (AMC.2) plus x4 PCI Express (AMC.1) to carrier
- › 4x GbE small form factor plug-in (SFP) interfaces on front panel
- › 2x 1000BASE-BX interfaces to carrier
- › Hot-swappable
- › Integrated IPMI
- › Designed for NEBS/ETSI Carrier Grade Linux with Cavium extensions

For more information, contact: EmbeddedComputingSales@Emerson.com

RSC# 38660 @ www.compactpci-systems.com/rsc

Interphase

2901 North Dallas Parkway, Suite 200 • Plano, TX 75093
214-654-5000

www.iphase.com



INTERPHASE®
Designed To Perform. Designed To Last.™

**iSPAN® 3650 AdvancedMC™ Quad OC 3/STM 1**

The iSPAN® 3650 AdvancedMC Quad OC 3/STM 1 interworking card is part of a new paradigm in communications processing subsystems. Based on the easy-to-program Wintegra™ WinPath2™ packet processor, which is purpose built for I/O processing tasks in network access environments, the iSPAN® 3650 offers an extensive set of protocols and multi-protocol interworking that reduce application development cycles and improve time to market.

The iSPAN® 3650 delivers unprecedented performance in IP traffic interworking between ATM AAL5 and Ethernet with its gateway on a card capability. Specialized functions include packet routing/classification, layer 2 and layer 3 traffic switching, VPN tag switching and more.

FEATURES

- › Four OC 3/STM 1 or one OC 12/STM 4 SFP interfaces
- › High-performance: 36,000 PVCs, 1 M/s AAL2 CPS packets, 50,000 Active CIDs, full wire speed
- › Multi-protocol: AAL1, AAL2 and AAL5, ATM and PPP over SONET/SDH
- › Carrier Grade Availability with APS support terminated on physically separate 3650 cards
- › Embedded MIPS 24K 450 MHz processor for on board control processing
- › Telecom clocks can be input and output on AdvancedMC CLK1 and CLK2

For more information, contact: www.fastnet@iphase.com

RSC# 41304 @ www.compactpci-systems.com/rsc

Kontron

14118 Stowe Drive • Poway, CA 92064
1-800-526-ATCA
www.kontron.com

**kontron****AM42xx AMC Intelligent I/O Modules**

Kontron portfolio of AMC Intelligent I/O modules based on next-generation Cavium OCTEON™ Plus CN5650 multi-core packet processors.

Two Intelligent AMC modules for AdvancedTCA and MicroTCA platforms

Kontron AM4204 with 4x 1 GbE ports to the front and software configurable Interfaces to the Fabric side (PCIe, 4x 1 GbE, or XAU)

Kontron AM4220 with 2x 10 GbE to the front and PCIe to the Fabric side

These modules enable a proliferation of potential “NEP-Ready” Kontron platforms dedicated for load-balancing, secure DPI, content-aware, and QoS over Ethernet applications. Kontron enhances its AdvancedTCA 10 GbE portfolio with the introduction of the AM42xx series of AdvancedMC GbE/10 GbE Intelligent I/O modules based on the next-generation Cavium OCTEON multi-core packet processor.

**FEATURES**

- › Cavium OCTEON Plus 5650 Network Service Processor provides high-density, high-bandwidth serial I/O for networking: 12x MIPS64 R2 Cores; 600 MHz; Up to 21.6 billion MIPS64 instructions per second; 16 high-speed SERDES, flexibly configured in blocks of 4
- › Board Support Package: Cavium CNUSERS/CDK SDK support; Wind River PNE LE support
- › Optional 6WINDgate Software Suites (ADS/SDS)

For more information, contact: info@us.kontron.com

RSC# 41091 @ www.compactpci-systems.com/rsc

Kontron

14118 Stowe Drive • Poway, CA 92064
888-294-4558
www.kontron.com

**kontron****AM4011**

The AM4011 is a highly integrated CPU board implemented as a single-module mid-size Advanced Mezzanine Card (AMC). The design is based on the Intel® Core™2 Duo processor combined with the Intel® 3100 server-class chipset.

The board includes up to 4 GB registered Double Data Rate (DDR2) memory with Error Checking and Correcting (ECC) running at 400 MHz. Comprehensive Ethernet connectivity is provided by two dual Gigabit Ethernet controllers (two to the front, two to the AMC ports 0/1) each utilizing a x4 lane PCI Express interconnection to the Intel® 3100 chipset ensuring maximum data throughput.

The careful design and selection of high-temperature resistant components together with the elaborated heat sink construction ensures a high product availability.

**FEATURES**

- › Intel® Core™2 Duo with 1.5 GHz
- › Up to 4 GB SDRAM memory (soldered) with ECC running at 400 MHz
- › Up to 8 GB NAND Flash memory via onboard USB 2.0 Flash Controller
- › Flexible Gigabit and PCI Express fabric interface

For more information, contact: info@us.kontron.com

RSC# 38573 @ www.compactpci-systems.com/rsc

Southco

P.O. Box 0116, 210 N. Brinton Lake Road • Concordville, PA 19331
610-459-4000

www.southco.com/ATCAresource

**AMC Handles**

Southco AMC Module Handles satisfy all types of standard module faceplates – compact, mid-size, and full-size. Our AMC Carrier Handles stow neatly to avoid interfering with module insertion. Both provide microswitch actuation for safe hot-swapping and maximum configuration flexibility.

Ergonomic design enhances the user experience through intuitive use, making it easy to remove and secure modules quickly. Our new flush-handle design provides a clean look when inserted, and protects against potential snagging or improper operation. The robust die-cast construction delivers long-lasting reliable performance.

All of these Southco components feature RoHS-compliant finishes, and are available with custom-color powder-coated handles for enhanced aesthetics or color-coding.

FEATURES

- › Unique flush-handle design offers a streamlined look and less protrusion than standard handles
- › Robust module handles resist torque, and provide a positive detent feel at each of three distinct detent points
- › Carrier handles provide ample clearance for all size configurations of AdvancedMC modules
- › Carrier handles feature intuitive operation – extend and rotate to deactivate microswitch, pull to release
- › Snap-in light pipe brackets include light pipe housing and light pipes in a one-piece assembly
- › Both standard and custom light pipe brackets are available for AMC.0 R1.0 and AMC.0 R2.0 standards

For more information, contact: info@southco.com

RSC# 32886 @ www.compactpci-systems.com/rsc

Xalvo Systems

Riant-Coteau 7 • 1196 Gland, Switzerland

+41-22-9950001

www.xalvo.com

**XS-AMC2**

XS-AMC2 is an Advanced Mezzanine Card (AMC) that offers high-end ATM and IP services. XS-AMC2 provides termination, switching, and interworking capabilities.

Using the state-of-the-art Wintegra WinPath2 Network Processor, XS-AMC2 is the perfect interface to handle both ATM and IP simultaneously.

XS-AMC2 onboard 24K MIPS processor can run advanced protocols (e.g. 3GPP, SS7, ATM, VoIP) while the Network Processor handles all the data paths.

Compliant with PICMG Advanced Mezzanine Card AMC.0, AMC.1, and AMC.2, XS-AMC2 can be used on AdvancedTCA, MicroTCA, and proprietary platforms.

**FEATURES**

- › Wintegra WinPath2 Network Processor
- › PICMG AMC.0 R2.0, AMC.1 & AMC.2
- › ATM AAL0, AAL1, AAL2 & AAL5
- › 4 x OC-3/STM-1
- › 1 x OC-12/STM-4
- › 4 x Gigabit Ethernet
- › Packet over SONET (POS)
- › Automatic Protection Switching (APS)
- › 3 x 128 MB DDR2 with ECC
- › 32 MB Flash EPROM

For more information, contact: info@xalvo.com

RSC# 34420 @ www.compactpci-systems.com/rsc

Xalyo Systems

Riant-Coteau 7 • 1196 Gland, Switzerland
+41-22-9950001
www.xalyo.com

**XS-AMC3**

XS-AMC3 is an Advanced Mezzanine Card (AMC) that offers 10/100/1000 Ethernet connectivity in AdvancedTCA and MicroTCA systems. XS-AMC3 provides a 7-port non-blocking Gigabit Ethernet switch with flexible I/Os.

XS-AMC3 natively supports 1000BASE-X and 100BASE-FX but also supports 10BASE-T, 100BASE-TX, and 1000BASE-T via triple-speed copper SFPs.

The AMC firmware automatically reads the SFP signature and configures the associated PHY accordingly.

Compliant with PICMG Advanced Mezzanine Card AMC.0 R2.0 and AMC.2, XS-AMC3 can be used on AdvancedTCA, MicroTCA, and proprietary platforms.

**FEATURES**

- > 7 Gigabit Ethernet ports
- > 1000BASE-X
- > 100BASE-FX
- > 10BASE-T
- > 100BASE-TX
- > 1000BASE-T
- > 4 front panel ports
- > 3 backplane ports (AMC.2 lanes 0, 1, and 8)

For more information, contact: info@xalyo.com

RSC# 40853 @ www.compactpci-systems.com/rsc

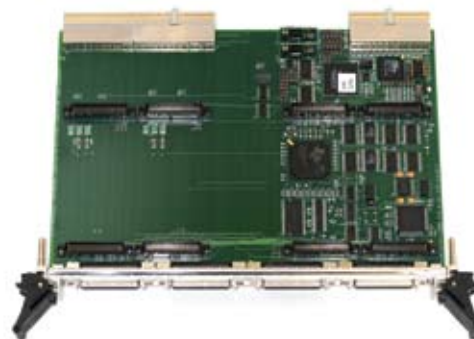
ALPHI Technology Corp.

1898 E. Southern Avenue • Tempe, AZ 85282
480-838-2428 • Fax 480-838-4477
www.alphitech.com

**CPCI-6713B-4IP**

The CPCI-6713B-4IP provides a high-performance 6U flexible I/O scheme supporting industry-standard Industry Packs. For applications requiring low-cost, high-density I/O or unique combinations, the CPCI-6713B-4IP is the perfect solution. The Local DSP can be used to simply move data to and from the CompactPCI bus or provide preprocessing functions such as local PID controls, FFTs, digital filtering, etc. Custom application software can be downloaded to the DSP via the CompactPCI bus. A very low-cost version without DSP is also available, CPCI-SIP.

The TMS320C67x DSP generation is supported by the TI eXpressDSP™ set of industry development tools, which includes a highly optimizing C/C++ Compiler, the Code Composer Studio™ IDE, JTAG-emulation, and DSP/BIOS.

**FEATURES**

- > Supports four (4) independent Industry Pack modules – 8/32 MHz – Up to 192 I/Os
- > High-performance floating-point Digital Signal Processor
- > TMS320C6713B @ 300 MHz
- > 64 KB L2 Unified Cache. Mapped RAM and 192 KB additional L2 Mapped RAM. Dual 32-bit general purpose timers
- > 32 MB of SDRAM
- > JTAG emulator port – drivers for Linux, Window XP, LabVIEW, and others
- > Over 50 applications on Industry Pack module solutions

For more information, contact: info@alphitech.com

RSC# 35829 @ www.compactpci-systems.com/rsc

PDSi – Pinnacle Data Systems, Inc.

6600 Port Road, Suite 100 • Groveport, OH 43125
 614-748-1150 fax 614-748-1209
www.pinnacle.com



**Pinnacle
Data
Systems,
Inc.**

XMC-E24D/PMC-E24D Dual Display Graphics Modules

PDSi offers these high-performance dual-display graphics modules in both XMC and PMC form factor. Using the ATI Radeon™ E2400 Graphics controller from AMD, these modules enable VME, CompactPCI, and AdvancedTCA systems to take full advantage of AMD's latest embedded advanced graphics technology. They provide simultaneous independent support of either one digital DVI and one VGA analog display, or two VGA displays at 32-bit color and up to 2048x1536 resolution.

This module provides the high performance, low power, flexibility, and long life-cycle availability required by many real-world embedded applications in industries such as Military/Aerospace, Industrial Control and Instrumentation, Telecom/Datacomm, and Medical Imaging.

Contact PDSi for more details or special requirements.

**FEATURES**

- › Based on ATI Radeon E2400 graphics processor
- › Superior 2D and 3D graphics acceleration
- › On-chip GDDR3 video memory
- › Dual independent high-performance display interfaces
- › DVI-I and analog VGA (full-size connectors)
- › Dual integrated triple 10-bit DACs for dual RGB output
- › Supports analog displays up to QXGA (2048x1536)
- › 32-bit color depth
- › New low power 65nm design
- › Customization welcomed, extended availability assured

For more information, contact: rob.ellis@pinnacle.com

RSC# 39360 @ www.compactpci-systems.com/rsc

PDSi – Pinnacle Data Systems, Inc.

6600 Port Road, Suite 100 • Groveport, OH 43125
 614-748-1150 fax 614-748-1209
www.pinnacle.com



**Pinnacle
Data
Systems,
Inc.**

XMC-GBX4 Quad Gigabit Ethernet Adaptor

This new quad Gigabit Ethernet XMC is a high-performance, low-latency network adaptor providing four high-speed Ethernet interfaces for use with VITA 42.3-compatible VME, PCI Express, CompactPCI®, and AdvancedTCA® processor boards. It is available in three configurations offering a mix of front and rear port access.

Wide internal data paths eliminate performance bottlenecks. The parallel and pipelined logic architecture is optimized for Gigabit Ethernet and efficiently handles packets with minimum latency. Using widely accepted Intel 82571EB Ethernet controllers, the XMC-GBX4 Adaptor offers up to four 10BASE-T/100BASE-Tx/1000BASE-T copper ports with front-mounted RJ-45 connectors and full status indicators. Alternatively, up to four SERDES ports are accessible through the Pn4 connector for use via an appropriate copper or fiber-based rear transition module.

**FEATURES**

- › Quad Gigabit Ethernet interfaces – Copper or SERDES
- › Up to 4 10BASE-T/100BASE-Tx/1000BASE-T ports with RJ-45 front connectors with status indicators
- › Up to 4 rear-accessible SERDES ports via Pn4
- › Low-latency data handling
- › Efficient packet prioritization
- › Enables use of jumbo frames
- › Maximum system performance and throughput
- › Windows, Linux, and Solaris x86 support
- › VITA XMC-compliant interfaces for high bandwidth
- › Customization welcomed, extended availability assured

For more information, contact: rob.ellis@pinnacle.com

RSC# 39452 @ www.compactpci-systems.com/rsc

PDSi – Pinnacle Data Systems, Inc.

6600 Port Road, Suite 100 • Groveport, OH 43125
614-748-1150 fax 614-748-1209
www.pinnacle.com



**Pinnacle
Data
Systems,
Inc.**

XMC-SD18 SATA HDD or SSD Storage Card

PDSi's new SATA XMC Storage Module (XMC-SD18) offers high capacity SATA storage using compact 1.8-inch hard disk (HDD) or solid state drives (SSD). Whether configured with an economical rotating HDD or with a highly shock-resistant SSD, this low profile module fits comfortably into VITA 42.3-compatible VME, CompactPCI®, AdvancedTCA®, and PCI Express processor boards with an XMC mezzanine card interface.

The onboard 4-port SATA controller provides an additional drive interface through the front connector with two more drives controllable through the board's rear I/O.

Critical military and aerospace applications will appreciate the high operating shock resistance (1000+ G) and high MTBF (over 1 million hours) when configuring this XMC with the latest SSD technology from Intel.

**FEATURES**

- › High-capacity 1.8-inch SATA storage XMC
- › Low-cost rotating HDD for normal uses
- › Rugged SSD for high shock and vibration
- › Featuring Intel advanced SSD technology
- › 3 additional SATA channels (1 front, 2 rear)
- › Windows and Linux support
- › VITA XMC-compliant interfaces for high bandwidth
- › Customization welcomed, extended availability assured
- › RoHS compliant

For more information, contact: rob.ellis@pinnacle.com

RSC# 40588 @ www.compactpci-systems.com/rsc

Technobox

140 Mount Holly Bypass, Unit 1 • Lumberton, NJ 08048-1114
609-267-8988
www.technobox.com

**5264**

Built around a Silicon Image PCI-680, the 5264 Front Panel CF Adapter provides an interface for two Type-I or Type-II CF devices. One device, connected to the Primary IDE channel, is available out the front panel. A second device, connected to the Secondary IDE channel, is mounted on the body of the adapter. Additionally, the Secondary IDE channel of the adapter can interface other IDE/ATA devices, via its rear I/O connector. The CF sites operate in true IDE mode and can be set to operate as either a master or a slave device via DIP switches. Two LEDs on the front panel provide activity status for the primary and secondary IDE channels.

**FEATURES**

- › Supports 2 CF devices (Type I or II)
- › Silicon Image PCI680 controller
- › Ultra133 on primary and secondary channels
- › Front panel CF device on primary channel; onboard CF site on secondary; both with positive retention
- › Supports DMA transfer to CF devices
- › RoHS compliant

For more information, contact: info@technobox.com

RSC# 37062 @ www.compactpci-systems.com/rsc

Technobox, Inc.

140 Mount Holly Bypass, Unit 1 • Lumberton, NJ 08048-1114
609-267-8988
www.technobox.com

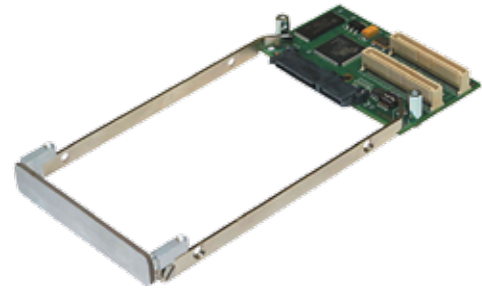
**5575**

The 2.5 inch SATA disk adapter provides an industry standard SATA connector for mounting a 2.5 inch SATA hard drive in the space occupied by a PMC.

This product uses the Silicon Image Sil3512 IC that supports SATA operation of a single hard drive. The Silicon Image Sil3512 controller connects the PCI bus to the one SATA link. The PCI bus can operate at 33 MHz or 66 MHz. Both 5 V and 3.3 V PCI bus signaling are supported.

The Silicon Image Sil3512 controller is programmed with a BIOS image stored in a 512K x8 EEPROM. A green status LED on the PCB conveys the activity of the hard drive.

This product is normally supplied without a hard drive, permitting purchase of drives for installation by the user.

**FEATURES**

- › Accepts 2.5-inch SATA HD or solid-state media
- › Silicon Image Sil3512 controller
- › Standard mounting
- › RoHS compliant
- › Lead-free

For more information, contact: info@technobox.com

RSC# 36166 @ www.compactpci-systems.com/rsc

Technobox

140 Mount Holly Bypass, Unit 1 • Lumberton, NJ 08048-1114
609-267-8988
www.technobox.com

**Triple Isolated RS-232/485/422 PMC**

The Technobox 5751 3-port Isolated Async Communications Adapter is a cost-effective solution for providing additional asynchronous serial ports.

Each port may be configured independently as RS-232, RS-422, or RS-485. All three ports are accessed via 9-pin Micro D-Subminiature connectors on the PMC front panel.

Options to terminate the differential RS-422/RS-485 signals with 150 ohm parallel termination are provided by the design. Independent isolation is provided for each port using a separate isolated DC-to-DC converter and opto-isolators for conveying I/O signals.

**FEATURES**

- › Three async serial ports (16550 UARTS)
- › Supports RS-232, RS-422, or RS-485
- › Front panel I/O only
- › Independent isolation for each port
- › Selectable interrupt configuration for each port
- › RoHS compliant

For more information, contact: info@technobox.com

RSC# 40983 @ www.compactpci-systems.com/rsc

Hybricon Corporation

12 Willow Road • Ayer, MA 01432

978-772-5422 x 261

www.hybricon.com**Ruggedized MicroTCA Series****Liquid-cooled Rugged MicroTCA**

- 3/4-ATR tall long liquid-cooled chassis
- Compatible with water and water-glycol fluids up to 150 PSI (Contact Factory for different fluid types)
- Rugged environments for applications such as airborne and ground mobile
- Shock & vibration per ANSI/VITA 47 class OS1 and V2
- Compatible with the latest PICMG Rugged MicroTCA draft specifications including optional faceplate fasteners
- Payload forced air cooled per PICMG Air Cooled MicroTCA.1 Draft
- Allows deployment of 0°C to +55°C temperature range payload cards at 10,000 ft. with liquid temperature of 0°C to +45°C @ 2 GPM
- Internal MIL grade fan – re-circulating air is cooled by passing through Liquid-to-Air Heat Exchanger
- Supports 11-slot MicroTCA backplane
- 300W 28VDC power supply compliant to MIL-STD-704F and MIL-STD-1295
- EMC Designed to meet MIL-STD-461E
- Operating temperature: Ambient: -40°C to +71°C
- Liquid Temp: 0°C to +60°C with PGW/EGW

Conduction-cooled Rugged MicroTCA

- 1/2-ATR tall long forced air conduction with air heat sink fins
- Card cage designed for (5) Single width AMC Slots, (1) MCH slot, (1) Power Module (PM) slot
- Demonstrated operation with Emerson Payload (Commercial Cards adapted with conduction frames per MicroTCA Ruggedization SIG Draft)
- Will be updated to match PICMG MicroTCA.3 Mechanics once the specification is completed
- Operating temperature: Ambient: 0°C to +50°C

**Air-Cooled Rugged MicroTCA**

- › 1-ATR tall long shock-mounted MicroTCA card cage for rugged environments
- › Card cage supports a front 150MM section and rear 75MM section
- › Designed to cool 80W per double-width full-size slot and 40W per single-width full-size slot at 10,000 feet altitude
- › Front to rear airflow
- › 600W 28VDC power supply compliant to MIL-STD-704F and MIL-STD-1295
- › EMC Designed to meet MIL-STD-461E
- › Operating temperature: Ambient: 0°C to +50°C

Tracewell Systems

567 Enterprise Drive • Westerville, OH 43081
800-848-4525
www.tracewell.com

**Micro-Block**

The Tracewell Systems Micro-Block sets a new standard for light-weight, rugged, deployable compact MicroTCA and CompactPCI computers. The fully sealed conduction-cooled system is strong, lightweight, and resistant to EMI while providing a highly flexible COTS computing platform for UAVs, ground vehicles, and other demanding applications. Micro-Block can be configured with COTS MicroTCA or CompactPCI cards providing a variety of cost-effective configuration solutions for high-density computing, I/O capabilities, and power requirements

FEATURES

- › Rugged conduction-cooled MicroTCA or CompactPCI system
- › Fully sealed
- › Modular design
- › EMI shielded per MIL-STD-461
- › Supports up to 8 cards
- › 30% better heat transfer versus standard conduction cooling scheme

For more information, contact: sales@tracewell.com

RSC# 41294 @ www.compactpci-systems.com/rsc

XTech

80 Trim Way • Randolph, MA 02368
781-963-7200
www.xtech-outside.com

**Reinforced MicroTCA Faceplates**

XTech, a worldwide leader in customized and standard solutions for electronic mechanical systems, has introduced its family of MicroTCA.0 R1.0-compliant, fastener-reinforced faceplates.

XTech's faceplate retention flange complies with MicroTCA.0 R1.0 specifications. It saves manufacturers the time and expense of devising in-house solutions and offers the industry a new, ready-to-use integrated product line.

The fastener-reinforced faceplates are fully assembled and available in compact, full-size, and mid-size configurations at single- and double-width.

For information, visit www.xtech-outside.com or call 781-963-7200.

**FEATURES**

- › Front locking attachment flanges with M3 captive screws on the top and bottom
- › A lightweight, robust aluminum profile
- › Increased security for use in rough service

For more information, contact: inquiry@xtech-outside.com

RSC# 40990 @ www.compactpci-systems.com/rsc

Performance Technologies

205 Indigo Creek Drive • Rochester, NY 14626

585-256-0200

www.pt.com**Advanced Managed Platforms™ for MicroTCA™**

Performance Technologies' award-winning, application-ready MicroTCA platforms have revolutionized how system architects think of MicroTCA. The company's sleek, 1U highly integrated platform design with built-in infrastructure provides a powerful and cost-effective building foundation that combines a mature, integrated Carrier Grade Linux® as well as a wide range of AMC options to meet virtually any communications equipment design criteria. Advanced Managed Platforms (AMPs) can significantly reduce development expenses and shorten development schedules, resulting in cost savings and faster time to market. These second- and third-generation platforms are pre-integrated and pre-tested, so they are ready to run your embedded application out-of-the-box.

AMPs offer significant design flexibility and can be configured with high-performance single- and dual-core compute modules, storage/video/audio modules, as well as serial or T1/E1 communications I/O cards. The platforms can accommodate all major AMC form factors such as single or double width cards, mid-size or full-size height. All elements run Performance Technologies NexusWare®, a CGL 4.0-registered and POSIX-compliant Linux distribution and development environment. NexusWare includes a full suite of software tools that can encompass communication protocols, HA middleware, and SAF compliant APIs that fully integrate the platform solutions. All Performance Technologies application-ready platforms for MicroTCA feature advanced cooling, with both push and pull fans to cool up to 40 W per mid-size, single slot. The front I/O panel features LEDs (in-service, out-of-service, and user-defined), a reset switch, and a platform management console port. Interconnects to the AMC modules include 1 Gb Ethernet, x1 PCI Express, SATA/SAS storage, IPMI management, and Telco Clock distribution. The rear panel has dual 10/100/1000 Mb Ethernet uplink ports, a 10/100 Mb Ethernet out-of-band platform management port, power input, and a power switch.

Performance Technologies offers cost-effective and high-performance AdvancedMC modules such as the x86 processor modules (AMC111 and AMC121), PowerPC® processor modules (AMC131), storage/video module (AMC590), and synchronous 4-port WAN Communications module (AMC335). Additional AMC modules are continuously under development.

**FEATURES**

- › Remote systems management with NexusWare Portal, RMCP, and SNMP interfaces
- › Designed for telecom, aerospace and defense, enterprise, as well as commercial applications
- › Supports a wide range of processing capabilities
- › Integrated NexusWare® Linux® Operating System
- › Integrated Ethernet switch with dual 1 GbE uplinks
- › Integrated PCI Express® switch
- › Integrated MicroTCA carrier and shelf managers
- › Front-to-back, push/pull cooling
- › AC or DC power options
- › Cooling supports up to 40 W per mid-size, single AdvancedMC™ (AMC) module
- › Telecom clock support
- › Fully compliant with MicroTCA.0, AMC.0, AMC.1, AMC.2, and AMC.3

Schroff

170 Commerce Drive • Warwick, RI 02886

Toll-free (800) 451-8755

www.schroff.us**Schroff**®**MicroTCA™ Enclosures**

Schroff® has developed a wide range of small innovative MicroTCA™ enclosures that will accelerate your time-to-market and balance the performance-to-cost ratio that allows system integrators to deliver an overall solution with a distinct competitive advantage.

The unique mechanical and tested design of Schroff's card guides, subracks, EMC gasket, and struts allows for maximum flexibility and consistent performance in every application. From this, many products have been developed to meet the enterprise, telecom, military, industrial, and medical markets. Cost-effective backplane routing designs and innovative cooling and power management solutions are helping system integrators in all of these markets achieve their cost and performance objectives for next-generation equipment. Compliance engineering expertise along with global manufacturing and support will ensure that your products are released on schedule.

Schroff has been leading the MicroTCA specification development since its conception and provides all the components, hardware, development, and production through-hardened enclosures that you would require. Contact an Applications Engineer to learn more about how Schroff's MicroTCA products have what it takes to help you achieve your Next-Generation System requirements. Schroff is committed to provide the best engineered and quality enclosure for your specific application.

**FEATURES**

- › Proven MicroTCA hardware, card guides, EMC gasket, and subrack assembly
- › Table-top and side-mount cube systems
- › 1U through 8U rack-mount systems with redundant cooling solutions and EMMC onboard
- › Solutions with fixed AC Power Entry and other power configuration options
- › Backplane design and manufacturing for lower layer count and high performance
- › Customization for point-to-point routing for cost and performance optimization
- › Engineered thermal solutions using FloTherm simulations and empirical testing
- › Proof-of-Concept ruggedized AMC hardware and hardened MicroTCA enclosures, including conduction-cooled ATR
- › Modular power management schemes for full compliance and options for low featured, cost-effective power management
- › Units in stock for immediate delivery

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**MTC600-48**

Emerson Network Power's MTC600-48 power module provides a self-contained power solution for MicroTCA systems. The module can support shelves, cubes and other system implementations, and is fully compliant with the PICMG MicroTCA.0 Revision 1.0 specification.

MTC600-48 power modules implement all of the incoming power conversion, power management and power protection functionality necessary for a complete MicroTCA system comprising up to 12 AdvancedMCs, 2 MicroTCA Carrier Hubs and 2 Cooling Units. It has an input range of -39.5 to -72 Vdc and can accommodate both -48 V and -60 V battery plants.

FEATURES

- › Complete power supply, power management and power protection solution for MicroTCA systems
- › Compact, high power-density, single-width module, 9 HP high
- › 600 W output power
- › 16 output channels, each capable of delivering 12 V @ 7.6 A payload power and 3.3 V @ 150 mA management power
- › Provides power for up to 12 AMCs, 2 MCHs and 2 CUs
- › Supports 1 + 1 input redundancy, N + 1 output redundancy and hot-swap operation

For more information, contact: 760-930-4600

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**MTC600-AC**

Emerson Network Power's MTC600-AC power module provides a self-contained power solution for MicroTCA systems. The module can support shelves, cubes and other system implementations and is fully compliant with the PICMG MicroTCA.0 Revision 1.0 specification.

MTC600-AC power modules implement all of the incoming power conversion, power management and power protection functionality necessary for a complete MicroTCA system comprising up to 12 AdvancedMCs, 2 MicroTCA Carrier Hubs and 2 Cooling Units. It supports an ac input of 90 to 264 Vac and is suitable for use with single-phase supplies virtually anywhere in the world.

FEATURES

- › Complete power supply, power management and power protection solution for MicroTCA systems
- › Compact, high power-density, single-width module, 12 HP high
- › 600 W output power
- › 16 output channels, each capable of delivering 12 V @ 7.6 A payload power and 3.3 V @ 150 mA management power
- › Provides power for up to 12 AMCs, 2 MCHs and 2 CUs
- › Supports N + 1 redundancy and hot-swap operation

For more information, contact: 760-930-4600

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2900 S. Diablo Way, Suite 190, Tempe, AZ 85282

1-800-759-1107 or 602-438-5720

EmersonNetworkPower.com/EmbeddedComputing**Centellis™ 500 MicroTCA Platform**

The Centellis™ 500 is an innovative MicroTCA™ solution suitable for use in enterprise applications. Designed as an economically viable solution, it utilizes an injection molded plastic enclosure with the smallest number of internal components possible for low-cost, high-volume manufacture. The system is supplied fully tested and includes MicroTCA backplane, fans, power module, MicroTCA Carrier Hub (MCH) and card cage.

Centellis 500 is a solidly constructed and engineered table-top or shelf placement MicroTCA system. The Centellis 500 system ships ready to go right out of the box with SpiderWare®M³ Platform Management graphical software designed for quick system configuration and remote management. The Centellis 500 is supplied complete with Emerson's MCH and the PrAMC-7211 AMC module featuring the Intel® Core™ 2 Duo processor.

**FEATURES**

- › Low profile, lightweight, solidly constructed injection molded plastic table-top, or shelf placement chassis is easily transported
- › Three (3) available AMC mid-size expansion payload slots for application customization
- › Dynamic cooling for low noise enterprise deployment
- › SpiderWare®M³ Platform Management software for ease of use and low total cost of ownership
- › Highly robust AMC connectors stringently tested to prevent AMC insertion failure
- › Best in class MicroTCA Carrier Hub
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SMT700 PXI Express

Sundance, the leading supplier and manufacturer of advanced Digital Signal Processing (DSP) and reconfigurable systems, launched the Series-7: a complete range of 3U PXI Express hybrid boards.

This new family of FPGA centric products is reconfigurable, flexible and scalable to suit high-performance computing and modular signal processing applications, enabling rapid prototyping and the development of embedded systems.

The innovative architecture is built around a large Xilinx Virtex-5 FPGA device for real-time processing, high-density DDR2 SDRAM memory for buffering and PCI Express for high-bandwidth data transfers.

The SMT700 is a PXI Express "Chameleon" board designed for a variety of applications including data acquisition, control and vision. It features medium and large Virtex-5 device sizes in the three main FPGA family types: LXT high-performance logic, SXT for complex DSP algorithms and FXT for embedded processing with PowerPC processor cores. The FPGA is directly connected to 1GB of DDR2 SDRAM and eight PCI Express point-to-point serial links. These resources break the existing bandwidth limitation of previous bus technologies to perform high-speed data streaming to host controllers.

Using the Sundance Local Bus (SLB) mezzanine cards, the SMT700 processing platform can interface to a wide range of multichannel analogue and digital data converters. The SLB module is an open-specification from Sundance, allowing OEMs to reuse existing mezzanines or to design their own.

With its on-board flash memory reprogrammable by USB interface, the SMT700 is a smart hardware board for embedded systems requiring stand-alone operating modes. It also features Gigabit Ethernet, optical transceiver and SATA modules for data communication purposes with external equipment.

The Series-7 offers recommended platform solutions to design rugged embedded systems for instrumentation, avionics and military applications.

Sundance's board support package includes host drivers, efficient software functions and an FPGA project.

**FEATURES**

- > Virtex-5 SX50T, SX95T, FX70T or LX110T FPGA
- > 1GB DDR2 SDRAM
- > RocketIO Serial Links (x4 lanes)
- > Two Sundance high-speed buses
- > PCI Express x8 lanes
- > 64MB flash memory
- > External clock and PXIe reference clock inputs
- > PXI control and trigger signals from backplane
- > Optional: 32-bit PCI interface
- > Sundance Local Bus (SLB) mezzanine card interface
- > Gigabit Ethernet port
- > Dual SATA connectors
- > Dual optical transceiver modules
- > USB interface for reprogramming

- > SMT702: High-speed analog-to-digital converter
- > Dual 3GHz, 8-bit A/D converters
- > Virtex-5 FX70T or LX110T FPGA

- > SMT712: High-speed digital-to-analog converter
- > Dual 2.3GHz, 12-bit D/A converters
- > Virtex-5 FX70T or LX110T FPGA

Trenton Technology, Inc.

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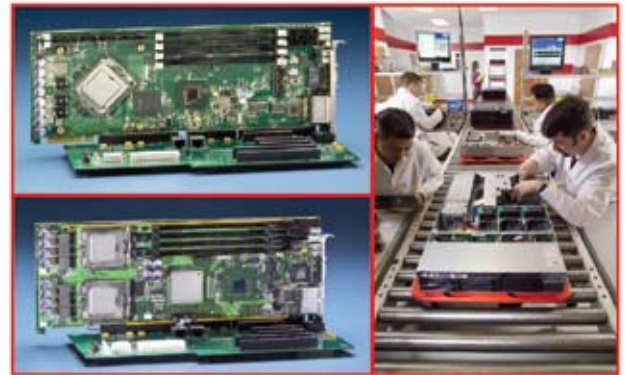
www.TrentonTechnology.com**TQ9, MCX & Systems**

Trenton Technology has built a reputation among our customers as one of the nation's leading providers of high quality Single Board Computers, System Host Boards (SHBs), and backplanes. We are a U.S. based electronics engineering and manufacturing company that has developed what is arguably the most reliable array of products in the field.

Trenton's latest Single Board Computer is the TQ9 and it supports a wide variety of single-, dual-, and quad-core Intel® Core™ 2 processors. New I/O interface capabilities include an audio codec interface, two eSATA connections to the backplane, and a dozen USB interfaces. A system designed with the TQ9 supports option cards ranging from x16 PCI Express® to legacy 32-bit/33 MHz PCI cards.

The single-processor TQ9 complements Trenton's latest dual-processor MCX- and MCG-series of SBCs. The MCX- and MCG-series of Single Board Computers feature the latest dual- and quad-core Intel® Xeon® processors. Trenton's extensive line of PICMG 1.3 backplanes supports a wide variety of PCI Express®, PCI-X, PCI, and even legacy or purpose-built ISA option card combinations. All of Trenton's PICMG 1.3 products are designed to provide many years of trouble-free service in robust embedded computing applications and come with a standard five-year factory warranty.

Trenton Systems, Inc. (www.TrentonSystems.com) is a new company made up of experienced board-level and industrial computer system engineers that specialize in providing robust computing systems for aerospace and military applications. Reliability and system longevity are key components of industrial computers purchased from Trenton Systems. We engineer in reliability and peace of mind by using long-life embedded sub-components and system revision control to ensure that the system configurations purchased today will remain available throughout the project's life.

**FEATURES**

- › TQ9 – Long-life/embedded Quad-Core Intel® Core™ 2 Processor Q9400, Dual-Core Intel® Core™ 2 Processor E8400 and Intel® Core™ 2 Processor E6400 and E4300 support
- › TQ9 – Intel® Q35 Express chipset and the ICH9DO with built-in SATA RAID support, quad-core processor options supported
- › TQ9 – Four DDR2 DIMM sockets, dual channel DDR2-800 memory interface (8 GB maximum), Audio Codec interface, and analog audio port
- › TQ9 – Dual Gigabit Ethernet, eight USB, and four SATA II 300 ports; one 10/100BASE-T Ethernet, two eSATA II, and four USB backplane interfaces
- › TQ9 – Video support for this PCI Express® graphics-class SHB includes x16 video and graphics cards, ADD2 cards, or onboard video port
- › MCX/MCG Boards – A single-board design with two processors that provide up to eight processor execution cores per board
- › MCX – Server-class SHB, dual- or quad-core Intel® Xeon® processors, Intel® 5000P chipset, independent 1,066/1,333 MHz system bus for each CPU
- › MCG – Graphics-class SHB, dual-, quad-core Intel® Xeon® processors, Intel® 5000X chipset, independent 1,066/1,333 MHz system bus for each CPU
- › MCX/MCG Boards – Four-channel system memory interface with 16 GB and 32 GB support options, six SATA II 300 ports with RAID support
- › MCX/MCG Boards – Three Gigabit Ethernet interfaces, eight USB 2.0 ports, supports PCI Express®, PCI-X, and PCI option cards
- › Backplanes – PICMG 1.3 Server/Graphics-class, models available to support x16, x8, x4, x1 PCI Express®, PCI-X, PCI, and ISA cards
- › Systems – Standard and custom products, 19" rackmount, 2U, 4U, 6U form factors, motherboard and PICMG 1.x SBCs, CompactPCI, and MicroTCA

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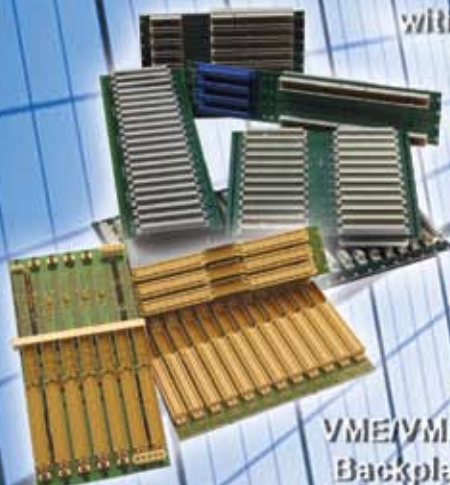
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