



» 2011 Product Guide «

Driving the world's embedded computing platforms



If it's embedded, it's Kontron.

Kontron worldwide



Corporate Headquarter Regional Headquarters Central Production Kontron Companies

» Kontron – A Global Company «

Kontron is a global leader in embedded computing technology. With more than 30% of its employees in Research and Development, Kontron creates many of the standards that drive the world's embedded computing platforms. Kontron's product longevity, local engineering and support, and value-added services, helps create a sustainable and viable embedded solution for OEMs and system integrators. Kontron works closely with its customers on their embedded application-ready platforms and custom solutions, enabling them to focus on their core competencies. The result is an accelerated time-to-market, reduced total-cost-of-ownership and an improved overall application with leading-edge, highly-reliable embedded technology.

More than 900 highly qualified engineers work with our experienced sales teams, global business units and partners to create solutions that meet our customer's application demands. Through an extensive portfolio, based on internationally accepted industry standards for hardware, software and connectivity, Kontron solutions range from COTS standard based products, fully-integrated application ready systems and platforms as well as extended software and programming services.

Kontron's advanced testing and manufacturing facilities are ISO 9001-certified in order to ensure consistency and the highest level of quality in products and services. With technical support and project management teams located around the globe, Kontron is able to support customers in a wide-range of markets, including Communications, Defense and Aerospace, Energy, Industrial Automation, Infotainment, Medical and Transportation. Kontron products are the preferred choice for any application that requires long-life, high-performance and cost-effective products in demanding and mission-critical environments.

With engineering, manufacturing, integration, project management, technical services and sales teams in Europe, Americas and Asia-Pacific, Kontron is close by – wherever you are. When it comes to advanced embedded computing and extended services, customers can focus on core capabilities and rely on Kontron as the preferred global OEM partner for successful long-term business relationships. Kontron's superior value-added services, and excellent technical support, allow customers to significantly reduce time-to-market and gain a clear competitive edge.

Kontron's Custom Products, Software & Services

Be sure to check out Kontron's Custom Products, Software & Services on pages 6-19. This section highlights a broad range of Kontron hardware and software services, including FPGA programming, PC Condition Monitoring and validation of complete software solutions. These enhanced services make it easier for customers to handle increasingly complex hardware and software functionalities including design, migration and customization.

Learn more at: www.kontron.com/customsolutions



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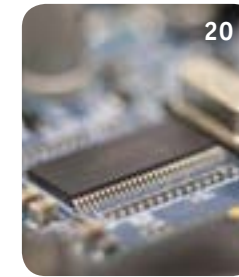
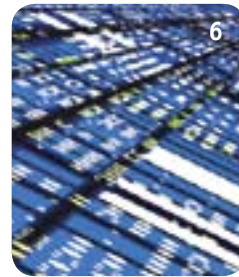
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» Custom Products, Software & Services «

Kontron helps leading OEMs and system integrators significantly reduce their time-to-market and gain a competitive edge. Kontron designs and manufactures innovative building blocks capable of supporting numerous applications for today's networked infrastructure. Our broad portfolio of products includes all major form factors, platforms and systems. We also offer application-specific technology and custom engineered & manufactured solutions.

Kontron helps customers to considerably reduce their time-to-market by providing state-of-the-art software services. The services are helping customers, i.e. to migrate from single-core to multi-core platforms for all important operating systems. The strong trend towards outsourcing does not stop at hardware level.

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» Custom Products & Services «

Kontron is dedicated to engineering, manufacturing and integrating products that fit your unique needs as well as providing service and support before, during and after the sale. As a member of your team, Kontron is a committed business partner that understands your applications and we are here to help develop a completely integrated solution even when there are challenging design elements to overcome.

Kontron offers partial and fully customized design services for carrier boards and SBCs in addition to fully-integrated systems. This includes all the services you may need, right up the value chain.

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» Modular assembly for Boards

Pre-assembled Computer-on-Modules (COMs), Single Board Computers (SBCs) and Motherboards that fit your application

Whether in the design phase or moving into production, Kontron has the tool you need. Our modular assembly products are ready to install in your lab bench fixture for quick evaluation right out of the box. Simplify production by calling out the Kontron product as a single component in the bill of materials for your finished design.

Getting your full core solution (COM/SBC/Motherboard, cooling solution, qualified memory, etc.) from a single vendor makes that possible and ensures that the system functionality is optimized for your application. Kontron also can include your custom carrier board design as part of the complete assembly. Kontron pre-assembled solutions help you find the best form-fit-function for your application so it can be brought to market quickly.

COMs



microETXexpress® with memory and heatspreader

SBCs



JReplus-DC with memory (if needed flat panel cables)

Motherboards



KTGM45/mITX with heatsink and socketed CPU

Driven and supported by the PICMG® group for more than 10 years, **CompactPCI** platforms are designed for modularity. Choosing from scalable 3U or 6U boards, you can configure your CompactPCI platform to your application needs by adding an appropriate front panel and memory. Optional HDD, CF or even conformal coating and ruggedization that optimizes the CPCI board for your application's environment.

CompactPCI



CP6002



» Customized System Configurations

Kontron offers a wide range of application-ready platforms dedicated to serving the specialized needs of various markets. Customers benefit from the practical feature of the flexibly configurable Box-PCs, IPCs, HMIs, 19" Rackmount Silent Servers, CompactPCI, MicroTCA, ATCA and modular rugged platforms, underscoring the trend in the field of embedded computing towards ready-to-use application platforms.

All systems are available direct from the warehouse as standard configurable systems or customized further as needed and delivered as a fully-tested and independently-certified solution for improved time to market.

microTCA platform



OM6120

3U CompactPCI



CP-ASM3-RAID

Embedded Box-PC



CB Series

» Dedicated Project Management

Be it a small project to tailor a board or a large full custom system project, a Kontron project manager is assigned for you. As a global company, Kontron has knowledgeable teams to support you in your region. Through your local project manager you have worldwide access to immense specialist know-how. Your project manager guides you securely through the entire design-in process to production-ready product by means of a precise gate project plan.

This allows you to concentrate on your core business and still retain an overview and full control of development, documentation, and production, including unique test processes, systems and procedures.



» Custom OEM Products

If, as an OEM, system integrator or value-added reseller, you develop your carrier boards and module concepts yourself, you know how challenging it can be. From one side, dynamic markets, ongoing technical changes, and high design risks move your project goals around; while from the other, competition and cost imponderables put immense pressure on your turnover and profitability goals. Is your capacity great enough to keep control of quality, solutions, and

services? Or is it time to think about outsourcing? Do you have a strong, trustworthy partner who you can involve in your board development, in your housing, in your system integration? What would you gain from this? You could concentrate on your core capabilities when you work with Kontron – and you'll be able to feel secure knowing that you are on your way to achieving your goals!



Design, housing, and system integration for your markets

» Industrial Automation
» Energy
» Transportation
» Medical

» Test and Measurement
» Infotainment
» Communications
» Military and Government

With our broad range of design experience, Kontron develops and delivers the designs and services you need, including standard memory, heat sink, housing, assembly, customer-specific configuration, packaging and shipment. If there's not a perfect modular match within our existing

diverse portfolio, Kontron can design and manufacture the completely custom board with your desired CPU in your desired form factor.

For more information please visit
www.kontron.com/boardsandmore

» Computer-on-Modules » Evaluation Board » Starter Kit » Custom Carrier Board » Full Custom SBC » Customized Chassis





» Custom Design & Manufacturing Services

At Kontron, our strength in original Design and Manufacturing Services (ODM) comes from our roots of being an innovative leader in open standards for embedded computers. Kontron understands the importance of this groundwork. With over 890 highly qualified engineers, Kontron has one of the world's largest R&D teams for embedded computing.

Kontron has created a portfolio of COTS products that are customized for unique designs and solutions. The re-use of existing technology optimizes costs. OEMs also receive the benefit of utilizing open-standard COTS products

without having to pay for the functional specification. Shorter development time speeds up time-to-market. As OS support, BSPs and middleware – which are one of the most important cost and competition factors – become increasingly more complex, Kontron standard products are financing basic functionality. They've already proven their worth in countless applications, helping to reduce total cost of ownership. Kontron capabilities then come full circle with our high-quality production site in Malaysia – a manufacturing facility for high-volumes of boards and systems up to approx. 30.000 pieces.

» System Integration Services

However specific your requirements – whether for mechanical and systems engineering, machines or automated systems or even for applications in medical or safety technology – Kontron can supply you with semi- and fully-customized systems for your control and visualization applications. We will define and develop an industry-specific board or system solution that precisely meets your requirements. Our OEM Program Management includes product certification testing, qualification and certification documentation, extended

lifecycle management as well as accreditation for CE, UL and FCC certification.

We'll give your product a unique face. A user interface is an important visiting card for any OEM customer. Design, ergonomics and functionality shape images and promote sales. For instance we offer various and individually customized faceplate colors, special housings and freely programmable function keys to meet your specific needs.



HMI OEM Systems – for more information please visit www.kontron.com/hmi



Ventura CBox – for more information please visit www.kontron.com/transportation



» Extreme Environmental Conditions

There is a steady increase in the need to design the extreme internal system applications – not only for applications in obvious harsh environments such as what outdoor POS/POI systems and those installed in military type vehicles are subjected to, but also to support rugged environments that result from space-constraints and mission critical or 24/7 design requirements.

» Extended Temperature

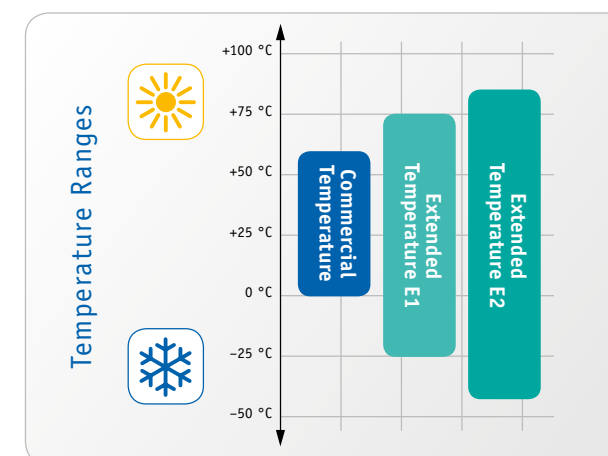
Building extended temperature solutions for demanding applications that call for reliable operation under harsh environmental conditions requires a strong combination of design expertise, proven components and thorough testing. Kontron's approach to rugged designs for extreme environments includes wide temperature range testing with a profile of -25 °C ~ +75 °C for extended temperature, and -40 °C ~ +85 °C for industrial temperature. Assuring compliance with extended temperature requirements, Kontron tests the assemblies (Board/COM, memory and cooler) so they are ready to install when delivered to the customer.

Enabling OEMs to reach their product life goals, Kontron makes selecting extended temperature solutions easier and provides the confidence that using these solutions will ensure the end-application will operate reliably for its expected life span.



Products with Extended Temperature (E1 or E2):

- Computer-on-Modules
- PC/104, PC/104-plus, PC/104-Express and CompactPCI® boards,
- AMC, MicroTCA, VME, VPX and application ready platforms for Automation, Communication, Military, POS/POI and Transportation.



» Ruggedization



Kontron's expertise with Rugged COTS products has been built up over many years of servicing applications in harsh environments. Our continuous commitment to the market has fostered innovative technical answers to the unique challenges at hand. With Kontron's adherence to standards, our customers know that Kontron products will fit their stringent requirements.

The success of Kontron's sophisticated embedded COTS products allows OEMs to leverage designs and technology for use in the most sensitive military applications.

To withstand extreme shock and vibration, humidity and other challenging environmental factors, many of Kontron products are manufactured in accordance with VITA 47 or better. Additionally, Kontron's system engineers are experts in thermal management offering a range of cooling methods: convection, conduction, liquid-cooled or thermo-electric solutions.

Kontron offers a range of ruggedized products to meet the most demanding needs of industries such as military and aerospace, avionics, industrial automation and transportation applications.

For more detailed information about ruggedized products and systems, please visit www.kontron.com/military.



PowerNode5 with heat pipe

» Conformal Coating

Conformal Coating as partial or entire protection for CPU boards and modules against moisture, dust, chemicals and temperature extremes that, if unprotected, could result in a complete failure of the electronic system. The coating

material can be applied by various methods, due to increasing complexities of CPU boards selectively coating via robot is the safest.

» Services

» Consulting



Kontron offers design consulting, training and concept optimization services that guarantee a short time to market with a reliable and cost-effective solution. Your application expertise coupled with Kontron engineering knowledge and proven reference designs eliminates the need to invest many expensive hours and resources designing your application from scratch.

Starter kits and Evaluation Boards give you a head start and minimize installation requirements and therefore reduce the

design time dramatically. They help to control and cut-back pre-market costs. Evaluation boards are recommended for testing in every design-in.

Proven layout & schematics speed up your design-in with complete modular building blocks like MARS for example. The Mobile Application platform for Rechargeable Systems allows you to save a great deal of time and effort when developing Smart Battery concepts. Simply adapt the modular building blocks you need and utilize the layout and schematics instead of having to develop the complete unit yourself.

» Kontron Academy

As part of our service package, we offer regular seminars and training sessions on hardware, software and networking as well as web-based and onsite trainings on request. Kontron's workshops provide a solid basis for the use, development and design-in of Kontron boards. Hands-on use of the development environment and understanding the building process and programming interfaces are the primary objectives of the training courses. For more information: www.kontron.com/academy



» Product Life Cycle Management



It is Kontron's policy to ensure that the investment you make in your solution pays off. Every Kontron solution is designed to be supported for at least five years. Kontron engineering and procurement teams work closely to manage the longevity of every standard and custom product.

Kontron takes great care in the selection process of suppliers and components. Manufacturers are selected through an ISO-9001 vendor approval process that provides assurance that we are establishing a relationship with our vendors that is consistent with our goals. Components are selected based on features, market acceptance, and the approval of the vendor.

Be it a standard commercial-off-the-shelf (COTS) or a rugged COTS product, with each product purchase you are entitled to our COTS commitment policy: Standard Warranty and Product Life Cycle Management. All hardware products we design are covered by a two-year return-to-factory warranty. This period can be extended with Warranty Extensions. Our products

have a guaranteed life cycle organized in successive periods like general and restricted availability. For each period, a standard level of support and services is defined. This level of commitment already goes beyond what typical hardware vendors offer.

Despite a company's best efforts, the need to modify a product sometimes does arise. This may be the result of a component prematurely becoming obsolete, an enhancement that is desired by the market, or a correction to a problem. In the event that it is necessary to designate a product for End-Of-Life (EOL), Kontron has defined the following options.

1. Migration Options
2. Parallel Replacement
3. Upgrade Replacement
4. Alternative Replacement
5. Continuation of Supply

Once again, your dedicated Kontron Project Manager and Kontron Strategic Account Manager works with you to jointly determine the best course of action.

» Technical support

We emphasize personal contact rather than answering systems and virtual assistants. Our technical support staffs are comprised of experienced engineers who are ready and able to respond to your requests. This means that you instantly get in contact with someone who understands your situation, listens to your description, analyzes the problem and gets it resolved quickly. For more information visit www.kontron.com/support



» Return of Material Authorization – RMA

Kontron provides a customer-oriented RMA service in order to get your unit repaired very fast and efficiently. Please refer to the RMA instructions outlined on the Kontron website:

www.kontron.com/support/rma-information

It contains:

- » Repair of boards and systems (under warranty and out of warranty)
- » Retrofitting of boards and systems
- » Customer-specific service contract

» Software Products & Services «

» Kontron's Global Software Center

Kontron has extended its in-house design services. While continuing to offer local software support, the Kontron Global Software Design Center is the company's central service point for handling the increasingly complex software functionalities of customers' embedded computing solutions, thereby helping OEMs to reduce their time to market and improve the quality of applications.

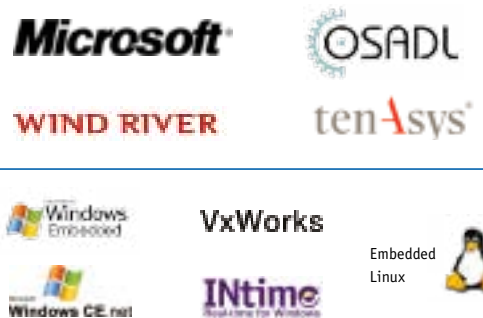
Knowledgeable Software Support Speeds Time to Market

- » Software development, development teams outsourcing – developers, testers
- » Consultancy, design and, i.e. implementation of software for Industrial Automation
- » Project based software package development for industrial communication, human-machine interfaces and process visualization/control
- » Porting of drivers and middleware
- » Porting, adoption and validation of target applications
- » Validation of complete software solution

Vision for Software Support

- All Kontron standard products are supported and validated with:
- » Board Support Packages for all important Operating Systems like Windows 7, Linux, VxWorks including all drivers and support of all hardware features
 - » Hypervisor/Virtualization, validated with different Operating Systems (if Hyper-Threading and / or Multi-core is supported by the CPU)
 - » Software tool chain including common, standardized Embedded API (EAPI)

OUR PARTNERS



CUSTOMER BENEFITS

- » Considerably reduce time-to-market due to out-of-the-box HW/SW solutions
- » Increased software quality
- » Extended variety of application-ready-platforms for dedicated market segments
- » Reduced total-cost-of-ownership

» FPGA Programming and IP Cores

Custom designs with individual I/O controller hub

As part of Kontron's Original Design and Manufacturing (ODM) services, Kontron offers OEMs the option to implement individual board designs with this new, highly integrated Intel® Atom™ SOC processor. Kontron offers in-house programmed FPGAs, manufacturer-specific ASICs (PLC logic) or dedicated standard PCIe devices. Therefore, systems are possible that integrate, besides versatile standard interfaces, additional communication ports, wireless connectivity, GPS services and video or audio streaming. Only the processor and the respective components are required for these devices reducing both energy consumption and the use of materials for the components. As an alternative to the Intel® Platform Controller Hub EG20, third party I/O Hubs can also be provided.



Kontron MICROSPACE® MSMST
(Detailed Information on page 27)

Kontron introduced the world's first PCIe/104™ embedded single board computer (SBC) based on the Intel® Atom™ E600C processor series with industrial temperature range, which pairs an Intel® Atom™ E600 series processor with an Altera Field Programmable Gate Array (FPGA) in a single package. With the new Intel® Atom™ E600C processor series, along with IP definable applications, the **Kontron MICROSPACE® MSMST** adds significant flexibility to SBC based applications.

Validated IP cores are available for CAN-bus, serial interfaces (SPI Master / UART) and PCI-Express, I2C and GPIO. This makes configuring the platform a quick and easy task. OEMs only need the required IP core and corresponding High-Speed Mezzanine Cards (HSMC) to carry out the interfaces. For further I/Os, Kontron also offers FPGA programming services.

OEMs will benefit from a simplified application design, reduced development efforts, faster time to market and lower total cost of ownership.

The relationship between Kontron, Intel® and Altera provides customers with complete embedded processor and FPGA solutions with flexible I/O. These fully validated and verified solutions consist of various form factors which include the processors, FPGAs, IP Cores, drivers, board support packages (BSPs) and support for various operating systems. Kontron offers software support for Windows, Linux, VxWorks and others upon request.

Kontron's Global Software Design Center also offers FPGA programming as an optional software service for customers. In addition, Kontron also offers complete design and production services with the revision controls, supply chain management, regulatory test services and industry-specific requirements, such as ITAR or ISO 13485 medical device manufacturing.

Customers benefit from faster upgrades, more flexibility and, on top of that, long-term guaranteed IP availability over lifecycles of dedicated components. For those customers who require a high-level of individualization, there is the option of realizing these differentiations on multi-functional COTS platforms only via software and with this, ensuring the use of this IP in the long term.

COM Express® FPGA Starterkit FPGA application ready Starterkit

Ready to use Starterkit with COM Express® FPGA Baseboard incl. Altera Cyclone IV GX 45 FPGA, 2 HSMC cards for automation, communication and video features, 12 V power supply and accessories.

- » COM Express® Evaluation Board for pin-out Type 1/2 or Type 10
- » Onboard Altera FPGA Cyclone IV GX incl. IP binary
- » HSMC card for Video/Mass storage and I/O
- » Choose your COM Express® module – Plug & Go



(More COM Express® modules on page 78)

» Kontron Embedded Application Programming Interface (Kontron EAPI)

Kontron has standardized the access and control of hardware resources for embedded applications. Application developers will benefit from a rich and sophisticated library of API functions for getting information from all new Kontron embedded computing platforms. Kontron EAPI is compliant to the PICMG®'s EAPI but independent of form factors and operating systems and offers an extended feature set. It helps to minimize OEMs' development work and the time spent on initial designs up to cross-platform migrations, including validation and verification. Additionally, Kontron's EAPI enables remote monitoring and control functionalities, resulting in improved service, easier maintenance and a lower total cost of ownership.

The first products to be fitted with the new Kontron EAPI are the Kontron COM Express® Computer-on-Module **nanoETXexpress-SP** the Kontron embedded motherboard **KTQ45**, and Kontron's **MICROSPACE® MPCX** line of industrial PCs.

The software interfaces to the hardware can be easily linked to any higher programming language like C++ or Java. This makes software and application development a much simpler

job. Moreover, developers can utilize the knowledge that has gone into creating the solution, even when migrating to another Kontron platform. This ensures the best time to market as well as reducing the amount of work needed for validation and verification.

OEMs can even leverage the Kontron EAPI to offer value-adding services to their customers. Some possible value-adds include, but are not limited to, remote hardware monitoring and enhanced servicing plans.

Kontron EAPI is compliant to the PICMG®'s EAPI as defined in the latest COM Express® specification, COM.0 Rev. 2, but extends its feature set by additional function calls such as basic system information (e.g. CPU, memory, HDD, battery), temperature and voltage monitoring, CPU performance and thermal control. Moreover, Kontron EAPI includes more form factors — from AdvancedTCA® to VPX — and all functions can be called remotely via internet.

Developers using this will benefit from the safety of an independently standardized programming interface combined with high convenience and an extended feature set.



nanoETXexpress-SP
(Detailed Information on p. 83)



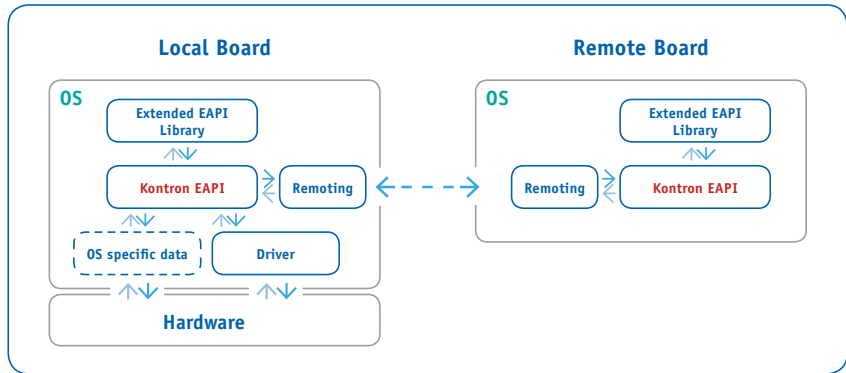
KTQ45
(Detailed Information on p. 34)



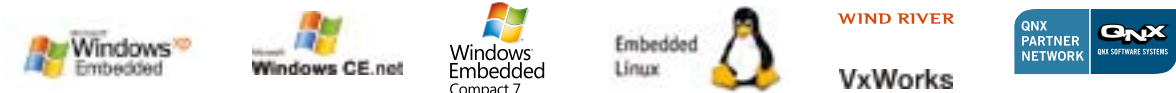
MICROSPACE® MPCX
(Detailed Information on p. 113)



Kontron Embedded Application Programming Interface (Kontron EAPI)



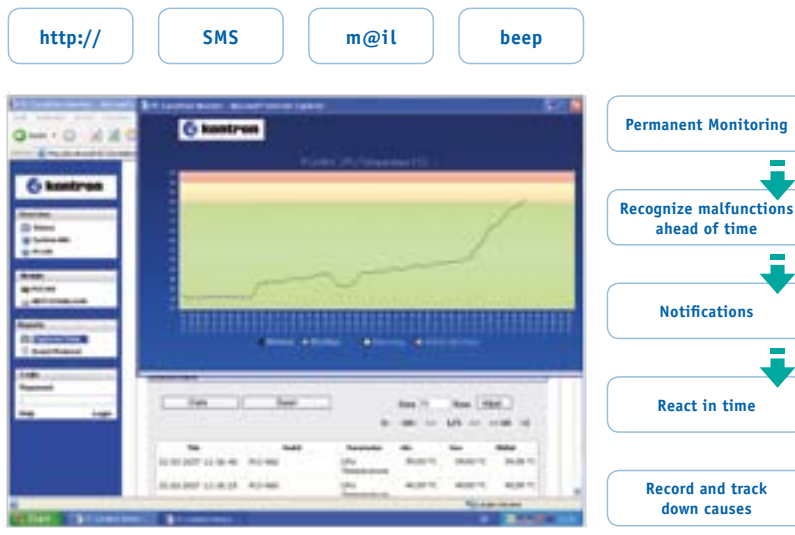
SUPPORTED OS



» PC Condition Monitoring

With PCCM software the system can be monitored and vital system information are collected to get early warning of an upcoming fail. By monitoring critical system parameters components can be replaced before the system crashes due to component fail. The service technician will have

information what component reached a critical status so he can have required spare part with him for fast repair. As a result maintenance-cycles can be optimized and MTTR value (mean time to repair) can be reduced.



Recognize malfunctions before they happen

- » Temperature monitoring
- » Fan speed monitoring
- » Hard drive monitoring with S.M.A.R.T.
- » KISS Stor Raid status
- » Monitoring of the supply voltages
- » Individual expandability through plug-in interfaces
- » In the event of malfunction, notification of the user/administrator (acoustic, optical, by e-mail or SMS, etc.)
- » Display of data and logs via standard HTML browsers
- » Export of data for individual analysis
- » Connection to customer systems via web service interfaces (SOAP)

» Boards & Mezzanines «

Kontron's Boards and Mezzanines give designers a Commercial-Off-The-Shelf solution that also offers the flexibility of full or semi-customization.

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» Single Board Computers «



Overview

Single Board Computers (SBCs) are standard, off-the-shelf computer boards that come in various industry conforming form factors. They can deliver customized features for the total solution when integrated with expansion boards ranging in type from PC/104, PC/104-plus and PCI-104 just to name a few.

Additionally you can find as well now the brand new small form factor Pico-ITX (100 x 72 mm).



Advantages of SBCs

SBCs are designed to work right out-of-the-box, thus optimizing development time so the final application can achieve an extremely quick time to market.

Kontron SBCs are highly integrated with all key system interfaces and functionalities already designed in to the board. This means

that only application-specific I/O needs to be integrated for the complete solution. This is made easy with standard accessories and contributes to the ultimate in fast system set-up – no specialized R&D knowledge and development time required. Just plug and go!

Kontron's SBC Families

Kontron offers three main families of small form factor single board computers. These include the PC/104 SBCs, the JReplus family of 3.5-inch SBCs, and the Pico-ITX family of 2.5" SBC. The members of the PC/104 SBCs product family are fully

compliant with the standards defined by the PC/104 Consortium (PC/104, PC/104-plus, PCI/104, and PCI/104-Express). JReplus 3.5-inch SBCs support PCI-104 compliant expansion boards.



pITX 2.5" SBCs



- » Small Form Factor 10 x 7.2 cm
- » Ultra-Low power consumption



JReplus 3.5" SBCs

- » From AMD-LX800 up to Intel® Atom™
- » Chassis re-use
- » Full featured
- » Expansion via PCI-104 I/O



PC/104™ SBCs

- » Full featured
- » Active and passive cooling
- » Size 9 x 9.6 cm
- » Extended temperature and conformal coating options
- » Compliant to the standards of the PC/104 Consortium (PC/104™, PC/104-plus™, PCI/104™, and PCI/104-Express™)



PCIe/104™ SBC with Intel® Atom™ processor E6x5C series

- » Long life support – 7 years+ for Intel® Atom™ processor E6x5C series
- » Flexible I/O functionality with existing FPGA core
- » Ideal for small, low-power devices
- » Designed E2 Industrial temp range (-40°C to +85°C)
- » Software support available to match application-specific needs

Pico-ITX – the small, powerful and cost effective 2.5” SBC family.

With the Pico-ITX form factor, Kontron now supports a new definition of small (100 x 72 mm), powerful and very cost effective 2.5” SBCs. The pITX-SP, Kontron’s first 2.5” SBC based on this specification, features the Intel® ATOM™ Z510 / Z530 processor and US15W System Controller Hub, together with

multiple I/O options, microSD-Card boot etc.. This product will be accompanied soon by the forthcoming KTLX800/pITX, another board with real low powerconsumption , offering CRT (DSUB15) graphics aoutput and COM ports to fullfill which is required typically by most industrial automaton applications.

2,5” Pico-ITX		
		 Coming soon!
	pITX-SP	KTLX800/pITX
CPU	Intel® Atom™ Z510 / Z530 1.1 / 1.6 GHZ	AMD Geode™ LX800 / 0.5GHz
Chipset	Intel® System Controller Hub US15W	CS5536 AD
DRAM	1 x DDR2 SO-DIMM up to 2GB	1 x DDR SODIMM up to 1GB
Audio	HD Audio analog / SPDIF *	Audio Codec 97 (AC97) Controller
USB	6 x USB 2.0 (2 x at front panel, 4 x on board) *	4 x USB 2.0
Serial Ports	-	2 x RS232 (RX/TX)
Ethernet	Intel® 82574L Gigabit Ethernet	Intel 82551ER PCI 10/100 Mbit LAN
I/O Features	8 Bit GPIO TTL *, SDIO *	16 configurable GPIO
Graphics Controller	Integrated decoders in Intel® System Controller Hub US15W for MPG2 and H.264 / MPEG-4 AVC	internal graphics controller
Graphics	DVI-D, JILI30 single channel LVDS (24 Bit) interface	CRT (DSUB-15) , JILI30 LVDS (24 Bit) interface
Dimensions (H x W x D)	100 x 72mm (Pico-ITX)	100 x 72mm (Pico-ITX)
Special Features	TPM 1.2 *, 1x microSD socket *	1x microSD socket *
Temperature/Humidity	Operating: 0°C - 60°C (32°F ~140°F) Storage: tbd	Operating: 0°C - 60°C (32°F ~140°F) Storage: tbd
Power Consumption (typ.)	5V DC, 5W typical	5V DC, tbd
Storage	2 x SATA II (chipset option) *, 1x PATA 44 Master / Slave *, microSD-Card-Slot	1 x SATA II *, microSD-Card-Slot

KAB-FLEX32

TTL flat panel cable type for JRExplus-LX



JILI30

LVDS flat panel cable type for all JRExplus and pITX boards (for TTL Displays please use KAB-ADAPT-LVDS to TTL P/N 61029 + KAB-FLEX32-xxx)



JRExplus 3.5-inch SBCs – Reduce System Costs!

The Kontron JRExplus family of 3.5-inch single board computers delivers computing performance suited to fit a wide range of embedded applications from diagnostics tools to box PC control systems. These highly integrated SBCs make designing simple with family consistent features including onboard connectors for up to 6 USB 2.0 devices, single and dual Gigabit Ethernet offerings,

integrated graphics and audio capabilities, system monitoring, and much more. And with all standard accessories available right away there’s no need to worry about moving from in-lab platform evaluation to full design production. Try a JRExplus 3.5-inch SBC today and kick start your embedded design.

JRExplus 3.5” SBCs			
			
	JRExplus-LX	JRExplus-690	JRExplus-DC
Line	plus	plus	plus
CPU	AMD® Geode™ LX800	AMD® Turion™ 64 / Sempron™ mobile CPU	Intel® Atom™ N270 processor
CPU Clock	500 MHz	up to 2.1 GHz Dual Core	1.6 GHz
Front Side Bus	-	Hyper Transport Technology	533 MHz
Cache	L2: 128 KByte	L2: 1x 512 KByte / 2x 512 KB	L2: 1x 512 KByte
BIOS	Phoenix™	AMIBIOS®	AMIBIOS®
Chipset	AMD CS5536	AMD M690E	Intel® 945GSE, Intel® ICH7M
DRAM	1 GByte DDR SDRAM	2 GByte DDR2 SDRAM	2 GByte DDR2 SDRAM
DRAM socket	SDRAM-SODIMM	SDRAM-SODIMM	SDRAM-SODIMM
CompactFlash	yes	yes	yes
Audio	AC'97	HD Audio	HD Audio
Hard Disk	EIDE (UMDA-66)	EIDE (UMDA-133)	EIDE (UMDA-133)
USB	4x USB 2.0 (2 on front panel, two internal)	6x USB 2.0 (4 on front panel, two internal)	6 x USB 2.0 (2 on front panel, 4 internal)
Ethernet	1x 10/100/1000	2 x 10/100/1000	1x 10/100, 1x 10/100/1000
Graphics Controller	AMD on chip graphic	Integrated ATI on chip graphic	Integrated with Intel® GMA950 (DirectX® 9, PS 2.0)
Graphics Memory	on-chip shared 8-256 MByte VRAM	shared memory	shared memory
Graphics	CRT/LCD, JILI30 (LVDS)-interface (optional), TTL (FLEX32)	CRT/LCD, JILI30 (LVDS)-interface	CRT/DVI, JILI30
Supply Voltage	5V single supply	ATX power supply	ATX power supply
IEEE 1394 Firewire	-	-	-
Serial Channels	1x DSUB RS232, 1x RS232 internal	1x DSUB RS232, 1x RS232 internal	1x DSUB RS232, 1x RS232 internal
Drives	1 x 1.44/2.88	-	-
Watchdog	yes	yes	yes
System Monitoring	yes	yes	yes
Expansion	PCI-104 compliant (PCI)	PCI-104 compliant (PCI)	PCI-104 compliant (PCI), MiniPCIe
Special Features	2x SATA, 1x PATA, CF-Socket	2x GBit-LAN, 2x SATA, 1x PATA, CF-Socket, 4bit Digital I/O	2x SATA, 1x PATA, CF-Socket, TPM 1.2, 4bit Digital I/O, Dual Independent Display
Power Management	APM 1.2 / ACPI 2.0	APM 1.2 / ACPI 2.0	APM 1.2 / ACPI 2.0
Cooling	fanless	active	passive / active depending on application
Dimensions H x W x D	102 x 147 mm	102 x 147 mm	102 x 147 mm
I/O Expansion Type	PCI-104 compliant (PCI)	PCI-104 compliant (PCI)	PCI-104 compliant (PCI)
Operating Temperature	0 to 60°C	0 to 60°C	0 to 60°C

PC/104

For building reliable embedded PCs, we offer a broad selection of PC/104 modules. If the customer does not find the required computer module in the standard product portfolio, we will develop and manufacture a custom computer system. Complete cable sets can be delivered with all CPU modules to facilitate the customer's entry into the world of PC/104.

- Advantages
- » Short development time

» Reduction of manufacturing costs

» Best price-performance ratio

» Full PC compatibility

» No wiring costs

» Maximum system reliability
- » Extremely robust

» Vibration resistant

» Various processor performances

» Space-saving

» Lightweight

PC/104 Power Supply



MICROSPACE® MSMPS104A



MICROSPACE® MSMPS104B

Function	Power supply	Power supply, UPS option
ISA-BUS	not mounted	not mounted
Protective Features	Reverse polarity, Fuse, Overload	Reverse polarity, Fuse, Overload
BUS Compatibility	-	-
Controller	-	Battery controller
Vinput (nom.)	12V (8V-20V)	24V, 36V, 42V, 48V (20V-55V)
1st Output	5V, 10Amp	5V, 10Amp
2nd Output	12V, 1Amp	12V, 1Amp
Power normal	75W, n=90%	75W, n=80%
Remote on/off Input	optoisolated (ignition)	optoisolated (ignition)
Power monitoring	Uin, Uout	Uin, Uout, Charger
Standard Temperature	-25°C to +60°C	-25°C to +60°C
Extended Temperature	-40°C to +85°C (reduced power to 50W)	-40°C to +85°C, (reduced power to 50W)
Dimensions (W x L in mm)	90 x 96	90 x 96
Weight	85 g	100 g
Software Support	-	UPS management
MTBF	100'000 h	100'000 h
Complies to	e1, EN60950	EN50155, IEC62040-3, e1, EN60950
Special Features	EN60950	Charger regulator interface: COM/SMB interface, Load voltage range: 20V-55V, Rechargeable battery: Pb, Pb-Gel
Accessories	Heatpipe cooler PSCS	Battery PS12BAT, Heatpipe cooler PSCS

PCIe/104 CPU



MICROSPACE® MSMST

Processor/Performance	Intel® Atom™ processor E6x5C series
IO-Controller	Altera® Arria II GX User programmable FPGA on Intel® Atom™ processor E6x5C package
PCI Express-Bus	yes, on the bottom
HSMC-Bus	yes, on the bottom
DRAM Min-Max	soldered 512 - 2048 MB
Graphics	int. graphic controller
Storage Interface	2x SATA300
USB	2x USB2.0
Standard Temperature	0°C to +70°C
Extended Temperature	-40°C to +85°C available
Dimension	90mm x 102mm
Special Features	Arria FPGA for custom interfaces (GPIO, UART, SPI, I2C, PCI, CAN, LPT, SD, ...) on HSMC.

» PCIe/104 CPU «



PCIe/104™ SBC with Intel® Atom™ processor E6x5C series

The PCIe/104™ embedded single board computer (SBC) is based on the Intel® Atom™ E600C processor series with industrial temperature range, which pairs an Intel® Atom™ E600 series processor with an Altera Field Programmable Gate Array (FPGA) in a single package. With the Intel® Atom™ E600C processor series, along with IP definable applications, the MICROSPACE® MSMST adds significant flexibility to SBC based applications. OEMs will benefit from a simplified application design, reduced development efforts, faster time to market and lower total cost of ownership.

With flexible FPGA I/O options, it allows OEMs to efficiently develop designs with the exact I/O requirements needed to address applications in markets such as automation, medical, transportation, energy, military and communications. Validated IP cores are available for CAN-bus, serial interfaces (SPI Master / UART) and PCI-Express, I2C and GPIO. This makes configuring the platform a quick and easy task. OEMs only need the required IP core and corresponding High-Speed Mezzanine Cards (HSMC) to carry out the interfaces. For further I/Os, we also offers FPGA programming services. This flexibility, combined with the x86/FPGA technology ecosystem of IP cores and HSMCs, makes it an ideal SBC for dedicated RISC platforms.

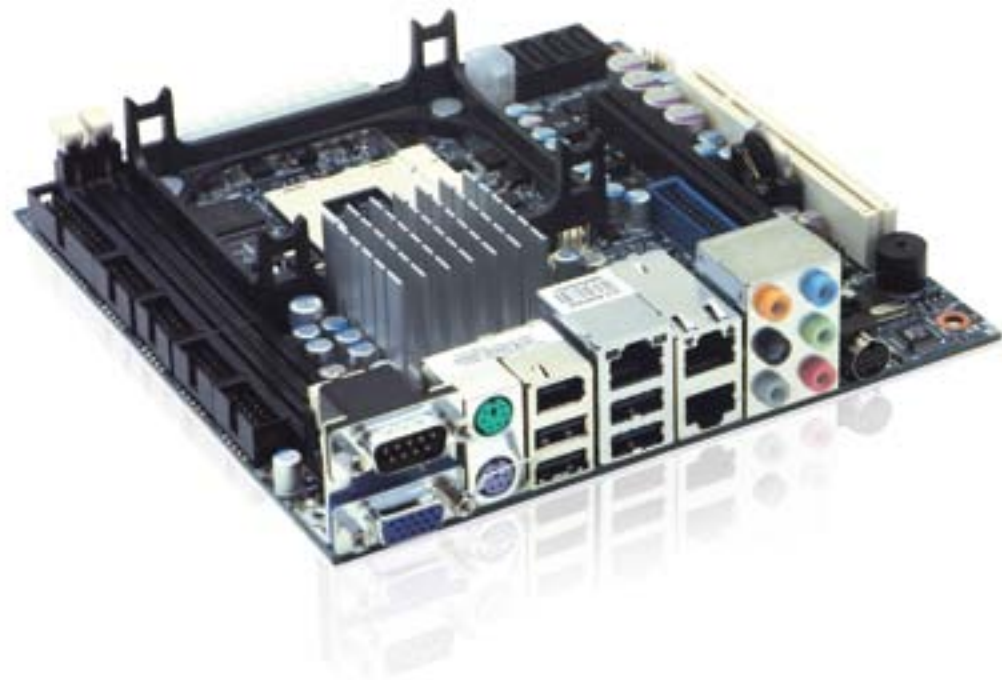
PCI/104-Express CPUs						PCI/104-Express CPUs
	MICROSPACE® MSM945	MICROSPACE® MSM945P	MICROSPACE® MSM200X	MICROSPACE® MSM200XP	MICROSPACE® MSM200XU	
Processor/Performance	Intel® Core™ Duo L2400 / Intel® Core™2 Duo L7400 (2x 1.6 GHz / 2x 1.5 Ghz)	Intel® Core™ Duo L2400 / Intel® Core™2 Duo L7400 (2x 1.6 GHz / 2x 1.5 GHz)	Intel® Atom™ Z510/Z530 (1.1/1.6 GHz)	Intel® Atom™ Z510/Z530 (1.1/1.6 GHz)	Intel® Atom™ Z510/Z530 (1.1/1.6 Ghz)	Processor/Performance
Chipset	945GME	945GME	US15W	US15W	US15W	Chipset
Bus	PCI-BUS: Option	PCI-BUS: Option, PCI Express-BUS: on the bottom	PCI-BUS: Option, PCI Express-BUS: not assembled	PCI-BUS: Option, PCI Express-BUS: on the bottom	PCI-BUS: Option, PCI Express-BUS: on the top	Bus
Memory	256-3072 MByte DRAM	512-3072 MByte DRAM	soldered 0.5-2 GByte	soldered 0.5-2 GByte	soldered 0.5-2 GByte	Memory
Video Controller	i945GME	i945GME	int. graphic Controller	int. graphic Controller	int. graphic Controller	Video Controller
Video Memory	8-224 MByte	8-224 MByte	128 MByte (UMA)	128 MByte (UMA)	128 MByte (UMA)	Video Memory
LCD Interface	SDVO	SDVO	24 bit LVDS	24 bit LVDS	24 bit LVDS	LCD Interface
CRT Interface	yes	yes	yes, up to 1920 x 1200 with reduced blanking	yes, up to 1920 x 1200 with reduced blanking	yes, up to 1920 x 1200 with reduced blanking	CRT Interface
IDE Interface P-ATA	1x	1x	1x	1x	1x	IDE Interface P-ATA
IDE Interface S-ATA	2x SATA 300	2x SATA 300	2x SATA 300	2x SATA 300	2x SATA 300	IDE Interface S-ATA
COM1 / COM2	RS232C / RS232C	RS232C / RS232C	RS232C / RS232C	RS232C / RS232C	RS232C / RS232C	COM1 / COM2
COM3 / COM4	-	-	RS232C, RS422/485 / RS232C, RS422/485	RS232C, RS422/485 / RS232C, RS422/485	RS232C, RS422/485 / RS232C, RS422/485	COM3 / COM4
USB	4x 2.0	4x 2.0, 2x PCI104ex	4x 2.0	4x 2.0	4x 2.0	USB
Ethernet	10/100 BASE-T	10/100 BASE-T	1 Gbit LAN	1 Gbit LAN	1 Gbit LAN	Ethernet
Sound	HDA, 2x Stereo, SPDIF	HDA, 2x Stereo, SPDIF	HDA, 2x Stereo, SPDIF	HDA, 2x Stereo, SPDIF	HDA, 2x Stereo, SPDIF	Sound
RTC Battery onboard	80mAh (or ext. 900mAh)	80mAh (or ext. 900mAh)	900mAh (typ. 10 years)	900mAh (typ. 10 years)	900mAh (typ. 10 years)	RTC Battery onboard
Dimensions (W x L in mm)	90/117 x 96/99	90/117 x 96/99	90 x 102 mm	90 x 102 mm	90 x 102 mm	Dimensions (W x L in mm)
Standard Temperature	-25°C to +60°C/+70°C	-25°C to +60°C/+70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	Standard Temperature
Extended Temperature	-40°C to +70°C	-40°C to +70°C	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C	Extended Temperature

PCI/104-Express Peripherals											PCI/104-Express Peripherals
	MICROSPACE® MSMGE104EX	MICROSPACE® MSM4E104EX	MICROSPACE® MSMEC104EX	MICROSPACE® MSMMI104EX	MICROSPACE® MSMSA104EX	MICROSPACE® MSMTW104EX	MICROSPACE® MSMG104EX	MICROSPACE® MSMG104EX-A	MICROSPACE® MSMGS104EX	MICROSPACE® MSM8C104EX	
Function	1 Gbit LAN	4x 1 Gbit LAN	ExpressCard-Adapter	PCIe MiniCard adapter	2x SATA300	FireWire, IEEE1394B	4x Frame grabber	4x Frame grabber	GSM-UMTS	8 channel serial port	Function
PCI-BUS	pass-through	pass-through	pass-through	pass-through	pass-through	pass-through	pass-through	pass-through	pass-through	pass-through	PCI-BUS
PCI Express-BUS	1x Lane	1x lane	1x lane	1x lane	1x lane	1x lane	1x lane	1x lane	1x lane	1x lane	PCI Express-BUS
BUS Compatibility	PCI/104-Express	PCI/104-Express	PCI/104-Express	PCI/104-Express	PCI/104-Express	PCI/104-Express	PCI/104-Express	PCI/104-Express	PCI/104-Express	PCI/104-Express	BUS Compatibility
Controller	82573L (Intel®)	4x 82574L (Intel®)	-	-	SIL 3132	TI	4x BT878A, PAL, NTSC	4x BT878A, PAL, NTSC	HC-25	8 ch. UART	Controller
1st Interface	1 Gbit LAN (RJ45)	4x 1 Gbit LAN (RJ45)	ExpressCard	PCIe MiniCard	2x SATA	1x IEEE1394A	16x Video, MCX (90°)	16x Video, MCX (180°)	GSM module	8 ch. RS232C (+/-9V) or	1st Interface
2nd Interface	2x USB	-	-	SIM card	2x USB	2x IEEE1394B	4x SVideo, MCX	4x SVideo, MCX	SIM card	8 ch. RS422 (1/8 load) or	2nd Interface
3rd Interface	-	-	-	-	-	-	-	-	Headset	8 ch. RS485 (1/8 load) or	3rd Interface
Power normal (typ.)	5V, 3.3V/4W	5V, 3.3V/4W	5V/3W	5V/8W	5V, 3.3V/2W	5V, 3.3V/1W	5V, 3.3V/6W	5V, 3.3V/6W	5V, 3.3V/5W	5V/3W	Power normal (typ.)
Power Management	-	-	yes	yes	-	12V	-	-	yes	-	Power Management
Dimensions (W x L in mm)	90 x 96	90 x 96	90 x 96	90 x 96	90 x 96	90 x 96	90 x 96	90 x 96	90 x 96	90 x 96	Dimensions (W x L in mm)
Weight	60 g	80 g	65 g	55 g	65 g	75 g	95 g	95 g	65 g	70 g	Weight
Software Support	WINXP, Linux, VxWorks, QNX	WINXP, Linux	XP, VISTA	XP, VISTA	XP, VISTA, Linux	WINXP, Linux	WIN, Linux	WIN, Linux	WINXP, Linux	XP, VISTA	Software Support
MTBF	100'000 h	100'000 h	100'000 h	100'000 h	200'000 h	200'000 h	100'000 h	100'000 h	100'000 h	200'000 h	MTBF
Special Features	-	PCI-switch:PLX 8505	Hot plug support: depending on BIOS/OS	-	Bandwidth: 2x 300MByte/s, RAID 0/1	Bandwidth: 2.5x 800Mbit/Sek.	Bandwidth: 133MByte/sec. Max., TTL i/o, 8bit	Bandwidth: 133MByte/sec. Max., TTL i/o, 8bit	Bandwidth: (max.) HSDPA 3.6 Mb/s, GSM-Edge: Quad-band, UMTS: 850/1900/2100MHz	RS422/85-TX, RX, CTS, RTS, +/-, 8x onboard termination	Special Features
Accessories	-	-	-	WLAN-MC, GSM-MC	-	-	MSMG104EX-Cable (MCX-BNC)	MSMG104EX-Cable (MCX-BNC)	GSM/UMTS	-	Accessories
Standard Temperature	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-20°C to +70°C	Standard Temperature
Extended Temperature	-	-40°C to +70°C	-	-	-	-40°C to +70°C	tbd	tbd	-40°C to +70°C	-40°C to +85°C	Extended Temperature

PC/104-Plus CPUs								PC/104-Plus CPUs
Processor/Performance	AMD Geode™ LX800 / 0.5GHz	AMD Geode™ LX800 / 0.5 GHz	AMD Geode™ LX800 / 0.5 GHz	AMD Geode™ LX800 / 0.5 GHz	AMD Geode™ LX800 / 0.5 GHz	AMD Geode™ LX800 / 0.5 GHz	Intel® Atom™ Z510/Z530 (1.1/1.6 GHz)	Processor/Performance
Chipset	CS5536 AD	CS5536 AD	CS5536 AD	CS5536 AD	CS5536 AD	CS5536 AD	US15W	Chipset
Bus	PC/104-Plus: Option	PCI-BUS: Option (3slot)	PCI-BUS: Option (3slot)	PCI-BUS: Option (3slot)	PCI-BUS: Option (2slot)	PCI-BUS: Option (2slot)	PCI-BUS: Option, ISA: yes (8 bit / no DMA / no Interrupt)	Bus
Memory	128-1024 MByte	128-1024 MByte	128-1024 MByte	128-1024 MByte	soldered 256 MByte	soldered 256 MByte	soldered 0.5-2 GByte	Memory
Video Controller	int. graphic Controller	int. graphic Controller	int. graphic Controller	int. graphic Controller	int. graphic Controller	int. graphic Controller	int. graphic Controller	Video Controller
Video Memory	16MB (UMA)	16 MByte (UMA)	16 MByte (UMA)	16 MByte (UMA)	16 (UMA)	16 (UMA)	128 (UMA)	Video Memory
LCD Interface	24bit, 320x240 to 1600x1200	24 bit, 320x240 to 1600x1200	24 bit, 320x240 to 1600x1200	24 bit, 320x240 to 1600x1200	24 bit, 320x240 to 1600x1200	24 bit, 320x240 to 1600x1200	24 bit LVDS	LCD Interface
CRT Interface	yes	yes	yes	yes	yes	yes	yes, up to 1920x1200 with reduced blanking	CRT Interface
IDE Interface P-ATA	1x EIDE (UDMA-33)	1x	1x	1x	1x	1x	1x	IDE Interface P-ATA
IDE Interface S-ATA	-	-	-	-	-	-	2x SATA300	IDE Interface S-ATA
COM1 / COM2	RS232C / RS232C	RS232C / RS232C	RS232C / RS232C	RS232C / RS232C	RS232C / RS232C	RS232C / RS232C	RS232C, RS422/485 / RS232C, RS422/485	COM1 / COM2
USB	2x 2.0	4x 2.0	4x 2.0	4x 2.0	4x 2.0	4x 2.0	6x 2.0	USB
Ethernet	10/100 BASE-T	10/100 BASE-T	10/100 BASE-T	10/100 BASE-T	10/100 BASE-T	10/100 BASE-T	1 GBit LAN	Ethernet
Sound	-	-	AC97	AC97	-	AC97	HDA (ALC882-7.1), 2x Stereo, SPDIF	Sound
RTC Battery onboard	-	-	400mAh	400mAh	-	400mAh (typ. 5 years)	900mAh (typ. 10 years)	RTC Battery onboard
Dimenstions (W x L in mm)	90 x 96	90 x 99	90 x 99	90 x 99	90 x 99	90 x 99	90 x 102 mm	Dimenstions (W x L in mm)
Special Features	Lan Boot, Watchdog, JIDA-Support, JRC-Support, Dark Boot, 32 MB - 1GB, chipDISK	-	-	-	soldered RAM	soldered RAM	-	Special Features
Standard Temperature	0°C to +60°C	0°C to +60°C	0°C to +60°C	0°C to +60°C	0°C to +60°C	0°C to +60°C	-25°C to +70°C	Standard Temperature
Extended Temperature	-	-25°C to +70°C	-25°C to +70°C	25°C to +70°C, -40°C to +85°C (with large cooler and E48 or with thermo junction and E48)	25°C to +70°C, -40°C to +85°C (with large cooler and E48 or with thermo junction and E48)	25°C to +70°C, -40°C to +85°C (with large cooler and E48 or with thermo junction and E48)	25°C to +70°C, -40°C to +85°C	Extended Temperature

PC/104-Plus Pheripherals								PC/104-Plus Pheripherals
Function	CAN	CAN	Video frame grabber	FireWire	8x serial	Ethernet LAN	1Gigabit-LAN	Function
PCI-BUS	yes	yes	yes	yes	yes	yes	yes	PCI-BUS
PCI Express-BUS	-	-	-	-	-	-	-	PCI Express-BUS
BUS Compatibility	PC/104-Plus	PC/104-Plus	PC/104-Plus	PC/104-Plus	PC/104-Plus	PC/104-Plus	PC/104-Plus	BUS Compatibility
Controller	Peak-CAN	Peak-CAN	BT878A	TSB43AB22	EXAR 17C158	i82551	i82541	Controller
Memory	-	-	-	-	-	32 kByte	32 kByte	Memory
1st Interface	CAN DSUB9, CiA DS102-1	CAN DSUB9, CiA DS102-1	1st channel CVBS	IEEE 1394 A	8ch RS232C	RJ45	RJ45	1st Interface
2nd Interface	CAN DSUB9, CiA DS102-1	CAN DSUB9, CiA DS102-1	2nd channel CVBS	IEEE 1394 A	8ch RS422	-	-	2nd Interface
3rd Interface	-	-	3rd channel CVBS /SVideo	-	8ch RS485	-	-	3rd Interface
Power normal (typ.)	3.3V/5V/2W	3.3V, 5V/4W	5V/2W	3.3V/3W	3.3V/3W	3.3V/1W	3.3V/2W	Power normal (typ.)
Dimensions (W x L in mm)	90 x 96	90 x 96	90 x 96	90 x 96	90 x 96	90 x 96	90 x 96	Dimensions (W x L in mm)
Weight	80 g	30 g	35 g	70 g	70 g	70 g	70 g	Weight
Software Support	Win, Linux	Win, Linux	WIN, CE, Linux	WIN, Linux	WIN, Linux	WIN, CE, Linux	WIN, Linux	Software Support
MTBF	200'000 h	200'000 h	200'000 h	>200'000 h	>200'000 h	200'000 h	100'000 h	MTBF
Special Features	Reset using software commands	500V isolated, Reset using software commands	Digital I/O, PAL, NTSC	-	8x 10pin header	10/100 BASE-T	-	Special Features
Standard Temperature	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	Standard Temperature
Extended Temperature	tbd	tbd	-40°C to +85°C	-40°C to +70°C	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C	Extended Temperature

» Motherboards «



Embedded Motherboards

Full Mechanical Compatibility from Mini-ITX to Full Size ATX



Mini-ITX



FLEX-ATX



Micro-ATX



ATX

Motherboards

Kontron offers a broad range of high-quality embedded motherboards from Mini-ITX to full size ATX. This variety of motherboards serves the different needs of our customers in the industrial and medical fields, point of sales technology, lottery systems, gaming and many other applications. These products are based on state-of-the-art processors and chipset platforms and utilize advanced technology components.

These embedded and industrial motherboards follow international industry size standards with well-defined mounting holes and standard I/O bracket areas. In addition, Kontron offers value-added services like product longevity, detailed documentation, display support and complete life cycle management. The embedded motherboards offer up to seven years product availability from the release date, based on embedded key components.

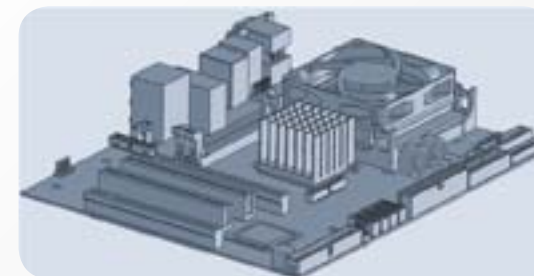
- » Up to seven years lifecycle and long term service and support
- » Extensive validation, verification and testing
- » Extended technical support and documentation
- » Flat panel display support expertise including LVDS, DVI, CRT, HDMI and ADD2/PCIe Cards
- » Quick time-to-market with standard form factors
- » Remote hardware and hard disk monitoring/control by original API software
- » Advanced technologies such as solid capacitors and up to 12 multilayer PCBs
- » Boards are tested and approved to UL 60950 – Information Technology Equipment (ITE) for easy validation efforts on behalf of customers and system integrators when system-level products must go through UL / CE safety testing

The use of Solid CAPs offers the following advantages:

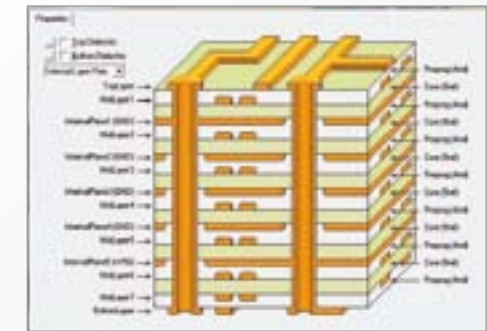
- » Long-life cycle – enhanced MTBF
- » Liquid free – no drying out
- » Improved resistance against higher ambient temperature
- » Optimized electric strength



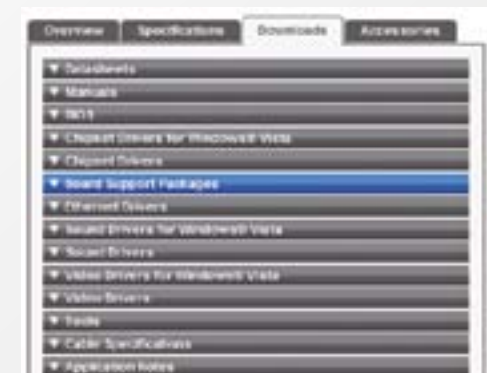
The availability of 3D-Drawings at early introduction for all available boards allows an instant start of housing design



Up to 12 Multilayer PCBs support more features on smaller form factors with the highest signal quality



Extended Documentation and Drivers – ready for download via Website



Embedded
Motherboards

986LCD-M/FLEX



986LCD-M/ATXE



986LCD-M/ATXP



KTGM45/FLEX



KTGM45/ATXE



KT965/FLEX



KT965/ATXE



KT965/ATXP



KTQ45/Flex



KTQ45/ATXE



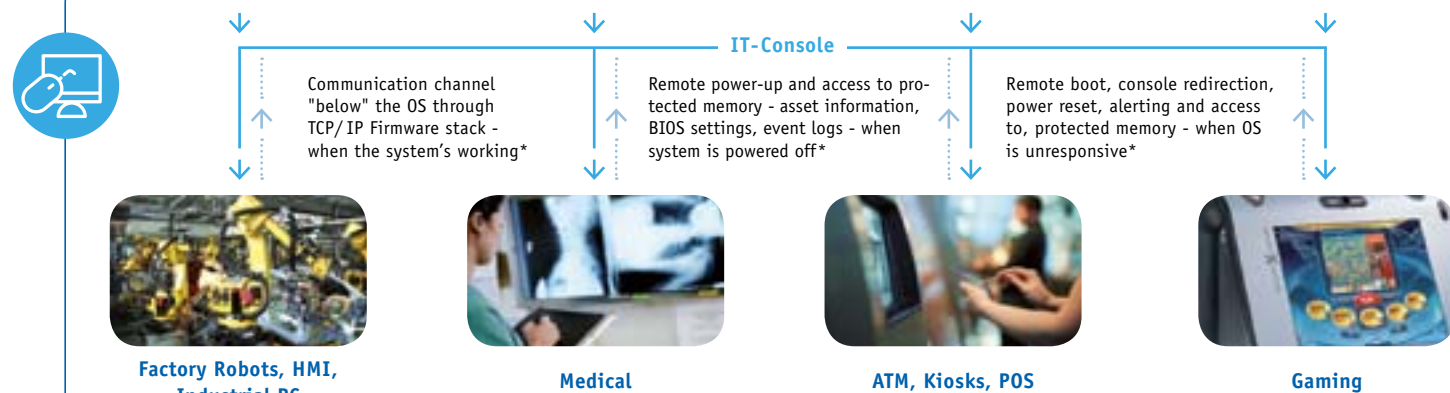
KTQ67/FLEX

Coming soon!

	986LCD-M/FLEX	986LCD-M/ATXE	986LCD-M/ATXP	KTGM45/FLEX	KTGM45/ATXE	KT965/FLEX	KT965/ATXE	KT965/ATXP	KTQ45/Flex	KTQ45/ATXE	KTQ67/FLEX
CPU	Intel® Core™ 2 Duo, Intel® Core™ Duo and Intel® Core™ Solo (mPGA478, mBGA479 prepared)	Intel® Core™ 2 Duo, Intel® Core™ Duo and Intel® Core™ Solo (mPGA478, mBGA479 prepared)	Intel® Core™ 2 Duo, Intel® Core™ Duo and Intel® Core™ Solo (mPGA478, mBGA479 prepared)	Intel® Core™ 2 Quad & Intel® Core™ 2 Duo	Intel® Core™ 2 Quad & Intel® Core™ 2 Duo	Intel® Core™ 2 Quad, Intel® Core™ 2 Duo Desktop, Pentium® 4 / D	Intel® Core™ 2 Quad, Intel® Core™ 2 Duo Desktop, Pentium® 4 / D	Intel® Core™ 2 Quad, Intel® Core™ 2 Duo Desktop, Pentium® 4 / D	Intel® Core™ 2 Duo E8400 and Intel® Core™ 2 Quad Q9400	Intel® Core™ 2 Duo E8400 and Intel® Core™ 2 Quad Q9400	Intel® Core™ i7/Xeon 4C /Core i5/Xeon 4C / i3 2C
CPU Clock	Up to 2.16 GHz	Up to 2.16 GHz	Up to 2.16 GHz	Up to 3.06 GHz	Up to 3.06 GHz	Up to 3.8 GHz	Up to 3.8 GHz	Up to 3.8 GHz	Up to 3.0 GHz	Up to 3.0 GHz	Up to 3.8 GHz
Front Side Bus	533 / 667 MHz	533 / 667 MHz	533 / 667 MHz	667 / 800 / 1066 MHz	667 / 800 / 1066 MHz	533 / 800 / 1066 MHz	533 / 800 / 1066 MHz	533 / 800 / 1066 MHz	800/1066/1333 MHz	800/1066/1333 MHz	up to 5GT/s (GEN2 speed)
Chipset	Intel® 945GM + ICH7R	Intel® 945GM + ICH7R	Intel® 945GM + ICH7R	Intel® GM45 + ICH9M-E	Intel® GM45 + ICH9M-E	Intel® Q965 + Intel® ICH8D0	Intel® Q965 + Intel® ICH8D0	Intel® Q965 + Intel® ICH8D0	Intel® Q45 Express	Intel® Q45 Express	Intel® Q67
DRAM	Up to 3 GByte DDR2 533/667, 2x DIMM-240	Up to 3 GByte DDR2 533/667, 2x DIMM-240	Up to 3 GByte DDR2 533/667, 2x DIMM-240	Up to 8 GB DDR3, 2 pcs. DIMM 240 pin	Up to 8 GB DDR3, 2 pcs. DIMM 240 pin	Up to 8 GByte, DDR2 800, 4x DIMM-240	Up to 8 GByte, DDR2 800, 4x DIMM-240	Up to 8 GByte, DDR2 800, 4x DIMM-240	Up to 8 GB DDR3, 4x DIMM-240	Up to 8 GB DDR3, 4x DIMM-240	Up to 8 GB DDR3, 4x DIMM-240 (max. 32GB)
Video Memory	Up to 192 MByte shared video memory	Up to 192 MByte shared video memory	Up to 192 MByte shared video memory	Up to 256 MByte shared video memory	Up to 256 MByte shared video memory	Up to 256 MByte Dynamic shared memory	Up to 256 MByte Dynamic shared memory	Up to 256 MByte Dynamic shared memory	Up to 256 MByte Dynamic shared memory	Up to 256 MByte Dynamic shared memory	tbd
IDE / SATA HDD-Interface	4x SATA 150/300 w. RAID 0,1,5,10, 1x ATA100	4x SATA 150/300 w. RAID 0,1,5,10, 1x ATA100	4x SATA 150/300 w. RAID 0,1,5,10, 1x ATA100	4x SATA 150/300 w. RAID 0,1, 1x ATA133	4x SATA 150/300 w. RAID 0,1, 1x ATA133	6x SATA150/300 w. RAID 0/1/5/10	6x SATA150/300 w. RAID 0/1/5/10	6x SATA150/300 w. RAID 0/1/5/10	5x SATA150/SATA300 w. RAID 0/1/5/10, 1x eSATA	5x SATA150/SATA300 w. RAID 0/1/5/10, 1x eSATA	6 x SATA150/SATA300 w. RAID 0/5/10
USB	8x USB 2.0	8x USB 2.0	8x USB 2.0	12x USB 2.0	12x USB 2.0	10x USB 2.0 (2x internal)	10x USB 2.0 (2x internal)	10x USB 2.0 (2x internal)	12x port USB 2.0 (4x internal)	12x port USB 2.0 (4x internal)	14 x port USB 2.0
Ethernet	2x GbE LAN	2x GbE LAN	3x GbE LAN	Up to 3x GbE LAN	Up to 3x GbE LAN	2x GbE LAN	2x GbE LAN	2x GbE LAN	2x GbE LAN	2x GbE LAN	3 x GbE LAN (incl. AMT 7.0 support)
Form Factor	Flex-ATX 228.6mm x 190.5mm (9" x 7.5")	ATX 300.5mm x 190.5mm (12" x 7.5")	ATX 300.5mm x 190.5mm (12" x 7.5")	Flex-ATX 228.6mm x 190.5mm (9" x 7.5")	ATX 300.5mm x 190.5mm (12" x 7.5")	Flex-ATX 228.6mm x 190.5mm (9" x 7.5")	ATX 300.5mm x 190.5mm (12" x 7.5")	ATX 300.5mm x 190.5mm (12" x 7.5")	Flex-ATX 228.6mm x 190.5mm (9" x 7.5")	ATX 300.5mm x 190.5mm (12" x 7.5")	Flex-ATX 228.6mm x 190.5mm (9" x 7.5")
Available I/Os	1x PCI Express x4, 2x PCI, 4x COM	1x PCI Express x4, 5x PCI, 4x COM	1x mini PCI Express, 6x PCI, 4x COM	1x PCI Express x4, 2x PCI, 4x COM	1x PCI Express x4, 5x PCI, 4x COM	1x PCI Express x4, 2x PCI, 2x COM	1x PCI Express x4, 5x PCI, 2x COM	1x mini PCI Express, 6x PCI, 2x COM	1x PCI Express x4, 2x PCI, 2x COM	1x PCI Express x4, 4x PCI, 2x COM	1x PCIe x4 (In x16 connector), 2x PCI 32bits/33MHz, 1x Mini-PCIe, 1X mSATA 4x COM, Internal PS/2 Mouse/Keyboard connector, LPT Parallel Port in FFC Connector
Graphic Interface	CRT / LVDS / PCI-Express x16 / SDVO	CRT / LVDS / PCI-Express x16 / SDVO	CRT / LVDS / PCI-Express x16 / SDVO	CRT / LVDS / PCI-Express x16 / SDVO	CRT / LVDS / PCI-Express x16 / SDVO	CRT / PCI-Express x16 / SDVO	CRT / PCI-Express x16 / SDVO	CRT / PCI-Express x16 / SDVO	CRT / PCI-Express x16 / SDVO	CRT / PCI-Express x16 / SDVO	1x PCIe x16, 2x Display port, 1x LVDS, 1x CRT
Rear I/O	COM1, CRT, Ethernet, USB, line-in, line-out, line-in, line-out, speaker, PS/2 mouse/keyboard	COM1, CRT, Ethernet, USB, line-in, line-out, speaker, PS/2 mouse/keyboard	COM1, CRT, Ethernet, USB, line-in, line-out, speaker, PS/2 mouse/keyboard	COM1, CRT, Ethernet, USB, S-video (Optional), line-in, line-out, speaker, PS/2 mouse/keyboard	COM1, CRT, Ethernet, USB, S-video (Optional), line-in, line-out, speaker, PS/2 mouse/keyboard	COM1, CRT, Ethernet, USB, line-in, line-out, speaker, PS/2 mouse/keyboard	COM1, CRT, Ethernet, USB, line-in, line-out, speaker, PS/2 mouse/keyboard	COM1, CRT, Ethernet, USB, line-in, line-out, speaker, PS/2 mouse/keyboard	COM1, CRT, Ethernet, USB, line-in, line-out, speaker, PS/2 mouse/keyboard	COM1, CRT, Ethernet, USB, line-in, line-out, speaker, PS/2 mouse/keyboard	DB9 serial port, DB15 VGA, Audio stacked 2x3 mini Jack tower, 6x USB, 2x Display port, 3x RJ45 LAN
Special Feature	IEEE1394, GPIO, HDD RAID 0/1/5/10 support, HD Audio, SPDIF, TV-out (optional)	IEEE1394, GPIO, HDD RAID 0/1/5/10 support, HD Audio, SPDIF, TV-out (optional)	IEEE1394, GPIO, HDD RAID 0/1/5/10 support, HD Audio, SPDIF, TV-out (optional)	GPIO, HDD RAID 0/1 support, AMT 4.0, TPM 1.2	GPIO, HDD RAID 0/1 support, AMT 4.0, TPM 1.2	HDD RAID, GPIO, LPT, HD Audio	HDD RAID, GPIO, LPT, HD Audio	HDD RAID, GPIO, LPT, HD Audio	HDD RAID, GPIO, LPT, HD Audio, AMT 5.0	HDD RAID, GPIO, LPT, HD Audio, AMT 5.0	HDD RAID, GPIO, LPT, HD Audio, Mini-PCIe; AMT 7.0 mSATA for SSD storage
Additional	Up to 7 years availability, ADD2-Cards for SDVO Interface for 2nd LCD	Up to 7 years availability, ADD2-Cards for SDVO Interface for 2nd LCD	Up to 7 years availability, ADD2-Cards for SDVO Interface for 2nd LCD	Up to 7 years availability, ADD2-Cards for SDVO Interface for 2nd LCD	Up to 7 years availability, ADD2-Cards for SDVO Interface for 2nd LCD	Up to 7 years availability, ADD2-Cards for SDVO Interface for 2nd LCD	Up to 7 years availability, ADD2-Cards for SDVO Interface for 2nd LCD	Up to 7 years availability, ADD2-Cards for SDVO Interface for 2nd LCD	Up to 7 years availability, ADD2-Cards for SDVO Interface for 2nd LCD	Up to 7 years availability, ADD2-Cards for SDVO Interface for 2nd LCD	Up to 7 years availability, mSATA, KT Embedded Feature Connector with ADC, DAC up to 160 GPIO

Hardware-based remote Diagnosis and Repair
with Intel® vPro™ Technology with Intel® Active Management Technology:For more details please see productline **Industrial Rack Mount Systems** on page 98

IT OR SERVICE PROVIDER CAN POWER ON, REMOTELY ACCESS AND FIX INOPERABLE EMBEDDED SYSTEMS



* Different examples for remote management and security capabilities depending on system status

Intel® AMT is part of the Intel® Management Engine, which is built into PCs with Intel® vPro™ technology. Intel® AMT is running in a ME integrated into the PCH (Platform Controller Hub) and is independent of the host CPU. This deep level hardware-based AMT Remote Troubleshooting and Recovery for distributed applications offers:

- » Remote monitoring, maintenance and installation via existing network connections
- » Hardware-based management does not depend on the presence of the OS or the power state of the system.
- » Remote power up / power down
- » Support of full KVM remote control
- » Remote boot and BIOS Update

- » Remote status information
- » Remote BIOS parameter changes and firmware updates
- » Proactive Alerting
- » For enhanced security HW-based encryption is included

This means:

- » Significant reduction of on-site-findings and field work
- » Decrease of downtime and minimized time-to-repair
- » Increased efficiency of IT technical staff
- » **Reduced TCO (Total Cost of Ownership)**

Currently available for KTGM45, KTQ45 and QM67/Q67 Motherboard families.

Embedded Mini-ITX Motherboards

Mini-ITX has become a very successful embedded motherboard form factor. Key features including multi LAN and a wide range of I/O possibilities make these products ideal for a wide range of applications. The very compact and space-saving footprint (17 x 17 cm (6.7 x 6.7")) meets the growing need for a small form factor board-level solutions and allows the customer to design

a very compact system without sacrificing the requirement of standard ATX mounting holes and the I/O bracket area.

The Mini-ITX form factor fills the gap between small single board computers (i.e. 3.5" Single Board Computers) and full-size Flex and ATX motherboards.

Additional tools for an easy and effective handling, monitoring and integration

Temperature monitoring example



API's and sample code for Hardware Monitoring, GPIO, Watchdog Timer, Fan Speed Control and SMBUS access



Embedded Mini-ITX Motherboards



986LCD-M/mITX(BGA)



986LCD-M/mITX



KT690/mITX



KT690/mITX (BGA)



KTUS15/mITX - 1.1 / 1.6 GHz



KTGM45/mITX



KTQM67/mITX

CPU	Intel® ULV Celeron® M / LV Core Duo	Intel® Core™ 2 Duo, Intel® Core™ Duo and Intel® Core™ Solo (mPGA478, mBGA479 prepared)	Mobile AMD Sempron™ single core and AMD Turion™ dual core	Single core mobile AMD Sempron™ U210 and dual core AMD Athlon™ X2 Neo L325	Intel® Atom™ Z510 CPU BGA /Intel® Atom™ Z530 CPU BGA	Intel® Core™2 Quad & Intel® Core™2 Duo	Intel® Core™ i7,-i5,-i3 2Core and 4Core CPUs & Intel® QM67 Chipset
CPU Clock	1.06 GHz / 1.66 GHz Other BGA CPU's available on request	Up to 2.16 GHz	Up to 2.0 GHz	Up to 2.0 GHz	1.1 GHz Basic / 1.1 GHz Std /1.6 GHz Std / 1.6 GHz Plus	Up to 3.06 GHz	Up to 3.1 GHz
Front Side Bus	533 / 667 MHz	533 / 667 MHz	16 Lane Hyper Transport	16 Lane Hyper Transport	400 MHz / 533 MHz	667 / 800 / 1066 MHz	DMI
Chipset	Intel® 945GM + ICH7R	Intel® 945GM + ICH7R	AMD M690T + SB600	AMD M690T + SB600	Intel® US15 Embedded	Intel® GM45 + ICH9M-E	Intel® QM67
DRAM	Up to 3 GByte DDR2 533/667	Up to 3 GByte DDR2 533/667, 2x DIMM-240	Up to 8 GByte DDR2 533/667 - 200 Pin, 2x SODIMM	Up to 8 GByte DDR2 533/667 - 200 Pin, 2x SODIMM	Up to 2 GB, SO-DIMM 200-Pin, 1x SODIMM	Up to 8 GB DDR3, 2 pcs. DIMM 240 pin	Up to 8 GB DDR3 x 2 DIMM-240 (max. 16GB)
Video Memory	Up to 192 MByte shared video memory	Up to 192 MByte shared video memory	Up to 256 MByte shared video memory	Up to 256 MByte shared video memory	Up to 256 MByte shared video memory	Up to 256 MByte shared video memory	tbd
IDE / SATA HDD-Interface	4x SATA 150/300 w. RAID 0,1,5,10, 1x ATA100	4x SATA 150/300, 1x ATA100	4x SATA 150/300 w. RAID 0,1,10, 1x ATA133	4x SATA 150/300 w. RAID 0,1,10, 1x ATA133	1x ATA100 / 1x ATA100, 2x SATA 150/300	4x SATA 150/300 w. RAID 0,1, 1x ATA133	6 x SATA (2 x Gen3) w. RAID -Support
USB	8x USB 2.0	8x USB 2.0	10x USB 2.0	10x USB 2.0	8x USB 2.0	12x USB 2.0	14 x USB 2.0
Ethernet	Up to 3x GbE LAN	Up to 3x GbE LAN	Up to 2x GbE LAN	Up to 2x GbE LAN	1x GbE Intel® LAN	Up to 3x GbE LAN	Up to 3x GbE LAN (incl. AMT 7.0 support)
Form Factor	Mini-ITX 170mm x 170mm (6.7" x 6.7")	Mini-ITX 170mm x 170mm (6.7" x 6.7")	Mini-ITX 170mm x 170mm (6.7" x 6.7")	Mini-ITX 170mm x 170mm (6.7" x 6.7")	Mini-ITX, 170mm x 170mm (6.7" x 6.7")	Mini-ITX 170mm x 170mm (6.7" x 6.7")	Mini-ITX 170mm x 170mm (6.7" x 6.7")
Available I/Os	1x PCI, 4x COM, 1x mini PCI-Express	1x PCI, 4x COM, 1x mini PCI-Express	1x PCI, 2x COM, 1x mini PCI-Express	1x PCI, 2x COM, 1x mini PCI-Express	2x COM / 1x PCI, 4x COM	1x PCI, 4x COM, 1x mini PCI-Express	1x PCI Express x 16, 1 PCI Express x 1, 4x COM, 2 x mini PCI-Express, Internal PS/2 Mouse/Keyboard connector, LPT Parallel Port in FFC Connector
Graphics Controller	Intel® GMA950, LVDS onboard	Intel® GMA950, LVDS onboard	Radeon X1250, LVDS onboard	Radeon X1250, LVDS onboard	Intel® GMA 500 , LVDS on board	Intel® GMA4500 MHD, LVDS onboard	integrated
Graphic Interface	CRT / LVDS / PCI-Express x16 / SDVO	CRT / LVDS / PCI-Express x16 / SDVO	DVI / CRT / LVDS / TV-Out (optional) / PCI-Express x8	DVI / CRT / LVDS / TV-Out (optional) / PCI-Express x8	CRT / DVI / LVDS / 2x PCI-Express x1	2 x Display Port, CRT / LVDS / PCI-Express x16 / SDVO	2 x Display Port, 1 DVI-I, LVDS / Embedded DP,
Rear I/O	COM1, CRT, IEEE1394, Ethernet, USB, line-in, line-out, speaker, PS/2 mouse/keyboard	COM1, CRT, IEEE1394, Ethernet, USB, line-in, line-out, speaker, PS/2 mouse/keyboard	COM1, CRT, DVI, TV-Out (optional), Ethernet, USB, line-in, line-out, speaker, PS/2 mouse/keyboard	COM1, CRT, DVI, TV-Out (optional), Ethernet, USB, line-in, line-out, speaker, PS/2 mouse/keyboard	DVI or CRT, Ethernet, USB, line-in, line-out, speaker, PS/2 keyboard	COM1, CRT, IEEE1394, Ethernet, USB, line-in, line-out, speaker, PS/2 mouse/keyboard	2x (Dual USB + Displayport), Dual USB + Ethernet, Dual Ethernet, DVI, Audio 3x
Special Feature	GPIO, IEEE1394, HDD RAID 0/1/5/10 support	GPIO, IEEE1394, HDD RAID 0/1/10 support	GPIO, HDD RAID 0/1/5/10 support, TPM Onboard	GPIO, HDD RAID 0/1/5/10 support, TPM Onboard	GPIO, 2x SDIO, TPM Onboard (Plus)	GPIO, IEEE1394, HDD RAID 0/1 support, AMT 4.0, TPM 1.2	GPIO, IEEE1394, HDD RAID 0,1,5,10 support, AMT 7.0, TPM 1.2, mSATA, ATX and single +12V power supply
Additional	Up to 7 years availability, ADD2-Cards for SDVO Interface for 2nd LCD, S-Video TV-out (optional), HD Audio, SPDIF	Up to 7 years availability, ADD2-Cards for SDVO Interface for 2nd LCD, S-Video TV-out (optional), HD Audio, SPDIF	Up to 7 years availability, S-Video TV-out (optional), HD Audio, SPDIF	Up to 7 years availability, S-Video TV-out (optional), HD Audio, SPDIF	Up to 7 years availability	Up to 7 years availability, ADD2-Cards for SDVO Interface for 2nd LCD, S-Video TV-out (optional), HD Audio, SPDIF	Up to 7 years availability, KT Embedded Feature Connector with ADC, DAC up to 160 GPIO
Partnumber	810203-4500 / 810201-4500	810200-4500	810280-4500	810284-4500 / 810283-4500	810290-4500 / 810292-4500/ 810290-4500 / 810292-4500	810350-4500	tbd

For more details please see productline Industrial Rack Mount Systems on page 98.

Special Embedded ATX and ATXU Motherboards

After the successful launch of the KT780/ATX motherboard, Kontron extends its family of motherboards to include a highperformance variant based on the 45nm Intel® Core™2 Quad processor, the Kontron KTG41/ATXU motherboard. Compared to standard Micro-ATX motherboards, the new Kontron Micro-ATX embedded motherboard with Intel® G41 Express chipset and LGA 775 socket for Intel® processors up to the 45nm Intel® Core™2 Quad processor Q9650 offer advanced design features that are well-suited for rugged environments. These embedded

motherboards focus on applications with faster innovation cycles and high demands on computing and graphics performance. Equipped with only the latest and most demanded interfaces, Kontron embedded motherboards are extremely cost-effective, making them a good match for highvolume applications with fast innovation cycles such as Gaming/ Entertainment, Digital Signage, POS/POI, Hospitality (check-in terminals, ticketing machines, hotel multimedia terminals) and even industrial shop fl oor applications managing quality control.

Special Embedded ATX and ATXU Motherboards		
		
	KTG41/ATXU	KT780/ATX
CPU	Intel® Core™ 2 Duo E8000 series and Intel® Core™ 2 Quad Q9000 series	AMD Athlon™ 64 & AMD Phenom™ Single to Quad Core
Chipset	Intel® G41 + ICH7R	AMD RS780 + SB700
DRAM	Up to 8 GByte , DDR3 1066, 2x DIMM-240	Up to 32 GByte , DDR2 800, 4x DIMM-240 - ECC Support
Video Memory	Up to 256 MByte shared video memory	Up to 256 MByte shared video memory
Form Factor	Micro-ATX 243.8mm x 243.8mm (9.6" x 9.6")	ATX 300.5 mm x 243.8mm (12" x 9.6")
Graphics Controller	Intel® GMA X4500	ATI Radeon HD 3200
Graphic Interface	CRT / PCI-Express x16	DVI / CRT / PCI-Express x16 2.0
Special Feature	HDD RAID 0/1/10 support, HD Audio, TPM support (optional)	HDD RAID 0/1/10 support, HD Audio, HDMI (optional), TPM support
Partnumber	810310-4500	810300-4500

Embedded Server Motherboard

Kontron has added an embedded server-class category to its already extensive portfolio of embedded and basic motherboard products. These motherboards feature long-life embedded server processors from Intel. These server boards are ideal for medical

imaging, simulation, storage and multimedia telecom and data center markets. They also offer leading-edge remote management tools with support for KVM and VM over IP for real time access.

Embedded Server Motherboard	
	
	KTC5520/EATX
CPU	Dual socket Intel® Xeon 5600 Series; Dual socket Intel® Xeon® 5500 Series
Chipset	Intel® 5520 I/O Hub (36D) and I/O Controller Hub (ICH10R)
DRAM	96 GB DDR3 Registered ECC SDRAM; 12 (twelve) DIMM sockets
IDE Interface	Interface 6 SATA ports (3Gb/s)
USB	4x USB 2.0
Form Factor	Server System Infrastructure (SSI) EBB Form factor
Available I/Os	Two 10/100/1000 Mbps Ethernet (Intel 82576EB); 1x 10/100/1000 Mbps Mangement; Integrated VGA XGI Volari Z9
Rear I/O	VGA; PS/2 Mouse and PS/2 Keyboard; Serial (DB-9); Audio In, Out Speaker Out; 2x Gbe RJ-45
Available Extensions	4 PCIe2 x8, 1 PCIe x4, 1 PCI 32/33 5V
Special Features	On board remote management: Extensive sensors monitoring and event generation on thresholds; Serial over LAN (IPMI v2.0); Trust Platform Management 1.2; UL, CE, NEBS Level 3 (designed for), FCC B; IPMI v2.0

➔ For more details please see productline **Communications Rack Mount Systems** on page 131.

ADD2-cards

ADD2-Cards add extra digital fl at panel display support by using onboard graphics interface connectors such as PCI-Express/SDVO. The solution is flexible and cost effective. By using an ADD2-Card, you can build a low-cost, single LCD-supported system. By adding

an ADD2-Card to motherboards that have onboard LVDS support, you can drive two LCDs from a single motherboard. Kontron offers both LVDS, CRT, HDMI and DVI interface ADD2-Cards.

ADD2-cards				
				
	ADD2-CRT-Internal	ADD2-DVI-DUAL-Internal	ADD2-DVI-DUAL-Internal-External	ADD2-LVDS-Internal
Series	ADD2-Card	ADD2-Card	ADD2-Card	ADD2-Card
Video Output	CRT	Single or Dual DVI	Single or Dual DVI	Single output LVDS
Resolution	Up to 1600x1200	1600x1200 / 1920x1080	1600x1200 / 1920x1080	1600x1200 / 1920x1080
Applicable Motherboards	986LCD-M, KT965, KTQ45, KTG41 and KTGM45 families	986LCD-M, KT965, KTQ45, KTG41 and KTGM45 families	986LCD-M, KT965, KTQ45, KTG41 and KTGM45 families	986LCD-M, KT965, KTQ45, KTG41 and KTGM45 families
Height	Low Profile	Low profile	Low profile	Low profile
Interface	PCI-Express/SDVO	PCI-Express/SDVO	PCI-Express/SDVO	PCI-Express/SDVO
Partnumber	820954	820951	820952	820953

ADD2-cards			
			
	ADD2-LVDS-DUAL-Internal	KT-PCIe-DVI-HDMI	KT-PCIe-HDMI-DVI-I
Series	ADD2-Card	AMD PCIe Card	Intel PCIe Card
Video Output	Single or dual output LVDS	DVI & HDMI	DVI & HDMI
Resolution	1600x1200 / 1920x1080	Up to 1920x1200	Up to 1920x1200
Applicable Motherboards	986LCD-M, KT965, KTQ45, KTG41 and KTGM45 families	KT690/mITX & KT780/ATX	KTQ45 and KTGM45 families
Height	Low profile	Low Profile	Low Profile
Interface	PCI-Express/SDVO	PCI-Express	PCI-Express
Partnumber	820950	820957	820977

» AdvancedTCA «



Processor Boards/Blades

Processor Boards/Blades Processor, Switch and Carrier Blades – Choose from a complete Kontron portfolio of AdvancedTCA GbE and 10GbE processor, switch and carrier blades to build your next AdvancedTCA based carrier grade system.

Each platform element provides System High Availability (HA) and high levels of modularity and configurability. This permits an ease of integration of multiple functions and new features, all on the same platform. There are major spin-off benefits for mobile-telco service providers, who

can expect reductions in CAPEX and OPEX, with reusable network systems and a greater flexibility to quickly introduce and terminate – “Swap-in/Swap-out” – subscriber services with no downtime. Even more significant for your carrier clients is they will be able to effortlessly grow their networks as their subscriber traffic increases. Kontron, with its global production and logistics capabilities, offers the advantages of one of the broadest ranges of computer technology for the communications market combined with industry-leading services, such as system assembly and middleware and OS implementation.

Processor Boards/Blades



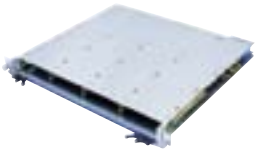
AT8242



AT8050

CPU	Dual Cavium OCTEON II CN6880 MIPS64 v2 Network processor	Single Intel® Xeon® Six-Core 5600 Series; Single Intel® Xeon® Quad-Core 5500 Series
Front Side Bus	-	-
CPU L2 Cache	-	-
Chipset	-	Intel® 5520 I/O Hub (36D) and I/O Controller Hub (ICH10R)
DRAM	Eight DDR3 DIMM sockets each supporting 32GB address range for up to 256GB	Support for up to 48 GB on 3-channels, DDR3 1066 MHz, ECC, registered SDRAM on 6 DIMM sockets total
Flash	USB Flash drive option (16GB); Unit processor is connected to two 128 Mbyte NOR flash with dual image support, and 1GB NAND flash.	Two redundant 1MB BIOS (Field software upgradeable)
Frontpanel	One PCIe x1 Gen 1 port from the switch management; Two 10/100/1000 Mbps Ethernet (Base Interface) Dual (40G-KR4 / 4x 10G-KR / XAUI / 4x GbE) (Fabric Interf)	Serial (RJ-45), 2 182576 Management LAN (RJ-45), 2 USB
Connectivity	40Gbps to each Network processor 2x 40GbE Fabric Interface Additional 160Gbps for various optional front or rear access I/O Independent management processor	2x 10/100/1000 Base-T (Base Interface); 2x 10Gb XAUI (Fabric Interface); Gen 2 PCI Express x4 to Update Channel and to RTM; Telecom clock support in Zone 2 and AMC
Mezzanine	-	1x AMC (mid-size); Hot Swap SAS/SATA HDD available via RTM8050
Compliance	PICMG 3.0 R3.0; PICMG 3.1 R1.0	PICMG 3.0R3 / 3.1 Option 9, Option 2

Carrier Boards



AT8404 Quad AMC Carrier (mid-size)

Base Interface Support	Two Gigabit Ethernet
Fabric Interface Support	Two 10 Gigabit Ethernet
AMC Slots	4 mid-size bays OR 2 mid-size bays + 1 mid-size double-bay, OR, 2 mid-size double-bays (cut away for SAS drives and enhanced cooling)
Usage Models for AMC Slots	Support for 2x GbE, IPMI, Telco Clock
GbE Switch Features	Multicast Support, extended QoS, VLANs
Ethernet/Bridging Protocols	Include VLANs (802.1Q), Link Aggregation (802.3ad), Spanning Tree (802.1D, 802.1w), QoS (802.1p), Flow Control (802.3x), GVRP, GMRP
RTM Support	2x SAS/SATA & SAS/SATA HD on RTM (AT8404) 4x SAS/SATA Storage (AT8400;AT8402), Dual Gb Ethernet, X8 lanes per AMC Rear I/O, out of band Management 10/100/1000Base-T and RS232
Configuration Options	SAS-SATA / Gigabit Ethernet combinations
Management	SNMP, TELNET, Command Line Interface in-band or out of band via 10/100/1000 Base-T or RS232 on front plate or RTM
IPMI	Version 1.5
Controller	PPC405GPr 400 MHz, 256 MByte SDRAM, 64 MByte Flash

Hub Boards



AT8904 (mid-size)

Base Interface Support	Gigabit Ethernet to 14 Payload Slots
Fabric Interface Support	10 Gigabit Ethernet to 14 Payload slots
Support for 14 Slot Shelves	Yes
Support for 16 Slot Shelves	Yes
AMC Slots	2 mid-size slots OR 1 AMC (mid-size; double-wide) bay
Usage Models for AMC Slots	AMC Slots can be used for Processor-AMCs, Storage-AMCs, Uplink-AMCs
Uplinks for Base Interface	4x 10/100/1000 Base-T
Uplinks for Fabric Interface	1x 10/100/1000 Base-T plus 4x 10 Gbit Ethernet via AMC Slots
Routing Protocols	Include OSPFv2, RIPv2, VRRP, IGMP Snooping, DiffServ, ARP, ICMP
Ethernet/Bridging Protocols	Include VLANs (802.1Q), Link Aggregation (802.3ad), Spanning Tree (802.1D, 802.1w), QoS (802.1p), Flow Control (802.3x), GVRP, GMRP
RTM Support	2x SAS/SATA Storage, 4x/8x lanes per AMC Rear I/O
Shelf Manager Crossconnect Support	Yes
Management	SNMP, TELNET, Command Line Interface in-band or out of band via 10/100 Base-T or RS232
IPMI	Version 1.5



For more details please see [Switches & Networking](#) on page 68 and [ATCA Platforms](#) on page 129.

» AdvancedMCs «



A new form factor defined by a PICMG standard has already established itself on the market – Advanced Mezzanine Cards (AMC), the mutual part of AdvancedTCA and MicroTCA. AdvancedMCs are based on serial interfaces and support different transport systems such as, for example, PCI-Express, Gigabit Ethernet, 10 Gigabit Ethernet, Serial Rapid I/O and SAS (Serial Attached SCSI)/SATA (Serial ATA). AMCs are flexible, powerful and simple to integrate into the AdvancedTCA or MicroTCA concept.

AMCs are offering:

- » High Data Throughput via high speed serial interconnects
- » High Managability via IMPI concept and interoperability check
- » High Serviceability through hot swap capability

Processor AMCs Double-Width



AM5030



AM5020



AM5010

CPU	Intel® Quad Core 1.73 GHz	Intel® Core™ i7-620LE LV 2.0 GHz and i7-610LE SV 2.53 GHz	Intel® Core™2 Duo 1.5GHz
Front Side Bus	-	-	667 MHz
CPU L2 Cache	8 MByte (LLC)	4 MByte (LLC)	4 MByte
Chipset	PCH 3420	PCH QM57	Server-class chipset Intel® 3100
DRAM	Up to 24 GByte registered DDR3 1066 MHz with ECC (3 channels)	Up to 8 GByte soldered registered DDR3 1066 MHz with ECC	Up to 4 GByte soldered registered DDR2 400 MHz with ECC
Flash	Socket for SATA NAND Flash module	Socket for SATA NAND Flash module	Socket for 16 GByte USB NAND Flash module
Frontpanel	2x GbE, 1x VGA, 2x USB 2.0, 1x COM (RJ45), 4 Control/Status LEDs (bi color), Reset button	2x GbE, 1x DVI-D, 2x USB 2.0, 1x COM (RJ45), 4 Control/Status LEDs (bi color), Reset button	2x GbE, 1x DVI-I, 2x USB 2.0, 1x COM (RJ45), 4 Control/Status LEDs (bi color), Reset button
Form Factor	Double width, full-size	Double width, full-size or mid-size	Double width, full-size or mid-size
Graphics	SM 750	Integrated in Core i7	ATI ES1000
Connectivity	System Interconnect: 2x GbE, 2x 10 GbE, 1x PCI-Express x4, 4x SATA, 1x COM	System Interconnect: 2x GbE, 2x PCI-Express x4, 4x SATA, 1x COM	System Interconnect: 2x GbE, 1x PCI-Express x4, 2x SATA, 1x COM
Compliance	PICMG: AMC.0 R2.0 / AMC.1 / AMC.2 / AMC.3; IPMI V1.5	PICMG: AMC.0 R2.0 / AMC.1 / AMC.2 / AMC.3; IPMI V1.5	PICMG: AMC.0 R2.0 / AMC.1 / AMC.2 / AMC.3; IPMI V1.5
Options	Up to 32 GB SATA NAND Flash module	Onboard 2.5" SATA HDD/SDD, Up to 32 GB SATA NAND Flash module	Onboard 2.5" SATA HDD/SDD, Up to 16 GByte USB NAND Flash module

Processor AMCs x86



AM4020



AM4011



AM4010

CPU	Intel® Core™ i7-620LE LV 2.0 GHz and i7-610LE SV 2.53 GHz	Intel® Core™2 Duo 1.5GHz	Intel® Core™2 Duo 1.5GHz
Front Side Bus	-	667 MHz	667 MHz
CPU L2 Cache	4 MByte (LLC)	4 MByte	4 MByte
Chipset	PCH QM57	Server-class chipset Intel® 3100	Server-class chipset Intel® 3100
DRAM	Up to 8 GByte registered DDR3 1066 MHz with ECC	Up to 4 GByte registered DDR2 400 MHz with ECC	Up to 4 GByte registered DDR2 400 MHz with ECC
Flash	Socket for SATA NAND Flash module	Socket for USB NAND Flash module	Socket for USB NAND Flash module
Frontpanel	2x GbE, 1x USB 2.0 (mini 5-pin), 1x COM (mini 10-pin) or DisplayPort, 4 Control/Status LEDs (bi color)	1x GbE, 1x USB 2.0, 1x COM (mini pin-row), 4 Control/Status LEDs (bi color)	1x GbE, 1x USB 2.0, 1x COM (RJ45), 4 Control/Status LEDs (bi color)
Form Factor	Single width, full-size or mid-size	Single width, full-size or mid-size	Single width, full-size or mid-size
Graphics	Integrated in Core i7	-	-
Connectivity	System Interconnect: 2x GbE, 2x PCI-Express x4, 4x SATA, 1x COM	System Interconnect: 2x GbE, 1x PCI-Express x4, 2x SATA, 1x COM	System Interconnect: 2x GbE, 1x PCI-Express x4, 4x SATA, 1x COM
Compliance	PICMG: AMC.0 R2.0 / AMC.1 / AMC.2 / AMC.3; IPMI V1.5	PICMG: AMC.0 R2.0 / AMC.1 / AMC.2 / AMC.3; IPMI V1.5	PICMG: AMC.0 R2.0 / AMC.1 / AMC.2 / AMC.3; IPMI V1.5
Options	Up to 32 GByte SATA NAND Flash module	Up to 16 GByte USB NAND Flash module	Up to 16 GByte USB NAND Flash module

Processor AMCs PowerPC	Available Q3-2011 Available Q3-2011			
	AM4120	AM4140	AM4100	AM4101
CPU	Freescale dual-core Power PC P2020, 1.2GHz	Freescale 4/8 core Power PC P4040/P4080, 1.2GHz or 1.5GHz	Freescale dual-core Power PC MPC8641D, 1.5GHz	Freescale dual-core Power PC MPC8641D, 1.5GHz
Front Side Bus	-	-	-	-
CPU L2 Cache	512 kByte	dedicated 128 kByte to each Core	Dual 1 MByte	Dual 1 MByte
Chipset	-	-	-	-
DRAM	Up to 4 GByte soldered DDR3 800 MHz with ECC	Up to 8 GByte soldered DDR3 1333 MHz with ECC	Up to 2 GByte soldered DDR2 600 MHz with ECC	Up to 2 GByte soldered DDR2 600 MHz with ECC
Flash	up to 2 GByte NAND Flash with onboard controller for application code and data, miniSD card socket internally	up to 2 GByte NAND Flash with onboard controller for application code and data, miniSD card socket internally	512 MByte NAND Flash with onboard controller for application code and data	2 GByte NAND Flash with onboard controller for application code and data
Frontpanel	2x GbE, 1x COM (RJ45), 4 Control/Status LEDs (bi color)	2x GbE, 1x COM (RJ45), 4 Control/Status LEDs (bi color)	2x GbE, 1x COM (RJ45), 4 Control/Status LEDs (bi color)	2x GbE, 1x COM (RJ45), 4 Control/Status LEDs (bi color)
Form Factor	Single width, mid-size	Single width, mid-size	Single width, full-size or mid-size	Single width, full-size or mid-size
Graphics	-	-	-	-
Connectivity	System Interconnect: 2x GbE, 1x PCI-Express x4 or 1x sRIO x4, 1x COM	System Interconnect: 2x GbE, 1x PCI-Express x4 or 1x sRIO x4, 1x COM, for additional interfaces, please refer to datasheet	System Interconnect: 2x GbE, 1x PCI-Express x4 or 1x sRIO x4, 1x COM	System Interconnect: 2x GbE, 1x PCI-Express x4, 1x sRIO x4, 1x COM
Compliance	PICMG: AMC.0 R2.0 / AMC.1 / AMC.2 / AMC.4 ; IPMI V1.5 and V2.0	PICMG: AMC.0 R2.0 / AMC.1 / AMC.2 / AMC.4 ; IPMI V1.5 and V2.0	PICMG: AMC.0 R2.0 / AMC.1 or AMC.4 / AMC.2; IPMI V1.5	PICMG: AMC.0 R2.0 / AMC.1 / AMC.2 / AMC.4; IPMI V1.5
Options	-	-	-	-

MicroTCA Carrier Hub – MCH

A MicroTCA Carrier Hub (MCH) plays a key role in the design of a MicroTCA platform. It combines the control and management infrastructure and the interconnect fabric resources needed to support up to twelve AdvancedMCs in a MicroTCA Platform. A MCH has the same form factor as an AdvancedMC. MCHs are the infrastructure elements

that are shared by all AdvancedMCs. Since MCHs represent a single point of failure in a MicroTCA platform (where any fault could bring down the entire system), it is possible to include a pair of MCHs to make the solution suitable for High Availability (HA) applications.

AM4904 / AM4910

The AM4904/AM4910 is a fully featured MCH providing high sophisticated system management and high performance switching capabilities for up to 12 AdvancedMC™ modules. The AM4904 supports a Layer 2 (on request Layer 3) managed GbE switch combined with additional switching options for 10 GbE, PCIe or SRIO.



- Completing the rich feature-set of the MCH by offering various clocking functions the AM4904/AM4910 is the perfect match for advanced communication application requirements.
- » Fully-featured MCH for up to 12 AMCs, 2 Power Modules and 2 Cooling Units
 - » Enterprise class switching functions
 - » Sophisticated management capabilities
 - » Layer 2 (on request Layer 3) managed GbE switch, optionally PCIe, SRIO or 10 GbE
 - » 2x GbE or 2x 10 GbE Uplink channels
 - » Update channel to redundant MCH

AM4901 / AM5901

The AM4901 and AM5901 are entry-level MCH solutions which enables cost-effective MicroTCA system designs. The two main functions of an MCH are system management (i.e. IPMI controlled power management, electronic keying, hot-swap of AMCs) and Ethernet switching. The AM4901 / AM5901 provide these functions for 6 AMCs - designed as a single PCB solution with one tongue only. The AM4901 / AM5901 contain an unmanaged Ethernet switch, which simplifies designs and improves costs (lower cost com-ponents, no switch controller, no software for switch controller). The AM5901 as a double AMC form factor offers more front panel space allowing a broader set of uplink capabilities compared to the single AMC form factor. Furthermore the AM5901 is

- designed to meet MicroTCA.1 requirements achieving higher robustness and shock and vibration resistance.
- » Cost optimized design by focusing to essential requirements
 - » System management + Unmanaged Ethernet Switching
 - » Low power consumption
 - » High reliability (MTBF > 620 000 h)



AM2901

The AM2901 is the smallest possible solution to provide as an MicroTCA Carrier Management Controller (MCMC) system management functions in a compact MicroTCA design. These functions include i.e IPMI controlled power management, electronic keying, hot-swap of AMCs). The AM42901 is the optimized solution where switching capabilities are not required.

- » Cost optimized design for small custom MicroTCA solutions
- » System management only - MCMC
- » Lowest power consumption
- » Highest reliability (MTBF > 2 000 000 h)



➔ For more details please see **Switches & Networking** on page 68.

I/O AMCs


AM4211
AM4220
AM4210
AM4204
AM4311
AM4310
AM4301

Interface	1 SFP+ and Serial RJ45; AMC TCLKA and TCLKC support	2x SFP+ 10GbE and Serial RJ45	4x SFP GbE	4x SFP GbE	4x SFP GbE	2x 10 Gigabit Ethernet	4x Gigabit Ethernet
Form Factor	Mid-size	Mid-size	Mid-size	Mid-size	Mid-size	Mid-size	Mid-size
Characteristics	CN6335 Cavium OCTEON II MIPS64 6-Core processor at 1.3 GHz Socketless	Cavium OCTEON Plus 5650 Network Service Processor provides high-density, high-bandwidth serial I/O for networking; 12x MIPS64 R2 Cores; 600Mhz	Cavium OCTEON Plus 5650 Network Service Processor provides high-density, high-bandwidth serial I/O for networking; 12x MIPS64 R2 Cores; 600Mhz	Cavium OCTEON Plus 5650 Network Service Processor provides high-density, high-bandwidth serial I/O for networking; 12x MIPS64 R2 Cores; 600Mhz	Direct-connect GbE ports from an AMC connector of an AMC carrier or a µTCA system to the front.	Accessory for AT8902M/AT8904M/AT8902, provides shelf interconnect for Fabric Interface, supports two XFP modules	Jumbo Frames (9 kByte), Advanced packet filtering, Transmit and receive IP, TCP and UDP checksum offloading capabilities, PCIe towards AMC connector
Compliance	AMC.0 R2.0, AMC.1 R2.0, AMC.2 R1.0, AMC.4 R1.0, MTCA.0 R1.0	AMC.0 R2.0 Advance Mezzanine Card Base Specification	AMC.0 R2.0 Advance Mezzanine Card Base Specification	AMC.0 R2.0 Advance Mezzanine Card Base Specification	AMC.0 R2.0 / AMC.2	AMC.0 R2.0 / AMC.2 R1.0 Type 6	AMC.0 R2.0 / AMC.1 R1.0 Type 4
Controller	Dual Gigabit Ethernet Controller Broadcom BCM5482	Dual Gigabit Ethernet Controller Intel® 82571EB	Dual Gigabit Ethernet Controller Intel® 82571EB	Dual Gigabit Ethernet Controller Intel® 82571EB	-	none (controlled via Hub Board, e.g. AT890x)	2x Dual Gigabit Ethernet Controller Intel® 82571EB

Mass Storage AMCs


AM4530
AM5500
AM4500
AM4510
AM4520

Interface	NAS, SATA II	2x SATA	SATA I	SATA 1 and SATA II	SAS
Storage Technology	HDD or SSD	HDD or SDD	Extended Duty Rotating Drive	Solid State Flash Drive	Serial Attached Storage Drive
Capacity	HDD is 2.5" 120GB and 250GB; SSD is 2.5" 32GB and 64GB Intel SSD	Up to 2x 500 GByte	Up to 250 GByte	Up to 64 GByte	Up to 146 GByte
Form Factor	Mid-size	Mid-size	Full-size or mid-size	Full-size or mid-size	Full-size or mid-size*
Access	depending on selected storage device	depending on selected storage device	7,200 RPM, avg seek time 12 ms	75 microseconds	10,000 RPM, avg seek time 4.1 ms
Sequential Bandwidth RW	depending on selected storage device	depending on selected storage device	8 MByte cache 150 MByte/s burst	250 / 170 MByte/s Sustained 300MByte/s burst	8 MByte cache 300 MByte/s burst
Characteristics	Marvell 88E6131 GbE switch for access between AMC ports 0, 1, 8, and 9 to the CPU	depending on selected storage device	24 hours / 7 days operation	NEBS level 3; 24 hours / 7 days operation	24 hours / 7 days operation
Compliance	PICMG: AMC.0 R2.0 / AMC.1 R2.0 / AMC.2 R1.0 / AMC.3 R1.0	PICMG: AMC.0 R2.0 / AMC.3 R1.0	PICMG: AMC.0 R2.0 / AMC.3 R1.0	PICMG: AMC.0 R2.0 / AMC.3 R1.0	PICMG: AMC.0 R2.0 / AMC.3 R1.0
Operating Temperature	Operating: 0-55°C HDD, 0-70°C SSD version	0-55 °C with HDD, 0-70°C with SSD	5-40 °C	0-70 °C	0-55 °C

» 6U CompactPCI Standard & Rugged Boards «


CompactPCI®


The Requirements are Obvious

The way that systems are designed for OEM applications is influenced by:

- » Commercial-off-the-shelf software availability
- » The need for a short time-to-market
- » The availability of experienced engineers
- » An abundance of third-party hardware and software products
- » The demand for open systems

Today's demands on industrial PC technology are far more than standard motherboards can fulfill because their designs are optimized for production cost, but not for longevity and they lack solutions for intelligent cabling, EMI shielding or optimized cooling.

CompactPCI is the Answer

Industrial PCs traditionally focus on improved mechanics to overcome the limitations posed by the standard PC set-up. This changed dramatically with the invention of CompactPCI, the fully industrialized version of desktop PC technology.

In the past, price played a decisive role when deciding to invest in a PC-based system. Today, price still plays a very important role but experience shows us that the ultimate deciding factors are the availability of off-the-shelf standard software and the low Mean-Time to Repair (MTTR) connected with CompactPCI based technology.

CompactPCI provides solutions for high density integrated systems, excellent EMI shielding, optimized cooling and reliable, serviceable, robust and high availability systems. Kontron integrates all these characteristics into a wide range of CompactPCI products with advantageous features:

- » High-performance PCI bus (528 MByte/s with up to 64 Bit data width)
- » Parallel card insertion from front for easy replacement and minimum MTTR
- » Proven 19" mechanics in 3U, 6U and mixed configurations
- » Rear I/O support option for internal cabling requirements and hot swap
- » Improved airflow by consequent vertical mounting of boards
- » Hot swap hardware provision on highly reliable connector

6U x86 Processor Boards

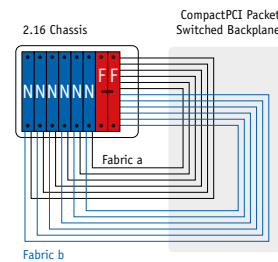
The high performance and low-power 32nm Intel® processors propel Kontron CompactPCI boards to new levels. These boards offer up to 30% more performance, with 25% less power consumption over previous generations. The Kontron CP6002-R1 and CP6002-R2 have been engineered with the Intel® Core™ i7

technology and, for the first time, integrate memory controller, PCI Express, all within the multi-core processor. This offers Medical, Military, Industrial and Telecommunications applications a major jump in performance power.

6U x86 Processor Boards				6U x86 Processor Boards										
Available Q2-2011 														
CP6003				CP6002		CP6001		CP6016		CP6014		CP6001-V		
CPU	Intel® Core™ i7 2nd generation Processor, dual/quad core up to 2.5 GHz			Intel® Core™ i7 up to 2.53 GHz		Intel® Core™ 2 Duo, Core Duo Processor up to 1.5 GHz		Intel® Core™ 2 Duo Processor, up to 2.53 GHz (T9400)		Two Intel® Quad-Core Xeon® Processor; or 2 x Intel® Dual-Core Xeon® Processor; up to 2.13 GHz core frequency		Intel® Celeron® M 440, 1.86 GHz		CPU
Front Side Bus	n/a			n/a		up to 667 MHz		1066 MHz		1066 MHz		533 MHz		Front Side Bus
CPU L2 Cache	6 MByte			4 MByte		2 / 4 MByte		6 MByte		4 MByte Dual Core, 12MB (2x 6MB) Quad Core		1 MByte		CPU L2 Cache
Chipset	Intel® QM67			Intel® QM57		Intel® 945GM, ICH7R I/O Controller Hub		Intel® 5100 and ICH9R I/O Controller Hub		Intel® 5100 and ICH9R I/O Controller Hub		Intel® 945GM and ICH7R		Chipset
DRAM	up to 16 GByte with ECC, DDR3 SO-DIMM, 1333/1600MHz			up to 8 GB soldered with ECC, DDR3 1066 MHz		up to 4 GByte, DDR2 533/667 MHz		up to 16 GByte with ECC, DDR2 667MHz SO-RDIMM		up to 32 GByte, DDR2 667MHz		up to 4 GByte DDR2 SO-DIMM, 533 MHz		DRAM
Flash Disk	SSD Flash disk option, 2.5 inch SSD/HD option			CompactFlash or SSD Flash disk option, 2.5 inch SSD/HD option		USB NAND Flash, soldered IDE Flash		USB NAND Flash		USB NAND Flash		CompactFlash, USB NAND Flash		Flash Disk
4HP Version	VGA (CRT), COM1, 3x Ethernet, 2x USB, LEDs, Reset, PMC/XMC			VGA (CRT), COM1, 2x Ethernet, 2x USB, LEDs, Reset, PMC/XMC		VGA (CRT), COM1, 3x Ethernet, 2x USB, 1x Serial, LEDs, Reset, PMC		VGA (CRT), COM1, 3x Ethernet, 2x USB, LEDs, Reset, PMC/XMC		N/A		2x Ethernet, 2x USB 2.0, LEDs, CRT, COM1, PMC		4HP Version
8HP Version	N/A			N/A		N/A		N/A		1x Ethernet, 1x microVGA; 1x DB9 serial port; 1x USB, XMC/PMC		N/A		8HP Version
USB	6x USB 2.0			6x USB		6x USB 2.0		7x USB 2.0		3x USB 2.0		3x USB2.0		USB
Ethernet	5x Gigabit, 3x to front, 2x to rear, PICMG 2.16 compliant			4x Gigabit, 2x to front, 2x to rear, PICMG 2.16 compliant		3x Gigabit, 1 fixed to front, 2 front or rear, PICMG 2.16 compliant		5x Gigabit, 3x to front, 2x to rear, PICMG 2.16 compliant		3x Gigabit; 1x to front, 2x to rear, PICMG 2.16 compliant		4x 10/100/1000Base-Tx, 2x Front & 2x PICMG 2.16		Ethernet
Graphics	Intel® QM67			Intel® QM57		Intel® 945GM		ATI ES1000 (64 MByte video memory)		ATI M72 (128 MByte video memory)		Intel® 945GM		Graphics
PMC	1x slot XMC: x8 PCIExpress or 1x slot PMC: 64-bit/66 MHz			up to 2x XMC: x8 PCIExpress or 2x slot PMC: 64-bit/66 MHz		1x slot PMC: 32-bit/66 MHz		1x slot XMC: x8 PCIExpress or 1x slot PMC: 64-bit/66 MHz		1x slot XMC: x4 PCIExpress or 1x slot PMC: 64-bit/133 MHz		1x 32 Bit/ 33 MHz		PMC
Rear I/O	Graphics, 4x USB 2.0, 2x GigEthernet, HD Audio, 4x SATA, 2x COM, Mouse/Keyb, Fan, Battery			2x Graphics (DVI/ HDMI) 4x USB2.0, 2x GigEthernet, 4x SATA, 2x COM, HDAudio, Speaker, Fan, GPIO, Battery		2x Graphics, 4x USB 2.0, 2x GigEthernet, 4x SATA, 2x COM, Mouse/Keyb, HDAudio, Speaker, Fan, GPIO, Battery		Graphics, 4x USB 2.0, 2x GigEthernet, HD Audio, 4x SATA, 2x COM, Mouse/Keyb, Fan, Battery		Graphics, 2x USB 2.0, 2x GigEthernet, 2x SATA, 2x COM		2x GigEthernet acc. PICMG2.16		Rear I/O
Characteristics	IPMI V1.5, Trusted Platform Module option, Watchdog			IPMI1.5, Trusted Platform Module (option), Watchdog, CP6002 with 2xPMC/XMC optional		IPMI V1.5, Trusted Platform Module, Watchdog		IPMI V1.5, Trusted Platform Module, Watchdog		IPMI V1.5		Performance & cost optimized for industrial applications		Characteristics
Power Consumption (typ.)	Quad Core 60W @ 2.1 GHz, Dual core 50W @ 2.5GHz			50W @ 2.53GHz		20W @ 1.2 GHz		60W @ 2.53 GHz		126W 2x Dual Core on 2 slots; 4GB memory 156W 2x Quad Core on 2 slots; 4GB memory		25 Watt @ 1.86 GHz		Power Consumption (typ.)
Operating Temperature	0 - +60°C			0 - +60°C		0 - +60°C		0 - +60°C		0 - +55°C		0°C to +60°C		Operating Temperature

Packed Ethernet Switching 2.16

Additionally, new switch-fabric architectures, such as the PICMG 2.16 packet switched backplane, increase system availability by eliminating single points of failure in board interconnectivity. PICMG 2.16 is an extension of the PICMG 2.x family of specifications. PICMG 2.16 provides a standard for the implementation of a packet-based switching architecture (based on Ethernet) on top of CompactPCI.



➔ For more details please see [Switches & Networking](#) on page 54.

6U Ethernet Switch Boards

CP6930

Routing Protocols	Include OSPFv2, RIPv2, VRRP, IGMP Snooping, DiffServ, ARP, ICMP
Ethernet/Bridging Protocols	Include VLANs (802.1Q), Link Aggregation (802.3ad), Spanning Tree (802.1D, 802.1w), QoS (802.1p), Flow Control (802.3x), GVRP, GMRP
Function	managed
Power Consumption (typ.)	50 Watt
Ports	24x GbE according PICMG2.16, 2x front 1GbE SFP, 6x front 10GbE SFP+
Connection	PICMG 2.16 / VITA31.1; front RJ45 & SFP / SFP+
Additional	Management port at front panel
Operating Temperature	0°C to 60°C

CP6923

Routing Protocols	Include OSPFv2, RIPv2, VRRP, IGMP Snooping, DiffServ, ARP, ICMP
Ethernet/Bridging Protocols	Include VLANs (802.1Q), Link Aggregation (802.3ad), Spanning Tree (802.1D, 802.1w), QoS (802.1p), Flow Control (802.3x), GVRP, GMRP
Function	managed
Power Consumption (typ.)	35 Watt
Ports	24x GbE (CP6923-R) or 20x GbE (CP6923-C)+ 4x SFP (CP6923-O), 2x 10 GbE XFP
Connection	PICMG 2.16/VITA31.1; front RJ45 & SFP / XFP
Additional	Management port at front panel; front-I/O (CP6923-C), rear-I/O (CP6923-R), optical-I/O (CP6923-O), rugged and rugged conduction cooled optional
Operating Temperature	0°C to 55°C; E2 (-40 - +85°C) versions available

CP6925

Routing Protocols	N/A
Ethernet/Bridging Protocols	N/A
Function	unmanaged
Power Consumption (typ.)	18 Watt
Ports	16x GbE
Connection	PICMG 2.16/VITA31.1; front RJ45
Additional	
Operating Temperature	0°C to 55°C

Carrier Boards

CP-HDD-S-KIT

Configuration Options	1-slot Backplane + 1x CP-HDD-S (HDD Carrier) or 2-slot Backplane + 2x CP-HDD-S (HDD Carriers)
Data Rate	Up to SATA II (300 MByte/s)
Form Factor	3U / 4HP (1x Carrier) or 3U / 8HP (2x Carriers)
PCI Bus	
PMC	
Rear I/O	
Drives	Up to 2x 2.5" HDD / SSD's
Hot Swap	Yes
Operating Temperature	-40°C to +85°C (depending on used storage media)

CP690HS

Configuration Options	
Data Rate	32/64 Bit, 33/66 MHz
Form Factor	
PCI Bus	2x 32/64 Bit
PMC	yes
Rear I/O	-
Drives	yes
Hot Swap	
Operating Temperature	0 - +60°C; E1 (-25°C - +75°C) optional

➔ For more details please see [6U CPCI Platforms](#) on page 120.

Rear Transition Modules

All of Kontron's CompactPCI CPU boards can be used with Rear Transition Modules (RTM) to access the boards' I/O from the back of the system, therefore easing the system's serviceability (with no cables plugged to the boards). RTMs can interface to I/Os such as VGA, serial ports, Ethernet ports, SCSI, USB, keyboard/mouse, IDE, floppy and others.



Rugged – Reliable – Robust

Kontron is constantly evolving its line of reliable and powerful rugged CompactPCI boards to ensure our customers can develop leading edge applications that work under extreme temperatures and high levels of physical stress. From communication systems on the ground to in-flight systems, the highest requirements must be

met without compromise. Examples of other applications include, defense flight combat simulators, on-board vehicle systems, shelter applications and in-flight entertainment. Kontron's rugged, high performance boards and switches are a perfect combination for applications that demand the highest levels of performance.

6U Rugged Processor Boards

CP6002-R2

CPU	Intel® Core™ i7 2.0 GHz
Front Side Bus	n/a
CPU L2 Cache	4 MByte
Chipset	Intel® QM57
DRAM	4 GB (up to 8 GB), DDR3 soldered, 1066 MHz
Flash Disk	SSD flash disk option
4HP Version	Displayport, Ethernet, USB, LEDs, Reset, 2x PMC/XMC
8HP Version	N/A
USB	6x USB
Ethernet	3x Gigabit, 1x to front, 2x to rear, PICMG 2.16 compliant
Graphics	Intel® QM57
PMC	2x PMC 66MHz/64bit or XMC, PCIe x8
Rear I/O	2x Graphics (DVI/ HDMI) 4x USB2.0, 2x GigEthernet, 4x SATA, 2x COM, HDAudio, Speaker, Fan, GPIO, Battery
Characteristics	IPMI1.5, Trusted Platform Module option, Watchdog, 2xPMC/XMC, System or Peripheral Slot, Rugged Forced Air-Cooled
Power Consumption (typ.)	40W @ 2.0GHz
Operating Temperature	E1 (-40 to +70°C)

CP6001-R2

CPU	Intel® Core™2 Duo, Core Duo Processor up to 1.5 GHz
Front Side Bus	up to 667 MHz
CPU L2 Cache	2 / 4 MByte
Chipset	Intel® 945GM, ICH7R I/O Controller Hub
DRAM	up to 4 GByte, DDR2 soldered, 533/667 MHz
Flash Disk	USB NAND Flash, soldered IDE Flash
4HP Version	VGA (CRT), COM1, 3x Ethernet, 2x USB, 1x Serial, LEDs, Reset, PMC
8HP Version	N/A
USB	6x USB 2.0
Ethernet	3x Gigabit, 1 fixed to front, 2 front or rear, PICMG 2.16 compliant
Graphics	Intel® 945GM (shared video memory)
PMC	1x slot PMC: 32-bit/66 MHz
Rear I/O	2x Graphics, 4x USB 2.0, 2x GigEthernet, 4x SATA, 2x COM, Mouse/Keyb, HDAudio, Speaker, Fan, GPIO, Battery
Characteristics	IPMI 1.5, TPM, Watchdog, System or Peripheral slot, Low-power, Rugged Forced-Air-Cooled
Power Consumption (typ.)	30W @ 1.5GHz
Operating Temperature	E2 (-40 - +85°C) with 1.2 GHz; E1 (-40 - +70°C) with 1.5 GHz

CP6001-R3

CPU	Intel® Core™2 Duo, Core Duo Processor up to 1.5 GHz
Front Side Bus	up to 667 MHz
CPU L2 Cache	2 / 4 MByte
Chipset	Intel® 945GM, ICH7R I/O Controller Hub
DRAM	up to 8 GByte, DDR3 soldered with ECC
Flash Disk	USB NAND Flash, soldered IDE Flash
4HP Version	no front I/O available
8HP Version	N/A
USB	6x USB 2.0
Ethernet	3x Gigabit, 1 fixed to front, 2 front or rear, PICMG 2.16 compliant
Graphics	Intel® 945GM (shared video memory)
PMC	1x slot PMC: 32-bit/66 MHz
Rear I/O	2x Graphics, 4x USB 2.0, 2x GigEthernet, 4x SATA, 2x COM, Mouse/Keyb, HDAudio, Speaker, Fan, GPIO, Battery
Characteristics	IPMI 1.5, TPM, Watchdog, System or Peripheral slot, Low-power, Rugged Conduction-Cooled
Power Consumption (typ.)	20W @ 1.2GHz
Operating Temperature	E2 (-40 - +85°C) with 1.2 GHz; E1 (-40 - +70°C) with 1.5 GHz

CP6923-R2/R3

The rugged versions CP6923-R-R2-E2 and CP6923-R-R3-E2 fulfill the temperature, shock and vibration requirements for harsh environments. Both operate from -40°C to +85°C. The forced air cooled R2 board withstands shock & vibration according to the VITA 47's EAC3 specification. The conduction cooled R3 switch fulfills the VITA 47's ECC4 specifications.



» 3U CompactPCI Standard & Rugged Boards «



The CompactPCI architecture embodies mechanical reliability, compactness, easy accessibility and maintenance.

In many applications, the available space for the installation is limited. Another issue to be solved is that applications must withstand harsh environmental conditions.

For rugged applications, the 3U CPCI form factor offers a robust solution with excellent shock and vibration characteristics of the Eurocard design and a high density pin-and-socket connector that ensures optimum mechanical stability. The compact 3U form factor offers obvious space-saving advantages and makes the 3U CompactPCI predestined for applications in all fields that require a small footprint as well as a robust design.

3U Processor Boards



CP3002



CP308



CP307⁶⁴/CP307



CP305



CP307-V

CPU	Intel® Core™ i7, up to 2.53 GHz	Intel® Core™2 Duo, up to 2.26 GHz	Intel® Core™2 Duo, Core Duo, up to 2.16 GHz	Intel® Atom™ N270, 1.6 GHz	Intel® Celeron® M 1.86 GHz (Core Solo based)
Front Side Bus	-	800 / 1066 MHz	533 / 667 MHz	533 MHz	533 MHz
CPU L2/L3 Cache	4 MByte L3	6 MByte	2 / 4 MByte	512 kByte	1 MByte
Chipset	QM57	Intel® GS45 and ICH9M	Intel® 945GM and ICH7R	Intel® 945GSE and ICH7-M	Intel® 945GM and ICH7R
DRAM	Up to 8 GByte DDR3, 1066 MHz	Up to 8 GByte DDR3, 800/1066 MHz	Up to 4 GByte, (2 GByte soldered + 2 GByte via SO-DIMM socket), 667 MHz	Up to 2 GByte DDR2 soldered, 533 MHz	Up to 2 GByte SO-DIMM DDR2, 533 MHz
Flash Disk	SATA NAND Flash, CFast on Mezzanine	USB NAND Flash, CompactFlash on Mezzanine, SDHC on Mezzanine	CompactFlash	CompactFlash	CompactFlash
4HP Version	2x Ethernet, CRT, 2x USB 2.0, LEDs	2x Ethernet, CRT, 2x USB 2.0, LEDs	2x Ethernet, CRT, 2x USB 2.0, LEDs	2x Ethernet, CRT, 2x USB 2.0, LEDs	N/A
8HP Version	DVI, COM1, 2x USB 2.0, Reset, HDD Carrier, CFast	CP308-HDD: DVI, COM1, 2x USB 2.0, Reset, HDD Carrier, CompactFlash, CP308-MEDIA: 2x DisplayPort, Line-In, Mic-In, Line-Out, S/PDIF, HDD Carrier, CompactFlash, SDHC, Mini-PCIe socket	DVI, COM1, 2x USB 2.0, PS/2, Reset, HDD Carrier	DVI, COM1, 2x USB 2.0, PS/2, Reset, HDD Carrier	2x Ethernet, CRT, DVI, COM1, 4x USB 2.0, PS/2, LEDs, Reset
USB	6x USB2.0	6x USB2.0	6x USB2.0	6x USB2.0	4x USB2.0
Ethernet	2x 1000Base-Tx, WOL functionality	2x 1000Base-Tx, WOL functionality	2x 1000Base-Tx	2x 1000Base-Tx	2x 1000Base-Tx
Graphics	Integrated in processor	GS45 internal	945GM internal	945GSE internal	945GM internal
Rear I/O	Optional	Optional	Optional	Optional	N/A
Characteristics	Highest Processor Performance, TPM optional, Peripheral Mode, Rugged Versions with CP3002-RA, CP3002-RC	High Processor Performance, TPM, System Management Controller, Peripheral Mode	High Performance, Rugged	Low Power, Rugged, EN50155 compliant	Cost optimized 3U CPU
Power Consumption (typ.)	28 W / 2.0 GHz LV	18 W / 1.86 GHz LV	18 W / 1.66 GHz LV	10 W / typ.	20 W / typ.
Operating Temperature	0°C to 60°C Standard	0°C to 60°C Standard, -40°C to +85°C E2 (optional with 1.2 GHz ULV processor)	0°C to +60°C Standard, -40°C to +85°C E2 (optional with 1.2 GHz ULV processor)	0°C to +55°C convection cooled, -40°C to +80°C with forced airflow	0°C to +60°C

3U Ethernet Switch Boards

CP3923



CP932



CP930



Function	Fully managed Layer 2/3	Unmanaged	Unmanaged
Form Factor	3U, 8HP / 12HP	3U / 4HP	3U / 4HP
Power Consumption (typ.)	20 Watt	5 Volt / 8 Watt	5 V / 1.5 Watt
Ports	Up to 16x ports, depending on version Fast Ethernet or Gigabit Ethernet	5x Gigabit Ethernet / One NIC	5x Fast Ethernet
Connection	8x RJ45 or 4x/8x M12, 8x GbE rear	5x RJ45 / cPCI	RJ45 / MT-RJ
Operating Temperature	-40°C to +85°C	-25°C to +75°C	-40°C to +85°C

➔ For more details please see [Switches & Networking](#) on page 68.

3U Ethernet and Fieldbus Controller Boards

CP342



CP353



Frontpanel	2x RJ45 or 2x SFP	9-pin D-sub for fieldbus connection, 9-pin D-sub for fieldbus configuration
Function	2x 10/100/1000Base-Tx or 2x 1000BaseFX	Profibus DP V1 Master
Data Rate	Up to Gigabit Ethernet	Up to 12 MBit/sec.
Channels	2x	1x
Isolation	-	opto-isolated
Controller	Intel® 82546GB	EC-1 System on Chip
Operating Temperature	-40°C to +85°C	0°C to +60°C

3U Controller Boards

CP332 (Graphics Controller)



CP346 (Serial Controller)



Frontpanel	Dual DVI-I with DVI and CRT signals	37-pin D-sub connector
Form Factor	3U / 4HP	3U / 4HP
Channels	2x	4x independent serial channels: RS232, RS422, RS485 configurable
Characteristics	Ultra High res. VGA	16550 UART compatible
Controller	ATI Radeon Mobility M9, 64MB	Quad UART OX16PCI954
Operating Temperature	-25°C to +75°C	-40°C to +85°C



For **3U CompactPCI Controller, Digital and Analog I/O** please check the **Kontron website** <http://www.kontron.com/products/boards+and+mezzanines/3u+compactpci/>

3U Analog I/O Boards

CP371



CP372



Resolution	12 Bit	12 Bit
Channels	Analog in 16 (optionally 8)	Analog out 8 (optionally 4)
Voltage Range	0-5V, 0-10V, +/-5V, +/- 10V	0-5V, 0-10V, +/-5V, +/- 10V
Current Range	0-20 mA, 4-20 mA	0-20 mA
Throughput Rate	13 kHz	-
Basic Accuracy	+/- 1 LSB	+/- 1 LSB
Isolation	2 kV	2 kV
Operating Temperature	-40°C to +85°C	-40°C to +85°C

3U Digital I/O Boards



CP384



CP383



CP382



CP381

Channels	16 digital in, 8 Relay out	16 digital in, 16 digital out	24 digital out	30 digital in
Input Voltage	Low Range: -3-5 V, High Range: 11-30 V	Low Range: -3-5 V, High Range: 11-30 V	-	Low Range: -3-5 V, High Range: 11-30 V
Input Current	5 mA	5 mA	-	5 mA
Output Current	max. 2A per channel	max. 500 mA per channel	max. 500 mA per channel	-
Isolation	2 kV	2 kV	2 kV	2 kV
Operating Temperature	0°C to +60°C	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C

3U PMC Carrier Boards

CP390



CPMC1



Height	3U	3U
PCI Bus	32 Bit/33 MHz	32 Bit/33 MHz
PMC	1x 32 Bit	1x 32 Bit
Rear I/O	-	64 rear I/O of the PMC P4 connector routed to the cPCI J2 backplane connector
Hot Swap	Optional	-
Operating Temperature	-25°C to +85°C	0°C to +55°C Standard Commercial, -40°C to +85°C Rugged Conduction-Cooled

HDD/SSD Carrier

CP-HDD-S-KIT



Configuration Options	1-slot Backplane + 1x CP-HDD-S (HDD Carrier) or 2-slot Backplane + 2x CP-HDD-S (HDD Carriers)
Data Rate	Up to SATA II (300 MByte/s)
Form Factor	3U / 4HP (1x Carrier) or 3U / 8HP (2x Carriers)
Drives	Up to 2x 2.5" HDD / SSD's
Hot Swap	Yes
Operating Temperature	-40°C to +85°C (depending on used storage media)



For more details please see **3U cPCI Platforms** on page 123.

Rugged – Reliable – Robust

Kontron is constantly evolving its line of reliable and powerful rugged CompactPCI boards to ensure our customers can develop leading edge applications that work under extreme temperatures and high levels of physical stress. From communication systems on the ground to in-flight systems, the highest requirements must be met without compromise. Examples of other applications

include, defense flight combat simulators, on-board vehicle systems, shelter applications and in-flight entertainment. Kontron’s rugged, forced air- or conduction-cooled, processor boards and switches are a perfect combination for applications that demand the highest levels of performance and ruggedization.

3U Rugged Processor Boards			
			
	CP3002-RC/-RA	ITC-320	CP3210
CPU	Intel® Core™ i7 2.0 GHz	Intel® Core™2 Duo 1.5GHz, Core Duo 1.2GHz, Celeron 1.07GHz Processor	PowerPC 750FX @733 MHz
Front Side Bus	-	Up to 667MHz	133MHz
CPU L2/L3 Cache	4 MBytes L3	2 / 4 MBytes	512 KB
Chipset	Intel® QM57	Intel® 3100	Discovery III Host Bridge
DRAM	Up to 8 GB DDR3 with ECC, 1066 MHz, soldered	1 or 2 GB with ECC soldered, 400 MHz	512 MB of DDR SDRAM with ECC, 266 MHz
Flash Disk	SATA NAND Flash, up to 32GB	USB 2.0 Flash Disk socket & USB Flash Disk module	256 MB of User Flash & 128 MB of System Flash
4HP Version	CP3002-RA: Monitoring LED's	VGA 1600x1200 16M colors (Optional in RC build)	no front I/O available
8HP Version	N/A	COM1-2, 2x USB 2.0, PS/2, HDD Carrier	N/A
USB	2x USB2.0	2x USB2.0	-
Ethernet	4x Gigabit Ethernet	2x Gigabit front or rear	1x Gigabit, 1x 100Base-Tx
Graphics	Integrated in processor	VGA 1600x1200 16M colors	-
PMC	-	Rugged PMC carrier CPMC1 supported	1x slot PMC: 32-bit 33/66 MHz
Rear I/O	2x USB 2.0, 4x GigEthernet, 2x SATA, 2x COM, GPIO, VGA/CRT	2x USB 2.0, 2x GigEthernet, 3x SATA, 2x COM, PCIe 4x1, GPIO	46 I/Os PMC, Gbe Ethernet, Ethernet 10/100, asynchronous EIA-232, simplified synchronous EIA-422/485, 4x GPIO, JTAG
Characteristics	Highest Performance, Low Power, Rugged Conduction-Cooled, Rugged Air-Cooled	High Performance, Low Power, Expandable I/Os; Rugged Conduction-Cooled	System or Peripheral slot, Low-power, Rugged Conduction-Cooled
Power Consumption (typ.)	31W @ 2.0GHz	24W @ Celeron 1.07GHz	11W
Operating Temperature	-40°C to +85°C RC without TPM; -40°C to +75°C RA without TPM; -25°C to +70°C RC/RA with TPM	0°C to +55°C; E2 (-40°C to +85°C); E1 (-40°C to +75°C)	E2 (-40°C to +85°C)

CP3923

The Gigabit Ethernet Switch CP3923-RC is a fully managed Layer 2/3 Gigabit Ethernet (GbE) switch with up to 16 Gigabit Ethernet ports offering IPv4 routing and optional IPv6 routing as well as full management capabilities. It supports powerful CLI, Telnet, Web and SNMP management interfaces to configure the entire set of protocols and parameters including Layer 2 and Layer 3 (IPv4/v6) protocols, Multicasting, QoS, and Security. For applications requiring higher bandwidth, it also supports link aggregation. The Kontron CP3923 also maximizes the reliability of rugged COTS applications by supporting Intelligent Platform Management (IPMI) and hot-swap capabilities.

The careful design and selection of high temperature resistant components together with the elaborate heat sink construction ensures high product reliability. Designed with soldered components the CP3923 is able to handle the toughest environmental conditions. With respect to the transportation market the CP3923-4M and the CP3923-8M are fully EN50155 compliant.

The CP3923-RC fulfills the requirements of the VITA 47 environmental class ECC4.



CP3923-RC



CP3923-4M



CP3923-8M

CP3002-RA Evaluation System

Rugged MAG designs follow a fast life cycle, matching as closely as possible every silicon innovation. To guarantee an easy and trouble-free project start and allow simple

evaluation and software development an dedicated evaluation system is available. The CP3002-RA and the appropriate rear transition module (CP-RI03-05) can be installed into the system.



CP3002-RA Evaluation System



CP3002-RA

» XMC/PMC «



Kontron supports an extensive range of COTS PCI Mezzanine Cards (PMCs) and Switched Mezzanine Cards (XMCs) for VPX, VME and CompactPCI systems used in Commercial or Harsh environments. Providing cost-effective performance and flexibility, Kontron's PMC/XMC products meet the specific requirements for your COTS embedded systems.

PCI Mezzanine Card (PMC)

Standardized by the IEEE association, PMC is the de facto standard for mezzanine cards used in the VPX, VME and CompactPCI ecosystems. PMC offers system designers a reliable form factor with the high-performance of the PCI bus.

Switched Mezzanine Card (XMC)

XMC is a PMC with a high-speed serial fabric interconnect defined by the VITA 42 standard. XMC specifies an additional connector („P5”) that supports PCI Express (VITA 42.3) or other high speed serial formats such as Serial RapidIO (VITA 42.2) and Parallel RapidIO (VITA 42.1).

XMC Mezzanines



XMC401
(Dual 10 Gigabit Ethernet)



XMC-ETH2
(Dual Gigabit Ethernet)



XMC-G72
(Graphics)

Frontpanel	2x SFP+	2x RJ-45	Digital DVI and CRT or dual CRT
Interface	Host: PCIe x8; ETH to front	Host: PCIe x4; ETH to front or rear (P4)	Host: PCIe x4; front or rear (P4)
Function	2 independent 1/10 Gigabit Ethernet channels at front panel	2 independent Gigabit Ethernet channels selectable to front or rear	Dual Head Graphics XMC; video to front or rear
Data Rate	Copper: 10 GbE, Fiber: 1/10 GbE	Copper: 10 Base-T, 100Base-Tx, 1000Base-T	High throughput interface to host: x8 PCI-Express up to 2.5 GB/s
Signals	Copper & Fiber	Copper	DVI-I and 15-pin VGA
Controller	Intel® 82599ES	Intel® 82571	Radeon HD2400 (M72-CSP128) graphics controller from ATI-AMD
Operating Temperature	Standard Commercial: 0°C to +55°C	Standard Commercial: 0°C to +55°C Rugged Air-Cooled: -40°C to +70°C Rugged Conduction-Cooled: -40°C to +85°C	Standard Commercial: 0°C to +55°C - Rugged Conduction-Cooled: -40°C to +70°C

PMC Mezzanines



PMC-6L
(Avionics I/O)



PMC240
(Dual Gigabit Ethernet)



PMC253
(Profibus)

Frontpanel	MIL-STD-1553-B Connector, ARINC429, Serial Lines and GPIO Lines Connector	2x RJ45 copper or 2x SC-type connector fiber or mixed	9 pin D-Sub for Fieldbus connection
Interface	Host: PMC 64 / 66MHz	Host: 32/64 bit, 33/66MHz; copper or fiber to front	Host: 32 bit, 33MHz; Profibus to front opto isolated
Function	ARINC-429 Interface, MIL-STD-1553, Up to 6 Serial Lines, Up to 16 GPIO	1 or 2 independent Gigabit Ethernet channels	Profibus DP V1 Master
Data Rate	-	Copper: 10Base-T, 100Base-Tx, 1000Base-T, Fiber: 1000Base-SX	up to 12 MBit/s
Signals	-	Copper or Fiber or mixed	RS485
FIFO			
Controller	T/T ARINC 429, T/R EIA 485/232	Intel® 82546EB or Intel® 82545EM	EC-1 System on Chip
Operating Temperature	Standard Commercial: 0°C to +55°C	0°C to +55°C	0°C to +60°C

» VME Standard & Rugged Products «



VMEbus is an open and flexible slot-card computer architecture which supports up to 21 cards in 3U, 6U or 9U Eurocard format. First standardized in the early '80s, the VMEbus has ever been improved by addition of new features and by the integration of new technologies while keeping backward compliance to legacy equipments.

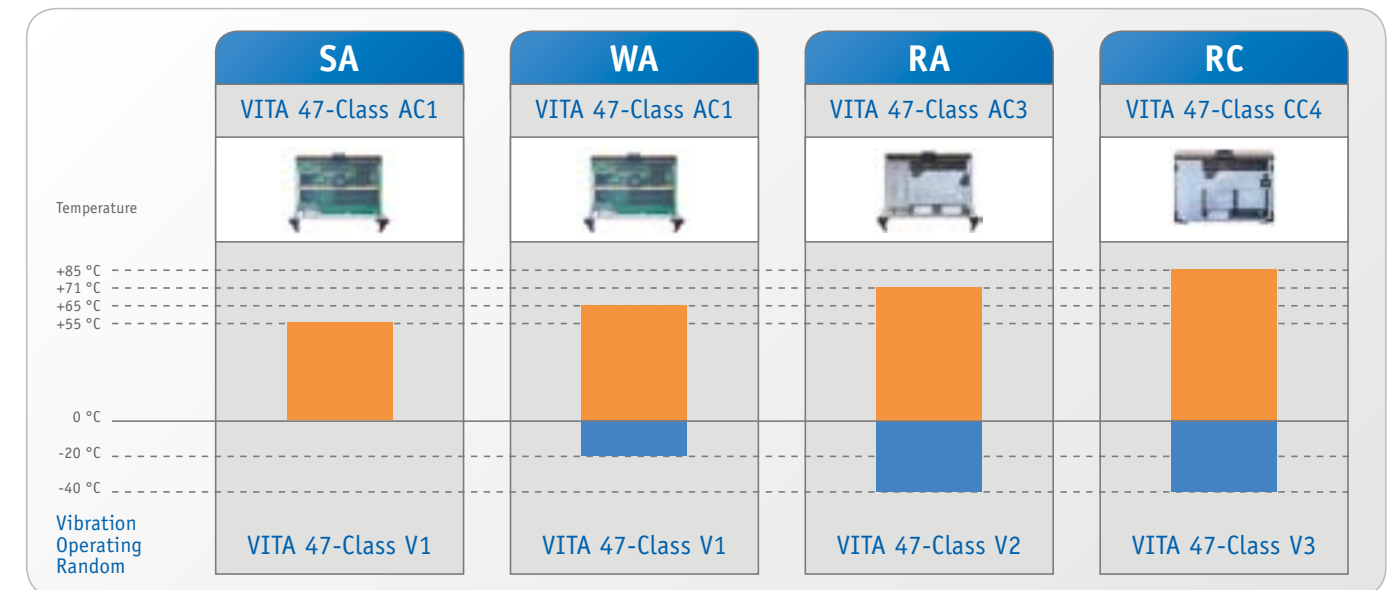
The VMEbus is one of the most commonly used computer architectures in embedded applications, and more precisely defense, transportation and industrial applications, for which robustness and long term supply are key selection criteria.



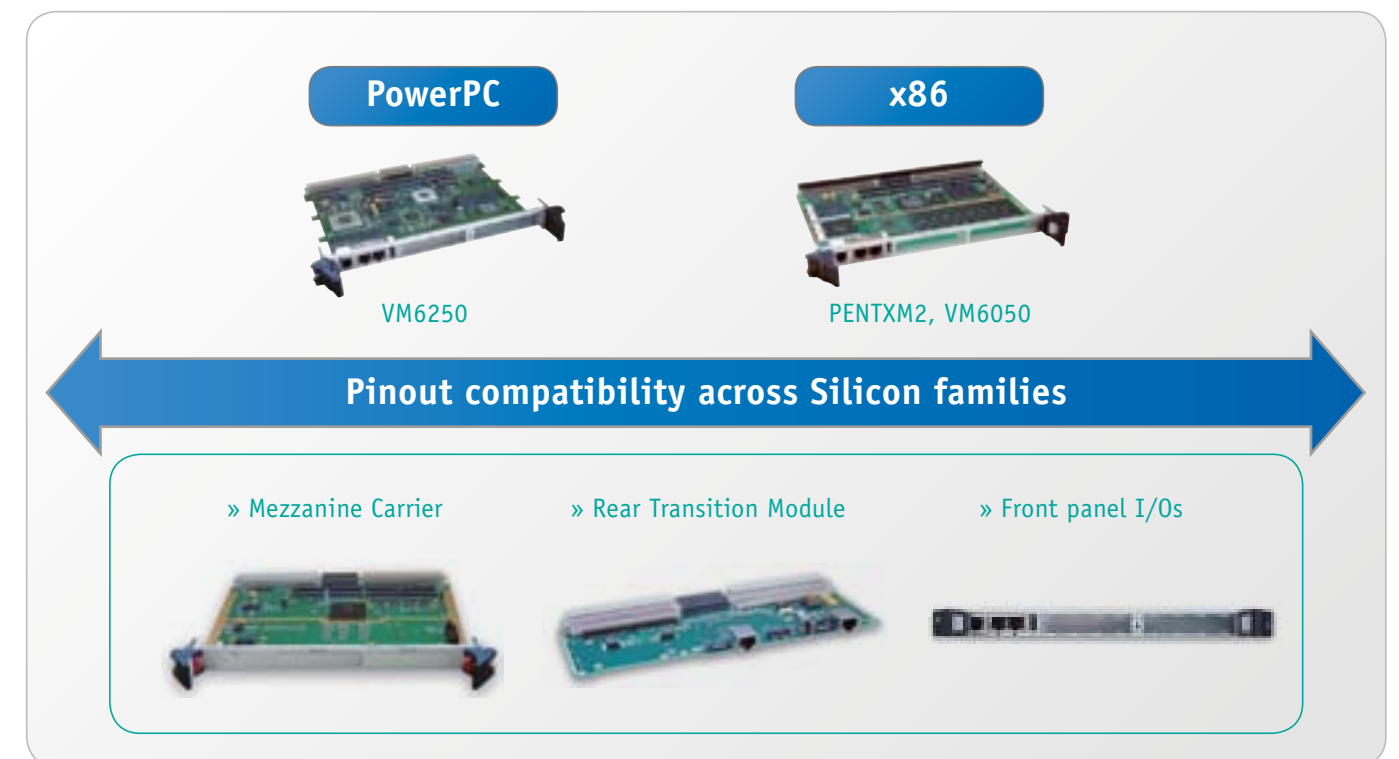
Kontron is one of the **pioneering companies of VMEbus** and is an active member of the **VMEbus International Trade Association (VITA)** which gathers more than 130 members. Kontron designs and markets a wide range of 3U and 6U VMEbus products and leads the improvement of the features of VMEbus products such as the support of Gigabit-Ethernet backplane switching (VITA 31), IPMI system management (VITA 38) or the use of enhanced performance P0 connector for the support of PCI-Express backplane interconnections.

Harsh Environments

To fulfill the demanding environmental requirements of the defense and other mission-critical markets, Kontron VME boards are manufactured in four classes: SA, WA and RA (Air-Cooled), and RC (Conduction-Cooled). All classes are 100% software compatible.



Straightforward PowerPC/x86 migration



6U Processor Boards



PENTXM4 / PENTXM2



VM6250



VM6050



VCE405



PowerNode5



PowerNode3+ / PowerNode3

6U Processor Boards

CPU	Single/Twin Dual Core Intel® Xeon® Processor ULV	Single or Dual Core MPC864x with AltiVec	Intel® Core™ i7 Dual Core Processor LV
CPU Clock	1.33 GHz to 1.67 GHz	1 GHz to 1.33 GHz	1.2 GHz to 2 GHz
CPU MIPS	11 332 DMIPS / 14 FFT GFlops	4706 DMIPS @1.33GHz	10 744 DMIPS / 23 FFT GFlops
CPU L2 Cache	2 MB	1 MB with EEC	4 MB
DRAM	Up to 4 GB w ECC	Up to 2 GB DDR2 with ECC	Up to 8 GB w ECC
Flash Onboard	4 GB NAND-Flash	Up to 16 GB USB Flash modules	Up to 16 GB SATA/USB Flash modules
NVRAM	-	128 KB	512 KByte
USB	3x USB2.0 (1x front, 2x rear P0)	3 x USB 2	Three USB
Ethernet	Two Gigabit Ethernet	4 x 10/100/1000 BaseT	Four Gigabit Ethernet
Graphics	XMC-G72 supported	-	XGI Z11 with 32 MB SDRAM
Serial Channels	Two Serial Lines	2 x UART	Two Serial Lines
PMC	1 PMC/XMC + 1 PMC	2 PMC/XMC + 1 FMC	2 PMC/XMC + 1 FMC
Rear I/O	2 GBE VITA 31.1, 2 USB, 2 SATA, 4x PCIe, 2 UART, XMC/PMC I/O	2x GBE, 1 x 4xPCIe, 2 x USB2, 2 x SATA, 2x UART, 3x GPIO, Mezzanine I/O	2 GBE VITA 31.1, 2 USB, 2 SATA, 4x PCIe, 2 UART, XMC/PMC/FMC I/O
Connectivity	4x PCIe, VME 64x, Gigabit Ethernet, Serial Lines, USB, SATA	4x PCIe, VME 2eSST, Gigabit Ethernet, Serial Lines, USB, SATA	4x PCIe, VME 64x, Gigabit Ethernet, Serial Lines, USB, SATA
Available Extensions	Rear Transition Module	Rear Transition Module, PMCs Carrier Board, FMC support	Rear Transition Module
Expansion Slots	V2PMC2 dual PMCs slot Carrier Board	V2PMC2 dual PMCs slot Carrier Board	V2PMC2 dual PMCs slot Carrier Board
Cooling	Standard Air, Rugged Convection Cooled and Conduction Cooled	Standard Air, Extended Temperature, Rugged Convection-Cooled, Rugged Conduction-Cooled	Standard Air, Rugged Convection Cooled and Conduction Cooled
Operating System	Linux kernel 2.6.18 SMP, Windows, QNX, VxWorks, LynxOS	Linux kernel 2.6.25, VxWorks 6.6, LynxOS5, ElinOS	Linux kernel 2.6.31 SMP, VxWorks 68 (SMP/AMP), Windows7
Power Consumption (typ.)	24W to 40W	27 to 45W	22W to 31W
Front IO	Two Gigabit Ethernet, Serial Line, USB	Gigabit Ethernet, Serial Line, USB	Two Gigabit Ethernet, Serial Line, USB
Rear IO	2 Gigabit Ethernet VITA 31.1, 2 USB, 2 SATA, 4x PCIe, 2 UART, XMC/PMC I/O	2 Gigabit Ethernet VITA 31.1, 2 USB, 2 SATA, 4x PCIe, 2 UART, XMC/PMC/FMC I/O	2 Gigabit Ethernet VITA 31.1, 2 USB, 2 SATA, 4x PCIe, 2 UART, XMC/PMC/FMC I/O

CPU	PowerPC 405GPr	Dual PowerPC 970FX with AltiVec	Single or Dual PowerPC 7448 / 7457 with AltiVecPowerNode3+ / PowerNode3
CPU Clock	400 MHz	1.6 GHz	1 GHz to 1.4 GHz
CPU MIPS	608 DMIPS	6500 DMIPS / 16 FFT GFlops	3484 DMIPS / 12 FFT GFlops
CPU L2 Cache	32KB	512 KByte	512kByte to 1 MByte
DRAM	Up to 128 MB with ECC	Up to 1 GByte with ECC	Up to 1 GByte with ECC
Flash Onboard	8 MB Flash EPROM	128 MByte of User Flash	Up to 64 MByte of User Flash
NVRAM	1 MB UVEPROM socket	32 Kbyte	8 KByte
USB	-	2 x USB 1.0	-
Ethernet	1x 10/100 Base-T (Front Panel or Rear I/O)	2 x 10/100/100 BaseT	2 x 10/100/100 BaseT
Graphics	-	-	-
Serial Channels	2x async. serial lines (Front Panel and Rear I/O), 4x sync./async. serial lines (Rear I/O)	2 x EIA-232	4 asynchronous EIA-232 serial lines on front panel & 2 EIA-422/485 on rear
PMC	2x 64-bit PMC sites	PMC slot 64/32-bit PCI/PCI-X @133MHz	PMC slot 64/32-bit PCI/PCI-X @133MHz
Rear I/O	Ethernet, Serial Lines, IIC Bus	PMCs I/O, EIDE interface, Ethernets, EIA-232, 4x RapidIO & SFPDP links	PMCs I/O, Giga-bit & 10/100 Ethernets, EIA-232, GPIO
Connectivity	VME, Ethernet	Serial FPD, Serial RapidIO, VME 2eSST, Gigabit Ethernet, Serial Lines, USB, EIDE	VME 2essT, Gigabit Ethernet, Serial Lines
Available Extensions	Rear Transition Module	Rear Transition Module	Rear Transition Module
Expansion Slots	-	-	-
Cooling	Standard Air, Rugged Convection-Cooled, Rugged Conduction-Cooled	Standard Air, Rugged Conduction-Cooled	Standard Air, Rugged Convection-Cooled, Rugged Conduction-Cooled
Operating System	LynxOS 4.0, VxWorks 5.4, Linux 2.4	Linux kernel 2.6.9 SMP, VxWorks 6.2	LynxOS 4.0.0, Linux kernel 2.6.9 SMP, VxWorks 6.2, VxW 5.5.1
Power Consumption (typ.)	7 W	75W	23W to 57W
Front IO	1x Async. Serial Line, 1x Ethernet 10/100BaseT	2x Gigabit Ethernet, 2x Serial Lines, 1x USB 1.0	Gigabit Ethernet, Serial Lines
Rear IO	PMCs I/O, 10/100 Ethernet, Serial Lines	PMCs I/O, EIDE interface, Ethernets, EIA-232, 4x RapidIO & SFPDP links	PMCs I/O, Giga-bit & 10/100 Ethernets, EIA-232, GPIO



To learn more about **VME**, please visit www.kontron.com/VME



For more details please see **Racks & Chassies** on page 124.

» VPX Standard and Rugged Products «



VPX (VITA 46) is a broadly defined technology utilizing the latest in a variety of switch fabric technologies in 3U and 6U format blades.

OpenVPX™ (VITA 65) is the architecture framework that defines system level VPX interoperability for multi-vendor, multi-module, integrated system environments.

These VPX standards are the right solution for applications deploying in harsh conditions. They are a perfect answer for high numbers of I/O requirements found in Vetronics computers as well as very high speed interconnect requirements found in parallel signal processing systems.

3U/6U VPX Turnkey Systems

Kontron has developed a range of 3U/6U VPX Turnkey development systems to help customers evaluate new VPX systems easily and allow rapid time-to-market.

For more information, please visit the Turnkey evaluation and development platforms section (p. 123).

Processor Boards

Leveraging the latest features of processor chipsets, 3U and 6U VPX Processor boards bring existing application software into the new world and performances offered by the VPX standard. Both VPX and OpenVPX pinout are available.

3U Processor Boards	Available 2H-2011		
	VX3030	VX3035	VX3230
CPU	Intel® Core™ i7 LV 2.0 GHz i7-620LE or SV 2.53 GHz i7-610E	Intel® Core™ i7-2655LE 2.2 GHz	Freescall 8544 1GHz low power CPU
CPU MIPS	10744 DMIPS	10744 DMIPS	2041 DMIPS
CPU L2 Cache	4MB	4MB	256 KB
Chipset	Mobile Intel® QM57 Express	Mobile Intel® QM67 Express	Single Chip Design (SOC)
DRAM	2, 4 or 8 GB Soldered with ECC	2, 4 or 8 GB Soldered with ECC	1 GB Soldered with ECC
DRAM speed	1067 MHz	1333 Gbit/s DDR3	400 MHz DDR2
Frontpanel	1xx GigEthernet, VGA, 1x USB 2.0, 1x EIA-232 UART; 3x control and status bicolor LEDs	1xx GigEthernet, VGA, 1x USB 2.0, 1x EIA-232 UART; 3x control and status bicolor LEDs	2x GigEthernet, COM, USB 2.0
Ethernet	2x GigEthernet on front and 2x GigEthernet on rear. On board switch.	2x GigEthernet on front and 2x GigEthernet on rear. On board switch.	2x GigEthernet configurable front or rear
Graphics Controller	Intel® HD Graphics with Dynamic Frequency in CPU	Intel® HD Graphics with Dynamic Frequency in CPU	-
Graphics	VGA on FP, 2 eDP (Display Port) on BP	VGA on FP, 2 eDP (Display Port) on BP	-
Rear I/O	3x GigEthernet, 4x SATA, PCI Express one x4 or four x1, 2 Serial Ports, 2 DisplayPorts	3x GigEthernet, 4x SATA, PCI Express one x4 or four x1, 2 Serial Ports, 2 DisplayPorts	2x USB 2.0, 2x GigEthernet, 2x SATA, 2x COM, PCIe 4x1, GPIO
Characteristics	High Performance, Rugged, Expandable I/Os	High Performance, Rugged, Expandable I/Os	Very Low Power, XMC/PMC slot
Power Supply	+5V, +12V inputs fully protected by fuse	+5V, +12V inputs fully protected by fuse	+5V only for SBC, +12V feeds XMC/PMC
Power Consumption (typ.)	40W with 4 GB of memory, no RTM	40W with 4 GB of memory, no RTM	15W
Storage	4 SATA ports, USB/SATA mezzanine port	4 SATA ports, USB/SATA mezzanine port	USB 2.0 Flash Disk socket. 2 SATA ports
Accessories	VPX RTM Module, USB Mass Storage Cards	VPX RTM Module, USB Mass Storage Cards	VPX 3U RTM Module, Mezzanine carrier, USB Mass Storage Cards

6U Processor Boards	Available 2H-2011		
	VX6060		
CPU	Four Intel® Core™ i7 cores in 2 processors		
CPU MIPS	7200 DMIPS on each CPU @ 2GHz		
CPU L2 Cache	256 KB per core		
Chipset	Mobile Intel® QM57 Express		
DRAM	2, 4 or 8 GB DDR3 with ECC (per CPU)		
DRAM speed	1067 MHz		
Frontpanel	2x GigEthernet, 1 VGA, 1x Display Port, 1x USB 2.0, 1x EIA-232 port, 4x LEDs		
Ethernet	2x Gig Ethernet on front and 4x Gigabit Ethernet on rear. On board switch.		
Graphics	1 eDP (enhanced display ports) per 3U core on P2. Intel® HD Graphics with DirectX 10 OpenGL 2.3		
Rear I/O	4x GigEthernet, 4x SATA, 2x PCI Express, 4x Serial Ports, 2 Display Ports		
Characteristics	High Performance, Low Power, Rugged, Expandable I/Os		
Options	0-55°C air cooled 1" size, -40°+75°C 0.8" size Conduction Cooled versions		
Power Consumption (typ.)	75W typical with 4 GB of memory, no RTM and no PMC		
Storage	USB 2.0 Flash Disk socket. On board 2"5 SATA support, 4 SATA ports		
Accessories	VPX RTM Module, USB Mass Storage Cards		

Thanks to their PCIe interface to the backplane, 3U VPX carriers feature an efficient data path to I/Os from single board computer boards. Legacy PMC and XMC mezzanines are supported by VX3800 while VX3830 supports the new VITA57 FMC mezzanine standard.

3U Carrier Boards



VX3800



VX3830

Function	PMC and XMC Carrier Board	FMC Carrier Board
Form Factor	3U VPX	3U VPX
Operating Temperature	Standard: 0°C to +55 °C Rugged Conduction-Cooled: -40°C to +85°C	Standard: 0°C to +55 °C Rugged Conduction-Cooled: -40°C to +85°C

3U Switch Boards



VX3910



VX3905

Fabric Interface Support	-	Gen 2 PCIe Switch (IDT 89H32NT24AG2)
Ethernet Interface Support	ETH 1000 BASE-BX ETH 1000 BASE-T	ETH 1000 BASE-BX ETH 1000 BASE-T
Ethernet Routing Protocols	Include OSPFv2, RIPv2, VRRP, IGMP Snooping, DiffServ, ARP, ICMP, ACLs	
Ethernet/Bridging Protocols	Include VLANs (802.1Q), Link Aggregation (802.3ad), Spanning Tre (802.1D, 802.1w), QoS (802.1p), Flow Control (802.3x), GVRP, GMRP Function managed , port mirroring	Marvell 88E6185 Unmanaged switch,
Power Supply	5V only design (20 Watt typ.)	5V only design (25 Watt typ.)
Front IO	1 RJ11 Serial, 4 RJ45 (1 GETH management, 3 1000BASE-T)	PCIe x4 PCIe Connector, 2 RJ45 1000BASE-T Connectors
Ports	28x GbE according OpenVPX/VITA65 and VITA 46.x, 4 front panel 1GbE RJ45	Up to 24 Ports/32 Lanes PCIe Switch, 9 Port GigEthernet Switch
Switch Management	via SNMP, TELNET, CLI Out of Band (front panel FE) or In-band via Fabric Management Port 10/100/1000 Base-T on front panel	PCIe switch configuration from BP I2C or OnBoard EEPROM
Operating Temperature	Air Cooled: 0°C to 55°C; Conduction Cooled: -40°C to +85°C	Air Cooled: 0°C to 55°C; Conduction Cooled: -40°C to +85°C

3U Backplanes
(Compatible with VX6060)



Distributed Backplanes



Centralized Backplanes

Dimensions H x W x D	3U 5-Slot 0.8" pitch (128.5 x 120.7 x 5.4mm), 3U 4-Slot 0.8" pitch (128.5 x 100.6 x 5.4mm), 3U 3-Slot 0.8" pitch (128.5 x 80.0 x 5.4 mm), 3U 3-Slot 1.0" pitch (128.5 x 80.0 x 5.4 mm)	3U 8-Slot 1.0" pitch (128.5 x 120.7 x 5.4 mm)
Storage	-55°C to +85°C	-55°C to +85°C
Standard	VITA 46.0-2007, VITA 46.4-VDSTU, VITA 46.10-2009	VITA 46.0-2007, VITA 46.4-VDSTU, VITA 46.10-2009
Partnumber	IFDP03-3U-VPXV1 : 3U, 0.8" Pitch, 3-Slot ; IFDP04-3U-VPXV1 : 3U, 0.8" Pitch, 4-Slot ; IFDP05-3U-VPXV1 : 3U, 0.8" Pitch, 5-Slot ; IFDP03-11N-3U-VPXV1 : 3U, 1.0" Pitch, 3-Slot	IFDP08-11N-3U-VPX1 : 3U, 1.0" Pitch, Single Star x4 Topology; IFDP08-11N-3U-VPX2 3U : 1.0" Pitch, Dual Star x4 Topology; IFDP08-11N-3U-VPX3 3U : 1.0" Pitch, Single Star x2 Topology
Operating Temperature	-40°C to +85°C	-40°C to +85°C

How to use VPX in Embedded Computing

With the VPX standard, innovative solutions can be designed for embedded computing. However, it can be difficult to leave a whole culture of parallel bus behind. Let's consider some computer templates based on VPX and point to point communication on the backplane.

Extensible Embedded Computer

Front panel

Slot 1

Slot 2

Slot 3

Slot 4

VX3030

VX3800

VX3830

PMC/XMC

FMC

Backplane

PCIe

Gigabit Ethernet

Gigabit Ethernet

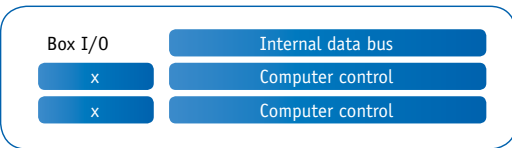
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In this example, a single SBC can drive as many I/O features as needed. Communicating between the SBC and intelligent I/O controllers is done on the PCIe backplane. With Kontron 3U VPX SBCs, the use of an advanced PCIe switch allows up to four direct connections to PCIe agents on the backplane. Even when limited to gen 1 PCIe communication, up to 250MB/s peak bandwidth is available for each peripheral slot. And point to point communication means this bandwidth is PER SLOT, not shared.



Safety Critical Computing

Front panel

Slot 1

Slot 2

Slot 3

Slot 4

VX3230

VX3230

VX3230

PMC/XMC

PMC/XMC

PMC/XMC

out

in

in

Backplane

PCIe

Gigabit Ethernet

Gigabit Ethernet

x

x

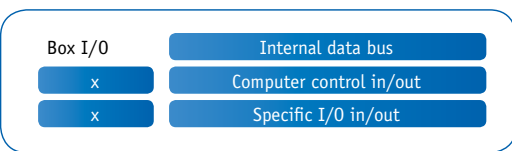
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In this example, multiple VPX SBC, possibly using different processor architecture, execute the same process control application. While Gigabit Ethernet communication is the most common way of monitoring the application, a shared memory scheme, implemented on top of the low latency PCIe backplane can be implemented to reproduce the legacy computing environment normally found in past VME architectures. I/O mezzanines (PMC or XMC) can be implemented at each SBC for single point of failure avoidance.



High Performance Embedded Computing

Front panel

Slot 1

Slot 2

Slot 3

Slot 4

VX30xx

VX30xx

VX30xx

VX3800

PMC/XMC

Backplane

VXFabric™

Mezzanine I/Os

1 Gigabit Ethernet

1 Gigabit Ethernet

PCIe

x

x

x

x

x

x

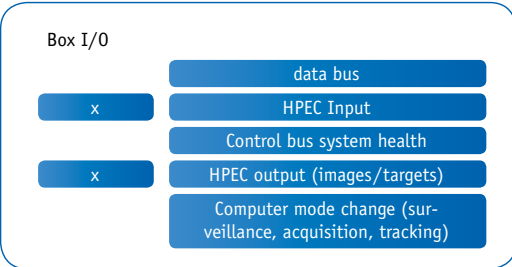
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In this example, each SBC receives and processes the sensor data. Low latency communication on the backplane can be used for instant radar mode change or other synchronous signaling while Gigabit Ethernet interface can either be used to route the final data flow and application control.



➔ For more details please see [Military Rugged Systems and Enclosures](#) on page 122.



» Switches & Network Platforms «



Embedded Network Products

Kontron engineers with deep experience in embedded design and network technologies align the right hardware components with the right software feature sets for products in any standard embedded form factor or customized design. Software features are based on the features sets on the roadmap plus Kontron specific extensions to provide ease-of use and the best choice for our customers.

Leading Edge Products

- » Board Level to Box Level
- » Carrier Grade Feature Set
- » Easy to use

Support Services

- » Training
- » Development of customized solutions based on proven building blocks
- » Evaluation Systems and starter kits for fast verification and evaluation
- » Certification support for industry specific regulatory approvals

» Embedded Network Products – Portfolio Summary

» Areas of Application

Network Technology connects all types of computers in Communication Networks, Industrial Production, Process Control, Public Transportation, Energy Production & Distribution, and Defense. Kontron Embedded Network Technology supports the environmental conditions, longtime supply, and special demands for such applications with leading edge features and customer support.

» Ease of Use

Kontron Network Technology products are designed to be easy to configure and use by operators in the field. The hardware is designed to suit versatile application demands in the field, where the software provides a extensive feature set and professional interfaces for configuration and remote management. Manuals and product documentation provide clear instructions for operators. All products have the same operation interfaces and thus a familiar environment for operators across the complete portfolio.

» Embedded Life Cycle

According to Long Term Supply and Maintenance agreements, Kontron Network Technology products support an extended lifetime of 10+ years.

» Services

The Kontron service portfolio starts with training on switching and network technology, followed by support of our customers through complete life cycle management. Training covers getting started, trouble shooting, and maintenance is supported according to the demand by individual SLAs, including 24/7 support, extended warranty, repair services, spare parts and upgrades. Kontron Technical Support is ready to assist customers world wide during trials, production, and field deployment.

» Rugged Solutions

The products support extended temperature ranges, enhanced shock & vibration, and EMI according to the specific needs in the area of application. Among the specifications covered are VITA 47 class AC1/2/3/CC4 (cooling), VITA 47 class V1/2/3 (shock and vibration) and EN50155 (railway rolling stock). Standard air cooled releases cover temperature ranges of 0 to 60 C. Rugged air cooled releases cover feature an extended temperature range of -40 to 85 C and qualify according to VITA47-EAC3/6. Conduction cooled releases for an extended temperature range of -40 to 85 C provide a conduction cooled frame with wedge locks and qualify according to VITA47-ECC4.



» Rack Mount Products

Rack mount products contain well proven Kontron switches and CPUs in combination with housing, power supply, and interface boards, which meet rugged and special environmental conditions.

» CompactPCI 6U Products

Products support the PICMG2.16 standard for GbE on the backplane and are available in rugged versions. For high-performance computing, 10 GbE connectivity is provided by front cabling via cost efficient SFP+. For CPU boards, matching 10 GbE XMC NICs are available.

» VME and VPX Products

According to VITA 31, the same CompactPCI switches and XMCs can be used in VME systems to provide 1 GbE and 10 GbE connectivity. On VPX, 10 GbE connectivity is provided on the backplane in combination with a VPX switch.

» CompactPCI 3U Products

All Kontron CPUs provide network interfaces on the J2 connector on the backplane. Matching managed and unmanaged switches provide GbE connectivity on the backplane, as well as Fast Ethernet and GbE on the front over RJ45 or M12 connectors.

» MicroTCA Products

MicroTCA uses serial connections on the backplane and allows to provide multiple interconnections with GbE, and 10 GbE speed. Matching switches also contain the management functions (MCH), as well as PCIe or SerialRapidIO fabric switches. Multicore packet processors are available on AMC form factor.

» ATCA Products

ATCA provides the highest fabric speeds at 1 GbE, 10 GbE, and 40 GbE. The matching switches provide carrier grade feature sets. Multicore packet processors are available on AMC form factor and on ATCA blades.

» Customized Solutions

Standard products can be modified according to specific customer needs. Kontron provides assistance to customers with their individual designs with customized solutions based on well proven hard- and software building blocks.

» Starter Kits

Systems and starter kits are available for evaluation and functional prototypes. To speed up customer projects, Kontron provides training on network products.

10 Gigabit Managed Rackmount Switches

The **Kontron CP6930-RM** is a 19 inch, non-blocking fully managed L2/L3 10Gb Ethernet Switch and provides rich and versatile feature support by using highest integration of Ethernet switch silicon.

» Switching Capacity

The CP6930 is designed for future oriented applications requiring outstanding switching capacity and communication safety. 6 SFP+ front ports running at 10Gb/s full line speed and 2 SFP ports at the front providing 1Gb support gives flexibility and an intrinsic value for today's investments. The 24 copper ports fulfill the requirement of highest computing performance and system integration.

» Reliability

The robust design features including easy maintenance as well as complete SNMP management support sets the foundation for robust and reliable systems. Built-In test capabilities enable effective switch maintenance.

» Management

The CP6930-RM can be monitored via SNMP. A comprehensive command line interface provides easy management and remote configuration by either serial or network interface. Support for features like IP forwarding & Multicast, Routing & Switching, Quality of Service, VLANs it is an ideal switch for reliable applications.

10 Gigabit Rackmount Switches		
	 CP6930-RM-12	 CP6930-RM-24
10 GigaBit SFP+ Ports	6x 10GBase-X SFP+ transceiver cages, configurable for 1GBase-X operation using SFP optical transceivers or direct attach copper	6x 10GBase-X SFP+ transceiver cages, configurable for 1GBase-X operation using SFP optical transceivers or direct attach copper
1 GigaBit SFP Ports	2x 1GBase-X SFP transceiver cages including SGMII support	2x 1GBase-X SFP transceiver cages including SGMII support
1 GigaBit RJ45 Ports	12x 10/100/1000Base-T	24x 10/100/1000Base-T
Management	Layer 2/3 Management via SNMP, Command Line (Telnet, SSH) - In-band - Out of band via Ethernet or RS232	Layer 2/3 Management via SNMP, Command Line (Telnet, SSH) - In-band - Out of band via Ethernet or RS233
Ethernet Bridging	Static link aggregation (IEEE 802.3ad) and port mirroring Multiple, classic and rapid spanning tree algorithms (IEEE 802.1s, IEEE 802.1d, IEEE 802.1w) Quality Of Service on all ports (IEEE 802.1p) Full Duplex operation and flow control on all ports (IEEE 802.3x) Static MAC filtering Port Authentication (IEEE 802.1X) Layer 2 multicast services using GARP/GMRP (IEEE 802.1p)	Static link aggregation (IEEE 802.3ad) and port mirroring Multiple, classic and rapid spanning tree algorithms (IEEE 802.1s, IEEE 802.1d, IEEE 802.1w) Quality Of Service on all ports (IEEE 802.1p) Full Duplex operation and flow control on all ports (IEEE 802.3x) Static MAC filtering Port Authentication (IEEE 802.1X) Layer 2 multicast services using GARP/GMRP (IEEE 802.1p)
IP Routing	VLAN support including VLAN tagging (IEEE 802.3ac), dynamic VLAN registration with GARP/GVRP (IEEE 802.1Q) and Protocol based VLANs (IEEE 802.1v) IPv4 Forwarding on all base channels and connected uplink ports; IPv6 on request Quality of service (CoS, DiffServ, ACL) ARP, ICMP for all routable interfaces OSPF routing protocol version 2 RIP routing protocol version 2 VRRP (virtual router redundancy protocol) IGMP snooping	VLAN support including VLAN tagging (IEEE 802.3ac), dynamic VLAN registration with GARP/GVRP (IEEE 802.1Q) and Protocol based VLANs (IEEE 802.1v) IPv4 Forwarding on all base channels and connected uplink ports; IPv6 on request Quality of service (CoS, DiffServ, ACL) ARP, ICMP for all routable interfaces OSPF routing protocol version 3 RIP routing protocol version 3 VRRP (virtual router redundancy protocol) IGMP snooping
IP Multicast	DVMRP, PIM-DM, PIM-SM, IGMP V2/3, IGMP Proxy	DVMRP, PIM-DM, PIM-SM, IGMP V2/3, IGMP Proxy
Additional Features	DHCP Server, SNTp Client, diagnostic, multiple configuration support	DHCP Server, SNTp Client, diagnostic, multiple configuration support
MTBF	Approx. 200 khours	Approx. 200 khours
Dimensions	19 inch, 1U Chassis 445 x 45 x 282 mm (WxHxD)	19 inch, 2U Chassis 445 x 90 x 282 mm (WxHxD)
Humidity	93% RH at 40 °C, non-condensing (acc. to IEC 60068-2-78)	93% RH at 40 °C, non-condensing (acc. to IEC 60068-2-78)
Power Consumption	110/230V, 75W; optionally 48VDC (36 to 72VDC) 24VDC (18 to 36VDC)	110/230V, 90W; optionally 48VDC (36 to 72VDC) 24VDC (18 to 36VDC)
Shock & Vibration	IEC 60068-2-6 (10 to 300Hz, 1G), IEC 60068-2-29 (15G/11ms)	IEC 60068-2-6 (10 to 300Hz, 1G), IEC 60068-2-29 (15G/11ms)
Options	Options for redundant hotswap power supplies, various connector interfaces, extended temperature range	Options for redundant hotswap power supplies, various connector interfaces, extended temperature range
Temperature Range	0 to 55°C	0 to 60°C



» Slot CPU's «



PICMG 1.3 & PICMG 1.0

Satisfy the requirement for flexible PC standard expansion slots.

Compared to other solutions offering standard PC style I/O-slots like PCI, PCI Express or even ISA, the Slot-CPU based implementation offers more flexibility and the highest number of slots in a given system.

Compare, for example, a KISS 4U motherboard offering with 7 I/O-slots to a KISS 4U based on PICMG technology with up to 13 slots, the Slot-CPU offers many more possibilities for adding functionality.

Advantages

- » PC-style I/O-Slots
- » Commodity for I/O-cards
- » Flexible Slot-Configuration
- » Affordable adoption of backplane technology
- » Same proven CPU-board for different systems possible

Slot-CPU 1.3

With the growing importance of PCIeexpress, ISA-cards are not implemented as often as they used to be, forcing the need for a new PICMG solution. The new PICMG 1.3 industrial standard addresses the need for PCI Express as well as offering modern standard interfaces on the edge-connector. Based on PICMG 1.3 system, solutions can use highly optimized cabling for USB and SATA. Even an internal LAN-connection is available for maximum

flexibility. Slot-CPU Full-Size Slot-CPU PICMG 1.0 PICMG 1.0 offers excellent flexibility for system integration. For customers needing many slots there is no better way to implement the solutions. If you need up to date performance or a high amount of memory combined with a legacy ISA-card, it might be the only way to a working solution.

Slot-CPU 1.3



PCI-960



PCI-760



PCI-761

CPU	Intel® Core™ Duo and Core™ 2 Duo	Core™ 2 Duo and Core™ 2 Quad	Intel® Pentium® and Core™ i3/i5/i7 processor
CPU Clock	up to 2x 2.33 GHz	up to 4x 3 GHz	up to 4x 2.8 GHz (3.46GHz Turbo)
Front Side Bus	533/800 MHz	800/1066/1333 MHz	-
Cache	2048/4096 kByte	2048/4096/9192 kByte	up to 8192 kByte
Chipset	Intel® 945GM	Intel® Q35	Intel® Q57
DRAM	4 GByte DIMM DDRII-SDRAM	8 GByte DIMM DDRII-SDRAM	8 GByte DIMM DDRIII-SDRAM
Flash Disk	Compact Flash	USB Flash	USB Flash
Ethernet	Tripple 1000Base-Tx	Tripple 1000 Base-Tx	Dual 1000 Base-Tx
IDE Channels	1x	-	-
SATA	4 (RAID-Support)	6 (RAID-Support)	6 (RAID-Support)
Available I/Os	CRT, PS/2, FDD, 8x USB, LPT, 2x COM	CRT, PS/2, FDD, 8x USB, LPT, 2x COM	CRT, PS/2, FDD, 8x USB, LPT, 2x COM
Graphics	GMA950	GMA3100	GMA4500
Dimensions H x W x D	PICMG 1.3 full size	PICMG 1.3 full size	PICMG 1.3 full size
Additional	Audio, JILI, miniPCI	Audio, JILI, miniPCI	Audio
Operating Temperature	0° to 50°C	0° to 50°C	0° to 50°C

Slot-CPU 1.3 Backplanes



xBP-13E5P7_2



xBP-13E5P7



xBP-13E9P3



xBP-6E2P3



xBP-6E5P0

Power connector	ATX	ATX	ATX	ATX	ATX
Type	ATX-type	ATX-type	ATX-type	2U Butterfly	2U Butterfly
CPU Slots	1	1	1	1	1
PCIexpress	1x PCIe X16, 1x PCIe X4, 3x PCIe X1	1x PCIe X16, 4x PCIe X1	1x PCIe X16, 4x PCIe X4 (all X16 connectors), 4x PCIe X1 (X1 connectors)	1x PCIe X16, 1x PCIe X4	1x PCIe X16, 1x PCIe X8, 3x PCIe X4 (all X16 connector)
PCI	7	7	3	3	0



For more details please see productline **Industrial Rack Mount Systems** on page 98.

Slot-CPU 1.0

PICMG 1.0 offers excellent flexibility for system integration. For customers needing many slots, the PICMG 1.0 can offer a flexible, cost effective solution. If you need up to date performance or a

high amount of memory combined with a legacy ISA-card, it might even be the only way to a working solution.

Slot-CPU 1.0



PCI-759

CPU	Intel® Core™ 2 Duo
CPU Clock	up to 3.6 GHz
Front Side Bus	533/800/1066 MHz
Cache	1024/2048/4096 kByte
Chipset	Intel® 945GV
DRAM	4 GByte DIMM DDRII-SDRAM
Flash Disk	-
Ethernet	Dual 10/100/1000 Base-Tx
IDE Channels	1
SATA	4
Available I/Os	CRT, PS/2, FDD, 4x USB, LPT, 2x COM
Graphics	GMA950
Dimensions H x W x D	PICMG full size
Additional	miniPCI
S-ATA	4
Operating Temperature	0° to 50°C

Slot-CPU 1.0 Backplanes



BP14 I1P12



BP14I3P10



BP14I6P7

Keyboard	DIN	DIN	DIN
Power connector	ATX/Screws	AT/ATX/Screws	AT/ATX/Screws
PICMG Slot	2	2	2
ISA	1	3	6
PCI	12 (64 Bit)	10	7

➔ For more details please see productline **Industrial Rack Mount Systems** on page 98.

 To learn more about **Slot-CPU PISA®** and **PISA® Backplanes**, please visit www.kontron.com

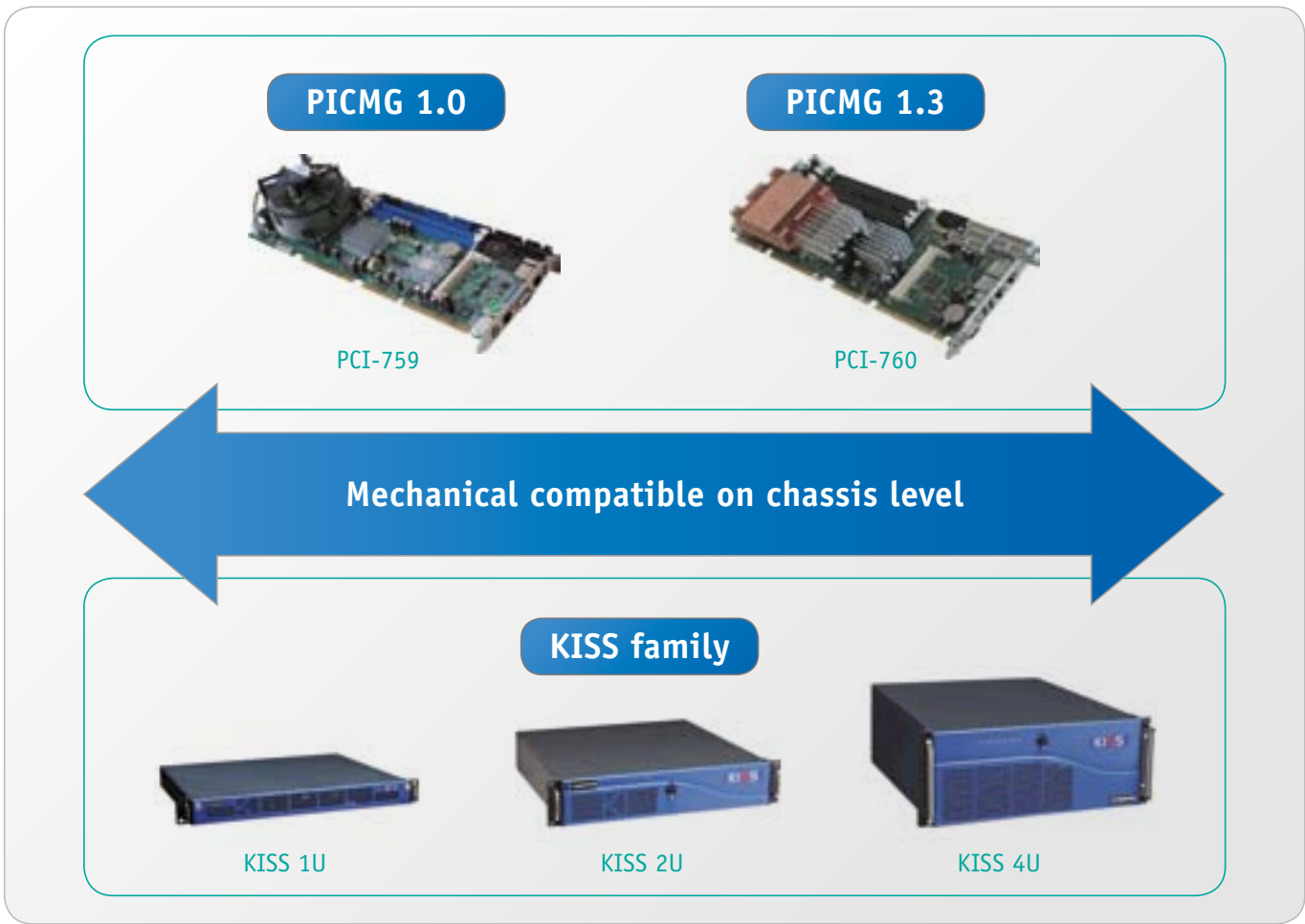
IO-Flexibility

In today's environment the main driving factor for PICMG 1.X based solutions is the great IO flexibility. Based on the interchangeable standard many backplanes offering different

combinations of slots are available. This flexibility in addition to the trend of higher slot-density offers excellent solutions for many dense or complex applications.

	Motherboards	PICMG 1.0 SHB	PICMG 1.3 SHB
			
ISA-Slots	-	7	4
PCI Slots	6	12-18	12-18
PCIexpress slots	7	-	12-18

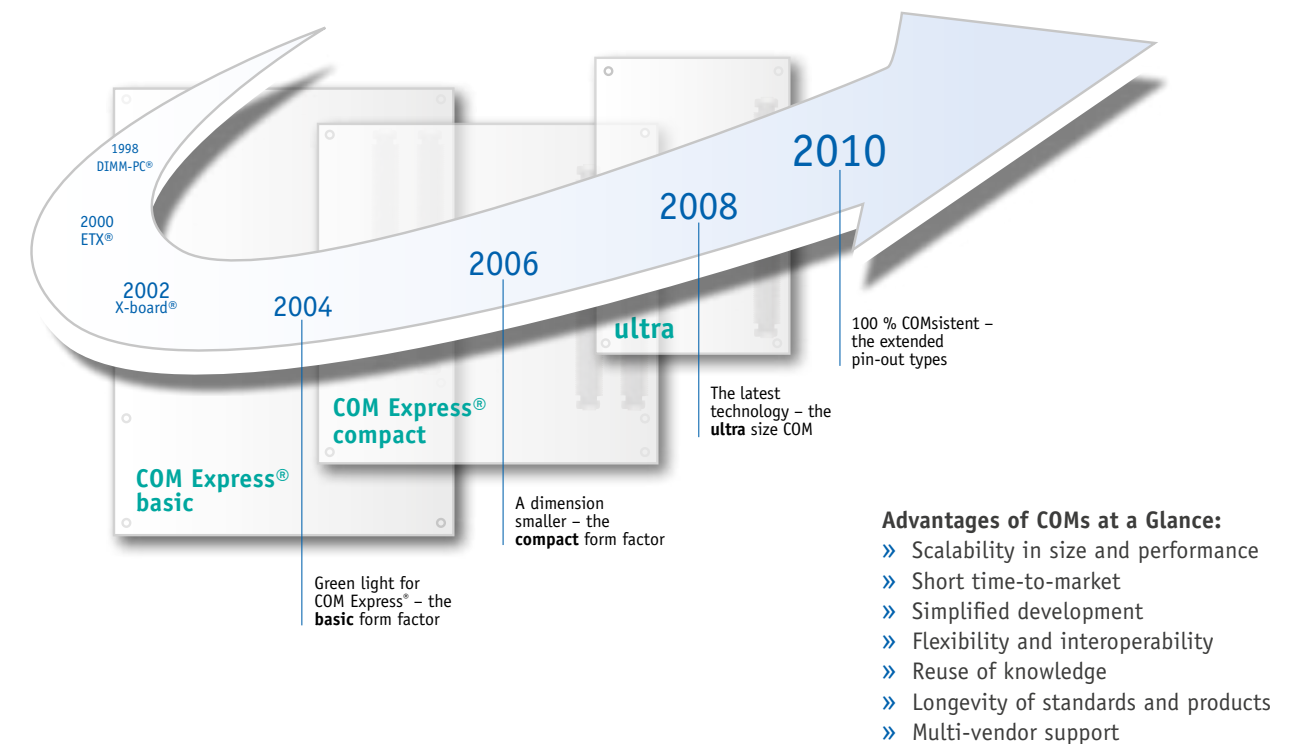
All values depending on chassis and backplane



» Computer-on-Modules «

Computer-on-Modules (COM) are highly integrated computer modules that support system expansion and application-specific customization without the use of cables. When using a Computer-on-Module, customers don't need to worry about the complex design of the COM, instead freeing them to concentrate on their core business. To tailor this modular solution to the application's specific needs, Kontron's Boards & More unit designs the carrier board including all necessary interfaces for the individual application. Kontron COMs are based on industry standards like ETX® and COM Express®. As such, Kontron COMs are simply plugged into the carrier board like a component.

The entire history of Computer-on-Modules has been shaped by Kontron's experience and leadership.



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COM Express®

ETX® 3.0
Long Term Support

Boards & More

» see page 11

» COM Express® basic «

Kontron's ETXexpress® family



Kontron has a long and successful history of innovation within Computer-on-Modules. Under Kontron's leadership, the COM Express® specification was developed and is maintained by the PCI Industrial Computer Manufacturer Group (PICMG®).

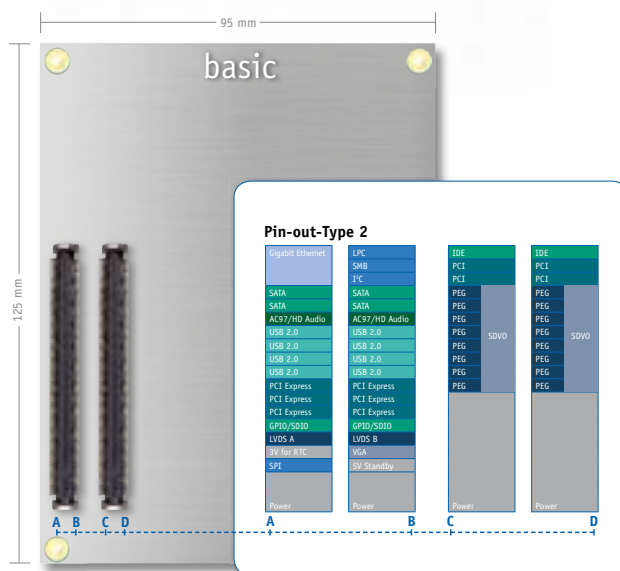
Kontron offers a wide range of COM Express® modules in different footprints - basic 125 x 95 mm, compact 95 x 95 mm and a compatible ultra-small solution 55 x 84 mm. ETXexpress® is Kontron's COM Express® basic form factor module with a footprint of 125 x 95 mm. Kontron modules offer complete, multimedia-capable computing cores for high-level applications and the high performance needed for your next generation product. Now available with pin-out Type 2 and 6.

High Performance with the Latest Interface Technologies

- » PCI-Express® – the elemental data highway
- » PCI-Express® Graphic (PEG) – for high speed x16 graphic
- » Gigabit Ethernet – for fastest connectivity
- » Serial ATA 600 – for fast drives and SSDs
- » Dual Channel DDR3 ECC
- » USB 3.0 – for high speed data transmission
- » COM Express® connectors – for highest proven transfer rates
- » DDI – new Digital Display Interfaces for easy graphics integration

Starterkits and Evaluation Boards

- » For COM Express® modules
- » For quick evaluation purposes
- » Starterkits include all required hard- and software for immediate start



COM Express® Pin-out Type 2 on basic form factor

COM Express® basic



ETXexpress®-CD



ETXexpress®-PC



ETXexpress®-AI



ETXexpress®-SC

	ETXexpress®-CD	ETXexpress®-PC	ETXexpress®-AI	ETXexpress®-SC
CPU	Intel® Core™ Duo L2400, Intel® Celeron® M 440, ULV423	Intel® Core™2 Duo SP9300, SL9400, SU9300, T9400, P8400, Celeron® M575	Intel® Core™ i7-610E, i7-620LE, i7-620UE, i5-520E	Intel® Core™ i7 (Quad Core), Core™ i5, Celeron®
CPU Clock	up to 2x 1.66 GHz	up to 2x 2.53 GHz	up to 2x 2.53 GHz	up to 2x 2.5 GHz / 4x 2.1 GHz
Cache	up to 4 MB L2	up to 6 MB L2	up to 4M L2	up to 6 MB L2 Cache
Chipset	Intel® 945GME, ICH7M-DH	Intel® GS45, ICH9M SFF, Intel® GM45, ICH9EM, Intel® GL40, ICH9M	Intel® Mobile Platform Controller Hub QM57	Intel® Mobile Platform Controller Hub QM67 or HM65
Bus Speed	533/667 MHz FSB	800/1066 MHz FSB	800/1066 FSB	800/1066/1333 MHz FSB
Memory	physical memory up to 4 GB DDR2, Dual Channel	up to 2x 4 GB DDR3, Dual Channel	up to 2x 4 GB (DDR3-RAM), Dual Channel with ECC	up to 16 GB DDR3, Dual Channel with ECC
Hard Disk	2x Serial ATA (AHCI; RAID 0,1), 1x PATA	4x Serial ATA 300 (AHCI; RAID 0, 1, 5, 10, Matrix), 1x PATA (optional Flash onboard)	4x Serial ATA (300) and PATA (on type 2 only)	2x Serial ATA 3 (600 MB/s), 2x Serial ATA 300, PATA (Type 2)
USB	USB 2.0, 8 ports	USB 2.0, 8 ports	USB 2.0, 8 ports	USB 2.0, 8 ports USB 3.0, 2 ports (Type 6)
PCI Express	5 PCIe x1 or 1 PCIe x4, 1 PEG x16	5 PCIe x1 or 1 PCIe x1 and 1 PCIe x4, 1 PEG x16	PCIe 7(x1) lanes on Type 6, 6 (x1) lanes on Type 2, 1 PEG x16	Type 2: 5 PCIe Gen 2.0 x1, 1 PEG x16 Type 6: 7 PCIe Gen 2.0 x1, 1 PEG x16 (Gen 2.0)
PCI	PCI 2.3, 32 bit / 33 MHz	PCI 2.3, 32 bit / 33 MHz	PCI 2.3, 32 bit / 33 MHz (Type 2 only)	PCI 2.3, 32 bit / 33 MHz (Type 2 only)
Ethernet	Realtek RTL 8111C, 10/100/1000 MBit	Intel® 82567, 10/100/1000 MBit	Intel® 82557, 10/100/1000 MBit	Intel® 82579, 10/100/1000 MBit
Sound	Intel® HD Audio, AC97	Intel® HD Audio	Intel® HD Audio	Intel® HD Audio
Graphics Controller	Intel® GMA 950 DirectX® 9, PS 3.0	Intel® GMA X4500 DirectX® 10, PS 4.0	Intel® iGFX GMA HD/5700MHD, DirectX® 10, PS 4.0	Intel® iGFX Gen6 integrated, DirectX® 10.1, PS 4.0, OpenGL 3.0
Graphics Memory	up to 256 MB DVMT	up to 1024 MB DVMT	tbd	tbd
Display Interfaces	Dual SDVO multiplexed with PEG, Single/Dual Channel LVDS 18/24 Bit, TVout, CRT, JILI support	Dual SDVO multiplexed with PEG, DisplayPort and HDMI, Single/Dual Channel LVDS 18/24 Bit up to UXGA (1600x1200), TVout, CRT up to QXGA (2048x1536)	Type 2: CRT, LVDS, PEG multiplexed with embedded DisplayPort Type 6: CRT, LVDS, 3x DDI (SDVO/DisplayPort/HDMI/DVI)	both: 1x CRT, 1x Single/Dual Channel LVDS 18/24 Bit up to UXGA (1600x1200) Type 2: 1x DP/eDP/SDVO/HDMI/DVI multiplexed with PEG port Type 6: 1x DDI (SDVO/DP/HDMI/DVI) + 1x DDI (DP/eDP/HDMI/DVI) + 1x DDI (DP/HDMI/DVI)
Power Management	ACPI 2.0	ACPI 3.0	ACPI 3.0	ACPI 3.0
Power Support	8.5 V – 18 V	8.5 V – 18 V	8 V – 18 V	8.5 V – 18 V
Form Factor	COM Express® basic: 125 x 95 mm Pin-out Type 2	COM Express® basic: 125 x 95 mm Pin-out Type 2	COM Express® basic: 95 x 95 mm Pin-out Type 2 or 6	COM Express® basic: 125 x 95 mm Pin-out Type 2 or 6
Temperature	Operation: 0°C to +60°C, Storage: -30°C to +85°C, Extended Temperature: -25°C to +75°C on request	Operation: 0°C to +60°C, Storage: -30°C to +85°C, Extended Temperature: -25°C to +75°C on request	Operation: 0°C to +70°C, Storage: -30°C to +85°C	Operation: 0°C to +60°C, Storage: -30°C to +85°C, Extended Temperature: -25°C to +75°C on request

New Pin-out Type 6 added

In the COM Express® Rev 2.0 specification, PICMG® defines the in total 7 pin-outs, while Type 2 currently is the most widely adopted for COM Express® basic and compact footprints. Based on pin-out Type 2, a new Type 6 was added. Legacy interfaces PCI and PATA pins are now used to support the SuperSpeed USB 3.0 and for additional PCI Express x1 lanes. The USB 3.0 pins are to implement up to four of the eight USB 2.0 ports as USB 3.0 ports that each require an extra pair as compared to USB 2.0. Pin-out type 6 adds extensive support for additional

display interfaces. The graphics options have always been one of the special strengths of COM Express® through support of PEG and SDVO alternatively. But these days, chipset vendors added new display interfaces and multiplex SDVO with DisplayPort, HDMI or DVI added. Intel® just calls this multiplexed output Digital Display Interface. As a matter of satisfying the growing need for graphics performance, Pin-out Type 6 separated PEG and DDI interfaces: PEG and up to 3 DDI interfaces can be used simultaneously.

» COM Express® compact «

Kontron's microETXexpress® family



Kontron microETXexpress® modules are 100 percent compliant to the open standard COM Express® specification maintained by PICMG® and follow the compact form factor and the Type 2 resp. Type 6 pin-out definitions. Kontron's microETXexpress® modules are equipped with state-of-the-art features. The COM Express® compact design is the entry-level model for applications looking to transition from other small form factor solutions to COM Express® and offers full PCI Express or PCI support.

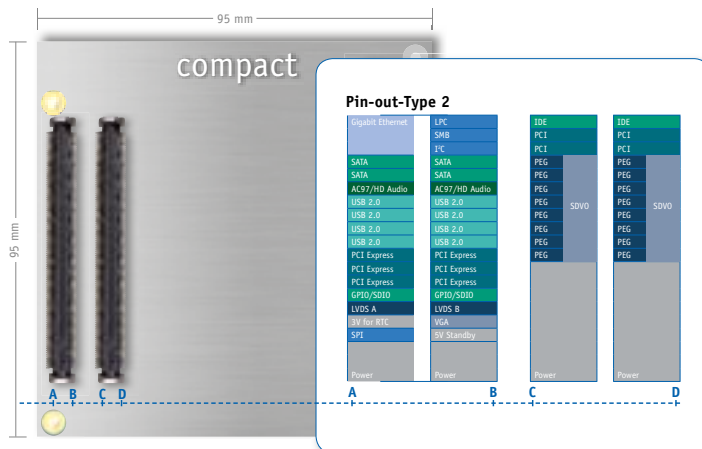
Advantages

- » Standardized COM Express® Form Factor
- » Compact module size (95 x 95 mm)
- » Performance scalability from Intel® Atom™ up to Intel® Core™ 2 Duo
- » Designed for mobile application requirements Kontron
- » Specialised COM Express® Starterkits available

THE THERMAL CONCEPT

COM Express® Heatspreader provides:

- » Identical mechanical size: modules of the same form factor fit into the same system
- » The only surface that needs cooling is the top of the heatspreader
- » Complete cooling solution available



COM Express® Pin-out Type 2 on compact form factor

COM Express™ compact



micro ETXexpress®-SP



micro ETXexpress®-XL



micro ETXexpress®-PV



micro ETXexpress®-DC



micro ETXexpress®-PC



micro ETXexpress®-OH

	Intel® Atom™ Z510, Z530	Intel® Atom™ Z520PT	Intel® Atom™ D510, D410, N450	Intel® Atom™ N270	Intel® Core™ 2 Duo SL9400, SU9300, Intel® Celeron® M Processor 722, 723	AMD G-Series Fusion Advanced Processing Unit (APU)
CPU						
CPU Clock	up to 1.6 GHz	1.33 GHz	up to 2x 1.66 GHz	1.6 GHz	up to 2x 1.86 GHz	up to 2x 1.6GHz
Cache	up to 512KB L2	512 KB L2	up to 1 MB L2	512KB L2	up to 6 MB L2	2x 512KB
Chipset	Intel® System Controller Hub US15W	Intel® System Controller Hub US15WPT	Intel® 82801HM	Intel® 945GSE, ICH7M	Intel® GS45, ICH9M SFF	AMD Fusion Controller Hub (FCH)
Bus Speed	400/533 MHz FSB	533 MHz FSB	667/800 MHz	400/533 MHz FSB	800/1066 MHz FSB	1333MHz
Memory	up to 2 GB DDR2	up to 2 GB onboard DDR2 (industrial temp. range)	up to 2 GB DDR2	up to 2 GB DDR2	up to 4 GB DDR3	Up to 8GB, single channel DDR3
Hard Disk	2x Serial ATA (RAID 0,1), 1x PATA	1x Serial ATA, 1x PATA, Optional industrial temp. range SSD onboard	3x Serial ATA	2x Serial ATA (AHCI), 1x PATA, optional SSD flash onboard	3x Serial ATA 300 (AHCI; RAID 0,1), 1x PATA	4x Serial ATA 2.0
USB	USB 2.0, 8 ports (1x USB Client)	USB 2.0, 8 ports	USB 2.0, 8 ports	USB 2.0, 8 ports	USB 2.0, 8 ports	up to 8x USB 2.0, up to 2x USB 3.0 (via Renesas uPD720200 PCIe Gen2 to USB 3.0 bridge)
PCI Express	2 PCIe x1, optional up to 5 PCIe x1	2 PCIe x1 lanes	5 PCIe x1 lanes	3 PCIe x1	5 PCIe x1 or 1 PCIe x1 and 1 PCIe x4, 1 PEG x16	6x PCIe – up to 4 lanes configurable as x4, x2, or x1, up to 2 lanes configurable as x2 or x1
PCI	PCI 2.3, 32 bit / 33 MHz	PCI 2.3, 32 bit / 33 MHz	PCI 2.3, 32 bit / 33 MHz	PCI 2.3, 32 bit / 33 MHz	PCI 2.3, 32 bit / 33 MHz	Not available
Ethernet	Intel® 82574L, 10/100/1000 MBit	Intel® 82574 (Industrial temp.), 10/100/1000 MBit	Intel® 82567, 10/100/1000 MBit	Intel® 82574L, 10/100/1000 MBit	Intel® 82567, 10/100/1000 MBit	Intel® 82574L 10/100/1000 Mbit
Sound	Intel® High Definition Audio	Intel® High Definition Audio	Intel® High Definition Audio	Intel® High Definition Audio, AC97	Intel® High Definition Audio	HD Audio (3 channels)
Graphics Controller	Intel® GMA 500, DirectX® 9, PS 3.0	Intel® GMA 500, DirectX® 9, PS 3.0	Integrated in Atom™ CPU, GMA3150 with DirectX® 9, PS 2.0	Intel® GMA950, DirectX® 9, PS 2.0	Intel® GMA X4500, DirectX® 10, PS 4.0	Integrated AMD Graphics Processor Unit (GPU) in the G-series APU w/ Direct X® 11, OpenGL™ 1.0 and OpenGL® 3.2 and 2.1
Graphics Memory	up to 256 MB DVMT	up to 1024 MB DVMT	up to 384 MB DVMT	up to 256 MB DVMT	up to 1024 MB DVMT	Dedicated integrated graphics memory controller
Display Interfaces	SDVO 1920x1080, Single-Channel LVDS 18/24 Bit, JILI support	Single channel 24 bit LVDS, Single SDVO channel	LVDS, VGA	Single/Dual Channel LVDS up to UXGA (1600 x 1200), CRT up to QXGA (2048x1536), SDVO, TVout, JILI support	Dual SDVO multiplexed with PEG, DP and HDMI / DVI - 1920 x 1200 x 60 Hz, Single Channel, LVDS 18/24 Bit up to UXGA (1600x1200), TVout, CRT up to QXGA (2048x1536)	Display Port - 2560 x 1200 x 60 Hz, HDMI / DVI - 1920 x 1200 x 60 Hz, Single channel (18 bit) LVDS, Single Analog VGA - 2560 x 1600 x 60Hz (2048x1536)
Power Management	ACPI 3.0	ACPI 3.0	ACPI 3.0	ACPI 3.0	ACPI 3.0	ACPI 3.0
Power Support	8.5 V – 18 V	4.75 V – 18 V	4.75 V – 18 V	8.5 V – 18 V	8.5 V – 18 V	4.75V to 18V
Form Factor	COM Express® compact: 95 x 95 mm Pin-out Type 2	COM Express® compact: 95 x 95 mm Pin-out Type 2	COM Express® compact: 95 x 95 mm Pin-out Type 2	COM Express® compact: 95 x 95 mm Pin-out Type 2	COM Express® compact: 95 x 95 mm Pin-out Type 2	COM Express® compact: 95 x 95 mm Pin-out Type 6
Temperature	Operation: 0°C to +60°C Storage: -40°C to +85°C	Operation: -40°C to +85°C Storage: -40°C to +85°C	Operation: 0°C to +60°C, Storage: -30°C to +85°C	Operation: 0°C to +60°C, Storage: -30°C to +85°C, Ext. Temperature: -25°C to +75°C on request	Operation: 0°C to +60°C, Storage: -30°C to +85°C, Ext. Temperature: -25°C to +75°C on request	Operation: 0°C to +70°C, Storage: -30°C to +85°C

» COM Express® compatible ultra-small «

Kontron's nanoETXexpress family

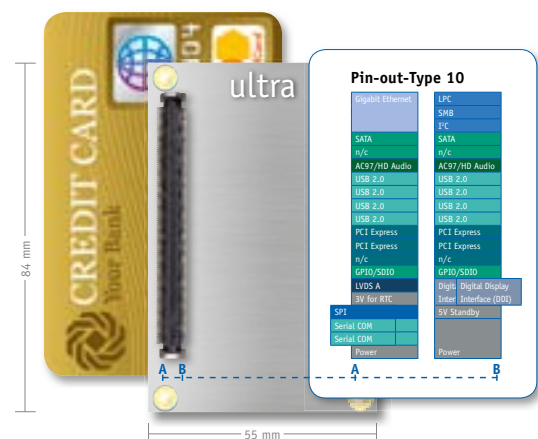


The Kontron nanoETXexpress Computer-on-Module design is compatible with the PICMG® defined COM Express® standard with respect to the Pin-out Type 1 and Pin-out Type 10. With a credit card sized footprint of a mere 55 mm x 84 mm, nanoETXexpress modules are ideal for ultra-mobile applications that require energy-saving x86 processor performance, high-end graphics, PCI Express and Serial ATA combined with longer battery life. The nanoETXexpress concept with its memory and storage on board is designed with the requirements of handheld devices for medical, transportation and for rugged environments in general as well as small mobile data systems in mind, not to mention a host of new applications that prior to now have not been possible due to size or power consumption limitations.

Advantages

- » Credit Card sized footprint (55 x 84 mm)
- » Based on COM Express® Pin-out Type 1 and pin-out Type 10
- » Serial ATA, for highspeed drives
- » Memory and FlashDrive on board
- » Long-term replacement for legacy small form factors

New Pin-out Type 10 added



COM Express® Pin-out Type 10 on ultra form factor

In the COM Express® Rev 2.0 specification, PICMG® defines the in total 7 pin-outs, while Type 1 is only suitable for ultra-small Computer-on-Modules like nanoETXexpress.

Based on pin-out Type 1, a new Type 10 was added which guarantees maximum of continuity and being prepared for future needs. In pin-out type 10, SATA ports 2 + 3 and PCI Express lanes 4 + 5 are now reserved pins for future usage.

As any ultra-small COMs haven't used 4 SATA ports nor all 6 PCI Express lanes, this is a good trade-off to be open for future need, USB 3.0 for example. In distinction to type 1, the new type 10 uses the former LVDS B and VGA to support the new DDI port. Digital Display Interface (DDI) is basically a multiplex port and enables to provides SDVO, DisplayPort, DVI or HDMI alternatively. Most important for industrial usage are serial COM ports which where added to Type 10, as well.

COM Express® compatible ultra-small



nanoETXexpress-SP



nanoETXexpress-TT

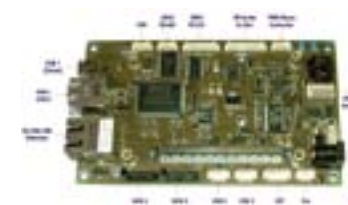
CPU	Intel® Atom™ Z510, Z530	Intel® Atom™ E6xx / E6xxT
CPU Clock	1.1 GHz up to 1.6 GHz	up to 1.6 GHz
Cache	32 KB Instruction Cache + 24 KB L1/512 kByte L2	32 KB Instruction Cache + 24 KB L1 Cache, 512 KB L2 Cache
Chipset	Intel® System Controller Hub US15W	Intel® Platform Controller Hub EG20 / EG20T
Bus Speed	400/533 MHz FSB	-
Memory	onboard up to 2 GB (DDR2)	onboard up to 2 GB DDR2-800
Hard Disk	1x onboard SSD up to 4 GByte, 1 SDIO port (shared with GPIO)	2x Serial ATA 300, 1x microSD-Card Slot on GPIO alternatively 1x Serial ATA 300, 1x SerialATA E2 SSD up to 8 GB
USB	USB 2.0, 8 ports (1 USB Client)	USB 2.0, 6 ports + USB Client port
PCI Express	1 PCIe x1 lane (opt. 2 PCIe x1 if no onboard LAN)	3x PCIe x1 lanes
Serial Ports	-	2x 2-wire TTL
Ethernet	Intel® 82574L Hartwell, 10/100/1000 MBit	MAC in Chipset integrated, Phy: Broadcom BCM54610, 10/100/1000 MBit
Sound	Intel® High Definition Audio	Intel® High Definition Audio
Graphics Controller	Integrated Intel® Graphics HDTV/HD capable, Decoder for MPEG2(HD)/H.264	Integrated 2D/3D Graphics Engine, Gfx Core 333/400 Mhz, shared VRAM, Video Encode : MPEG4, H.263, H.264 Video Decode : MPEG2, MPEG4, VC1, WMV9, H.264
Graphics Memory	up to 256 MB, DVMT	up to 352 MB
Display Interfaces	Single Chanel LVDS 18/24 Bit; WXGA 1366x768; SDVO (optional) up to 1920x1080	LVDS 18/24bit 1280x768@60Hz SDVO 1920x1080@50Hz
Power Management	ACPI 3.0	ACPI 3.0
Power Support	4.75 V – 14.7 V	4.75V – 14V
Form Factor	SFF size ultra: 84 x 55 mm COM Express® Pin-out Type 1	SFF size ultra: 84 x 55 mm COM Express® Pin-out Type 10
Temperature	Operation: 0°C to 60°C Storage: -30°C to 85°C	Operation: 0°C to +60°C Storage: -30°C to +85°C Commercial Temperature Range: 0°C to +60°C and Industrial Temperature Range (E2): -40°C to +85°C

Ready-to-run Starterkits

When you're ready to start evaluating the nanoETXexpress platform, make sure to place your order for one of the ready-to-run starter kits that comes complete with all needed accessories as well as a LCD display.



COM Express® Starterkit Type 1
incl. COM Express® compatible HMI Baseboard, display and more.



COM Express® HMI Baseboard
is designed to allow embedded application developers to get up and run quickly with the nanoETXexpress module platform, giving them a head start on the total system design.



COM Express® Baseboard Type 1
is designed to allow embedded application developers to get up and running quickly on the nanoETXexpress modular platform.

» The ETX® Solution «

ETX® 3.0
Long Term Support

ETX® Computer-on-Modules are the perfect solution for embedded applications that require full PC functionality and high performance CPUs. They support x86 CPUs from 500 MHz up to Intel® Core™ 2 Duo and offer a full complement of PC I/O such as keyboard, serial, parallel and Parallel ATA interfaces. The full-featured ETX® series also includes onboard USB, ethernet, graphics and sound. ETX® modules are installed on the applicationspecific carrier board much like an integrated circuit component, in a host site comprised of four low profile, surface mount connectors.

- » 2x Serial ATA support by connector area on the module
- » ETX® 3.0 is 100 percent backwards pin-to-pin compatible with previous ETX® standard revisions
- » No redesign needed for the ETX® carrier boards
- » Long Term Support

THE THERMAL CONCEPT

ETX® Heatspreader provides:

- » Identical mechanical size – all ETX® modules fit in the same system.
- » The only surface that needs cooling is the top of the heatspreader.
- » Additional active and passive Heatsinks are available.



ETX® Starterkit

- » Complete Starterkit for immediate evaluation purposes.
- » Includes all required hard- and software components for a quick start.
- » Choose your Module for the Starterkit.



ETX®



ETX®-LX



ETX®-CD



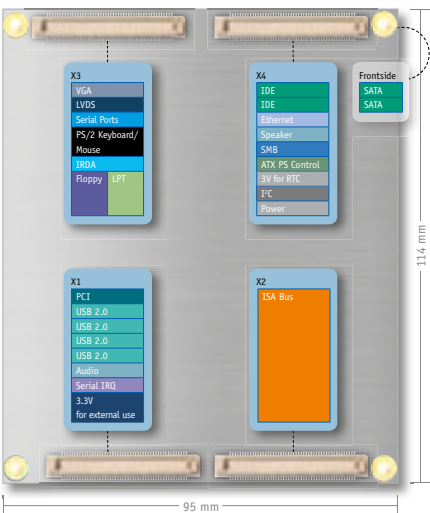
ETX®-DC

CPU	AMD Geode™ LX800	Intel® Core™ 2 Duo, Intel® Core™ Duo, Intel® Celeron® M	Intel® Atom™ N270
CPU Clock	500 MHz	1.06 GHz up to 2x 1.66 GHz	1.6 GHz
Cache	128 kB L2	up to 4 MB L2	512 kB L2
Chipset	AMD Geode™ CS5536 Companion Device	Intel® 945GME, ICH7M	Intel® 945GSE, ICH7M
Bus Speed	Geode™-Link	400/533/667 MHz	400/533 MHz
DRAM	up to 1 GB (DDR-RAM)	up to 2 GB (DDR2-RAM)	up to 2 GB (DDR2-RAM)
DRAM socket	1x DDR SO-DIMM up to 1 GB	1x DDR2 SO-DIMM socket up to 2 GB	1x DDR2 SO-DIMM socket up to 2 GB
SM Bus Support	yes	yes	yes
Flash Disk	CompactFlash™ Type II socket onboard	-	-
Hard Disk	2x Serial ATA (RAID 0,1), 1x PATA, 1x CompactFlash™ Type II socket on board	2x Serial ATA (AHCI), 1x PATA	2x Serial ATA (AHCI), 2x PATA
USB	USB 2.0, 4 ports	USB 2.0, 4 ports; opt. 6 ports	USB 2.0, 4 ports; opt. 6 ports
PCI Express	-	-	-
PCI	PCI 2.3, 32 bit / 33 MHz	PCI 2.3, 32 bit / 33 MHz	PCI 2.3, 32 bit / 33 MHz
USB Boot/Legacy Support	yes/yes	yes/yes	yes/yes
Ethernet	10/100 MBit	10/100 MBit	10/100 MBit
Ethernet Controller	Intel® 82551ER	Intel® 82562EZ	Intel® 82562V
Audio Controller	AL203 AC 97 Rev 2.3 compatible Codec	AC97, Codec Crystal CS4299	AC97, HDA Codec Realtek ALC888
Graphics Controller	LX800, integrated graphic processor	Intel® GMA 950	Intel® GMA 950
Graphics Memory	up to 254 MB UMA	up to 224 MB DVMT 3.0	up to 224 MB DVMT 3.0
Flat Panel Interface	JILI Interface (LVDS) or JIDI (digital) TTL-Interface	JILI-LVDS, SDVO	JILI-LVDS, SDVO
Power Management	ACPI 2.0, APM 1.2, S3 support	ACPI, APM 1.2, S3 support	ACPI, APM 1.2, S3 support
Temperature/Humidity	Operation: 0° to 60°C, Extended Temperature -25°C to 75°C on request	operation: 0° to 60°; Extended Temperature -25°C to 75°C on request	operation: 0° to 60°; Extended Temperature -25°C to 75°C on request
Power Consumption (typ.)	typ. Idle: 6.5 W @ AMD Geode™ LX800	typ. Idle 13.8 W @ Intel® Core™ 2 Duo L7400	typ. Idle ~10.5 W @ Intel® Atom™ N270
Dimensions H x W x D	95 x 114 mm	95 x 114 mm	95 x 114 mm

What about Intel® Pentium® M?

In 2010, Kontron discontinued Pentium® M products like ETX®-PM or ETX®-PM3. This is due to discontinuation of important chipsets Intel® 855xx and 852xx which were required by those Computer-on-Modules. However, Kontron offers several migration opportunities, for example ETX®-CD and ETX®-DC. The ETX®-DC is equipped with a

Intel® Atom™ N270 and meets most of the requirements Pentium® M solutions had – even real 24-bit LVDS is feasible. As a replacement for high-performance Pentium® M solutions, Kontron can offer ETX®-CD i.e. with Intel® Celeron® M440 or dual core Intel® Core™ Duo CPUs. Ask Kontron's Sales Team to assist you in Pentium® M migration.



» HMI & Displays «

The scalable product line of the HMI systems offers a wide range of processor capacities (up to Intel® Core Duo™) and display dimensions from 7.0" up to 19.0". The 100% industry-capable Panel PCs and displays meet the toughest industrial requirements concerning shock, vibration and temperature resistance. However specify your requirements, we supply you with semi- and full-customized Panel PCs and displays for your control and visualization applications.

- » High performance with embedded multi-core processor technology
- » Fanless cooling at maximum processor performance
- » Scalable display sizes
- » Closed cabinets for use in rugged environments

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» HMI – Human Machine Interface «



V Panel Express

Supreme computing performance with scaleable multi-core processors

- » High performance with embedded multi-core processor technology up to Intel® Core™ Duo processors
- » Ideal for running real time control and visualization simultaneously on one system or high-end rugged computing applications
- » Fanless cooling at maximum processor performance
- » Scaleable display size: 12“, 15“, 17“ and 19“

V Panel Express

The V Panel Express line based on ETXexpress / COM Express technology offers supreme computing performance at low power consumption. The integrated innovative cooling concept realizes a passive and fanless cooling for highest processor performance up to Intel® Core™ Duo processor technology. This allows critical

and highly complex realtime applications to run on one computer with almost twice the performance. The V Panel Express is ideal for running real time control and visualization simultaneously whereas previously these applications had to be run on two or more dedicated systems.

V Panel Express				
	V Panel Express 121	V Panel Express 150	V Panel Express 170	V Panel Express 190
Display	12.1"	15.0"	17.0"	19.0"
Resolution	800x600	1024x768	1280x1024	1280x1024
Brightness	350cd/m²	250cd/m²	250cd/m²	250cd/m²
Touch Screen	Resistive analog	Resistive analog	Resistive analog	Resistive analog
Front Bezel	Alu, Stainless steel optional	Alu, Stainless steel optional	Alu, Stainless steel optional	Alu, Stainless steel optional
Dimensions (Panelmount) H x W x D	312 x 380 x 163 mm	354 x 450 x 163 mm	399 x 461 x 168 mm	426 x 516 x 165 mm
Processor	up to Intel® Core™ Duo T2500	up to Intel® Core™ Duo T2500	up to Intel® Core™ Duo T2500	up to Intel® Core™ Duo T2500
Main Memory	up to 2 GByte	up to 2 GByte	up to 2 GByte	up to 2 GByte
I/Os	5x USB (1x front; 4x rear side), 1x LAN 10/100, 1x LAN 100/1000, 2x RS232, 1x DVI-I	5x USB (1x front; 4x rear side), 1x LAN 10/100, 1x LAN 100/1000, 2x RS232, 1x DVI-I	5x USB (1x front; 4x rear side), 1x LAN 10/100, 1x LAN 100/1000, 2x RS232, 1x DVI-I	5x USB (1x front; 4x rear side), 1x LAN 10/100, 1x LAN 100/1000, 2x RS232, 1x DVI-I
Free Slots	2x PCI	2x PCI	2x PCI	2x PCI
Internal Drives	optional 2x Compact Flash, 2x SATA HDD	optional 2x Compact Flash, 2x SATA HDD	optional 2x Compact Flash, 2x SATA HDD	optional 2x Compact Flash, 2x SATA HDD
Power Supply	24 VDC	24 VDC	24 VDC	24 VDC
Cooling	Fanless	Fanless	Fanless	Fanless
EMC	US: FCC47 CFR PART 15; Class A level CE: EN61000-6-2; EN55022/A (CISPR22)	US: FCC47 CFR PART 15; Class A level CE: EN61000-6-2; EN55022/A (CISPR22)	US: FCC47 CFR PART 15; Class A level CE: EN61000-6-2; EN55022/A (CISPR22)	US: FCC47 CFR PART 15; Class A level CE: EN61000-6-2; EN55022/A (CISPR22)
Approvals	CE, FCC, cULus	CE, FCC, cULus	CE, FCC, cULus	CE, FCC, cULus
Protection Class	IP 65 front (NEMA 250 type 12 and 13)	IP 65 front (NEMA 250 type 12 and 13)	IP 65 front (NEMA 250 type 12 and 13)	IP 65 front (NEMA 250 type 12 and 13)
Altitude	Operating: 10000 ft (3,048m) Storage: 15000 ft (4,622m)	Operating: 10000 ft (3,048m) Storage: 15000 ft (4,622m)	Operating: 10000 ft (3,048m) Storage: 15000 ft (4,622m)	Operating: 10000 ft (3,048m) Storage: 15000 ft (4,622m)
Shock DIN EN 60068-2-27	Operating: 15G, 11ms duration storage: 30G, 11ms duration (half-sinus)	Operating: 15G, 11ms duration storage: 30G, 11ms duration (half-sinus)	Operating: 15G, 11ms duration storage: 30G, 11ms duration (half-sinus)	Operating: 15G, 11ms duration storage: 30G, 11ms duration (half-sinus)
Vibration DIN EN 60068-2-6	Operating: 10-500 Hz: 1G / 3 axis Storage: 10-500 Hz: 2G / 3 axis	Operating: 10-500 Hz: 1G / 3 axis Storage: 10-500 Hz: 2G / 3 axis	Operating: 10-500 Hz: 1G / 3 axis Storage: 10-500 Hz: 2G / 3 axis	Operating: 10-500 Hz: 1G / 3 axis Storage: 10-500 Hz: 2G / 3 axis
MTBF	> 40000 h *	> 40000 h *	> 40000 h *	> 40000 h *
Verified OS	Windows XP, Windows XP Embedded, Linux, Linux Embedded	Windows XP, Windows XP Embedded, Linux, Linux Embedded	Windows XP, Windows XP Embedded, Linux, Linux Embedded	Windows XP, Windows XP Embedded, Linux, Linux Embedded
Temperature/Humidity	Operating: 0° to +50°C / 20 to 85% non condensing Storage: -20° to +60°C / 5 to 95% non condensing	Operating: 0° to +50°C / 20 to 85% non condensing Storage: -20° to +60°C / 5 to 95% non condensing	Operating: 0° to +50°C / 20 to 85% non condensing Storage: -20° to +60°C / 5 to 95% non condensing	Operating: 0° to +50°C / 20 to 85% non condensing Storage: -20° to +60°C / 5 to 95% non condensing

* excl. the Backlight Tube

Micro Client IIA

The fanless and scalable Kontron Micro Client IIA is equipped with Intel® Atom™ processor 1.6 GHz with low TDP (Thermal Design Power) which enables a passive and fanless cooling. By focusing on the intended use as an industrial thin client including touch functionality for operating and monitoring, the new Kontron Micro Client IIA provides all the latest features required for thin client oriented HMI applications in a cost-optimized design that

includes a modular IP65 protected front panel with touch screen. The Kontron Micro Client IIA can be implemented with either SATA, CompactFlash or Ethernet boot functionality. This makes it the perfect fit for all common serverorientated HMI client technologies. Shock and vibration resistance, thermal stability and compliance with the strictest EMC standards are standard features for all Micro Clients.

Micro Client IIA					
					
	Micro Client IIA 70	Micro Client IIA 104	Micro Client IIA 121	Micro Client IIA 150	Micro Client IIA 170
Display	7.0" TFT	10.4" TFT	12.1" TFT	15.0" TFT	17.0" TFT
Resolution	800x480	800x600	800x600	1024x768	1280x1024
Brightness	330cd/m²	230cd/m²	400cd/m²	350cd/m²	380cd/m²
Touch Screen	Resistive analog	Resistive analog	Resistive analog	Resistive analog	Resistive analog
Dimensions (Panelmount) H x W x D	168 x 235 x 49 mm	277 x 348 x 50 mm	312 x 380 x 55 mm	354 x 450 x 56 mm	399 x 461 x 56 mm
Colour (Front)	black RAL 911	black (Pantone 433c)	black (Pantone 433c)	black (Pantone 433c)	black (Pantone 433c)
Mounting	Panelmount + VESA opt.	Panelmount + VESA opt.	Panelmount + VESA opt.	Panelmount + VESA opt.	Panelmount + VESA opt.
Processor	Intel® Atom™ 1.6 GHz	Intel® Atom™ 1.6 GHz	Intel® Atom™ 1.6 GHz	Intel® Atom™ 1.6 GHz	Intel® Atom™ 1.6 GHz
Main Memory	up to 2 GB	up to 2 GB	up to 2 GB	up to 2 GB	up to 2 GB
I/Os	2x USB, 2x LAN10/100/1000, 1x RS232, 1x RS232/RS422/RS485 opt.	2x USB rear, 1x USB front, 2x LAN10/100/1000, 1x RS232, 1x RS232/RS422/RS485 opt.	2x USB rear, 1x USB front, 2x LAN10/100/1000, 1x RS232, 1x RS232/RS422/RS485 opt.	2x USB rear, 1x USB front, 2x LAN10/100/1000, 1x RS232, 1x RS232/RS422/RS485 opt.	2x USB rear, 1x USB front, 2x LAN10/100/1000, 1x RS232, 1x RS232/RS422/RS485 opt.
Field Buses	CAN bus and additional field buses optional	CAN bus and additional field buses optional	CAN bus and additional field buses optional	CAN bus and additional field buses optional	CAN bus and additional field buses optional
Internal Drives	Compact Flash	Compact Flash and/or 2.5" HDD	Compact Flash and/or 2.5" HDD	Compact Flash and/or 2.5" HDD	Compact Flash and/or 2.5" HDD
Power Supply	12 - 24 VDC	12 - 24 VDC	12 - 24 VDC	12 - 24 VDC	12 - 24 VDC
Cooling	Fanless	Fanless	Fanless	Fanless	Fanless
EMC	US: FCC47 CFR PART 15; Class A level CE: EN61000-6-2 EN55022/A (CISPR22)	US: FCC47 CFR PART 15; Class A level CE: EN61000-6-2 EN55022/A (CISPR22)	US: FCC47 CFR PART 15; Class A level CE: EN61000-6-2 EN55022/A (CISPR22)	US: FCC47 CFR PART 15; Class A level CE: EN61000-6-2 EN55022/A (CISPR22)	US: FCC47 CFR PART 15; Class A level CE: EN61000-6-2 EN55022/A (CISPR22)
Approvals	CE, cULus	CE, cULus	CE, cULus	CE, FCC, cULus	CE, cULus
Protection Class	IP 65 front	IP 65 front	IP 65 front	IP 65 front	IP 65 front
Altitude	Operating: 10.000 ft (3,048 m); storage: 15.000 ft (4,622 m)	Operating: 10.000 ft (3,048 m); storage: 15.000 ft (4,622 m)	Operating: 10.000 ft (3,048 m); storage: 15.000 ft (4,622 m)	Operating: 10.000 ft (3,048 m); storage: 15.000 ft (4,622 m)	Operating: 10.000 ft (3,048 m); storage: 15.000 ft (4,622 m)
Shock DIN EN 60068-2-27	Operating: 15G, 11ms duration Storage: 50G, 11ms duration (half-sinus)	Operating: 15G, 11ms duration Storage: 50G, 11ms duration (half-sinus)	Operating: 15G, 11ms duration Storage: 50G, 11ms duration (half-sinus)	Operating: 15G, 11ms duration Storage: 50G, 11ms duration (half-sinus)	Operating: 15G, 11ms duration Storage: 50G, 11ms duration (half-sinus)
Vibration DIN EN 60068-2-6	Operating: 10-500 Hz: 1G / 3 axis Storage: 10-500 Hz: 2G / 3 axis	Operating: 10-500 Hz: 1G / 3 axis Storage: 10-500 Hz: 2G / 3 axis	Operating: 10-500 Hz: 1G / 3 axis Storage: 10-500 Hz: 2G / 3 axis	Operating: 10-500 Hz: 1G / 3 axis Storage: 10-500 Hz: 2G / 3 axis	Operating: 10-500 Hz: 1G / 3 axis Storage: 10-500 Hz: 2G / 3 axis
MTBF	> 40.000 h*	> 40.000 h*	> 40.000 h*	> 40.000 h*	> 40.000 h*
Verified OS	Windows XP Embedded, CE, Linux Embedded	Windows XP Embedded, CE, Linux Embedded	Windows XP Embedded, CE, Linux Embedded	Windows XP Embedded, CE, Linux Embedded	Windows XP Embedded, CE, Linux Embedded
Temperature/Humidity	Operating: 0° to +50°C / 20 to 90% non condensing Storage: -20° to +60°C / 5 to 90% non condensing	Operating: 0° to +50°C / 20 to 90% non condensing Storage: -20° to +60°C / 5 to 90% non condensing	Operating: 0° to +50°C / 20 to 90% non condensing Storage: -20° to +60°C / 5 to 90% non condensing	Operating: 0° to +50°C / 20 to 90% non condensing Storage: -20° to +60°C / 5 to 90% non condensing	Operating: 0° to +50°C / 20 to 90% non condensing Storage: -20° to +60°C / 5 to 90% non condensing

* excl. the Backlight Tube

Pico Client

Cost conscious HMI for rugged environments

- » Compact space saving Panel PC
- » Fanless cooling
- » Resistive touchscreen 5.7"
- » Front IP 65 protected
- » Designed for visualization operation and control tasks in machines, systems and buildings

The ARM 9 based Pico Client is a robust human machine interface perfectly suited for applications in automation as well as in building management systems. The cost conscious HMI is designed exclusively for visualization, operation and control tasks in machines, systems and buildings. The new Pico Client provides all features required for HMI applications in a cost-optimized design that includes an IP65 protected front panel with touch screen. Shock and vibration resistance, thermal stability and compliance with the strictest EMC standards are standard features for the new Pico Client.

Pico Client	
	Pico Client
Display	5.7" TFT
Resolution	640x480
Brightness	400cd/m²
Touch Screen	Resistive analog
Dimensions (H x W x D)	156 x 212 x 50 mm
Weight	ca. 0.6 kg
Colour	Front black (Pantone 433c), housing RAL 7035
Mounting	Panelmount
Processor	ARM 926EJ-S / 200MHz
RAM	32 MByte, 16Mbyte flash, 16Kbyte SRAM battery buffered
I/O Standard	2x LAN 10/100, 1x RS232/RS485, 1x USB1.1 Client
Internal Drives	SD/MMC
Power Supply	24 VDC
Cooling	Fanless
EMC	US: FCC47 CFR PART15; Class A level CE: EN61000-6-2; EN55022 / A (CISPR22)
Certifications	CE, cULus, EN/UL60950-1
Protection Class	Front IP65, housing IP20
Altitude	Operating: 10000 ft (3.048m); Storage: 15000 ft (4.622m)
Shock DIN EN 60068-2-27	Operating: 15 g 11 ms duration / Storage: 30G, 11ms duration (half-sinus)
Vibration DIN EN 60068-2-6	Operating: 10-500 Hz: 1G/3 axis / Storage: 10-500 Hz: 2G/3 axis
MTBF	> 40000 h
Verified OS	Windows® CE 5.0
Temperature/Humidity	Operating: 0° C to +50° / 20 to 85% non condensing; Storage: -20° C to +60° / 5 to 95% non condensing

Nano Client

Rugged Fanless HMI

The Nano Client offers stainless steel housing (IP66 around) and fanless cooling.

- » Closed cabinet (stainless steel, IP66 around)
- » Fanless cooling
- » Ideally designed for use as a web client / thin client in rugged environments
- » Low power management with Intel® Atom™ processor up to 1.6 GHz
- » Compact space saving systems with max. 63 mm depth

Kontron’s Nano Clients are robust and cost conscious human machine interfaces. With stainless steel housing and all around protection in IP66, the Nano Client is perfectly suited as a client device in rugged environments. Intel’s® Atom™ processor with low TDP (Thermal Design Power) enables a passive and fanless cooling in combination with a closed cabinet.

The Nano Clients are scaleable in processor performance to suit individual requirements and applications. Whether as a thin client, a web client, a user terminal or as a controller, a wide variety of requirements can be realized quickly and inexpensively using these rugged, low power HMI systems.



Nano Client

Nano Client 104

Nano Client 150

Display	10.4" TFT	15.0" TFT
Resolution	800x600	1024x768
Brightness	230cd/m²	350cd/m²
Touch Screen	Resistive analog	Resistive analog
Dimensions (H x W x D)	230 x 292 x 56 mm	299 x 384 x 63 mm
Housing	Stainless steel	Stainless steel
Weight	ca. 3.5 kg	ca. 6 kg
Mounting	VESA 75	VESA 100
Processor	Intel® Atom™ processor up to 1.6 GHz	Intel® Atom™ processor up to 1.6 GHz
RAM	up to 1 GByte	up to 1 GByte
I/O Standard	USB, LAN 10/100/1000	USB, LAN 10/100/1000
Internal Drives	Compact Flash	Compact Flash
Power Supply	24 VDC	24 VDC
Cooling	Fanless	Fanless
EMC	US: FCC47 CFR PART15; Class A level CE: EN61000-6-2; EN55022 / A (CISPR22)	US: FCC47 CFR PART15; Class A level CE: EN61000-6-2; EN55022 / A (CISPR22)
Certifications	CE, designed to meet cULus	CE, designed to meet cULus
Protection Class	IP66 all around	IP66 all around
Altitude	Operating: 10000 ft (3.048m); Storage: 15000 ft (4.622m)	Operating: 10000 ft (3.048m); Storage: 15000 ft (4.622m)
Shock DIN EN 60068-2-27	Operating: 15 g 11 ms duration / Storage: 50G, 11ms duration (half-sinus)	Operating: 15 g 11 ms duration / Storage: 50G, 11ms duration (half-sinus)
Vibration DIN EN 60068-2-6	Operating: 10-500 Hz: 1G/3 axis / Storage: 10-500 Hz: 2G/3 axis	Operating: 10-500 Hz: 1G/3 axis / Storage: 10-500 Hz: 2G/3 axis
MTBF	> 40000 h*	> 40000 h*
Verified OS	Windows XP Embedded, CE, Linux Embedded	Windows XP Embedded, CE, Linux Embedded
Temperature/Humidity	Operating: 0 °C to +45 °C / 20 to 90% non condensing Storage: -20 °C to +65 °C / 5 to 90% non condensing	Operating: 0 °C to +45 °C / 20 to 90% non condensing Storage: -20 °C to +65 °C / 5 to 90% non condensing

* excl. the Backlight Tube

Medi Client IIA

Panel PC for Medical Equipment OEMs

- » EN 60601-1 compliant
- » Robust, light and easy-to-clean plastic housing
- » Fanless cooling
- » Low power management with Intel® Atom™ processor up to 1.6 GHz

Kontron’s Medi Client IIA offers medical OEMs a highly reliable platform with flexible mounting options and the longevity required by the medical industry. The touch screen of the medical Panel PC offers sharp graphics on a high contrast TFT display. The front panel of the medical Panel PC offers IP65 protection. The extremely tough and light plastic housing (ABS UL94V0) is scratch proof,

corrosion resistant and chemical resistant for long life and easy cleaning. VESA arm mounting makes the Kontron Medi Client IIA easy to integrate for a wide spectrum of cost-sensitive OEM medical applications that require sharp graphics and intuitive user interfaces in a space-saving, robust design. The Kontron Medi Client IIA is equipped with Intel® Atom™ processor 1.6 GHz. The dual Ethernet (10/100/1000), dual USB2.0 and serial (RS232 opt. RS422/RS485) interfaces making it the ideal Panel PC for a wide range of medical applications. With its low power consumption and low heat dissipation, the new Medi Client IIA is also perfectly suited for mobile, battery driven all-in-one Point-of-Care applications, such as mobile nursing stations and bedside terminals in hospitals or health centers.



Medi Client IIA

Medi Client IIA104

Medi Client IIA150

Display	10.4" TFT	15.0" TFT
Resolution	800x600	1024x768
Brightness	230cd/m²	350cd/m²
Touch Screen	Resistive analog	Resistive analog
Dimensions (H x W x D)	226 x 296 x 58.5 mm	286 x 363 x 62 mm
Weight	ca. 2.2 kg	ca. 3.3 kg
Colour (Front)	signal white (RAL 9003)	signal white (RAL 9003)
Mounting	VESA 75	VESA75/100
Processor	Intel® Atom™ 1.6 GHz	Intel® Atom™ 1.6 GHz
RAM	up to 2 GB	up to 2 GB
I/O Standard	2x USB, 2x LAN 10/100/1000, 1x RS232 (RS422/RS485 optional)	2x USB, 2x LAN 10/100/1000, 1x RS232 (RS422/RS485 optional)
Field Buses	-	CAN bus optional
Internal Drives	Compact Flash + HDD opt.	Compact Flash + HDD opt.
Power Supply	12 - 24 VDC	12 - 24 VDC
Cooling	Fanless	Fanless
EMC	US: FCC47 CFR PART15 Class B, CE: EN60601-1-2; EN61000-6-2; EN55022/EN55011 Class B	US: FCC47 CFR PART15 Class B, CE: EN60601-1-2; EN61000-6-2; EN55022/EN55011 Class B
Certifications	CE, cULus, EN 60601-1 compliant	CE, cULus, EN 60601-1 compliant
Protection Class	Mechanical: IPX1, IP65 front; Electrical Safety: Class II	Mechanical: IPX1, IP65 front; Electrical Safety: Class II
Altitude	Operating: 10000 ft (3.048m), Storage: 15000 ft (4.622m)	Operating: 10000 ft (3.048m), Storage: 15000 ft (4.622m)
Shock DIN EN 60068-2-27	Operating: 15 g 11 ms duration, Storage: 30G, 11ms duration (half-sinus)	Operating: 15 g 11 ms duration, Storage: 30G, 11ms duration (half-sinus)
Vibration DIN EN 60068-2-6	Operating: 10-500 Hz: 1G/3 axis, Storage: 10-500 Hz: 2G/3 axis	Operating: 10-500 Hz: 1G/3 axis, Storage: 10-500 Hz: 2G/3 axis
MTBF	> 40000 h*	> 40000 h*
Verified OS	Windows XP Embedded, CE, Linux Embedded	Windows XP Embedded, CE, Linux Embedded
Temperature/Humidity	Operating: 0 °C to +40 °C / 20 to 85% non condensing Storage: -20 °C to +60 °C / 5 to 95% non condensing	Operating: 0 °C to +40 °C / 20 to 85% non condensing Storage: -20 °C to +60 °C / 5 to 95% non condensing

* excl. the Backlight Tube

Rugged HMI Display Computer for Transportation (HMITR)

Features EN50155 Compliant Panel
Does your control system require a graphical user interface? Is it exposed to shock/vibration, extreme temperatures, harsh environments? If the answer is yes, Kontron's Rugged Panel Computer HMITR is the solution!

Powerful and rugged
Heart of the robust, fanless system is a performant x86 processor ensuring excellent processing power, low power consumption and the ability to operate in extended temperature ranges. The complete system is certified according to the EN50155 ensuring safe deployment in trains.

Effective
Featuring a IP54 (splash guard) 10,4 TFT display with touch foil or hard keys, the Panel is a perfect choice for Human Machine Interfaces (HMI) in harsh environments.

Comprehensive Featureset
With 2 Fast Ethernet, 2 serial interfaces, 2 USB ports, maintenance interface and a Flash socket, all necessary interfaces are present. Features like a real time clock, watchdog and temperature sensor round up the comprehensive feature set.

HMITR		
		
	HMITR-Touch	HMITR-UIC keyboard
Mounting	Front Panel mounting	Front Panel mounting
Weight	approx. 3 KG	approx. 3 KG
RAM	up to 2 GByte	up to 2 GByte
Display	10.4" TFT	10.4" TFT
Resolution	800x600	800x600
Brightness	600 cd/m²	600 cd/m²
I/O Standard	USB, LAN 10/100/1000, serial, CAN, Digital IO, Audio	USB, LAN 10/100/1000, serial, CAN, Digital IO, Audio
Touch Screen	Projected capacitive	Keyboard according UIC612-01
Dimensions (H x W x D)	310 x 214 x 95 mm	310 x 214 x 95 mm
Processor	Intel® Atom™ E660T, 1.3 GHz	Intel® Atom™ E660T, 1.3 GHz
Internal Drives	SSD or SD card	SSD or SD card
Power Supply	24 VDC, 110 VDC optional	24 VDC, 110 VDC optional
Cooling	Fanless	Fanless
EMC	EN50155	EN50155
Protection Class	IP54 front, IP20 rear	IP54 front, IP20 rear
Certifications	CE, designed to meet EN50155 Railway	CE, designed to meet EN50155 Railway
Altitude	Operating: 10000 ft (3.048m); Storage: 15000 ft (4.622m)	Operating: 10000 ft (3.048m); Storage: 15000 ft (4.622m)
Shock DIN EN 60068-2-27	according EN50155	according EN50155
Vibration DIN EN 60068-2-6	according EN50155	according EN50155
MTBF	Display > 70.000 h	Display > 70.000 h
Verified OS	Fedora Linux, Windows XP Embedded	Fedora Linux, Windows XP Embedded
Housing	Front Alu anodized, rear zink plated steel	Front Alu anodized, rear zink plated steel
Temperature/Humidity	Operating: -30 °C to +70 °C / 20 to 90% non condensing Storage: -30 °C to +80 °C / 5 to 90% non condensing	Operating: -30 °C to +70 °C / 20 to 90% non condensing Storage: -30 °C to +80 °C / 5 to 90% non condensing

KFM

The KFM series of 15", 19" and 21" LCD monitors is fully certified and specially designed for industrial applications. The KFM's ample display area can present vivid and precise images for your HMI. The front accessible on-screen-display function allows users to adjust images with ease. The optional touch-screen gives you access to your system.

All KFM monitors offer as standard:
VGA and DVI and S-Video and Composite Video inputs.

- Four Inputs:**
- » VGA
 - » DVI
 - » S-Video
 - » Composite Video

KFM			
	KFM15_e	KFM19_e	KFM21_e
Display	15.1" XGA	19.0" SXGA	21.3" UXGA
Viewing angle L R U D	75, 75, 50, 75	85, 85, 85, 85	85, 85, 85, 85
Brightness	350 cd/m²	300 cd/m²	250 cd/m²
Touch Screen	resistive analog optional	resistive analog optional	resistive analog optional
Dimensions H x W x D	Panelmount: 334 x 450 x 63 mm Rack Mount: 311 x 483 x 63 mm	Panelmount: 431 x 483 x 75 mm Rack Mount: 400 x 483 x 75 mm	Panelmount: 444 x 559 x 87 mm
Mounting	Panel Mount / Rack Mount	Panel Mount / Rackmount	Panel Mount
Construction	Anti-corrosion heavy duty steel EN 10215-DX 51D+AZ 150-A-C	Anti-corrosion heavy duty steel EN 10215-DX 51D+AZ 150-A-C	Anti-corrosion heavy duty steel EN 10215-DX 51D+AZ 150-A-C
Interface	VGA SUB-D, DVI, S-Video, Composite Video	VGA SUB-D, DVI, S-Video, Composite Video	VGA SUB-D, DVI, S-Video, Composite Video
Power Supply	24 V DC integrated, AC integrated	24 V DC integrated, AC integrated	230 V AC integrated
Cooling	Fanless	Fanless	Fanless
OSD	yes	yes	yes
Control Panel Indicators	Power LED	Power LED	Power LED
Control Panel Switch	Power On/Off	Power On/Off	Power On/Off
Altitude	10.000 ft	10.000 ft	10.000 ft
Options (Fully Certified with System)	resistive analog optional	resistive analog optional	resistive analog optional
Shock DIN EN 60068-2-27	15 g 11 ms half sine	15 g 11 ms half sine	15 g 11 ms half sine
Vibration DIN EN 60068-2-6	10 - 58 Hz +- 0.075 mm, 58 - 500 Hz 1g	10 - 58 Hz +- 0.075 mm, 58 - 500 Hz 1g	10 - 58 Hz +- 0.075 mm, 58 - 500 Hz 1g
MTBF	> 40.000 h*	> 40.000 h*	> 40.000 h*
Weight	~ 5.6 kg	~ 9.6 kg	~ 10 kg
Temperature/Humidity	Operating: 0 °C to +50 °C / 20 to 85% non condensing Storage: -20 °C to +60 °C / 5 to 95% non condensing	Operating: 0 °C to +50 °C / 20 to 85% non condensing Storage: -20 °C to +60 °C / 5 to 95% non condensing	Operating: 0 °C to +50 °C / 20 to 85% non condensing Storage: -20 °C to +60 °C / 5 to 95% non condensing

* excl. the Backlight Tube

» Systems & Platforms «

Kontron offers designers of application platforms a broad variety of industrial rack mount computers, enclosures and chassis based on Kontron’s wide range of industrial standards for computer platforms. Using our platforms all Kontron solutions are easy to scale and adoptable even to challenging customer requirements.

- » High performance with latest embedded multi-core processor technology
- » Flexible cooling at maximum processor performance
- » Scalable system size and performance
- » Optimized for use in harsh environments

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» Industrial Rack Mount Systems «



Multifunctional Kontron Industrial Silent Server – KISS

Kontron offers a large array of Intel® based Industrial PC Rack Mount platforms around two core architectures: passive backplane (SBC) and motherboard. The benefits of the passive backplane are its ability to support a greater number and combination of ISA / PCI and PCI Express expansion slots (up to 14) and to offer longer life cycles, which can be greater than 5 years.

Advantages

- » Low noise design
- » Configurable with pre-verified options
- » Long life time support >5 years
- » Newest processor architectures
- » Designed for high reliability and easy maintainability
- » Shock proof rugged design
- » Excellent thermal design
- » Hot swap chassis fans



Also available
in various colors!

4U Rack Mount Systems

The Kontron KISS 4U system series is designed for continuous high-reliability operation and low total cost of ownership in harsh environments. KISS 4U systems combine very high computing performance with individual system function settings. This

combination is ideally suited for embedded applications, such as medical and military imaging, signal processing, transportation and test and measurement systems.

4U Rack Mount Systems



KISS 4U Q57 ATX



KISS 4U KTQ45 ATX



KISS 4U KTC5520



KISS 4U KTC5520 TR

Construction	Anti-corrosion and long term stable heavy duty steel EN 10215-DX 51D+AZ 150-A-C	Anti-corrosion and long term stable heavy duty steel EN 10215-DX 51D+AZ 150-A-C	Anti-corrosion and long term stable heavy duty steel EN 10215-DX 51D+AZ 150-A-C	Anti-corrosion and long term stable heavy duty steel EN 10215-DX 51D+AZ 150-A-C
Mounting	19" Rack Mount, Desk Top, Tower	19" Rack Mount, Desk Top, Tower	19" Rack Mount, Desk Top, Tower	19" Rack Mount
Paint Color	Flap blue, Body black, others on request (black flap is standard in NA)	Flap blue, Body black, others on request (black flap is standard in NA)	Flap blue, Body black, others on request (black flap is standard in NA)	Flap blue, Body black, others on request (black flap is standard in NA)
Weight	~ 15 kg	~ 15 kg	~ 15 kg	~ 15 kg
Control Panel Indicators	Power LED and HDD LED (others on request)	Power LED and HDD LED (others on request)	Power LED and HDD LED , SYSID,	Power LED and HDD LED , SYSID,
Control Panel Switch	ATX Power	ATX Power	ATX Power, SYSID	ATX Power, SYSID
CPU	Intel® i3-540, Intel® i5-660, Intel® i7-860	Intel® E8400, Intel® QUAD Core Q9400	Intel® Xeon® Processor E5540, Intel® Xeon® Processor 5540, Intel® Xeon® Processor E5645	Intel® Xeon® Processor E5540, Intel® Xeon® Processor 5540, Intel® Xeon® Processor E5645
Front Side Bus	800/1066/1333 MHz	800/1066/1333 MHz	1333 MHz	1333 MHz
DRAM	Up to 8 GB DDR 3	Up to 8 GB DDR 3	Up to 96 GB DDR3 Registered ECC	Up to 96 GB DDR3 Registered ECC
I/O Standard	2x USB 2.0 Front side	2x USB 2.0 Front side	2x USB 2.0 Front side	2x USB 2.0 Front side
I/Os	Rear I/Os: 3x RS232, 1x RS485, VGA, Audio, 8x USB 2.0, PS/2 M+K, 2x LAN 10/100/1000	Rear I/Os: 3* RS232, 1x RS485, VGA, Audio, 8* USB 2.0, PS/2 M+K, 2* LAN 10/100/1000	Rear I/Os: 2x GB LAN, 4x USB 2.0, PS/2 Mouse and Keyboard, VGA, Sound, 1x RS232C	Rear I/Os: 2x GB LAN, 4x USB 2.0, PS/2 Mouse and Keyboard, VGA, Sound, 1x RS232C
Drives	accessible: 3x 5.25", 2x 3.5", 1x internal 3.5", KISS Store	accessible: 3x 5.25", 2x 3.5", 1x internal 3.5", KISS Store	accessible: 2x 5.25", 1x Slim Bay	accessible: 2x 5.25", 1x Slim Bay
System Monitoring	By PCCM	By PCCM	KVM over IP and Remote Management; IPMI v2.0	KVM over IP and Remote Management; IPMI v2.0
Expansion Slots	2x PCI 32 bit, 2x PCI_e x1, 1x PCI_e x16, 1x PCI_e x4	4x PCI 32 bit, 1x PCI_e x16, 1x PCI_e x4	1x PCI 32 Bit, 1x PCIe 2.0 x8 using x16 slot, 3x PCIe 2.0 x8, 1x PCI_e x4 using x8 Slot	1x PCI 32 Bit, 1x PCIe 2.0 x8 using x16 slot, 3x PCIe 2.0 x8, 1x PCI_e x4 using x8 Slot
Power Supply	AC wide range 400W (80+), AC wide range 650W (80+), 24 V DC, 48 V DC, AC redundant	AC wide range 400W (80+), AC wide range 650W (80+), 24 V DC, 48 V DC, AC redundant	AC 650 W wide range (80+) AC redundant 500 W	AC redundant 500 W
Cooling	2x Hot Swap Chassis Fans ultra low noise	2x Hot Swap Chassis Fans ultra low noise	3x Hot Swap Chassis Fans ultra low noise	3x Hot Swap Chassis Fans ultra low noise
Approvals	CE designed to meet UL	CE designed to meet UL	CE designed to meet UL	Certified for transportation use**
Protection Class	IP 20 optional IP 52	IP 20 optional IP 52	IP 20 optional IP 52	IP 20 optional IP 52
Options (Fully Certified with System)	KISS Stor 1 or KISS Stor 0/5 RAID Subsystem, Slide Rails	KISS Stor 1 or KISS Stor 0/5 RAID Subsystem, Slide Rails	8x 2.5" SAS HDDs, KISS Stor 1 or KISS Stor 0/5 RAID Subsystem, Slide Rails	KISS Stor 1 or KISS Stor 0/5 RAID Subsystem, KISS DA xxx, Slide Rails
Altitude	0 - 3000 m (0 - 10.000 ft) operating	0 - 3000 m (0 - 10.000 ft) operating	0 - 3000 m (0 - 10.000 ft) operating	0 - 3000 m (0 - 10.000 ft) operating
Shock DIN EN 60068-2-27	operating: 15G, 11 ms 6 axis	operating: 15G, 11 ms 6 axis	operating: 15G, 11 ms 6 axis	operating: 15G, 11 ms 6 axis
Vibration DIN EN 60068-2-6	operating: 10 - 500 Hz 1G	operating: 10 - 500 Hz 1G	operating: 10 - 500 Hz 1G	operating: 10 - 500 Hz 1G
Humidity rel.	operating: 5 - 95% rel non condensing	operating: 5 - 95% rel non condensing	operating: 5 - 95% rel non condensing	operating: 5 - 95% rel non condensing
Operating System	WIN 7 (32 bit and 64 bit), WIN XP, Linux	WIN 7 (32 bit and 64 bit), WIN XP, Linux	WIN Server 2008, Red Hat Enterprise Linux 64 bit	WIN Server 2008, Red Hat Enterprise Linux 64 bit
MTBF	50.000 h at 25°C (77°F)*	50.000 h at 25°C (77°F)*	50.000 h at 25°C (77°F)*	50.000 h at 25°C (77°F)*
Noise	< 35 dB at 25°C (77°F)	< 35 dB at 25°C (77°F)	~ 40 dB at 25°C (77°F)	~ 40 dB at 25°C (77°F)
Dimensions H x W x D	4U x 19" x 472 mm (18.58inch)	4U x 19" x 472 mm (18.58inch)	4U x 19" x 472 mm (18.58inch)	4U x 19" x 472 mm (18.58inch)
Operating Temperature	0°C to 50°C (32°F-122°F)	0°C to 50°C (32°F-122°F)	0°C to 45°C (32°F-11°F)	0°C to 45°C (32°F-11°F)

* Excluding FANS

** EN 50155:2001+A1:2002+ Corrigendum 2003, EN 50212-3-2:2006, DIN EN 60068-2-1:2008-01 Cold DIN EN 60068-2-2:2008-05 Dry heat DIN EN 60068-2-27:2010-02 Shock DIN EN 60068-2-30:2006-06 Damp heat, cyclic ,DIN EN 60068-2-64:2009-04 Vibration, broad-band random,D

Further 4U Rack Mount Systems »

The KISS 4U series is 4U (7 inches) tall and 18.11 inches deep and provides sufficient space, power and cooling for high performance graphics cards in a minimal footprint. Each KISS 4U series system has also been designed with flexibility in mind. Be

sure to review the downloadable ordering guides for each product to see the configuration options available for your geography. Kontron life cycle management enables 5-7 years of KISS system longevity.

Further 4U Rack Mount Systems

»

4U Rack Mount Systems				
				
	KISS 4U PCI 759	KISS 4U PCI 760	KISS 4U PCI 760 MIL-STD	KISS 4U PCI 761
Construction	Anti-corrosion and long term stable heavy duty steel EN 10215-DX 51D+AZ 150-A-C	Anti-corrosion and long term stable heavy duty steel EN 10215-DX 51D+AZ 150-A-C	Anti-corrosion and long term stable heavy duty steel EN 10215-DX 51D+AZ 150-A-C	Anti-corrosion and long term stable heavy duty steel EN 10215-DX 51D+AZ 150-A-C
Mounting	19" Rack Mount, Desk Top, Tower	19" Rack Mount, Desk Top, Tower	19" Rack Mount	19" Rack Mount, Desk Top, Tower
Paint Color	Flap blue, Body black, others on request (black flap is standard in NA)	Flap blue, Body black, others on request (black flap is standard in NA)	Body black, others on request	Flap blue, Body black, others on request (black flap is standard in NA)
Weight	~ 15 kg	~ 15 kg	~ 15 kg	~ 15 kg
Control Panel Indicators	Power LED and HDD LED (others on request)	Power LED and HDD LED (others on request)	Power LED and HDD LED (others on request)	Power LED and HDD LED (others on request)
Control Panel Switch	ATX Power	ATX Power	ATX Power	ATX Power
CPU	Intel® Core™2 Duo E4300, E6400	Intel® Core™2 Duo E4300, E6400, Quad Core Q9400	Intel® Core™2 Duo E4300, E6400, Quad Core Q9400	Intel® i3-540,Intel® i5-660, Intel® i7-860
Front Side Bus	1066/800/533 MHz	1333/1066/800 MHz	1333/1066/800 MHz	1333/1066/800 MHz
DRAM	Up to 4 GByte DDR2	Up to 8 GByte DDR2	Up to 8 GByte DDR2	Up to 8 GByte DDR2
I/O Standard	2x USB 2.0 Front side	2x USB 2.0 Front side	2x USB 2.0 Front side	2x USB 2.0 Front side
I/Os	2x LAN 10/100/1000, VGA, PS/2 Mouse and keyboard, 2x COM RS232C, 6x USB 2.0	2x LAN 10/100/1000, VGA, PS/2 Mouse and keyboard, 2x COM RS232C, 6x USB 2.0	2x LAN 10/100/1000, VGA, PS/2 Mouse and keyboard, 2x COM RS232C, 6x USB 2.0	2x LAN 10/100/1000, VGA, PS/2 Mouse and keyboard, 2x COM RS232C, 6x USB 2.0
Drives	accessible: 3x 5.25", 2x 3.5", 1x internal 3.5", KISS Store	accessible: 3x 5.25", 2x 3.5", 1x internal 3.5", KISS Store	accessible: 3x 5.25", 2x 3.5", 1x internal 3.5", KISS Store	accessible: 3x 5.25", 2x 3.5", 1x internal 3.5", KISS Store
System Monitoring	on request	By PCCM	By PCCM	By PCCM
Expansion Slots	7x PCI 32 Bit 33 MHz 5 V, 1x PCI_e x 16, 4x PCIe x1	7x PCI 32 Bit 33 MHz 5 V, 1x PCI_e x 16, 4x PCIe x1	7x PCI 32 Bit 33 MHz 5 V, 1x PCI_e x 16, 4x PCIe x1	7x PCI 32 Bit 33 MHz 5 V, 1x PCI_e x 16, 4x PCIe x1
Power Supply	AC wide range 400W (80+), AC wide range 650W (80+), 24 V DC, 48 V DC, AC redundant	AC wide range 400W (80+), AC wide range 650W (80+), 24 V DC, 48 V DC, AC redundant	AC wide range 400W	AC wide range 400W (80+), AC wide range 650W (80+), 24 V DC, 48 V DC, AC redundant
Cooling	2x Hot Swap Chassis Fans ultra low noise	2x Hot Swap Chassis Fans ultra low noise	2x Hot Swap Chassis Fans ultra low noise	2x Hot Swap Chassis Fans ultra low noise
Approvals	CE designed to meet UL	CE designed to meet UL	MIL-STD 810F, MIL-STD 461E method: CE102,CS101,CS114,RE 102,RS103,CS116	CE designed to meet UL
Protection Class	IP 20 optional IP 52	IP 20 optional IP 52	IP 20 optional IP 52	IP 20 optional IP 52
Options (Fully Certified with System)	KISS Stor 1 or KISS Stor 0/5 RAID Subsystem, Slide Rails	KISS Stor 1 or KISS Stor 0/5 RAID Subsystem , Slide Rails	KISS DA 135,Slide Rails	KISS Stor 1 or KISS Stor 0/5 RAID Subsystem , Slide Rails
Altitude	0 - 3000 m (0 - 10.000 ft) operating	0 - 3000 m (0 - 10.000 ft) operating	0 - 3000 m (0 - 10.000 ft) operating	0 - 3000 m (0 - 10.000 ft) operating
Shock DIN EN 60068-2-27	operating: 15G, 11 ms 6 axis	operating: 15G, 11 ms 6 axis	operating: 15G, 11 ms 6 axis	operating: 15G, 11 ms 6 axis
Vibration DIN EN 60068-2-6	operating: 10 - 500 Hz 1G	operating: 10 - 500 Hz 1G	operating: 10 - 500 Hz 1G	operating: 10 - 500 Hz 1G
Humidity rel.	operating: 5 - 95% rel non condensing	operating: 5 - 95% rel non condensing	operating: 5 - 95% rel non condensing	operating: 5 - 95% rel non condensing
Operating System	WIN 2000, WIN XP, Linux, VISTA	WIN 2000, WIN XP, Linux, VISTA	WIN XP, Linux	WIN 2000, WIN XP, Linux, VISTA
MTBF	50.000 h at 25°C (77°F)*	50.000 h at 25°C (77°F)*	50.000 h at 25°C (77°F)*	50.000 h at 25°C (77°F)*
Noise	~40 dB at 25 °C (77°F)	< 35 dB at 25°C (77°F)	< 35 dB at 25°C (77°F)	< 35 dB at 25°C (77°F)
Dimensions H x W x D	4U x 19" x 472 mm (18.58inch)	4U x 19" x 472 mm (18.58inch)	4U x 19" x 472 mm (18.58inch)	4U x 19" x 472 mm (18.58inch)
Operating Temperature	0°C to 50°C (32°F-122°F)	0°C to 50°C (32°F-122°F)	0°C to 50°C (32°F-122°F)	0°C to 50°C (32°F-122°F)

* Without FANs

4U Short Rack Mount Systems

4U Short Rack Mount Systems The Answer for Space Limited Applications The KISS-Short has been designed with fl exibility in mind and can accommodate half size PICMG 1.2 and Flex-ATX motherboards. The main attraction of KISS-Short is its extremely low noise level, which is inaudible against normal conversation.

Kontron’s KISS 4U Short offers the same features in drive space, maintainability and functionality as it’s “Big Brother” KISS but is only 300 mm deep. If space is an issue, KISS-Short is the right choice.

4U Short Rack Mount Systems			
		KISS 4U Short KTQ67 Flex	KISS 4U Short KTQ45 Flex
Construction	Anti-corrosion and long term stable heavy duty steel EN 10215-DX 51D+AZ 150-A-C	Anti-corrosion and long term stable heavy duty steel EN 10215-DX 51D+AZ 150-A-C	Anti-corrosion and long term stable heavy duty steel EN 10215-DX 51D+AZ 150-A-C
Mounting	Rack Mount	Rack Mount	Rack Mount
Paint Color	Flap blue, Body black, others on request (black flap is standard in NA)	Flap blue, Body black, others on request (black flap is standard in NA)	Flap blue, Body black, others on request (black flap is standard in NA)
Weight	~12 kg	~12 kg	~12 kg
Control Panel Indicators	Power LED, HDD LED	Power LED, HDD LED	Power LED, HDD LED
Control Panel Switch	PWR On, Reset	PWR On, Reset	PWR On, Reset
CPU	Intel® Core™ 2Duo E8400, Intel® Core™Quad Q9400	Intel® Core™ 2Duo E8400, Intel® Core™Quad Q9400	Intel® Core™ 2Duo E8400, Intel® Core™Quad Q9400
Front Side Bus	800/1066/1333 MHz	800/1066/1333 MHz	800/1066/1333 MHz
DRAM	Up to 8 GB DDR 3	Up to 8 GB DDR 3	Up to 8 GB DDR 3
I/O Standard	2x USB 2.0 front	2x USB 2.0 front	2x USB 2.0 front
Dimensions (H x W x D)	4U x 19" x 300 mm (11.81inch)	4U x 19" x 300 mm (11.81 inch)	4U x 19" x 300 mm (11.81 inch)
I/Os	Rear I/Os: 2x COM, VGA, Line in, Line out, 8x USB 2.0, PS/2 M+K, 2x LAN 10/100/100	Rear I/Os: 2x COM, VGA, Line in, Line out, 8x USB 2.0, PS/2 M+K, 2x LAN 10/100/100	Rear I/Os: 2x COM, VGA, Line in, Line out, 8x USB 2.0, PS/2 M+K, 2x LAN 10/100/100
Drives	1x 3.5" internal, 2x 5.25" front accessible, 1x 3,5" front accessible	1x 3.5" internal, 2x 5.25" front accessible, 1x 3,5" front accessible	1x 3.5" internal, 2x 5.25" front accessible, 1x 3,5" front accessible
System Monitoring	By PCCM	By PCCM	By PCCM
Expansion Slots	2x PCI full size 32 Bit, 1x PCIe x16 1x PCIe x4	2x PCI full size 32 Bit, 1x PCIe x16 1x PCIe x4	2x PCI full size 32 Bit, 1x PCIe x16 1x PCIe x4
Power Supply	AC 400 W (80+) autoswitching, 24 V DC, 48 V DC	AC 400 W (80+) autoswitching, 24 V DC, 48 V DC	AC 400 W (80+) autoswitching, 24 V DC, 48 V DC
Cooling	2 Front side hot swap Chassis FANs	2 Front side hot swap Chassis FANs	2 Front side hot swap Chassis FANs
Protection Class	IP 20 optional IP 52	IP 20 optional IP 52	IP 20 optional IP 52
Options (Fully Certified with System)	KISS Store 1 or KISS Store 0/5 RAID Subsystem, Slide Rails, additional front IOs	KISS Store 1 or KISS Store 0/5 RAID Subsystem, Slide Rails, additional front IOs	KISS Store 1 or KISS Store 0/5 RAID Subsystem, Slide Rails, additional front IOs
Altitude	0 - 3000 m (0 - 10.000 ft) operating	0 - 3000 m (0 - 10.000 ft) operating	0 - 3000 m (0 - 10.000 ft) operating
Shock DIN EN 60068-2-27	Operating:15 g 11 ms half sine	Operating:15 g 11 ms half sine	Operating:15 g 11 ms half sine
Vibration DIN EN 60068-2-6	Operating: 10-500 Hz 1 g	Operating: 10-500 Hz 1 g	Operating: 10-500 Hz 1 g
Humidity rel.	Operating: 5-95 rel.% non condensing	Operating: 5-95 rel.% non condensing	Operating: 5-95 rel.% non condensing
Operating System	WIN 27 (32 bit and 64 bit), WIN XP, Linux,	WIN 27 (32 bit and 64 bit), WIN XP, Linux,	WIN 27 (32 bit and 64 bit), WIN XP, Linux,
MTBF	50.000 h @ 25° C (77°F)	50.000 h @ 25° C (77°F)	50.000 h @ 25° C (77°F)
Noise	< 35 dB @ 25° C (77°F)	< 35 dB @ 25° C (77°F)	< 35 dB @ 25° C (77°F)
Operating Temperature	0°C to 50°C (32°F-122°F)	0°C to 50°C (32°F-122°F)	0°C to 50°C (32°F-122°F)

2U Rack Mount Systems

2U Rack Mount Systems Versatile 2U Solution for space limited applications The features of the KISS 2U include an especially low installation height (88.90 mm), extremely quiet (<35 dbA), scalable as desired, RoHs-compliant, long-term available and ruggedized. Ideal Industrial Server solution with redundant AC PSU and integrated hot swappable RAID 1 Subsystem. KISS 2U features PICMG 1.3 and PICMG 1.0 slots boards or Flex ATX motherboards,

and is accordingly expandable in an especially flexible fashion, up to multicore and PCI-Express-based systems. In both the Flex ATX and PICMG 1.3 designs, the KISS 2U servers offer performance currently up to Intel® I7 and up to 16 GByte DDR3 memory. The chassis for the KISS 2U is designed either for the desktop or for installation in a 19” cabinet.

2U Rack Mount Systems									2U Rack Mount Systems
	KISS 2U PCI 960	KISS 2U PCI 761	KISS 2U PCI 760	KISS 2U PCI 759	KISS 2U KT965Flex	KISS 2U 986Mini ITX	KISS 2U KTQ45/Flex	KISS 2U KTQ45 Flex Low profile	
Construction	Anti-corrosion and long term stable heavy duty steel EN 10215-DX 51D+AZ 150-A-C	Anti-corrosion and long term stable heavy duty steel EN 10215-DX 51D+AZ 150-A-C	Anti-corrosion and long term stable heavy duty steel EN 10215-DX 51D+AZ 150-A-C	Anti-corrosion and long term stable heavy duty steel EN 10215-DX 51D+AZ 150-A-C	Anti-corrosion and long term stable heavy duty steel EN 10215-DX 51D+AZ 150-A-C	Anti-corrosion and long term stable heavy duty steel EN 10215-DX 51D+AZ 150-A-C	Anti-corrosion and long term stable heavy duty steel EN 10215-DX 51D+AZ 150-A-C	Anti-corrosion and long term stable heavy duty steel EN 10215-DX 51D+AZ 150-A-C	Construction
Mounting	Rack Mount, Desktop	Rack Mount, Desktop	Rack Mount, Desktop	Rack Mount, Desktop	Rack Mount, Desktop	Rack Mount, Desktop	Rack Mount, Desktop	Rack Mount, Desktop	Mounting
Paint Color	Flap blue, Body black, others on request (black flap is standard in NA)	Flap blue, Body black, others on request (black flap is standard in NA)	Flap blue, Body black, others on request (black flap is standard in NA)	Flap blue, Body black, others on request (black flap is standard in NA)	Flap blue, Body black, others on request (black flap is standard in NA)	Flap blue, Body black, others on request (black flap is standard in NA)	Flap blue, Body black, others on request (black flap is standard in NA)	Flap blue, Body black, others on request (black flap is standard in NA)	Paint Color
Weight	~ 10 Kg	~ 10 Kg	~ 10 Kg	~ 10 Kg	~ 8 Kg	~ 8 Kg	~ 8 Kg	~ 8 Kg	Weight
Control Panel Indicators	Power LED, HDD LED	Power LED, HDD LED	Power LED, HDD LED	Power LED, HDD LED	Power LED, HDD LED	Power LED, HDD LED	Power LED, HDD LED	Power LED, HDD LED	Control Panel Indicators
Control Panel Switch	Power ON, reset	Power ON, reset	Power ON, reset	Power ON, reset	Power ON, reset	Power ON, reset	Power ON, reset	Power ON, reset	Control Panel Switch
CPU	Celeron® 440, Intel® Core™ Duo T2500, Intel® Core™2 Duo T7400	Intel® i3-540,Intel® i5-660,Intel® i7-860	Intel® Core™ Duo E4300, Intel® Core™2 Duo E6400, Intel® Core™2 Quad Q9400	Intel® Core™ Duo E4300, Intel® Core™2 Duo E6400	Intel® Core™ Duo E4300, Intel® Core™2 Duo E6400	Celeron® 440, Intel® Core™ Duo T2500, Intel® Core™2 Duo T7400	Intel® E8400,Intel® QUAD Core Q9400	Intel® E8400,Intel® QUAD Core Q9400	CPU
Front Side Bus	533/667 MHz	1066/1333 MHz	800/1066/1333 MHz	800/1066/1333 MHz	533/800/1066 MHz	533/800/1066 MHz	800/1066/1333 MHz	800/1066/1333 MHz	Front Side Bus
DRAM	Up to 4 GByte DDR 2	Up to 8 GByte DDR3	Up to 8 GByte DDR 2	Up to 8 GByte DDR 2	Up to 8 GByte DDR 2	Up to 8 GByte DDR 2	Up to 8 GB DDR 3	Up to 8 GB DDR 3	DRAM
I/O Standard	Front: 2x USB 2.0	Front: 2x USB 2.0	Front: 2x USB 2.0	Front: 2x USB 2.0	Front: 2x USB 2.0	Front: 2x USB 2.0	Front: 2x USB 2.0	Front: 2x USB 2.0	I/O Standard
Drives	1x 3.5" Internal, 1x 3.5" accessible, 1x 5.25" accessible	1x 3.5" Internal, 1x 3.5" accessible, 1x 5.25" accessible	1x 3.5" Internal, 1x 3.5" accessible, 1x 5.25" accessible	1x 3.5" Internal, 1x 3.5" accessible, 1x 5.25" accessible	1x 3.5" Internal, 1x 3.5" accessible, 1x 5.25" accessible	1x 3.5" Internal, 1x 3.5" accessible, 1x 5.25" accessible	1x 3.5" Internal, 1x 3.5" accessible, 1x 5.25" accessible	1x 3.5" Internal, 1x 3.5" accessible, 1x 5.25" accessible	Drives
System Monitoring	By PCCM	By PCCM	By PCCM	on request	By PCCM	on request	By PCCM	By PCCM	System Monitoring
Expansion Slots	3x PCI full size 32 Bit, 1x PCIe x16, 1x PCIe x4, optional: 1x PCIe x16, 1x PCIe x8, 3 x PCI_e x 4	3x PCI full size 32 Bit, 1x PCIe x16, 1x PCIe x4, optional: 1x PCIe x16, 1x PCIe x8, 3 x PCI_e x 4	3x PCI full size 32 Bit, 1x PCIe x16, 1x PCIe x4, optional: 1x PCIe x16, 1x PCIe x8, 3 x PCI_e x 4	4x PCI full size 32 Bit, 1x PIGMG 1.0	2x PCI 32 Bit 33 MHz full size	2x PCI 32 Bit 33 MHz full size	2x PCI full size 32 Bit, or 1x PCIe x16 and PCIe x4 or 1x PCI 32 Bit and 1x PCI_e x16	2x PCI full size 32 Bit, 1x PCIe x16 1 x PCIe x4	Expansion Slots
Power Supply	AC400 W, 24V DC, redundant AC PSU	AC400 W, 24V DC, redundant AC PSU	AC400 W, 24V DC, redundant AC PSU	AC400 W, 24V DC, redundant AC PSU	AC400 W, 24V DC, redundant AC PSU	AC400 W, 24V DC, redundant AC PSU	AC400 W, 24V DC, redundant AC PSU	AC400 W, 24V DC, redundant AC PSU	Power Supply
Cooling	3 Hot swap low noise chassis fans	3 Hot swap low noise chassis fans	3 Hot swap low noise chassis fans	3 Hot swap low noise chassis fans	3 Hot swap low noise chassis fans	3 Hot swap low noise chassis fans	3 Hot swap low noise chassis fans	3 Hot swap low noise chassis fans	Cooling
Protection Class	IP 20 optional IP 52	IP 20 optional IP 52	IP 20 optional IP 52	IP 20 optional IP 52	IP 20 optional IP 52	IP 20 optional IP 52	IP 20 optional IP 52	IP 20 optional IP 52	Protection Class
Altitude	0 - 3000 m (0 - 10.000 ft) operating	0 - 3000 m (0 - 10.000 ft) operating	0 - 3000 m (0 - 10.000 ft) operating	0 - 3000 m (0 - 10.000 ft) operating	0 - 3000 m (0 - 10.000 ft) operating	0 - 3000 m (0 - 10.000 ft) operating	0 - 3000 m (0 - 10.000 ft) operating	0 - 3000 m (0 - 10.000 ft) operating	Altitude
Shock DIN EN 60068-2-27	operating: 5 g 11 ms half sine	operating: 5 g 11 ms half sine	operating: 5 g 11 ms half sine	operating: 5 g 11 ms half sine	operating: 5 g 11 ms half sine	operating: 5 g 11 ms half sine	operating: 5 g 11 ms half sine	operating: 5 g 11 ms half sine	Shock DIN EN 60068-2-27
Vibration DIN EN 60068-2-6	operating: 10 - 500 Hz 1,0 g	operating: 10 - 500 Hz 1,0 g	operating: 10 - 500 Hz 1,0 g	operating: 10 - 500 Hz 1,0 g	operating: 10 - 500 Hz 1,0 g	operating: 10 - 500 Hz 1,0 g	operating: 10 - 500 Hz 1,0 g	operating: 10 - 500 Hz 1,0 g	Vibration DIN EN 60068-2-6
Humidity rel.	operating: 5 - 95% non condensing	operating: 5 - 95% non condensing	operating: 5 - 95% non condensing	operating: 5 - 95% non condensing	operating: 5 - 95% non condensing	operating: 5 - 95% non condensing	operating: 5 - 95% non condensing	operating: 5 - 95% non condensing	Humidity rel.
Operating System	WIN 2000,WIN XP, Linux, VISTA	WIN7,WIN XP, Linux	WIN7,WIN XP, Linux	WIN 2000,WIN XP, Linux	WIN XP, Linux,	WIN 2000,WIN XP, Linux	WIN 2000,WIN XP, Linux, Windows 7	WIN 2000,WIN XP, Linux, Windows 7	Operating System
MTBF	50.000 h at 25°C (77°F)	50.000 h at 25°C (77°F)	50.000 h at 25°C (77°F)	50.000 h at 25°C (77°F)	50.000 h at 25°C (77°F)	50.000 h at 25°C (77°F)	50.000 h at 25°C (77°F)	50.000 h at 25°C (77°F)	MTBF
Noise	< 35 dB at 25 °C (77°F)	< 35 dB at 25 °C (77°F)	< 35 dB at 25 °C (77°F)	< 40 dB at 25 °C (77°F)	< 35 dB at 25 °C (77°F)	< 35 dB at 25 °C (77°F)	< 35 dB at 25 °C (77°F)	< 35 dB at 25 °C (77°F)	Noise
Dimensions H x W x D	2U x 19" x 472 mm (18.58inch)	2U x 19" x 472 mm (18.58inch)	2U x 19" x 472 mm (18.58inch)	2U x 19" x 472 mm (18.58inch)	2U x 19" x 472 mm (18.58inch)	2U x 19" x 472 mm (18.58inch)	2U x 19" x 472 mm (18.58inch)	2U x 19" x 472 mm (18.58inch)	Dimensions H x W x D
Operating Temperature	0°C to 50°C (32°F-122°F)	0°C to 50°C (32°F-122°F), (0°C-45°C (32°F-113°F) for Quad Core CPUs)	0°C to 50°C (32°F-122°F), (0°C-45°C (32°F-113°F) for Quad Core CPUs)	0°C to 50°C (32°F-122°F), (0°C-45°C (32°F-113°F) for Quad Core CPUs)	0°C to 50°C (32°F-122°F)	0°C to 50°C (32°F-122°F)	0°C to 50°C (32°F-122°F)	0°C to 50°C (32°F-122°F)	Operating Temperature

2U Short Rack Mount Systems

The KISS 2U short system has been designed with fl exibility in mind and can accomodate FlexATX and MiniITX motherboards, all in a chassis that can be used as a desktop or 19” rack mounted cabinet. The main attraction of KISS 2U short servers is their extremely low noise level, which is inaudible against normal

conversation. KISS IPC servers are thus ideal for most noise – sensitive environments such as hospital operating theaters and computer server rooms. The performance and maximum of confi guration of KISS servers are based on Kontron’s extensive range of CPU boards.

2U Short Rack Mount Systems				
	KISS 2U Short 986LCDM/ITX	KISS 2U Short KT965Flex	KISS 2U Short KTQ45Flex	KISS 2U Short KTQ45Flex low profile
	Construction	Anti-corrosion and long term stable heavy duty steel EN 10215-DX 51D+AZ 150-A-C	Anti-corrosion and long term stable heavy duty steel EN 10215-DX 51D+AZ 150-A-C	Anti-corrosion and long term stable heavy duty steel EN 10215-DX 51D+AZ 150-A-C
	Mounting	Rack Mount, Desktop	Rack Mount, Desktop	Rack Mount, Desktop
	Paint Color	Flap blue, Body black, others on request (black flap is standard in NA)	Flap blue, Body black, others on request (black flap is standard in NA)	Flap blue, Body black, others on request (black flap is standard in NA)
Weight	~ 8 Kg	~ 8 Kg	~ 8 Kg	~ 8 Kg
Control Panel Indicators	Power LED, HDD LED	Power LED, HDD LED	Power LED, HDD LED	Power LED, HDD LED
Control Panel Switch	Power LED, HDD LED	Power LED, HDD LED	Power LED, HDD LED	Power LED, HDD LED
CPU	Celeron® 440, Intel® Core™ Duo T2500, Intel® Core™2 Duo T7400	Intel® Core™ Duo E4300, Intel® Core™2 Duo E6400	Intel® Core™ 2Duo E8400, Intel® Core™Quad Q9400	Intel® Core™ 2Duo E8400, Intel® Core™Quad Q9400
Front Side Bus	533/667 MHz	533/800/1066 MHz	800/1066/1333 MHz	800/1066/1333 MHz
DRAM	Up to 4 GByte DDR 2	Up to 8 GByte DDR 2	Up to 8 GB DDR 3	Up to 8 GB DDR 3
I/O Standard	Front: 2x USB 2.0	Front: 2x USB 2.0	Front: 2x USB 2.0	Front: 2x USB 2.0
Drives	1x 3.5" Internal, 1x 3.5" accessible, 1x 5.25" accessible	1x 3.5" Internal, 1x 3.5" accessible, 1x 5.25" accessible	1x 3.5" Internal, 1x 3.5" accessible, 1x 5.25" accessible	1x 3.5" Internal, 1x 3.5" accessible, 1x 5.25" accessible
System Monitoring	on request	by PCCM	by PCCM	by PCCM
Expansion Slots	2* PCI 32 Bit max length 230mm	2* PCI 32 Bit max length 230mm	2x PCI 32 Bit, or 1x PCIe x16 and PCIe x4 or 1x PCI 32 Bit and 1* PCI_e x 16	2x PCI full size 32 Bit, 1x PCIe x16, 1x PCIe x4
Power Supply	AC400 W, 24V DC	AC400 W, 24V DC	AC400 W, 24V DC	AC400 W, 24V DC
Cooling	3 Hot swap low noise chassis fans	3 Hot swap low noise chassis fans	3 Hot swap low noise chassis fans	3 Hot swap low noise chassis fans
Protection Class	IP 20 optional IP 52	IP 20 optional IP 52	IP 20 optional IP 52	IP 20 optional IP 52
Altitude	0 - 3000 m (0 - 10.000 ft) operating	0 - 3000 m (0 - 10.000 ft) operating	0 - 3000 m (0 - 10.000 ft) operating	0 - 3000 m (0 - 10.000 ft) operating
Shock DIN EN 60068-2-27	operating: 5 g 11 ms half sine	operating: 5 g 11 ms half sine	operating: 5 g 11 ms half sine	operating: 5 g 11 ms half sine
Vibration DIN EN 60068-2-6	operating: 10 - 500 Hz 1,0 g	operating: 10 - 500 Hz 1,0 g	operating: 10 - 500 Hz 1,0 g	operating: 10 - 500 Hz 1,0 g
Humidity rel.	operating: 5 - 95% non condensing	operating: 5 - 95% non condensing	operating: 5 - 95% non condensing	operating: 5 - 95% non condensing
Operating System	WIN XP, Linux	WIN XP, Linux	WIN XP, Linux, Windows 7	WIN XP, Linux, Windows 7
MTBF	50.000 h at 25°C (77°F)	50.000 h at 25°C (77°F)	50.000 h at 25°C (77°F)	50.000 h at 25°C (77°F)
Noise	< 35 dB at 25 °C (77°F)	< 35 dB at 25 °C (77°F)	< 35 dB at 25 °C (77°F)	< 35 dB at 25 °C (77°F)
Dimensions H x W x D	2U x 19“ x 350 mm (13.78inch)	2U x 19“ x 350 mm (13.78inch)	2U x 19“ x 350 mm (13.78inch)	2U x 19“ x 350 mm (13.78inch)
Operating Temperature	0°C to 50°C (32°F-122°F)	0°C to 50°C (32°F-122°F)	0°C to 50°C (32°F-122°F)	0°C to 50°C (32°F-122°F)

1U Short Rack Mount Systems

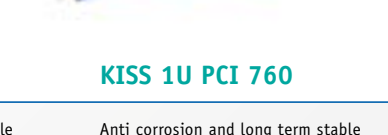
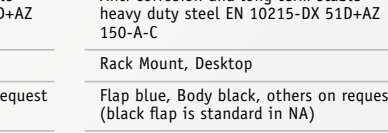
When space is limited, the KISS 1U short systems are designed to provide a solution. Only 350 mm(13,78 inch) deep, these smaller systems can be confi gured to meet your needs.

1U Short Rack Mount Systems				
	KISS 1U Short KT GM45		KISS 1U Short 986	
	Construction	Anti-corrosion and long term stable heavy duty steel EN 10215-DX 51D+AZ 150-A-C	Construction	Anti-corrosion and long term stable heavy duty steel EN 10215-DX 51D+AZ 150-A-C
	Mounting	Rack Mount, Desktop	Mounting	Rack Mount, Desktop
	Paint Color	Flap blue, Body black, others on request (black flap is standard in NA)	Paint Color	Flap blue, Body black, others on request (black flap is standard in NA)
Weight	~7 kg		Weight	~7kg
Control Panel Indicators	Power LED, HDD LED		Control Panel Indicators	Power LED, HDD LED
Control Panel Switch	Power ON, reset		Control Panel Switch	Power ON, reset
CPU	Intel® Core™2 P8400,Intel® Core™2 T9400		CPU	Celeron® 440, Intel® Core™ Duo T2500, Intel® Core™2 Duo T7400
Front Side Bus	667/800/1066 MHz		Front Side Bus	533/667 MHz
DRAM	Up to 4 GByte DDR3		DRAM	Up to 4 GByte DDR 2 SDRAM
OS Preinstalled	WIN7,WIN XP, Linux		OS Preinstalled	WIN XP, Linux
I/O Standard	Front I/O: 4x USB 2.0 Rear: 2x COM, 2x USB, VGA and 2x GB LAN		I/O Standard	Front I/O: 4x USB 2.0 Rear: 2x COM, 2x USB, VGA and 2x GB LAN
Drives	KISS Stor Slim, SLIM DVD RW, Internal 1x HDD, CF		Drives	KISS Stor Slim, SLIM DVD RW, Internal 1x HDD, CF
System Monitoring	on request		System Monitoring	on request
Expansion Slots	2x PCI 32 Bit 33MHz or 1x PCI_e x 16		Expansion Slots	2x PCI 32 Bit 33MHz or 1x PCI_e x 16
Power Supply	AC wide range 270 W, 24 V DC, 48 V DC		Power Supply	AC wide range 270 W, 24 V DC, 48 V DC
Cooling	4 chassis FAN		Cooling	4 chassis FAN
Protection Class	IP 20 optional IP 52		Protection Class	IP 20 optional IP 52
Options (Fully Certified with System)	KISS Stor Slim		Options (Fully Certified with System)	KISS Stor Slim
Altitude	0 - 3000 m (0 - 10.000 ft) operating		Altitude	0 - 3000 m (0 - 10.000 ft) operating
Shock DIN EN 60068-2-27	Operating: 5 g 11 ms half sine		Shock DIN EN 60068-2-27	Operating: 5 g 11 ms half sine
Vibration DIN EN 60068-2-6	Operating: 10-500 Hz 1 g		Vibration DIN EN 60068-2-6	Operating: 10-500 Hz 1 g
Humidity rel.	5 - 95% non condensing		Humidity rel.	5 - 95% non condensing
Operating System	WIN XP, Linux		Operating System	WIN XP, WIN 2000, Linux
MTBF	30.000h at 25°C (77°F)		MTBF	30.000h at 25°C (77°F)
Noise	~ 40 dB at 25°C (77°F)		Noise	~ 40 dB at 25°C (77°F)
Dimensions H x W x D	1U x 19“ x 350 mm (13,78 inch)		Dimensions H x W x D	1U x 19“ x 350 mm (13,78 inch)
Operating Temperature	0° to 50°C (32°F-122°F)		Operating Temperature	0° to 50°C (32°F-122°F)

1U Rack Mount Systems

1U Rack Mount Systems The KISS 1U provides numerous customer options with an especially low installation height (44.45 mm). It is extremely quiet (< 35dba), scalable, RoHS compliant, has long term availability all in a ruggedized platform. The KISS 1U features PICMG 1.3 single board computer support, and due to the flexible design provides multicore, and PCI-based as well

PCI express based solutions. With PICMG 1.3 designs, the KISS 1U offers performance currently up to Intel® Quad Core™ Q9400 and up to 8 GByte DDR2 memory. 2 free fullsize slots, either in PCI or PCI express, options for more drives, and various power supplies enable KISS 1U for different applications.

1U Rack Mount Systems			
			
	KISS 1U PCI 761	KISS 1U PCI 760	KISS 1U PCI 960
Construction	Anti corrosion and long term stable heavy duty steel EN 10215-DX 51D+AZ 150-A-C	Anti corrosion and long term stable heavy duty steel EN 10215-DX 51D+AZ 150-A-C	Anti corrosion and long term stable heavy duty steel EN 10215-DX 51D+AZ 150-A-C
Mounting	Rack Mount, Desktop	Rack Mount, Desktop	Rack Mount, Desktop
Paint Color	Flap blue, Body black, others on request (black flap is standard in NA)	Flap blue, Body black, others on request (black flap is standard in NA)	Flap blue, Body black, others on request (black flap is standard in NA)
Weight	~10 kg	~10 kg	~10 kg
Control Panel Indicators	Power LED, HDD LED	Power LED, HDD LED	Power LED, HDD LED
Control Panel Switch	Power ON	Power ON	Power ON
CPU	Intel® i3-540,Intel® i5-660, Intel® i7-860	Intel® Core™2 Duo E4300, E6400, Q9400	Celeron® 440, Intel® Core™ Duo T2500, Intel® Core™2 Duo T7400
Front Side Bus	1066/1333 MHz	533/800/1033 MHz	533/667 MHz
DRAM	Up to 8 GByte DDR3	Up to 8 GByte DDR 2 SDRAM	Up to 4 GByte DDR 2 SDRAM
I/O Standard	Front I/O: 2* USB 2.0 Rear: 2x COM, 2x USB, VGA and 2* GB LAN	Front I/O: 1x GB LAN, 2* USB 2.0 Rear: 2x COM, 2x USB, VGA and 2* GB LAN	Front I/O: 1x GB LAN, 2x USB 2.0 Rear: 2x COM, 2x USB, VGA and 2* GB LAN
Drives	KISS Stor Slim, SLIM DVD RW, Internal up to 3* HDD, CF	KISS Stor Slim, SLIM DVD RW, Internal up to 3* HDD, CF	KISS Stor Slim, SLIM DVD RW, Internal up to 3* HDD, CF
System Monitoring	on request	on request	on request
Expansion Slots	2x PCI 32 Bit 33MHz or 1* PCI_e x 16 and 1* PCI_e x 4,or 1*PCI 32 bit and 1* PCI_e x 4	2x PCI 32 Bit 33MHz or 1* PCI_e x 16 and 1* PCI_e x 4,or 1*PCI 32 bit and 1* PCI_e x 4	2x PCI 32 Bit 33MHz or 1* PCI_e x 16 and 1* PCI_e x 4,or 1*PCI 32 bit and 1* PCI_e x 4
Power Supply	AC wide range 400 W, 24 V DC, 48 V DC	AC wide range 400 W, 24 V DC, 48 V DC	AC wide range 400 W, 24 V DC, 48 V DC
Cooling	4 chassis FAN	4 chassis FAN	4 chassis FAN
Protection Class	IP 20 optional IP 52	IP 20 optional IP 52	IP 20 optional IP 52
Options (Fully Certified with System)	KISS Stor Slim	KISS Stor Slim	KISS Stor Slim
Altitude	0 - 3000 m (0 - 10.000 ft) operating	0 - 3000 m (0 - 10.000 ft) operating	0 - 3000 m (0 - 10.000 ft) operating
Shock DIN EN 60068-2-27	Operating: 5 g 11 ms half sine	Operating: 5 g 11 ms half sine	Operating: 5 g 11 ms half sine
Vibration DIN EN 60068-2-6	Operating: 10-500 Hz 1 g	Operating: 10-500 Hz 1 g	Operating: 10-500 Hz 1 g
Humidity rel.	5 - 95% non condensing	5 - 95% non condensing	5 - 95% non condensing
Operating System	WIN XP, Windows 7, Linux	WIN XP, WIN 2000, Linux	WIN XP, WIN 2000, Linux
MTBF	50.000h at 25°C (77°F)	50.000h at 25°C (77°F)	50.000h at 25°C (77°F)
Noise	~ 40 dB at 25°C (77°F)	~ 40 dB at 25°C (77°F)	~ 40 dB at 25°C (77°F)
Dimensions H x W x D	1U x 19" x 457 mm (18 inch)	1U x 19" x 457 mm (18 inch)	1U x 19" x 457 mm (18 inch)
Operating Temperature	0° to 50°C (32°F-122°F)	0° to 50°C (32°F-122°F)	0° to 50°C (32°F-122°F)

1U KVM – Keyboard-Video-Mouse

Kontron’s RMVS and RPD series 1U monitor/keyboard drawers have been meeting the needs of our customers for over five years. During this time, we have noted the additional features that customers have requested and have incorporated them into our revolutionary new KVM 1U series, which offers more valuable features and options than any other comparable models. The KVMs offer three different LCD display sizes up to an unprecedented 19”, all with high contrast ratios and wide viewing angles.

The monitor flips up and stays put at any angle thanks to its heavy-duty torque hinge. Choose from different standard keyboard languages based on your application’s requirements. The KVMs are designed to allow multiple back panel termination options including 8-port KVM which can be cascaded to control up to 512 systems. The unit comes with standard preinstalled ball bearing slide rails making rack installation faster and easier than ever.

1U KVM				
				
	RPD-1151	RPD-1158	RPD-1171	RPD-1178
Weight	14 kg	14 kg	14 kg	14 kg
OSC	OnScreenControl function including: auto adjustment, brightness, contrast, phase, H-V position, frequency, size and display mode	OnScreenControl function including: auto adjustment, brightness, contrast, phase, H-V position, frequency, size and display mode	OnScreenControl function including: auto adjustment, brightness, contrast, phase, H-V position, frequency, size and display mode	OnScreenControl function including: auto adjustment, brightness, contrast, phase, H-V position, frequency, size and display mode
Brightness	200 cd/m²	200 cd/m²	260 cd/m²	260 cd/m²
Interface	8x 25 pin D type female connectors for 8-platform connection (VGA, PS/2 keyboard and PS/2 mouse, male connectors at the platform side)	8x 25 pin D type female connectors for 8-platform connection (VGA, PS/2 keyboard and PS/2 mouse, male connectors at the platform side)	8x 25 pin D type female connectors for 8-platform connection (VGA, PS/2 keyboard and PS/2 mouse, male connectors at the platform side)	8x 25 pin D type female connectors for 8-platform connection (VGA, PS/2 keyboard and PS/2 mouse, male connectors at the platform side)
Keyboard	PS/2 84 keys keyboard and trackball (German and US layout)	PS/2 84 keys keyboard and trackball (German and US layout)	PS/2 84 keys keyboard and trackball (German and US layout)	PS/2 84 keys keyboard and trackball (German and US layout)
Display Types	15" TFT XVGA	15" TFT XVGA	17" TFT SXGA	17" TFT SXGA
KVM	1 port	8 port	1 port	8 port
Cascading	-	up to 512 PCs	-	up to 512 PCs
KVM control	-	Port selection through front panel switches	Port selection through front panel switches	Port selection through front panel switches
Material	heavy duty steel	heavy duty steel	heavy duty steel	heavy duty steel
Power Supply	85 V ~ 264 V AC input	85 V ~ 264 V AC input optimal - 48 V DC	85 V ~ 264 V AC input	85 V ~ 264 V AC input
Humidity rel.	max. 90% rel.	max. 90% rel.	max. 90% rel.	max. 90% rel.
Dimensions H x W x D	19" x 1U x 492 mm	19" x 1U x 492 mm	19" x 1U x 550 mm	19" x 1U x 550 mm
Additional	-	8 Port KFM for cascading	8 Port KFM for cascading	8 Port KFM for cascading
Operating Temperature	0° to 40°C	0° to 40°C	0° to 40°C	0° to 40°C

» Embedded Box PCs «



Starting from the smallest dimensions of 75 x 250 x 160 mm (H x W x D), OEMs can use the "form follows function" principle to configure their individual Embedded Box PCs with respect to size, system components and feature set in order to meet their application-specific requirements. From the outset, the flexible assembly and interface capabilities of these standard products have been designed to meet different configuration requirements with pre-verified options. This significantly reduces initial development costs for OEMs. Box PCs are used in the automation, transportation, energy and infotainment sectors.

- » High performance with low power consumption
- » Future ready with Intel® Atom™ N270 / Core™ 2 Duo up to 2.26 GHz technology
- » Variable in form and function

Fanless Box PCs – Concept Box (CB) Series

As a robust and fanless embedded box, Kontron's CB Series is suitable for demanding industrial environments and also for applications in vertical markets such as medical, transportation, digital signage and infotainment. Through documented testing, lifecycle management, excellent thermal values, the CB series ensures the highest quality and reliability.

Advantages

- » Fanless, maintenance free
- » Lifecycle management
- » Long-term availability
- » Documented testing
- » Excellent thermal design
- » No chassis or CPU fan necessary



CB SERIES TECHNOLOGY

The new fanless Kontron CB series is designed for a broad spectrum of applications which require long-term availability, lifecycle management and extreme reliability, for example, transportation, automation, P.O.S. and digital signage applications.

Kontron's Embedded CB series, which comes in a rugged aluminum chassis, excels thanks to its high performance-per-watt with fully passive-cooling which makes it more robust than other designs available to date in the same performance class. The ready-to-run

embedded box PC is ideal for rugged application areas, which require interfaces for various deployments like RS232, RS422/485, digital I/Os, CAN interface, NVRAM, Firewire, and up to three gigabit Ethernet interfaces besides the standard PC interfaces. Additional cabling work can be eliminated due to the WiFi option. Customer-specific extensions can be carried out via PCI Express Mini Card slot.

Due to the flexible design, nearly all form factors and functionality can be achieved.



Concept Box (CB) Series

Designed for your demand » CB Series Technology

The new fanless Kontron CB standard product series is designed for a broad spectrum of OEM applications which require long-term availability, lifecycle management and extreme reliability. Let our concept box line be your next system platform for medical technology, transportation, automation, infotainment, P.O.S. and digital signage applications. Kontron's Embedded CB series, which comes in a rugged aluminum chassis, excels thanks to its high performance per- watt with fully passive-cooling which makes it

more robust and reliable than other designs available to date in the same performance class. The ready-to-run embedded box PC is ideal for rugged application areas, which require interfaces for various deployments like RS232, RS422/485, digital I/Os, CAN interface, NVRAM, Firewire, and up to two gigabit Ethernet interfaces besides the standard PC interfaces. Additional cabling work can be eliminated due to the WiFi option. Customer-specific extensions can be carried out via PCI Express Mini Card slot. Due to the flexible design, nearly all form factors and functionality can be realized by OEMs looking for a fast go-to-market system solution.

Concept Box (CB) - Series			
			
	CB 751	CB 752	CB 753
Construction	designed in an ultra low profile aluminum chassis	designed in an ultra low profile aluminum housing	designed in an ultra low profile aluminum housing
Mounting	Wall mount, Desktop, Front mount	Wall mount, Desktop, Front mount	Wall mount, Desktop, Front mount
Paint Color	Blue	Blue	Blue
Weight	~ 4kg	~ 3 kg	~ 6 kg
Control Panel Indicators	Power LED, HDD LED	Power LED, HDD LED	Power LED, HDD LED
Control Panel Switch	PWR on	PWR on	PWR on
CPU	Intel® Celeron® M Processor ULV, 1.06 GHz (mBGA479), Intel® Celeron® M Processor, LV, 1.66GHz (mBGA479)	Intel® Atom™ N270 1,60 GHz	Intel® Core™ 2 Duo Mobile P8400 2.26GHz; FSB1066 3MB mPGA478
DRAM	3 GB DDR memory support (2+1)	2 GB DDR2	2x DIMM-240 up to 8 GB
I/O Standard	Front: 4x USB, 3x GB LAN, PS/2 M+K, VGA, Line in, Line out, Firewire, RS232, Rear: 3x RS232, 2x USB	Front: 2x GB LAN, 2x COM, VGA, 4x USB, Rear: 2x USB, Audio, GPIO	Front: 4x USB, 3x GB LAN, PS/2 M+K, VGA, Line in, Line out, Firewire, RS232, Rear: 3x RS232
Dimensions (H x W x D)	75 mm x 250 mm x 260 mm (2,95 inch x 9,84 inch x 10,23 inch)	75mm x 250mm x 160 mm (2,95 inch x 9,84 inch x 6,3 inch)	75 mm x 350 mm x 260 mm (2,95 inch x 13,78 inch x 10,24inch)
Free Slots	PCI Express mini Card	PCI Express mini Card	2x PCI slot or 1x PCIexpress
Drives	2,5" HDD/SSD, CF	2,5" HDD/SSD, CF	2,5" HDD/SSD, CF
Compliance	CE compliant, Designed to meet UL, Shock and Vibration proofed	CE compliant, Designed to meet UL, Shock and Vibration proofed	CE compliant, Designed to meet UL, Shock and Vibration proofed
Power Supply	24 VDC (10-32V) external AC adapter	24 VDC (6,5 VDC to 30 VDC), optional external AC adapter	24 VDC (10-32V) external AC adapter
Cooling	Fanless	Fanless	Fanless
Options (Fully Certified with System)	DVI	CAN Bus, RS 422/485, 18-bit DVI, 3rd COM,NVRAM	DVI
Shock DIN EN 60068-2-27	operating: 5G 11ms duration, 6 directions (half-sine)	operating: 5G 11ms duration, 6 directions (half-sine)	operating: 5G 11ms duration, 6 directions (half-sine)
Vibration DIN EN 60068-2-6	operating: 10-150 Hz: 0,5G sine / 3 axis	operating: 10-500 Hz: 0,5G sine / 3 axis	operating: 10-500 Hz: 0,5G sine / 3 axis
Operating System	WIN XP, Linux, WIN XP embedded	WIN CE 6.0, WIN XP embedded, Linux embedded, WIN XP pro	WIN XP, Linux, WIN XP embedded
MTBF	~40.000 h	~40.000 h	~40.000 h
Noise	0 db if only CF used	0 db if only CF used	0 db if only CF used
Temperature/Humidity	operating: 0°C to 50°C according IEC 60068-2-1, 60068-2-2, 60068-2-14, operating: 5 to 95 % @ 40°C not condensing	operating: 0°C to 50°C according IEC 60068-2-1, 60068-2-2, 60068-2-14, operating: 5 to 95 % @ 40°C not condensing	operating: 0°C to 50°C according IEC 60068-2-1, 60068-2-2, 60068-2-14, operating: 5 to 95 % @ 40°C not condensing

Industrial Box PCs

Kontron's V Box Express PCs are powerful and robust industrial box PCs, designed especially for rugged use in close proximity to machinery. RoHS-compliant, equipped with a scalable ETXexpress module and high-performance processors up to Intel® Pentium® M 2.0 GHz or with the new Intel® Core™2 DuoTM the V Box Express series is optimally equipped for every task in measurement, controls, operation and visualization.

The integrated innovative cooling concept of the V Box Express II realizes a passive and fanless cooling.

With small dimensions the compact box PCs are used primarily where little space is available, such as in enclosures, consoles, or directly on machines. The high electromagnetic compatibility and the resistance to shock and vibration make the systems ideal for use in robust environments.

Industrial Box PCs				
				
	V Box Express	V Box Express II	KIC-MC Box	
Construction	heavy duty steel	heavy duty steel	System	KIC-MC
Mounting	Wall Mount, Desk Top	Wall Mount	Product Line	KIC series
Weight	~ 6.1 kg	~ 5.5 kg	Paint color	Front blue, body black
CPU	Intel® Pentium® M 2.0 GHz or Intel® Core™2 Duo up to 2.0 GHz	Intel® Pentium® M 2.0 GHz, Intel® Core™2 Duo 2.16 GHz	Weight	~ 3 kg
DRAM	Up to 2 GByte DDR2	Up to 2 GByte DDR2	CPU Module	ETXexpress®-MC
Drive bays internal	1x or 2x 2.5" removable HDD SATA optional (PCI Slot mounted), 1x Compact Flash + 1x Compact Flash optional	1-2x 2.5" HDD SATA opt., 1-2x CF	CPU	T7500
I/O Standard	3x RS232, 1x RS232/422/485 opt., 1x DVI-I, 1x DVD-D opt., 4x USB 2.0 + 2x USB 2.0 opt.	3x RS232, 1x RS232/422/485 opt., 1x DVI-I, 1x DVD-D opt., 4x USB 2.0 + 2x USB 2.0 opt.	DRAM	Up to 4 GB DDR2
Ethernet	1x LAN 10/100 (Pentium® M), 1x LAN 10/100/1000 (Intel® Core™2 Duo)	1x LAN 10/100 (Pentium® M), 1x LAN 10/100/1000 (Intel® Core™2 Duo)	Non volatile memory (NVRAM)	32KByte or 128KByte
Expansion Slots	4x PCI half size or 2x PCI + 2x PCI Express x1	2x PCI, 2x PCI Express x1 opt. instead of CF slot	Interfaces Front	LVDS, RS232, 2x LAN 10/100/1000 MBit, 3x USB 2.0, Audio, mono, 8x GPIO, DC-In, Power Control signals (Power Button, Power LED)
Power Supply	24 V DC	24 V DC	Interfaces Rear	DVI-I, RS232, 2x LAN 10/100/1000 MBit, 6x USB 2.0, Line out, Stereo
Cooling	2 Chassis FAN	Fanless	Controls on the frontside	Remote On/Off, Remote LED
Protection Class	IP 20	IP 20	Drives	2x 2,5" HDD/SSD
Certifications	CE, FCC A, cULus	CE, FCC A, cULus, GOST, CB	Expansion slots	1 x PCI_e x1
Altitude	Operating: 10000 ft (3.048m) Storage: 15000 ft (4.622m)	Operating: 10000 ft (3.048m) Storage: 15000 ft (4.622m)	Power supply	24 V DC
Shock DIN EN 60068-2-27	Operating: 15G, 11ms Storage: 30G, 11ms duration	Operating: 15G, 11ms Storage: 30G, 11ms duration	Cooling	1 chassis FAN
Vibration DIN EN 60068-2-6	Operating: 10-500 Hz, 1G/3 axis	Operating: 10-500 Hz, 1G/3 axis	Vibration	Operating: 10 to 500 Hz Random
Humidity rel.	5 - 95% @ 40°C not condensing	5 - 95% @ 40°C not condensing	Humidity	20% to 80%
Operating System	WIN XP (embedded), LINUX (embedded)	WIN XP (embedded), LINUX (embedded)	Dimensions (H x W x D)	87 x 200 x 199
MTBF	> 25000 h	> 40.000 h	Approvals	CE
Dimensions H x W x D	270 x 145 x 218 mm (10.63 x 5.70 x 8.58 inch)	235 x 330 x 130 mm (9.25 x 13.00 x 5.12 inch)	MTBF	50.000 h
Operating Temperature	0°C to 50°C	0°C to 50°C	Temperature	Operating: 0°C to 50°C
			Dimensions H x W x D	270 x 145 x 218 mm (10.63 x 5.70 x 8.58 inch)
			Operating Temperature	0°C to 50°C (32°F-122°F)

ThinkIO – Compact and Rugged Embedded IPC

The ThinkIO family is dedicated to OEMs acting in industrial, building, transportation and energy automation markets. The open and adaptable ThinkIO is utilized either as Industrial PC (IPC) with software development on different operating systems, or optionally as an IEC61131-3 compliant SoftPLC. The integrated platform significantly reduces time to market, allowing OEMs to focus on their core competence and save resources.

- SoftPLC CoDeSys**
- » Supports all five IEC 61131-3 languages
 - » Integrated Visualization
 - » Integrated OPC Server
 - » Integrated field bus configuration
 - » Configuration of network, clock, graphics, security and backup via Web browser

- WAGO-I/O-SYSTEM 750 and 753**
- » 1, 2, 4 or 8 channels per module
 - » Modules digital, analog, AS-I, RS232, RS485, counter, ...
 - » 0°C to +55°C, several modules available: -20°C to +60°C
 - » 753 series – connection part removable from electronics
 - » Pre-wiring possible
 - » Increased maintainability
 - » Intermixable with 750 series

- ThinkIO and HMI**
- » Easy process data display with CoDeSys Visualization
 - » Touch Panel connection via DVI/VGA
 - » Distant monitoring with Kontron MicroClient

ThinkIO



ThinkIO-Duo/-Solo

Construction	Maintenance free: no ventilation slots, no batteries, no fan, aluminium chassis, soldered components
Mounting	DIN Rail
Weight	~ 1.100 g
CPU	Intel® Core™Duo 1.2 GHz, Intel® Celeron® M 1.06 GHz
DRAM	1 GByte standard
Flash	512 MByte/2 GByte/4 GByte onboard standard, external CF socket
NVRAM	512 kByte standard
I/O Standard	2x LAN 10/100/1000, 2x USB 2.0, RS232, DVI-I, 7x digital in, 2x digital out, watchdog relay out, RUN/STOP switch, reset, RTC
Dimensions (H x W x D)	100 mm x 236 mm x 65* mm (*from upper edge of DIN 35 rail)
Power Supply	24 V DC (-25%/+30%) / typ. 30 W
Cooling	passive, no fan
Protection Class	IP 20
Options (Fully Certified with System)	WAGO-I/O System, 3rd LAN 10/100, Profinet Controller/Device, Profibus Master/Slave, CANopen Master
Shock DIN EN 60068-2-27	15 g acceleration, 11 ms duration, 3 shocks per direction (18 total)
Vibration DIN EN 60068-2-6	5-9 Hz 3.5 mm amplitude, 9-150 Hz 4g, 1 octave/min, 10 sweeps/axis
Humidity rel.	93% RH at 40°C, non-condensing
Operating System	Embedded real-time Linux 2.6 cross compile distribution (preinstalled), Debian desktop distribution, Windows XP embedded
Accessories	10ms holdup module acc. IEC61131-2/PS2
Standard	Emission: EN55022/B, EN61000-6-3 / Immission: EN55024, EN61000-6-2 / Electrical Safety: EN60950-1 / Temperature Cold: IEC60068-2-1 / Temperature Dry Heat: IEC60068-2-2 / DIN 35 Rail: EN50022
Operating Temperature	0°C to +55°C

MICROSPACE®
Railway



MPCX28R



MPCR50R

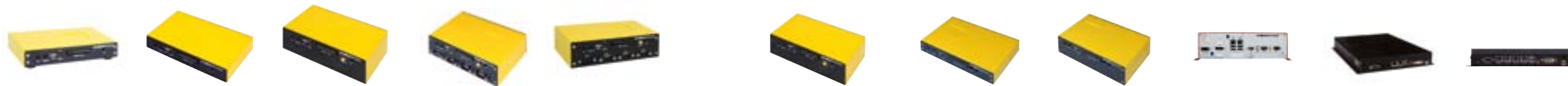
Processor/Performance	Intel® Atom™ Z530 (1.6 GHz)	Intel® Core™ Duo L2400 / Intel® Core™2 Duo L7400 (2x 1.6 GHz / 2x 1.5 Ghz)
HDD	Option: 2.5" 80 GByte or 32 GByte SSD	80 GByte 2.5" or 32 GByte SSD
CompactFlash	Option	yes
Memory	1 GByte DDR2	up to 3GByte
Graphics/Resolution	1600 x 1200 (UXGA)	2048x1536 (QXGA)
Video Interface 1	DVI-D, opt. VGA	VGA
Video Interface 2	-	DVI
COM1 / COM2	RS232C, RS422/485 (DSUB9) / RS232, RS422/485 (DSUB9)	RS232 (DSUB9) / RS323 (DSUB9)
COM3 / COM4	-	RS232, CAN (DSUB9) / RS232, CAN (DSUB9)
USB	2x 2.0 front, 2x 2.0 back, 1x 2.0 (M12) back	2x 2.0 front, 1x 2.0 (M12) front
LAN Port A	10/100 BASE-T (M12), with LAN boot, WakeOnLan	10/100 BASE-T (M12) with LAN boot
LAN Port B	10/100 BASE-T (M12), WakeOnLan	1 Gbit-LAN (RJ45) with LAN boot
Sound	2x Stereo (Mic.line)	2x Stereo 10W, 1x Stereo In
Digital Input/Output	4x DC-isolated in-/output	4x opto output, 4x opto input
DC voltage input (not isol.), V1248	10-54VDC/typ.15W	8-58VDC/typ.40W
DC voltage input (1.5kV isol.), Ixx	24/36/48/72/110VDC/typ.15W	24/36/48/72/110VDC/typ.40W
Expansion	2x PCIE Mini Card, 1x PCI/104	2x PCIexpress MiniCard, 1x PCI/104express slot, 1x PCI ExpressCard slot
Protection class	IP52, EN50155	IP40, EN50155
Dimensions (W x L x H in mm)	159 x 190 x 66	480 x 132 x 250
Weight	1,6 kg	6 kg
Special Features	WakeOnLan, RingWake, WakeOnRing, PowerSaveMode	-
Standard Temperature	-25°C to +55°C (T1) (with HD)	-25°C to +55°C (T1) (with HD)
Extended Temperature	-25°C to +70°C (T3) (with SSD)	-40°C to +85°C (TX) (with SSD)

MICROSPACE®
Vehicle



MPCX28

Processor/Performance	Intel® Atom™ Z530 (1.6 GHz)
HDD	(Option: 2.5" 80 GByte or 32 GByte SSD)
CompactFlash	Option
Memory	1 GByte DDR2
Graphics/Resolution	1600 x 1200 (UXGA)
Video Interface 1	DVI-D
Video Interface 2	Customer specific DVI-A
COM1 / COM2	RS232C, RS422/485 (DSUB9) / RS232C, RS422/485 (DSUB9)
USB	2x 2.0 back, 2x 2.0 front
LAN Port A	1 Gbit (RJ45) with LAN boot, WakeOnLan
LAN Port B	1 Gbit (RJ45)
Sound	2x Stereo (Mic. line)
Digital Input/Output	4x DC-isolated in-/output
DC voltage input (not isol.), V1248	10-54VDC/typ.15W
Expansion	2x PCIexpress MiniCard, 1x PCI/104
Protection class	IP52
Dimensions (W x L x H in mm)	159 x 187 x 66
Weight	1,5 kg
Special Features	WakeOnMove, RingWake, WakeOnRing, PowerSaveMode
Standard Temperature	-25°C to +55°C (with HD)
Extended Temperature	-25°C to +70°C (with SSD, no HD)



	MPC20	MPC20L	MPC21	MPC21A	MPC21B	MPC21C	MPC25	MPC26	MPCV800	MPCF50	MPCF50A
Processor/Performance	AMD Geode™ LX800 (0.5 Ghz)	AMD Geode™ LX800 (0.5 Ghz)	AMD Geode™ LX800 (0.5 Ghz)	AMD Geode™ LX800 (0.5 Ghz)	AMD Geode™ LX800 (0.5 Ghz)	AMD Geode™ LX800 (0.5 Ghz)	Intel® Atom™ Z510 (1.1 GHz)	Intel® Atom™ Z510 (1.1 GHz)	AMD Geode™ LX800 (0.5 Ghz)	Intel® Core™ Duo L2400 / Intel® Core™2 Duo L7400 (2x 1.6 GHz / 2x 1.5 Ghz)	Intel® Core™ Duo L2400 / Intel® Core™2 Duo L7400 (2x 1.6 GHz / 2x 1.5 Ghz)
HDD	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	160 GByte, 2.5"	320 GByte (SATA)	320 GByte (SATA)
CompactFlash	CF 256 MByte installed	socket (type I/II)	CF 256 MByte installed	CF 256 MByte installed	CF 256 MByte installed	CF 256 MByte installed	CF 256MB installed	CF 256MB installed	-	-	-
Memory	256 (max. 1 GByte)	256 (max. 1 GByte)	256 (max. 1 GByte)	256 (max. 1 GByte)	256 (max. 1 GByte)	256 (max. 1 GByte)	1GB soldered	1GB soldered	512 MByte	1 GByte (max. 2 GByte), (max. 3 GByte)	1 GByte (max. 2 GByte), (max. 3 GByte)
	int. graphic Controller / UXGA	int. graphic Controller / UXGA	int. graphic Controller / UXGA	int. graphic Controller / UXGA	int. graphic Controller / UXGA	int. graphic Controller / UXGA	Int. graphic Controller / UXGA	Int. graphic Controller / UXGA	int. graphic Controller / UXGA	int. graphic Controller / QXGA	int. graphic Controller / QXGA
Video Interface 1	CRT	CRT	CRT	CRT	CRT	CRT	DVI-D	DVI-D	CRT	CRT	CRT
Video Interface 2	-	-	-	-	-	-	-	-	-	DVI	DVI
COM1 / COM2	-	-	RS232C (DSUB9) / -	RS232C (DSUB9) / RS232 (DSUB9)	RS232C (DSUB9) / RS232 (DSUB9)	RS232C (DSUB9) / RS232 (DSUB9)	-	RS232/RS232	RS232C / RS232C	-	-
COM3 / COM4	-	-	-	RS232C (DSUB9) / RS232C (DSUB9)	CAN1 (DSUB9) / CAN2 (DSUB9)	-	-	-	-	-	-
USB	4x 2.0 (1x internal)	4x 2.0 (1x internal)	4x 2.0 (1x internal)	4x 2.0 (1x internal)	4x 2.0 (1x internal)	4x 2.0 (1x internal)	6x 2.0 (of which 1x internal)	6x 2.0 (of which 1x internal)	4x 2.0	6x 2.0	6x 2.0
LAN Port A	10/100 BASE-T	10/100 BASE-T	10/100 BASE-T	10/100 BASE-T	10/100 BASE-T	10/100 BASE-T	1Gbit (PCIe)	1Gbit (PCIe)	10/100 BASE-T	10/100 BASE-T (RJ45) with LAN boot	10/100 BASE-T (RJ45) with LAN boot
LAN Port B	10/100 BASE-T	-	10/100 BASE-T	10/100 BASE-T	10/100 BASE-T	10/100 BASE-T	10/100 BASE-T	10/100 BASE-T	1 Gbit	1x 1 Gbit	3x 1 Gbit
Sound	2x Stereo	2x Stereo	2x Stereo	2x Stereo	2x Stereo	2x Stereo	2x Stereo	2x Stereo	-	2x Stereo	-
Digital Input/Output	-	-	-	4x opto isol. 50V/1A	-	-	-	-	24 programmable I/O	-	-
DC voltage input (not isol.), V1248	10V-28V/typ.10W	10V-28V/typ.10W	10V-28V/typ.10W	10V-28V/typ.10W	10V-28V/typ.10W	-	10V-28V/typ.12W	10V-28V/typ.12W	-	-	-
DC voltage input (1.5kV isol.), Ixx	-	-	-	-	-	-	-	-	-	-	-
Expansion	-	-	-	-	-	-	PCIexpress MiniCard	PCIexpress MiniCard	MiniPCI, PC/104-Plus (max. 2 cards)	MiniPCI	PCIexpress MiniCard
Protection class	-	-	-	-	-	-	-	-	IP40	IP40	IP40
Dimensions (W x L x H in mm)	165 x 110 x 27	165 x 110 x 27	165 x 110 x 46	165 x 110 x 46	165 x 110 x 46	165 x 110 x 46	165 x 110 x 27	165 x 110 x 46	292 x 146 x 83	310 x 256 x 42	310 x 256 x 42
Weight	500 g	500 g	700 g	700 g	700 g	700 g	500 g	500 g	3 kg	3 kg	3 kg
Special Features	fanless, incl. DC power cable	fanless	MiniPCI-socket, PCI/104-slot, incl. DC power cable	MiniPCI-socket, incl. DC power cable	MiniPCI-socket, incl. DC power cable	MiniPCI-socket, PCI/104-slot, incl. DC power cable	fanless	fanless	Videointerface 3: LVDS, 18 bit	3D-Support: DirectX9	3D-Support: DirectX9
Standard Temperature	0°C to +50°C (with HD)	0°C to +50°C (with HD)	0°C to +50°C (with HD)	0°C to +50°C (with HD)	0°C to +50°C (with HD)	0°C to +50°C (with HD)	0°C to +40°C (with HD)	0°C to +40°C (with HD)	+5°C to +50°C (with HD)	+5°C to +50°C (with HD)	+5°C to +50°C (with HD)
Extended Temperature	-25°C to +70°C (without HD)	-25°C to +70°C (without HD)	-25°C to +70°C (without HD)	-25°C to +70°C (without HD)	-25°C to +70°C (without HD)	-25°C to +70°C (without HD)	-25°C to +50°C (without HD)	-25°C to +50°C (without HD)	-25°C to +70°C (with SSD/CF)	-25°C to +70°C (with SSD)	-25°C to +70°C (with SSD)



» μ TCA and cPCI Platforms «



Kontron offers comprehensive pre-integration and pre-validation services for its MicroTCA and CompactPCI platforms and enclosures.

Available in different form factors, the line of Kontron platforms and enclosures are reliable, scaleable and always the best configuration from the very start.

MicroTCA

MicroTCA is a new open modular standard developed by the PICMG committee. MicroTCA is complementary to AdvancedTCA (ATCA). Where ATCA is optimized for very high capacity, high performance applications, MicroTCA is designed to address cost sensitive and physically smaller applications with lower capacity, performance, and perhaps less stringent availability requirements.

MicroTCA preserves many of the important philosophies of ATCA, including basic interconnect topologies and management structure. MicroTCA has a primary purpose of serving as a platform for telecommunications and enterprise computer network equipment. Its secondary goal is to function as a platform for other demanding market places, such as Customer Premises Equipment (CPE). By configuring highly diverse collections of AMCs in a MicroTCA Shelf, many

different application architectures can be easily realized. The common elements defined by MicroTCA are capable of inter connecting these AMCs in many interesting ways – powering and managing them, all at high efficiency and low cost.

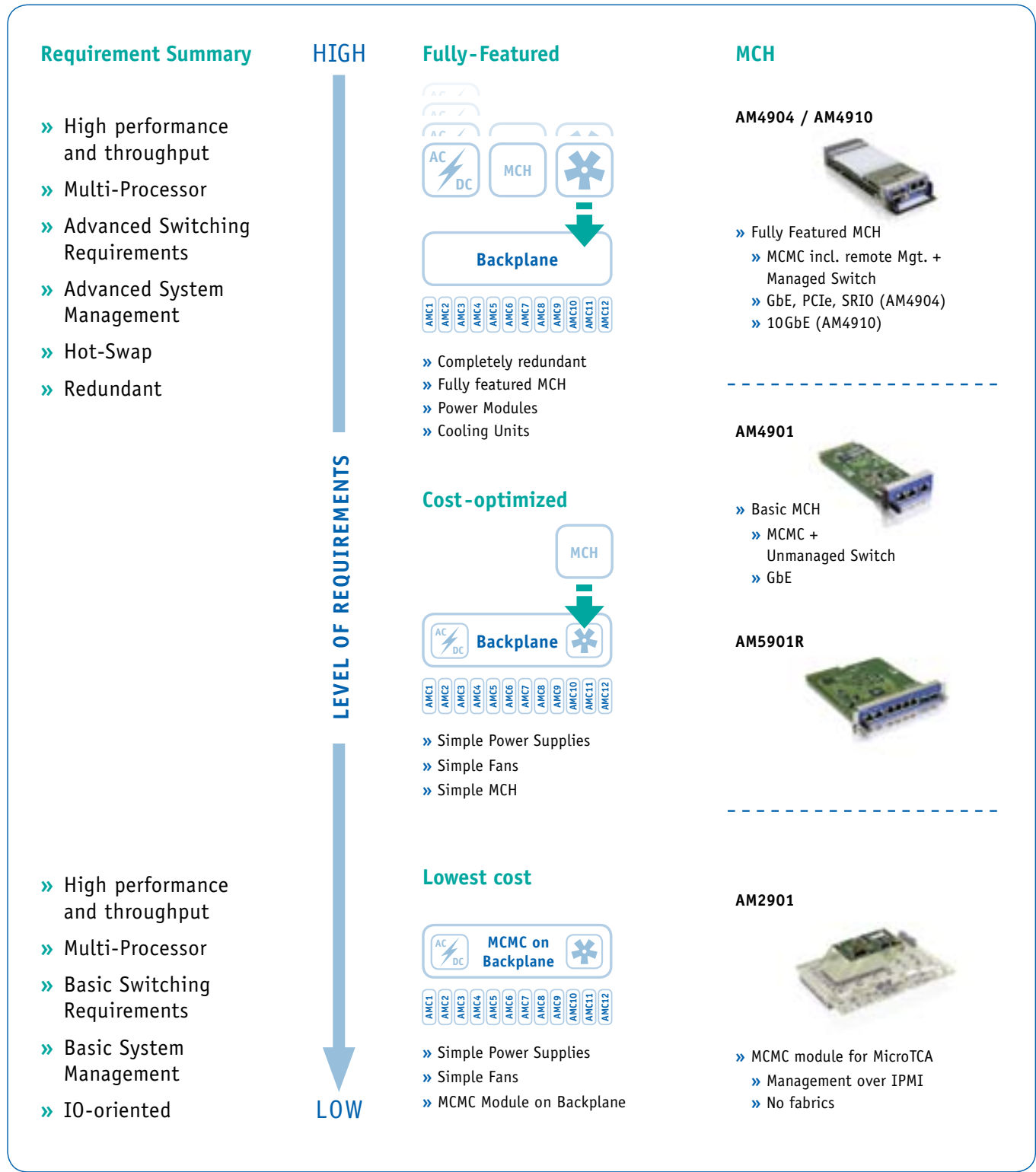
Some Further Benefits of MicroTCA:

- » Complementary to AdvancedTCA
- » Full conformance with the AMC.0 definition
- » Support any/all AMC-defined form factors
- » Favorable cost, size, and modularity
- » Target low start-up costs
- » Modular and serviceable
- » Hot Swap/plug&play support, in conformance with AMC.0 and consistent with AdvancedTCA



Because of the diverse configurations available with AdvancedMCs, MicroTCA platforms can be found throughout many application spaces today. The common elements defined by the MicroTCA standard allow the AMCs to be configured in many ways.

Powering and managing the AMCs with high efficiency demands a solid MicroTCA Carrier Hub (MCH). The MCH plays a key role in each individual MicroTCA platform in regards to flexibility, features and cost. Kontron offers different levels of MCH functionality to meet the needs of every application.



MicroTCA OM platforms – MicroTCA and AMC-Systems the (re)Evolution

The advent of the MicroTCA open standard is quickly proving to gain considerable traction as an architecture that fulfills a need for various telecom applications that do not require the size and cost of a complete ATCA system. One of the significant factors behind the success of MicroTCA is its reuse of support of the ecosystem of new and existing AMC modules. Even though it was designed for telecommunication applications, the application areas for MicroTCA go far beyond.

Among these applications are communication technologies and image processing in the military and medical area, Professional Mobile Radio, multiprocessing systems in industrial automation, as well as avionic servers. Other areas of application include infotainment, video surveillance and information systems.

The MicroTCA specification today supports managed systems consisting of processors, DSP, Network Service Processors, storage, line cards, I/O cards and RF modules. Among the benefits of MicroTCA is the flexibility with respect to interconnecting AMCs over PCI-Express, Ethernet (1GbE and 10GbE), Serial Rapid IO and SAS/SATA.

Basically all application areas combine the following requirements:

- » Multiprocessor systems
- » High network capacity
- » Low latency
- » Large data throughput

mTCA OM single platforms	OM6040 Compact		
	OM6040 Compact	OM6060	OM6120
Form Factor	3U	3U	5U
Connectivity	GbE, PCIe or SRIO switching, SATA as P2P	GbE, PCIe, SRIO switching, SATA as P2P	GbE, PCIe, SRIO, 10GbE switching, SATA as P2P
Characteristics	Compact, high performance	Value oriented	High performance, high density
Power Supply	250W AC	250W AC	300W or 2x 300W AC
Slot	4x single width	6x single width	12x single width
MCH	AM4904-BASE, AM4904-PCIe, AM4904-SRIO	AM4901	AM4904-BASE, AM4904-PCIe, AM4904-SRIO, AM4910
Basic Configuration	MCH	MCH	MCH
Customer Configuration	Processor cards, DSPs, I/O	Processor cards, DSPs, I/O	Processor cards, DSPs, I/O

mTCA OM double platforms	OM6090D/OM7090D		
	OM6090D/OM7090D	OM6040D	OM6062
Form Factor	7U	5U	5U
Connectivity	1/10GbE switching; PCIe, SATA as P2P	1/10 GbE switching; PCIe, SATA as P2P	1 GbE switching; PCIe, SATA as P2P
Characteristics	High-end, high bandwidth	Compact, performance-oriented	Cost optimized, front I/O connectivity
Power Supply	Up to 3x 600W AC	Up to 2x 300W AC	300W AC
Slot	9x single or double width	4x single or double width	6x single or double width
MCH	Dual MCH slots: AM4910, AM4904-BASE	AM4910, AM4904-BASE	AM5901
Basic Configuration	MCH	MCH	MCH
Customer Configuration	Processor cards, I/O cards	Processor cards, I/O cards	Processor cards, I/O cards

CompactPCI Platforms

6U Standard Platforms			
			
	XL2000	XL1000 Series	CP-ASM6-P47
Depth	210 mm	275 mm	275 mm
19" Rack Mounting	Wall mount	Cabinet / ETSI mount	Cabinet or Wall mount
Backplanes	4 slot	2, 4, 6 or 8 Slot	4, 8 or 16 Slot
Power Supply	75 Watt AC or DC	up to 3x P47 series	up to 6x P47 series
Cooling	optional	Left to right fan	Bottom to top fan
Housing	28 HP / 7U	84 HP / 1, 2, 3 or 4U	84 HP / 6U
Packet Switched Backplane	N/A	optional	optional
H110	N/A	optional	optional
Additional	not fitted with boards		

6U PSB Platforms		
		
	CP-ASM6-PSB	CP-ASM10-PSB
Depth	275 mm	275 mm
19" Rack Mounting	Cabinet mounting	Cabinet mounting
Backplanes	16 slot	14 slot + 2 fabric switch slots
Power Supply	up to 4x 200 W / 3U	up to 4x 250 W / 3U
Cooling	Bottom to top fan	Built in fan tray
Housing	84 HP / 6U	84 HP / 10U
Packet Switched Backplane	yes	yes
H110	yes	N/A
Additional		IPMI & chassis monitoring optional

3U Platforms			
			
	CP-ASM3	CP-ASM4-POCKET	RTOP
Depth	275 mm	210 mm	298 mm
19" Rack Mounting	Cabinet or Wall Mount	Wall mount	Desktop
Backplanes	Various Version available / 2-11 slots	4 slot	4-slot cPCI
Rear I/O	Yes	No	Yes 80mm
Drives	DVD / HDD / FDD optional	HDD optional	Room
Characteristics	Modular System, Redundant PSU	Cost optimized system	Development Rack
Power Supply	P47 series or M series	75 Watt AC or DC	200 W
Cooling	Optional	Optional	Fan
Housing	42 HP or 84 HP / 3U	28 HP / 4U	H=191mm W=170mm

Application-Ready Platforms

CPCI Application-Ready Platforms combine modularity, robustness, low-maintenance, and longevity of CompactPCI designs with leading edge technologies, ready to be used for dedicated types of applications.

Kontron offers a choice of processors and network technology for application-ready-platforms. Among the target markets are Transportation, Industrial Plants, Vessels, Coastal Waters and Borderline Control. Systems may be configured in a modular way. For example surveillance with radar, sonar, or video, and switching especially in harsh environments is a growing demand and therefore one of the application segments.

To meet the requirements for applications such as Internet On Train, Passenger Information systems, Train Management & Control as well as platforms for wayside systems including switching, routing, video surveillance and train control, Kontron offers platforms who bring a maximum of application-ready functionality. The modularity and flexibility of the CompactPCI standard also allows an easy customization of all Application Ready Platforms according to customer demands.

		
OBSERVO Rugged RAID Data Server	INTERPARLO Internet On Train Server	CP-ASM3-MPSW Switched Multiple CPU Platform
» Surveillance Data Recording in harsh environments » Transportation, Borderline, Coastal Water, Industrial Plants » Fanless RAID System, up to 8 or 4 hot swap Disks » Hardware RAID controller RAID 0, 1, 5, 10, JBOD » CompactPCI technology: robust, modular, long-lasting » EN50155 compliant	» CompactPCI Platform for Passenger Infotainment » Transportation » All in one: Multiple CPU + switched Ethernet Access » Secondary controllers for streaming applications » Wireless Modules for UMTS, GPRS, GPS and WiFi » EN50155, M type connectors, 24...110 VDC	» All rugged applications requiring redundancy, diagnostics, or supervision » Various Markets including: Industrial Automation, Transportation, Defense, » Secondary bus & controller in one rack » Integrated network access via GbE Switch » Advanced managed switching L2, L3 » Wide CPU performance range from Intel® Celeron®M 1.06 GHz up to Intel® Core™ i7 2.53 GHz



» Mil/Aero Rugged Systems & Enclosures «



Kontron's rugged systems and enclosures are designed for strength, serviceability, and modularity and offer the newest technologies to meet a wide range of military applications. Rack-mount or ATR form factor, 6U or 3U, Kontron enclosures and systems are tuned to a variety of shock, vibration and EMI standards based on operating environments.

These advanced chassis designs are optimized for both flexible configurability and rugged performance, with a

range of choices in each design: from cooling methods to bus/backplane architectures to processors, I/O and power supplies. Whether the specific requirement is for a standalone chassis, rack-mount, portable or custom platform, Kontron can provide a solid foundational design with the flexibility for tailoring the features, performance and cost to any specification.

Over 15 years of satisfied customers testify to Kontron quality and expertise in aerospace and defense.

FROM DEVELOPMENT TO SYSTEM DEPLOYMENT



Turnkey Evaluation and Development Platforms

3U cPCI



Easy ITC

CPU	Intel® Core™2 Duo 1.5 GHz
CPU L2 Cache	4 MB
Chipset	Intel® 3100
DRAM	1GB DDR2− 400 SDRAM with ECC
Operating System Preinstalled	Linux Fedora9, Windows XP Pro
Hard Disk	SATA 40 GB Hard Disk Drive
Ethernet	2x Gigabit Ethernet configurable front or rear
Graphics Controller	XGI Z11 with 32 MB SDRAM
Dimensions (H x W x D)	191 x 169.64 x 298.1 mm
Front IO	3x USB, VGA, PS2 Keyboard/Mouse, 2x Gigabit Ethernet (configurable on front or rear), 2x Serial Lines
Rear IO	2x USB, 2x Serial Lines, 2x Gigabit Ethernet (configurable on front or rear)
Accessories	3U cPCI Rear Transition Module

3U VPX



EZ3-VX3030

CPU	Intel® Core™ i7 @ 2Ghz
CPU L2 Cache	4 MB
Chipset	Mobile Intel® QM57 Platform Controller Hub
DRAM	Soldered 2/4/8 GB DDR3-800/1066 with ECC
OS Preinstalled	Fedora 14
2D/3D Acceleration	OpenGL 2.1 DirectX 10
Flash Disk	USB 2.0/ SATA Flash Disk socket
Operating System Preinstalled	Linux Fedora 14 or VxWorks 6.x
Hard Disk	-
Ethernet	3x Gigabit Ethernet (1is front OR rear) +2 1000BaseBX option
Graphics Controller	Intel® HD Graphics with Dynamic Frequency in CPU
Dimensions (H x W x D)	191 x 169.64 x 298.1 mm
Front IO	1x GETH, Serial, LED, VGA, USB 2.0, LEDs, RESET
Rear IO	2x USB, 3x GETH, 4x SATA, 2x eDP, 2x COM, PCIe 4x1, 2x Serial, GPIO
Open Slots	3
Accessories	VPX 3U Rear Transition Module, USB and SATA Mass Storage Cards
Bus type	3U, 0.8" Pitch, 4-Slot DIStributed VPX; IFDP04-3U-VPXV1



EZ3-VX3230

CPU	Freescale MPC8544 @ 1 GHz, low power CPU
CPU L2 Cache	256 KB
Chipset	Single Chip Design (SOC)
DRAM	Soldered 1 GB DDR2-533 SDRAM with ECC
OS Preinstalled	Fedora 9 or VxWorks 6.8
2D/3D Acceleration	No Graphics
Flash Disk	USB 2.0 Flash Disk socket
Operating System Preinstalled	Linux Fedora 9 or VxWorks 6.8
Hard Disk	-
Ethernet	2x Gigabit Ethernet configurable front or rear
Graphics Controller	Not Applicable
Dimensions (H x W x D)	191 x 169.64 x 298.1 mm
Front IO	2x GigEthernet, Serial, USB 2.0, LEDs
Rear IO	2x USB 2.0, 2x GigEthernet, 2x SATA, 2x COM, PCIe 4x1, GPIO
Open Slots	3
Accessories	VPX 3U Rear Transition Module, USB Mass Storage Cards
Bus type	3U, 0.8" Pitch, 4-Slot DIStributed VPX; IFDP04-3U-VPXV1

➔ For more details please see productline **VPX** on page 50.

6U VPX



EZ2-VX6060

CPU	Two Intel® Core™ i7
CPU L2 Cache	256 KB per core
Chipset	Two Intel® Platform Controller Hub PCH QM 57
DRAM	4 GB on each CPU
OS Preinstalled	Linux 2.6.x or VxWorks 6
Hard Disk	250 GB SATA Hard Disk Drive
Ethernet	6x Gigabit Ethernet (2x Front Panel, 4x Rear Panel)
Dimensions (H x W x D)	88.9 x 482.6 x 440 mm
Rear I/O	
Options	None
Front IO	2x Gigabit Ethernet, 2x USB, 1x Serial Line, 4x LEDs, 1x VGA, 1x Display Port
Open Slots	none
Accessories	Rear Transition Module

6U VME



EZ1-VM6250



EZ1-VM6050

CPU	Freescale Dual-Core MPC8640D @1.25 GHz with Altivec	Intel® Core™ i7 @ 2Ghz
CPU L2 Cache	2 MB	4 MB
Chipset	Single Chip Design (SOC)	Intel® QM57 Platform Controller Hub
DRAM	2 GB DDR2 with ECC	Soldered 2/4/8 GB DDR3-800/1066 with ECC
Flash Disk	USB 2.0/SATA Flash Disk socket	USB 2.0/SATA Flash Disk socket
Operating System Preinstalled	Linux Fedora 9	Linux Fedora 12
Hard Disk	250 GB SATA Hard Disk Device	SATA FLASH Disk Drive of 16 GB or more
Ethernet	3x Gigabit Ethernet	2x Gigabit Ethernet configurable front or rear
Graphics Controller	-	XGI Z11 with 32 MB SDRAM
Dimensions (H x W x D)	44.64 x 443.5 x 254.3 mm	44.64 x 443.5 x 254.3 mm
Front IO	COM, 2 Gigabit Ethernet, USB, LEDs, Reset	COM, 2 Gigabit Ethernet, USB, LEDs, Reset
Rear IO	2x USB, 3x Gigabit Ethernet, 1x Serial	2x USB, 3x Gigabit Ethernet, 1x Serial -- graphic option

Kontron Turnkey Platforms, ideally suited for evaluation and development

- » High-performance
- » Low-cost
- » COTS based solution
- » Built for Customization
- » Ready-to-use

Rapid Prototyping Baselines

3U Rugged COTS Line Systems



MEC-VPX



MEC-CompactPCI

Backplanes	4-slots VITA 46 VPX backplane	4 slots
I/Os	MIL-STD-1553, ARINC-429, VGA, GETH, UART	MIL-STD-1553, UART, Ethernet and GPIOs
Power Supply	100 W	75 Watt AC or DC
Operating System	Linux, VxWorks, ARINC653, D0178B	Linux, VxWorks, ARINC653, D0178B
Operating Temperature	-40°C to +71°C	-40 °C to +71 °C

3U & 6U Industrial Grade/ Development Enclosures

VME Racks and Chassis



R4U8S



R2U4S



ASM3-VME



FS-1107/09



FS-1112/18

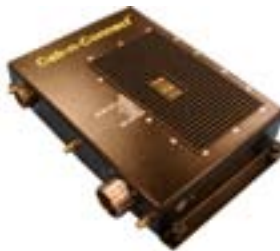
Height	4U Chassis	2U Chassis	3U Chassis	7 or 9-slot 6U 160mm cards	8U Chassis
Expansion	8-slot 6U 160mm cards and 80mm RTM	4-slot 6U 160mm cards with 80mm RTM	7, 12, 15 (3U cards)	7 or 9-slot 6U 160mm cards	12 or 18-slot 6U cards
Power Supply	700 W	400 W	50 W or 90 W	400 W	800 W
Dimensions H x W x D	H=4U D=17.32" W=19"	H=2U D=17.32" W=19"	42 / 84 HP /3U	10.25" x 17.63" x 9"	14" x 19" x 20"
Input Voltage	100-240 VAC 50-60 Hz	100-240 VAC 50-60 Hz	95-260 V AC	85-264 VAC, 47-440 Hz	90-264 VAC; 47-440 Hz

Commercial Avionics
"Wireless-in-the-Sky" & "Video-on-Demand" Inflight Entertainment Systems

Cab-n-Connect™ 802.11n Wireless Access Point

Cab-n-Connect™ access point takes advantage of the recently ratified IEEE 802.11n specification, which increases maximum throughput to wireless clients from 54mbps to over 300mbps. Based on Motorola's award winning AP-7131 802.11 a/b/g/n enterprise-grade access point, Cab-n-Connect provides secure wireless connectivity for commercial airlines and general aviation.

- » Backwards compatible to 802.11 a/b/g standards
- » Can operate as a Cabin Wireless LAN Unit (CWL) and Terminal Wireless LAN Unit (TWLU)
- » ARINC 763 compliant
- » Options for integrated Ethernet Switch, Power Over Ethernet
- » Qualified to RTCA/DO-160F



ACE Flight™ 600 General Purpose Airborne Server

The gateway through which flight crews and ground personnel access essential onboard information, the ACE Flight™ line of general purpose Airborne Servers provide a reliable, flexible, and high performance framework for airborne flight information systems.

- » ARINC 600
- » 360-800Hz, 115VAC
- » Scalable to Customer Application
- » Options for customer configured I/O
- » Qualified to RTCA/DO-160F



Military Rugged Systems & Enclosures

Kontron’s unique blend of COTS products, enclosures and specialized systems designs provide a solid foundation for quick development of custom solutions. SWAP-C requirements, the operational parameters of high altitude UAVs, wheeled military vehicles or a shipboard shock and vibration resilient solution, Kontron has the design and manufacturing capability to meet the most demanding operating environment.

19" Rackmount					
	FS-1203	FS-1207	FS-1209	FS-1270	FS-1290
Backplane Slots	3 Slots	7 Slots	up to 7 Slots (5 slot VPX)	10, 12, 18 Slots	10, 12, 18 Slots
Form Factor	2U Chassis	4U Chassis	5U Chassis	8U Chassis	9U Chassis
Dimensions	3.5" x 19" x 20"	7" x 24" x 19"	8.75" x 18" x 19"	14" x 22.1" x 19"	15.75" x 24" x 19"
Weight	25 lbs	35 lbs	40 lbs	60 lbs	70 lbs
Compatible Architectures	6U - VME, cPCI, VPX	6U - VME, cPCI	6U - VME, cPCI, VPX	VME, cPCI	VME, cPCI, VPX
Cooling	Convection	Convection	Convection	Convection	Convection
Power Supply	160 Watts	400 Watts	400 Watts	800 Watts	800 Watts
Vibration	MIL-STD-810E, MIL-STD-167, RTCA/DO-160F				
Shock	MIL-STD-810E, MIL-S-901D, RTCA/DO-160F				
EMC	MIL-STD-461E				
Storage Temperature	(-40°C to +71°C)	(-40°C to +71°C)	(-40°C to +71°C)	(-40°C to +71°C)	(-40°C to +71°C)
Operating Temperature	(0°C to +50°C)	(0°C to +50°C)	(0°C to +50°C)	(0°C to +50°C)	(0°C to +50°C)

Rugged Systems		
	FS-8704	Cobalt
Board / Mezzanines	Motherboard	COM Express®
Form Factor	ATX	Small Form Factor
Dimensions	7" x 22" x 19"	6.5" x 9.75" x 2.95"
Weight	45 lbs	4.7 lbs
Compatible Architectures	PCI, CPU	Com Express
Cooling	Convection	Conduction
Power Supply	460 Watts DC	28VDC input, MIL-STD-1275 (vehicle) 28VDC input, MIL-STD-704 (aircraft) 115VAC input, 360 - 800Hz (aircraft) Approximately 5W-25W
Vibration	MIL-STD-810E, MIL-STD-167, RTCA/DO-160F	MIL-STD-810E, MIL-STD-167, RTCA/DO-160F
Shock	MIL-STD-810E, MIL-S-901D, RTCA/DO-160F	MIL-STD-810E, MIL-S-901D, RTCA/DO-160F
EMC	-	MIL-STD-461E, RTCA/DO-160F
Enclosure	-	MIL-STD-108E
Special Features	-	Scalable per customer needs
Additional	-	8-port Ethernet switch, ARINC 429 (3) receive and (2) channels, MIL-STD-1553 (2) redundant channels, GPS (option)
Accompanying Board Products	-	N/A
Storage Temperature	-	(-50°C to +95°C)
Operating Temperature	-	(-20°C to +55°C)

ATR											ATR
	FS-5955	FS-5965	FS-5968	FS-5971	FS-5975	FS-5977	FS-5981	FS-5985	FS-7275	FS-7276	
Backplane Slots	10 Slots	8 Slots	8 Slots	5 Slots	5 Slots	5 Slots	5 Slots	5 Slots	7 Slots	8 Slots or 15 Slots	Backplane Slots
Form Factor	1-short ATR	3/4-short ATR	3/4-short ATR	1/2-short ATR	1/2-short ATR	1/2-short ATR	1/2 ATR	1/2 ATR	1-short ATR	1 1/2 long ATR	Form Factor
Dimensions	10.48" x 12.60" x 10.12"	7.62" x 13.87" x 7.50"	7.62" x 13.87" x 7.50"	7.62" x 13.75" x 4.88"	7.735" x 13.75" x 4.88"	7.84" x 13.75" x 4.88"	5.84" x 11" x 4.88"	5.84" x 13.93" x 4.88"	7.6" x 19.6" x 10.1"	10.625" x 19.62" x 15.38"	Dimensions
Weight	30.6 lbs	18 lbs	32 lbs	22 lbs	18 lbs	22 lbs	7.9 lbs	9.7 lbs	20 lbs	40 lbs	Weight
Compatible Architectures	6U - VME, cPCI, VPX	6U - VME, cPCI, VPX	6U - VME, cPCI, VPX	6U - VME, cPCI, VPX	6U - VME, cPCI, VPX	6U - VME, cPCI, VPX	3U - cPCI, VPX	3U, cPCI, VPX	6U - VME, cPCI	6U - VME, cPCI	Compatible Architectures
Cooling	Conduction	Conduction	Conduction	Conduction	Conduction	Conduction	Conduction	Conduction	Convection	Convection	Cooling
Power Supply	550 Watts DC	550 Watts DC	550 Watts DC	200 Watts DC	200 Watts DC	200 Watts DC	208 W DC	200 Watts DC	450 Watts AC	600 Watts AC	Power Supply
Vibration	MIL-STD-810E	MIL-STD-810E	MIL-STD-810E	MIL-STD-810E	MIL-STD-810E	MIL-STD-810E	MIL-STD-810E	MIL-STD-810E	MIL-STD-810E	MIL-STD-810E	Vibration
Shock	MIL-STD-810E	MIL-STD-810E	MIL-STD-810E	MIL-STD-810E	MIL-STD-810E	MIL-STD-810E	MIL-STD-810E	MIL-STD-810E	MIL-STD-810E	MIL-STD-810E	Shock
EMC	MIL-STD-461E	MIL-STD-461E	MIL-STD-461E	MIL-STD-461E	MIL-STD-461E	MIL-STD-461E	MIL-STD-461E	MIL-STD-461E	-	-	EMC
Enclosure	MIL-STD-108E	MIL-STD-108E	MIL-STD-108E	MIL-STD-108E	MIL-STD-108E	MIL-STD-108E	MIL-STD-108E	MIL-STD-108E	-	-	Enclosure
Special Features	Available- custom I/O, wiring, backplane	Available- custom I/O, wiring, backplane	Available- custom I/O, wiring, backplane	Available- custom I/O, wiring, backplane	Available- custom I/O, wiring, backplane	Available- custom I/O, wiring, backplane	Available- custom I/O, wiring, backplane	Available- custom I/O, wiring, backplane	-	-	Special Features
Additional	AC 400Hz power option available	AC 400Hz power option available	AC 400Hz power option available	AC 400Hz power option available	AC 400Hz power option available	AC 400Hz power option available	AC 400Hz power option available	AC 400Hz power option available	-	-	Additional
Storage Temperature	(-50°C to +95°C)	(-50°C to +95°C)	(-50°C to +95°C)	(-50°C to +95°C)	(-50°C to +95°C)	(-50°C to +95°C)	(-50°C to +95°C)	(-50°C to +95°C)	(0°C to +50°C)	(0°C to +50°C)	Storage Temperature
Operating Temperature	MIL-STD-5400 C1	MIL-STD-5400 C1	MIL-STD-5400 C1	MIL-STD-5400 C1	MIL-STD-5400 C1	MIL-STD-5400 C1	MIL-STD-5400 C1	MIL-STD-5400 C1	-	-	Operating Temperature

» Open Communication Platforms «



Kontron Open Modular Core Platform are the result of a long-standing expertise in driving specifications and developing standard-based hardware components and integrated platforms for the telecommunications market.

As integrated core platforms, they provide redundant power entry modules, cooling infrastructure with hot swappable redundant fans, and 10G and 40GbE switching capabilities based on the AT8910 and AT8940 ATCA switch blade, each with platform synchronization interfaces.

AdvancedTCA Integrated 10G and 40G Core Platforms

Developing telecom equipment and applications based on standard-based, pre-integrated platforms ensures faster time to market and therefore faster time to revenue. A pre-integrated Open Modular Core platform saves the Telecom Equipment Manufacturer significant development time and resources by using standard based hardware and integrated data transport and management functionalities. Platform thermal pre-qualification according to standard based guidance, such as CP-TA B.4, ensures thermal interoperability and the flexibility to create different platform configurations of CPU, NPU, DSP storage or even specialized and custom ATCA based line cards that meet the requirements for 3G/4G, LTE, WIMAX, GPON and IP-TV network elements.

7 KEY BENEFITS TO TEMs & NEPs

- » Faster time-to-market
- » Development cost savings
- » Reduced inventory costs
- » Faster upgrades to new technology advances
- » Consistent long-life product support
- » Achieve shorter lead times for build-to-order systems
- » Global service & maintenance

ATCA OM Core Platforms



OM9141-40G



OM9141-10G



OM9020

Form Factor	13U GbE Platform with 40GbE	13U GbE Platform with 10GbE	2U GbE Platform; 10GbE options
Connectivity	Dual Star GbE, 40GbE	Dual Star GbE, 10GbE	GbE or XAUI direct interconnect
Slot	14	14	2
NEBS	Designed to meet NEBS Level 3	Designed to meet NEBS Level 3	Designed for NEBS Level 3 compliance
Platform Software	RedHat on COM express for System Manager	RedHat on COM express for System Manager	Options for: Red Hat Enterprise; Linux V.5, or Wind River Linux PNE 1.4; ENEA Element 2.0 HA middleware; support for IPMI 1.5
Node	12x slots	12x slots	2 Slots for GbE or 10GbE multi-core processor and/or carrier nodes
Switching	Base: 2xGbE per Node, Fabric: 4x10GbE per Node	Base: 2xGbE per Node, Fabric: 4x10GbE per Node	N/A
Storage	25GB / 50GB SATA M0-297 format or 16GB eUSB format for System Manager	25GB / 50GB SATA M0-297 format or 16GB eUSB format for System Manager	SAS/SATA options via AMC or RTM
Front IO	Fabric Interface: 4x 10G SFP+ FI with LRM support, Base Interface 4x 1G/10G SFP/SFP+ support, LRM	Fabric Interface: 4x 10G SFP+ FI with LRM support, Base Interface 4x 1G/10G SFP/SFP+ support, LRM	8x GbE or 4x GbE + 2x 10GbE
Rear IO	FI: up to 2x 40G QSFP FI (40G version only) BI: 2x 1G SFP 4x 10G SFP+ FI Interfaces with LRM support, optional Telco PLL (incl. optional syncE support)	FI: up to 2x 40G QSFP FI (40G version only) BI: 2x 1G SFP 4x 10G FI Interfaces with LRM support, optional Telco PLL (incl. optional syncE support)	All Slots
Open Slots	Based on customer requests	Based on customer requests	Based on customer requests
Shelf Manager	Single or Dual	Single or Dual	Single or Dual
Bus type	Dual Star	Dual Star	GbE or XAUI direct interconnect
Basic Configuration	Base Configuration: redundant or non-redundant AT8940 with COM-express for System Manager option, 2xShMC	Base Configuration: redundant or non-redundant AT8910 with COM-express for System Manager option, 2xShMC	Processor Blade (AT8050) Xeon 5600; Carrier Blade (AT8404); Total of 5 AMC slots (for Line Cards, DSPs, Network Service Processors, storage)
Customer Configuration	on demand	on demand	on demand

MicroTCA Integrated 10G Core Platforms

OM6061

The Kontron OM6061 is a highly flexible 1U platform (12.5” deep rack-mountable) for Central Office and service aggregation point applications. It is fully pretested with Kontron storage, processor, and network processor AdvancedMC modules, and features an 8-fan front-to-back cooling setup, an integrated 360W -48V or -60V power supply and a low cost MCH module platform. The OM6061 offers six mid-size AdvancedMC slots for multiple system configurations, and is designed to meet NEBS and is ideal for a wide assortment of applications, ranging from eNodeBs, SIP Servers, SSL Offload, and content-aware processing and QoS over Ethernet.

- » Cost-efficient MCH module and six (6) AMC slots
- » Front-to-back cooling and integrated 360W -48V or -60V power supply
- » Designed for NEBS compliance

OM5080

The OM5080 provides the lowest per-slot cost for carrier grade MicroTCA today by integrating both the MCH and Power Module functionality in the 2U chassis. The OM5080 is ideally suited for high bandwidth multi-processor and I/O intensive applications that need be deployed in a small footprint.

- Key Features:**
- » 2U integrated carrier grade platform
 - » 8 mid-size AdvancedMCs
 - » Dual integrated MCH
 - » Dual integrated AC or DC Power Supply

MicroTCA OM Core Platforms		
	OM6061	OM5080
CPU	AM4020 (processor), AM4211 (network processor)	2x AM4010 processor AMC
Form Factor	1U	2U
Connectivity	GbE, PCIe	GbE, PCIe
Options	Packet processor cards, Storage, DSPs, I/O	line cards, DSPs, I/O
Slot	6	8
Platform Software	Linux Kernel 2.6 installed; IPMI compliant on Carrier	Linux Kernel 2.6 installed; IPMI compliant on Carrier
Switching	MCH module	single star base & fabric
Storage	AM4510 SSD Module; AM4530 NAS SATA Module	SAS/SATA AMCs (option)
Front IO	8x GbE or 4x GbE + 2x 10GbE	8x GbE or 4x GbE + 2x 10GbE
Open Slots	6	6
MCH	AM4901	on Carrier (GbE, PCIe, SAS/SATA point-to-point)
Basic Configuration	Designed to meet NEBS; fully pre-tested with AM4510 (storage), AM4010 (processor), and AM4204 (network processor) AdvancedMC modules.	8 AMC Slots (2 x AM4010, 6 slots for customization, 2x GbE per AMC, 8 GbE Uplinks or 8 AMC Slots (2x AM4010, 6 slots for customization, 5x GbE per AMC, 4x GbE + 2x 10GbE Uplinks
Customer Configuration	On Demand	On Demand

Communication Rack Mount Servers

Kontron’s Communications Rack Mount Servers are ideally suited for telco and data network applications. They are available in 1U and 2U ruggedized, shallow-depth chassis with long life availability and support. Communication Rack Mount Servers include two product families:

Carrier Grade Servers

Carrier Grade Servers are NEBS-3 and ETSI compliant standard building blocks used in a variety of telecom applications and are important for satisfying the demanding requirements and limited space of the telecom central office. Available in 1U and 2U chassis.

Key Benefits:

- » NEBS-3 / ETSI compliant
- » Long life support (3–5 years)
- » Short depth (20”), ruggedized chassis
- » Dual, redundant AC or DC power option
- » Telco alarm management
- » Hardware RAID option
- » Industry-leading performance/watt

IP Network Servers

IP Network Servers are optimized for high I/O throughput and compute performance, serving as an excellent choice for data network applications with large I/O requirements. They are well suited for enterprise application acceleration and content caching, and are ideal platforms for running Telco SoIP, including IMS, IPTV, video on demand (VoD), SIP application servers, IP-PBX, and IPPSTN gateways. Available in 1U and 2U chassis.

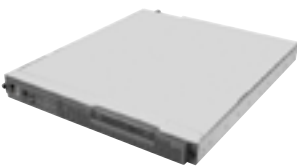
Key Benefits:

- » Short depth (20"-24"), ruggedized chassis
- » “Appliance” look and feel
- » Long life product availabilitiy (3-5 years)
- » Dual, redundant AC or DC power option
- » Hardware RAID option (2U servers only)
- » Industry-leading performance/watt

Carrier Grade Servers



CG2100 Carrier Grade Server



Carrier Grade Server TIGW1U

Form Factor	2U chassis	1U chassis
Processor	Two socket six-core Intel® Xeon® E5600 series processors	Dual socket support for Intel® Xeon® processors L5410 (45nm) OR for Intel® Xeon® processors LV 5148 or LV 5128 (65nm)
Chipset	Intel® 5520 Chipset + ICH10R	Intel® 5000P Memory Controller and ESB2-E I/O Controller chipset; supports front side bus speeds of 1066 MHz and 1333 MHz
Power Supply	Dual-redundant 600W AC or DC hot-swap power supply (2nd power supply optional). PMBus supported	Dual, redundant 450W AC or DC Hot Swap Power Supply (2nd power supply optional)
Alarm Card	Telco Alarm Management - front-panel feature supports central office alarm systems	Telco Alarm Management - front-panel feature supports central office alarm systems
Rear I/O	Two rear-panel GbE NIC (Cu) ports. Additional I/O expansion available as option (see I/O Expansion Type).	Four rear-panel GbE NIC (Cu) ports, upgradeable to 12 GbE ports (max) based on PCI configuration
PCI Slots	Supports 3 or 5 PCI-E slots, or 3 PCI-E & 2 PCI-X slots. PCI Gen2 supported	One PCI Super slot supporting either PCI-X 133MHz or optional PCI-Express x8
Main Memory	Twelve RDIMM/UDIMM memory slots (DDR3-800/1066/1333). Maximum 96 GB memory	Six DIMM slots supporting FBDIMM memory; 240-pin DDR2-533 and DDR2-667 FBDIMMs can be used; Maximum 32GB memory
Drive bays internal	Drive trays for up to six hot-swap 2.5-inch SAS or SATA hard disk drives	Drive trays for up to three hot-swap 2.5-in. SAS hard disk drives. DVD-CDR installed.
RAID	Software RAID 0,1,10 supported (std); Hardware RAID 5,6 supported as optional module	Software RAID 0,1 supported (std); Hardware RAID 5 supported as optional module
Flash	Flash storage capability supports specifi ed solid state drives via USB or SATA interface; SD Flash Memory support (optional)	Flash storage capability supports specified solid state drives (purchased separately)
I/O Expansion Type	Optional I/O module enables external SAS storage or additional Quad GbE or Dual 10GbE ports	
Hot Swap	Hot-swap, redundant fans; hot-swap, redundant power supplies; hot-swap hard drives	Hot-swap, redundant power supplies; hot-swap hard drives
Management	Intel® Remote Management Module 3 (RMM3) w/ GCM4 (optional)	Remote Management Module (optional)
Front Bezel	Customizable front bezel adaptable to customer needs and environment	Standard gray bezel; customizable bezel available (optional)
Dimensions (H x W x D)	3.45 x 17.14 x 20 inches (87.6 x 435.3 x 508 mm)	1.70 x 16.93 x 20 inches (43.25 x 430 x 508 mm)

IP Network Servers



IP Network Server NSN2U



IP Network Server NSW1U

Form Factor	2U chassis	1U chassis
Processor	Dual socket support for six-core Intel® Xeon® Processors 5600 Series and quad-core 5500 Series	Single socket support for the Intel Xeon processor 5400 series (L5410 or E5540) (45nm) OR for the Intel Xeon processor 5100 series (65nm)
Chipset	Intel® 5520 Chipset + ICH10R	Intel® 5000P Memory Controller and ESB2-E I/O Controller chipset; supports front side bus speeds of 1066 MHz and 1333 MHz
Power Supply	Dual-redundant 600W AC or DC hot-swap power supply (2nd power supply optional). PMBus supported.	Dual, redundant 450W AC or DC Hot Swap Power Supply (2nd power supply optional)
Rear I/O	Two rear-panel GbE NIC (Cu) ports. Additional I/O expansion available as option (see I/O Expansion Type).	Four rear-panel GbE NIC (Cu) ports, upgradeable to 12 GbE ports (max) based on PCI configuration
Front IO	N/A	Optional Four or Eight front-panel GbE NIC ports (copper or fiber), with optional Bypass capability
PCI Slots	Supports 3 or 5 PCI-E slots, or 3 PCI-E & 2 PCI-X slots. PCI Gen2 supported.	One PCI Super slot supporting either PCI-Express x8 or optional PCI-X 133MHz
Main Memory	Twelve RDIMM/UDIMM memory slots (DDR3-800/1066/1333). Maximum 96 GB memory	Six DIMM slots supporting FBDIMM memory; 240-pin DDR2-533 and DDR2-667 FBDIMMs can be used; Maximum 32GB memory
Drive bays internal	Drive trays for up to eight hot-swap 2.5-inch SAS or SATA hard disk drives; Additional bay supports optical drive (purchased separately)	Drive trays for two fixed 3.5-in. SATA hard disk drives
RAID	Software RAID 0,1,10 supported (std); Hardware RAID 5,6 supported as optional module	Software RAID 0,1 supported (std)
Flash	Flash storage capability supports specified solid state drives via USB or SATA interface	Flash storage capability supports specified solid state drives (purchased separately)
I/O Expansion Type	Optional I/O module enables external SAS storage or additional Quad GbE or Dual 10GbE ports	
Hot Swap	Hot-swap, redundant fans; hot-swap, redundant power supplies; hot-swap hard drives	Hot-swap, redundant power supplies
Management	Intel® Remote Management Module 3 (RMM3) w/ GCM4 (optional)	Remote Management Module (optional)
Front Bezel	Customizable front bezel adaptable to customer needs and environment	Customizable front bezel adaptable to customer needs and environment
Dimensions (H x W x D)	3.45 x 17.14 x 24 inches (87.6 x 435.3 x 610 mm)	1.70 x 16.93 x 20 inches (43.25 x 430 x 508 mm)

» About Kontron «

Through a set of core values, Kontron employees strive to meet the needs of all our customers and partners. Our mission is guided by a set of objectives that help define the fundamental spirit and philosophy that underscore the integrity and enthusiasm with which we regard our relationships.

We aspire to:

- » Build sound customer relationships by surpassing expectations through innovation, quality workmanship and unmatched technical support and service
- » Position our company as a key vendor in the embedded computer market with leading solutions that reduce our customers' time-to-market and provide them with a clear competitive advantage
- » Provide value for our shareholders by maintaining financial strength and stability; and attaining market leadership through increased revenues and strategic acquisitions.
- » Create solid alliances with our customers, partners, suppliers and other industry members to mutually strengthen our market positions.

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» Driving Industry Standards

In addition to designing products based on industry standard form factors including PC/104, PICMG® 1.x, COM Express®, VME, VPX, CompactPCI, AdvancedTCA, AdvancedMC and MicroTCA board-level solutions and featuring the latest technology advancements, Kontron's engineers are embedded computer innovators.

Kontron creates benchmark standards for cutting-edge embedded solutions, such as ETX® (Embedded Technology eXtended), which has become the global standard for

custom-designed solutions based on Computer-on-Modules. COM Express® is the latest PICMG® standard – officially adopted in 2005. Kontron's COM Express® modules based on PCI-Express are blazing new trails in embedded computer technology.

Over 12 years of experience in consistent further development of the COM Express® technology therefore offers a stable foundation for the design of carrier boards – and a secure investment in the future.

» Strategic Partners / Memberships

Together with our major industry partners, such as Intel®, Freescale™, Altera, Microsoft® and Wind River, we are working to reduce the time-to-market for our OEM customers. Close relationships with our strategic partners allow us the earliest access to cutting-edge technologies and enables us to solve customer problems efficiently and quickly.



» Kontron – Your Preferred Outsourcing Partner

Kontron's years of experience with global production and logistics capabilities offer our customers high-quality, innovative products that are delivered on time. We are dedicated to OEM's business and we strongly believe that system and software integration is the key for success.

Kontron offers OEMs:

- » Open Standards
- » Rugged COTS Products
- » Reduced Time-To-Market
- » Customization & ODM Services
- » Superior Technical Support
- » Extended Product Lifecycle Management
- » Reduced Total-Cost-Of Ownership

Kontron's System Integration includes:

- » Application-ready platforms
- » HMI, Touch Panel PCs, ThinClients
- » Communication servers/HA systems
- » Third-party hardware
- » SW, middleware, protocol stacks
- » Ruggedization
- » Certification
- » Validation

Customization and Building Blocks:

- » **Processor platforms** – Intel® Core™ i3/i5/i7, Core™2 Quad, Core™ 2 Duo, Xeon™, Atom™ processor, Mobile AMD Sempron™ single core and AMD Turion™ dual core, Freescale™ QorIQ, Xscale® (PXA), PowerPC, Cavium OCTEON etc.
- » **Operating systems** – Windows Embedded XP, Windows CE, Windows 7, Windows Embedded Compact 7, Windows 2008 Server, Linux, VxWorks, QNX
- » **Form factors** – COM Express® basic, compact and nanoETXexpress, ETX® 3.0, CompactPCI, VME, VPX, MicroTCA, AdvancedTCA, AdvancedMC, PICMG® 1.x, PC/104, PC/104-Plus, PC/104-Express, 3.5" SBCs, ATX, Micro-/Flex-ATX, Mini-ITX, Pico-ITX
- » **Chassis** – 1U, 2U, 3U, 4U, 6U, metal or plastic and customer-specific housing
- » **Connectivity** – Fieldbus interfaces, Industrial Ethernet, Network interfaces, Switches/Hubs, WLAN and Bluetooth, MIL-SCD 1553
- » Industrial I/O boards – digital, analog, serial
- » BIOS, Board Support Packages (BSPs)
- » Unified Extensible Interfaces (UEFI)
- » Driver software, middleware, virtualization, hypervisor
- » Intel® Active Management Technology (Intel® AMT)
- » Intel® Trusted Execution Technology (Intel® TXT)
- » Security Trusted Platform Module (TPM)

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About Kontron

Kontron is a global leader in embedded computing technology. With more than 30% of its employees in Research and Development, Kontron creates many of the standards that drive the world's embedded computing platforms. Kontron's product longevity, local engineering and support, and value-added services, helps create a sustainable and viable embedded solution for OEMs and system integrators. Kontron works closely with its customers on their embedded application-ready platforms and custom solutions, enabling them to focus on their core competencies. The result is an accelerated time-to-market, reduced total-cost-of-ownership and an improved overall application with leading-edge, highly-reliable embedded technology.

Kontron is listed on the German TecDAX stock exchange under the symbol "KBC".
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