kontron

» 2012 Product Guide «

Driving the world's embedded computing platforms

www.kontron.com

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 6-15. 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**

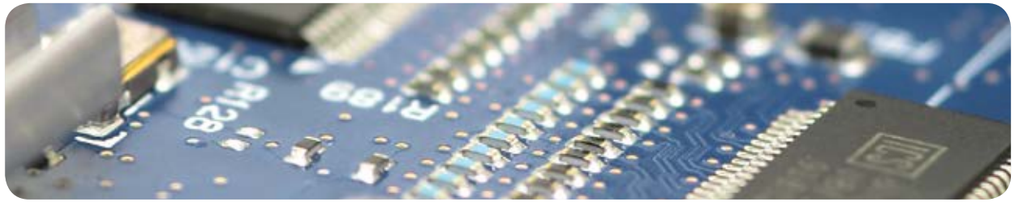
» Content «

» 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 services for partial and fully customized carrier boards and Single Board Computers (SBCs) in addition to customized systems. This includes all the services you may need, right up the value chain.

Content



» 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 level of integration 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

COM Express® compact with memory and heatspreader

SBCs

JRex*plus*-DC with memory (if needed flat panel cables)

Motherboards

KTGM45/mITX with heatsink and socketed CPU

» 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

» Custom specific products

Kontron is your partner for the development and realization of your individual product idea. If there is not a perfect modular match within our existing diverse portfolio, Kontron designs and delivers your tailor-made product according to your specific requirements. With our broad range of design experience, Kontron develops the designs and provides the services you need to realize your custom product including individual logistic concepts, i.e. packaging and shipment. Due to our deep going technological know-how in diverse markets from communication, government, industrial automation over energy, transportation to medical and infotainment you benefit from proven building blocks and approved processes in development, project management as well as life cycle management. You can be sure that your product will be designed or even certified in accordance to the relevant standards in each market. With Kontron as a strong and trustworthy outsourcing partner you can concentrate on your core capabilities and speed up your time-to-market.

Kontron offers innovative solutions for board and system level products:

Customization based on standard products or systems:
» Semi custom boards
» Semi custom systems

Design of full custom products:
» Full custom boards
» Full custom systems

You also find detailed information about our individual carrier board solutions in Computer-on-Modules (Page 58)

For more information please visit **www.kontron.com/custom**

» Computer-on-Modules

» Custom Carrier Board

» Full Custom SBC

» Customized System

» HMI

» Dedicated project management

From the beginning, a dedicated Kontron project manager who is in charge of your product during the complete project is assigned for you. As a global company, Kontron has knowledgeable teams and specialists worldwide to support you in your region. Your project manager guides you securely through the whole life cycle of the product by means of a precise project plan: design, specification, implementation, verification and validation. During the production phase continuous optimizations and if necessary change management are in focus. This allows you to concentrate on your core business and still retain an overview and full control of your product.

Your benefits at a glance:
» Tailor-made and optimized product for your specific application
» Short time-to-market with Kontron's R&D giving you access to the latest technologies
» Efficient design based on proven reference building blocks
» Local single point of contact at project management

» 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.

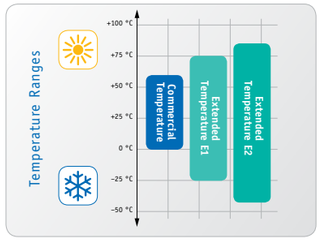
» Extended Temperature

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.

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.

For more details (i.e. VITA 47) please see corresponding product specifications.

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

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**.

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.

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.

» Comprehensive 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, Evaluation Boards and Application Ready Platforms 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. 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. OEMs benefit by reducing their time to market and they can focus their inhouse R&D-Teams on differentiation and improve the quality of their 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

Microsoft · Windows Embedded Gold Partner · Embedded Linux · OSADL · WIND RIVER · REAL TIME SYSTEMS GmbH · softing · CoDeSys

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 21)

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 58)

» 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 fitted with the new Kontron EAPI were the Kontron COM Express® mini Computer-on-Module **COMe-mSP1** the Kontron embedded motherboard **KTQ45**, and Kontron's **MICROSPACE® MPCX** line of industrial PCs. COMe-bAI2, COMe-cPV2, COMe-cOH2, MSMST, COMe-bSC#, COMe-mTT10, pITX-SP, KTLX800, JRexPlus-DC, VX3030 and MSM-LP were added lately. Arm-based products will be supported as well, as they become available.

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.

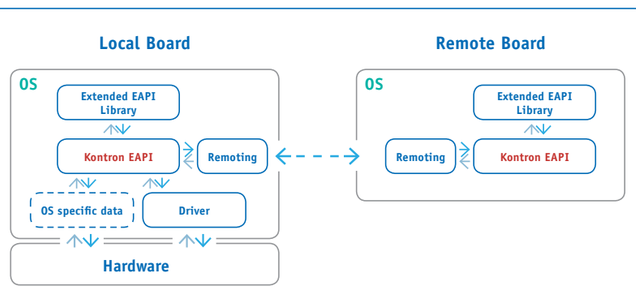
Developers using this will benefit from the safety of an independently standardized programming interface combined with high convenience and an extended feature set.

COMe-mTT10
(Detailed Information on p. 65)

KTQ45
(Detailed Information on p. 27)

MICROSPACE® MPCX
(Detailed Information on p. 89)

Kontron Embedded Application Programming Interface (Kontron EAPI)

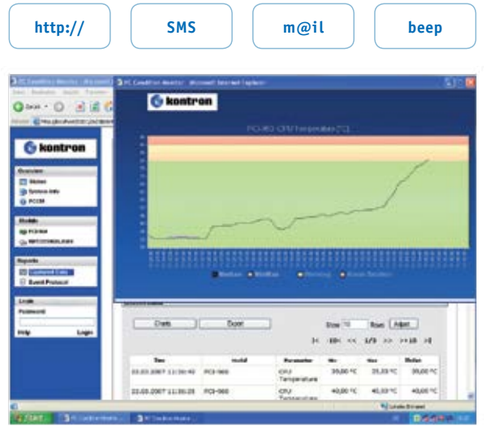


SUPPORTED OS

Windows XP Embedded · Windows CE.net · Windows Embedded Compact 7 · Embedded Linux · WIND RIVER VxWorks · QNX PARTNER NETWORK QNX

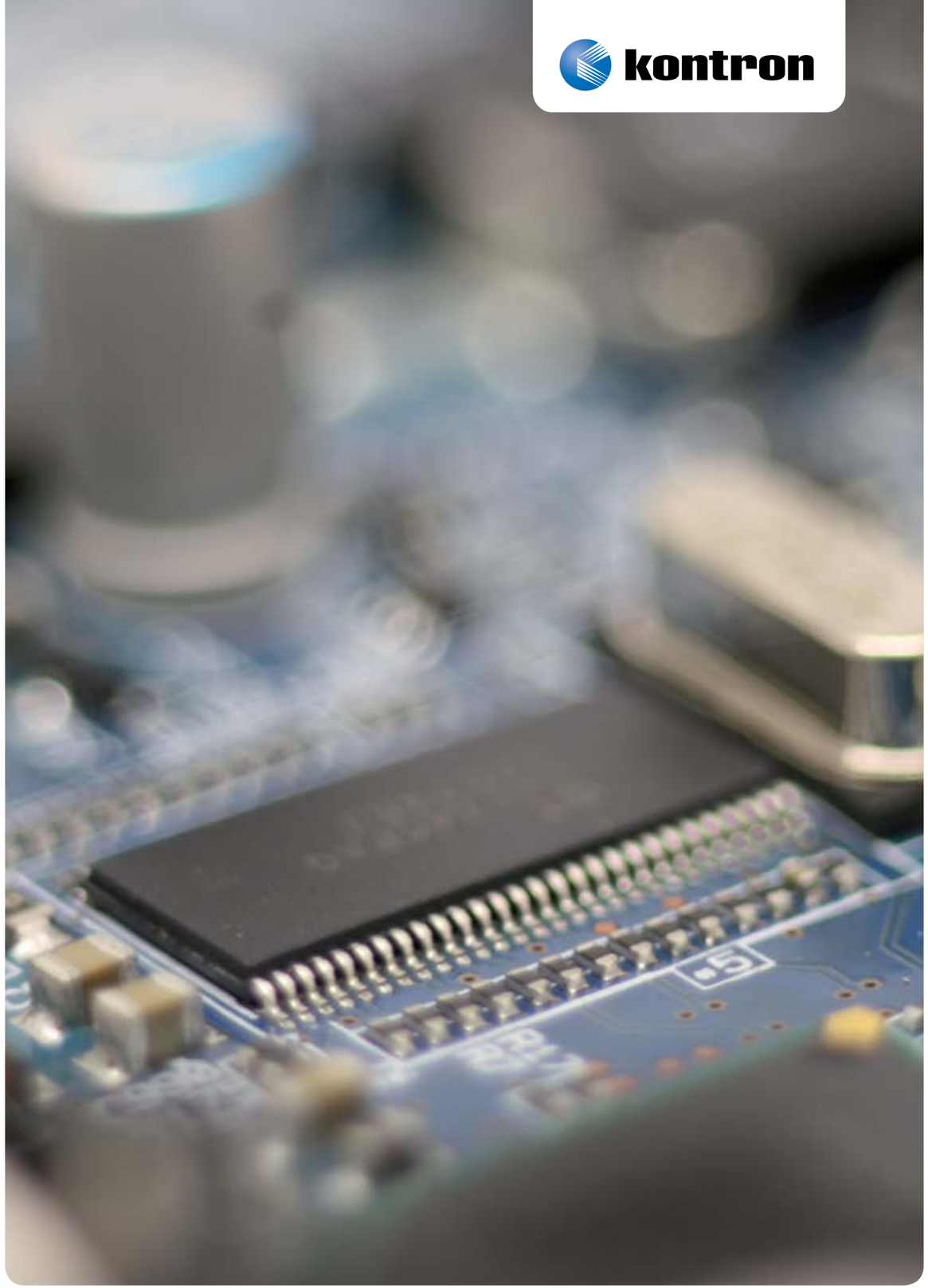
» PC Condition Monitoring

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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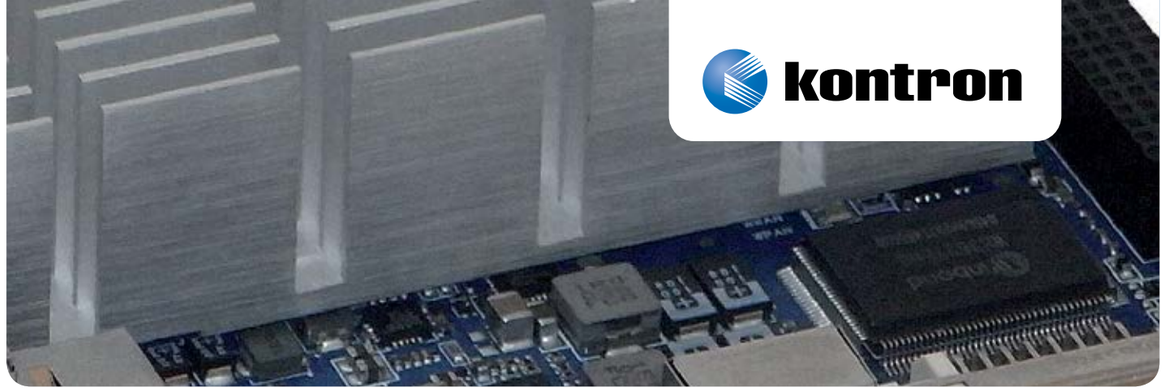


» 3.5" Single Board Computers «

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 now find the well-known the small form factor Pico-ITX (100 x 72 mm) Motherboards on page 24 and following.

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!

JRex*plus* 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. 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.

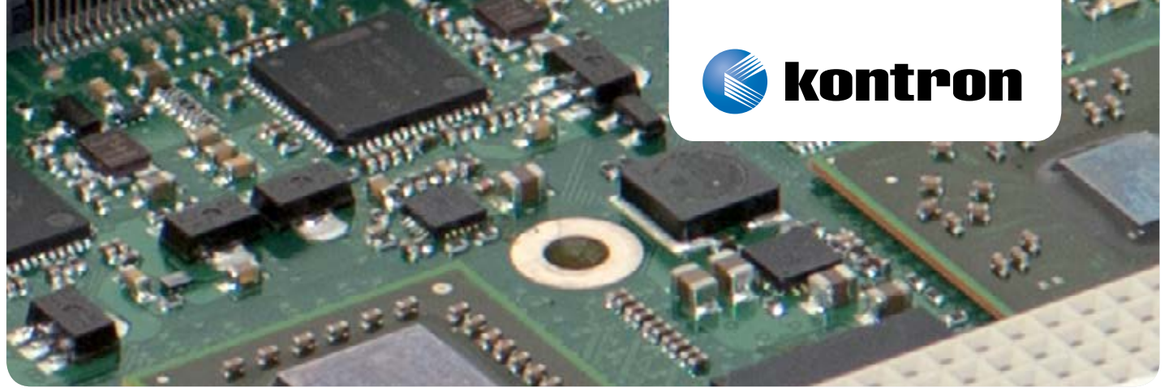
JRex*plus* 3.5" SBCs	 JRexplus-LX	 JRexplus-DC
Line	Plus	Plus
CPU	AMD® Geode™ LX800	Intel® Atom™ N270 processor
CPU Clock	500 MHz	1.6 GHz
Front Side Bus	-	533 MHz
Cache	L2: 128 KByte	L2: 1x 512 KByte
BIOS	Phoenix™	AMIBIOS®
Chipset	AMD CS5536	Intel® 945GSE, Intel® ICH7M
DRAM	1 GByte DDR SDRAM	2 GByte DDR2 SDRAM
DRAM socket	SDRAM-SODIMM	SDRAM-SODIMM
CompactFlash	Yes	Yes
Audio	AC'97	HD Audio
Hard Disk	EIDE (UMDA-66)	EIDE (UMDA-133)
USB	4x USB 2.0 (2 on front panel, two internal)	6x USB 2.0 (2 on front panel, 4 internal)
Ethernet	1x 10/100/1000	1x 10/100, 1x 10/100/1000
Graphics Controller	AMD on chip graphic	Integrated with Intel® GMA950 (DirectX® 9, PS 2.0)
Graphics Memory	On-chip shared 8-256 MByte VRAM	Shared memory
Graphics	CRT/LCD, JILI30 (LVDS)-interface (optional),TTL (FLEX32)	CRT/DVI, JILI30
Supply Voltage	5V single supply	ATX power supply
IEEE 1394 Firewire	-	-
Serial Channels	1x DSUB RS232, 1x RS232 internal	1x DSUB RS232, 1x RS232 internal
Drives	1x 1.44/2.88	-
Watchdog	Yes	Yes
System Monitoring	Yes	Yes
Expansion	PCI-104 compliant (PCI)	PCI-104 compliant (PCI), MiniPCIe
Special Features	2x SATA, 1x PATA, CF-Socket	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
Cooling	Fanless	Passive / active depending on application
Dimensions H x W x D	102 x 147 mm	102 x 147 mm
I/O Expansion Type	PCI-104 compliant (PCI)	PCI-104 compliant (PCI)
Operating Temperature	0°C to 60°C	0°C to 60°C

KAB-FLEX32

TTL flat panel cable type for JRex*plus*-LX

JILI30

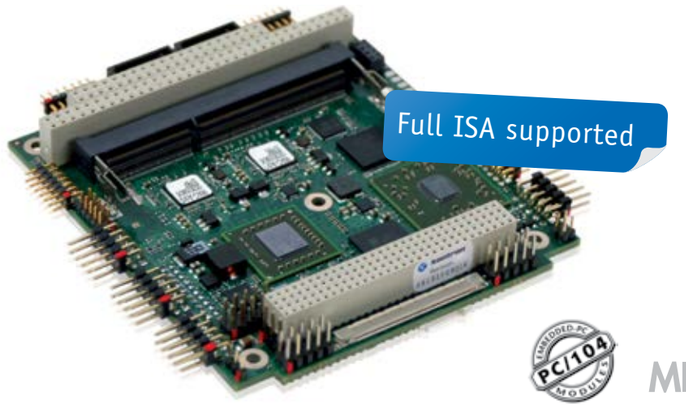
LVDS flat panel cable type for all JRex*plus* and *p*ITX boards (for TTL Displays please use KAB-ADAPT-LVDStoTTL P/N 61029 + KAB-FLEX32-xxx)



» PC/104 CPU Module «

PC104, PC104 Plus, PC104 Express

MSM-e0 PC/104-Plus™ board with AMD Embedded G-Series CPU and high performance graphic



Small Form Factor

With its extremely compact form factor of only 90 mm x 96 mm, Kontron's PC/104 boards are the ideal platform for innovative SFF designs space-constrained applications that can utilize Commercial Off-the-Shelf (COTS) solutions.

Rugged

PC/104 boards by-design feature a high mechanical and electrical resistance: Thanks to the rugged connectors and soldered components, all boards and peripherals are highly resistant to the effects of shock and vibration. Additionally, a large number of boards are available for use under extended temperature conditions from -40°C up to +85°C, providing highest reliability for operation in extreme environments.

Flexible

PC/104 allows modules to be stacked without the need of a backplane. This means that no baseboard development is needed, which results in a reduction of risk, costs and engineering time. PC/104 systems are very compact with a standardized fit, form and bus architecture with a wide variety of standard of enclosures and peripheral components available on the market. PC/104 SBCs are best suited for applications constrained by costs, size, weight, small quantities and where time-to-market is an critical factor.

PC/104

We offer a broad selection of PC/104 modules to build reliable embedded PC Systems. If the required functionality is not part of the standard product portfolio, we have capabilities to develop and manufacture such a customized embedded solution and its modules. Complete cable sets can be delivered with all CPU modules to facilitate the customer`s entry into the world of PC/104.

Advantages

- » Scalability
- » Compact and small formfactor
- » Rugged stacking concept
- » No baseboard needed
- » Fully PC compatibility
- » Low-Power & fanless design
- » Shock and vibration resistant
- » Longterm availability
- » Extremely robust
- » Industry-proven standard
- » Out of the box, ready to run
- » Reduces time to market

PC/104 Power Supply MICROSPACE®

MSMPS104A

MSMPS104

	MSMPS104A	MSMPS104
Function	Power supply	Power supply
ISA-BUS/PCI-Bus	Not mounted	PC/104, PC/104+
Protective Features	Reverse polarity, Fuse, Overload	-
BUS Compatibility	-	-
Controller	-	-
Vinput (nom.)	12V (8V-20V)	15-30V
1st Output	5V, 10A	5V, 15A
2nd Output	12V, 1A	12V, 1.8A
Power normal	75W	75W
Remote on/off Input	Optoisolated (ignition)	-
Power monitoring	Uin, Uout	-
Standard Temperature	-25°C to +60°C	-25°C to +60°C
Extended Temperature	-40°C to +85°C (reduced power to 50W)	-
Dimensions (W x L in mm)	90 x 96	90 x 96
Weight	85 g	120 g
Software Support	-	-
MTBF	100'000 h	100'000 h
Complies to	e1, EN60950	-
Special Features	EN60950	-
Accessories	Heatpipe cooler	-

PCIe/104 CPU MICROSPACE®

MSMST

	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, ready to run package available (Eval - Kit)

PC/104-Plus, PCI/104-Express CPUs MICROSPACE®

MSM-LP

MSM-e0/N

MSM945P

MSM200XP/XU

MSM800SEV

MSM800XEV

M0PSlcdLX

	MSM-LP	MSM-e0/N	MSM945P	MSM200XP/XU	MSM800SEV	MSM800XEV	M0PSlcdLX
Processor/Performance	Intel® Atom™ D525 (Dual Core)/1.8 GHz or D425/1.8 GHz	AMD embedded T44R 1.2GHz / T24L 1GHz	Intel® Core™ Duo L2400 / Intel® Core™2 Duo L7400 / Intel® Atom™ N-270 (2x 1.6 GHz / 2x 1.5 GHz / 1x 1.6 GHz)	Intel® Atom™ Z510/Z530 (1.1/1.6 GHz)	AMD Geode™ LX800 / 0.5 GHz	AMD Geode™ LX800 / 0.5 GHz	AMD Geode™ LX800 / 0.5GHz
Chipset	Intel® 82801HM	AMD™ FCH A55E	945GME	US15W	CS5536 AD	CS5536 AD	CS5536 AD
Bus	PCI-BUS: Option, on the bottom, PCI Express-Bus: Yes, on the bottom	PC/104-PCI: 32 bit 33MHz 4 Slots, PC/104-ISA: 16 bit	PCI-BUS: Option, PCI Express-BUS: on the bottom	PCI-BUS: Option, PCI Express-BUS: on the bottom/on top	PC/104-Plus: Option	PC/104-Plus: Option	PC/104-Plus: Option
Memory	Up to 4GB DDR3 SODIMM	Up to 4GB LVDDR3-1066 1x SO-DIMM	512-3072 MByte DRAM	Soldered 0.5-2 GByte	128-1024 MByte	128-1024 MByte	128-1024 MByte
Video Controller	Int. graphic controller, multi display support, high performance	AMD Radeon™ HD 6250 / -	i945GME	Int. graphic Controller	Int. graphic Controller	Int. graphic Controller	Int. graphic Controller
Video Memory	Up to 256 MB (UMA)	Up to 384 MB shared video memory / -	8-224 MByte	128 MByte (UMA)	16 MB (UMA)	16 MB (UMA)	16MB (UMA)
LCD Interface	LVDS up to 1366x768 18bpp	Up to 1920x1200 24bpp / -	LVDS	24 bit LVDS	24 bit, 320x240 to 1600x1200	24 bit, 320x240 to 1600x1200	24bit, 320x240 to 1600x1200
CRT Interface	Up to 2048x1536 @ 60Hz	Up to 1920x1200 30bpp / -	Yes	Yes, up to 1920 x 1200 with reduced blanking	Yes	Yes	Yes
IDE Interface P-ATA	1x	-	1x	1x	1x	1x	1x
IDE Interface S-ATA	2x SATA300	2x SATA150/300/600 w.RAID 0,1 support	2x SATA 300	2x SATA 300	-	-	-
COM1 / COM2	RS232C or Option: UART	2x RS232	RS232C / RS232C	RS232C / RS232C	RS232C / RS232C	RS232C / RS232C	RS232C / RS232C
COM3 / COM4	UART	2x UART	-	RS232C, RS422/485 / RS232C, RS422/485	-	-	-
USB	4x 2.0, 2x 2.0 on PCI104ex Connector	4x 2.0	4x 2.0, 2.0 on PCI104ex connector	4x 2.0	4x 2.0	4x 2.0	2x 2.0
Ethernet	2 Gbit LAN	2x 1 Gbit LAN	10/100 LAN	1 Gbit LAN	10/100 LAN	10/100 LAN	10/100 LAN
Sound	HDA, 2x Stereo, SPDIF in/out	HD Audio line-out, mic-in, SPDIF out/in	HDA, 2x Stereo, SPDIF	HDA, 2x Stereo, SPDIF	AC97	AC97	-
RTC Battery onboard	900mAh (typ. 10 years)	-	80mAh (or ext. 900mAh)	900mAh (typ. 10 years)	400mA	400mA	-
Dimensions (W x L in mm)	90 x 102	90 x 102	90/117 x 96/99	90 x 102	90 x 99	90 x 99	90 x 96
Standard Temperature	0°C to +70°C	0°C to + 60°C	-25°C to +60°C/+70°C	-25°C to +70°C	0°C to +60°C	0°C to +60°C	0°C to +60°C
Extended Temperature	-40°C to +85°C	-40°C to +85°C	-40°C to +70°C	-40°C to +85°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)	-
Special Features	Optional: soldered SSD, 2 - 16 GB (SSD), PXE, GIPO, PWE Eval-Kit available	8x GPIO 4x A/D 2x D/A PWM Boot from LAN, Watchdog, bootable micro SD card slot, ECO Mode (min. pwr. consumption), Eval-Kit available	-	-	-	soldered RAM	Lan Boot, Watchdog, JIDA-Support, JRC-Support, Dark Boot, 32 MB - 1GB, chipDISK

PC/104-Plus, PCI/104-Express Peripherals MICROSPACE®

MSMGE104EX

MSM4E104EX

MSMMI104EX

MSMSA104EX

MSMG104EX

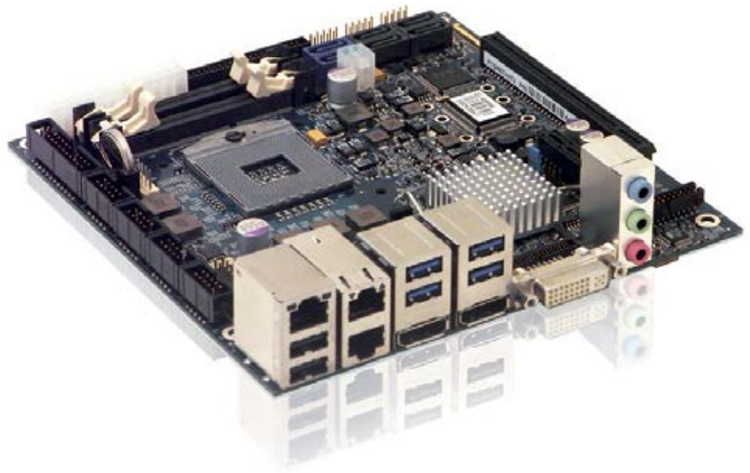
MSM8C104EX

MSMCA104+ISOL

MSMW104+

	MSMGE104EX	MSM4E104EX	MSMMI104EX	MSMSA104EX	MSMG104EX	MSM8C104EX	MSMCA104+ISOL	MSMW104+
Function	1 Gbit LAN	4 Gbit LAN	PCIe MiniCard adapter	2x SATA300	4x Frame grabber	8 channel serial port	CAN	FireWire
PCI-BUS	Pass-through	Pass-through	Pass-through	Pass-through	Pass-through	Pass-through	Yes	Yes
PCI Express-BUS	1x lane	1x lane	1x lane	1x lane	1x lane	1x lane	-	-
BUS Compatibility	PCI/104-Express	PCI/104-Express	PCI/104-Express	PCI/104-Express	PCI/104-Express	PCI/104-Express	PC/104-Plus	PC/104-Plus
Controller	82573L (Intel®)	4x 82574L (Intel®)	-	SIL 3132	4x BT878A, PAL, NTSC	-	Peak-CAN	TSB43AB22
1st Interface	1 Gbit LAN (RJ45)	4x 1 Gbit LAN (RJ45)	PCIe MiniCard	2x SATA	16x Video, MCX (90°)	8 ch. RS232C (+/-9V) or	-	-
2nd Interface	2x USB	-	SIM card	2x USB	4x SVideo, MCX	8 ch. RS422 (1/8 load) or	CAN DSUB9, CiA DS102-1	IEEE 1394 A
3rd Interface	-	-	-	-	-	8 ch. RS485 (1/8 load) or	CAN DSUB9, CiA DS102-1	IEEE 1394 A
Power normal (typ.)	5V, 3.3V/4W	5V, 3.3V/4W	5V/8W	5V, 3.3V/2W	5V, 3.3V/6W	5V/3W	-	-
Dimensions (W x L in mm)	90 x 96	90 x 96	90 x 96	90 x 96	90 x 96	90 x 96	3.3V, 5V/4W	3.3V/3W
Weight	60 g	80 g	55 g	65 g	95 g	70 g	90 x 96	90 x 96
Software Support	WINXP, Linux, VxWorks, QNX	WINXP, Linux	XP, VISTA	XP, VISTA, Linux	WIN, Linux	XP, VISTA	30 g	70 g
MTBF	100'000 h	100'000 h	100'000 h	200'000 h	100'000 h	200'000 h	Win, Linux	WIN, Linux
Special Features	-	-	-	Bandwidth: 2x 300MByte/s, RAID 0/1	Bandwidth: 133MByte/sec. Max., TTL i/o, 8bit	RS422/85:TX, RX, CTS, RTS, +/-, 8x onboard termination	200'000 h	200'000 h
Accessories	-	-	WLAN-MC, GSM-MC	-	MSMG104EX-Cable (MCX-BNC)	-	500V isolated, Reset using software commands	-
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	-20°C to +70°C	-25°C to +70°C	-25°C to +70°C
Extended Temperature	-	-40°C to +70°C	-	-	tbd	-40°C to +85°C	-	-40°C to +70°C

» Longlife Motherboards «



Motherboards

Kontron offers a broad range of high-quality embedded motherboards from Pico-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**

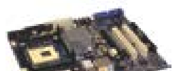
Embedded Motherboards

Full Mechanical Compatibility from Mini-ITX to Full Size ATX

Pico-ITX 2.5" | Mini-ITX | FLEX-ATX | Micro-ATX | ATX

Embedded Motherboards	KTQ67/FLEX	KTQ77/FLEX	KTQ67/ATXE	KTQM67/FLEX	KTQM67/ATXP
CPU	Intel® Core™ i7/Xeon® 4C /Core™ i5/Xeon® 4C / i3 2C	Intel® Core™ i7/Xeon® 4C /Core™ i5/Xeon® 4C / i3 2C	Intel® Core™ i7/Xeon 4C /Core™ i5/Xeon® 4C / i3 2C	Intel® i7-,i5,-i3 2 Core™ and 4 Core CPUs; Intel® Celeron® Processor B810	Intel® i7-,i5,-i3 2 Core™ and 4 Core CPUs; Intel® Celeron® Processor B810
CPU Clock	Up to 3.8 GHz	Up to 3.8 GHz	Up to 3.8 GHz	Up to 2.7GHz (3.5GHz in Turbo) depending on actual CPU	Up to 2.7GHz (3.5GHz in Turbo) depending on actual CPU
Front Side Bus	Up to 5GT/s (GEN2 speed).	Up to 5GT/s (GEN2 speed).	Up to 5GT/s (GEN2 speed).	DMI 2.0 support; Four lanes in each direction; 5 GT/s point-to-point DMI interface to PCH is supported.	DMI 2.0 support; Four lanes in each direction; 5 GT/s point-to-point DMI interface to PCH is supported.
Chipset	Intel® Q67	Intel® Q67	Intel® Q67	Intel® QM67	Intel® QM67
DRAM	Up to 8 GB DDR3, 4x	Up to 8 GB DDR3, 4x	Up to 8 GB DDR3, 4x	Up to 8 GB DDR3, 4x	Up to 8 GB DDR3, 4x
Video Memory	tbd	tbd	tbd	tbd	tbd
IDE Interface	6x SATA150/SATA300 w. RAID 0/5/10	6x SATA150/SATA300 w. RAID 0/5/10	6x SATA150/SATA300 w. RAID 0/5/10	6x SATA150/SATA300 w. RAID 0/5/10	6x SATA150/SATA300 w. RAID 0/5/10
USB	14x port USB 2.0	4x USB 3.0, 10x USB 2.0	14x port USB 2.0	14x port USB 2.0	14x port USB 2.0
Ethernet	3x GbE LAN	3x GbE LAN	3x GbE LAN	3x GbE LAN	3x GbE LAN
Form Factor	Flex-ATX 228.6mm x 190.5mm (9" 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")
Available I/Os	1x PCIe x4 (In x16 connector), 2x PCI 32bits/33MHz, 1x Mini-PCIe, 1X mSATA 4x COM	1x PCIe x4 (In x16 connector), 2x PCI 32bits/33MHz, 1x Mini-PCIe, 1X mSATA 4x COM	1x PCIe x4 (In x16 connector), 5 x PCI 32bits/33MHz, 1x Mini-PCIe, 1x mSATA 4x COM	PCIe 3.0, 2x PCI 32bits/33MHz (on FLEX), 1x Mini-PCIe, 1x mSATA,4x COM, Internal PS2 Mouse/ Keyboard connector, LPT Parallel port in FFC connector	1x PCI Express x16, 1 PCI Express x1, 6x PCI; 4x COM, 2x mini PCI-Express, 2x IEEE1394a (Pin row), Internal PS2 Mouse/ Keyboard connector, LPT Parallel port in FFC connector
Graphic Interface	1x PCIe x16, 2x Display port, 1X LVDS, 1x CRT	1x PCIe x16, 2x Display port, 1x CRT	1x PCIe x16, 2x Display port, 1X LVDS, 1x CRT	2x Display port, 1 DVI-I, LVDS / Embedded DP, HDMI via Adapter / 1x PCIe x16 PCI slot	2x Display port, 1 DVI-I, LVDS / Embedded DP, HDMI via Adapter / 1x PCIe x16 PCI slot
Rear I/O	DB9 serial port, DB15 VGA , Audio stacked 2x3 mini Jack tower, 6x USB, 2x Display port 3x RJ45 LAN	DB9 serial port, DB15 VGA , Audio stacked 2x3 mini Jack tower, 6x USB, 2x Display port 3x RJ45 LAN	DB9 serial port, DB15 VGA , Audio stacked 2x3 mini Jack tower, 6x USB, 2x Display port, 3x RJ45 LAN	2x (Dual USB +Displayport), Dual USB + Ethernet, Dual Ethernet, DVI, Audio 3x	2x (Dual USB +Displayport), Dual USB + Ethernet, Dual Ethernet, DVI, Audio 3x
Special Feature	HDD RAID, GPIO, LPT, HD Audio, Mini-PCIe; AMT 7.0	HDD RAID, GPIO, LPT, HD Audio, Mini-PCIe; AMT 8.0, support for 3 indepentent displays Displays,PCI 3.0 support	HDD RAID, GPIO, LPT, HD Audio, Mini-PCIe; AMT 7.0	HDD RAID, GPIO, LPT, HD Audio, Mini-PCIe; AMT 7.0	HDD RAID, GPIO, LPT, HD Audio, Mini-PCIe; AMT 7.0
Additional	GPIO, HDD RAID 0,1,5,10 support, AMT 7.0, TPM 1.2, mSATA for SSD Storage, ATX power supply, KT embedded feature port with ADC, DAC up to 160 GPIO, Up to 7 years availability	GPIO, HDD RAID 0,1,5,10 support, AMT 8.0, TPM 1.2, mSATA for SSD Storage, ATX power supply, KT embedded feature port with ADC, DAC up to 160 GPIO, Up to 7 years availability	GPIO, HDD RAID 0,1,5,10 support, AMT 7.0, TPM 1.2, mSATA for SSD Storage, ATX power supply, KT embedded feature port with ADC, DAC up to 160 GPIO, Up to 7 years availability	GPIO, HDD RAID 0,1,5,10 support, AMT 7.0, TPM 1.2, mSATA for SSD Storage, ATX power supply, KT embedded feature port with ADC, DAC up to 160 GPIO, Up to 7 years availability	PIO, HDD RAID 0,1,5,10 support, AMT 7.0, TPM 1.2, mSATA for SSD Storage, ATX power supply, KT embedded feature port with ADC, DAC up to 160 GPIO, Up to 7 years availability

Embedded Motherboards









Embedded Motherboards	986LCD-M/FLEX	986LCD-M/ATXP	KTGM45/FLEX	KTGM45/ATXE	KT965/FLEX	KT965/ATXE	KT965/ATXP	KTQ45/Flex	KTQ45/ATXE
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 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
CPU Clock	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
Front Side Bus	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
Chipset	Intel® 945GM + ICH7R	Intel® 945GM + ICH7R	Intel® GM45 + ICH9M-E	Intel® GM45 + ICH9M-E	Intel® Q965 + Intel® ICH8DO	Intel® Q965 + Intel® ICH8DO	Intel® Q965 + Intel® ICH8DO	Intel® Q45 Express	Intel® Q45 Express
DRAM	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
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
IDE 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, 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
USB	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)
Ethernet	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
Form Factor	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")	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")
Available I/Os	1x PCI Express x4, 2x 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
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 / PCI-Express x16 / SDVO	CRT / PCI-Express x16 / SDVO	CRT / PCI-Express x16 / SDVO	CRT / PCI-Express x16 / SDVO	CRT / PCI-Express x16 / SDVO
Rear I/O	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	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
Special Feature	IEEE1394, GPIO, HDD RAID 0/1/5/10 support, HD Audio, SPDIF	IEEE1394, GPIO, HDD RAID 0/1/5/10 support, HD Audio, SPDIF	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
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

For more details please see productline Industrial Rack Mount Systems on page 78

Hardware-based remote Diagnosis and Repair with Intel® vPro™ Technology with Intel® Active Management Technology:

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

IT-Console

Communication channel "below" the OS through TCP/ IP Firmware stack - when the system's working*

Remote power-up and access to protected memory - asset information, BIOS settings, event logs - when system is powered off*

Remote boot, console redirection, power reset, alerting and access to, protected memory - when OS is unresponsive*


Factory Robots, HMI, Industrial PC


Medical


ATM, Kiosks, POS


Gaming

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 Controler 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, KTQM77 and QTQ77 QM67/Q67 Motherboard families.

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

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.

For more details please see productline **Industrial Rack Mount Systems** on page 78.

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 170 x 170 mm

986LCD-M/ mITX(BGA)

986LCD-M/mITX

KT690/mITX (BGA)

KTUS15/mITX - 1.1 / 1.6 GHz

KTGM45/mITX

KTQM67/mITX

NEW

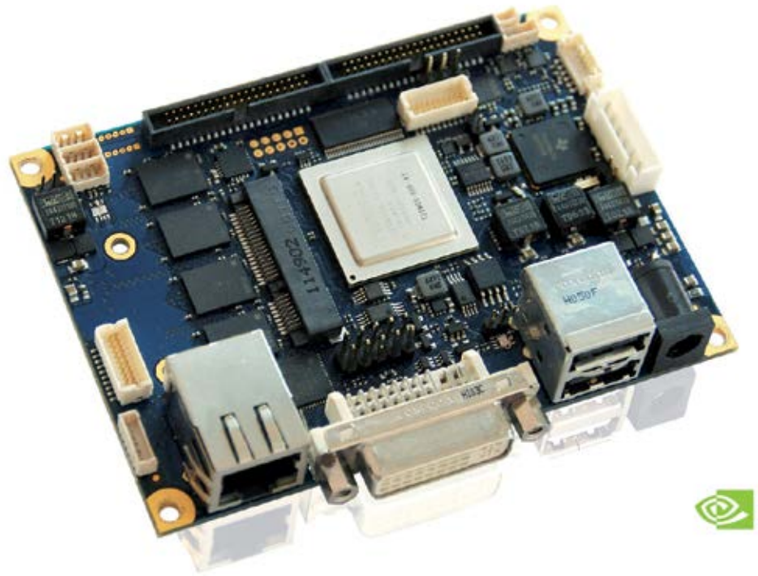
KTQM77/mITX

KTHM65/mITX

Embedded Mini-ITX Motherboards 170 x 170 mm

CPU	Intel® ULV Celeron® M / LV Core Duo	Intel® Core™ 2 Duo, Intel® Core™ Duo and Intel® Core™ Solo (mPGA478, mBGA479 prepared)	Single core mobile AMD Sempron™ U210, 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® i7-,i5,-i3 2 Core and 4 Core CPUs; Intel® Celeron® Processor B810	Intel® i7-,i5,-i3 2 Core and 4 Core CPUs; Intel® Celeron® Processor B810	Intel® i7-,i5,-i3 2 Core and 4 Core CPUs; Intel® Celeron® Processor B810	**CPU**
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	1.1 GHz Basic / 1.1 GHz Std /1.6 GHz Std / 1.6 GHz Plus	Up to 3.06 GHz	Up to 2.7GHz (3.5GHz in Turbo) depending on actual CPU	Up to 2.7GHz (3.5GHz in Turbo) depending on actual CPU	Up to 2.7GHz (3.5GHz in Turbo) depending on actual CPU	**CPU Clock**
Front Side Bus	533 / 667 MHz	533 / 667 MHz	16 Lane Hyper Transport	400 MHz / 533 MHz	667 / 800 / 1066 MHz	DMI 2.0 support; Four lanes in each direction; 5 GT/s point-to-point DMI interface to PCH is supported.	DMI 2.0 support; Four lanes in each direction; 5 GT/s point-to-point DMI interface to PCH is supported.	DMI 2.0 support; Four lanes in each direction; 5 GT/s point-to-point DMI interface to PCH is supported.	**Front Side Bus**
Chipset	Intel® 945GM + ICH7R	Intel® 945GM + ICH7R	AMD M690T + SB600	Intel® US15 Embedded	Intel® GM45 + ICH9M-E	Intel® QM67	Intel® QM67	Intel® HM65	**Chipset**
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 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	Up to 8 GB DDR3 x 2	Up to 8 GB DDR3 x 2	**DRAM**
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	tbd	tbd	tbd	**Video Memory**
IDE 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	1x ATA100 / 1x ATA100, 2x SATA 150/300	4x SATA 150/300 w. RAID 0,1, 1x ATA133	6x SATA (2 x Gen3) w. RAID -Support	6x SATA (2 x Gen3) w. RAID -Support	6x SATA (2 x Gen3)	**IDE Interface**
USB	8x USB 2.0	8x USB 2.0	10x USB 2.0	8x USB 2.0	12x USB 2.0	14 x USB 2.0	4x USB 3.0, 10x USB 2.0	12 x USB 2.0	**USB**
Ethernet	Up to 3x GbE LAN	Up to 3x GbE LAN	Up to 2x GbE LAN	1x GbE Intel® LAN	Up to 3x GbE LAN	Up to 3x GbE LAN	Up to 3x GbE LAN	1x GbE LAN	**Ethernet**
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")	Mini-ITX 170mm x 170mm (6.7" x 6.7")	**Form Factor**
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, 1 x PCI-Express x16 with PCI-Express x8 support	2x COM / 1x PCI, 4x COM	1x PCI, 4x COM, 1x mini PCI-Express	1x PCI Express x16, 1 PCI Express x 1, 4x COM, 2x mini PCI-Express	One PCIe x16, Gen. 3.0 plus one PCIe x1, Gen. 2.0, 4x COM, 2x mini PCI-Express, 2x IEEE1394a (Pin row), Internal PS2 Mouse/Keyboard connector	1x PCI Express x16, 1 PCI Express x1, 4x COM, 2 x mini PCI-Express	**Available I/Os**
Graphics Controller	Intel® GMA950, LVDS onboard	Intel® GMA950, LVDS onboard	Radeon X1250, LVDS onboard	Intel® GMA 500 , LVDS on board	Intel® GMA4500 MHD, LVDS onboard	Integrated	Integrated	Integrated	**Graphics Controller**
Graphic Interface	CRT / LVDS / PCI-Express x16 / SDVO	CRT / LVDS / PCI-Express x16 / SDVO	DVI / CRT / LVDS / TV-Out (optional) / PCI-Express x8	CRT / DVI / LVDS / 2x PCI-Express x1	CRT / LVDS / PCI-Express x16 / SDVO	2x Display port, 1 DVI-I, LVDS / Embedded DP, HDMI via Adapter / 1x PCIe x16 PCI slot	2x Display port, 1 DVI-I, LVDS / Embedded DP, HDMI via Adapter / 1x PCIe x16 PCI slot	2x Display port, 1 DVI-I, LVDS / Embedded DP, HDMI via Adapter / 1x PCIe x16 PCI slot	**Graphic Interface**
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	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, DVI, Audio 3x	2x (Dual USB +Displayport), Dual USB + Ethernet, DVI, Audio 3x	2x (Dual USB +Displayport), Dual USB + Ethernet, DVI, Audio 3x	**Rear I/O**
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, 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	GPIO, IEEE1394, HDD RAID 0,1,5,10 support, AMT 8.0, TPM 1.2, support for 3 indepentent displays Displays, PCI 3.0 support	GPIO, IEEE1394, HDD RAID 0,1,5,10 support, AMT 7.0, TPM 1.2	**Special Feature**
Additional	Up to 7 years availability, ADD2-Cards for SDVO Interface for 2nd LCD, HD Audio, SPDIF	Up to 7 years availability, ADD2-Cards for SDVO Interface for 2nd LCD, 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, HD Audio, SPDIF	GPIO, TPM 1.2, mSATA for SSD Storage, ATX and single 12V power supply (only on Mini-ITX), KT embedded feature port with ADC, DAC up to 160 GPIO, up to 7 years availability	GPIO, TPM 1.2, mSATA for SSD Storage, ATX and single 12V power supply (only on Mini-ITX), KT embedded feature port with ADC, DAC up to 160 GPIO, up to 7 years availability	GPIO, TPM 1.2, mSATA for SSD Storage, ATX and single 12V power supply (only on Mini-ITX), KT embedded feature port with ADC, DAC up to 160 GPIO, up to 7 years availability	**Additional**

» Pico-ITX «



POWERED BY NVIDIA® TEGRA®

Pico-ITX – the small, powerful and cost-effective 2.5" Motherboard 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" Motherboards. The pITX-SP, Kontron's first 2.5" Motherboard based on this specification, features the Intel® ATOM™ Z510 / Z530 processor, together with multiple I/O options, microSD-Card boot etc. This product is accompanied by the KTLX800/pITX, another board with real low power consumption, offering CRT (DSUB15) graphics aoutput and COM ports to fullfill which is required typically by most industrial automaton applications.

Third in a row is the AMD FUSION-technology based KTA55/pITX, which offers dual core performance combined with superior DX11 Graphics, supporting DVI-I and 24 Bit dual channel LVDS. And last but not least according to the new KONTRON strategy the product familiy is extended by an ARM based board with extreme low power consumption. All boards include the standard Kontron Technolgy Pico-ITX cooling concept and offer longterm availability up to 7 years.

2,5" Pico-ITX	 pITX-SP	 KTLX800/pITX	 KTA55/pITX	NEW  KTT20/pITX
CPU	Intel® Atom™ Z510 / Z530 1.1 / 1.6 GHZ	AMD Geode™ LX800 / 0.5GHz	AMD 1.0 GHz Dual Core T40N	Dual Core ARM Cortex-A9 CPU
Chipset	Intel® System Controller Hub US15W	CS5536 AD	AMD A55E	Integrated
DRAM	1x DDR2 SO-DIMM up to 2GB	1x DDR SODIMM up to 1GB	1x DDR3 SODIMM up to 4GB	Onboard 32bit DDR-2 (memory down 512MB or 1GB)
Audio	HD Audio analog / S/PDIF	Audio Codec 97 (AC97) Controller	Realtek ALC888 Controller, S/PDIF	Audio, 2 channel line in, line out, MIC, speaker amp out
USB	6x USB 2.0 (2 x at front panel, 4x on board)	4x USB 2.0	6x USB 2.0	5x USB 2.0
Serial Ports	-	2x RS232	-	3x RS232
Ethernet	Intel® 82574L Gigabit Ethernet	Intel 82551ER PCI Gigabit LAN controller	Ethernet Intel® 82574L, 1x 10/100/1000 Mbit	1x 10/100/1000 Mbit
I/O Features	8 Bit GPI/O TTL , SDIO	16 configurable GPIO	8 configurable GPIO	Up to 24 configurable GPIO
Graphics Controller	Integrated decoders in Intel® System Controller Hub US15W for MPG2 and H.264 / MPEG-4 AVC	Internal graphics controller	Internal GPU	Ultra low power GeForce GPU with enhanced 3D capabilities
Graphics	DVI-D JILI30 single channel LVDS (24 Bit) interface	CRT (DSUB-15) JILI30 single channel LVDS (24 Bit) interface	DVI and VGA output on DBI-I, dual channel 24Bit LVDS	Output resolution LCD up to WSXGA+ (1680x1050), DVI-I up to 1080p, Output resolution CRT (via Adapter) up to UXGA (1600x1200)
Dimensions (H x W x D)	100 x 72mm (Pico-ITX)	100 x 72mm (Pico-ITX)	100 x 72mm (Pico-ITX)	100 x 72mm (Pico-ITX)
Special Features	TPM 1.2 , 1x microSD socket	1x microSD socket	1x microSD socket, lockable DC Power Connector, Backlight output selectable 5V or 12V external bypass	1x microSD socket, lockable DC Power Connector, miniPCIe slot, Battery charger for 3cell LI-ION battery packs optional; Backlight output selectable 5V or 12V external bypass
Temperature/Humidity	Operating 0°C to 60°C (32°F ~140°F) Storage: tbd	Operating 0°C to 60°C (32°F ~140°F) Storage: tbd	Operating 0°C to 60°C (32°F ~140°F) Storage: tbd	Operating 0°C to 60°C (32°F ~140°F) Storage: tbd
Power Consumption (typ.)	5V DC, 8W typical	5V DC, 5W typical	5V DC, 10W typical	Up to15V, 3 W typical
Storage	Single or Dual SATA II (chipset option), 1x PATA 44 Master / Slave; mSD-Card-Slot	SATA II, mSD-Card-Slot	2x SATA III, mSD-Card-Slot	mSD-Card-Slot

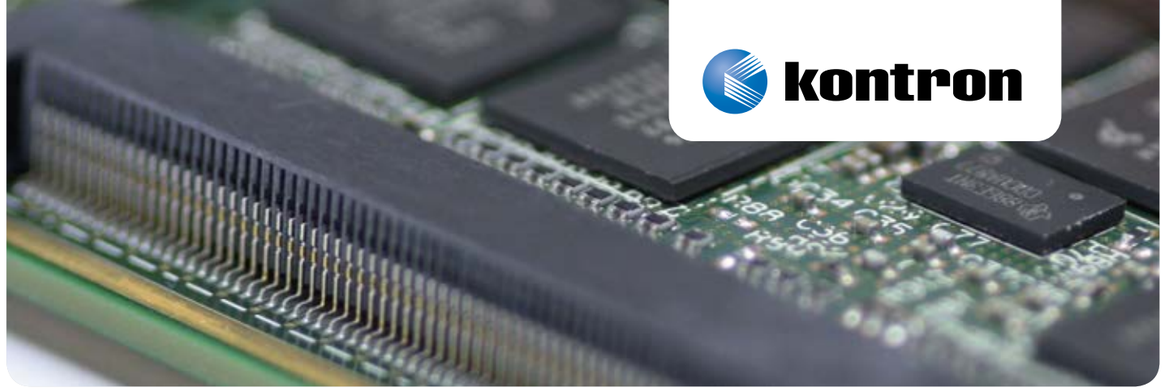
Kontron's Pico-ITX

Accessory Kit Available

KTA55/pITX

Ultrasmall 2.5" Dual Core Motherboard with AMD FUSION Technology

- » Superior DX11 graphics
- » DVI-I & 24-bit LVDS
- » 6x USB 2.0, 2x SATA, GBit Ethernet
- » Bootable micro SD Card Slot
- » Standard KT PICO-ITX cooling concept
- » Lockable DC Power Connector



» 3U CompactPCI Standard & Rugged Boards «

CompactPCI® PICMG®

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





	CP3003	CP3002	CP308	CP30764/CP307	CP305
CPU	3rd gen Intel® Core™ i7, up to 2.1 GHz Quad Core	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
Front Side Bus	-	-	800 / 1066 MHz	533 / 667 MHz	533 MHz
CPU L2 Cache	Up to 6 MByte L3	4 MByte L3	6 MByte	2 / 4 MByte	512 kByte
Chipset	QM77	QM57	Intel® GS45 and ICH9M	Intel® 945GM and ICH7R	Intel® 945GSE and ICH7-M
DRAM	Up to 16 GByte DDR3, 1600 MHz	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
Flash Disk	SATA NAND Flash (up to 32GB), CFAST on Mezzanine	SATA NAND Flash, CFast on Mezzanine	USB NAND Flash, CompactFlash on Mezzanine, SDHC on Mezzanine	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	2x Ethernet, CRT, 2x USB 2.0, LEDs
8HP Version	2x DisplayPort, COM1, USB 3.0, GbE, Reset, HDD Carrier, CFast; Extra XMC Carrier Mezzanine	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
USB	1x USB3.0, 4x USB2.0	6x USB2.0	6x USB2.0	6x USB2.0	6x USB2.0
Ethernet	Up tp 3x 1000Base-Tx, WOL functionality	2x 1000Base-Tx, WOL functionality	2x 1000Base-Tx, WOL functionality	2x 1000Base-Tx	2x 1000Base-Tx
Graphics	Integrated in processor	Integrated in processor	GS45 internal	945GM internal	945GSE internal
Rear I/O	Optional	Optional	Optional	Optional	Optional
System / Peripheral Mode	Both	Both	Both	System	System
Characteristics	Highest Processor Performance, TPM optional	High Processor Performance, optional TPM, Rugged versions with CP3002-RA or CP3002-RC	High Processor Performance, TPM, System Management Controller	Rugged	Low Power, Rugged, EN50155 compliant
Power Consumption (typ.)	tbd	28 W / 2.0 GHz LV	18 W / 1.86 GHz LV	18 W / 1.66 GHz LV	10 W / typ.
Operating Temperature	0°C to 60°C Standard, -40°C to 85°C (ULV)	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

Advanced switching - CP3923

The CP3923 is a fully managed Layer 2/3 Gigabit Ethernet (GbE) switch with up to 16 GbE 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 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. 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


CP3923-8C

3U Ethernet Switch Boards

CP3923 / CP3923-ENH

CP932

CP930

	CP3923 / CP3923-ENH	CP932	CP930
Function	Fully managed Layer 2/3	Unmanaged	Unmanaged
Form Factor	3U, 8HP / 12HP	3U / 4HP	3U / 4HP
Power Consumption (typ.)	Typ. 20W	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
Routing Protocols	OSPF v2, RIP v2, ECMP, VRRP, IGMP v2/v3, IPv6 optional	-	-
Ethernet/Bridging Protocols	VLAN Support (802.1Q, 802.1v), Link Aggregation (802.3ad), Spanning Tree (802.1S), QoS (802.1p), Flow Control (802.3x), GARP, GMRP	-	-
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 100.

3U Ethernet and Fieldbus Controller Boards

CP342

CP353

	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)

	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

	CP371	CP372
Resolution	12 Bit	12 Bit
Channels	Analog in 16	Analog out 8
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

	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

	CP390	CPMC1
Form Factor	3U cPCI	3U cPCI
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

	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)

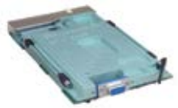
For more details please see **3U CPCI Platforms** on page 107.

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-RA/RC



ITC-320

CP3210

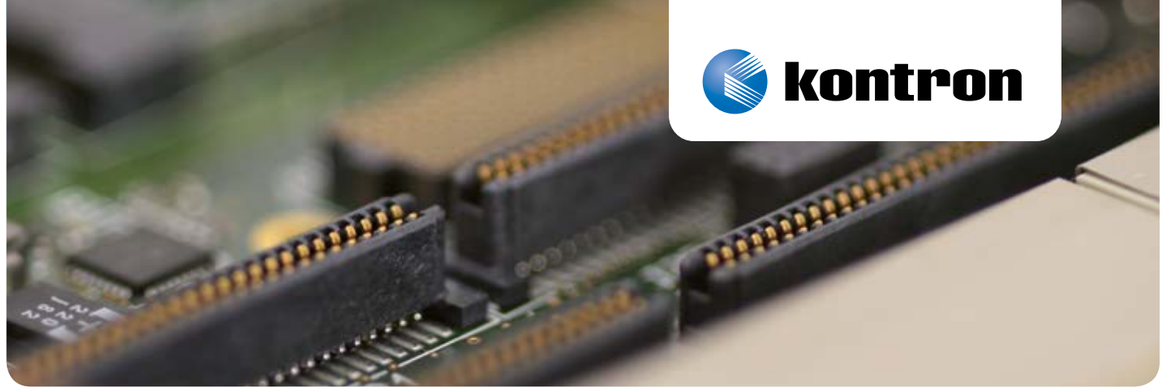
	CP3002-RA/RC	ITC-320	CP3210
CPU	Intel® Core™ i7 2.0 GHz	Intel® Core™2 Duo 1.5GHz, Core Duo 1.2GHz, Celeron 1.07GHz Processor	PowerPC 750FX @733 MHz
Front Side Bus	-	Up to 667MHz	133MHz
CPU L2 Cache	4 MBytes L3	2 / 4 MBytes	512 KB
Chipset	Intel® QM57	Intel® 3100	Discovery III Host Bridge
DRAM	Up to 8 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)

CP-ASM4-TT Evaluation System

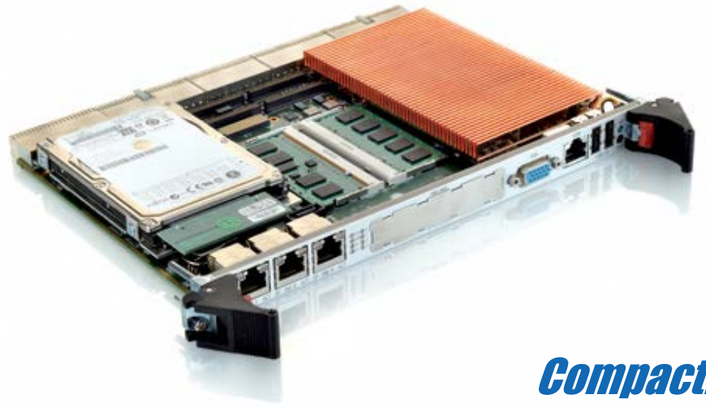
Rugged MAG designs follow a fast life cycle, matching as closely as possible every silicon innovation. To guarantee an easy and trouble-free project start and allow simple evaluation and software evelopment an dedicated evaluation system is available. The CP3002-RA and the appropriate rear transition module (CP-RIO3-05) can be installed into the system.

CP-ASM4-TT

CP3002-RA



» 6U CompactPCI Standard & Rugged Boards «



CompactPCI® PICMG

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 fast Time-To-Market and low TCO
» 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 full fill 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:

» Latest high performance, low power processor technology
» Robust and fully modular international standard
» Scaleable platforms for air and conduction cooled environments
» Hot swap and management support with highly reliable connectors
» Rear I/O support option to allow fast replacements and upgrades

6U x86 Processor Boards

The high performance and low-power 22nm 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. This offers Medical, Military, Industrial and Telecommunications applications a major jump in performance power.

6U x86 Processor Boards	 NEW						6U x86 Processor Boards
	CP6004-SA	CP6003-SA	CP6002	CP6001	CP6016	CP6001-V	
CPU	Intel® Core™ i7 3rd generation Processor, Dual/Quad core up to 2.7 GHz	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)	Intel® Celeron® M 440, 1.86 GHz	CPU
Front Side Bus	n/a	n/a	n/a	Up to 667 MHz	1066 MHz	533 MHz	Front Side Bus
CPU Cache	Up to 6MB	6 MByte	4 MByte	2 / 4 MByte	6 MByte	1 MByte	CPU L2 Cache
Chipset	Intel® QM77	Intel® QM67	Intel® QM57	Intel® 945GM, ICH7R 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, 1600MHz	Up to 16 GByte with ECC, DDR3 SO-DIMM, 1333 MHz	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 4 GByte DDR2 SO-DIMM, 533 MHz	DRAM
Flash Disk	SSD Flash disk option, 2.5 inch SSD/HD option	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	CompactFlash, USB NAND Flash	Flash Disk
4HP Version	VGA (CRT), COM1, 3x Ethernet, 2x USB, LEDs, Reset, PMC/XMC	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	2x Ethernet, 2x USB 2.0, LEDs, CRT, COM1, PMC	4HP Version
USB	6x USB 2.0	6x USB 2.0	6x USB	6x USB 2.0	7x USB 2.0	3x USB2.0	USB
Ethernet	5x Gigabit, 3x to front, 2x to rear, PICMG 2.16 compliant	5x Gigabit, 3x to front, 2x to rear, PICMG 2.16 compliant	4x Gigabit, 2x to front, 2x to rear, PICMG2.16 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	4x 10/100/1000Base-Tx, 2x Front & 2x PICMG 2.16	Ethernet
Graphics	Intel® QM77	Intel® QM67	Intel® QM57	Intel® 945GM	ATI ES1000 (64 MByte video memory)	Intel® 945GM	Graphics
PMC	1x slot XMC: x8 PCIExpress or 1x slot PMC: 64-bit/66 MHz	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 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	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	2x GigEthernet acc. PICMG2.16	Rear I/O
Characteristics	IPMI V1.5, Trusted Platform Module option, Watchdog	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	Performance & cost optimized for industrial applications	Characteristics
Power Consumption (typ.)	Quad Core 60W @2.3 GHz, Dual Core 40W @ 2.5GHz	Quad Core 60W @ 2.1 GHz, Dual core 50W @ 2.5GHz, 40W @2.2GHz	50W @ 2.53GHz	20W @ 1.2 GHz	60W @ 2.53 GHz	25 Watt @ 1.86 GHz	Power Consumption (typ.)
Operating 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	Operating Temperature

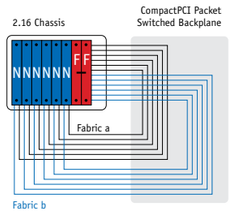
For more details please see **6U CPCI Platforms** on page 99.

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.

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.



6U Ethernet Switch Boards

CP6930 / CP6930-ENH

CP6923

CP6925

	CP6930 / CP6930-ENH	CP6923	CP6925
Routing Protocols	Include OSPFv2, RIPv2, VRRP, IGMP Snooping, DiffServ, ARP, ICMP	Include OSPFv2, RIPv2, VRRP, IGMP Snooping, DiffServ, ARP, ICMP	N/A
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; CP6930-ENH with IPv6 routing suppport	Include VLANs (802.1Q), Link Aggregation (802.3ad), Spanning Tree (802.1D, 802.1w), QoS (802.1p), Flow Control (802.3x), GVRP, GMRP	N/A
Function	Managed	Managed	Unmanaged
Power Consump.(typ.)	50 Watt	35 Watt	18 Watt
Ports	24x GbE according PICMG2.16, 2x front 1GbE SFP, 6x front 10GbE SFP+	24x GbE (CP6923-R) or 20x GbE (CP6923-C)+ 4x SFP (CP6923-O), 2x 10 GbE XFP	16x GbE
Connection	PICMG 2.16 / VITA31.1; front RJ45 & SFP / SFP+	PICMG 2.16/VITA31.1; front RJ45 & SFP / XFP	PICMG 2.16/VITA31.1; front RJ45
Additional	Management port at front panel	Management port at f. panel; front-IO (CP6923-C), rear-IO (CP6923-R), optical-IO (CP6923-O), rugged and rugged conduction cooled optional	-
Operating Temperature	0°C to 60°C	0°C to 55°C; E2 (-40°C to +85°C) versions available	0°C to 55°C

For more details please see **Switches & Networking** on page 100.

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.

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.

6U Rugged Processor Boards

CP6003-RC

CP6003-RA

	CP6003-RC	CP6003-RA
CPU	Intel® Core™ i7 2nd. Generation Quad / Dual Core up to 2.2. GHz	Intel® Core™ i7 2nd. Generation Quad / Dual Core up to 2.2. GHz
Front Side Bus	n/a	n/a
CPU Cache	Up to 6 MByte	Up to 6 MByte
Chipset	Intel® QM67	Intel® QM67
DRAM	4 / 8 GB (up to 16GB), DDR3 soldered, 1333 MHz with ECC	4 / 8 GB (up to 16GB), DDR3 soldered, 1333 MHz with ECC
Flash Disk	SSD flash disk option	SSD flash disk option
4HP Version	LEDs, Reset, PMC/XMC	Displayport, 3x Ethernet, 2x USB, LEDs, Reset, PMC/XMC
USB	6x USB	6x USB
Ethernet	4x Gigabit to rear, 2 of them PICMG2.16 compliant	5x Gigabit, 3x to front, 2 of them switchable to rear IO, 2x to rear, PICMG2.16 compliant
Graphics	Intel® QM67	Intel® QM67
PMC	1x PMC 66MHz/64bit or XMC, PCIe x8	1x PMC 66MHz/64bit or XMC, PCIe x8
Rear I/O	2x Graphics (DVI/ HDMI), VGA, 4x USB2.0, 4x GigEthernet, 4x SATA, 2x COM, HDAudio, Speaker, Fan, GPIO, Battery	2x Graphics (DVI/HDMI), VGA, 4x USB2.0, up to 4x GigEthernet, 4x SATA, 2x COM, HDAudio, Speaker, Fan, GPIO, Battery
Characteristics	IPMI1.5, Trusted Platform Module option, Watchdog, PMC/XMC, System or Peripheral Slot, Rugged Conduction Cooled	IPMI1.5, Trusted Platform Module option, Watchdog, PMC/XMC, System or Peripheral Slot, Rugged Forced Air-Cooled
Power Consumption (typ.)	Quad Core 60W @ 2.1 GHz, Dual Core 40W @ 2.2GHz	Quad Core 60W @ 2.1 GHz, Dual Core 40W @ 2.2GHz
Operating Temperature	E1 (-40 to +70°C)	E1 (-40 to +70°C)

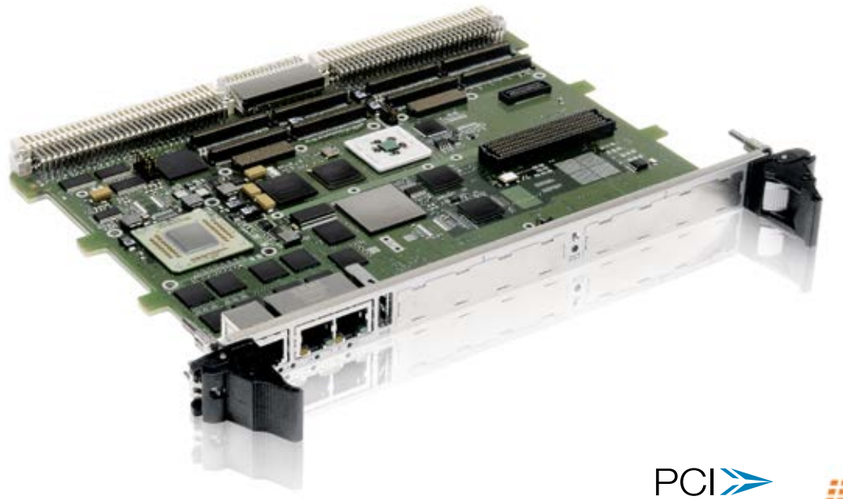
6U Rugged Processor Boards

CP6002-R2

CP6001-R2/R3

	CP6002-R2	CP6001-R2/R3
CPU	Intel® Core™ i7 2.0 GHz	Intel® Core™2 Duo, Core Duo Processor up to 1.5 GHz
Front Side Bus	n/a	Up to 667 MHz
CPU L2 Cache	4 MByte	2 / 4 MByte
Chipset	Intel® QM57	Intel® 945GM, ICH7R I/O Controller Hub
DRAM	4 GB (up to 8 GB), DDR3 soldered, 1066 MHz	Up to 8 GByte (R3) 4 GByte (R2), DDR2 soldered, 533/667 MHz
Flash Disk	SSD flash disk option	USB NAND Flash, soldered IDE Flash
4HP Version	Displayport, Ethernet, USB, LEDs, Reset, 2x PMC/XMC	R2 - VGA (CRT), COM1, 3x Ethernet, 2x USB, 1x Serial, LEDs, Reset, PMC R3- non
USB	6x USB	6x USB 2.0
Ethernet	3x Gigabit, 1x to front, 2x to rear, PICMG2.16 compliant	3x Gigabit, 1 fixed to front, 2 front or rear, PICMG 2.16 compliant
Graphics	Intel® QM57	Intel® 945GM (shared video memory)
PMC	2x PMC 66MHz/64bit or XMC, PCIe x8	1x slot PMC: 32-bit/66 MHz
Rear I/O	2x Graphics (DVI/ HDMI), VGA, 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
Characteristics	IPMI1.5, Trusted Platform Module option, Watchdog, 2xPMC/ XMC, System or Peripheral Slot, Rugged Forced Air-Cooled	IPMI 1.5, TPM, Watchdog, System or Peripheral slot, Low-power, Rugged Forced-Air-Cooled
Power Consumption (typ.)	40W @ 2.0GHz	R2 - 30W @ 1.5GHz R3 - 20W @ 1.2GHz
Operating Temperature	E1 (-40 to +70°C)	E2 (-40 - +85°C) with 1.2 GHz; E1 (-40 - +70°C) with 1.5 GHz

» VME Standard & Rugged Products «



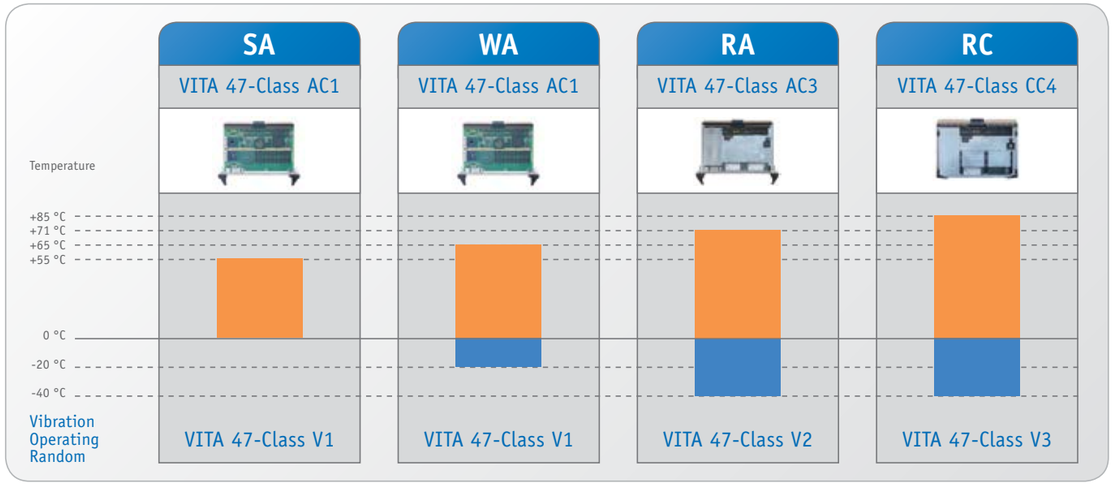
VMEbus is an open and flexible slot-card computer architecture which supports up to 21 cards in 3U, 6U or 9U Eurocard format. First standardized in the early '80s, the VMEbus has ever been improved by addition of new features and by the integration of new technologies while keeping backward compliance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

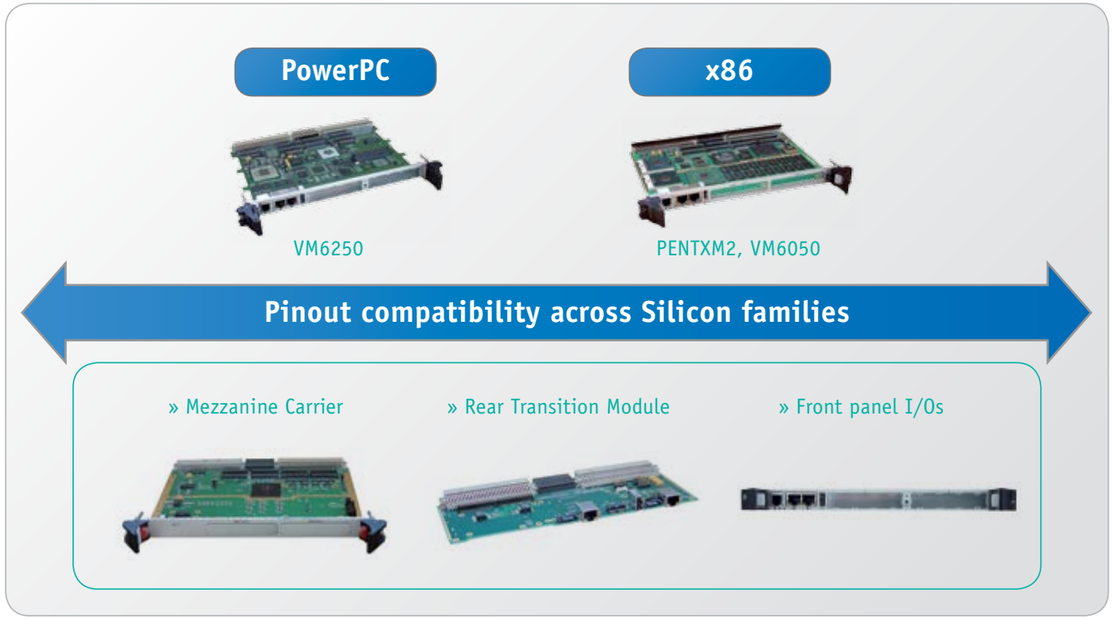
Kontron is one of the pioneering companies of VMEbus and is an active member of the VMEbus Inter national Trade Association (VITA) which gathers more than 130 members. Kontron designs and markets a wide range of 3U and 6U VMEbus products and leads the improvement of the features of VMEbus products such 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

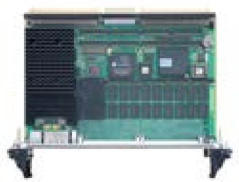
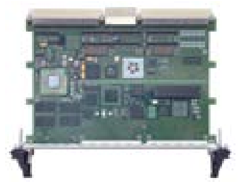
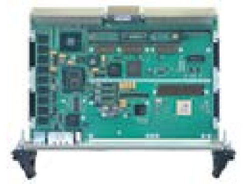
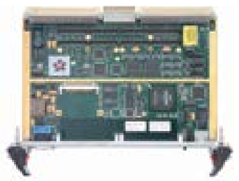
To fulfill the demanding environmental requirements of the defense and other mission-critical markets, Kontron VME boards are manufactured in four classes: SA, WA and RA (Air-Cooled), and RC (Conduction-Cooled). All classes are 100% software compatible.



Straightforward PowerPC/x86 migration



6U Processor Boards


6U Processor Boards	PENTXM4 / PENTXM2	VM6250	VM6050	VCE405	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	PowerPC 405GPr	Single or Dual PowerPC 7448 with Altivec	CPU
CPU Clock	1.33 GHz to 1.67 GHz	1 GHz to 1.33 GHz	1.2 GHz to 2 GHz	400 MHz	1 GHz to 1.4 GHz	CPU Clock
CPU performance	14 GFlops FFT	10.2 GFlops FFT	23 GFlops FFT	608 DMIPS	12.4 GFlops FFT	CPU MIPS
CPU L2 Cache	2 MB	1 MB with EEC	4 MB	32KB	512kByte to 1 MByte	CPU L2 Cache
DRAM	Up to 4 GB with ECC	Up to 2 GB DDR2 with ECC	Up to 8 GB with ECC	Up to 128 MB with ECC	Up to 1 GByte with ECC	DRAM
Flash Onboard	4 GB NAND-Flash	Up to 16 GB USB Flash modules	Up to 16 GB SATA/USB Flash modules	8 MB Flash EPROM	Up to 64 MByte of User Flash	Flash Onboard
NVRAM	-	128 KB	512 KByte	1 MB UVEPROM socket	8 KByte	NVRAM
USB	3x USB2.0 (1x front, 2x rear P0)	3x USB2	3x USB	-	-	USB
Ethernet	2x Gigabit Ethernet	4 x 10/100/1000 BaseT	4x Gigabit Ethernet	1x 10/100 Base-T (Front Panel or Rear I/O)	2x 10/100/100 BaseT	Ethernet
Graphics	XMC-G72 supported	-	XGI Z11 with 32 MB SDRAM	-	-	Graphics
Serial Channels	Two Serial Lines	2x UART	Two Serial Lines	2x async. serial lines (Front Panel and Rear I/O), 4x sync./async. serial lines (Rear I/O)	4 async. EIA-232 serial lines on front panel & 2 EIA-422/485 on rear	Serial Channels
Mezzanine	1 PMC/XMC + 1 PMC	2 PMC/XMC + 1 FMC	2 PMC/XMC + 1 FMC	2x 64-bit PMC sites	PMC slot 64/32-bit PCI/PCI-X @133MHz	PMC
Rear I/O	2x GBE VITA 31.1, 2x USB, 2x SATA, 4x PCIe, 2x UART, XMC/PMC I/O	2x GBE, 4xPCIe, 2x USB2, 2x SATA, 2x UART, 3x GPIO, Mezzanine I/O	2x GBE VITA 31.1, 2x USB, 2x SATA, 4xPCIe, 2x UART, XMC/PMC/FMC I/O	Ethernet, Serial Lines, IIC Bus	PMCs I/O, Gigabit & 10/100 Ethernets, EIA-232, GPIO	Rear I/O
Connectivity	4xPCIe, VME 64x, Gigabit Ethernet, Serial Lines, USB, SATA	4xPCIe, VME 2eSST, Gigabit Ethernet, Serial Lines, USB, SATA	4xPCIe, VME 64x, Gigabit Ethernet, Serial Lines, USB, SATA	VME, Ethernet	VME 2essT, Gigabit Ethernet, Serial Lines	Connectivity
Available Extensions	Rear Transition Module	Rear Transition Module	Rear Transition Module	Rear Transition Module	Rear Transition Module	Available Extensions
Expansion Slots	V2PMC2 dual PMCs slot Carrier Board	V2PMC2 dual PMCs slot Carrier Board & FMC support	V2PMC2 dual PMCs slot Carrier Board & FMC support	-	-	Expansion Slots
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	LynxOS 4.0, VxWorks 5.4, Linux 2.4	LynxOS 4.0.0, Linux kernel 2.6.9 SMP, VxWorks 6.2, VxW 5.5.1	Operating System
Power Consumption (typ.)	24W to 40W	27W to 45W	22W to 31W	7 W	23W to 57W	Power Consumption (typ.)
Front IO	2x Gigabit Ethernet, Serial Line, USB	Gigabit Ethernet, Serial Line, USB	2x Gigabit Ethernet, Serial Line, USB	1x Async. Serial Line, 1x Ethernet 10/100BaseT	Gigabit Ethernet, Serial Lines	Front IO
Rear IO	2x Gigabit Ethernet VITA 31.1, 2x USB, 2x SATA, 4x PCIe, 2 UART, XMC/PMC I/O	2x Gigabit Ethernet VITA 31.1, 2x USB, 2x SATA, 4xPCIe, 2 UART, XMC/PMC/FMC I/O	2x Gigabit Ethernet VITA 31.1, 2x USB, 2x SATA, 4xPCIe, 2 UART, XMC/PMC/FMC I/O	PMCs I/O, 10/100 Ethernet, Serial Lines	PMCs I/O, Giga-bit & 10/100 Ethernets, EIA-232, GPIO	Rear IO
Operating Temperature	Air Cooled VITA 47-Class AC1 (0°C to 55°C); Conduction Cooled VITA 47-Class CC4 (-40°C to +85°C)	Air Cooled VITA 47-Class AC1 (0°C to 55°C); Conduction Cooled VITA 47-Class CC4 (-40°C to +85°C)	Air Cooled VITA 47-Class AC1 (0°C to 55°C); Conduction Cooled VITA 47-Class CC4 (-40°C to +85°C)	Air Cooled VITA 47-Class AC1 (0°C to 55°C); Conduction Cooled VITA 47-Class CC4 (-40°C to +85°C)	Air Cooled VITA 47-Class AC1 (0°C to 55°C); Conduction Cooled VITA 47-Class CC4 (-40°C to +85°C)	Operating Temperature

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

For more details please see **Turnkey Evaluation Platforms** on page 107.

» VPX Standard & Rugged Products «

VPX OpenVPX™ VXFabric™

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

Kontron offers a complete VPX Ecosystem with Payload (SBC, Mezzanine Carriers, FPGA) and PCIe and Ethernet switch boards supported by a family of VPX backplanes and enclosures. This offering helps to build a complete range of risk free deployment computers, from simple PC like to Multi rack HPEC applications.

VXFabric™ and VXControl™
VXFabric offers Multi Gigabytes bandwidth between boards thanks to a Linux low level software module interfacing the TCP/IP stack with PCIe fabric. All existing code works unmodified on VXFabric. VXControl is a solution for fine grained Out Of Band health management at the computer level. It relies on on-board controllers and chassis management module, interfaced through the standard SMB (system management bus) of the VPX backplane.

3U/6U VPX Turnkey Platforms
Kontron has developed a range of 3U/6U VPX Turnkey development platforms 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. 107).

3U Processor Boards

3U Processor Boards	VX3030	VX3035	VX3042	VX3044	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	Intel® Core™ i7 (3rd gen), Dual Core, configurable TDP 14W to 25W	Intel® Core™ i7 (3rd gen), Quad Core, 35W	Freescale 8544 1GHz low power CPU
CPU performance	23 GFlops FFT	43.5 GFlops FFT	43.5 GFlops FFT	83 GFlops FFT	2041 DMIPS
CPU Last Level Cache	4MB	4MB	4MB (Dual Core) & 6MB (Quad Core)	4MB (Dual Core) & 6MB (Quad Core)	256 KB
Chipset	Mobile Intel® QM57 Express	Mobile Intel® QM67 Express	Mobile Intel® QM77 Express	Mobile Intel® QM77 Express	Single Chip Design (SOC)
DRAM	2, 4 or 8 GB Soldered with ECC	2, 4 or 8 GB Soldered with ECC	4, 8 or 16 GB Soldered with ECC	8 or 16 GB Soldered with ECC	1 GB Soldered with ECC
DRAM speed	1067 MHz	1333 MHz	1600 MHz	1600 MHz	400 MHz DDR2
Frontpanel	1x GigEthernet, VGA, 1x USB 2.0, 1x EIA-232 UART; 3x control and status bicolor LEDs	1x GigEthernet, VGA, 1x USB 2.0, 1x EIA-232 UART; 3x control and status bicolor LEDs	1x GigEthernet, 1x Mini Display Port, 1x USB 2.0, 1x RS232 UART; 5x control and status bicolor LEDs	1x GigEthernet, 1x Mini Display Port, 1x USB 2.0, 1x RS232 UART; 5x control and status bicolor LEDs	2x GigEthernet, COM, USB 2.0
Ethernet	2x GbE on front and 2x GbE on rear, on board switch	2x GbE on front and 2x GbE on rear, on board switch	1x GbE on front and 2x 10G/1 GbE on rear, on board switch	1x GbE on front and 2x 10G/1 GbE on rear, on board switch	2x GbE configurable front or rear
Graphics Controller	Intel® HD Graphics with Dynamic Frequency in CPU	Intel® HD Graphics with Dynamic Frequency in CPU	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	Mini Display Port on FP, 2 eDP (Display Port) on BP	Mini Display Port on FP, 2 eDP (Display Port) on BP	-
Rear I/O	3x GigEthernet, 4x SATA, PCIe one x4 or four x1, 2 Serial Ports, 2 DisplayPorts	3x GigEthernet, 4x SATA, PCIe one x4 or four x1, 2 Serial Ports, 2 DisplayPorts	2x 10G/1 GigEthernet, 4x SATA, x2/x4/x8 PCIe, 2 Serial Ports, 2 DisplayPorts, XMC I/Os (option)	2x 10G/1GigEthernet, 4x SATA, x2/x4/x8 PCIe, 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	High Performance, Rugged, Expandable I/Os	High Performance, Rugged, Expandable I/Os	Very Low Power
Mezzanine	-	-	XMC		XMC and PMC
Power Supply	+5V, +12V inputs fully protected by fuse	+5V, +12V inputs fully protected by fuse	+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, without RTM	45W, without RTM	59W, without RTM	70W, without RTM	15W
Storage	4 SATA ports, USB/SATA mezzanine port	4 SATA ports, USB/SATA mezzanine port	4 SATA ports, SSD	4 SATA ports, SSD	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 RTM Module, USB Mass Storage Cards	VPX RTM Module, USB Mass Storage Cards	VPX 3U RTM Module, Mezzanine carrier, USB Mass Storage Cards
Operating Temperature	Air Cooled VITA 47-Class AC1 (0°C to 55°C); Conduction Cooled VITA 47-Class CC4 (-40°C to +85°C)	Air Cooled VITA 47-Class AC1 (0°C to 55°C); Conduction Cooled VITA 47-Class CC4 (-40°C to +85°C)	Air Cooled VITA 47-Class AC1 (0°C to 55°C); Conduction Cooled VITA 47-Class CC4 (-40°C to +85°C)	Air Cooled VITA 47-Class AC1 (0°C to 55°C); Conduction Cooled VITA 47-Class CC4 (-40°C to +85°C)	Air Cooled VITA 47-Class AC1 (0°C to 55°C); Conduction Cooled VITA 47-Class CC4 (-40°C to +85°C)

Upgrade Performance and I/Os at each generation

Core i7 1st Generation
x4 PCIe
GETH BaseBX
GETH BaseT

Core i7 2nd Generation
x4 PCIe gen2
GETH BaseBX
GETH BaseT

Core i7 3rd Generation

Dual Core 14 to 25W (Configurable TDP)
XMC slot
x8 PCIe gen3
1/10 GETH BaseBX
1GETH BaseT

Quad Core 35W
x8 PCIe gen3
1/10 GETH BaseBX
1GETH BaseT

intel VPX

- » Backward and Forward compatible pin-out
- » Single System Design, Multiple CPU generation upgrades
- » Write the code once run on all the product line

6U Processor Boards

	VX6070	VX6060
CPU	Eight Intel® Core™ i7 (3rd gen) cores in 2 processors	Four Intel® Core™ i7 cores in 2 processors
CPU performance	166 GFlops FFT with 2 CPU @ 2.1GHz	46 GFlops FFT with 2 CPU @ 2GHz
CPU Last Level Cache	6 MB per processor	256 KB per core
Chipset	Mobile Intel® QM77 Express	Mobile Intel® QM57 Express
DRAM	4, 8 or 16 GB DDR3 with ECC (per CPU)	2, 4 or 8 GB DDR3 with ECC (per CPU)
DRAM speed	1600 MHz	1067 MHz
Frontpanel	2x GigEthernet, 1 VGA, 1x Display Port, 1x USB 2.0, 1x EIA-232 port, 4x LEDs, optional 10GETH SFP+ Cages	2x GigEthernet, 1 VGA, 1x Display Port, 1x USB 2.0, 1x EIA-232 port, 4x LEDs
Ethernet	2x GigEthernet on front, 2x 10G base KR + 1000BaseT GigEthernet on rear. On board switch.	2x GigEthernet on front and 4x GigEthernet on rear. On board switch.
Graphics	2 eDP (enhanced display ports) per 3U core on P2. Intel® HD Graphics with DirectX 10 OpenGL 2.3	1 eDP (enhanced display ports) per 3U core on P2. Intel® HD Graphics with DirectX 10 OpenGL 2.3
Rear I/O	2x 10G base KR + 1000BaseT Gig Ethernet, 4x SATA, 2x PCi Express gen3, 4x Serial Ports, 2 Display Ports	4x Gig Ethernet, 4x SATA, 2x PCi Express, 4x Serial Ports, 2 Display Ports
Characteristics	High Performance, Low Power, Rugged, Expandable I/Os	High Performance, Low Power, Rugged, Expandable I/Os
Options	0°C to 55°C air cooled 1' size, -40° to +75°C 0,8" size Conduction Cooled versions	0°C to 55°C air cooled 1" size, -40° to +75°C 0,8" size Conduction Cooled versions
Power Consumption (typ.)	95W typical with 8 GB of memory, no RTM and no PMC	75W typical with 4 GB of memory, no RTM and no PMC
Storage	USB 2.0 or SATA Flash Disk socket, on board 2"5 SATA support, 4 SATA ports	USB 2.0 Flash Disk socket, on board 2"5 SATA support, 4 SATA ports
Accessories	VPX RTM Module, USB Mass Storage Cards	VPX RTM Module, USB Mass Storage Cards
Operating Temperature	Air-Cooled VITA 47-Class AC1 (0°C to +55°C); Conduction-Cooled VITA 47-Class CC4 (-40°C to +85°C)	Air-Cooled VITA 47-Class AC1 (0°C to +55°C); Conduction-Cooled VITA 47-Class CC4 (-40°C to +85°C)

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 and VX3836 support the new VITA57 FMC mezzanine standard.

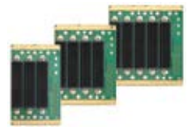
3U Carrier Boards

	VX3800	VX3830	VX3836
Function	PMC and XMC Carrier Board	VITA57 FMC Carrier Board for simple I/O s	VITA57 FMC Carrier Board for High Speed I/O and intensive sensor data processing
Form Factor	3U VPX , 4HP or 5HP	3U VPX, 4HP or 5HP	3U VPX, 4HP or 5HP
Characteristics	PMC PCI bus is 5V tolerant. VIO is set at 3.3V by default	Xilinx® Virtex®-5 LX20T FPGA	Xilinx® Virtex®-6 LX240T FPGA
Options	n/a	Sample Implementation with GPIO FMC	Sample implementation with sFPDP FMC
Operating Temperature	Air-Cooled VITA 47-Class AC1 (0°C to +55°C); Conduction-Cooled VITA 47-Class CC4 (-40°C to +85°C)	Air-Cooled VITA 47-Class AC1 (0°C to +55°C); Conduction-Cooled VITA 47-Class CC4 (-40°C to +85°C)	Air-Cooled VITA 47-Class AC1 (0°C to +55°C); Conduction-Cooled VITA 47-Class CC4 (-40°C to +85°C)
Software support	No sw needed, standard PCI drivers apply	Linux based development kit with FMC and FPGA management support	Linux based development kit with FMC and FPGA management support

3U Switch Boards

	VX3920	VX3910	VX3905
Fabric Interface Support	ETH 10G Base KR, ETH 1000 Base T, ETH 1000 Base BX	ETH 1000 BASE-BX ETH 1000 BASE-T	PCIe gen 2, ETH 1000 BASE-BX ETH 1000 BASE-T
Routing Protocols	Include OSPFv2, RIPv2, VRRP, IGMP Snooping, DiffServ, ARP, ICMP, ACLs	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	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 Ethernet switch and IDT 89H32NT24AG2 PCIe switch
Power Supply	5V only design	5V only design	5V only design
Power Consumption (typ.)	50 Watts (TBC)	20 Watts	20 Watts
Front IO	1 RJ11 Serial, 1 RJ45 (1 GETH management or data), 2 SFP+	1 RJ11 Serial, 4 RJ45 (1 GETH management, 3 1000BASE-T)	PCIe x4 Connector, 2 RJ45 1000BASE-T Connectors
Standard	Open VPX MOD3-SWH-2F24U module usable in SLT3-SWH-2F24U-14.4.3 slots - ROHS and CE compliant	Open VPX MOD3-SWH-2F24U module usable in SLT3-SWH-2F24U-14.4.3 slots - ROHS and CE compliant.	OpenVPX MOD3-SWH-6F6U-16.4.1-3 module usable in SLT3-SWH-6F6U-14.4.1 slots
Ports	24x 10G ETH ports	24x 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
Operating Temperature	Air-Cooled VITA 47-Class AC1 (0°C to +55°C); Conduction-Cooled VITA 47-Class CC4 (-40°C to +85°C)	Air-Cooled VITA 47-Class AC1 (0°C to +55°C); Conduction-Cooled VITA 47-Class CC4 (-40°C to +85°C)	Air-Cooled VITA 47-Class AC1 (0°C to +55°C); Conduction-Cooled VITA 47-Class CC4 (-40°C to +85°C)
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	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

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
Operating Temperature	-40°C to +85°C	-40°C to +85°C
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 ; IFDP03-1IN-3U-VPXV1 : 3U, 1.0" Pitch, 3-Slot	IFDP08-1IN-3UVPXV1SI: 3U, 1.0" Pitch, Single Star x4 Topology; IFDP08-1IN-3U-VPX2 3U : 1.0" Pitch, Dual Star x4 Topology; IFDP08-1IN-3UVPXV3SI 3U: 1.0" Pitch, Single Star x2 Topology

For more details please see **Military Rugged Systems and Enclosures** on page 106.

» AdvancedTCA «

AdvancedTCA® PICMG®

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 AdvancedTCAbased 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 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.

For more details please see **Switches & Networking** on page 100 and **ATCA Platforms** on page 113.

Processor Boards/Blades

AT8060

CPU	Dual Intel® Xeon® 8-Core Processor E5-2600 Series
Front Side Bus	Dual 8GT/s QPI interfaces between both CPUs provide 40GByte/s/direction
CPU L2 Cache	Up to 20 MB
Chipset	C600 series chipset
DRAM	Up to 64GB DDR3 on 4 DIMM per CPU
Flash	Dual eUSB Flash Modules - 16 GB each
Frontpanel	2x SFP SerDes Ethernet; Serial (RJ-45); 2x USB
Connectivity	Two 10/100/1000 Mbps Ethernet (Base Interface); Four 10/100/1000 Mbps Ethernet (FP and RTM); and 10 + 10 Gigabit Ethernet Fabric Interface
Mezzanine	AMC bay with PCIe x8 Gen2 + SATA connectivity; Rear Transition Module RTM8063 with 2 hot swap 2.5" SAS hard drives
Compliance	PICMG 3.0 R3 / PICMG 3.1 R1.0 specification options 1 and 9 / AMC.0 R2.0 / AMC.1 R2.0 specification type 1, 2, 4, or 8

AT8050

CPU	Single Intel® Xeon® Six-Core 5600 Series; Single Intel® Xeon® Quad-Core 5500 Series
Front Side Bus	-
CPU L2 Cache	12 MB (5600), 8 MB (5500)
Chipset	Intel® 5520 I/O Hub (36D) and I/O Controller Hub (ICH10R)
DRAM	Support for up to 48 GB on 3-channels, DDR3 1066 MHz, ECC, registered SDRAM on 6 DIMM sockets total
Flash	Two redundant 1MB BIOS (Field software upgradeable)
Frontpanel	Serial (RJ-45), 2 i82576 Management LAN (RJ-45), 2 USB
Connectivity	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 3.0R3 / 3.1 Option 9, Option 2

AT8242

CPU	Dual Cavium Octeon II CN6880 Network processor
Front Side Bus	-
CPU L2 Cache	-
Chipset	-
DRAM	Eight DDR3 DIMM sockets each supporting 32GB address range for up to 256GB
Flash	USB Flash drive option (16GB); Unit processor is connected to two 128 Mbyte NOR flash with dual image support, and 1GB NAND flash.
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)
Connectivity	40Gbps to each Network processor 2x 40GbE Fabric Interface Additional 160Gbps for various optional front or rear access I/O Independent management processor
Mezzanine	-
Compliance	PICMG 3.0 R3.0; PICMG 3.1 R1.0

Hub Boards

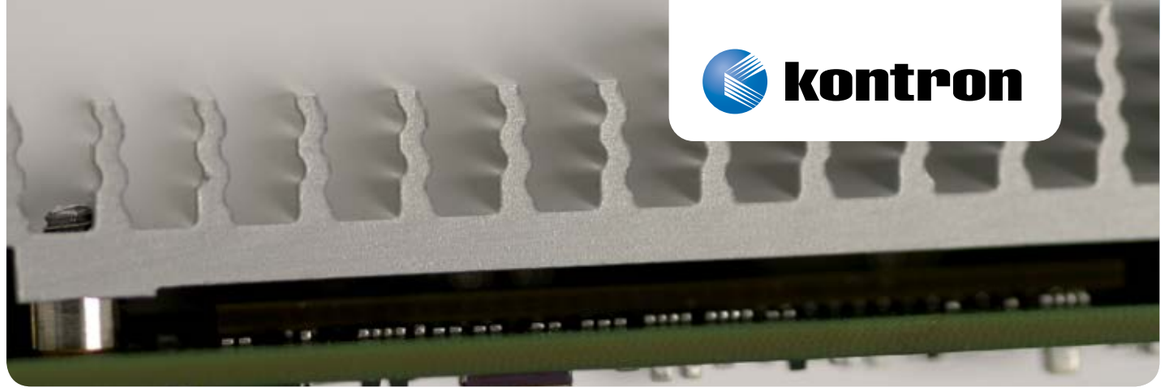
AT8910

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
Uplinks for Base Interface	4x 10/100/1000 Base-T
Uplinks for Fabric Interface	Support of 4 1G/10G SFP+ front uplinks with 10GBase-SR/LR/LRM/ direct attach copper cables
Routing Protocols	IPv4 unicast and multicast routing: unicast forwarding protocols & functions (ARP, OSPF, VRRP, RIP); multicast forwarding protocols & functions (PIM-DM, PIM-SM, DVMRP, IGMP).
Ethernet/Bridging Protocols	Includes Meshed multicast, multicast and RSTP interoperability, same port bridging, link aggregation, LLDP, lossless Ethernet
RTM Support	Up to 80Gbps uplink capability on Fabric Interface: 2x QSFP configured as 8x 10G uplinks using 2 active copper cables; 1x QSFP configured as 4x 10G and 4x SFP+ uplinks; Telco clocking is standard
Shelf Manager Crossconnect Support	Yes
Management	Management connection to System Manager via RS232 front RJ45, or 10/100/1000Base-T front RJ45
IPMI	Version 1.5

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 10/100/1000Base-T or RS232 on front plate or RTM
IPMI	Version 1.5
Controller	PPC405GPr 400 MHz, 256 MByte SDRAM, 64 MByte Flash



» AdvancedMCs «

AdvancedMC™ PICMG®

Advanced Mezzanine Cards (AMC) defined as a PICMG form factor standard and mutual part of AdvancedTCA and MicroTCA has meanwhile established itself on the market. AdvancedMCs are based on serial interfaces and support different transport systems such as, for example, PCIExpress, 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 cabability

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.

Processor AMCs x86

AM4022

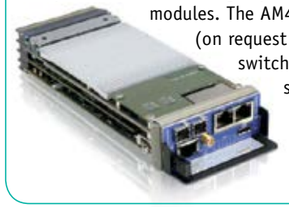
AM4020

AM4010/AM4011

	AM4022	AM4020	AM4010/AM4011
CPU	Intel® Core™ i7 3rd generation Processor, dual/quad core up to 2.x 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	n/a	-	667 MHz
CPU Cache	Up to 6 MByte (LLC)	4 MByte (LLC)	4 MByte
Chipset	Intel® QM77	PCH QM57	Intel® 3100
DRAM	Up to 8 GByte soldered DDR3 1600 MHz with ECC	Up to 8 GByte soldered DDR3 1066 MHz with ECC	Up to 4 GByte soldered DDR2 400 MHz with ECC
Flash	Socket for SATA NAND Flash module	Socket for SATA 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)	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 (RJ45/ mini pin-row), 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	Integrated in Core™ i7	-
Connectivity	System Interconnect: 2x GbE, 2x PCI-Express x4 (or 1x 8), 3x SATA, 3x USB 3.0, 1x COM	System Interconnect: 2x GbE, 2x PCI-Express x4, 4x 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	PICMG: AMC.0 R2.0 / AMC.1 / AMC.2 / AMC.3; IPMI V1.5	Up to 32 GByte SATA NAND Flash module	Up to 16 GByte USB NAND Flash module

AM4904 / AM4910

The AM4904/AM4910 is a fully featured MCH providing high sophisticated system management and high performance switching capabilities for up to 12 AMC 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.



» 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

AM4901

The AM4901 is an entry-level MCH solution 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 provides these functions for 6 AMCs - designed as a single PCB solution with one tongue only.

» Cost optimized design by focusing to essential requirements
» System management + Unmanaged Ethernet Switching
» Low power consumption
» High reliability (MTBF > 620 000 h)

For more details please see **Switches & Networking** on page 100.

Processor AMCs PowerPC

AM4150

CPU	Freescale dual-core QorIQ P5020/64bit, 2.0GHz
Front Side Bus	800 MHz platform frequency
CPU L2 Cache	Dedicated 512 kByte to each Core; 2 MB shared L3 CoreNet platform cache
Chipset	-
DRAM	Up to 8 GByte dual channel, soldered DDR3 1300 MHz with ECC
Flash	Up to 2 GByte NAND Flash with onboard controller for application code and data, miniSD card socket internally
Frontpanel	2x GbE, 1x COM (RJ45), 4 Control/Status LEDs (bi color)
Form Factor	Single width, full-size or mid-size
Graphics	-
Connectivity	System Interconnect: 2x GbE (port 1 routable to front), 1x PCI-Express x4 or 1x sRIO(1.3+2.1) x4 on port 4-7, 1x PCI-Express x4 or 1x sRIO(1.3+2.1) x4 or 3xGbE/ SGMII on port 8-11, 1xSATA on port 2, 1x COM
Compliance	PICMG: AMC.0 R2.0 / AMC.1 R2.0 / AMC.2 R1.0 / AMC.3 / AMC.4 R1.0 / MTCA.0 R1.0; IPMI V2.0,R1.0
Options	-

AM4140

CPU	Freescale 4/8 core QorIQ P4040/P4080, 1.5GHz
Front Side Bus	800 MHz platform frequency
CPU L2 Cache	Dedicated 128 kByte to each Core; 2 MB shared L3 CoreNet platform cache
Chipset	-
DRAM	Up to 8 GByte dual channel, soldered DDR3 1300 MHz with ECC
Flash	Up to 2 GByte NAND Flash with onboard controller for application code and data, miniSD card socket internally
Frontpanel	2x GbE, 1x COM (RJ45), 4 Control/Status LEDs (bi color)
Form Factor	Single width, mid-size
Graphics	-
Connectivity	System Interconnect: 2x GbE (port 1 routable to front), 1x PCI-Express x4 or 1x sRIO x4 on port 4-7, 1x PCI-Express x4 or 1x sRIO x4 or 10G/XAUI or 4xGbE/SGMII on port 8-11, 1x COM
Compliance	PICMG: AMC.0 R2.0 / AMC.1 R2.0 / AMC.2 R1.0 / AMC.4 R1.0 / MTCA.0 R1.0; IPMI V2.0,R1.0
Options	-

AM4120

CPU	Freescale dual-core QorIQ P2020, 1.2GHz
Front Side Bus	400 MHz platform frequency
CPU L2 Cache	512 kByte
Chipset	-
DRAM	Up to 4 GByte soldered DDR3 600 MHz with ECC
Flash	Up to 2 GByte NAND Flash with onboard controller for application code and data, miniSD card socket internally
Frontpanel	2x GbE, 1x COM (RJ45), 4 Control/Status LEDs (bi color)
Form Factor	Single width, mid-size
Graphics	-
Connectivity	System Interconnect: 2x GbE (port 1 routable to front), 1x PCI-Express x4 or 1x sRIO x4 , 1x COM
Compliance	PICMG: AMC.0 R2.0 / AMC.1 R1.0 / AMC.2 R1.0 / AMC.4 R1.0 / MTCA.0 R1.0; IPMI V2.0 R1.0
Options	Extended temperature range/ rugged version on project request

AM4100/AM4101

CPU	Freescale dual-core Power PC MPC8641D, 1.5GHz
Front Side Bus	-
CPU L2 Cache	Dual 1 MByte
Chipset	-
DRAM	Up to 2 GByte soldered DDR2 600 MHz with ECC
Flash	512 MByte/2GByte NAND Flash with onboard controller for application code and data
Frontpanel	2x GbE, 1x COM (RJ45), 4 Control/Status LEDs (bi color)
Form Factor	Single width, full-size or mid-size
Graphics	-
Connectivity	System Interconnect: 2x GbE, 1x PCI-Express x4 and/ or 1x sRIO x4 , 1x COM
Compliance	AM4101:PICMG: AMC.0 R2.0 / AMC.1 or AMC.4 / AMC.2; IPMI V1.5 AM4100: PICMG: AMC.0 R2.0 / AMC.1 / AMC.2 / AMC.4; IPMI V1.5
Options	-

Processor AMCs Cavium

AM4211

Interface	1x 10GbE to the front; HIROSE for RS232 access to processor
Form Factor	Mid-size
Characteristics	Cavium OCTEON II cn6645 MIPS64 10-Core processor at 1.1 GHz Socketless
Compliance	AMC.0 R2.0, AMC.1 R2.0, AMC.2 R1.0, AMC.4 R1.0, MTCA.0 R1.0
Controller	Dual Gigabit Ethernet Controller

AM4220

Interface	2x SFP+ 10GbE and Serial RJ45
Form Factor	Mid-size
Characteristics	Cavium OCTEON Plus 5650 Network Service Processor provides high-density, high-bandwidth serial I/O for networking; 12x MIPS64 R2 Cores; 600Mhz
Compliance	AMC.0 R2.0 Advance Mezzanine Card Base Specification
Controller	Dual Gigabit Ethernet Controller Intel® 82571EB

AM4210

Interface	4x SFP GbE
Form Factor	Mid-size
Characteristics	Cavium OCTEON Plus 5650 Network Service Processor provides high-density, high-bandwidth serial I/O for networking; 12x MIPS64 R2 Cores; 600Mhz
Compliance	AMC.0 R2.0 Advance Mezzanine Card Base Specification
Controller	Dual Gigabit Ethernet Controller Intel® 82571EB

AM4204

Interface	4x SFP GbE
Form Factor	Mid-size
Characteristics	Cavium OCTEON Plus 5650 Network Service Processor provides high-density, high-bandwidth serial I/O for networking; 12x MIPS64 R2 Cores; 600Mhz
Compliance	- AMC.0 R2.0 Advance Mezzanine Card Base Specification
Controller	Dual Gigabit Ethernet Controller Intel® 82571EB

Mass Storage AMCs

AM4530

Interface	NAS, SATA II
Storage Technology	HDD or SSD
Capacity	HDD is 2.5" 120GB and 250GB; SSD is 2.5" 32GB and 64GB Intel SSD
Form Factor	Mid-size
Access	Depending on selected storage device
Sequential Bandwidth RW	Depending on selected storage device
Characteristics	Marvell 88E6131 GbE switch for access between AMC ports 0, 1, 8, and 9 to the CPU
Compliance	PICMG: AMC.0 R2.0 / AMC.1 R2.0 / AMC.2 R1.0 / AMC.3 R1.0
Operating Temperature	0°C to 55°C HDD, 0°C to 70°C SSD version

AM5500

Interface	2x SATA
Storage Technology	HDD or SDD
Capacity	Up to 2x 500 GByte
Form Factor	Mid-size
Access	Depending on selected storage device
Sequential Bandwidth RW	Depending on selected storage device
Characteristics	Depending on selected storage device
Compliance	PICMG: AMC.0 R2.0 / AMC.3 R1.0
Operating Temperature	0°C to 55°C with HDD, 0°C to 70°C with SSD

AM4500

Interface	SATA I
Storage Technology	Extended Duty Rotating Drive
Capacity	Up to 250 GByte
Form Factor	Full-size or mid-size
Access	7,200 RPM, avg seek time 12 ms
Sequential Bandwidth RW	8 MByte cache 150 MByte/s burst
Characteristics	24 hours / 7 days operation
Compliance	PICMG: AMC.0 R2.0 / AMC.3 R1.0
Operating Temperature	5°C to 40°C

AM4510

Interface	SATA 1 and SATA II
Storage Technology	Solid State Flash Drive
Capacity	Up to 64 GByte
Form Factor	Full-size or mid-size
Access	75 microseconds
Sequential Bandwidth RW	250 / 170 MByte/s Sustained 300MByte/s burst
Characteristics	NEBS level 3; 24 hours / 7 days operation
Compliance	PICMG: AMC.0 R2.0 / AMC.3 R1.0
Operating Temperature	0° to 70°C

AM4520

Interface	SAS
Storage Technology	Serial Attached Storage Drive
Capacity	Up to 146 GByte
Form Factor	Full-size or mid-size*
Access	10,000 RPM, avg seek time 4.1 ms
Sequential Bandwidth RW	8 MByte cache 300 MByte/s burst
Characteristics	24 hours / 7 days operation
Compliance	PICMG: AMC.0 R2.0 / AMC.3 R1.0
Operating Temperature	0°C to 55°C

I/O AMCs

AM4320

Interface	2x SFP+ 10GbE
Form Factor	Mid-size
Characteristics	High speed network expansion accessory for ATCA blades and MicroTCA platforms ; supports IPv4 and IPv6; Virtualisation VMDq and VMDc (SR-IOV); On-chip receive/transmit buffers; TCP and UDP checksum offload; TCP segmentation offload (up to 256kB)
Compliance	AMC.0 specification R2.0; AMC.1 R2.0 PCI express x8 (5GT/s, Gen2)
Controller	Intel 82599ES Ethernet controller with dual 10GbE interface

AM4311

Interface	4x SFP GbE
Form Factor	Mid-size
Characteristics	Direct-connect GbE ports from an AMC connector of an AMC carrier or a MTCA system to the front.
Compliance	AMC.0 R2.0 / AMC.2
Controller	-

AM4310

Interface	2x 10 Gigabit Ethernet
Form Factor	Mid-size
Characteristics	Accessory for AT8902M/ AT8904M/AT8902, provides shelf interconnect for Fabric Interface, supports two XFP modules
Compliance	AMC.0 R2.0 / AMC.2 R1.0 Type 6
Controller	None (controlled via Hub Board, e.g. AT890x)

AM4301

Interface	4x Gigabit Ethernet
Form Factor	Mid-size
Characteristics	Jumbo Frames (9 kByte), Advanced packet filtering, Transmit and receive IP, TCP and UDP checksum offloading capabilities, PCLE towards AMC connector
Compliance	AMC.0 R2.0 / AMC.1 R1.0 Type 4
Controller	2x Dual Gigabit Ethernet Controller Intel® 82571EB

» PMC/XMC/FMC «

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

FPGA Mezzanine Card (FMC)
FPGA Mezzanine Card, or FMC, as defined in VITA 57 provides a specification describing a new I/O mezzanine module that will connect to, but not be limited to, 3U and 6U form factor cards. FMC modules use a smaller form factor compared with PMC or XMC modules, and assume connection to an FPGA or other device with reconfigurable I/O capability. The standard describes options to create modules for operating in a range of environments from passively cooled to fully ruggedized conduction cooled.

XMC Mezzanines

XMC401 (Dual 10 Gigabit Ethernet)

XMC402 (Dual 10 Gigabit Ethernet)

XMC-ETH2 (Dual Gigabit Ethernet PMC-XMC)

XMC-G72 (Graphics)

	XMC401 (Dual 10 Gigabit Ethernet)	XMC402 (Dual 10 Gigabit Ethernet)	XMC-ETH2 (Dual Gigabit Ethernet PMC-XMC)	XMC-G72 (Graphics)
Frontpanel	2x SFP+	2x RJ45	2x RJ-45	Digital DVI and CRT or dual CRT
Interface	Host: PCIe x8; ETH to front	Host: PCIe x8; ETH to front	Host: PCIe x4 (or PCI 32 bit, 33/66MHZ); 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 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	10/100/1000 Base-T / 10GBase-T	Copper: 10 Base-T, 100Base-Tx, 1000Base-T	High throughput interface to host: x8 PCIe up to 2.5 GB/s
Signals	Copper & Fiber	Copper	Copper	DVI-I and 15-pin VGA
Controller	Intel® 82599ES	Intel® x540	Intel® 82571	RADEON E2400 (M72-CSP128) graphics controller from ATI-AMD
Operating Temperature	Standard Commercial: 0°C to +55°C	Standard Commercial: 0°C to +55°C	Standard Commercial: 0°C to +55°C, Rugged Conduction-Cooled: -40°C to +85°C	Standard Commercial: 0°C to +55°C, Rugged Conduction-Cooled: -40°C to +71°C

PMC Mezzanines

PMC-1553 (Avionics I/O)

PMC-6L (Avionics I/O)

PMC240 (Dual Gigabit Ethernet)

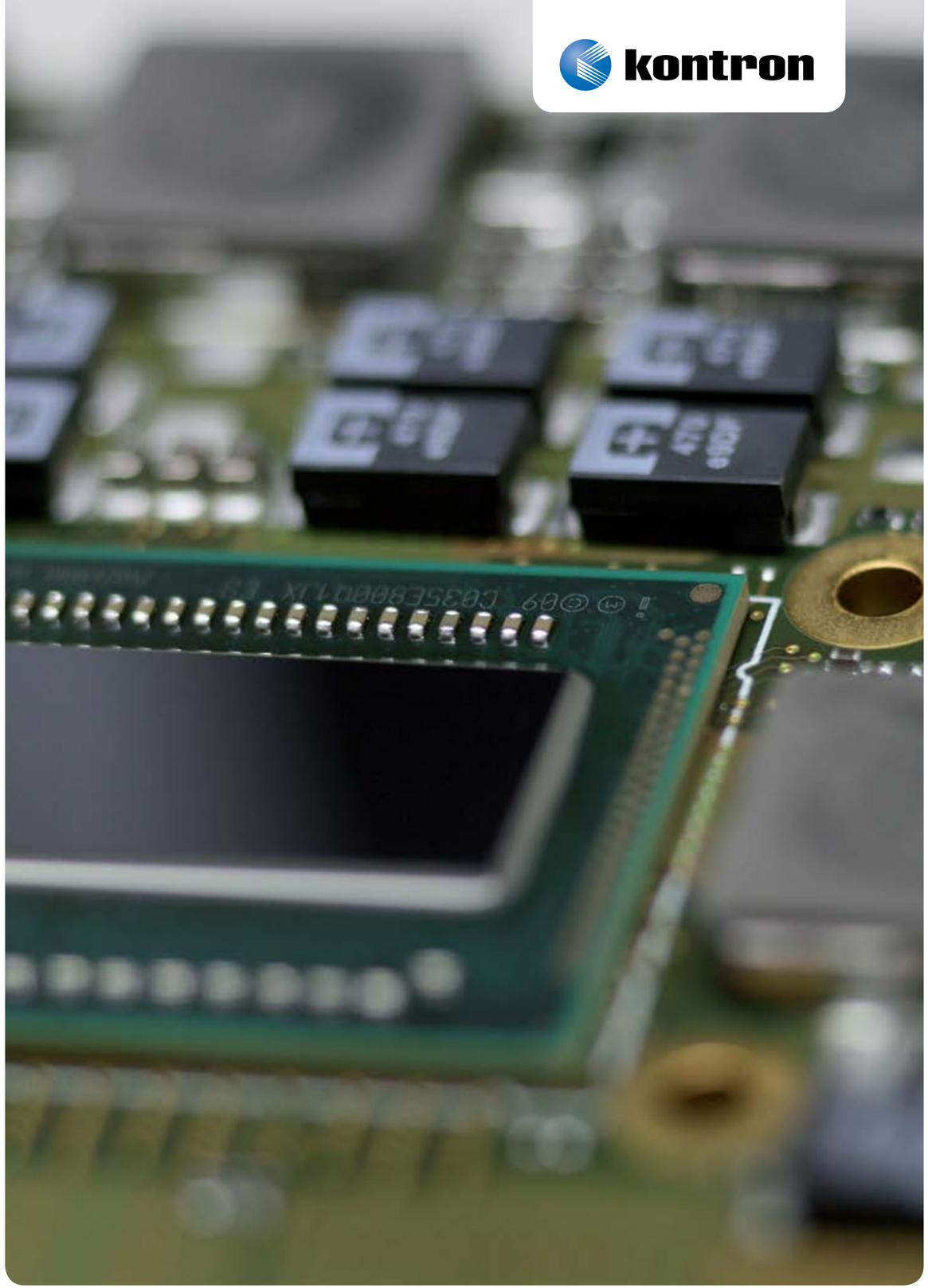
PMC253 (Profibus)

	PMC-1553 (Avionics I/O)	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 1x SC type fiber + 1x RJ45 copper	9 pin D-Sub for Fieldbus connection
Interface	32-bit/33 MHz	32/64 bit, 33/66MHz	Host: 32/64 bit, 33/66MHz; copper or fiber to front	Host: 32 bit, 33MHz; Profibus to front opto isolated
Function	MIL-STD-1553B	ARINC-429, MIL-STD-1553, Serial Lines, GPIOs	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
Controller	ILC-DDC BU-61688	T/T ARINC 429, T/R EIA 485/232	Intel® 82546GB	EC-1 System on Chip
Operating Temperature	VITA 47-Class CC4 (-40° to +85°C)	VITA 47-Class AC1 (0° to +55°C)	0°C to +55°C	0°C to +60°C

FMC Mezzanines

FMC-SERO (multi-channel interface card)

	FMC-SERO (multi-channel interface card)
Interface	24 FPGA GPIO front or rear, 16 EIA-232 or 8 EIA-422/EIA-485
Connector	High Pin Count (HPC) FMC connector and a 50-pin TYCO 0-787171-5 front connector
Operating Temperature	Standard Commercial VITA 47-Class AC1 (0° to +55°C), Rugged Conduction-cooled VITA 47-Class CC4 (-40° to +85°C)



» 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 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.

Advantages of COMs at a Glance:

- » Scalability in size and performance
- » Short time-to-market
- » Simplified development
- » Flexibility and interoperability
- » Reuse of knowledge
- » Longevity of standards and products
- » Multi-vendor support

CONTENTS

COM Express®

ETX® 3.0 Long Term Support

ULP-COM

Boards & More

» COM Express® basic «

COM Express® basic and compact just differs in their physical length. On those two connectors, all interfaces are standardized. COM Express® basic and compact modules uses Pin-out Type 2 or the newer Pin-out Type 6.

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 the ultra small "mini" 55 x 84 mm.
The COM Express® specification defines different pin-outs, with Types 2, 6 and 10 being the most commonly adopted. They are described on the following pages.
Kontron modules offer complete, multimedia-capable computing cores for high-level applications and the high performance needed for your next generation product. Basic and compact footprints are 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
» 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® basic	 COMe-bCD2 (ETXexpress®-CD)	 COMe-bPC2 (ETXexpress®-PC)	 COMe-bAI# (ETXexpress®-AI)	 COMe-bSC# (ETXexpress®-SC)	 COMe-bIP#
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™ i7-2715QE, i7-2655LE, i7-2610UE, i5-2515E, i3-2310OE, i3-2340UE, Celeron® B810E, 847E, 807UE	Intel® Core™ i7-3615QE, i7- 3612QE, i5-3610ME, i3-3120ME, i3-3117UE
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 resp. 4x 2.1 GHz	Up to 2x 2.5 GHz resp. 4x 2.3 GHz
Cache	Up to 4 MB L2	Up to 6 MB L2	Up to 4 MB L2	Up to 6 MB L2	Up to 6 MB
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 resp. HM65	Intel® Mobile Platform Conroller Hub QM77 resp. HM76
Bus Speed	533/667 MHz FSB	800/1066 MHz FSB	800/1066 FSB	n/a	n/a
Memory	Physical memory up to 4 GB DDR2, Dual Channel	Up to 2x 4 GB DDR3, Dual Channel	Up to 2x 4 GB DDR3, Dual Channel with ECC	Up to 2x 8 DDR3, Dual Channel with ECC	Up to 2x 8 GB DDR3, Dual Channel
Hard Disk	2x SerialATA (AHCI; RAID 0,1), 1x PATA	4x SerialATA 2, 1x PATA (optional Flash onboard)	4x SerialATA 2 PATA (on Type 2 only)	2x SerialATA 3 , 2x SerialATA 2 PATA (on Type 2 only)	2x SerialATA 3 2x SerialATA 2 PATA (on Type 2 only)
USB	USB 2.0, 8 ports	USB 2.0, 8 ports	USB 2.0, 8 ports	Type 2: USB 2.0, up to 8 ports Type 6: USB 3.0, 2 ports and USB 2.0, 6 ports	Type 2: USB 2.0, 8 ports Type 6: USB3.0, 4 ports and USB 2.0, 4 ports
PCI Express	5 PCIe x1 1 PEG x16	5 PCIe x1 1 PEG x16	Type 2: 6 PCIe x1, 1 PEG x16 Type 6: 7 PCIe x1, 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	Type 2: 5 PCIe Gen 2.0 x1, 1 PEG x15 Gen 3 Type 6: 7 PCIe Gen 2.0 x1, 1 PEG x16 Gen 3
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)	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	Intel® 82579, 10/100/1000 MBit
Sound	Intel® High Definition Audio, AC97	Intel® High Definition Audio	Intel® High Definition Audio	Intel® High Definition Audio	Intel® High Definition 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 HD3000/ HD2000 integrated, DirectX® 10.1, PS 4.0, OpenGL 3.0	Intel® iGFX HD4000 integrated, DirectX® 11, PS 5.0, OpenGL 3.0, OpenCL 1.1
Graphics Memory	Up to 256 MB DVMT	Up to 1700 MB DVMT	Up to 1700 MB DVMT	Up to 1700 MB DVMT	Up to 1700 MB DVMT
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 1600x1200, TVout, CRT up to 2048x1536	Type 2: VGA, LVDS, PEG (Multiplexed) Type 6: VGA, LVDS, 1x DDI (SDVO/DVI/DP/HDMI), 2x DDI (DVI/DP/HDMI), PEG (Multiplexed)	3x DP++ (incl. 1x SDVO, 1x eDP) 1x CRT, 1x Dual Channel LVDS 18/24 bit (DP++ and PEG multiplexed on Type 2)	3x DP++ (incl. 1x SDVO, 1x eDP), 1x CRT, 1x Dual Channel LVDS 18/24 bit (DP++ and PEG multiplexed on Type 2)
Power Support	8.5 V – 18 V; ACPI 2.0	8.5 V – 18 V; ACPI 3.0	8 V – 18 V; ACPI 3.0	8.5 V – 18 V; ACPI 3.0	8.5 V – 20 V; ACPI 3.0
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: 125 x 95 mm Pin-out Type 2 or 6	COM Express® basic: 125 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 or -40°C to +85°C on request (esp. Celeron® 722, SU9300, SL9400)	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 or -40°C to +85°C (esp. i7-2610UE, i7-2655LE) on request	Operation: 0°C to +60°C, Storage: -30°C to +85°C, Extended Temperature: -25°C to +75°C on request

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® compact «

Kontron COM Express® compact modules are 100 percent compliant to the open standard COM Express® specification maintained by PICMG® and follow the Type 2 resp. Type 6 pin-out definitions.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.

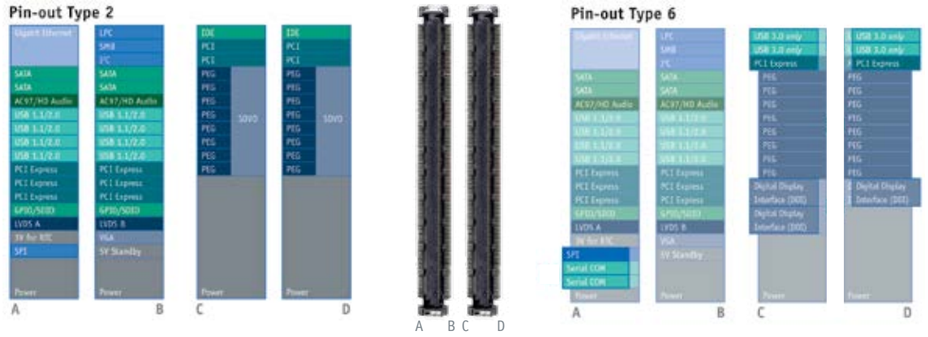
Advantages

- » Compact module size (95 x 95 mm)
- » Performance scalability from Intel® Atom™ and AMD G-Series up to Intel® Core™2 Duo
- » Designed for mobile application requirements

COM Express® compact	COMe-cPC2 (microETXexpress®-PC)	COMe-cOH# (microETXexpress®-OH)	COMe-cCT6
CPU	Intel® Core™ 2 Duo SL9400, SU9300, Intel® Celero® M Processor 722, 723	AMD G-Series T44R, T52R, T40N, T56N	Intel® Atom™ N2600, N2800, D2550
CPU Clock	Up to 2x 1.86 GHz	Up to 2x 1.6 GHz	Up to 2x 1.86 GHz
Cache	Up to 6 MB L2	512 kB L2	32 KB Instructions cache + 24 KB L1 Cache, 1MB L2 Cache
Chipset	Intel® GS45, ICH9M SFF	AMD FCH A50M	Intel® SCH NM10 Express
Bus Speed	800/1066 MHz FSB	800/1066 MHz FSB	n/a
Memory	Up to 4 GB DDR3	Up to 2x 4 GB DDR3	Up to 4 GB DDR3
Hard Disk	3x SerialATA 2, 1x PATA	4x SerialATA 3	2x SerialATA 2, Flash optional
USB	USB 2.0, 8 ports	USB 3.0 (type 6 only), 2 ports and USB 2.0, 6 ports	USB 2.0, 8 ports (optional 2x USB 3.0)
PCI Express	5 PCIe x1; 1 PEG x16	6 PCIe x1	4x PCI Express x1 Lanes, one for LAN onboard
PCI	PCI 2.3, 32 bit / 33 MHz	PCI 2.3, 32 bit / 33 MHz (type 2 only)	-
Serial Ports	–	1x 2-wire TTL	2x 2-wire TTL optional
Ethernet	Intel® 82567, 10/100/1000 MBit	Intel® 82574L, 10/100/1000 MBit	Intel® 82574L, 10/100/1000 Mbit
Sound	Intel® High Definition Audio	Intel® High Definition Audio	Intel® High Definition Audio w/ HDMI 1.3a support
Graphics Controller	Intel® GMA X4500, DirectX® 10, PS 4.0	AMD Mobility Radeon HD6250/HD6310, DirectX® 11, OpenCL 1.0, PS 5.0,H.264, VC-1 (ATI Avivo HD)	Intel® GMA 3650/3600 DirectX® 9.1, OpenGL 3.0, BluRay 2.0
Graphics Memory	Up to 1024 MB DVMT	tbd	tbd
Display Interfaces	Dual SDVO multiplexed with PEG, DisplayPort and HDMI, Single/Dual Channel, LVDS 18/24 Bit up to 1600x1200, TVout, CRT up to 2048x1536	Single Channel LVDS 18 bit, (type 6) 24 bit (Type 2), 2x DDI (DisplayPort/HDMI/ DVI) CRT up to 2560x1600 (Type 6)	Single Channel LVDS 18/24bit, 2x DP++ (HDMI/DVI/DisplayPort), CRT up to 1920x1200
Power Support	8.5 V – 18 V; ACPI 3.0	4.75 V - 18V; ACPI 3.0	4.75 V – 20 V, ACPI 3.0
Form Factor	COM Express® compact: 95 x 95 mm, Pin-out Type 2	COM Express® compact: 95 x 95 mm, Pin-out Type 2 or 6	COM Express® compact: 95 x 95 mm, Pin-out Type 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 +70°C Storage: -30°C to +85°C	Operation: 0°C to +60°C, Storage: -30° to +85°C, Extended Temperature: -25°C to 75°C on request

COM Express® compact	COMe-cSP2 (microETXexpress®-SP)	COMe-cXLi2 (microETXexpress®-XL)	COMe-cPV2 (microETXexpress®-PV)	COMe-cDC2 (microETXexpress®-DC)
CPU	Intel® Atom™ Z510, Z530	Intel® Atom™ Z520PT	Intel® Atom™ D510, D410, N450, D525	Intel® Atom™ N270
CPU Clock	Up to 1.6 GHz	1.33 GHz	Up to 2x 1.66 GHz	1.6 GHz
Cache	32 kB Instruction Cache + 24 kB L1, up to 512kB L2	512 kB L2	Up to 1 MB L2	512kB L2
Chipset	Intel® SCH US15W	Intel® SCH US15WPT	Intel® 82801HM	Intel® 945GSE, ICH7M
Bus Speed	400/533 MHz FSB	533 MHz FSB	667/800 MHz	400/533 MHz FSB
Memory	Up to 2 GB DDR2	Onboard up to 2 GB DDR2 (industrial temperature range)	Up to 2x 2 GB DDR2/DDR3	Up to 2 GB DDR2
Hard Disk	2x SerialATA (RAID 0,1), 1x PATA	1x SerialATA, 1x PATA, Optional industrial temperature range SSD onboard	3x SerialATA	2x SerialATA (AHCI), 1x PATA, optional SSD flash onboard
USB	USB 2.0, 8 ports (1x USB Client)	USB 2.0, 8 ports	USB 2.0, 8 ports	USB 2.0, 8 ports
PCI Express	2 PCIe x1, optional up to 5 PCIe x1	2 PCIe x1 lanes	5 PCIe x1 lanes	3 PCIe 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
Ethernet	Intel® 82574L, 10/100/1000 MBit	Intel® 82574 (Industrial Temperature Range), 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
Graphics Controller	Intel® GMA 500, DirectX® 9, PS 3.0	Intel® GMA 500, DirectX® 9, PS 3.0	Integrated in Atom™ CPU, GMA950 (200 MHz) with DirectX® 9, PS 2.0	Intel® GMA950, DirectX® 9, PS 2.0
Graphics Memory	Up to 256 MB DVMT	Up to 1024 MB DVMT	Up to 384 MB DVMT	Up to 256 MB DVMT
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 1600 x 1200, CRT up to 2048x1536, SDVO, TVout, JILI support
Power Support	8.5 V – 18 V; ACPI 3.0	4.75 V – 18 V; ACPI 3.0	4.75 V – 18 V; ACPI 3.0	8.5 V – 18 V; ACPI 3.0
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
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 Industrial Temperature Range: -40°C to +85°C	Operation: 0°C to +60°C, Storage: -30°C to +85°C, Extended Temperature: -25°C to +75°C or -40°C to +85°C (only D525) on request	Operation: 0°C to +60°C, Storage: -30° to +85°C, Extended Temperature: -25°C to 75°C on request

Pin-out Type 2 and Type 6 at a glance



COM Express® Pin-out Type 2 and 6 are used for the form factor basic and compact COM: Differences from pin-out Type 2 to pin-out Type 6 are highlighted in the Pin-out Type 6 Map.

» COM Express® mini «

Formerly known as nanoETXexpress: The COM Express® mini is designed to deliver power-saving Computer-on-Modules with high performance x86 technology on a footprint that is the size of a credit card - a mere 55 x 84 mm. The ultra small Kontron COM Express® mini module is available following either COM Express® Type 1 or Type 10 pin-out definition. COM Express® mini 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. Kontrons COM Express® mini 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)
- » COM Express® mini Pin-out Type 1 and pin-out Type 10
- » Serial ATA, for highspeed drives
- » Memory and FlashDrive on board

New Pin-out Type 10 added

COM Express® mini Pin-out Type 10

Based on COM Express® pin-out Type 1, pin-out Type 10 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 reserved pins for future usage.

As no Chipset which fits on COM Express® mini designs haven't offer 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 type 10 use 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® mini	 COMe-mSP1 (nanoETXexpress-SP)	 COMe-mTT10 (nanoETXexpress-TT)	 COMe-mCT10
		–40°C to +85°C	NEW
CPU	Intel® Atom™ Z510, Z530	Intel® Atom™ E6xx / E6xxT	Intel® Atom™ N2600, N2800, D2550
CPU Clock	1.1 GHz up to 1.6 GHz	0.6 GHz up to 1.6 GHz	Up to 2x 1.86 GHz
Cache	32 kB Instruction Cache + 24 kB L1/512 kByte L2	32 kB Instruction Cache + 24 kB L1 Cache, 512 kB L2 Cache	32 KB Instructions cache + 24 KB L1 Cache, 1MB L2 Cache
Chipset	Intel® SCH US15W	Intel® PCH EG20T	Intel® SCH NM10 Express
Bus Speed	400/533 MHZ FSB	n/a	n/a
Memory	Onboard up to 2 GB DDR2	Onboard up to 2 GB DDR2-800	Onboard up to 4 GB DDR3 (800/1066 MHz)
Hard Disk	1x onboard SSD up to 4 GByte, 1 SDIO port (shared with GPIO)	2x SerialATA 300, 1x microSD-Card Slot on GPIO alternatively, 1x SATA 300, 1x SATA E2 SSD up to 8 GB	2x Serial ATA external supporting 3Gb/s alternatively: 1x SATA + 1x SATA onBoard SSD Flash drive up to 8GB SLC / 32GB MLC
USB	USB 2.0, 8 ports (1 USB Client)	USB 2.0, 6 ports + USB Client port	USB 2.0, 8 ports
PCI Express	1 PCIe x1 lane (opt. 2 PCIe x1 if no onboard LAN)	3x PCIe x1 lanes	4x PCI Express x1 Lanes,one for LAN onboard
Serial Ports	–	2x 2-wire TTL	2x 2-wire TTL optional
Ethernet	Intel® 82574L Hartwell, 10/100/1000 MBit	MAC in Chipset integrated, Phy: Broadcom BCM54610, 10/100/1000 MBit	Intel® 82574L (Hartwell) 10/100/1000 Mbit
Sound	Intel® High Definition Audio	Intel® High Definition Audio	Intel® High Definition Audio w/ HDMI 1.3a support
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	Integrated 2D/3D Graphics Engine, GMA 3650/3600, Gfx clock 640/400MHz, DirectX® 9.1 Video Decode: MPEG2, Blu-Ray Disk 2.0, VC-1, H.264, WMV9 up to 1080p
Graphics Memory	Up to 256 MB, DVMT	Up to 352 MB, DVMT	tbd
Display Interfaces	Single Chanel LVDS 18/24 Bit 1366x768; SDVO (optional) up to 1920x1080	LVDS 18/24bit 1280x768@60Hz SDVO 1920x1080@50Hz	LVDS 18/24bit (N2600/2800) 1366x768 LVDS 18/24bit (D2550) 1440x900 1x DP++ (HDMI/DVI/DisplayPort, embedded DP)
Power Support	4.75 V – 14.7 V; ACPI 3.0	4.75 V – 14.7 V; ACPI 3.0	4.75 V – 14 V, ACPI 3.0
Form Factor	COM Express® mini: 84 x 55 mm Pin-out Type 1	COM Express® mini: 84 x 55 mm Pin-out Type 10	COM Express® mini: 84 x 55 mm 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 Industrial Temperature Range: -40°C to +85°C	Operation: 0°C to +60°C, Storage: -30° to +85°C, Extended Temperature: -25°C to +75°C on request

Ready-to-run Starterkits

When you're ready to start evaluating the COM Express® mini 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.

COMe Starterkit Ref. T10

w/ Reference Carrier-i Type 10, 7" display, touch controller, power supply and more

COMe Ref. Carrier-i Type 10

This COM Express® Reference Carrier board is specially designed for environmental tests with extended temperature range (E2) -40°C to +85°C. It also offers three different display interfaces for high graphic scalability: LVDS, Display Port and DVI.

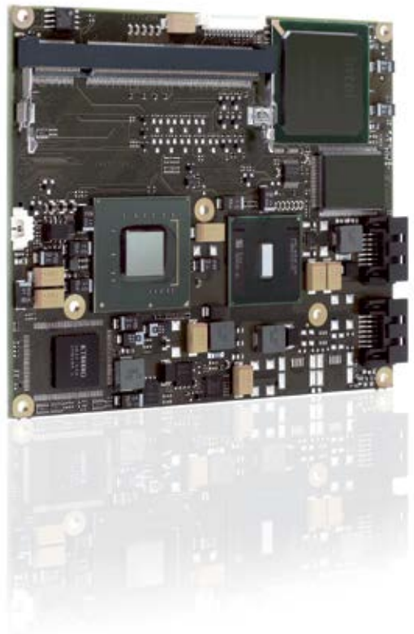
COMe Eval Carrier T10

COM Express® Eval Carrier Type 10 board is designed to allow embedded application developers to get up and running quickly on the COM Express® mini platform.

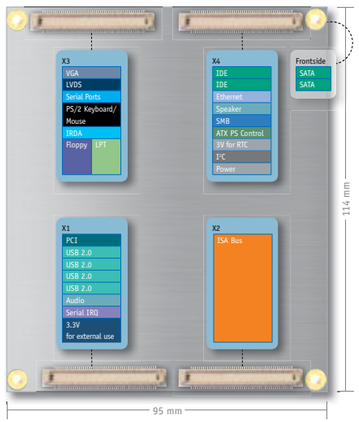
» The ETX® Solution «

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 application specific 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	NEW  ETX®-OH
CPU	AMD Geode™ LX800	Intel® Core™ 2 Duo, Intel® Core™ Duo, Intel® Celeron® M	Intel® Atom™ N270	AMD G-Series, T40R, T52R, T40E, T56N
CPU Clock	500 MHz	Up to 2x 1.66 GHz	1.6 GHz	Up to 2x 1.65 GHz
Cache	128 kB L2	Up to 4 MB L2	512 kB L2	2x 512 kB L2
Chipset	AMD Geode™ CS5536 Companion Device	Intel® 945GME, ICH7M	Intel® 945GSE, ICH7M	AMD FCH A55M
Bus Speed	Geode™-Link	400/533/667 MHz	400/533 MHz	1066 MHz FSB
Memory	Up to 1 GB DDR-RAM (266/333/400)	Up to 2 GB DDR2	Up to 2 GB DDR2	Up to 4 GB DDR3
Hard Disk	2x SerialATA (RAID 0, 1), 1x PATA 100, 1x CompactFlash™ socket on board	2x SerialATA (AHCI), 1x PATA	2x SerialATA (AHCI), 2x PATA	2x SerialATA (AHCI), 2x PATA
USB	4x USB 2.0	USB 2.0, 4 ports; opt. 6 ports	USB 2.0, 4 ports; opt. 6 ports	USB 2.0, 4 ports; opt. 2x miniUSB 2.0
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
ISA	-	ISA Bus (ETX® 3.0 compliant)	ISA Bus (ETX® 3.0 compliant)	ISA Bus (ETX® 3.0 compliant)
Serial Ports	-	2x full COM ports TTL	2x full COM ports TTL	2x full COM ports TTL
Ethernet	10/100 MBit Ethernet, Intel® 82551ER	Intel® 82562EZ, 10/100 MBit	Intel® 82562V, 10/100 MBit	Broadcom BCM54610 10/100 MBit
Sound	ALC203 AC97 controller, line-input / output and microphone	AC97, Codec Crystal CS4299	Realtek ALC886GR HDA	Realtek ALC886GR HDA
Graphics Controller	LX800, integrated graphic processor	Intel® GMA 950	Intel® GMA 950	Integrated Radeon HD6310 / HD6250 DirectX® 11, PS 5.0, OpenGL 3.2 ATI Avivo HD with H.264, VC-1, Blu-ray support
Graphics Memory	Up to 254 MB UMA	Up to 224 MB DVMT 3.0	Up to 224 MB DVMT 3.0	tbd
Display Interfaces	-	Single/Dual Channel LVDS 18/24 bit up to 1600x1200, SDVO, CRT up to 2048x1536, JILI support	Single/Dual Channel LVDS 18/24 bit up to 1600x1200, SDVO, CRT up to 2048x1536, JILI support	DP++ (DisplayPort/HDMI/DVI), Dual Channel LVDS 18/24 bit up to 1920 x 1200, CRT up to (2560 x 1600)
Power Support	-	5 V; ACPI 2.0, APM 1.2	5 V; ACPI 2.0	5 V; ACPI 3.0
Form Factor	ETX® 3.0; 95 x 114 x 10 mm	ETX 3.0: 95 x 114 mm	ETX 3.0: 95 x 114 mm	ETX 3.0: 95 x 114 mm
Temperature	Operation: 0° to 60°C Storage: -30° to 85°C	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 +60°C, Storage: -30°C to +85°C, Extended Temperature: -25°C to +75°C on request

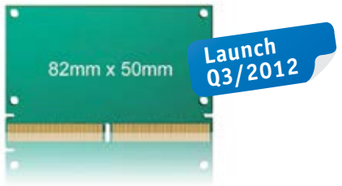
ETX® lifetime explanation

ETX series will be available with the current processors up to 2018, Kontron will survey any new processor family from the manufacturers if they are suitable in ETX designs.

» Ultra Low-Power (ULP) «

ULP-COM

Small size ULP-COM with TI 3874



Texas Instruments

Kontron's new module standard bridges the gap between current proprietary industrial offerings and offerings from the consumer market – a far less suitable solution for demanding environments.

The new ULP-COM standard was developed to encompass a new range of modules for ARM and SOC processors. Based on the 314-pin MXM 3.0 connector that is only 4.3 mm in height, it enables durable, slim, cost-efficient solution designs. The connector is also available in a shock and vibration proof construction suitable for harsh environments. The standard enables new interfaces specifically for the new ARM and SOC platforms including video outputs such as LVDS.

Looking down the road, the standard will also allow for the use of DisplayPort 24-bit RGB and HDMI. Another first are the dedicated camera interfaces, which are included in the standard, minimizing design efforts and BOM. As a result, users no longer need to compromise or work with inefficient standards that are stretched between the x86 feature set and lean ARM and SOC I/Os.

Initially covered under the standard are two module foot-prints to offer flexibility for different mechanical requirements: a short module measuring 82 mm x 50 mm and a full size module measuring 82 mm x 80 mm.

Other sections of the standard address the already familiar requirements of other module standards, resulting in the latest 1.0 version achieving a high-degree of maturity.

Low-power embedded architecture platform for computer-on-modules based on ARM technology

- » Creating mobile, embedded, connected solutions
- » Scalable building blocks
- » Optimized pin-out definition for ARM technology
- » Ultra low-power, low-profile solutions
- » Constructed to withstand harsh industrial environments

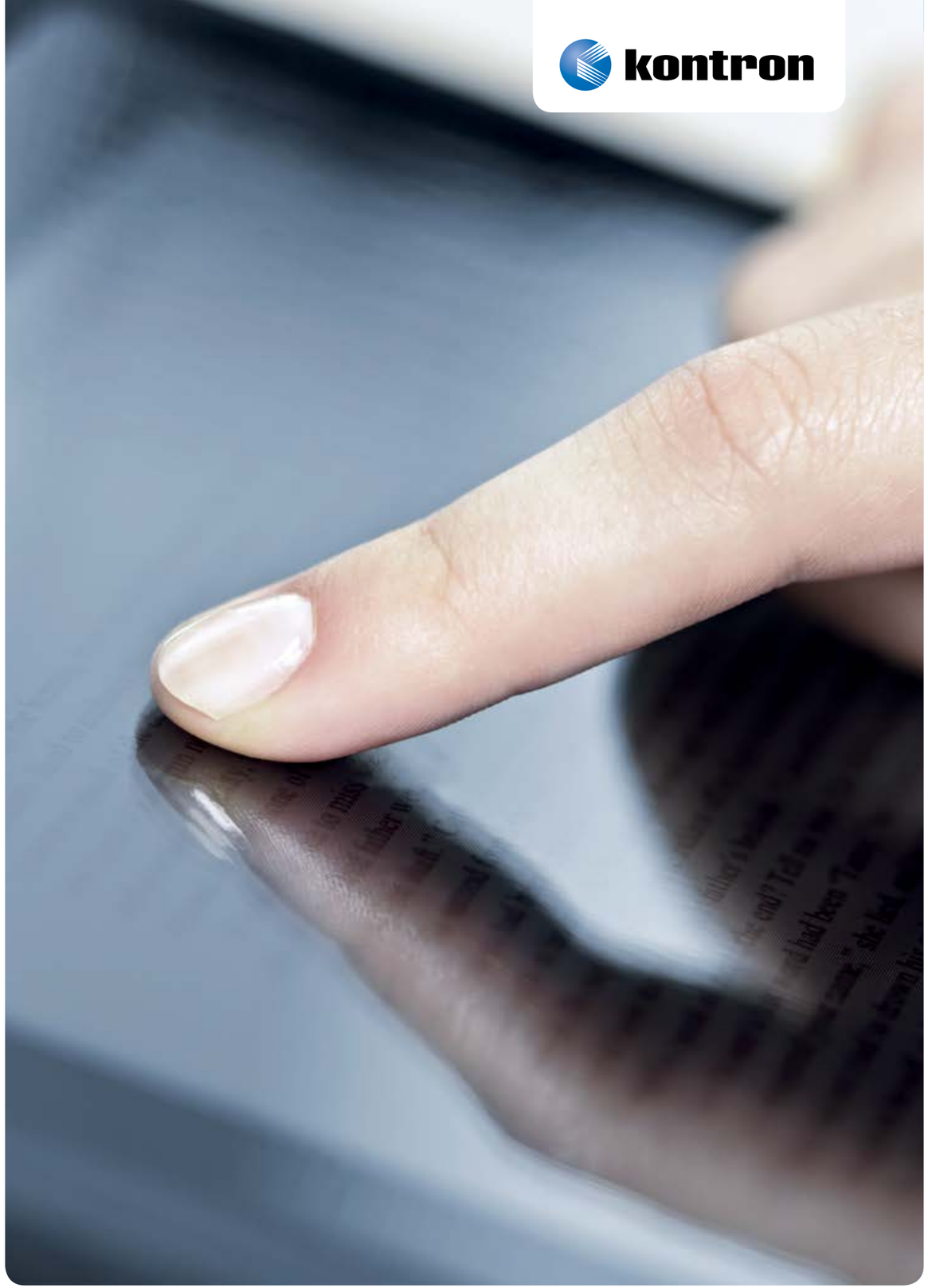
ULP-COM		 preliminary	 preliminary
	ULP-COM-sAT30	**ULP-COM-sA3874**	**ULP-COM-sAMX6**
Processor	Nvidia Tegra 3 (Kel-Al), Quad Core™ ARM Cortex A9 800MHz	TI Sitara AM3874 Single core Cortex A8 Up to 1.4GHz	Freescale i.MX 6 Solo Dual and Quad CoreARM Cortex-A9 Up to 1.2GHz
Graphics	Dual Displays HD Video Decode, including MPEG2 HD Video Encode Dual GPUs, 2D and 3D acceleration	3D graphics acceleration HD video processing	Dual Display HD 1080p encode and decode 2D and 3D acceleration
Memory	DDR3, 1 or 2GB, down	DDR3 memory, 1GB, down	DDR3 up to 2 GB, memory down
Flash	Up to 64 GB NAND/eMMC on-module (Custom Option)	Up to 16GB NAND down, up to 128 MB NOR	Up to 64GB NAND/eMMC on-module (Custom Option)
Ethernet	10/100/1000 Mbit/sec	1000 Mbit/sec	10/100/1000 Mbit/sec
USB	USB 2.0 3 ports (one OTG)	2x USB 2.0	3x USB 2.0 port (one OTG)
Display	Parallel LCD 18 / 24 bit LVDS Single Channel 18 bit / 24 bit - 18 bit compatible Support for dual channel 24 bit LVDS (Carrier board xmitter) HDMI	Dual Displays HDMI Parallel LCD interface	Parallel LCD 18/24 bit LVDS Single Channel 18/24bit HDMI
Image Capture Interfaces	2x Camera Ports CSI-2, dual lane	Camera input 10bit parallel interface	2 Interfaces (PCAM, CSI)
Additional Interfaces	PCIe Gen 1 x1 lane width, 2 links plus support signals SATA, SD Card, eMMC, SPI (x2), I2C (x5), I2S (x3), UART (x4), GPIO (x12), SPDIF, WDT, Battery and System Management	3x PCIe:; 2x CAN; Camera input 10bit parallel interface; (-40 to +85°C); 3x UART, SATA	Up to 3 PCIe x1, MLB150, 12xGPIOs, SDIO, SATA eMMC, 2x SPI, 5x I2C, 2x I2S, SPDIF, WDT, 2x CAN, Battery and System Management
SW Support	Android ICS Linux	Windows CE6/7/8 Android 2.3 QNX VxWorks (with Hypervisor)	Linux Android WEC7
Power & Thermal	5 Watts typical Operating temperature: 0°C to 70°C Industrial temperature version later this year	2 Watts typical Industrial temperature: -40 to +85°C	5 Watts typical -40°C to 85°C
Power Supply	3V to 5.25V - Operates directly from single level Lithium Ion cells, or fixed 3.3V or 5V power supplies	3V to 5.25V - Operates directly from single level Lithium Ion cells, or fixed 3.3V or 5V power supplies	3V to 5.25V - Operates directly from single level Lithium Ion cells, or fixed 3.3V or 5V power supplies
Compliance	Form Factor: 82 mm x 50 mm as defi ned by the ULP-COM specification Compliance: ULP-COM ("Ultra Low Power - Computer on Module" specification, Kontron)	Form Factor: 82 mm x 50 mm as defi ned by the ULP-COM specification Compliance: ULP-COM ("Ultra Low Power - Computer on Module" specification, Kontron)	Form Factor: 82 mm x 50 mm as defined by the ULP-COM specification Compliance: ULP-COM ("Ultra Low Power - Computer on Module" specification, Kontron)

I/O Features
314-pin MXM 3.0 Connector

PCI EXPRESS · USB · SERIAL ATA · SD IO · USB · I²C · CAN · CSI · LVDS · GB LAN · HDMI · I²C/I²S

Operating Systems

Windows Embedded Compact 7 · Android · Embedded Linux · WIND RIVER · VxWorks · QNX SOFTWARE SYSTEMS



» HMI – Human Machine Interfaces «

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 meet the toughest industrial requirements concerning shock, vibration and temperature resistance. However specific your requirements, we supply you with semi- and full-customized Panel PCs 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

CONTENTS

V Panel Express

The V Panel Express line based on 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 104	V Panel Express 121	V Panel Express 150	V Panel Express 170	V Panel Express 190
Display	10.4"	12.1"	15.0"	17.0"	19.0"
Resolution	800x600	800x600	1024x768	1280x1024	1280x1024
Brightness	230cd/m²	350cd/m²	250cd/m²	250cd/m²	250cd/m²
Touch Screen	Resistive analog	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	Alu, Stainless steel optional
Dimensions (Panelmount) H x W x D	277 x 348 x 146 mm	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™ 2 Duo	Up to Intel® Core™ 2 Duo	Up to Intel Core™ 2 Duo	Up to Intel Core™ 2 Duo	Up to Intel Core™ 2 Duo
Main Memory	Up to 2 GByte	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	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	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	Optional 2x Compact Flash, 2x SATA HDD
Power Supply	24 VDC	24 VDC	24 VDC	24 VDC	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, FCC, cULus	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)	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)	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)	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	Operating: 10-500 Hz: 1G / 3 axis / Storage: 10-500 Hz: 2G / 3 axis
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	Operating: 0° to +50°C / 20 to 85% non condensing Storage: -20° to +60°C / 5 to 95% non condensing
MTBF	> 40000 h *	> 40000 h *	> 40000 h *	> 40000 h *	> 40000 h *
Verified OS	Windows 7 ultimate, Windows XP, Windows XP Embedded, Linux, Linux Embedded	Windows 7 ultimate, Windows XP, Windows XP Embedded, Linux, Linux Embedded	Windows 7 ultimate, Windows XP, Windows XP Embedded, Linux, Linux Embedded	Windows 7 ultimate, Windows XP, Windows XP Embedded, Linux, Linux Embedded	Windows 7 ultimate, Windows XP, Windows XP Embedded, Linux, Linux Embedded

* 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
Mounting	Panelmount + VESA opt.	Panelmount + VESA opt.	Panelmount + VESA opt.	Panelmount + VESA opt.	Panelmount + VESA opt.
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	Resisitive analog	Resisitive analog	Resisitive analog	Resisitive analog	Resisitive 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)
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
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
MTBF	> 40.000 h*	> 40.000 h*	> 40.000 h*	> 40.000 h*	> 40.000 h*
Verified OS	Windows Embedded Standard 7, Windows 7 ultimate, Windows XP Prof./Emb., CE, Linux Embedded	Windows Embedded Standard 7, Windows 7 ultimate, Windows XP Prof./Emb., CE, Linux Embedded	Windows Embedded Standard 7, Windows 7 ultimate, Windows XP Prof./Emb., CE, Linux Embedded	Windows Embedded Standard 7, Windows 7 ultimate, Windows XP Prof./Emb., CE, Linux Embedded	Windows Embedded Standard 7, Windows XP Prof./Emb., CE, Linux Embedded

* excl. the Backlight Tube

Pico Client

Cost conscious HMI for rugged environments

» Compact space saving Panel PC
» Fanless cooling
» Resistive touchscreen 5.7"
» Front IP65 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
Mounting	Panelmount
Weight	Ca. 0.6 kg
RAM	32 MByte, 16Mbyte flash, 16Kbyte SRAM battery bufferd
Display	5.7" TFT
Resolution	640x480
Brightness	400cd/m2
I/O Standard	2x LAN 10/100, 1x RS232/RS485, 1x USB1.1 Client
Touch Screen	Resistive analog
Dimensions (H x W x D)	156 x 212 x 50 mm
Processor	ARM 926EJ-S / 200MHz
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)
Protection Class	Front IP65, housing IP20
Certifications	CE, cULus, EN/UL60950-1
Altitude	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)
Vibration DIN EN 60068-2-6	Operating: 10-500 Hz: 1G/3 axis / Storage: 10-500 Hz: 2G/3 axis
Temperature/Humidity	Operating: 0° C to +50° / 20 to 85% non condensing; Storage: -20° C to +60° / 5 to 95% non condensing
MTBF	> 40000 h*
Verified OS	Windows® CE 5.0

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
Mounting	VESA 75	VESA 100
Weight	Ca. 3.5 kg	Ca. 6 kg
RAM	Up to 1 GByte	Up to 1 GByte
Display	10.4" TFT	15.0" TFT
Resolution	800x600	1024x768
Brightness	230cd/m2	350cd/m2
I/O Standard	USB, LAN 10/100/1000	USB, LAN 10/100/1000
Touch Screen	Resistive analog	Resistive analog
Dimensions (H x W x D)	230 x 292 x 56 mm	299 x 384 x 63 mm
Processor	Intel® Atom™ processor up to 1.6 GHz	Intel® Atom™ processor up to 1.6 GHz
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)
Protection Class	IP66 all around	IP66 all around
Certifications	CE, designed to meet cULus	CE, designed to meet cULus
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
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
MTBF	> 40000 h*	> 40000 h*
Verified OS	Windows XP Embedded, CE, Linux Embedded	Windows XP Embedded, CE, Linux Embedded
Housing	Stainless steel	Stainless steel

* 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

MediClient IIA 104

MediClient IIA 150

	MediClient IIA 104	MediClient IIA 150
Mounting	VESA 75	VESA75/100
Weight	Ca. 2.2 kg	Ca. 3.3 kg
RAM	Up to 2 GB	Up to 2 GB
Display	10.4" TFT	15.0" TFT
Resolution	800x600	1024x768
Brightness	230cd/m²	350cd/m²
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)
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
Colour (Front)	Signal white (RAL 9003)	Signal white (RAL 9003)
Processor	Intel® Atom™ 1.6 GHz	Intel® Atom™ 1.6 GHz
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
Protection Class	Mechanical: IPX1, IP65 front; Electrical Safety: Class II	Mechanical: IPX1, IP65 front; Electrical Safety: Class II
Certifications	CE, cULus, EN 60601-1 compliant	CE, cULus, EN 60601-1 compliant
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
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
MTBF	> 40000 h*	> 40000 h*
Verified OS	Windows Embedded Standard 7, Windows 7 ultimate, Windows XP Prof./Emb., CE, Linux Embedded	Windows Embedded Standard 7, Windows 7 ultimate, Windows XP Prof./Emb., CE, Linux Embedded

* 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

HMITR - UIC

	HMITR	HMITR - UIC
Mounting	Front Panel mounting	Front Panel mounting
Weight	Approx. 2.8 kg	Approx. 2.8 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	14,4 V to 40 VDC or 66 V to 154 VDC, others on request	14,4 V to 40 VDC or 66 V to 154 VDC, others on request
Cooling	Fanless	Fanless
EMC	EN50155	EN50155
Protection Class	IP65 front, IP20 rear	IP65 front, IP20 rear
Certifications	CE, EN50155 Railway, EN50121-3-2 Railway EMC, EN61373 Railway Shock/Vibration, EN60950 Safety, Designed to meet CENTS45545-1 Fire/Smoke	CE,CE, EN50155 Railway, EN50121-3-2 Railway EMC, EN61373 Railway Shock/Vibration, EN60950 Safety, Designed to meet CENTS45545-1 Fire/Smoke
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
Temperature/Humidity	Operating: -30 °C to +70 °C / 0 to 90% non condensing Storage: -30 °C to +80 °C / 5 to 90% non condensing	Operating: -30 °C to +70 °C / 0 to 90% non condensing Storage: -30 °C to +80 °C / 5 to 90% non condensing
MTBF	Display > 60000 h*	Display > 60000 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

» 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 to 7 years
- » Newest processor architectures
- » Designed for high reliability and easy maintainability
- » Shock proof rugged design
- » Excellent thermal design
- » Hot swap chassis fans

4U Rack Mount Systems

TThe 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 PCI 760	 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, Desk Top, Tower	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)	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 (others on request)	Power LED and HDD LED (others on request)
Control Panel Switch	ATX Power	ATX Power	ATX Power	ATX Power
CPU	Intel® i3-540,Intel® i5-660, Intel® i7-860	Intel® E8400,Intel® QUAD Core Q9400	Intel® Core™2 Duo E4300, E6400, Quad Core Q9400	Intel® i3-540,Intel® i5-660, Intel® i7-860
Front Side Bus	800/1066/1333 MHz	800/1066/1333 MHz	1333/1066/800 MHz	1333/1066/800 MHz
DRAM	Up to 8 GB DDR3	Up to 8 GB DDR3	Up to 8 GByte DDR2	Up to 8 GByte DDR3
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: 3* RS232, 1x RS485,VGA,Audio, 8* USB 2.0, PS/2 M+K, 2* 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	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", 1x 3.5", 1x internal 3.5", KISS Store	Accessible: 3x 5.25", 1x 3.5", 1x internal 3.5", KISS Store	Accessible: 3x 5.25", 1x 3.5", 1x internal 3.5", KISS Store	Accessible: 3x 5.25", 1x 3.5", 1x internal 3.5", KISS Store
System Monitoring	By PCCM	By PCCM	By PCCM	By PCCM
Expansion Slots	2* PCI 32 bit, 2xPCI_e x1, 1x PCI_e x 16, 1x PCI_e x 4	4* PCI 32 bit, 1x PCI_e x 16, 1x PCI_e x 4	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 (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
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	CE designed to meet UL	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 Stor 1 or KISS Stor 0/5 RAID Subsystem, Slide Rails	KISS Stor 1 or KISS Stor 0/5 RAID Subsystem, Slide Rails
Altitude	0 -2000 m (0 - 6562 ft) operating	0 -2000 m (0 - 6562 ft) operating	0 -2000 m (0 - 6562 ft) operating	0 -2000 m (0 - 6562 ft) operating
Shock DIN EN 60068-2-27	Operating: 15 G, 11 ms 6 axis	Operating: 15 G, 11 ms 6 axis	Operating: 15 G, 11 ms 6 axis	Operating: 15 G, 11 ms 6 axis
Vibration DIN EN 60068-2-6	Operating: 10 - 500 Hz 1 G	Operating: 10 - 500 Hz 1 G	Operating: 10 - 500 Hz 1 G	Operating: 10 - 500 Hz 1 G
Humidity rel.	5 - 95% at 40 C° non condensing	5 - 95% at 40 C° non condensing	Operating: 5 - 95% rel non condensing	5 - 95% at 40 C° 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 2000, WIN XP, Linux	WIN 2000, WIN XP, Linux
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	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)

* 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

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.

Designed for optimal performance at Industrial Environment, KISS 4U EATX series supports EATX Mainboards, providing innovative and first to market technologies.
KISS 4U EATX systems are designed for high reliability and scalable performance. With support for dual socket XEON processors, we offer the best platform with high density, low power consumption, for industrial environment.

4U Rack Mount Systems

KISS 4U KTC 5520

KISS 4U X9DR3

	KISS 4U KTC 5520	KISS 4U X9DR3
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
Mounting	19" Rack Mount, Desk Top, tower	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)
Weight	~ 15 kg	~ 15 kg
Control Panel Indicators	Power LED and HDD LED, SYSID	Power LED and HDD LED, SYSID
Control Panel Switch	ATX Power, SYSID	ATX Power, SYSID
CPU	Intel® Xeon® Processor E5540, Intel® Xeon® Processor 5540. Intel® Xeon® Processor E5645	E5-2600 series
Front Side Bus	1333 MHz	Up to 1600 MHz
DRAM	Up to 96 GB DDR3 Registered ECC	512GB Reg. ECC DDR3
I/O Standard	2x USB 2.0 Front side	2x USB 2.0 Front side
Dimensions (H x W x D)	4U x 19" x 472 mm (18.58 inch)	4U x 19" x 472 mm (18.58 inch)
I/Os	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, VGA, 1x RS232C
Drives	Accesible: 2x 5.25", 1x Slim Bay	Accesible: 2x 5.25", 1x Slim Bay
System Monitoring	KVM over IP and Remote Management; IPMI v2.0	KVM over IP and Remote Management; IPMI v2.0
Expansion Slots	1x PCI 32 Bit, 1x PCI_e 2.0 x8 using x16 slot, 3x PCI_e 2.0 x8, 1x PCIe x4 using x8 slot	3x PCI_e 3.0 x16, 2x PCI_e 3.0 x8, 1x PCIe x4 using x8 slot
Power Supply	AC 650 W wide range (80+) AC redundant 500 W	AC 650 W wide range (80+) AC redundant 500 W
Cooling	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
Protection Class	IP 20 optional IP 52	IP 20 optional IP 52
Options (Fully Certified with System)	8x 2.5" SAS HDDs, 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
Altitude	0 -2000 m (0 - 6562 ft) operating	0 -2000 m (0 - 6562 ft) operating
Shock DIN EN 60068-2-27	Operating: 15 G, 11 ms 6 axis	Operating: 15 G, 11 ms 6 axis
Vibration DIN EN 60068-2-6	Operating: 10 - 500Hz 1 G	Operating: 10 - 500Hz 1 G
Humidity rel.	Operating: 5 - 95 % rel non condensing	Operating: 5 - 95 % rel non condensing
Operating System	WIN Server 2008, Red Hat Enterprice Linux 64 bit	WIN Server 2008, Red Hat Enterprice Linux 64 bit
MTBF	50.000 h at 25° C (77°F)*	50.000 h at 25° C (77°F)*
Noise	~ 40 dB at 25°C (77°F)	~ 40 dB at 25°C (77°F)
Operating Temperature	0°C to 45°C (32°F - 11°F)	0°C to 45°C (32°F - 11°F)

Based on Kontron IPC Family KISS and with proven competencies in engineering, manufacturing, testing, and value-added services, we meet the needs of our customers in various vertical segments by providing state of the art assemblies which include: mechatronics, layer circuit card assemblies, electro-mechanical assembly, ruggedized system assembly, cables, harnesses, and chassis.
For certain variants the vertical approvals are already done and customer specific adaption are our business.

4U Rack Mount Systems

KISS 4U KTC 5520 TR

KISS 4U 760 Mil

	KISS 4U KTC 5520 TR	KISS 4U 760 Mil
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
Mounting	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 black, Body black, others on request
Weight	~ 15 kg	~ 15 kg
Control Panel Indicators	Power LED and HDD LED, SYSID	Power LED and HDD LED,
Control Panel Switch	ATX Power, SYSID	ATX Power
CPU	Intel® Xeon® Processor E5540, Intel® Xeon® Processor 5540. Intel® Xeon® Processor E5645	Intel® E4300 or E4000
Front Side Bus	1333 MHz	1066 MHz
DRAM	up to 96 GB DDR3 Registered ECC	Up to 8 GB DDR2
I/O Standard	2x USB 2.0 Front side	2x USB 2.0 Front side
Dimensions (H x W x D)	4U x 19" x 472 mm (18.58 inch)	4U x 19" x 472 mm (18.58 inch)
I/Os	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, 2x USB 2.0,VGA
Drives	Accesible: 2x 5.25", 1x Slim Bay	Accesible: 3x 5.25", 1x Slim Bay
System Monitoring	KVM over IP and Remote Management; IPMI v2.0	By PCCM
Expansion Slots	1x PCI 32 Bit, 1x PCI_e 2.0 x8 using x16 slot, 3x PCI_e 2.0 x8, 1x PCIe x4 using x8 slot	BP xBP-13E9P3
Power Supply	AC redundant 500 W	AC 400 W (80+)
Cooling	3x Hot Swap Chassis Fans ultra low noise	2x Hot Swap Chassis Fans ultra low noise
Approvals	EN 50155 :2001 + A1:2002 + Corrigentum 2003, EN 50121 -3-2 :2006,DIN EN 61373:1999-1	MIL-STD 810F,MIL Std 461E
Protection Class	IP 20 optional IP 52	IP 20 optional IP 52
Options (Fully Certified with System)	SSD HDDs, KISS Stor 1 or KISS Stor 0/5 RAID Subsystem, Slide Rails	SSD, Slide Rails, NET SK-9E21D Gigabit LAN PCI-Exp x1
Altitude	0 -2000 m (0 - 6562 ft) operating	0 -2000 m (0 - 6562 ft) operating
Shock DIN EN 60068-2-27	Operating: 15 G, 11 ms 6 axis	Operating: 15 G, 11 ms 6 axis
Vibration DIN EN 60068-2-6	Operating: 10 - 500Hz 1 G	Operating: 10 - 500Hz 1 G
Humidity rel.	Operating: 5 - 95 % rel non condensing	Operating: 5 - 95 % rel non condensing
Operating System	WIN Server 2008, Red Hat Enterprice Linux 64 bit	WIN XP, WIN 7,Linux
MTBF	50.000 h at 25° C (77°F)*	50.000 h at 25° C (77°F)*
Noise	~ 40 dB at 25°C (77°F)	~ 40 dB at 25°C (77°F)
Operating Temperature	0°C to 45°C (32°F - 113°F)	0°C to 50°C (32°F - 122°F)

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

	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
Mounting	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)
Weight	~12 kg	~12 kg
Control Panel Indicators	Power LED, HDD LED	Power LED, HDD LED
Control Panel Switch	PWR On, Reset	PWR On, Reset
CPU	Intel® i3-2120, Intel® i5-2400,Intel® i7-2600	Intel® Core™ 2Duo E8400, Intel® Core™Quad Q9400
Front Side Bus	800/1066/1333 MHz	800/1066/1333 MHz
DRAM	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
Dimensions (H x W x D)	4U x 19" x 300 mm (11.81inch)	4U x 19" x 300 mm (11.81 inch)
I/Os	Rear I/Os: 2* COM, VGA, Line in, Line out, 8* USB 2.0, PS/2 M+K, 3* LAN 10/100/100	Rear I/Os: 2* COM, VGA, Line in, Line out, 8* USB 2.0, PS/2 M+K, 2* LAN 10/100/100
Drives	1x 3.5" internal, 2x 5.25" front accessible, 1* 3,5" front accessible	1x 3.5" internal, 2x 5.25" front accessible, 1* 3,5" front accessible
System Monitoring	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
Power Supply	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
Protection Class	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
Altitude	0 -2000 m (0 - 6562 ft) operating	0 -2000 m (0 - 6562 ft) operating
Shock DIN EN 60068-2-27	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
Humidity rel.	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
MTBF	50.000 h @ 25° C (77°F)	50.000 h @ 25° C (77°F)
Noise	~40 dB @ 25° C (77°F)	~40 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)

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

	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

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 or Micro 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 currenty up t Intel® I7 and up to 32 GByte DDR3 memory. The chassis for the KISS 2U is designed either for the desktop, tower or for installation in a 19" cabinet.

2U Rack Mount Systems

KISS 2U PCI 761

KISS 2U X9SCM Low profile

KISS 2U KTQ67 Flex

KISS 2U KTQ67 Flex Low profile

	KISS 2U PCI 761	KISS 2U X9SCM Low profile	KISS 2U KTQ67 Flex	KISS 2U KTQ67 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
Mounting	Rack Mount, Desktop	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)	Flap blue, Body black, others on request (black flap is standard in NA)
Weight	~ 11 Kg	~ 11 Kg	~ 11 Kg	~ 11 Kg
Control Panel Indicators	Power LED, HDD LED	Power LED, HDD LED	Power LED, HDD LED	Power LED, HDD LED
Control Panel Switch	Power Button	Power Button	Power Button	Power Button
CPU	Intel® i3-540, Intel® i5-660, Intel® i7-860	E3-1275, E3-1225	Intel® I7-2600, Intel® I5-2400, Intel® I3-2120	Intel® I7-2600, Intel® I5-2400, Intel® I3-2120
Front Side Bus	1066/1333 MHz	1066/1333MHz	800/1066/1333 MHz	800/1066/1333 MHz
DRAM	Up to 8 GByte DDR3	Up to 32GB DDR3 ECC	Up to 32 GB DDR3	Up to 32 GB DDR3
I/O Standard	2x GB LAN, 2*COM,2* USB, VGA,	2x GB LAN, 2*COM,2* USB, VGA,Keyb/Mouse	2* COM,VGA,2* Displayport,HD Audio,6* USB 2.0, 3* LAN 10/100/1000	2* COM,VGA,2* Displayport,HD Audio,6* USB 2.0, 3* LAN 10/100/1000
Drives	Accessible: 1x 5.25", 1x 3.5",1x internal 3.5" (optional)	Accessible: 1x 5.25", 1x 3.5",1x internal 3.5" (optional)	Accessible: 1x 5.25", 1x 3.5",1x internal 3.5" (optional)	Accessible: 1x 5.25", 1x 3.5",1x internal 3.5" (optional)
System Monitoring	By PCCM	By IPMI 2.0	By PCCM	By PCCM
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	2x PCI_e x 8, 2x PCIe x4	2x PCI full size 32 Bit, or 1x PCIe x16 and PCIe x4 or 1x PCI 32 Bit and 1* PCI_e x 16	1x PCIe x4 In x16 connector,1x PCIe x16, 2x PCI 32bits/33MHz,
Power Supply	AC 400 W 80+, DC 24 V, DC48V, AC redundant	AC 400 W 80+, DC 24 V, DC48V, AC redundant	AC 400 W 80+, DC 24 V, DC48V, AC redundant	AC 400 W 80+, DC 24 V, DC48V, AC redundant
Cooling	2 Hot swap chassis fans	2 Hot swap chassis fans	2 Hot swap chassis fans	2 Hot swap 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 -2000 m (0 - 6562 ft) operating	0 -2000 m (0 - 6562 ft) operating	0 -2000 m (0 - 6562 ft) operating	0 -2000 m (0 - 6562 ft) operating
Shock DIN EN 60068-2-27	Operating: 15 G, 11 ms 6 ax	Operating: 15 G, 11 ms 6 ax	Operating: 15 G, 11 ms 6 ax	Operating: 15 G, 11 ms 6 ax
Vibration DIN EN 60068-2-6	Operating: 10 - 500 Hz 1 G	Operating: 10 - 500 Hz 1 G	Operating: 10 - 500 Hz 1 G	Operating: 10 - 500 Hz 1 G
Humidity rel.	5 - 95% at 40 C° non condensing	5 - 95% at 40 C° non condensing	5 - 95% at 40 C° non condensing	5 - 95% at 40 C° non condensing
Operating System	WIN7,WIN XP, Linux	Windows Server 2008, 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 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)
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)

2U Short Rack Mount Systems

The KISS 2U short system has been designed with flexibility 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 configuration of KISS servers are based on Kontron´s extensive range of CPU boards.

2U Short Rack Mount Systems

KISS 2U Short KTQ67 Flex low profile

KISS 2U Short KTQ45 Flex low profile

	KISS 2U Short KTQ67 Flex low profile	KISS 2U Short 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
Mounting	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)
Weight	~ 8 Kg	~ 8 Kg
Control Panel Indicators	Power LED, HDD LED	Power LED, HDD LED
Control Panel Switch	Power Button	Power Button
CPU	Intel® i3-2120, Intel® i5-2400, Intel® i7-2600	Intel® Core™ 2Duo E8400, Intel® Core™Quad Q9400
Front Side Bus	800/1066/1333 MHz	800/1066/1333 MHz
DRAM	Up to 16 GByte DDR3	Up to 8 GB DDR3
I/O Standard	2* COM, VGA, 2* Displayport, HD Audio, 6* USB 2.0, 3* LAN 10/100/100	2* COM, VGA, 2* Displayport, HD Audio, 6* USB 2.0, 3* LAN 10/100/100, HD audio
Drives	1x 3.5" Internal or accessible, 1x 5.25" accessible	1x 3.5" Internal or accessible, 1x 5.25" accessible
System Monitoring	By PCCM	By PCCM
Expansion Slots	2* PCI 32 Bit and PCI_ex4 and PCI_e x16 low profile :max length 230mm	2x PCI 32 Bit, 1x PCIe x16 , 1x PCIe x4 low profile, max lenght :230 mm
Power Supply	AC400 W, 24V DC	AC400 W, 24V DC
Cooling	2 Hot swap chassis fans	2 Hot swap chassis fans
Protection Class	IP 20 optional IP 52	IP 20 optional IP 52
Altitude	0 -2000 m (0 - 6562 ft) operating	0 -2000 m (0 - 6562 ft) operating
Shock DIN EN 60068-2-27	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
Humidity rel.	5 - 95% at 40 C° non condensing	5 - 95% at 40 C° non condensing
Operating System	WIN XP, Linux, Window	WIN XP, Linux, Window
MTBF	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)
Dimensions H x W x D	2U x 19" x 350 mm (13.78 inch)	2U x 19" x 350 mm (13.78 inch)
Operating Temperature	0°C to 50°C (32°F-122°F)	0°C 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 DDR2	Up to 4 GByte DDR2
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 x16 and 1* PCI_e x4,or 1*PCI 32 bit and 1* PCI_e x4	2x PCI 32 Bit 33MHz or 1* PCI_e x16 and 1* PCI_e x4,or 1*PCI 32 bit and 1* PCI_e x4	2x PCI 32 Bit 33MHz or 1* PCI_e x16 and 1* PCI_e x4,or 1*PCI 32 bit and 1* PCI_e x4
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 -2000 m (0 - 6562 ft) operating	0 -2000 m (0 - 6562 ft) operating	0 -2000 m (0 - 6562 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 GG	Operating: 10-500 Hz 1 G	Operating: 10-500 Hz 1 G
Humidity rel.	5 - 95% at 40 C° non condensing	5 - 95% at 40 C° non condensing	5 - 95% at 40 C° 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 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 configured to meet your needs.

1U Short Rack Mount Systems

	KISS 1U Short KTQM67	KISS 1U Short KTGM45	KISS 1U Short 986
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	~7 kg	~7 kg	~7kg
Control Panel Indicators	Power LED, HDD LED	Power LED, HDD LED	Power LED, HDD LED
Control Panel Switch	Power ON, reset	Power ON, reset	Power ON, reset
CPU	Intel® i7-2710QE,Intel®i5 2510E	Intel® Core™2 P8400,Intel® Core™2 T9400	Celeron® 440, Intel® Core™ Duo T2500, Intel® Core™2 Duo T7400
Front Side Bus	1066/1333 MHz	667/800/1066 MHz	533/667 MHz
DRAM	Up to 16GByte DDR3	Up to 8 GByte DDR3	Up to 4 GByte DDR 2 SDRAM
OS Preinstalled	WIN7, Linux , WES732 and 64 bit	WIN7,WIN XP, Linux	WIN XP, Linux
I/O Standard	Front I/O: 4* USB 2.0 Rear: 6x USB, 2* Displayport,1* DVI-I, 3* GB LAN, Audio 3x	Front I/O: 4* USB 2.0 Rear: 2x COM, 2x USB, VGA and 2* GB LAN	Front I/O: 4* USB 2.0 Rear: 2x COM, 2x USB, VGA and 2* GB LAN
Drives	KISS Stor Slim ,KISSDA225S, SLIM DVD RW, Internal 1* HDD, CF	KISS Stor Slim, SLIM DVD RW, Internal 1* HDD, CF	KISS Stor Slim, SLIM DVD RW, Internal 1* HDD, CF
System Monitoring	On request	On request	On request
Expansion Slots	2x PCI 32 Bit 33MHz or 1* PCI_e x16	2x PCI 32 Bit 33MHz or 1* PCI_e x16	2x PCI 32 Bit 33MHz or 1* PCI_e x 6
Power Supply	AC wide range 270 W, 24 V DC, 48 V DC	AC wide range 270 W, 24 V DC, 48 V DC	AC wide range 270 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 -2000 m (0 - 6562 ft) operating	0 -2000 m (0 - 6562 ft) operating	0 -2000 m (0 - 6562 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% at 40 C° non condensing	5 - 95% at 40 C° non condensing	5 - 95% at 40 C° non condensing
Operating System	WIN7, Linux , WES732 and 64 bit	WIN XP, Linux	WIN XP, WIN 2000, Linux
MTBF	30.000h at 25°C (77°F)	30.000h at 25°C (77°F)	30.000h 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 350 mm (13,78 inch)	1U x 19" x 350 mm (13,78 inch)	1U x 19" x 350 mm (13,78 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)

» Embedded Box PCs «

Starting from the smallest dimensions of 51x250x140 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. Kontrons box PCs besides passing all tests which are necessary for fanless embedded units like extended temperature, shock/vibration and EMV (EMC) and therefore ideally suited for automation, transportation, energy and infotainment sectors.

- » High performance with low power consumption
- » Future ready with Intel® Atom™ N270 / Intel® Core™ and AMD technology
- » Variable in form and function

Advantages

- » Fanless, maintenance free
- » Flexible in design and function
- » Customization
- » Lifecycle management
- » Long-term availability
- » Documented testing

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	2.5" 80 GByte or 32 GByte SSD	80 GByte 2.5" or 32 GByte SSD
CompactFlash	Option	Yes
Memory	1 GB	up to 3GB
Graphics/Resolution	1600 x 1200 (UXGA)	2048x1536 (QXGA)
Video Interface 1	DVI-D, customer specific VGA	VGA
Video Interface 2	-	DVI
COM1 / COM2	RS232C, RS422/485/RS232, RS422/485	RS232/RS323
COM3 / COM4	-	RS232, CAN / RS232, CAN
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 LAN (M12), with LAN boot, WakeOnLan	10/100 LAN (M12) with LAN boot
LAN Port B	10/100 LAN (M12), WakeOnLan	1 Gbit LAN (RJ45) with LAN boot
Sound	2x Stereo	2x Stereo 10W, 1x Stereo In
Digital Input/Output	4x opto. isolated in-/output	4x opto. isolated output, 4x opto. isolated 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	MPCX60
Processor/Performance	Intel® Atom™ Z530 (1.6 GHz)	Intel® Atom™ D525 (2x 1.8GHz)
HDD	2.5" 80 GByte or 32 GByte SSD	Soldered SSD, 2.5" SSD/HDD (internal)
CompactFlash	Option	Yes
Memory	1 GB	Up to 4GB DDR3 RAM
Graphics/Resolution	1600 x 1200 (UXGA)	Int. graphic Controller, multi display
Video Interface 1	DVI-D, customer specific VGA	VGA 2048x1536
Video Interface 2	-	LVDS 1366x768
COM1 / COM2	RS232C, RS422/485 / RS232C, RS422/485	4x COM
USB	2x 2.0 back, 2x 2.0 front	5x USB
LAN Port A	1 Gbit (RJ45) with LAN boot, WakeOnLan	1x Gbit LAN
LAN Port B	1 Gbit (RJ45), WakeOnLan	-
Sound	2x Stereo	2x Stereo (lin. MIC), SPDIF out
Digital Input/Output	4x opto. isolated in-/output	4x in, 4x out, ADC, DAC
DC voltage input (not isol.), V1248	10-54VDC/typ.15W	12-48V
Expansion	2x PCIexpress MiniCard, 1x PCI/104	2x PCIe MiniCard, 1x PCI/104ex, cPCI, HSMC
Protection class	IP52	IP65 (optional)
Dimensions (W x L x H in mm)	159 x 187 x 66	243 x 206 x 76
Weight	1,5 kg	2,8 kg
Special Features	WakeOnMove, RingWake, WakeOnRing, PowerSaveMode	Altera® FPGA (HSMC slot), planed to be e1 certified
Standard Temperature	-25°C to +55°C (with HD)	-25°C to +55°C
Extended Temperature	-25°C to +70°C (with SSD, no HD)	tbd

Fanless CB Series - designed for your demand

The fanless Kontron CB standard product 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.

Fanless CB - Series

CB 751

CB 752

CB 753

CB 511

CB 754

CB 7XX

	CB 751	CB 752	CB 753	CB 511	CB 754	CB 7XX
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	Designed in an ultra low profile aluminum housing	Designed in an ultra low profile aluminum chassis	Designed in an ultra low profile aluminum chassis
Mounting	Wall mount, Desktop, Front mount	Wall mount, Desktop, Front mount, DIN Rail	Wall mount, Desktop, Front mount	Wall mount, Desktop, DIN Rail	Wall mount, Desktop, Front mount	Wall mount, Desktop, Front mount
Paint Color	Blue	Blue	Blue	Blue	Blue	Blue
Weight	~ 4kg	~ 3 kg	~ 6 kg	~ 3 kg	~ 4kg	~ 4kg
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
Control Panel Switch	Power Button	Power Button	Power Button	Power Button	Power Button	Power Button
CPU	Intel® Celeron® M Processor ULV, 1.06 GHz (mBGA479), Intel® Celeron® M Processor, LV, 1.66GHz (mBGA479)	Intel® Atom™ N270 1.60GHz	Intel® Core™ 2 Duo P8400 2.26GHz; FSB1066 3MB mPGA478	Intel® Atom™ N270 1.60GHz	Dual Core AMD Athlon™ X2 Neo L325 1.5 GHz; 18W, 2x512 KB cache	-
DRAM	3 GB DDR2 memory support (2+1)	2 GB DDR2	2x DDR3 DIMM-240 PIN up to 8 GB	2 GB DDR2	2x DDR2 memory (200pins DIMM)	-
I/O Standard	Front: 4x USB, 3x GB LAN, PS/2 M+K, VGA, Audio, Firewire, RS232, Power Button Rear: 3x RS232, 2x USB Bottom: CF door	Front: 2x GB LAN, 2x COM, VGA, 4x USB, Power Button Rear: 2x USB, Audio, CF door	Front: 4x USB, 3x GB LAN, PS/2 M+K, VGA, Audio, Firewire, 2x RS232 Rear: Power Button Bottom: CF door	Front: 1x RS232, 2x GB LAN, 4x USB, 1x VGA; Rear: 1x Line out, 1x RS232, CF	Front: 6x USB, 2x GB LAN, PS/2 M+K, VGA, DVI, Audio, 1x COM, Power button Rear: 1x COM 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 10,23inch)	51mm x 250mm x 140 mm (2,01 inch x 9,84 inch x 5,51 inch)	75 mm x 250 mm x 260 mm (2,95 inch x 9,84 inch x 10,23 inch)	-
Free Slots	Internal PCI Express mini Card	Internal PCI Express mini Card	1x PCI or 1x PCIexpress slot and 1x internal PCI Express mini Card	Internal PCI Express mini Card	Internal PCI Express mini Card	Internal PCI Express mini Card
Drives	2.5" HDD/SSD, CF	2.5" HDD/SSD, CF	2.5" HDD/SSD, CF	CF only	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	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 VDC to 30 VDC), optional external AC adapter	24 VDC (10 VDC to 30 VDC), optional external AC adapter	24 VDC (10 VDC to 30 VDC), optional external AC adapter	24 VDC (10 VDC to 30 VDC), optional external AC adapter	24 VDC (10 VDC to 30 VDC), optional external AC adapter	24 VDC (10 VDC to 30 VDC), optional external AC adapter
Cooling	Fanless	Fanless	Fanless	Fanless	Fanless	Fanless
Options (Fully Certified with System)	DVI	CAN Bus, RS 422/485, 18-bit DVI, RS422/485, 3rd COM RS232 via USB, WLAN, NVRAM, WLAN	DVI, 2nd 2.5" HDD/SSD, 2x RS232/422/485, WLAN	3rd COM RS232 via USB, WLAN	RS422/485, 3rd COM RS232 via USB, WLAN	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)	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: 10-500Hz 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: 10-500 Hz: 0,5G sine / 3 axis	Operating: 10-500Hz Hz: 0,5G sine / 3 axis	Operating: 10-500Hz Hz: 0,5G sine / 3 axis
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: -15°C to +60°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: -15°C to +60°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, Operating: 5 to 95 % @ 40°C not condensing
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, WIN 7	WIN CE 6.0, WIN XP embedded, Linux embedded	WIN XP, Linux, WIN XP embedded	WIN XP, Linux, WIN XP embedded
MTBF	~40.000 h	~40.000 h	~40.000 h	~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	0 db if only CF used	0 db if only CF used	0 db if only CF used

Industrial Box PCs

KIC-MC Box

	KIC-MC Box
System	KIC-MC
Product Line	KIC series
Paint color	Front blue, body black
Weight	~ 3 kg
CPU Module	ETXexpress®-MC
CPU	T7500
DRAM	Up to 4 GB DDR2
Non volatile memory (NVRAM)	32KByte or 128KByte
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)
Interfaces Rear	DVI-I, RS232, 2x LAN 10/100/1000 MBit, 6x USB 2.0, Line out, Stereo
Controls on the frontside	Remote On/Off, Remote LED
Drives	2x 2,5" HDD/SSD
Expansion slots	1x PCI_e x1
Power supply	24 V DC
Cooling	1 chassis FAN
Vibration	Operating: 10 to 500 Hz Random
Humidity	20% to 80%
Dimensions (H x W x D)	87 x 200 x 199
Approvals	CE
MTBF	50.000 h
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)

MICROSPACE® Industrial

	MPC-pONE	MPC-p2	MPC20	MPC21	MPC21A	MPC21B	MPC21C	MPCF50	MPCF50A
									
Processor/Performance	Intel® Atom™ Z510 / 1.1GHz or Z530 / 1.6GHz	AMD embedded T44R 1,2GHz single core or T40N, 2x1GHz dual core	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® 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	2.5" SATA SSD / HDD, microSD	2.5" SATA SSD / HDD, mSATA	Optional	Optional	Optional	Optional	Optional	320 GB (SATA)	320 GB (SATA)
CompactFlash	-	-	CF 256 MB installed	CF 256 MB installed	CF 256 MB installed	CF 256 MB installed	CF 256 MB installed	-	-
Memory	1x DDR2 SO-DIMM, up to 2GB	1x LVDDR3-1066 SO-DIMM up to 4GB	256 (max. 1 GByte)	256 (max. 1 GByte)	256 (max. 1 GByte)	256 (max. 1 GByte)	256 (max. 1 GByte)	1 GByte (max. 2 GByte), (max. 3 GByte)	1 GByte (max. 2 GByte), (max. 3 GByte)
Graphics/Resolution	1600 x 1200 (UXGA)	1920 x 1200	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	DVI	DVI-I, VGA	CRT	CRT	CRT	CRT	CRT	CRT	CRT
Video Interface 2	-	-	-	-	-	-	-	DVI	DVI
COM1 / COM2	-	2x RS232 (rear)	-	RS232C	RS232C/RS232	RS232 /RS23	RS232C/RS232	-	-
COM3 / COM4	-	2x RS232 (rear)	-	-	RS232C/RS232C	CAN1/CAN2	-	-	-
USB	4x 2.0 (2x front, 2x rear)	6x 2.0 (2x front, 4x rear)	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	6x 2.0
LAN Port A	1 Gbit LAN	1 Gbit LAN	10/100 LAN	10/100 LAN	10/100 LAN	10/100 LAN	10/100 LAN	10/100 LAN (RJ45) with LAN boot	10/100 LAN(RJ45) with LAN boot
LAN Port B	-	1 Gbit LAN	10/100 LAN	10/100 LAN	10/100 LAN	10/100 LAN	10/100 LAN	1x 1 Gbit LAN	3x 1 Gbit LAN
Sound	2x stereo line-in, line-out	HD Audio line-out, mic-in	2x Stereo	2x Stereo	2x Stereo	2x Stereo	2x Stereo	2x Stereo	-
Digital Input/Output	-	-	-	-	4x opto isol. 50V/1A	-	-	-	-
DC voltage input (not isol.), V1248	5V	8V - 30V	10V-28V/typ.10W	10V-28V/typ.10W	10V-28V/typ.10W	10V-28V/typ.10W	-	-	-
DC voltage input (1.5kV isol.), Ixx	-	-	-	-	-	-	-	-	-
Expansion	-	-	-	-	-	-	-	MiniPCI	PCIexpress MiniCard
Protection class	IP52	IP 52	-	-	-	-	-	IP40	IP40
Dimensions (W x L x H in mm)	122 x 53 x 99/105	99 x 130 x 56mm	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	310 x 256 x 42	310 x 256 x 42
Weight	600 g	1.1 kg	500 g	700 g	700 g	700 g	700 g	3 kg	3 kg
Special Features	Optional: 2GB DDR2 RAM, SSD 40GB, HDD 500GB (planed), DIN rail kit, power supply	Optional: SSD 64GB, HDD 500GB DIN rail kit, PCIe MiniCards for Wifi, GSM/UMTS, SSD, mSATA minicard	Fanless, incl. DC power cable	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	3D-Support: DirectX9	3D-Support: DirectX9
Standard Temperature	0°C to +45°C	0°C to + 60°C	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)	+5°C to +50°C (with HD)	+5°C to +50°C (with HD)
Extended Temperature	-	Planed to be -25°C to +70°C	-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 (with SSD)	-25°C to +70°C (with SSD)

» µTCA Platforms «

µTCA® PICMG®

MicroTCA is an 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:
» 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

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 fulfi lls 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 tele communication applications, the application areas for MicroTCA go far beyond.

Basically all application areas combine the following requirements:
» Multiprocessor systems
» High network capacity
» Low latency
» Large data throughput

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.

mTCA OM Single Platforms	 OM6040 Compact	 OM6060	 OM6120
Form Factor	3U	3U	5U
Connectivity	GbE, PCIe or SRIO switching, SATA as P2P	GbE switching, PCIe, SRIO, 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

OM6063

The OM6063 is a flat and compact 1U system concept for high-end processor modules and switches beyond 1Gbit/s and positions MicroTCA at 10 Gbits/s. This allows in just a 1U form factor the accommodation of 6 state-of-the-art multicore CPUs such as Intel® Core™ i7 on Kontron's AM4022, Freescale™ QorIQ on Kontron's AM4140, as well as Kontron's 1Gbit switch AM4901 or 10Gbit switch AM4910.

» PCIe/sRIO paired slots (ports 4...7)
» 10GbE Switched Fabric (ports 8...11)
» Simple MCH or fully featured MCH
» 6 mid-size single AMC slots in a 1U 19" system
» 1 full size MCH slot
» Open Frame 250W AC PSU
» Power Management & Cooling on Backplane EMMC

MicroTCA System development made easy

MicroTCA Starter Kit

Entry Level Platform for Prototypes and AMC Developers

The MicroTCA starter kit is based entirely on off-the-shelf MicroTCA components. This MicroTCA starter kit represents an entry level system with suitable options for AMC processor modules in combination with the AMC developer's-package, and easy IPMI systems configuration through the OMVIU MicroTCA Management Software.

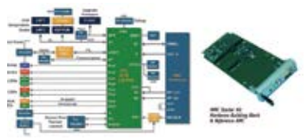
- Base System: OM6060 Chassis incl. 250 Watts AC Power, Multi-Purpose Backplane for 6 Mid-Size AMCs, AM4901 MCH with GbE Switch
- Intel® Architecture Option: AM4020 Core™ i7
- Power PC Freescale QorIQ Option: AM4120
- Packet-Processing Option: AM4211 Cavium 6-Core AMC
- AMC developer's option: MMC Starter kit incl. MMC Hardware and Software building blocks with reference implementation on AMC
- System Developer Option: OMVIU MicroTCA Configuration Management Software

AMC-MMC Developer Kit

AMC Developers Package

For AMC developers MicroTCA management may represent an obstacle for own AMC designs. The management functions over IPMI on AMCs are contained in a functional entity named MMC (module management controller). The AMC developer's package provides proven building blocks for MicroTCA management: a hardware building block, MMC management software, as well as a reference implementation on AMC incl. debugging facilities. The MMC hardware building block may be copied into own AMC developments. The MMC software is available as binary with runtime-licenses and as source code. Customer specific adaptations can be provided on request.

- Proven building blocks for MicroTCA management
- Reference implementation on AMC incl. debugging facilities
- Modular Design to facilitate adaption



OMVIU

MicroTCA Configuration Management Software

The OMVIU MicroTCA Configuration Management Software is a Java based graphical tool for remote monitoring and control of MicroTCA systems. The intuitive GUI allows the simultaneous access to several MicroTCA shelf or carrier managers. The product supports the entire Kontron AMC/MicroTCA product family and standard compliant systems (backplanes, fan units, power modules), MCHs and AMCs from other vendors.

- Graphical User Interface for system configuration
- Icon based visualization
- No need for cryptic CLI commands
- Java based tool for Mac OS, Windows, Linux and others
- Supports all standard compliant systems and AMCs
- Trace and error logging facilities

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 felxibility, features and cost. Kontron offers different levels of MCH functionality to meet the needs of every application.

Requirement Summary

- High performance and throughput
- Multi-Processor
- Advanced Switching Requirements
- Advanced System Management
- Hot-Swap
- Redundant

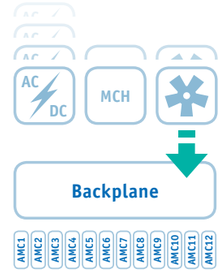
HIGH

LEVEL OF REQUIREMENTS

- High performance and throughput
- Multi-Processor
- Basic Switching Requirements
- Basic System Management
- IO-oriented

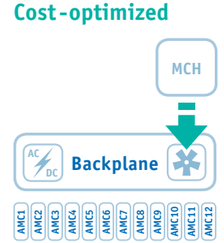
LOW

Fully-Featured



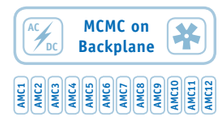
- Completely redundant
- Fully featured MCH
- Power Modules
- Cooling Units

Cost-optimized



- Simple Power Supplies
- Simple Fans
- Simple MCH

Lowest cost



- Simple Power Supplies
- Simple Fans
- MCMC Module on Backplane

MCH

AM4904 / AM4910

- Fully Featured MCH
  - MCMC incl. remote Mgt. + Managed Switch
  - GbE, PCIe, SRIO (AM4904)
  - 10GbE (AM4910)

AM4901

- Basic MCH
  - MCMC + Unmanaged Switch
  - GbE

AM5901R

AM2901

- MCMC module for MicroTCA
  - Management over IPMI
  - No fabrics

» cPCI Application-Ready Platforms «

CompactPCI® PICMG®

CompactPCI platforms are the most widespread and proven platforms to build reliable, serviceable, robust, and high available industrial system solutions.

Kontron provides various 3U and 6U card cages with integrated Power Supplies, backplane, and monitoring options, EMI shielded and with optimized cooling. On request, the customer can leave the integration of CPU and peripheral functions as well as the entire system hardware responsibility to Kontron, in order to concentrate on the application as his core competency.
To any system request, Kontron's project team will be happy to work on the optimized hardware system platform proposal together with the customer.

Application-Ready Platforms

CompactPCI 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.

Application-Ready Platforms

OBSERVO
Rugged RAID Data Server

- » Surveillance Data Recording in harsh environments
- » Transportation, Borderline, Coastal Water, Industrial Plants
- » Automated Maintenance for long term missions
- » Fanless RAID up to 8 hot swap Disks
- » Hardware RAID 0, 1, 5, 10, 50
- » EN50155 compliant

INTERPARLO
Internet On Train Server

- » CompactPCI Platform for Passenger Infotainment
- » Transportation
- » All in one: Multiple CPU + switched Ethernet Access
- » Secondary controllers for streaming
- » Wireless Modules for LTE, UMTS, GPRS, GPS and WiFi
- » EN50155, wide range PSU 24-110 VDC

CP-ASM3-MDC-MPSW
Switched Multiple CPU Platform

- » All applications requiring redundancy, diagnostics, or supervision
- » Secondary bus option for three controller in one rack
- » Integrated network access via GbE Switch, advanced managed L2, L3
- » Wide CPU performance range from Intel® Celeron®M 1.06 GHz up to 3rd gen. Quad Core Intel® Core™ i7 2.53 GHz

6U Standard and PSB Platforms

XL2000

XL1000 Series

CP-ASM6-P47

CP-ASM10-PSB

	XL2000	XL1000 Series	CP-ASM6-P47	CP-ASM10-PSB
Depth	210 mm	275 mm	275 mm	275 mm
19" Rack Mounting	Wall mount	Cabinet / ETSI mount	Cabinet or Wall mount	Cabinet mounting
Backplanes	4 slot	2, 4, 6 or 8 Slot	4, 8 or 16 Slot	14 slot + 2 fabric switch slots
Power Supply	75 Watt AC or DC	Up to 3x P47 series	Up to 6x P47 series	Up to 4x 250 W / 3U
Cooling	Optional	Left to right fan	Bottom to top fan	Built in fan tray
Housing	28 HP / 7U	84 HP / 1, 2, 3 or 4U	84 HP / 6U	84 HP / 10U
Packet Switched Backplane	n/a	Optional	Optional	Yes
H110	n/a	Optional	Optional	n/a
Additional	Not fitted with boards	-	-	IPMI & monitoring optional

3U Platforms

CP-ASM3 Series

CP-ASM4-POCKET

RTOP

	CP-ASM3 Series	CP-ASM4-POCKET	RTOP
Depth	275 mm or 235 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 / SSD optional	HDD optional	Room
Characteristics	Modular System, Redundant PSU (P47)	Cost optimized system	Development Rack
Power Supply	Selection of AC or DC, P47 or M- type, 100-200W	75 Watt AC or DC	200 W
Cooling	1U fan tray as option	Optional	Fan
Housing	42 HP or 84 HP / 3U	28 HP / 4U	H=191mm W=170mm

» 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 feature 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

10 Gigabit Managed Rackmount Switches

The Kontron 19 inch rackmount Ethernet Switch family provides non-blocking fully managed L2/L3 10Gb Ethernet Switching together with a rich and versatile feature support by using highest integration of Ethernet switch silicon.



10 Gigabit Rackmount Switches	NEW RES2400	NEW RES2404	CP6930-RM-12	
10 GB SFP+ Ports	n/a	4x 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	6x 10GBase-X SFP+ transceiver cages, configurable for 1GBase-X operation using SFP optical transceivers or direct attach copper
1 GB SFP Ports	n/a	n/a	2x 1GBase-X SFP transceiver cages including SGMII support	2x 1GBase-X SFP transceiver cages including SGMII support
1GB RJ45 Ports	24x 10/100/1000Base-T	24x 10/100/1000Base-T	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 RS232	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 Bridging1	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)	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)	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)	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)
Ethernet Bridging2	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)	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)	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)	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)
Ethernet Bridging3	VLAN support including VLAN tagging (IEEE 802.3ac), dynamic VLAN registration with GARP/GVRP (IEEE 802.1Q) and Protocol based VLANs (IEEE 802.1v)	VLAN support including VLAN tagging (IEEE 802.3ac), dynamic VLAN registration with GARP/GVRP (IEEE 802.1Q) and Protocol based VLANs (IEEE 802.1v)	VLAN support including VLAN tagging (IEEE 802.3ac), dynamic VLAN registration with GARP/GVRP (IEEE 802.1Q) and Protocol based VLANs (IEEE 802.1v)	VLAN support including VLAN tagging (IEEE 802.3ac), dynamic VLAN registration with GARP/GVRP (IEEE 802.1Q) and Protocol based VLANs (IEEE 802.1v)
IP Routing	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	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	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	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
IP Routing1	VRRP (virtual router redundancy protocol) IGMP snooping	VRRP (virtual router redundancy protocol) IGMP snooping	VRRP (virtual router redundancy protocol) IGMP snooping	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	DVMRP, PIM-DM, PIM-SM, IGMP V2/3, IGMP Proxy	DVMRP, PIM-DM, PIM-SM, IGMP V2/3, IGMP Proxy
Options	Options for fanless operation	n/a	Options for redundant hotswap power supplies, various connector interfaces, extended temperature range	Options for redundant hotswap power supplies, various connector interfaces, extended temperature range
Shock	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)	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)
Dimensions	19 inch, 1U Chassis 445 x 45 x 282 mm (WxHxD)	19 inch, 1U Chassis 445 x 45 x 282 mm (WxHxD)	19 inch, 1U Chassis 445 x 45 x 282 mm (WxHxD)	19 inch, 2U Chassis 445 x 90 x 282 mm (WxHxD)
Humidity rel.	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)	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)
MTBF	Approx. 200 khours	Approx. 200 khours	Approx. 200 khours	Approx. 200 khours
Power Consumption (typ.)	110/230V, 40W; 24VDC (18 to 36VDC)	110/230V, 62W; 24VDC (18 to 36VDC)	110/230V, 75W; optionally 48VDC (36 to 72VDC) 24VDC (18 to 36VDC)	110/230V, 90W; optionally 48VDC (36 to 72VDC) 24VDC (18 to 36VDC)
Additional	DHCP Server, SNTP Client, diagnostic, multiple configuration support	DHCP Server, SNTP Client, diagnostic, multiple configuration support	DHCP Server, SNTP Client, diagnostic, multiple configuration support	DHCP Server, SNTP Client, diagnostic, multiple configuration support
Temperature Range	-25°C to 70°C	-25°C to 70°C	0°C to 55°C	0°C to 55°C

» Embedded Network Products – Portfolio Summary

» Areas of Application
Network Technology connects all types of computers in Communication Networks, Industrial Production, Process Control, Public Transportation, Engery 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 an 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 accross the complete portfolio

» Embedded Life Cycle
According to Long Term Supply and Maintenace 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 temperatue ranges, enhanced shock & vibe, and EMI according to the specific needs in the area of application. Among the specifications coverd 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 highperformance 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.

» M2M Smart Services Developer Kit «

In the years to come most electronic devices will connect to the Internet. Analysts estimate that tens of billions of devices will communicate in this decade. By deploying smart services on the machine-to-machine (M2M) devices OEMs will be able to expand their solutions to meet these new market opportunities. Developers of emerging smart services need a simple, yet powerful M2M device to test their application's connectivity and performance. OEMs can reduce time-to-market by using Kontron's M2M Smart Services Developer Kit, which was developed in collaboration with Intel. The Kontron M2M System is Wi-Fi and 802.15.4 ready. 3G WWAN is either also installed or can be easily added by dropping-in a pre-certifi ed PCI Express mini card module for 3G/4G for wireless connectivity application testing.

The external USB ports allow easy use of M2M SDKs. There is ample storage space for M2M smart service applications, middleware and OS on the internal microSD card and by using the externally accessible microSD slot. With a built-in accelerometer, dual HDMI and HD audio support, Kontron's M2M System enables both movement tracking as well as A/V intensive smart services applications. Kontron's cost effective M2M family of small, powerful, low power M2M Systems are designed to offer OEMs production ready solutions to accelerate smart services deployment opportunities.

M2M

KM2M Dev Kit

KM2M806XT Deployment System

	KM2M Dev Kit	KM2M806XT Deployment System
Product	Kontron M2M Smart Services Developer Kit (with Ericsson 3G module)	Kontron M2M Smart Services Deployment System for industrial and extended temperature range Applications
Chassis Dimensions (H x W x D)	67mm x 100mm x 27mm (92mm x 100mm x 62mm with mounting brackets)	Industrial Rated Cast Aluminum Case 32mm x 125mm x 89.98mm
Interfaces Top	SIM slot	-
Interfaces Left	USB 2.0 (Type A), MicroUSB 2.0 (Type B), Power, RJ-45 Ethernet, 2x antenna connectors	2x MicroHDMI, MicroSD slot, 2x antenna connectors
Interfaces Right	Microphone, Headphone/Line Out, 2x MicroHDMI, MicroSD slot, MicroUSB 2.0, 2x antenna connectors	2x USB 2.0 (Type A), Power, RJ-45 Ethernet, 2x antenna connectors
Controls on top	Reset button, user input button/software enabled, LED status indicators	-
Internal Data Storage capacity	4 GB via internal MicroSD card	4 GB via internal MicroSD card
External Power Supply	100-240 VAC, 50/60 Hz input/rating, 12 VDC, 2A operating input/rating (US and Continental Europe power cords included)	100-240 VAC, 50/60 Hz input/rating, 12 VDC, 2A operating input/rating (US and Continental Europe power cords included)
Processor/Chipset	Intel® Atom™ processor E640T 1 GHz/Intel® Platform Controller Hub EG20T	Intel® Atom™ processor E640T 1 GHz/Intel® Platform Controller Hub EG20T
Cache	32 KB instruction cache + 24 KB L1 cache, 512 KB L2 cache	32 KB instruction cache + 24 KB L1 cache, 512 KB L2 cache
Memory	1 GB DDR2	1 GB DDR2
Wi-Fi WLAN (802.11a/b/g/n)	Intel® Centrino® Advanced N 6205 Wi-Fi module installed	Intel® Centrino® Advanced N 6205 Wi-Fi module installed
WPAN (802.15.4)	TI CC2531 SOC; ready for ZigBee® certification	TI CC2531 SOC; ready for ZigBee® certification
3G/4G WWAN	Ericsson 5521gw 3Gmodule installed or option to drop-in other PCI Express 3G/4G broadband module	Ericsson 5521gw 3Gmodule installed or option to drop-in other PCI Express 3G/4G broadband module
Accelerometer	Ultra low-power high performance three axis linear accelerometer	Ultra low-power high performance three axis linear accelerometer
Weight	0.8 lb/0.36 kg system; 2.35 lb/1.1 kg packaged kit	0.8 lb/0.36 kg system; 2.35 lb/1.1 kg packaged kit
Temperature	Operating: -0°C to +50°C Storage: -25°C to +70°C (-13°F to 158°F)	Operating: -40°C to +85°C Storage: -40°C to +85°C
Humidity	Operating: 5 to 95 % RH @ 25-35°C non condensing	Operating: 5 to 95 % RH @ 25-35°C non condensing
Shock	Operating: 2G 11ms duration, 6 directions (half-sine) Non-operating: 25G 11ms duration, 6 directions (half-sine) Packaged: 2G 5-40 Hz: sloping to 0.00015 g2/Hz@ 500 Hz	Operating: 2G 11ms duration, 6 directions (half-sine) Non-operating: 25G 11ms duration, 6 directions (half-sine) Packaged: 2G 5-40 Hz: sloping to 0.00015 g2/Hz@ 500 Hz
Vibration	Unpackaged system: 5-500 Hz: 0.5G sine / 3 axis	Unpackaged system: 5-500 Hz: 0.5G sine / 3 axis
Approvals	Nemko NRTL 60950-1, FCC Class B, CE	Nemko NRTL 60950-1, FCC Class B, CE
OS	Wind River Linux 4.1 – 90 day trial; driver support enabled for Ericsson 5521gw module	Wind River Linux 4.1 – 90 day trial
Also in the box	2x 3G antennas (including cabling) 2x 802.11/802.15.4 antennas, 16 GB USB Memory stick with Wind River Linux LiveUSB and USB adapter	2x 802.11/802.15.4 antennas, 16 GB USB Memory stick with Wind River Linux LiveUSB and USB adapter

» 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. Rackmount 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

COTS Boards & Enclosures
- » Standard form factor
- » Semi & full custom

Development Tools
- » Software tools and development platforms for rapid application modeling and testing

Software Services
- » BSPs: VxWorks, Lynuxworks, Linux, Windows, ...
- » Virtualisation
- » IPMI

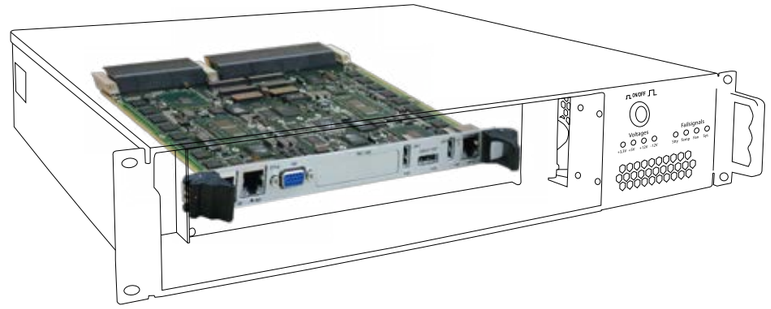
Systems Integration
- » Full range of environmental compliance
- » Choice of form factor or architecture
- » Backplane or module based

Total Custom Solution
- » Application ready
- » Concept to production

Turnkey Evaluation and Development Platforms

Kontron provides a solution for a quick entry into the evaluation and development of VME and VPX applications. EZ turnkey platforms are compact air-cooled rack systems with pre-integrated VME or VPX board along with the associated rear transition module (RTM) and pre-loaded software, so that system developers can immediately begin with application development.world and performances offered by the VPX standard. Both VPX and OpenVPX pinout are available.

COMPLETE SET FOR A QUICK START



Power supply Cable + Serial Cable + Documentation + Pre-loaded software: Linux or VxWorks + Pre-installed benchmarks

- » Available for PowerPC or Intel SBC
- » Compatible with many extensions
- » Ready to use in seconds
- » 5+ Years of Guaranteed Supply
- » 10+ Years of Hardware and Software Support

	EZ Platform	Base Board	Pre-loaded software
VMEbus	EZ1-VM6250	VM6250 - 6U VME PowerPC	Linux Fedora, Hybrid VxWorks 6.6/ Linux Fedora
	EZ1-VM6050	VM6050 - 6U VME Intel	Linux Fedora
VPX	EZ3-VX3230	VX3230 - 3U VPX PowerPC	Linux Fedora, VxWorks 6.6, VxWorks 6.8
	EZ2-VX6060	VX6060 - 6U VPX Intel	Linux Fedora
	EZ3-VX3030	VX3030 - 3U VPX Intel	Linux Fedora
	EZ3-VX3035	VX3035 - 3U VPX Intel	Linux Fedora
	EZ3-VX3040	VX3040 - 3U VPX Intel	Linux Fedora
	EZ3-CMB	CMB – Chassis Management Board evaluation system: please contact Kontron	Linux Fedora

CMB - Chassis Management Board

CMB (Chassis Monitoring Board) is the ideal board for simple and robust control and monitoring operations. The CMB is in charge of continuously watching and reporting critical vital signals of the system.

» Management of Temperature, Fans and Power Supply
» Alarm through Chassis Front Panel LEDs and SNMP Traps
» Serial Line and TCP/IP Interface
» Remote Management through Serial Line, Telnet, HTTP and SNMP
» For use in VME, VPX and CompactPCI Chassis

More details on
www.kontron.com/products/systems+and+platforms/

Rapid Prototyping Baselines

3U Rugged COTS Line Systems	 Available Q3-2012 MEC-AERO	 APEX-VX	 MEC-CompactPCI
Board / Mezzanines	VPX or cPCI SBCs, PMC Carrier, Avionics PMCs	VX30xx CPUs, VX38xx PMC/XMC/FMC carriers, VX3905 ETH/PCIe switch	ITC320 SBC, PMC Carrier, PowerPC SBC, GETH switch
Backplanes	6-slots	5-slot VITA 46 VPX centralized backplane	4-slots
I/Os	MIL-STD-1553, ARINC-429, GPIOs, UART	MIL-STD-1553, ARINC-429, DisplayPort, GETH, UART - Customizable front I/Os	MIL-STD-1553, Ethernet and GPIOs
Power Supply	200W (28V)	200W (28V)	75 Watt AC or DC
Operating System	Linux, VxWorks	Linux, VxWorks	Linux, VxWorks, ARINC653, DO178B
Operating Temperature	-40°C to +71°C	-40°C to +71°C	-40°C to +71°C
Bandwidth	-	x4 PCIe gen 2 between boards (over 1GB/sec)	-

3U & 6U Industrial Grade/ Development Enclosures

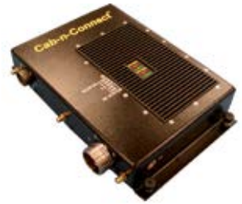
VME Racks and Chassis	 R4U8S	 R2U4S	 ASM3-VME	 FS-1107/09	 FS-1112/18
Height	4U Chassis	2U Chassis	3U Chassis	-	8U Chassis
Expansion	8-slot 6U 160mm cards and 80mm RTM	4-slot 6U 160mm cards with 80mm RTM	7, 12, 15 (3U cards)	7 or 9-slot 6U 160mm cards	12 or 18-slot 6U cards
Power Supply	700 W	400 W	50 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 (CWLU) 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

Power-On Built-In Test Solution

Kontron PBIT software is an extensible framework for Power On Built In Test of SBCs. Its execution occurs early in the boot process. PBIT is a powerful tool to help fast and accurate diagnostic, avoiding to waste precious time in deep investigations of the application code when a failure is showing up in a system.
PBIT has been designed to be executed as fast as possible and be an integral part of the operational system start sequence (automatic mode).
PBIT also has a user interface that can be called up to access an interactive test mode. A configurable tests list allows adding and removing specific feature test. This list is tuned by the user to reduce the test time; only the features used for a given application need to be tested at power up.
PBIT also include an innovative complex test approach allowing maximum coverage with minimal learning curve for Kontron customers deploying SBC based systems: PBIT has a learning mode to record the status of all ports and buses connected to the processor, allowing a quick and extensive system configuration diagnostic.

Kontron PBIT is featured on CPU boards such as VX3230, VM6250, VX6060, VX3030, VM6050, VX3035, VX3042 and VX3044 operating in VPX or VME enclosures deploying embedded and ruggedized Military, Aerospace or Transportation system market applications.

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

	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
Compatiable 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

	FS-8704	Cobalt
Board / Mezzanines	Motherboard	COM Express®
Form Factor	ATX	Small Form Factor
Dimensions	7" x 22" x 19"	8.5" x 7.0" 3.4"
Weight	45 lbs	7 lbs
Compatiable 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) 5W-25W
Vibration	MIL-STD-810E, MIL-STD-167, RTCA/DO-160F	MIL-STD-810E, MIL-STD-167, RTCA/DO-160F, Section 8
Shock	MIL-STD-810E, MIL-S-901D, RTCA/DO-160F	MIL-STD-810E, MIL-S-901D, RTCA/DO-160F, Section 7
EMC	-	MIL-STD-461E, RTCA/DO-160F, Section 20-21
Enclosure	-	MIL-STD-108E
Storage	-	80GB or 160GB solid state drive fixed or removable
Special Features	-	Scalable per customer needs
Additional	-	8-port Ethernet Switch Managed or unmanaged ARINC 429, 6 receive, 4 transmit channels MIL-STD-1553, 2 redundant channels, GPS option
Operating System	-	Linux or Windows
Operating Temperature	-	-40°C to +71°C

ATR

FS-5955

FS-5965

FS-5968

FS-5971

FS-5975

FS-5977

FS-5981

FS-5985

FS-7275

FS-7276

	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
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
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"
Weight	30.6 lbs	18 lbs	32 lbs	22 lbs	18 lbs	22 lbs	7.9 lbs	9.7 lbs	20 lbs	40 lbs
Compatiable 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
Cooling	Conduction	Conduction	Conduction	Conduction	Conduction	Conduction	Conduction	Conduction	Convection	Convection
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
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
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
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	-	-
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	-	-
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	-	-
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	-	-
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)
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	-	-

ATR

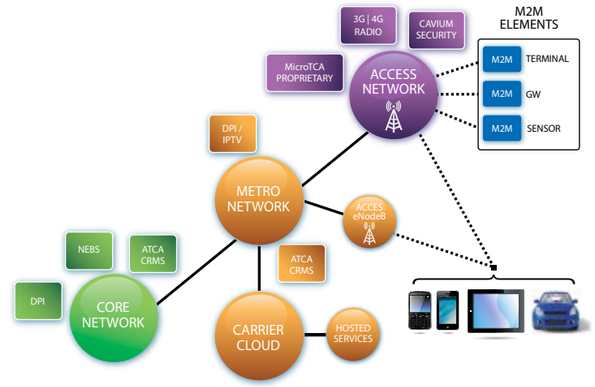
» Open Communication Platforms «

Kontron OCP across the Core, Metro, Carrier Data Center, Access, Edge Networks

Carrier Grade Platforms
ATCA – 10G/40G Platforms
MicroTCA – 10G Platforms
CRMS (1U, 2U, 3U Communication
Rack Mount Servers)

Mission Critical Platforms
CRMS (1U, 2U Communication
Rack Mount Servers)

M2M
Smart Services Developer Kit
Smart Deployment Device



From Core and Metro Networks to the Network Edge, Kontron offers Telecom Equipment Manufacturers (TEMs) a wide portfolio of pre-integrated open communication platforms (OCP) for the design of numerous fixed and mobile applications.

Core and Metro Networks:
To meet the high bandwidth and carrier grade requirements of service provider Core and Metro networks, TEMs rely on Kontron 10G/40G ATCA platforms to design their various network elements. Kontron carrier grade communication rackmount servers are also a complementary computing and networking asset.

Carrier Cloud:
With existing network infrastructures in place, service providers compete for their share of cloud-based revenues. TEM suppliers need to provide highly scalable, compute-intensive solutions, which makes Kontron 10G/40G ATCA and CRMS platforms a perfect fit for anything from mobile streaming media services to IPTV.

Access Network:
Thanks to its smaller, compact design, Kontron MicroTCA platforms are used to design various systems across wireless Access networks, including for 3G, femtocell, and 4G LTE (e.g.: eNodeBs).

M2M Networks:
At the Edge, Kontron also designs versatile wired/3G/4G wireless M2M Gateways that collect data from a network of M2M sensor devices, and intelligently and securely transport them across the network.

Security, Deep Packet Inspection: Kontron and Cavium:
Combined hardware and software Kontron-Cavium solutions for extreme performance security and packet processing across the network.

AdvancedTCA Integrated 10G and 40G Core Platforms

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 MO-297 format or 16GB eUSB format for System Manager	25GB / 50GB SATA MO-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; BI: 2x 1G SFP 4x 10G SFP+ FI Interfaces with LRM support, optional Telco PLL (incl. optional syncE support)	2x QSFP configured as 8x 10G uplinks using 2 active copper cables; 1x QSFP configured as 4x 10G and 4x SFP+ uplinks; Telco clocking is standard	All Slots
Open Slots	Based on customer requests for CPU, NPU, DSP or 3rd party specialty blades	Based on customer requests for CPU, NPU, DSP or 3rd party specialty blades	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

MicroTCA OM Core Platforms	OM6061	OM5080
		
CPU	AM4020 (processor), AM4211 (network processor)	2x AM4010 processor AMC
Form Factor	1U	2U
Connectivity	GbE switching, PCIe, SRIO, SATA as P2P	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 customiziation, 2x GbE per AMC, 8 GbE Uplinks or 8 AMC Slots (2x AM4010, 6 slots for customiziation, 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, 2U, and 3U ruggedized, shallow-depth chassis with long life availability and support.

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. They are well suited for enterprise application acceleration and content caching, and for running Telco SoIP, including IPTV, video on demand (VoD), SIP application servers, IP-PBX, and IPPSTN gateways.

Key Benefits:
» Short depth (20"-24"), ruggedized chassis
» "Appliance" look and feel
» Long life product availabiltiy (3-5 years)
» Dual, redundant AC or DC power option
» Hardware RAID option (2U servers only)

IP Network Servers

	IP Network Server NSN2U	IP Network Server NSW1U
Management	Intel® Remote Management Module 3 (RMM3) w/ GCM4 (optional)	Remote Management Module (optional)
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
Flash	Flash storage capability supports specified solid state drives via USB or SATA interface	Flash storage capability supports specified solid state drives (purchased separately)
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
Form Factor	2U chassis	1U chassis
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)
Front Bezel	Customizable front bezel adaptable to customer needs and environment	Customizable front bezel adaptable to customer needs and environment
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 E5440) (45nm) OR for the Intel Xeon processor 5100 series (65nm)
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
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
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 standard
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)
I/O Expansion Type	Optional I/O module enables external SAS storage or additional Quad GbE or Dual 10GbE ports	-
RAID	Software RAID 0,1,10 supported (std); Hardware RAID 5,6 supported as optional module	Software RAID 0,1 supported (std)
Front IO	n/a	Optional Four or Eight front-panel GbE NIC ports (copper or fiber), with optional Bypass capability
Hot Swap	Hot-swap, redundant fans; hot-swap, redundant power supplies; hot-swap hard drives	Hot-swap, redundant power supplies

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, 2U and 3U formfactors.

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

Carrier Grade Servers

	FS3100 Flexible Server	CG2200 Carrier Grade Server	CG2100 Carrier Grade Server	TIGW1U Carrier Grade Server
Processor	Dual socket support for six-core Intel® Xeon® Processors 5600 Series	Dual socket support for Intel® Xeon® 8-Core Processor E5-2600 Series	Dual socket support for six-core Intel® Xeon® Processors 5600 Series	Dual socket support for Intel® Xeon® processors L5410 (45nm) OR for Intel® Xeon® processors LV 5148 or LV 5128 (65nm)
Management	Integrated BMC (iBMC) with advanced options	Integrated BMC (iBMC) with advanced options; Intel® Remote Management Module 4 (RMM4)	Intel® Remote Management Module 3 (RMM3) w/ GCM4 (optional)	Remote Management Module (optional)
Chipset	Intel® 5520 Chipset + ICH10R	Intel® C600 series 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
Flash	-	Supports 2 SD media flash modules-front access; Supports internal flash storage	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)
Drive bays internal	Supports up to 12x hot-swap 2.5" SAS/SATA drives and (2) internal 2.5" SATA drives	Supports up to six hot-swap 2.5" SAS/SATA HDD's	Drive trays for up to six hot-swap 2.5" SAS or SATA hard disk drives	Drive trays for up to three hot-swap 2.5" SAS hard disk drives, DVD-CDR installed
Form Factor	3U chassis	2U chassis	2U chassis	1U chassis
Dimensions (H x W x D)	5.25 x 17.14 x 20 inches (133.35 x 435.3 x 508mm)	3.45 x 17.14 x 20 inches (87.6 x 435.3 x 508 mm)	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)
Front Bezel	Customizable front bezel adaptable to customer needs and environment	Customizable front bezel adaptable to customer needs and environment; Front panel: 1 serial, 1 USB 2.0	Customizable front bezel adaptable to customer needs and environment	Standard gray bezel; customizable bezel available (optional)
Main Memory	12 RDIMM/UDIMM memory slots (DDR3-800/1066/1333). Maximum 96 GB memory	16 slot, 4 channel support of DDR3 RDIMM/UDIMM Supports 256GB maximum (with 16GB DIMM)	12 RDIMM/UDIMM memory slots (DDR3-800/1066/1333). Maximum 96 GB memory	6 DIMM slots supporting FBDIMM memory; 240-pin DDR2-533 and DDR2-667 FBDIMMs can be used; Maximum 32GB memory
PCI Slots	Up to 8 FH/FL PCI-E slots	Supports 2 PCI-E risers (4 FL/FH cards) and 2 LP cards (one internal without rear I/O accessibility) for a total of 6 PCI-E Gen 2 / Gen 3 IO cards	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
Rear I/O	(1) serial, (4) USB 2.0, (2) GbE NIC ports, video, PS/2, HD audio	1 serial, 4 USB 2.0, 1 management NIC port Quad rear GbE NIC ports (standard)	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 (standard)
Power Supply	Dual redundant AC or DC hot swap power supplies	Dual redundant 650W AC or DC Hot Swap Power Supplies 80 PLUS® silver or better efficiency	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)
I/O Expansion Type	n/a	Optional PCI-X riser (2 FL/FH cards)	Optional I/O module enables external SAS storage or additional Quad GbE or Dual 10GbE ports	n/a
RAID	Multiple hardware RAID storage controller options based on 3rd party adapters	Integrated SAS/SATA interface with SW RAID 0/1/5/10; supports a variety of 3rd party HW RAID controllers	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
Alarm Card	n/a	Telco Alarm Management - front-panel feature supports central office alarm systems	Telco Alarm Management - front-panel feature supports central office alarm systems	Telco Alarm Management - front-panel feature supports central office alarm systems
Hot Swap	Hot-swap, redundant power supplies; hot-swap hard drives	Hot-swap, redundant fans; hot-swap, redundant power supplies; hot-swap hard drives	Hot-swap, redundant fans; hot-swap, redundant power supplies; hot-swap hard drives	Hot-swap, redundant power supplies; hot-swap hard drives

» 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.

CONTENTS

» 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, Nvidia Tegra 3, Texas Instruments Sitara 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 mini, 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 40% 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".
For more information, please visit: **www.kontron.com**

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