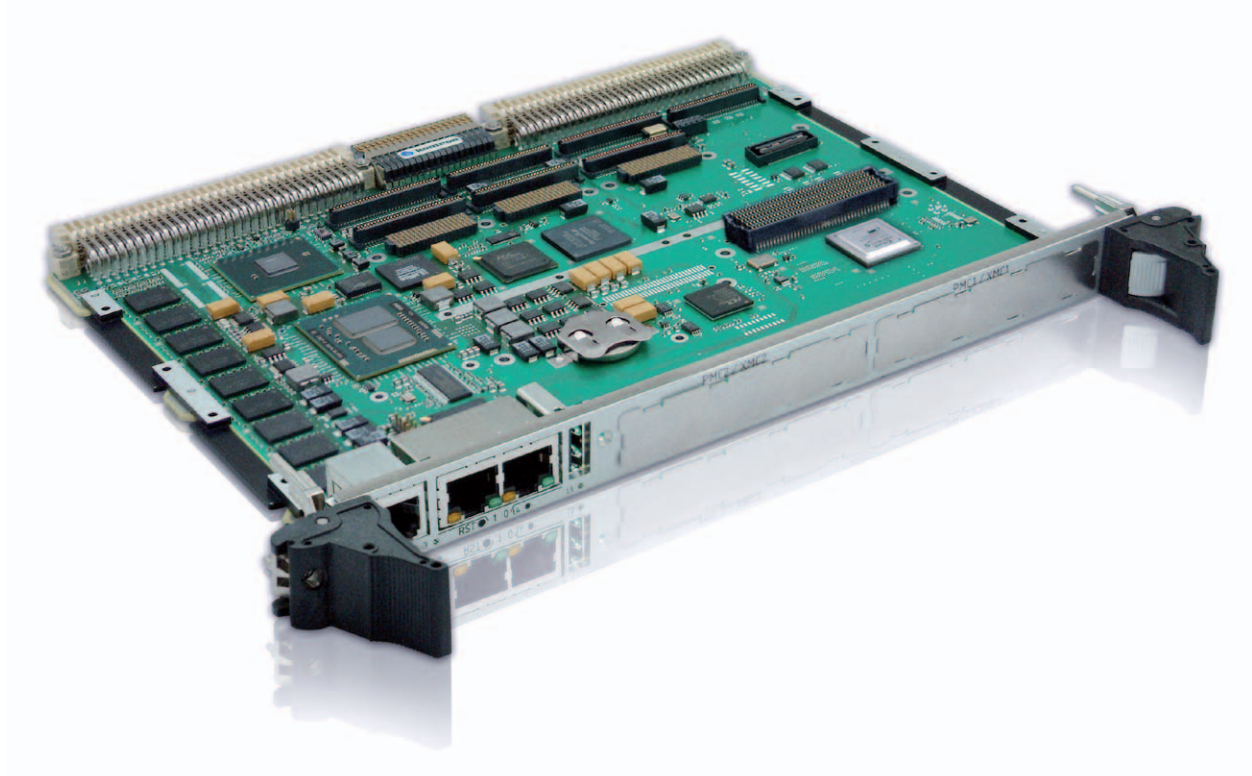# » VM6050 «

6U VME Intel® Core™ i7 Single Board Computer

» High processing capacities
Outstanding performance in VME format with SSE 4.2 CPU instruction set

» Exceptional I/O Versatility
Build the solution fitting your program requirements: XMC, PMC and VITA 57 FMC support, Digital Graphics, Virtex 5 FPGA, SATA disk onboard

» Commercial and Rugged versions
Designed for the most demanding applications

» Extended Life Cycle
Adapted long term support program to your application life cycle

VM6050

6U VME High Performance Intel® Core™ i7 Computer

The VM6050 is built around Intel®'s state of-the-art Core™ i7 dual-core processor. The VM6050 provides exceptional I/O capabilities onboard and outstanding flexibility by providing support for both PMC, XMC and FMC mezzanine cards. The VM6050's VME interface helps customers preserve their investment in legacy VME equipment.

Extensive I/O Connectivity

The VM6050 standard version provides four Gigabit Ethernet interfaces, two serial lines, six GPIO, three USB links, two SATA interfaces, one 4x PCI-Express link and two onboard Mezzanine Sites, supporting PMC/XMC and FMC cards (VITA 57 FPGA I/O). The VM6050 supports the V2PMC2, a 6U VME PCI-X/PMC carrier card that holds up to two single-width or one double-width PCI-X/PMC module.

High Versatility and Customization

The VM6050 offers many options to fit a large range of application requirements: SATA disk onboard, FMC VITA 57 support, USB/SATA Flash slot. And thanks to a specific module plugged on left hand mezzanine slot, the VM6050 can feature Digital Graphics, VGA, additional GPIOs, USB and High Definition Audio IO coming from Core I7 processor.

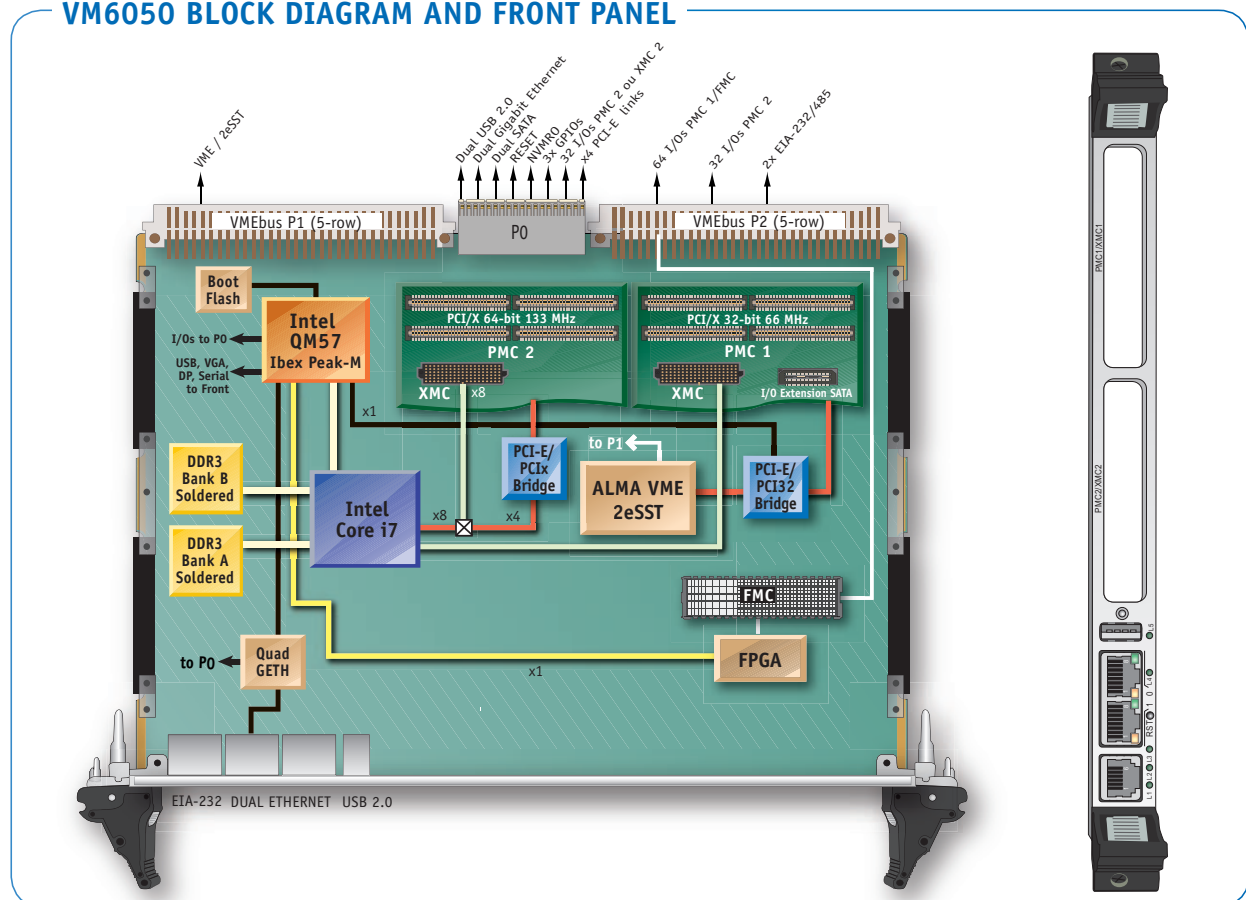Example: VM6050 with two Display Ports module

Long Term Availability

Maximizing the lifetime of an application is a critical issue when it comes to saving development investments. The VM6050 has been designed with long life-cycle components. Beyond the use of standard commercially available components, Kontron offers Longevity of Supply services which are designed to make the VM6050 available for ten years or longer.

Legacy Compatibility

The VM6050 is front and rear I/O compatible with Kontron's PENTXM2/4 and VM6250 SBCs, supporting the same peripherals, Rear Transition Module and PMCs Carrier.

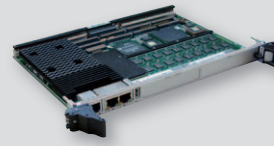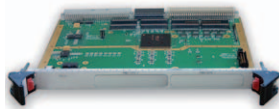## VM6050 BLOCK DIAGRAM AND FRONT PANEL

PowerPC	x86
VM6250	PENTXM2, VM6050

◄ Pinout Compatibility across Silicon Families ►

» Mezzanine Carrier

» Rear Transition Module

» Front Panel I/Os

Technical Information

Processor	Intel® Core™ i7 processor (32nm manufacturing process): » Core i7-620LE Low Voltage, 4 MB L3 cache (shared instruction/data cache between both cores) » Two Cores with Hyperthreading (4 threads total) from 1.2 GHz to 2 GHz » 4 Mbytes cache » Intel Hyper-Threading Technology » Intel Turbo Boost Technology » Intel 64 Technology
Memory	
System Memory	Up to 8 GB dual channel DDR3 SDRAM running at 1066 MHz, with ECC, soldered
Flash (uEFI BIOS)	4 MB FLASH, with recovery image and uEFI BIOS settings
EEPROM	Serial EEPROM (24LC64) 8 KB for storing product VPD
USB/SATA NAND Flash	Flash mezzanine socket for USB or SATA NAND Flash modules (typically 8, 16 or 32 GB)
Onboard Controller	
Platform Controller Hub	Mobile Intel® QM57 Express Chipset:
Gigabit Ethernet	4 x 1000BASE-T (2 front and 2 rear)
Watchdog	FPGA-based, timeout ranging from 1s to 510s, IRQ, Reset, dual-stage
RTC	Integrated in QM57 with 256 Byte CMOS RAM
Front Interfaces	
Standard version	1 x RS232/422/485, 2 x 1000BASE-T, 1 x USB 2.0, LEDS, 2 x PMC/XMC slots
Onboard Interfaces	
Debug Interface	XDP port for processor emulation probe connection
USB/SATA	1 x onboard FLASH mezzanine socket for USB or SATA modules
Mezzanines slots	PMC/XMC/FMC connectors
SATA onboard	SATA connector
Options	
Graphics	Core i7 processor provides high performance 3D graphics features that can be used thanks to an optional module providing two Display Ports either on front panel or on the backplane through P0. » Support for two independent displays » Supports digital display resolutions up to 2560 x 1600 pixels @ 60Hz » Dynamic Video Memory Technology (DVMT) This module is plugged on PMC/XMC left-hand slot.
FMC VITA 57 option	FMC VITA 57 slot with Xilinx Virtex5 LX20T FPGA I/O instead of PMC/XMC right-hand slot
SATA disk carrier option	SATA disk carrier instead of PMC/XMC right-hand slot
5V only	3.3V not required, under power consumption restrictions regarding mezzanines
Other options	Additional USB, HDA, GPIO instead of PMC/XMC left-hand slot, please contact Kontron

Technical Information

Software	Power-on Built-In-Tests testing over 95% of board features
	AMI BIOS version 2.00.1201
	Linux Operating System Fedora 14 Board Support Package
	Real Time Operating System VxWorks
	Windows
Power	Power needs: 3.3V, 5V (+12/-12V if required for mezzanine)
Core i7-620LE @1.2 GHz	Typical/Max: 30W / 42W
Core i7-620LE @ 2 GHz	Typical/Max: 40W / 54W
Weight	Standard Air-Cooled Version: 430g approx. / Conduction-Cooled Version: 700g approx.

Environmental Specifications

	SA Standard Commercial	WA Extended Temperature	RA Rugged Air-Cooled	RC Rugged Conduction-Cooled
Conformal Coating	Optional	Standard	Standard	Standard
Airflow	1.2 m/s	1.5 m/s	1.8 m/s	NA
Temperature	VITA 47-Class AC1	VITA 47-Class AC2	VITA 47-Class AC3	VITA 47-Class CC4
Cooling Method	Convection	Convection	Convection	Conduction
Operating	0° to +55°C	-20° to +65°C	-40° to +71°C	-40° to +85°C
Storage	-45° to +85°C	-45° to +85°C	-45° to +100°C	-45° to +100°C
Vibration Sine (Operating)	20-500 Hz - 2g	20-500 Hz - 2g	20-2,000 Hz - 3g	20-2,000 Hz - 5g
Random	VITA 47-Class V1	VITA 47-Class V1	VITA 47-Class V2	VITA 47-Class V3
Shock (Operating)	20g/11 ms Half Sine	20g/11 ms Half Sine	40g/20 ms Half Sine	40g/20 ms Half Sine
Altitude (Operating)	-1,640 to 15,000 ft	-1,640 to 33,000 ft	-1,640 to 33,000 ft	-1,640 to 60,000 ft
Relative Humidity	90% without condensation	95% without condensation	95% without condensation	95% without condensation

Ordering Information

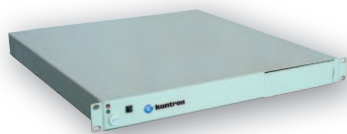| Article	Order Code	Description
Fast Track Order Code deliverable in less than 15 days:		
VM6050	VM6050-2SA34-10110	Air-Cooled version, Core i7 @2 GHz, 4 GB DDR3, 8 GB Flash, 2 PMC/XMC slots
VM6050	VM6050-2SA34-12110	Air-Cooled version, Core i7 @2 GHz, 4 GB DDR3, 8 GB Flash, 1 PMC/XMC slot, 2 front display ports
EZ1-VM6050	EZ1-VM6050	Turnkey evaluation and development platform

VM6050 options: make your choice !

> Class: SA, WA, RA, RC
> Digital and VGA Graphics onboard
> Conformal Coating, additional USB & GPIOs and HDA.

> Memory: 4 GB, 8 GB
> Mezzanine slots: 2 PMC, 2 PMC/XMC, VITA 57 FMC support, onboard SATA connector

Please contact Kontron support-kom-sa@kontron.com or your Kontron Sales representative to define the version fitting your requirements.

ASSOCIATED PRODUCTS

Evaluation System

EZ1-VM6050

Rear Transition Module

PBV36-P0-VM6-00

SATA Disk Carrier

KIT-DISK25-SATA

PMCs carrier

V2PMC2

CORPORATE OFFICES

Europe, Middle East & Africa

Oskar-von-Miller-Str. 1
85386 Eching/Munich
Germany

Tel.: +49 (0)8165/ 77 777
Fax: +49 (0)8165/ 77 219

info@kontron.com

North America

14118 Stowe Drive
Poway, CA 92064-7147
USA

Tel.: +1 888 294 4558
Fax: +1 858 677 0898

info@us.kontron.com

Asia Pacific

17 Building,Block #1,ABP.
188 Southern West 4th Ring Road
Beijing 100070, P.R.China

Tel.: + 86 10 63751188
Fax: + 86 10 83682438

info@kontron.cn

www.kontron.com