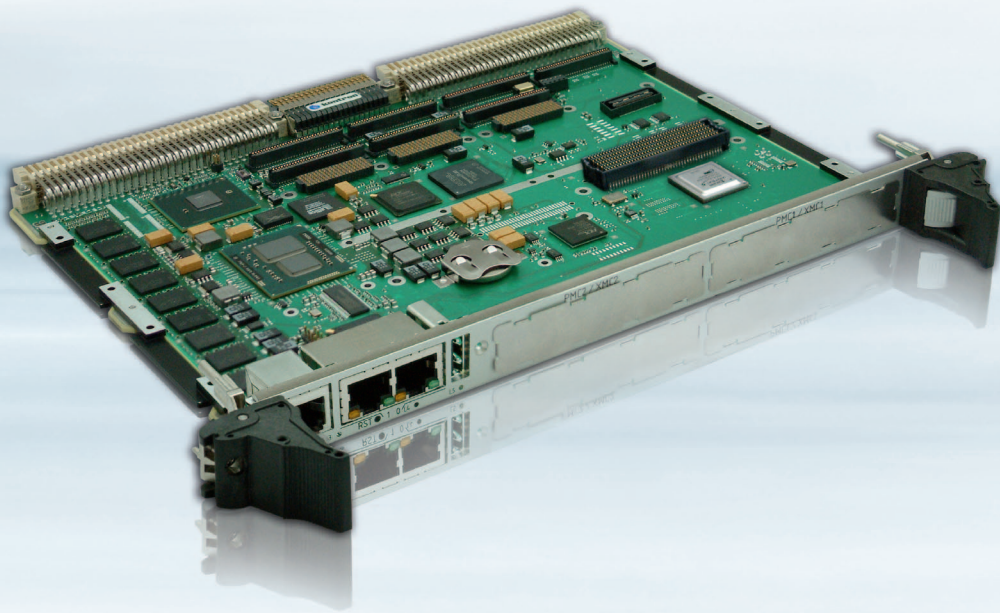


# VM6050

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## 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

POSSIBILITIES START HERE



# 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.

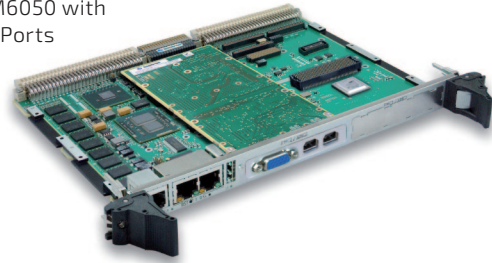
## EXTENSIVE I/O CONNECTIVITY

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



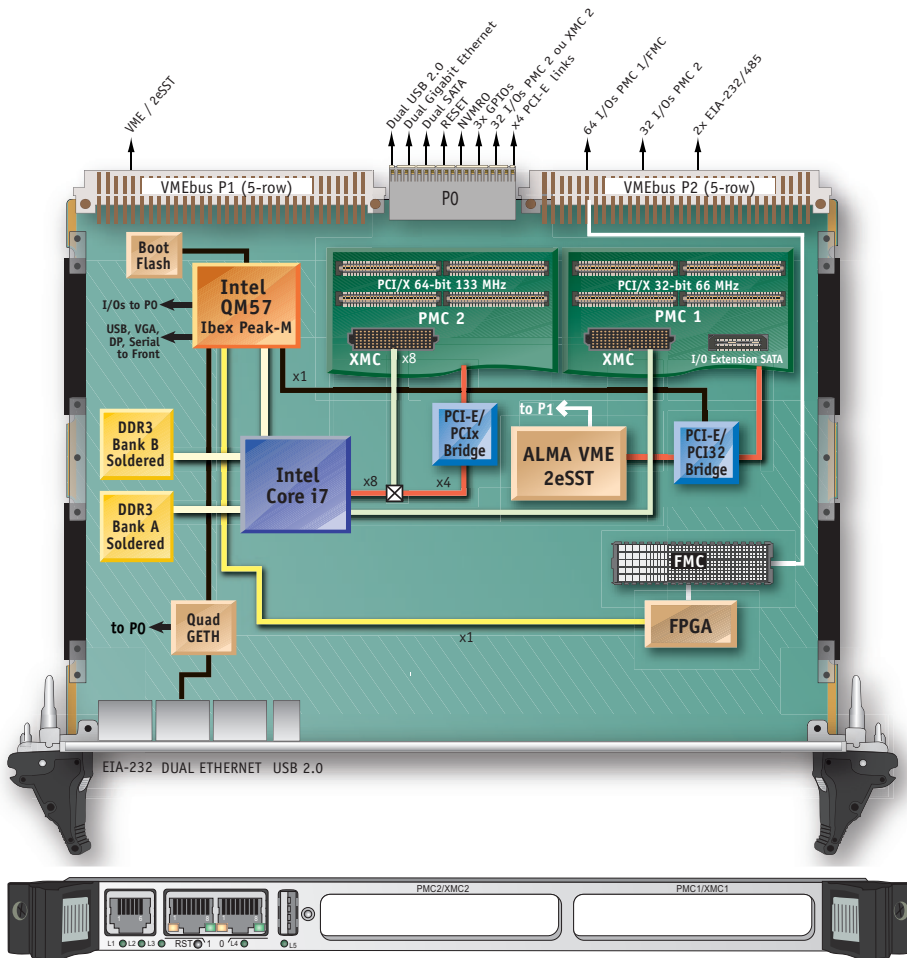
## LONG TERM AVAILABILITY

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

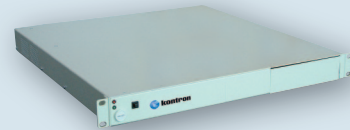
The VM6050 is front and rear I/O compatible with Kontron's PENTXM2/4 and VM6250 SBCs, supporting the same peripherals, Rear Transition Module and PMCs Carrier.

## ▶ VM6054 BLOCK DIAGRAM AND FRONT PANEL



## ASSOCIATED PRODUCTS

### EVALUATION SYSTEM



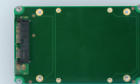
EZ1-VM6050

### REAR TRANSITION MODULE



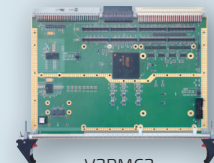
PBV36-P0-VM6-00

### SATA DISK CARRIER

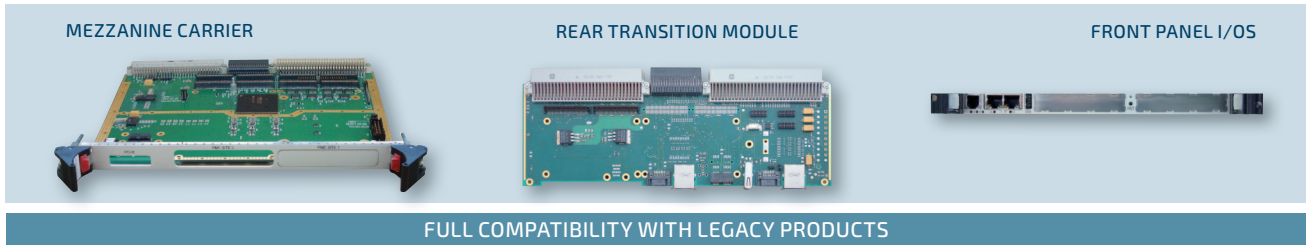
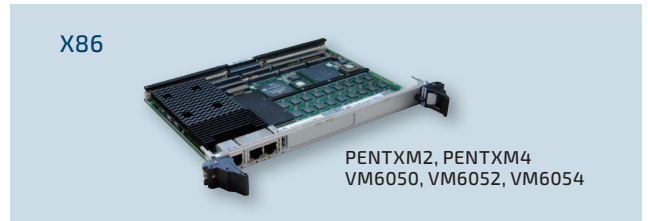
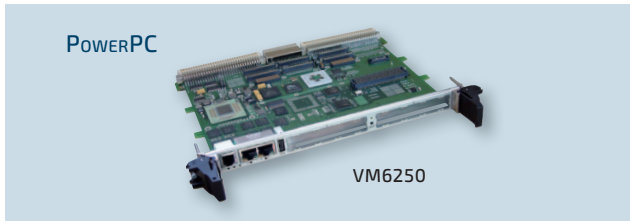


KIT-DISK25-SATA

### PMCs CARRIER



V2PMC2



► TECHNICAL INFORMATION

<b>PROCESSOR</b>		<p>Intel® Core™ i7 processor (32nm manufacturing process):</p> <ul style="list-style-type: none"> <li>▶ Core i7-620LE Low Voltage, 4 MB L3 cache (shared instruction/data cache between both cores)</li> <li>▶ Two Cores with Hyperthreading (4 threads total) from 1.2 GHz to 2 GHz</li> <li>▶ 4 Mbytes cache</li> <li>▶ Intel Hyper-Threading Technology</li> <li>▶ Intel Turbo Boost Technology</li> <li>▶ Intel 64 Technology</li> </ul>
<b>MEMORY</b>	<p>System Memory</p> <p>Flash (uEFI BIOS)</p> <p>EEPROM</p> <p>USB/SATA NAND Flash</p>	<p>Up to 8 GB dual channel DDR3 SDRAM running at 1066 MHz, with ECC, soldered</p> <p>4 MB FLASH, with recovery image and uEFI BIOS settings</p> <p>Serial EEPROM (24LC64) 8 KB for storing product VPD</p> <p>Flash mezzanine socket for USB or SATA NAND Flash modules (typically 8, 16 or 32 GB)</p>
<b>ONBOARD CONTROLLER</b>	<p>Platform Controller Hub</p> <p>Gigabit Ethernet</p> <p>Watchdog</p> <p>RTC</p>	<p>Mobile Intel® QM57 Express Chipset:</p> <p>4 x 1000BASE-T (2 front and 2 rear)</p> <p>FPGA-based, timeout ranging from 1s to 510s, IRQ, Reset, dual-stage</p> <p>Integrated in QM57 with 256 Byte CMOS RAM</p>
<b>FRONT INTERFACES</b>	Standard version	1 x RS232/422/485, 2 x 1000BASE-T, 1 x USB 2.0, LEDs, 2 x PMC/XMC slots
<b>ONBOARD INTERFACES</b>	<p>Debug Interface</p> <p>USB/SATA</p> <p>Mezzanines slots</p> <p>SATA onboard</p>	<p>XDP port for processor emulation probe connection</p> <p>1 x onboard FLASH mezzanine socket for USB or SATA modules</p> <p>PMC/XMC/FMC connectors</p> <p>SATA connector</p>
<b>OPTIONS</b>	<p>Graphics</p> <p>FMC VITA 57 option</p> <p>SATA disk carrier option</p> <p>5V only/no P0</p> <p>Other options</p>	<p>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.</p> <ul style="list-style-type: none"> <li>▶ Support for two independent displays</li> <li>▶ Supports digital display resolutions up to 2560 x 1600 pixels @ 60Hz</li> <li>▶ Dynamic Video Memory Technology (DVMT)</li> </ul> <p>This module is plugged on PMC/XMC left-hand slot.</p> <p>FMC VITA 57 slot with Xilinx Virtex5 LX20T FPGA I/O instead of PMC/XMC right-hand slot</p> <p>SATA disk carrier instead of PMC/XMC right-hand slot</p> <p>VMC64 compatible version: 3.3V not required, under power consumption restrictions regarding mezzanines No P0 connector fitted</p> <p>Additional USB, HDA, GPIO instead of PMC/XMC left-hand slot, please contact Kontron</p>
<b>SOFTWARE</b>		<p>Power-on Built-In-Tests testing over 95% of board features</p> <p>AMI BIOS version 2.00.1201</p> <p>Linux Operating System Fedora 14 Board Support Package</p> <p>Real Time Operating System VxWorks</p> <p>Windows</p>

## ► TECHNICAL INFORMATION

<b>POWER</b>	Core i7-620LE @1.2 GHz Core i7-620LE @ 2 GHz	Power needs: 3.3V, 5V (+12/-12V if required for mezzanine) Typical/Max: 30W / 42W Typical/Max: 40W / 54W
<b>WEIGHT</b>		Standard Air-Cooled Version: 430g approx. / Conduction-Cooled Version: 700g approx.

## ► ENVIRONMENTAL SPECIFICATION

	SA - STANDARD COMMERCIAL	WA - EXTENDED TEMPERATURE	RA - RUGGED AIR-COOLED	RC - RUGGED CONDUCTION-COOLED
<b>CONFORMAL COATING</b>	Optional	Standard	Standard	Standard
<b>AIRFLOW</b>	1.2 m/s	1.5 m/s	1.8 m/s	NA
<b>TEMPERATURE</b>	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	-40° to +85°C	-45° to +85°C	-45° to +100°C	-45° to +100°C
<b>VIBRATION SINE (OPERATING)</b>	20-500 Hz - 2g	20-500 Hz - 2g	20-2,000 Hz - 3g	20-2,000 Hz - 5g
<b>RANDOM</b>	VITA 47-Class V1	VITA 47-Class V1	VITA 47-Class V2	VITA 47-Class V3
<b>SHOCK (OPERATING)</b>	20g/11 ms Half Sine	20g/11 ms Half Sine	40g/11 ms Half Sine	40g/11ms Half Sine
<b>ALTITUDE (OPERATING)</b>	-1,500 to 60,000 ft	-1,500 to 60,000 ft	-1,500 to 60,000 ft	-1,500 to 60,000 ft
<b>RELATIVE HUMIDITY</b>	90% without condensation	95% without condensation	95% without condensation	95% without condensation

## ► ORDERING INFORMATION

ARTICLE	ORDER CODE	DESCRIPTION
VM6050	VM6050-2SA34-00110	6U VME SBC Core i7 620LE @ 2 GHz, SA class, 4 GB SDRAM, 2 PMC/XMC
VM6050	VM6050-2WA34-00110	6U VME SBC Core i7 620LE @ 2 GHz, WA class, 4 GB SDRAM, 2 PMC/XMC
VM6050	VM6050-2RA34-00110	6U VME SBC Core i7 620LE @ 2 GHz, RA class, 4 GB SDRAM, 2 PMC/XMC
VM6050	VM6050-2RC34-10110	6U VME SBC Core i7 620LE @ 2 GHz, RC class, 4 GB SDRAM, 8GB USB Flash, 2 PMC/XMC

### TURNKEY EVALUATION PLATFORM:

<b>EZ1-VM6050</b>	EZ1-VM6050-00-L	Turnkey VME development System based on VM6050-2SA34-10110-L. I/Os: 4xGbE, 3xUSB, 2xSATA, 2 front DisplayPorts + one PMC/XMC slot. Linux Fedora 14 distribution - Kernel 2.6.35
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### 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 [sales.KFR@kontron.com](mailto:sales.KFR@kontron.com) or your Kontron Sales representative to define the version fitting your requirements.

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