

VP12

Intel Core i7 Based Dual Slot Rugged VME Single Board Computer

The VP12 Rugged Single Board Computer (SBC) from Abaco Systems features the high performance, highly integrated Core i7 processor platform from Intel.

Core i7 offers integrated graphics and memory controller plus dual core processing up to 2.53 GHz all in one device. Coupled with the Mobile Intel QM57 Express Chipset this provides an unmatched level of I/O bandwidth for both on-board and off-board functions.

Features of the Core i7 processor

- Intel Intelligent Power Technology allows processors to operate at optimal frequency and power.
- Intelligent performance on-demand with Intel Turbo Boost Technology
- Multi-level shared cache improves performance and efficiency by reducing latency to frequently used data
- Hyper-Thread Technology – 2 threads per core
- Streaming SIMD extensions 4.1/4.2

In addition to a comprehensive range of onboard IO features, the VP12 also offers two onboard mezzanine expansion sites for enhanced system flexibility. Memory resources include up to 8 GB DDR3 SDRAM, 16 GB NAND Flash, one or two optional onboard SATA Hard drives, BIOS Flash and optional BIOS backup Flash.

The VP12 is designed to meet the requirements of a wide range of applications from industrial through to Defense and Aerospace programs.

FEATURES:

- Intel® Core i7 processor up to 2.53 GHz
 - Integrated two channel DDR3-1067 memory controller with ECC
 - Up to 4 MB shared cache
- Up to 8 GB DDR3 SDRAM with ECC
- Up to 16 NAND Flash (soldered)
- Dual onboard expansion sites:
 - 1x PCI-X PMC / x8 PCIe XMC
 - 1x PCI 66 MHz PMC
- Front I/O
 - 2x Gigabit Ethernet
 - 1x USB
 - 1x VGA
 - 1x COM port
- Rear I/O
 - 2x Gigabit Ethernet ports (VITA 31.1)
 - 1x VGA (2x ports possible if front I/O not required)
 - 2x DVI
 - 2x SATA ports
 - 2x COM ports
 - 2x USB ports
 - 12x GPIO
 - 2x PMC I/O signals
 - IPMI 2.0, PICMG® 2.9
- BIOS backup Flash
- One or two optional onboard SATA HDDs
- Optional extended operating temperature range
- Dual slot 6U VME64 form factor
- Compliant to IEEE STD 1101.2-1992 & ANSI/VITA 20-2001, VITA 30.1
- Operating system support for VxWorks®, Linux®, and Windows®

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Specifications

Processor

- Intel Core i7 32nm processor, options include but are not limited to:
 - ULV @ 1.06 GHz
 - LV @ 2.0 GHz
 - SV @ 2.53 GHz
- Up to 4 MB shared cache
- Integrated two channel DDR3-1067 memory controller with ECC

SDRAM

- Maximum memory configuration of up to 8 GB DDR3 SDRAM soldered with ECC

Flash Memory

- Soldered NAND flash array up to 16 GB

UEFI (replaces BIOS)

- The VP12 System UEFI includes all functions required by the processor core and chipset
- Will also support expansion ROM code for remote booting from either of the dual Ethernet ports

Ethernet

- Dual Gigabit Ethernet interface via two Intel 82574 Gigabit Ethernet controllers - routed to front panel
- Dual Gigabit Ethernet interface via two Intel 82574 Gigabit Ethernet controllers - routed to rear (VITA31.1 compliant)

USB Ports

- Three USB 2.0 ports: one routed to front panel I/O, and two to rear P2 connector
- Keyboard and Mouse (PS2) emulation via USB

VMEbus Backplane Interface

- 2eSST capable via TSi148 (ANSI/VITA 1.5-2003 offering bandwidths up to 320 MB/s) Serial Ports
- Three 16550 compatible full duplex async serial ports

Serial Ports

- Three 16550 compatible full duplex async serial ports
 - One routed to front panel RS232 (COM3)
 - Two routed to P2, with user selectable RS232/422/485
- Ports feature independent 16-byte FIFO supporting baud rates up to 115 Kbaud

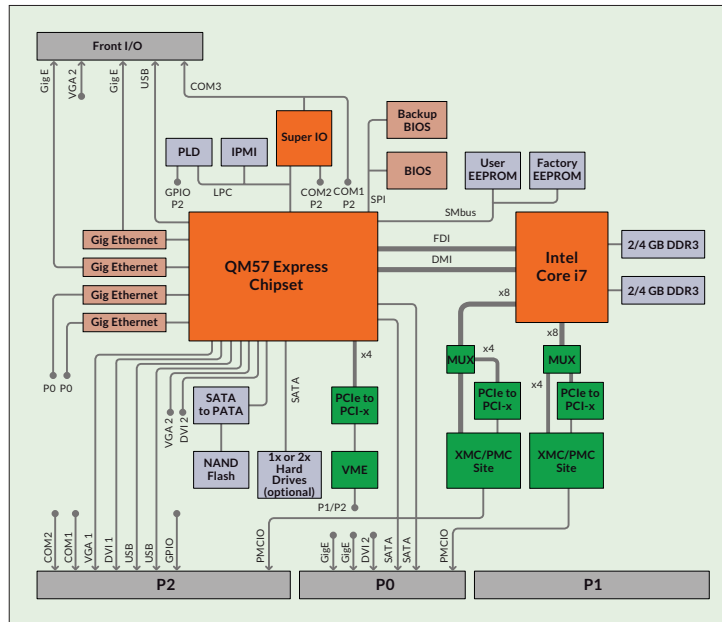
PMC/XMC Expansion

- Up to 2 onboard mezzanine expansion sites, one of which offers PMC (PCI-X up to 64bit /133MHz) and XMC (x8 PCIe Gen 2) capable. The other offers 64-bit / 66 MHz PMC
- PCI signaling is 3.3V, with 5V tolerance when operated at 33 MHz

Video

- Provided via the integrated Intel Graphics Controller
- One VGA port routed to front panel (or optionally to rear panel)
- One VGA port plus two TMDS (DVI-D) ports routed to rear IO (for use with VTM24)
- Any two ports can be used for dual display operation

Block diagram



SATA

- Two SATA to rear IO (P0)

GPIO

- 12 GPIO pins - software configurable

IPMI

- IPMI interface via Baseboard Management Controller (PICMG 2.9)

Onboard hard drive

- Up to two 2.5" SATA hard drives or Flash disks can be optionally ordered (precludes use of PMC site 2)

Power requirements

- +5, +3.3V (plus +12V/-12V if required by mounted PMC module)

EEPROM / Watchdog / RTC / Timers / Temp sensors

- 512 kbit serial EEPROM for non-volatile user data

- SuperIO watchdog
- 146818 compatible with Li battery
- Legacy PC-AT timer and HPET (High Precision Event Timer) provided from Ibex Peak Controller
- CPU die and Chipset die, software readable

Other HW features

- Hardware Write Protection (rear pin)
- Front power button (and rear)
- Three status LEDs and four BIT status LEDs at front, two status LED signals at rear
- IPMI 2.0 Controller (VITA 38)
- Compliant to IEEE STD 1101.2-1992 and ANSI/VITA 20-2001, VITA 30.1

Transition Module

- VTM24

Software

- Support for Windows, Linux, VxWorks

Environmental

	Level 1	Level 2
Cooling Method	Convection	Convection
Conformal Coating	Optional	Standard
High/Low Temp	0 to 55°C	-20 to +65°C
Operational	(300 ft/m)	(300 ft/m)
Random Vibration	0.002g2/Hz*	0.002g2/Hz*
Shock	20g**	20g**

*With a flat response to 1000 Hz, 6 dB/Oct roll-off from 1000 to 2000 Hz, **Peak sawtooth 11 ms duration

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