Core i7 VME 64x Single Board Computer

**KEY FEATURES AND BENEFITS**
- Rugged 6U VME SBC
- Upto 8 GB DDR3 SDRAM
- Intel Qm57 chipset.
- 8 MB BIOS
- IDE compact flash interface
- VME 64x support
- On-board VGA up to 2048 x 1536 resolution
- Single/Dual 18/24-bit Low Voltage Differential Signalling (LVDS)
- One PMC / XMC slot
- 32 bit PCI on P0 and personality module
- Upto four RS-232 or 422 serial port
- Eight discrete I/O lines
- Seven USB 2.0 interfaces
- Power management
- Linux, QNX and Windows
- BIST
- COM express carrier (Type 2)

**APPLICATIONS**
- Mission computers
- Graphics display units
- Check-out systems

**DESCRIPTION**
6U VME SBC, based on Intel® Core™ i7 embedded processor series upto 2.53GHz is the next generation of 64-bit, dual core processors built on 32nm process technology with intelligent performance, power efficiency, integrated graphics and Error Correcting Code (ECC) memory on industry-standard x86 architecture. Intel® Core™ i7 processor is paired with the mobile Intel® Qm57.

**BLOCK LEVEL EXPLANATION**
The board is built on VME platform with 64x support, on 6U form factor. To ensure high reliability under extreme operating conditions the module is capable of accurate temperature self-monitoring and power dissipation control through on-board temperature sensors.

**COM Express Processor Module**
This module is a standard type 2 compliant COM express carrier in VME backbone architecture and has one PMC/XMC slot.

**PMC/XMC Slot Interface**
The module is equipped with 64bit, 100 MHz PMC slot or x8 PCIe XMC slot. This slot is directly interfaced to the processor. This slot is interfaced with two personality modules through 32 bit PCI bus and is extended to P0 connector for I/O expansion daughter cards.

**Power Supply**
The COM express processor requires 5V power supply along with auxiliary 5V stand-by supply and 3V battery backup for RTC interface. All the on board power rails are generated from 5V. The +/-12V for the PMC / XMC I/Os is supplied through backplane.
SATA
- Four SATA II ports fully compliant with SATA 2.0 *
- Supports data transfer rate up to 300MB/s
- Enables easy connection with industry standard mass storage devices.

USB
- Seven USB ports, fully compliant with USB 2.0 and 1.0
- Two ports routed to Front panel
- Two ports routed to VME rear P2 connector
- One port used for on board SSD mass storage
- Two ports routed to VME P0 connector

PERSONALITY MODULE
- One personality module to interface specific I/O application requirements like 10/100/1000 Mbps Ethernet, Fast SCSI, GPIO, Arinc429, dual 1553B, RS232/422, mass memory storage etc.

I/O INTERFACE
- 32bit PCI bus operates at 33MHz

SERIAL I/O
- Four RS232/422/485 software configurable serial ports

Audio
- High definition audio controller
- Audio Out/MIC input
- Front panel interface

I/O INTERFACE
Front I/O
- One 10/100/1000 Mbps Ethernet port
- Two USB ports
- One RS232 port
- One VGA
- Audio, LVDS

Rear P0 Interface
- Four SATA 2.0 ports *
- PCI 32bit, 33 MHz interface
- Personality Module I/O
- Two USB ports

Rear P2 Interface
- Two 10/100/1000 Mbps Ethernet ports
- Two USB ports
- Four RS232 or RS422
- Four GPIO and four GPI

* - SATA port 4 and compact flash interface mutually exclusive
SPECIFICATIONS

MISCELLANEOUS

RTC
- Battery backed RTC.

Watch Dog Timer
- Programmable in 1 µsec intervals ranging from 1µsec to 99.99 sec to reset the board to generate a high priority interrupt
- Reset and interrupt selection option.

Temperature Sensor
- On board temperature sensor to measure the processor die temperature.

General Purpose I/O
- Upto 8 GPIO via P2 connector can be configured as Transistor - Transistor Logic (TTL) or Low Voltage Complementary Metal Oxide Semiconductor (LVCMOS) or open drain outputs. Four line can be configured as input and four as output.

SOFTWARE

Windows
- 5.5/Tornado 2.2 and further versions
- Linux 2.6 and further versions
- LynxOS 4.0 and further versions
- QNX 6.5 and other versions

CONNECTOR DETAILS

PMC connectors, Primary XMC connector, COM express connector, VME connectors, PCI connector, RPM connectors, USB connectors, VGA/ DVI connector, COM1 Rs232, ethernet1 connector, reset switch and compact flash connector.

POWER

- 5V stand-by power supply, +12V and -12V input voltage
- 35W to 55W power consumption at 1.06GHz to 2.53 GHz (without PMC / XMC / RPM)

MECHANICAL

- Board (Main) in mm : 233.35(L) x 160(B) x 20.32(W)
- Module (Main Board) : Single Slot 6U (H), 4T (W)
- Air cooled and conduction cooled versions available.

ENVIRONMENT

- Operating Temperature : -20°C to +55°C
- Storage Temperature : -40°C to +71°C
- Humidity : 95% RH

I/O OPTIONS

P0 I/O Options
00 : P0_PMIO_1 to 20, SATA PORT 0 and 2, USB Port 6, x4 P0 PCI
01 : P0_PMIO_1 to 15, SATA PORT 0, 1 and 2, USB Port 6, x4 P0 PCI
10 : P0_PMIO_1 to 10, SATA PORT 0, 1 and 2, USB Port 5 and 6, x4 P0 PCI
11 : P0_PMIO_1 to 10, SATA PORT 0, 1, 2 and 3, USB Port 5 and 6, x4 P0 PCI

P2 I/O Options
0 : 0-10/100/1000 Mbps ETH Port1
1- P2_PMIO_1 to 8
1 : 0-P2_PMIO_9 to 11
1- USB2.0 Port 4
2 : 0-P2_PMIO_12 to 19
1- Rear VGA Port
3 : 0-USB Port3/0-COM3 -RS232-NM
1- PS/2 Key board/1- PS/2 Mouse
4 : 0-COM4 -RS232-FM, COM2/COM5-RS232-NM
1- COM2/COM4/COM6 RS422-NM
5 : 00-PMCIO_01 to 64
10-PMIO_20 to 28, GPO 1 to 4, GPI 1 to 4, HRESET
11-PMCIO_01 to 55, GPO 1 to 4, GPI 1 to 4, HRESET
7 : 0 - Reserved

Eg:

<table>
<thead>
<tr>
<th>7</th>
<th>6</th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

Hex value 1 6
SPECIFICATIONS

DP - VME - 0669 - X X X X X X X X X X

- Environmental class 1, 2, 3A, 4, 5
- I/O option - P0 - 00 to 11 (refer P0 I/O option)
- I/O option - P2 - 00 to 11 (refer P2 I/O option)

Graphics Interface
- 0 - VGA output
- 3 - LVDS
- 6, 9 - VGA and LVDS

IDE Flash
- 0 - None
- 9 - 8 GB IDE Compact Flash and 128MB NVSRAM

HAD Audio
- 0 - No Audio interface
- 3 - Audio interface with one channel Audio output and one MIC input

Ethernet
- 0 - Gigabit ethernet port1 - Front
- 3 - Gigabit ethernet port1 - Rear P2 and gigabit ethernet port2 - Rear P2
- 6 - Gigabit ethernet port1 - Rear P2 and gigabit ethernet port2 - Rear P2

PMC/ XMC
- 0 - None
- 3 - PMC Interface
- 6 - XMC Interface
- 9 - PMC and XMC Interface (connectors only)

SSD / VME Interface
- 0 - No SSD memory device
- 3 - 4 GB -16 GB SSD (Based on application requirement)
- 6 - No VME interface and SSD

DDR3 SDRAM
- 0 - 2 GB DDRIII SDRAM
- 3 - 4 GB DDRIII SDRAM
- 6 - 8 GB DDRIII SDRAM
- 9 - 4 GB DDRIII SDRAM with ECC

CPU
- 0 - Core i7 Processor at 2.53 GHz
- 3 - Core i7 Processor at 2.0 GHz
- 6 - Core i7 Processor at 1.06 GHz
- 9 - Type 2 compliant other COM express processors.

Cooling
- 3 - Air cooled
- 6 - Conduction cooled

Grade
- 3 - Commercial temperature range
- 6 - Rugged wide temperature range

For further details contact factory