GE Fanuc
Intelligent Platforms

SBC330

3U VPX Single Board Computer

Features

- High performance 3U VPX SBC
- 8641D PowerPC® to 1.5 GHz
- Dual or single core variants
- 1 MByte L2 cache per core
- Up to 2 GBytes ECC DDR2 SDRAM at 600 MHz
- 512 Mbytes Flash
- Two PCI Express ports to backplane One x8 port, plus one x4 port
- Two 10/100/1000 Ethernet ports
- Two SATA 150 ports
- Two serial ports
- PS/2 keyboard & mouse
- Eight Digital IO ports to P2
- Air cooled and conduction cooled versions
- Comprehensive VxWorks® BSP software
- GE Fanuc AXIS software support
- BMM support

The VPXteme3 SBC330 is designed to maximize the benefits of the latest Freescale 8641D dual core processor, and delivers a quantum leap in processing and IO bandwidth over previous generations. Thermally optimized to run the processor at its limits, the SBC330 is targeted at the most demanding applications of embedded computing.

The VPXteme3 product family offers PowerPC SBCs in 3U VPX form factor and offers long term program support by maintaining a common hardware and software architecture between family members, reducing customer integration issues of future family members.

Each PowerPC core, operating at up to 1.5 GHz, has 1 MByte L2 cache and an AltiVec™ vector processor. The 8641D can support symmetric or asymmetric multiprocessing* and its dual 64-bit DDR2 memory controllers can be assigned to each core for increased operating system isolation, or can be shared between the cores.

The VPX form factor allows for backplane bandwidths unimaginable with CompactPCI or VME using either packet-based PCI-Express or rapid-IO communications. Fully connected mesh topologies allow for more than tenfold increases in system bandwidth over legacy bussed or circuit switched interconnects.

The 8641D natively supports two 8-lane PCI-Express ports. One of these is routed directly to the backplane, where it may be used to connect to peripheral devices, such as the GRA110 graphics processing unit. The second PCI-Express interface routes into a PCI-Express switch, from which four lanes are routed to the backplane and the remaining lanes provide interconnect to USB and Serial ATA interfaces.

The SBC330 also incorporates a number of other high-speed, off-board Interfaces, including 480 Mbps USB 2.0 and SATA 300.

Support for legacy interfaces such as RS232 COM ports and PS2 keyboard/mouse as well as software programmable digital IO lines has not been forgotten.

Like other members of the VPXtreme3 family, the SBC330 incorporates a BIT Management Microcontroller (BMM) to allow the coordination of BIT reporting over the VPX I²C based System Management (SM) bus.

The SBC330 benefits from a comprehensive VxWorks OS, which includes AXIS support Deployed test software (BIT) is planned for future availability.

* depending on operating system support

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Specifications

Processor
- 8641D Dual Core PowerPC @ up to 1.5 GHz
- 1 MByte of L2 full speed on-chip cache per core

RAM Main memory
- Up to 2 GBytes DDR2 SDRAM with ECC

Flash memory
- 256 MBytes Flash fitted as standard.
- Boot Sector and Write protect options

PCI Express ports
- One 8-lane PCIe directly to backplane
- One 4-lane PCIe to backplane via a PCIe switch

Ethernet interfaces
- Two 10/100/1000 base-T ports

SATA interfaces
- Two SATA disk ports : SATA-2 300 Mbps

Serial interfaces
- Two ports RS232, with hardware control

PS/2 interfaces
- PS/2 keyboard and mouse

USB interfaces
- Four USB 2.0 interfaces
  (One at high speed, other three at standard speed)

Discrete digital I/O
- 8 bits of digital I/O, each can generate interrupt

Other hardware features
- Real-time clock
- Elapsed Time indicator
- 2x watchdog timers

Temperature sensors /control
- Two sensors ; CPU die and ambient
- Software programmable switch off

Software support
- VxWorks BSP
- BIT (planned)

Power requirements
- +5V only for Power @ 15 Amps Max
- +5V at 7 Amps @ 1000/400 MHz typical operation
- P3V3_AUX and or VBAT may be supplied to
  supply the real-time clock and BMM only.

Environmental
- Five Levels, (1 - 5)
  - Convection -40 to +75 °C
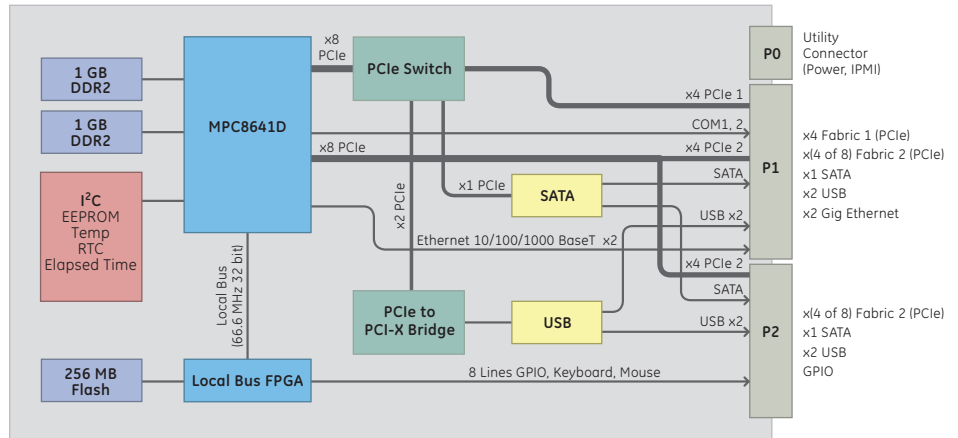 - Conduction -40 to +85 °C

Weight
- Max with conduction heatsink: 584 grams

Safety/Emissions
- Designed to meet UL1950/60950
- Designed to meet FCC part 15, subpart A.

Block Diagram

Environmental Levels

	Level 1	Level 2	Level 3	Level 4	Level 5
Cooling Method	Convection	Convection	Convection	Conduction	Conduction
Conformal Coating	Optional	Standard	Standard	Standard	Standard
High/Low Temp Operational	0 to 55°C (300 ft/m)	-20 to +65°C (300 ft/m)	-40 to +75°C (600 ft/m)	-40 to +75°C At cold wall	-40 to +85°C At cold wall
Random Vibration	$0.002g^2/Hz$*	$0.002g^2/Hz$*	$0.04g^2/Hz$**	$0.1g^2/Hz$**	$0.1g^2/Hz$**
Shock	20g***	20g***	20g***	40g***	40g***

**With a flat response to 1000 Hz, 6 dB/Oct roll-off from 1000 to 2000 Hz   ** From 10 to 1000 HZ   ***Peak sawtooth 11 ms duration

Ordering Information

SBC330- (L.F.M.R.S)
L = level (1 -5); **F** = Core/GHz (1 = 1.0 GHz, 3 = 1.33 GHz, 5 = 1.5 GHz); **M** = memory (3 = 2x 1 GByte);
R = reserved = 0; **S** = software (3 = VxWorks only, 4 = BIT + VxWorks)

Examples:
SBC330-13303 = SBC330 level 1, (0 to 55 °C), 1.33 GHz, 2 GBytes RAM, VxWorks only
SBC330-55303 = SBC330 level 5, (-40 to +85 °C), 1.50 GHz, 2 GBytes RAM, VxWorks only
SBC330-31303 = SBC330 level 3, (-40 to +75 °C), 1.00 GHz, 2 GBytes RAM, VxWorks only

About GE Fanuc Intelligent Platforms
GE Fanuc Intelligent Platforms is a leading global provider of embedded computing solutions for a wide range of industries and applications. Our comprehensive product offering includes many types of I/O, single board computers, high performance signal processors, fully integrated, rugged systems including flat panel displays, plus high speed networking and communications products. The company is headquartered in the U.S. and has design, manufacturing and support offices throughout the world. Whether you're looking for one of our standard products or a fully custom solution, GE Fanuc Intelligent Platforms has the breadth, experience and 24/7 support to deliver what you need. For more information, visit www.gefanuc.com.

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Additional Resources

For more information, please visit the GE Fanuc Intelligent Platforms web site at:

www.gefanuc.com