

Model SB21064



300MHz RISC Processor Single Board Computer



FEATURES

- **PICMG™ Passive Backplane Compliant**
- **Windows NT™ or Digital Unix™ Operating System**
- **275MHz or 300MHz Processors**
- **IDE and SCSI-2 Controllers On-board**

DESCRIPTION

The SB21064 Single Board Computer mates the speed of the DEC Alpha AXP with standard backplanes and feature cards. New hardware and firmware technology incorporates shared interrupt handling under both Digital Unix and Windows NT making available a much wider offering of third party adapters.

The SB21064 RISC computer performs best under the 64 bit Digital Unix operating system and is supported very well by Microsoft Windows NT. Future generations of Windows NT are projected to be 64 bit operating systems permitting the SB21064, and future “Alpha Generations”, to really shine.

To take advantage of the SB21064 with current Windows NT 32 bit operation, Digital has introduced FX!32, a software utility that “re-compiles” Intel based code “on-the-fly” into almost native Alpha code. The result is a 40 percent average increase in performance over an equivalent Pentium processor running the same application. FX!32 permits the use of the SB21064 with most of today’s standard application software packages. FX!32 is available free from Digital Equipment Corp. and can be downloaded via the Internet.

Features on the SB21064 include an IDE disk drive controller, supported under Windows NT, and a Q-Logic Fast/Wide SCSI controller supported under both Windows NT and Digital Unix. Additionally there are two isolated serial ports, a PS/2 mouse port, and a parallel printer port.

The boot console of the board can be either an SRM console for Digital Unix V4.0 or the ARC console for Windows NT 4.0. Both operating systems are available in the same passive backplanes.

The ISA bus is driven with up to 64mA of current to support long passive backplanes of up to 20 expansion slots. The PICMG PCI bus connector offers PCI to PCI Bridge compliant interface for passive backplanes. Industrial Computer Source offers standard backplanes with 2, 4, 6 or 9 PCI expansion slots in a variety of combinations with ISA bus expansion slots. Other backplane configurations are available on special request to fit your specific application requirements. The SB21064 shares the same backplane technology as Industrial Computer Source’s Intel based platforms assuring you of the widest possible range of processing power available.

SPECIFICATIONS

Processor Supported:

DEC Alpha AXP™ 21064 processor
Installed in Zero Insertion Force Socket
Fan cooled heat sink, fan speed monitored. If the fan fails, the CPU will shut down to protect the processor.

Processor Clock Rate:

275MHz or 300MHz

ISA Bus Clock Rate:

8.3MHz fixed clock rate
64mA ISA Bus drive current

PCI Bus Clock Rate:

PICMG Passive Backplane compliant
30.5MHz with 275MHz processor
33MHz with 300MHz processor
Support for multiple DEC PCI to PCI Bridge Chip backplanes for support of additional PCI expansion slots

Memory Capacity:

16MB Minimum to 128MB Maximum

Memory Sockets:

Single bank of two
64 bit memory path
PS/2 Style, 36bit, Fast Page Mode SIMMs
2x36, 4x36, 8x36, 16x36

Memory Speed:

60nS

Cache Memory:

0k installed
512k or 2MB external via optional Cache modules
128 bit memory path, two 64 bit modules required

IDE fixed disk:

Supports two drives on PCI Local Bus
Supported by Windows NT only.

Floppy Drive Controller:

With support for 2.88MB, 1.44MB, 1.2MB, 720K and 360K floppy drives

SCSI-2 Controller:

Q-Logic ISP1020A chip on PCI bus
Single ended, 8 or 16 bit Fast/Wide SCSI-2
Can be totally disabled
Supported by both Windows NT and Digital Unix

Dual Serial Ports:

16550 Compatible, FIFO Buffer.
Serial Port 1 connector at rear panel (DB-9P).
Serial Port 2, 10 pin header connector on-board with cable supplied to rear panel.
Isolated to 1500V.

Single Parallel Port:

Bi-directional capability
Compatible with parallel software keys.
EPP and EPC enhanced printer port modes.
DB-25S connector on rear bracket.

PS/2 Mouse Port:

4 pin header on board with cable to rear panel
Mini-DIN connector included

Keyboard Port:

Header connector on-board. Self healing fuse.

Speaker Port:

Header connector provided.

Hardware Reset:

Header connector on-board
All drive controller connectors, i.e. floppy, EIDE and SCSI, have shrouded connectors. All pins supplying current in excess of 1.0A to an external connection are fused. One single connector for keyboard, speaker and reset connections at the top of the board.

Operating System Support:

Windows NT V4.0 and later
Digital Unix, V4.0 and later

Operating Environment:

0 to 60°C
(Fan Cooled Heat Sink Included)
5 to 95% R.H., Non-Condensing
5G Shock, Any Axis
0.5G Vibration, 10-500Hz, Any Axis
Sea Level to 10,000' Altitude

Storage Environment:

-40 to +85°C
5 to 95% R.H., Non-Condensing
10G Shock Any axis
1G Vibration

MTBF:

Calculated with Mil-Hdbk-217e
> 75,000 P.O.H. @ 25°C

Power Requirements:

Less than 1Watt w/o CPU or DRAM
Processor Requires Approximately 10 A @ +3.3VDC

PC Board:

AT Height (4.8"/114.3mm)
PICMG Compliant
Requires two expansion slots for fan and SIMM clearance
12 Layer, Surface Mount Technology



ORDERING GUIDE

Model SB21064N300

300MHz 21064 Processor, for Windows NT

Model SB21064U300

300MHz, 21064 Processor, for Digital Unix, Unix License Required

Model SB21064N275

275MHz 21064 Processor, for Windows NT

Model SB21064U275

275MHz, 21064 Processor, for Digital Unix, Unix License Required

CACHE MEMORY MODULES

Model 21A02-M1

Two Modules for 512kB Total Cache

Model 21A02-M2

Two Modules for 2MB Total Cache

MEMORY SIMMS (60NS, DRAM)

Model TMS-20036-60

8MB, 2M x 36, 72 pin, Fast Page Mode

Model TMS-40036-60

16MB, 4M x 36, 72 pin, Fast Page Mode

Model TMS-80036-60

32MB, 8M x 36, 72 pin, Fast Page Mode

Model TMS-16036-60

64MB, 16M x 36, 72 pin, Fast Page Mode

ACCESSORIES

Model 50313-01A

SCSI Cable Adapter, M-M, 68P High Density Wide to 50P Narrow Cabling

Model 50314-01A

SCSI Device Adapter, F-F, 68P High Density Wide to 50P Narrow Device

UNIX LICENSING AND MEDIA

Model QLMT4AE6X

2 User License for Digital Unix

Model QAMT4APH8

Media, CD-ROM, Digital Unix 4.0

Model QLMT5AEAA

C Developer's Extension, UNIX
Add to base license

Model QLMT6AEAA

Server Extension, UNIX
Add to base license

Model QA054AAH8

Media, Layered Products, CD-ROM,
Additional binary for Developer's and Servers

Model QLMT7AM3x

Concurrent User License (s), x equals number of additional users

Note: FX!32 is available for free download at <http://www.digital.com/semiconductor/amt/fx32>
See Industrial Computer Source Document #1572 for the FX!32 Data Sheet.

ORDERING GUIDE CONT.

Third Party Peripherals Tested Under Windows NT 4.0

For other peripherals compatible with Windows NT, refer to the Microsoft Windows 4.0 Hardware Compatibility List for DEC Alpha.

Industrial Computer Source Models Description Bridge Support

| Video Cards | | |
|----------------|-------------------------------------|---|
| MGA-MIL/2N | PCI VIDEO 1600 X 1200 200HZ 2MEG | Y |
| MGA-MIL/4N | PCI VIDEO 1600 X 1200 200HZ 4MEG | Y |
| NB9FX13311P | SVGA 1152 X 864 1MB 256K COLOR PCI | N |
| NB9FX13312P | SVGA 1152 X 864 256K CLR 2MB PCI | N |
| NB9FX25311P | PCI BUS SVGA VIDEO ADAPTER 1MB DRAM | N |
| NB9FX25312P | PCI BUS SVGA VIDEO ADAPTER 2MB DRAM | N |
| NB9FX27712P | PCI BUS SVGA VIDEO ADAPTER 2MB VRAM | N |
| NB9FX27714P | PCI BUS SVGA VIDEO ADAPTER 4MB VRAM | N |
| PCISTEALTH3D/2 | PCI VIDEO 1600 X 1200 NI 2MB DRAM | N |

| Network Interface Cards | | |
|-------------------------|------------------------|---|
| DE435-AA | ENET NIC DEC PCI COMBO | Y |
| DE450-CA | ENET NIC DEC PCI COMBO | Y |
| DE500-AA | ENET NIC DEC PCI COMBO | Y |
| EM960TP | ENET NIC TP FDE PCI | Y |

| Serial or Parallel Port Adapters | | |
|----------------------------------|---------------------------------|---|
| ROCKET/PCI-16 | 16 PORT PCI RS 232 422 ADAPTER | Y |
| ROCKET/PCI-8 | 8 PORT PCI RS 232 422 ADAPTER | Y |
| PCI/QUAD-DB25 | 4 PORT RS232 DB25 FAN OUT CABLE | Y |

ORDERING GUIDE CONT.

Disk Drive Controllers

| Disk Drives SCSI | |
|------------------|--|
| PD1225S | 1.225GB SCSI 2 FIXED DISK 10MS, Quantum |
| QM31280TMS | 1.2GB 12MS SCSI-2, Quantum |
| QM32110TMS | 2.11GB 10.5MS SCSI-2, Quantum |
| QM33200TMS | 3.20GB 10.5MS SCSI-2, Quantum |
| ST19171N | SCSI-2 FAST DISK DRIVES 9.1GB, Seagate |
| ST19171W | SCSI-2 WIDE DISK DRIVE 9.1GB, Seagate |
| ST31055N | SCSI-2 ULTRA DISK DRIVE 1.05GB, Seagate |
| ST31055W | SCSI-2 ULTRA WIDE DISK DRIVE 1.05GB, Seagate |
| ST32155N | SCSI-2 ULTRA DISK DRIVE 2.15GB, Seagate |
| ST32155W | SCSI-2 ULTRA WIDE DISK DRIVE 2.15GB, Seagate |
| ST32171N | SCSI-2 ULTRA DISK DRIVE 2.15GB, Seagate |
| ST32171W | SCSI-2 ULTRA WIDE DISK DRIVE 2.15GB, Seagate |
| ST34371N | SCSI-2 ULTRA DISK DRIVE 4.35GB, Seagate |
| ST34371W | SCSI-2 ULTRA WIDE DISK DRIVE 4.35GB, Seagate |
| QM34550ALS | 4.5GB SCSI 2 ULTRA DISK DRIVE, Quantum |
| QM34550ALSW | 4.5GB SCSI 2 ULTRA WIDE DISK DRIVE, Quantum |
| QM39100ALS | 9.1GB SCSI 2 ULTRA DISK DRIVE, Quantum |
| QM39100ALSW | 9.1GB SCSI 2 ULTRA WIDE DISK DRIVE, Quantum |
| Disk Drives IDE | |
| QM30850TRA | 850MB EIDE FIXED DRIVE 14MS, Quantum |
| QM31080FBA | 1080MB EIDE FIXED DRIVE 12MS, Quantum |
| QM31280FBA | 1280MB EIDE FIXED DISK 12MS ATA-2, Quantum |
| QM31280TMA | 1.28GB EIDE DISK DRIVE, Quantum |
| ST31276A | EIDE FIXED DISK DRIVE 1.2GB, Seagate |
| ST32140A | 2.1GB EIDE FIXED DISK, Seagate |

CD-ROM Drives

| CD-ROM Drives SCSI | | |
|--------------------|--------------------------------|--------|
| CDR1460A | 8X SCSI CD-ROM DRIVE | |
| CDU76S | CD-ROM DRIVE SCSI 2 QUAD SPEED | |
| XM3801BS | CD-ROM DRIVE SCSI 2 15X SPEED | |
| XM5701BS | CD-ROM DRIVE SCSI 2 12X SPEED | |
| CD-ROM Drives IDE | | |
| CDU311 | CD-ROM DRIVE IDE 8X SPEED SONY | |
| XM5702BS | CD-ROM DRIVE IDE 12X SPEED | Note 1 |

Note 1: When configured as the Master on the Primary Controller, the BIOS has to have BIOS Support for a PnP OS set to Enabled.

ORDERING GUIDE CONT.

Third Party Peripherals Supported Under Digital UNIX

These are products in Industrial Computer Source's product offering tested under the Digital Unix operating system by Industrial Computer Source. Other third party products may be supported but are not offered by Industrial Computer Source. Digital Equipment Corporation also carries a complete line of peripherals which are certified by them under Digital Unix.

Industrial Computer Source Model Description Bridge Support

| Video Cards | | | |
|----------------|-------------------------------------|---|---|
| MGA-MIL/2N | PCI VIDEO 1600 X 1200 200HZ 2MEG | 1 | N |
| MGA-MIL/4N | PCI VIDEO 1600 X 1200 200HZ 4MEG | 1 | N |
| NB9FX13311P | SVGA 1152 X 864 1MB 256K COLOR PCI | | N |
| NB9FX13312P | SVGA 1152 X 864 256K CLR 2MB PCI | | N |
| NB9FX25311P | PCI BUS SVGA VIDEO ADAPTER 1MB DRAM | | N |
| NB9FX25312P | PCI BUS SVGA VIDEO ADAPTER 2MB DRAM | | N |
| NB9FX27712P | PCI BUS SVGA VIDEO ADAPTER 2MB VRAM | 1 | N |
| NB9FX27714P | PCI BUS SVGA VIDEO ADAPTER 4MB VRAM | 1 | N |
| PCIATIAX2 | ATI ULTRA PRO 2MB PCI SVGA | | N |
| PCISTEALTH3D/2 | PCI VIDEO 1600 X 1200 NI 2MB DRAM | 1 | N |
| PBXGA-AA | PCI BUS 8 PLANE VIDEO CARD OSF/1 | | Y |

Note 1: Generic video drivers used for X-Windows. This allows for only 16-colors.

| Network Interface Cards | | |
|-------------------------|-------------------------------|--------|
| DE435-AA | ENET NIC DEC PCI COMBO | N |
| DE450-CA | ENET NIC DEC PCI COMBO | Y |
| DE500-AA | ENET NIC DEC PCI COMBO | Y |
| EM960TP | ENET NIC TP FDE PCI | Y |
| ETHER-PCI | ENET PCI RJ45 10 NIC | Y |
| ANA6901C | 10 20 PCI ENET NIC COMBO | Y |
| ANA6901 | 10 20 ENET PCI NIC UTP | Y |
| ANA6911TX | 10 20 ENET PCI NIC UTP | Y |
| ANA6904UTP | 10 20 4 PORT ENET PCI NIC UTP | Note 1 |

Note 1: Only able to use the lower port of this 4 port card.

ORDERING GUIDE CONT.

Disk Drives

| Disk Drives SCSI | |
|------------------|---|
| PD1225S | 1.225GB SCSI 2 FIXED DISK 10MS, Quantum |
| QM31280TMS | 1.2GB 12MS SCSI-2, Quantum |
| QM32110TMS | 2.11GB 10.5MS SCSI-2, Quantum |
| QM33200TMS | 3.20GB 10.5MS SCSI-2, Quantum |
| QM34550ALS | 4.5GB SCSI 2 ULTRA DISK DRIVE, Quantum |
| QM34550ALSW | 4.5GB SCSI 2 ULTRA WIDE DISK DRIVE, Quantum |
| QM39100ALS | 9.1GB SCSI 2 ULTRA DISK DRIVE, Quantum |
| QM39100ALSW | 9.1GB SCSI 2 ULTRA WIDE DISK DRIVE, Quantum |

IDE Not supported

Tape Drives

| CD-ROM Drives SCSI | |
|--------------------|--------------------------------|
| CDU76S | CD-ROM DRIVE SCSI 2 QUAD SPEED |
| XM5701BS | CD-ROM DRIVE SCSI 2 12X SPEED |