CSS Laboratories

Single Board Computer SBP-205

User Guide

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Contents

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Section 1 – SBP-205 Features

Overview of the SBP-205

Processor and Memory

The SBP-205 is a single board computer (SBC) designed to support a single Pentium® III processor with the following features:

- Operating speeds up to 1GHz
- Integrated 256 KB cache.
- On-board 64-bit path memory supports up to 512MB of total memory in two 168-pin DIMM sockets.

Bus Architecture

The SBP-205 is fully ISA and PCI Local Bus compatible. The PCI Local Bus is fully compliant with the PCI Local Bus 2.1 specifications.

Peripheral Support

The SBP-205 supports a full complement of peripherals including:

- Diskette/EIDE (up to four EIDE drives and two diskette drives)
- Two serial ports
- One parallel port
- One PS/2 keyboard
- One PS/2 mouse
- Two USB ports

Operating System Compatibility

The SBP-205 is fully compatible with numerous operating systems including:

- MS-DOS™ , Windows 98™ and Windows NT/2000™
- OS/2
- SCO UNIX™ , Interactive UNIX™ , QNX™
- Linux

System Integration

The SBP-205 smoothly integrates with a CSS Laboratories passive backplane and with the MaxPro tower servers and a number of ProRack rackmount systems.

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Board Features

Specific features are discussed in the following sections. Important features include:

- Cache Memory
- Voltage regulators
- DIMMs
- Processor(s)
- Connectors
- Jumper switches
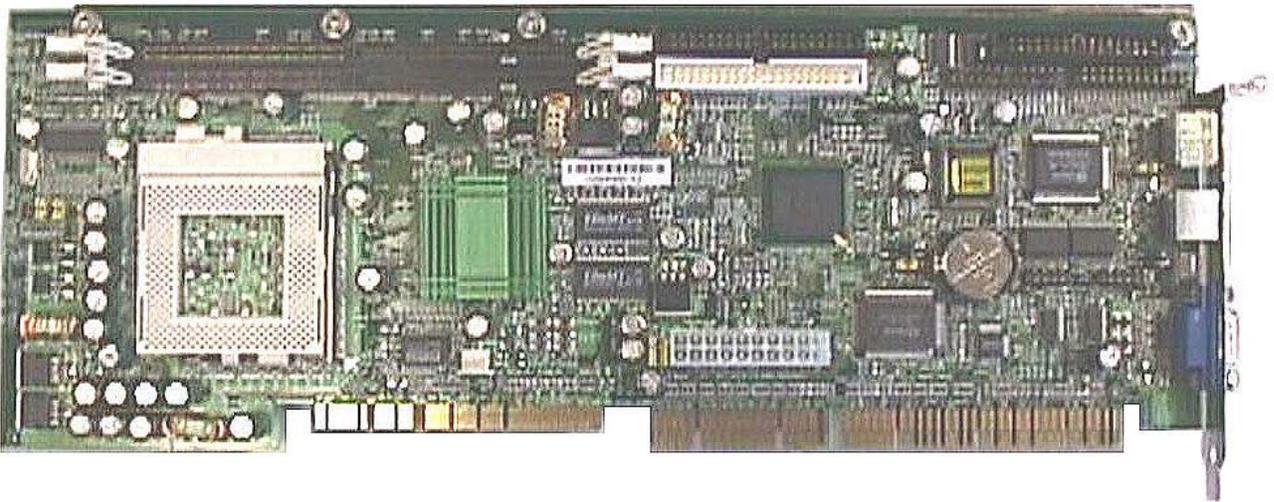
Figure 1 – SBP-205

Cache Memory

The SBP-205 provides an internal 64-bit wide, non-blocking, second level (L2) cache supporting 256KB running at full CPU speed. The cache modules are inside the CPUs, and provide 32KB of first level (L1) cache.

Voltage Regulators

The nine voltage regulators mounted on the SBP-205 provide compatibility with a full line of processors.

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Microprocessor

The SBP-205 supports a single Pentium III® processor operating at speeds up to 1GHz. The processor features include:

- Dynamic Execution performance with Multiple Branch Prediction, Data Flow Analysis and Speculative Execution.

- Multi-transaction system bus.

- Dual Independent Bus Architecture, which allows data access from either bus simultaneously or in parallel.

- Intel™ MMX multimedia technology.

- 32KB (16KB/16KB) non-blocking, L1 cache.

- 66/100/133 MHz bus speed.

- Error correction, fault analysis, recovery and functional redundancy checking for both system and L2 cache busses.

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Section 2 – Using the SBP-205

Connectors

Connector designations are stamped in white on the SBP-205 board.

SBP-205 Board Connector Descriptions

Connector	Description
IDE1	Primary IDE connector
IDE2	Secondary IDE connector
USB1	USB0 (Universal Serial Bus 1)
USB2	USB1 (Universal Serial Bus 2)
FDD	Diskette drive connector
LPT1	Parallel port
Mouse	PS/2 mouse connector
Keyboard	PS/2 keyboard connector
Chassis Fan	Spare fan connector
VGA	Video connector
COM1	Serial port 1 connector (COM 1)
COM2	Serial port 2 connector (COM 2)
Battery	Battery
Power	ATX power supply unit connector
CPU Fan	Processor fan connectors

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The following illustration,

Figure 2 – SBP-205 Connectors, shows the on-board location of the connectors detailed in the above descriptions chart.
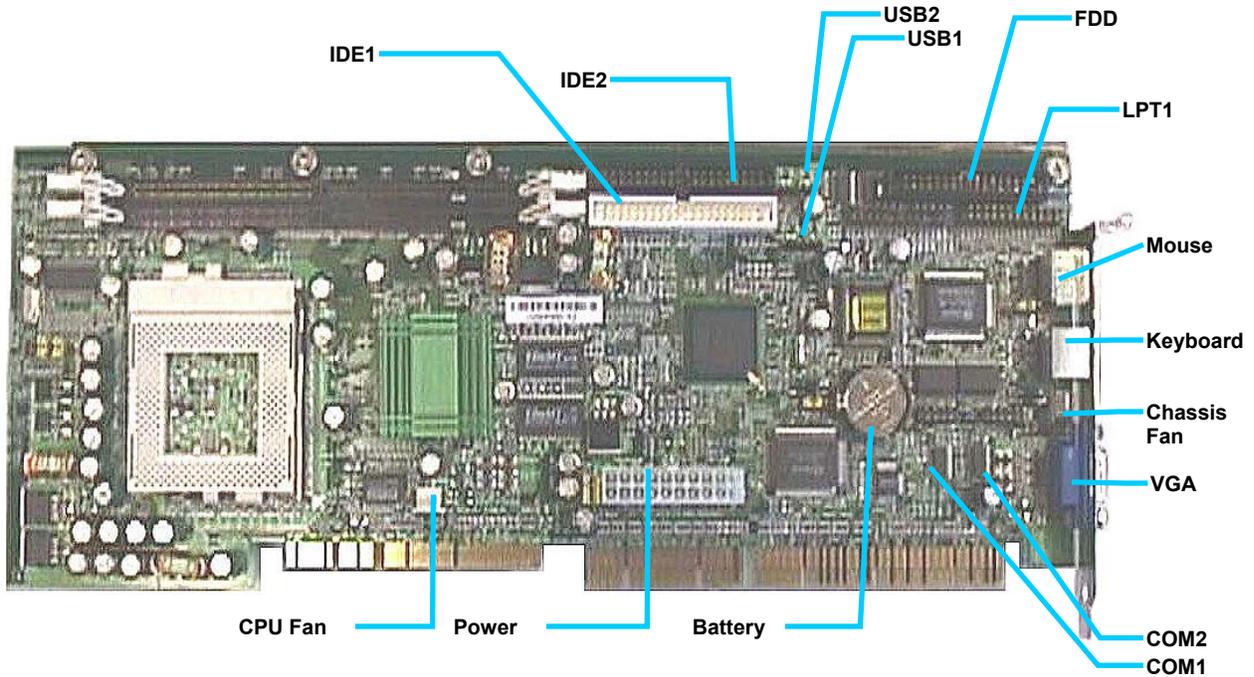
Figure 2 – SBP-205 Connectors

Keyboard and Mouse

The 6-pin PS/2 keyboard and mouse connectors are keyed for proper installation.

PS/2 Keyboard Connector Pin Assignments

Pin	Assignment	Pin	Assignment
1	Keyboard Data	4	+5 Vdc
2	Not Used	5	Clock
3	Ground	6	Not Used

PS/2 Mouse Connector Pin Assignments

Pin	Assignment	Pin	Assignment
1	Mouse Data	4	+5 Vdc
2	Not Used	5	Clock
3	Ground	6	Not Used

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IDE, Primary and Secondary

The primary PCI IDE connector is designated IDE1. The secondary PCI IDE connector is designated IDE2. Both are 40-pin connectors.

IDE Connectors (IDE1, IDE2) Pin Assignments

Pin	Assignment	Pin	Assignment
1	Reset IDE	2	Ground
3	Host Data 7	4	Host Data 8
5	Host Data 6	6	Host Data 9
7	Host Data 5	8	Host Data 10
9	Host Data 4	10	Host Data 11
11	Host Data 3	12	Host Data 12
13	Host Data 2	14	Host Data 13
15	Host Data 1	16	Host Data 14
17	Host Data 0	18	Host Data 15
19	Ground	20	Key
21	DDRQ (DDRQ1)	22	Ground
23	I/O Write #	24	Ground
25	I/O Read #	26	Ground
27	IOCHRD	28	470 Ω (ohm) pull down
29	DDACK0 (DDACK1) #	30	Ground
31	IRQ14 (IRQ15)	32	Reserved
33	Addr1	34	Reserved
35	Addr0	36	Addr2
37	Chip Select 1P (1S) #	38	Chip select (3P 3S)
39	Activity #	40	Ground

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Parallel Port

The parallel port connector is a 26-pin connector.

Parallel Port Connector Pin Assignments

Pin	Assignment	Pin	Assignment
1	STE	14	Ground
2	AFD #	15	PD6
3	PD0	16	Ground
4	ERR #	17	PD7
5	PD1	18	Ground
6	INIT #	19	ACK #
7	PD2	20	Ground
8	SLIN #	21	BUSY
9	PD3	22	Ground
10	Ground	23	PE
11	PD4	24	Ground
12	Ground	25	SLCT
13	PD5	26	Not Used

Serial Ports (COM1, COM2)

The SBP-205 features two 9-pin serial ports and connectors. They are designated COM1 (serial port 1) and COM2 (serial port 2).

Serial Port Connectors (COM1, COM2) Pin Assignments

Pin	Assignment	Pin	Assignment
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	Ground		

-

Diskette Drive (FDD)

The diskette drive, also called the floppy drive, is a 34-pin connector, designated FDD.

Diskette Drive Connector (FDD) Pin Assignments

Pin	Assignment	Pin	Assignment
1	Ground	2	DENSEL
3	Ground	4	TP
5	Key	6	FDENIN #
7	Ground	8	FDINDX #
9	Ground	10	FDM00 #
11	Ground	12	FDDS01 #
13	Ground	14	FDDS004#
15	Ground	16	FDM01#
17	MSEN1	18	FDDIR #
19	Ground	20	FDSTEP #
21	Ground	22	FDWD #
23	Ground	24	FDWE #
25	Ground	26	FDTRK0 #
27	MSEN0	28	FDWPD #
29	Ground	30	FDRDATA #
31	Ground	32	FDRHEAD #
33	Ground	34	DSKCHG #

Universal Serial Bus (USB)

The SBP-205 provides connectors for two Universal Serial Bus (USB) connectors. They are designated USB1) and USB2).

USB Connector (USB1, USB2) Pin Assignments

Pin	Assignment	Pin	Assignment
1	VCC	3	Data +
2	Data –	4	Ground

Processor Cooling Fan (CPU Fan)

The SBP-205 provides a 3-pin processor cooling fan connector. It is designated CPU Fan.

Processor Cooling Fan Connector (CPU Fan) Pin Assignments

Pin	Assignment	Pin	Assignment
1	Ground	2	12 volt
3	Sense		

Memory

The SBP-205 provides two 168-pin DIMM sockets. The board supports up to 512MB of RAM with each socket supporting DIMMs up to 256 MB.

Memory Guidelines

The SBP-205 comes with 128 MB SDRAM installed in one DIMM socket. When selecting additional memory, use the following guidelines.

- The SBP-205 supports either FSB ECC or non-ECC SDRAM PC-133.
- SDRAM PC-133 can be installed in one or both DIMM sockets.
- Minimum memory size is 64MB; maximum total memory size is 512MB. Memory size and speed can vary between sockets.
- Select 168-pin DIMM sizes as detailed in the following chart:

SBP-205 Supported DIMM Sizes

DIMM Capacity	SDRAM Density	SDRAM Organization	Number of SDRAMs
64 MB	64 Mbit	4M X 16	8
64 MB	64 Mbit	8M X 8	8
128 MB	64 Mbit	8M X 8	16
256 MB	64 Mbit	8M X 8	32
512 MB	128Mbit	32Mx4	32

SPD Data Structure

To be fully compliant with all applicable Intel® SDRAM memory specifications, populate the SBP-205 with DIMMs that support the Serial Presence Detect (SPD) data structure.

If the installed memory modules do not support SPD, you will see a notification to this effect on the screen at power up. The BIOS will attempt to configure the memory controller for normal operation.

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Recommended Memory Configuration

The following table displays the recommended system memory configuration, starting at 64 MB.

SBP-205 System Memory Configuration

RAM	Bank 0	Bank 1	RAM	Bank 0	Bank 1
64 MB	8M x 64/72		256 MB	32M x 64/72	
128 MB	8M x 64/72	8M x 64/72	320 MB	32M x 64/72	8M x 64/72
128 MB	16M x 64/72		384 MB	16M x 64/72	32M x 64/72
192 MB	16M x 64/72	8M x 64/72	512 MB	32M x 64/72	32M x 64/72
256 MB	16M x 64/72	16M x 64/72			

Installing and Removing Memory

The SBP-205 DIMM sockets are located on the left side of the board.

> **IMPORTANT NOTE:** It should not be necessary to remove the single board computer from the passive backplane or the system chassis in order to remove or install memory modules. However, it is very important to properly support the board while applying pressure during DIMM removal or installation. On-board circuits, connectors or the board itself could be damaged if not properly supported.
>
> Ground or discharge any static electricity before making hardware modifications.

DIMM Sockets

Locking Clips

Locking Clips
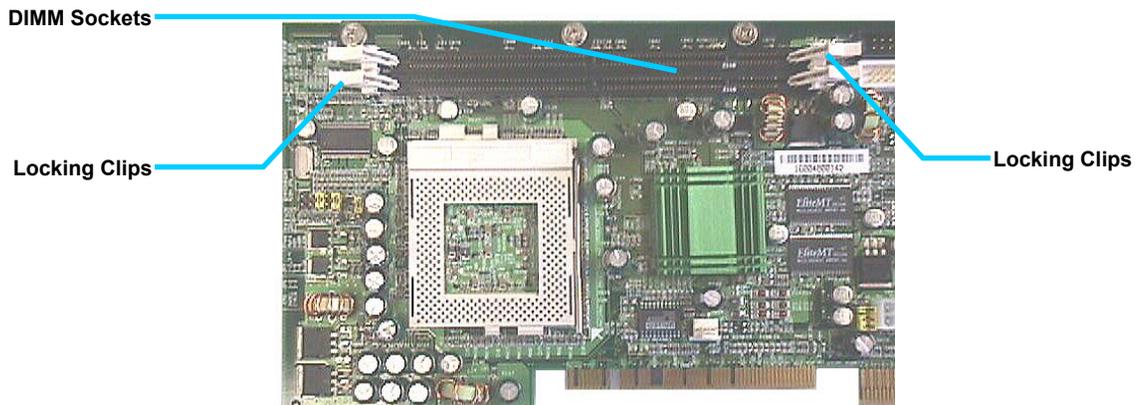
Figure 3 – SBP-205 DIMM Sockets

Follow these steps to install or remove memory modules:

1. Power down the system and remove the power cord.

2. Open the system case following the steps in the User Guide provided with your MaxPro or ProRack system.

3. Locate the DIMM sockets on the SBP-205.

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4. Remove a DIMM by pressing the white locking clips down (away from the memory module). Lift the DIMM straight out of the socket.

5. Position the new DIMM it so that it aligns with the socket. (The DIMM and the socket are keyed for correct orientation). Gently press straight down until the module clicks into place.

6. Press the two white locking clips up into locked position.

7. Close the system case and power up the system.

As the system boots, the BIOS will automatically detect the new memory configuration.

Processor

The SBP-205 supports a single Pentium III processor operating at up to 1 GHz. The processor mounting includes a single edge contact (SEC) slot and an attached mounting and retention bracket. The SBP-205 accepts a Pentium II/III processor packaged in an SECC-2 cartridge.

The system operation with single or dual processors is automatically configured by the operating system or network operating system. With dual processors installed, the two CPUs function symmetrically.

Processor Overview

The SBP-205 processor mounts in the 370 socket. An on-board heat sink is mounted on the board to the right of the 370 socket.

Installing and Removing a Processor

Follow these steps to remove and install a processor:

To prepare for installation and removal:

1. Power down the system and remove the power cord and any other external connectors.

2. Open the system case following the steps in the User Guide provided with your MaxPro or ProRack system.

3. Make sure to ground yourself by touching the system case before touching any components.

IMPORTANT NOTE: It should not be necessary to remove the single board computer from the passive backplane or the system chassis in order to remove or install a processor. However, it is very important to properly support the board while applying pressure during processor removal or installation. On-board circuits, connectors or the board itself could be damaged if not properly supported.

To remove a processor:

1. Disconnect the cooling fan power connector from the on-board power connector.

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2. Remove the fan/heat sink from on top of the processor by undoing the mounting clip.

3. Lift and release ZIF-socket arm.

4. Lift the processor out of the 370 socket.

To install a processor:

1. Lift and release ZIF-socket arm.

2. Position the processor with pins lined up with socket.

3. Gently press processor into socket until into place.

4. Push down ZIF-socket arm and lock.

5. Attach fan/heat sink on top of the processor and secure with mounting clip.

6. Plug the cooling fan power connector into the on-board power connector (CPU Fan).

7. Close the system case and reconnect the external cables.

8. Power up the system.

The system will boot and the BIOS will automatically detect the new processor.

SBP-205 Installation

The MaxPro tower server or ProRack rackmount system has been fully set up by CSS Laboratories before delivery. The passive backplane and single board computer(s) have been installed and configured at the factory.

Typically, no single board computer (SBC) installation is necessary. However, the modular design of the MaxPro and ProRack systems enables you to customize them to meet specific needs. Swapping out the single board computer(s) is one way the MaxPro and ProRack systems can be customized and upgraded.

Overview

The SBP-205 connects to any CSS Laboratories passive backplane through one EISA connector with a PCI bus extension. This SBC connector socket combination is located on the passive backplane.

Installing the SBP-205 to a Passive Backplane

It is not necessary to remove the passive backplane from the system chassis in order to remove or install the SBP-205.

To prepare the system and SBC for installation:

1. Power down the system and remove the power cord and any other external connectors.

2. Open the system case.

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Follow the instructions in the MaxPro or ProRack User Guide that accompanied your system.

3. Inspect the SBP-205 jumper settings and reset them as needed.

   The SBP-205 jumper switches are pre-set at the factory. If any changes are needed, it is easier to make them before installing the SBC. See *Jumper Switches* for information and procedures.

4. Install the processor and the DIMMs.

   It is easier to install a processor and DIMMs to the SBC before the SBC itself is installed. See *Installing and Removing Memory* and *Installing and Removing* a Processor for procedures.

To remove an installed SBC:

1. Unplug any EIDE or other data cables and port connectors from the SBC.

2. Remove the retaining screw located at the rear of the system case.

3. Lift the SBC from the sockets on the passive backplane.

   All MaxPro and ProRack series chassis come with protective stabilizer bracket is part of the chassis. This bracket must be removed in order to remove the SBC. Refer to the MaxPro, ProRack User Guide for removal procedures.

4. Remove the DIMMs from the installed SBC.

   See *Installing and Removing Memory* for procedures.

5. Remove the processor from the installed SBC.

   See *Installing and Removing* a Processor for procedures.

To install the SBP-205:

1. Position the SBP-205 over the sockets on the passive backplane.

   Make sure that the connector pins are facing down. The SBP-205 will install in only one direction. The correct SBC sockets are the EIDE with the PCI bus extension. See *Figure 4 – Passive Backplane* and *Figure 5 – SBC Installed to Passive Backplane* for sample illustration using the PB11109 passive backplane.

2. Gently press the SBP-205 into the sockets until it clicks into place.

3. Replace the retaining screw at the rear of the system case.

4. Connect the EIDE cables, along with any other data cables and external port connectors.

5. Close the system case.

6. Reconnect the power cord and the external connectors, and power up the system.

As the system boots, the BIOS will detect the SBP-205 settings. You may need to manually reconfigure the system. See *BIOS* Configuration for procedures to configure the BIOS and CMOS.

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SBC Connector Slots
(EISA Connector and PCI
Bus Extension)
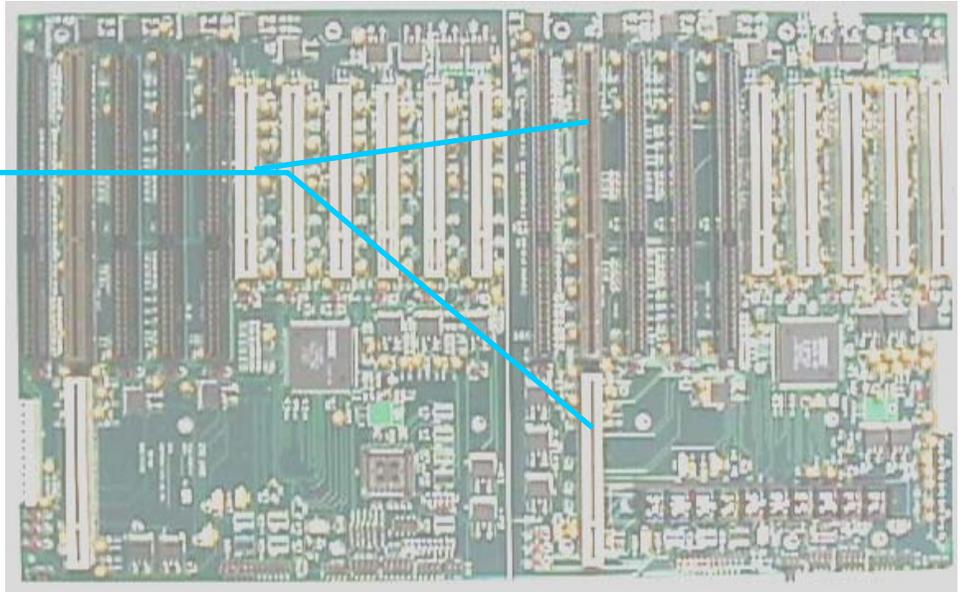
Figure 4 – Passive Backplane
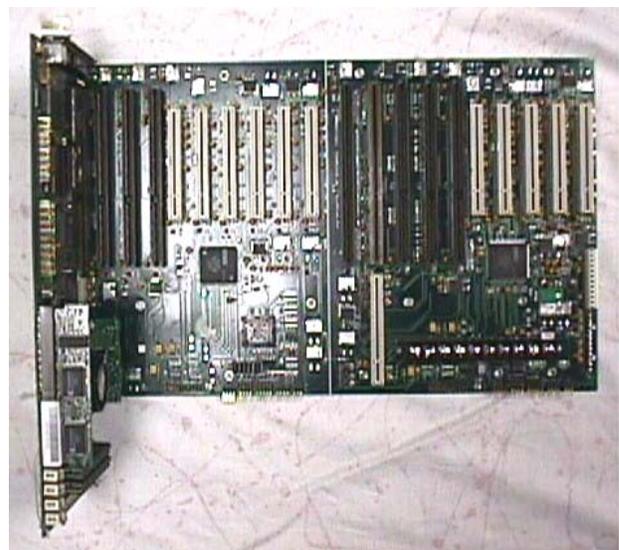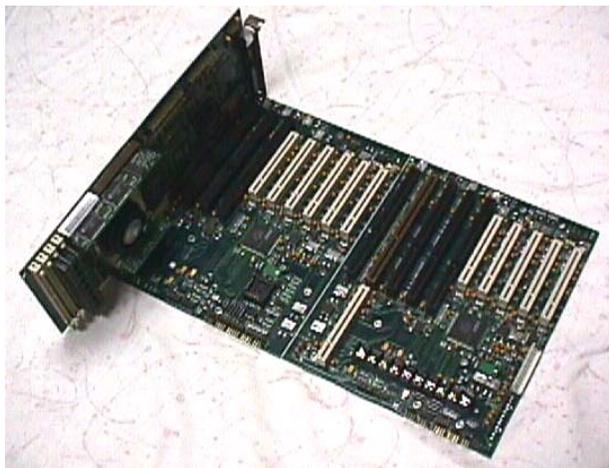
Figure 5 – SBC Installed to Passive Backplane

Jumper Switches

The SBP-205 jumper switches are pre-configured at the factory. Jumpers are used to configure the processor bus frequency and to clear CMOS contents.

Jumper Switches Overview

The Pentium III processor uses a clock multiplier to match the processor core frequency with the speed of the processor bus—the speed at which data travels into and out of the processor. Four jumper switches determine the processor bus frequency. Another jumper temporarily clears the CMOS contents.

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> **NOTE:** With the new Pentium III processor, it is not necessary to set jumper switches to determine the bus processor frequency. The Pentium III processor is self-adjusting.

Two-pin jumpers are described as jumped, "on" or "in" with the small plastic jumper cap on, or not jumped, "off" or "out" with the jumper cap off.

Jumpers with more than two pins are described by numbering the pins. Each of the SBP-205 jumpers has the number "1" stamped on the board next to that jumper's pin number one.

The jumper cap placed over a particular combination of pins, such as 1-2 or 2-3, determines the jumper setting.

SBP-205 Jumpers

Jumper Designation	Number of Pins	Jumper Function
JP2	3	Clear CMOS contents
JP5	3	CPU Setting
JP6	3	Keyboard Power On
JP7	10	CPU Clock

See *Figure 6 – SBP-205 Jumper Switches* for the location of the jumpers.
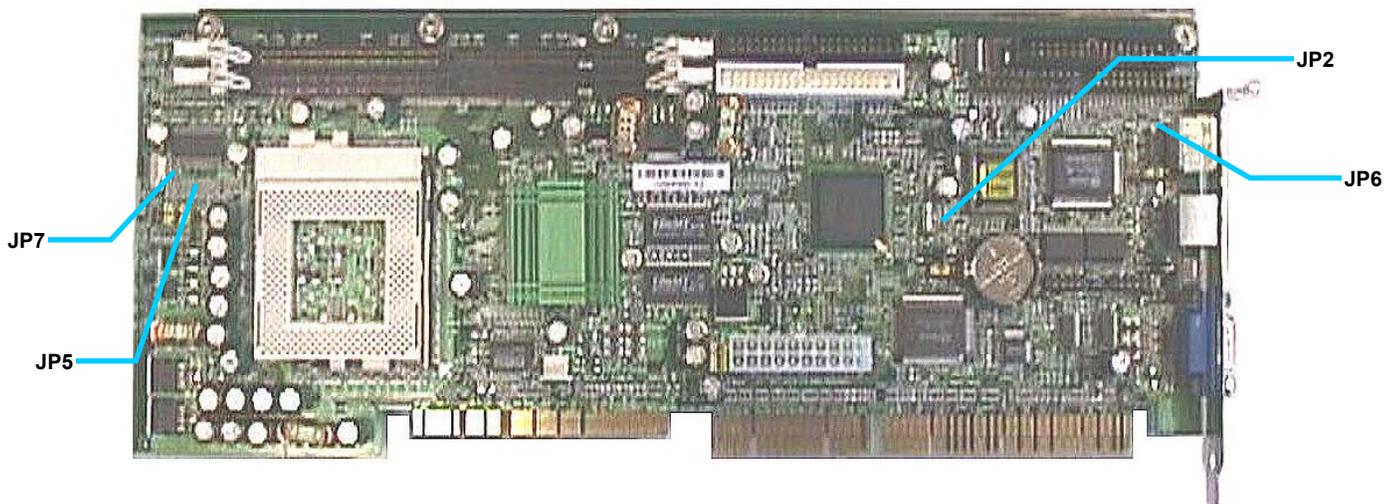
Figure 6 – SBP-205 Jumper Switches

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Setting Jumper Switches

Setting jumper switches is easiest with the SBP-205 removed from the system. While the jumper switches are accessible with the SBP-205 installed, it might be necessary to remove one or more adapter cards if they restrict access to the jumpers.

To access the jumper switches:

1. Power down the system and remove the power cord and any other external connectors.

2. Open the system case.

   Follow the instructions in the MaxPro or ProRack User Guide that accompanied your system.

3. Locate the jumper switches you wish to set.

4. Temporarily remove any adapters or connectors that restrict your access to the jumper switches.

5. If necessary, temporarily remove the SBP-205 from the system.

   For SBP-205 removal and installation procedures, see *Installing the SBP-205 to a Passive Backplane*.

To temporarily clear the CMOS:

CMOS contains the system BIOS configurations. Temporarily placing a jumper cap on JP17 pins 2-3 clears the contents of the CMOS chip.

Clear CMOS Contents, JP2

Status	Pins
Clear CMOS	1-2
Normal (default)	2-3

Remember to reset the jumper cap to the default position after clearing the CMOS contents.

To set the CPU setting

CPU Setting, JP5

Status	Pins
Intel	1-2
Cyrix	2-3

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To set keyboard power on:

Keyboard Power On, JP6

Status	Pins
Enable	1-2
Disable	2-3

To set CPU clock speed::

The Pentium III processor automatically adjusts processor speed ratios. There is no need to reset jumper switches to match the bus speed and the processor clock speed.

With a Pentium II processor, jumper settings are used to multiply the bus speed to match the processor clock speed. The SBP-205 provides a chart stamped on the board which gives the processor speed ratios at different settings of jumper JP7.

CPU Clock, JP7

Status	Pins
Auto	1-2, 3-4
66	5-6
100	7-8
133	9-10

BIOS Configuration

BIOS Configuration Overview

The SBP-205 features an AMI BIOS with built-in CMOS setup for system parameters, peripheral management and PCI bridge and interrupt steering.

The MaxPro tower servers and ProRack rackmount systems with the SBP-205 installed automatically detect and configure PCI-compliant adapters while booting. The BIOS automatically sets the adapter IRQ levels and I/O addresses each time the computer starts.

Resource configuration is complete when the operating system starts. If the system displays an error while booting, it may require additional steps to configure.

Access the BIOS setup by pressing the **[Delete]** key after the POST memory test begins and before the operating system boot begins.

The following illustration shows the menus available from the BIOS setup utility main menu.

In all menus, use the up and down arrow (↑↓) keys on the keyboard to select an item. Use the **<PgUp>** and **<PgDn>** keys to toggle options for a given item.

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```
CMOS Setup Utility – Copyright © 1984-2001 Award Software


   ►  Standard CMOS Features              ►  Frequency/Voltage Control

   ►  Advanced BIOS Features                 Load Fail-Safe Defaults

   ►  Advanced Chipset Features              Load Optimized Defaults

   ►  Integrated Peripherals                 Set Supervisor Password

   ►  Power Management Setup                 Set User Password

   ►  PnP/PCI Configurations                 Save & Exit Setup

   ►  PC Health Status                       Exit Without Saving


 Esc  : Quit                      ↑ ↓ → ←      : Select Item
 F10  : Save & Exit Setup
```

Figure 7 – BIOS Setup Main Menu

The most commonly accessed setup procedures are discussed in the following topics. These are:

- Standard CMOS Setup
- Advanced CMOS Setup
- Advanced Chipset Setup
- Power Management Setup
- PCI/Plug and Play Setup
- Peripheral Setup

Setting Up CMOS—Standard Setup

The Standard Setup utility records the system setup to CMOS. Select **Standard CMOS Setup** from the main menu.

```
CMOS Setup Utility – Copyright © 1984-2001 Award Software
                       Standard CMOS Features

                                                      Item Help
   Date  (mm:dd:yy)       Mon, Dec 10  2001
   Time  (hh:mm:ss)       14 : 46 : 58

   ►  IDE Primary Master     [ None ]
   ►  IDE Primary Slave      [ None ]
   ►  IDE Secondary Master   [ None ]
   ►  IDE Secondary Slave    [ None ]

   Drive A                   [ 1.44M, 3.5 in. ]
   Drive B                   [ None ]

   Video                     [ EGA/VGA ]
   Halt On                   [ All  , But Keyboard ]


 ↑ ↓ → ←: Move  Enter: Select  +/-/PU/PD: Value  F10: Save  Esc: Exit  F1: General Help
   F5: Previous Values         F6: Fail-Safe Defaults        F7: Optional Defaults
```

Figure 8 – Standard CMOS Setup

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Pri Master

This option sets the primary master EIDE/PCI hard drive. It defines the drive modes and parameters. The default setting is **Auto** to auto-detect the drive type and settings.

Pri Slave

This options sets the primary slave EIDE/PCI hard drive. It defines the parameters and modes. The default setting is **Auto** to auto-detect the drive type and settings.

Sec Master

This option sets the secondary master EIDE/PCI hard drive if one is installed. It defines the drive parameters and modes. The default setting is **Not Installed**.

Sec Slave

This option sets the secondary slave EIDE/PCI hard drive if one is installed. It defines the drive parameters and modes. The default setting is **Not Installed**.

Floppy Drive A, Floppy Drive B

This option selects the type of drive that matches the installed diskette drive. Scroll through the drive types by using the up and down arrow keys on the keyboard.

Date, Time

Enter the new values as necessary.

Setting Up CMOS—Advanced Setup

```
CMOS Setup Utility – Copyright © 1984-2001 Award Software
                   Advanced BIOS Features

  Virus Warning                [ Disabled ]        Item Help
  CPU Internal Cache           [ Enabled ]
   External Cache              [ Enabled ]
  CPU L2 Cache ECC Checking    [ Enabled ]
  Processor Number Feature     [ Enabled ]
  Quick Power On Self Test     [ Enabled ]
  First Boot Device            [ Floppy ]
  Second Boot Device           [ HDD-O ]
  Third Boot Device            [ LS120 ]
  Boot Other Device            [ Enabled ]
  Swap Floppy Drive            [ Disabled ]
  Boot Up Floppy Seek          [ Enabled ]
  Boot Up NumLock Status       [ On ]
  Gate A20 Options             [ Fast ]
  Typematic Rate Setting       [ Disabled ]

  Security Option              [ Setup ]

↑ ↓ → ←: Move  Enter: Select  +/-/PU/PD: Value  F10: Save  Esc: Exit  F1: General Help
   F5: Previous Values        F6: Fail-Safe Defaults        F7: Optional Defaults
```

Figure 9 – Advanced CMOS Setup, First Page

Advanced Setup displays two screens of options to fine tune a number of system features. Select **Advanced CMOS Setup** from the main menu.

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Use the up and down arrow keys to select an item. Options for each item are displayed in the right-hand column. Press **<PgUp>** or **<PgDn>** to toggle the options.

```
CMOS Setup Utility – Copyright © 1984-2001 Award Software
                    Advanced BIOS Features

                                                        Item Help
  CPU L2 Cache ECC Checking      [ Enabled ]
  Processor Number Feature       [ Enabled ]
  Quick Power On Self Test       [ Enabled ]
  First Boot Device              [ Floppy ]
  Second Boot Device             [ HDD-O ]
  Third Boot Device              [ LS120 ]
  Boot Other Device              [ Enabled ]
  Swap Floppy Drive              [ Disabled ]
  Boot Up Floppy Seek            [ Enabled ]
  Boot Up NumLock Status         [ On ]
  Gate A20 Options               [ Fast ]

  Typematic Rate Selling         [ Disabled ]
  Security Option                [ Setup ]
  OS Select For DRAM > 64MB      [ Non-OS2 ]
  Report No FDD for WIN 95       [ No ]
  Small Logo(EPA) Show           [ Disabled ]

↑ ↓ → ←: Move  Enter: Select  +/-/PU/PD: Value  F10: Save  Esc: Exit  F1: General Help
  F5: Previous Values          F6: Fail-Safe Defaults        F7: Optional Defaults
```

Figure 10 – Advanced CMOS Setup, Second Page

Setting Up CMOS—Advanced Chipset Setup

The chipset has been pre-configured, but Advanced Chipset Setup gives you two pages of options to configure some of the advanced system features.

```
CMOS Setup Utility – Copyright © 1984-2001 Award Software
                   Advanced Chipset Features

                                                        Item Help
  SDRAM CAS Latency Time         [ 3 ]
  SDRAM Cycle Time Tras/Trc      [ Auto ]
  SDRAM RAS-to-CAS Delay         [ Auto ]
  SDRAM RAS Freecharge Time      [ Auto ]
  System BIOS Cacheable          [ Disabled ]
  Video BIOS Cacheable           [ Disabled ]
  Memory Hole at 15M-16M         [ Disabled ]
  CPU Latency Time               [ Disabled ]
  Delayed Transaction            [ Enabled ]
  On-Chip Video Window Size      [ 64MB ]
  Local Memory Frequency         [ 100 Mhz ]

    CAS# Latency                 [ 3 ]
    Paging Mode Control          [ Open ]
    RAS-toCAS Override           [ by CAS# LT ]
    RAS# Timing                  [ Fast ]
    RAS# Freecharge Timing       [ Fast ]

↑ ↓ → ←: Move  Enter: Select  +/-/PU/PD: Value  F10: Save  Esc: Exit  F1: General Help
  F5: Previous Values          F6: Fail-Safe Defaults        F7: Optional Defaults
```

Figure 11 – CMOS Advanced Chipset Setup

Configuring Power Management

The power management options include:

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  - Enable/Disable system power management
  - An inactivity timer to set the amount of time before the system enters standby mode.
  - Hard disk power management during standby and suspend modes.
  - Video power management during standby and suspend modes.
  - Fan power management.

Configuring PCI/Plug and Play

Use the PCI/Plug and Play Setup to define attributes of the PCI bus portion of the SBP-205.

```
         CMOS Setup Utility – Copyright © 1984-2001 Award Software
                          PnP/PCI Configurations

    PNP OS Installed             [ No ]              Item Help
    Reset Configuration Data     [ Disabled ]

    Resources Controlled By      [ Auto(ESCD)]


    PCI/VGA Palette Snoop        [ Disabled ]




  ↑ ↓ → ←: Move   Enter: Select   +/-/PU/PD: Value  F10: Save  Esc: Exit  F1: General Help
     F5: Previous Values          F6: Fail-Safe Defaults          F7: Optional Defaults
```

Figure 12 – CMOS PCI/PNP Setup

-

Setting Up Peripherals

Use Peripherals Setup to specify the peripheral devices installed.

The **On-Board IDE** option enables the on-board chipset EIDE function.

```
┌─────────────────────────────────────────────────────────────────────────┐
│         CMOS Setup Utility – Copyright © 1984-2001 Award Software         │
│                          Integrated Peripherals                          │
├──────────────────────────────────────────────┬──────────────────────────┤
│  On-Chip Primary     PCI  IDE    [ Enabled ] │       Item Help          │
│  On-Chip Secondary  PCI  IDE     [ Enabled ] │                          │
│  IDE Primary Master    PIO       [ Auto ]    │                          │
│  IDE Primary Slave     PIO       [ Auto ]    │                          │
│  IDE Secondary Master   PIO      [ Auto ]    │                          │
│  IDE Secondary Slave    PIO      [ Auto ]    │                          │
│  IDE Primary Master   UDMA       [ Auto ]    │                          │
│  IDE Primary Slave    UDMA       [ Auto ]    │                          │
│  IDE Secondary Master   UDMA     [ Auto ]    │                          │
│  IDE Secondary Slave    UDMA     [ Auto ]    │                          │
│  USB Controller                  [ Enabled ] │                          │
│  USB Keyboard Support            [ Disabled ]│                          │
│  Init Display First              [ PCI Slot ]│                          │
│   IDE HDD Block Mode             [ Enabled ] │                          │
│   Power On Function              [ BUTTON ONLY ] │                      │
│                                              │                          │
│  Onboard FDC Controller          [ Enabled ] │                          │
│  Onboard Serial Port 1           [ 3F8/IRQ4 ]│                          │
├──────────────────────────────────────────────┴──────────────────────────┤
│ ↑ ↓ → ←: Move  Enter: Select  +/-/PU/PD: Value  F10: Save  Esc: Exit  F1: General Help │
│   F5: Previous Values          F6: Fail-Safe Defaults        F7: Optional Defaults │
└─────────────────────────────────────────────────────────────────────────┘
```

Figure 13 – Peripherals Setup

```
┌─────────────────────────────────────────────────────────────────────────┐
│         CMOS Setup Utility – Copyright © 1984-2001 Award Software         │
│                          Integrated Peripherals                          │
├──────────────────────────────────────────────┬──────────────────────────┤
│  USB Keyboard Support            [ Disabled ]│       Item Help          │
│  Init Display First              [ PCI Slot ]│                          │
│   IDE HDD Block Mode             [ Enabled ] │                          │
│   Power On Function              [ BUTTON ONLY ] │                      │
│                                              │                          │
│  Onboard FDC Controller          [ Enabled ] │                          │
│  Onboard Serial Port 1           [ 3F8/IRQ4 ]│                          │
│  Onboard Serial Port 2           [ 2F8/IRQ3 ]│                          │
│  UART Mode Select                [ Normal ]  │                          │
│                                              │                          │
│                                              │                          │
│                                              │                          │
│  Onboard Parallel Port           [ 378/IRQ7 ]│                          │
│  Parallel Port Mode              [ SPP ]     │                          │
│                                              │                          │
│  PWRON After PWR-Fail            [ Off ]     │                          │
├──────────────────────────────────────────────┴──────────────────────────┤
│ ↑ ↓ → ←: Move  Enter: Select  +/-/PU/PD: Value  F10: Save  Esc: Exit  F1: General Help │
│   F5: Previous Values          F6: Fail-Safe Defaults        F7: Optional Defaults │
└─────────────────────────────────────────────────────────────────────────┘
```

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Section 3 – Maintenance and Troubleshooting

Routine Maintenance

Follow these basic steps to maintain and safeguard the SBP-205 single board computer:

- The MaxPro tower server chassis and the ProRack rackmount chassis are designed to provide protection for internal devices and connections. Care must still be taken to ensure that the system case won't be kicked or struck. An impact could damage disk drives.

- Do not place the MaxPro or the ProRack near any heat source that may damage it, such as heaters, direct sunlight, etc.

- Do not eat, drink or smoke near the system.

- Use a surge protector with the MaxPro or ProRack and any peripheral devices. Power surges can damage or destroy the SBP-205 or other components. Surges can also destroy data on the hard drives.

- Allow a space of at least eight inches around your system for proper ventilation.

- Do not plug the MaxPro or ProRack into the same electrical circuit with a "noisy" electric motor, such as a blender or a vacuum cleaner.

- Ground yourself by touching the system case before touching any hardware or software. This discharges the static electricity in your body. (Static electricity can damage components).

- Keep the system clean and free of dust. Use commercially available dust covers.

Troubleshooting

Troubleshooting Tools

The first and most important sign of trouble is that a particular device simply is not working. The other main indicator is that you receive error messages, either on power up or when attempting to use a particular device.

The SBP-205 functions only in conjunction with other components, including a passive backplane and optional adapter cards. Most problems with the SBP-205 will be traceable to connections or to software including the BIOS.

Several common physical problems and problems with related devices are discussed in this section and in the *Troubleshooting Using System Utilities* topic later in this section.

There are three main troubleshooting tools:

1. Direct inspection

2. Troubleshooting using system utilities

-

The various Windows operating systems, for example, provide system information, data on problem devices and other troubleshooting utilities.

3. Troubleshooting Tables

These tables deal with problems and solutions that are primarily physical in nature, but can also involve reconfiguring software installations. The *Troubleshooting Tables* build upon and work with what you learn by doing the initial inspection steps. Use all three tools together as necessary.

Troubleshooting by Direct Inspection

First, make sure that the power cord(s) and all external connectors are properly connected. Then make sure that the system itself and its peripherals are turned on, particularly any peripheral that isn't working.

Next, answer this question: *Have you installed any new hardware or software since the system was last working properly?* If you have just added any new hardware or software, then remove the software or device and see if the system now runs correctly. If it does, reinstall the new device and/or software. Reinstalling often resolves hardware conflicts and solves the problem.

Troubleshooting Using System Utilities

Different operating systems provide different arrays of troubleshooting and system utilities. The steps outlined here provide an example of using the Windows NT system utilities to pinpoint problem devices.

1. Access the Control Panel from the Start Menu or from the Windows desktop.

2. Double-click the **Devices icon**. This will display the Devices window.
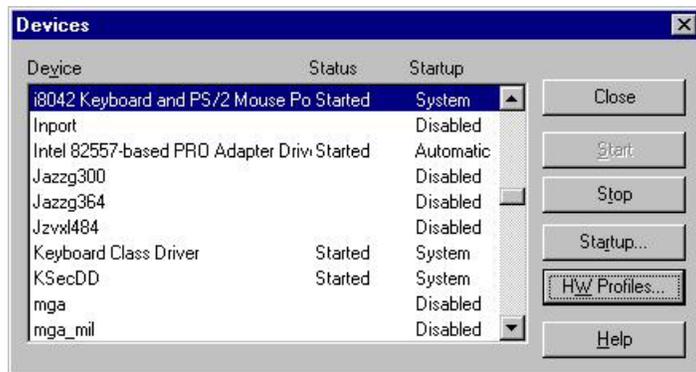
Figure 14—Windows NT Devices Window

3. Select the problem device and click the **HW Profiles** button. This will display the Device window.

4. Click the **Enable** button if the device is incorrectly disabled.

•
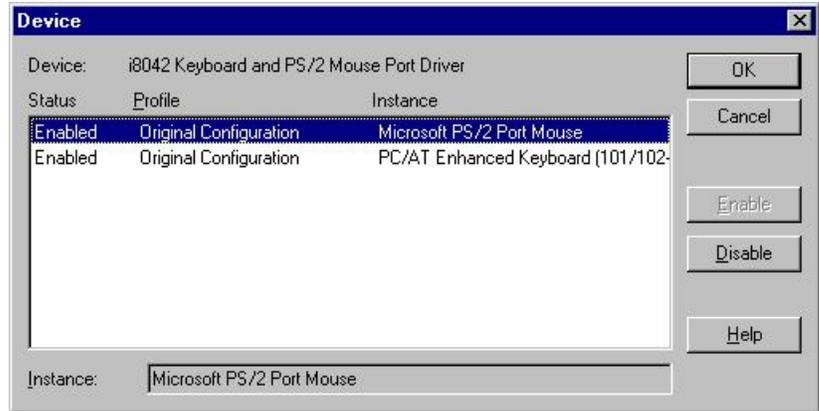
Figure 15—Windows NT Device Window

5. Click the **Disable** button if the device is enabled and is still not functioning properly.

6. Adjust the resource settings as necessary using the BIOS setup utility.

The resource settings include the IRQ and the I/O address currently in use by the device. This often is where a device problem can occur, as the IRQ or the I/O address settings can be the same as those for another device on the system.

If there is a device conflict, reinstalling the software drivers will usually reassign IRQs and I/O addresses and often will resolve the conflict and the problem.

Windows NT does not provide direct control of device resource allocations or hardware conflict information. Individual devices must be installed using the BIOS utilities. See *BIOS* Configuration for more information.

Windows 2000 addresses this deficiency, and provides more detailed system information and greater device installation control from within the operating system.

Troubleshooting Tables

The following tables list common problems and the basic handlings to resolve those problems. The handlings are only the most likely steps to take, suggested guidelines. Use them in conjunction with the direct inspection and system utilities tools discussed earlier.

-

SBP-205 Troubleshooting Tables

GENERAL PROBLEMS	HANDLING
The system will not power on.	1. Make sure that the power cables are properly connected. 2. Make sure that all power strips, UPS and power outlets have power. 3. If you've just installed a new optional device, remove it and reboot the system. 4. Make sure that all power switches on the MaxPro or ProRack hot swappable power supplies are in the **On** position. If the problem persists, have the system serviced.
Damaged switches, broken indicator lights, etc.	Have the system serviced and the broken or damaged parts replaced.
Other power problems or intermittent power errors.	1. Make sure that all external power connectors are properly seated and that the system power switches are on, including the front panel switch, auxiliary switches and individual power supply switches. 2. Make sure that the current selector switches on the power supplies are set to the proper current (110v or 220v). 3. If this does not resolve the problem, inspect the P1 and P2 power connector on the passive backplane. Also inspect the other power connectors such as the Auxiliary P1 and P2 connectors and terminal lugs if they are in use. Make sure that all connectors are properly seated at both ends and that there are no breaks in the wires. If the problem persists, inspect the on-board connectors for damaged pins. If any pins are damaged, have the system serviced.
CMOS (system) clock errors.	1. Inspect the lithium 3.3 volt (BAT) connector on the passive backplane. Make sure that the connector is properly seated at both ends. 2. If the problem persists, inspect the battery located on the SBP-205. Make sure that it is properly seated or replace the battery. 3. If the problem persists, inspect the BAT connector on the passive backplane for damaged pins. If any pins are damaged, have the system serviced.
Reset button does not reset the system.	1. Inspect the reset/turbo (RST) connector on the passive backplane. Make sure that the connector is properly seated at both ends. 2. If the problem persists, inspect the RST connector on the passive backplane for any damaged pins. If any pins are damaged, have the system serviced. If the problem persists, have the system serviced.

-

INPUT DEVICE PROBLEMS	HANDLING
Some or all of the keyboard keys don't work.	1. Make sure that the keyboard is properly connected to the system, and make sure that the system and the monitor are turned on. 2. Test if the problem is with the keyboard or something else by swapping out the keyboard with one from another system. 3. If the problem lies with the keyboard itself, have it serviced or replaced.
The mouse doesn't work.	1. Make sure that the mouse is correctly connected to the system. If so, use the Inspection steps outlined above to determine if the mouse drivers are properly installed and not in conflict with any other drivers. 2. If the problem persists, replace the mouse.

MONITOR PROBLEMS	HANDLING
The screen is blank.	1. Make sure that the screen has not been blanked by power management settings. If so, moving the mouse or touching a key will bring the monitor back to active mode. 2. Make sure that the monitor power cord is plugged into a working electrical outlet. 3. Make sure that the monitor itself is turned on and that the contrast and brightness are properly adjusted. 4. Make sure that the monitor cable is properly connected to the system unit. 5. If these steps don't resolve the problem, have the monitor serviced or replaced.
The monitor screen is out of synchronization	1. Reduce the resolution of the video display adapter. Consult the operating system and/or video display adapter user guides for procedures. 2. Reduce the refresh rate. Consult the operating system and/or video display adapter user guides for procedures.
The screen flickers some or all of the time.	Use the monitor software utilities (see your monitor user manual) to set it for the highest possible refresh rate. If the problem persists, have the monitor serviced or replaced.
Distortion or some other kind of screen jitter, wavy image or rolling image.	Check all monitor connections and any self-tests described in your monitor's user manuals. If the monitor checks out OK, inspect the monitor's location. Is it near some other electromagnetic device such as an appliance, electrical transformer, fluorescent lights, etc? If so, turn off the monitor and either move it or the other device a minimum of a foot apart. Turn the monitor back on. If the problem still persists, have the monitor serviced or replaced.

-

MEMORY PROBLEMS	HANDLING
The amount of memory displayed by the operating system is less than the memory installed.	1. Make sure that the DIMMs are properly installed and seated in their slots. You'll have to open the system case to do this. See *Installing and Removing Memory* for information and procedures.
	2. Make sure that the installed memory is the correct type for the system, or if you have more than one memory module installed, that all modules are compatible. See *Memory Guidelines* for more information.
	If this is all correct, the operating system provides an array of troubleshooters and diagnostics to help you identify the problem. In Windows operating systems, this utility can be accessed through Windows Help.

PORT OR PERIPHERAL DEVICE PROBLEMS	HANDLING
The parallel port doesn't work or isn't recognized by the system.	1. The parallel port is mounted on the SBP-205. Check the BIOS setting to see if it has been disabled.
	2. Open the system case and make sure that the parallel port data cable and power connector are properly seated in their slots on the SBP-205. Refer to Connectors to make sure it's in the right slot.
	3. Use the system utilities troubleshooting steps to make sure that the port has a unique I/O address and that it is not in conflict with any other devices.
	If the problem persists, have the system serviced.
The number of serial and parallel ports displayed is less than the number installed.	1. Make sure that the port has not been disabled in the BIOS CMOS.
	2. Use the system utilities to make sure that each port has a unique I/O address and that none are in conflict with any other devices.
	3. Make sure that the internal port connectors are properly seated in the proper slot on the SBP-205. Refer to *Connectors* to make sure each is connected to the correct slot.
	If the problem persists, have the system serviced.
A serial or parallel device doesn't work. This includes printers and any other devices that connect to serial or parallel ports.	Make sure that the ports are functioning, as in the above section of this table. Make sure that the device is properly connected to the port, is turned on, and that the driver(s) are properly installed.
	If the problem persists, and the ports are functioning properly, have the device serviced or replaced.

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PORT OR PERIPHERAL DEVICE PROBLEMS	HANDLING
The system does not recognize an installed PCI or ISA adapter.	1. Make sure that any external connections to the adapter are properly connected.
	2. Ensure that any software applications or drivers for the PCI or ISA adapter have been installed correctly. Consult the manual that came with the adapter for specific troubleshooting steps.
	3. If the problem persists, inspect the PCI or ISA adapter. Make sure that it is properly seated into the PCI or ISA slot. If any additional connectors are required, make sure that they are properly seated.
	4. If the problem persists, try installing the adapter to a different slot.
	If the problem persists and there are no other system problems, have the adapter serviced or replaced.

DISKETTE DRIVE PROBLEMS	HANDLING
The diskette drive isn't working: the in-use light stays on, or the system doesn't recognize the drive at all.	Ensure that there is a diskette properly inserted in the drive. If so, then make sure that the diskette itself is properly formatted and isn't damaged. Damage doesn't have to be evident to the naked eye—such as a cracked casing. The diskette or the data on it could have been damaged through becoming magnetized.
	Make sure the floppy cable is connected correctly. The floppy light will stay on if the cable is reversed.
	If the diskette is okay, make sure it contains the proper files to do what you want it to do (in the case of a software installation or program diskette).
	If the problem persists, have the system serviced. The drive itself might be improperly connected or malfunctioning.

-

HARD DRIVE PROBLEMS	HANDLING
A frontloading swappable hard drive doesn't work or data on the drive isn't detected by the system or a flashing green LED indicates a problem.	1. Gently press on the front of the drive tray to make sure that the tray connectors are properly seated and that the tray face is flush with the MaxPro or ProRack system case. 2. If the drive still does not work, unlock the keylock and remove the drive tray. Make sure that the power connector and the controller connector are properly connected to the drive. Return the drive tray to operating position. Make sure it is properly seated and lock the keylock. 3. If there is more than one tray, try swapping with another one to see if it can be recognized by the controller card. Do not swap the position of a drive in a RAID Array. (It is position sensitive). If the drive still does not work, have the drive serviced or replaced.
Other hard drive data access problems.	Consult the SCSI documentation for termination information and procedures. All SCSI devices must be properly terminated. CSS Laboratories terminates the last SCSI cable end with an active terminator. If none of the above solutions resolve data access or other system operation problems related to the hard drive, see the operating system user guides for diagnostic and repair tools.

CD-ROM DRIVE PROBLEMS	HANDLING
The CD-ROM doesn't work or data on the CD isn't detected by the system.	Clean the CD-ROM with a clean, lint-free cloth using a motion outward from the center, NOT in a circle. (This can damage the data on the disk). If this doesn't solve the problem, clean the optical head lens. Lens cleaning kits are commercially available. Make sure that the CMOS and SCSI settings are enable for the CD. If this still doesn't solve the problem, have the CD-ROM serviced or replaced.
The CD-ROM disk tray doesn't work.	Make sure that the system power is turned on. The tray won't open and close without it. To open a tray that is stuck closed, gently insert the tip of a paperclip into the manual tray release (a small hole to the right of the tray release button.) Press gently to open the tray. This will often free it. If the tray still doesn't work, have the drive serviced or replaced.

-

CD-ROM DRIVE PROBLEMS	HANDLING
The system doesn't recognize the CD-ROM drive.	Check for missing or improperly installed software drivers.
	If the correct drivers are properly installed, open the system case and ensure that the CD-ROM power connector and controller connector are properly connected at both ends.

SOFTWARE PROBLEMS	HANDLING
A software program doesn't work: it terminates, gives error messages, causes problems with other software applications, etc.	Make sure that the problems are caused by the software itself by answering some questions:
	▪ Does the system have the memory required to run the software? Refer to the program manual for memory requirements.
	▪ Is the memory properly installed and configured?
	▪ Is the software designed to run on your system?
	▪ Does other software work on your system?
	▪ Does the software work on another system?
	Refer to the software manual for the meaning and handling of any error messages to help narrow down the problem.
	If the software is not the problem, then trace down the various system devices that the software uses. Apply the troubleshooting steps outlined in these tables and earlier in this topic to ensure that those devices are properly connected and working.

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Section 4 – Technical References

SBP-205 General Specifications

Form factor	13.28" x 7.25"
CPU	Single Intel Pentium II/III: ▪ Host bus frequencies of 66/100/133 MHz ▪ Up to 1 GHz
Cache	An external 64-bit wide non-blocking second level (L2) cache, supporting 256K or 512K running at full CPU speed is inside the CPU.
Memory Subsystem	On-board 64-bit path memory: ▪ Two (2) 168-pin DIMM sockets. Each socket provides one bank of memory ▪ Up to 512 MB total memory (2 x 256MB) ▪ Either standard SDRAM or PC-133 SDRAM ▪ ECC supported.
Bus Interface	ISA and PCI Local Bus compatible.
PCI Local Bus Interface	Fully compliant with the PCI Local Bus 2.1 specifications. ▪ Optimized to allow the CPU to sustain the highest possible bandwidth (greater than 100MB/sec sustained) and low latency of the PCI Bus. ▪ Supports 4 PCI masters, pipeline snoop ahead and improved PCI to DRAM write-back policy.
Data Path	▪ 64-bit Data/Memory ▪ 16 bit ISA ▪ 32-bit PCI
Interrupts	▪ 11 edge sensitive and configurable ▪ 4-PCI level sensitive ▪ Mapped as any unused IRQ, configurable. ▪ Fully Plug-and-Play compatible.

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DMA Channels	Fully PC compatible with seven DMA channels, each supporting type F transfers.
Clock/Calendar	Real Time Clock supported by a lithium battery.
Power Requirement	17 amps +5 Vdc 0.1 amps –12 Vdc 5 amps +12 Vdc
Peripheral Support	▪ Floppy/EIDE (headers) ▪ 2 serial ports (rear connectors) ▪ 1 parallel port (header to connector) ▪ PS/2 keyboard (rear connector) ▪ PS/2 mouse (rear connector) ▪ 2 USB ports (headers to connectors)
BIOS Features	AMI BIOS including: ▪ Advanced CMOS setup for system parameters ▪ Peripheral management for configuration of on-board peripherals ▪ PCI to PCI bridge steering ▪ PCI Interrupt steering
O/S Compatibility	MS-DOS, Windows, Windows 98/Millenium, OS/2, SCO UNIX, Interactive UNIX, Interactive UNIX, QNX, Linux, Windows NT/2000
Environmental Specifications	Temperature: 0° to 55° C Humidity: 20% to 80% non-condensing

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Memory Configuration

The following chart shows all possible memory configurations for the SBP-205.

SBP-205 Memory Configuration

RAM	Bank 0	Bank 1	RAM	Bank 0	Bank 1
64 MB	8M x 64/72		256 MB	32M x 64/72	
128 MB	8M x 64/72	8M x 64/72	320 MB	32M x 64/72	8M x 64/72
128 MB	16M x 64/72		384 MB	16M x 64/72	32M x 64/72
192 MB	16M x 64/72	8M x 64/72	512 MB	32M x 64/72	32M x 64/72
256 MB	16M x 64/72	16M x 64/72			

System Interrupt Chart

The processor has 2 controllers that supply a total of 16 IRQs. The following chart shows IRQ assignments in order of decreasing priority.

System Interrupts

IRQ	Function
NMI	Parity error
IRQ0	Reserved, interval timer
IRQ1	Reserved, keyboard buffer full
IRQ2	Reserve, cascade interrupt from slave PIC
IRQ3	Onboard serial port 2
IRQ4	Onboard serial port 1
IRQ5	User available
IRQ6	Onboard floppy controller
IRQ7	Onboard parallel port
IRQ8	Real-time clock (RTC)
IRQ9	User available
IRQ10	User available
IRQ11	User available
IRQ12	Onboard mouse port if enabled, else user available
IRQ13	Reserved, math coprocessor
IRQ14	Onboard primary IDE disk controller
IRQ15	Onboard secondary IDE disk controller

-

IRQ9, IRQ10, IRQ11, IRQ12, IRQ15, IRQ3, IRQ4, IRQ5 and IRQ7 can be redirected to PCI add-in boards.

The PCI standard has a 4-IRQ limitation. Some PCI add-in boards do not require IRQs. Some can share an IRQ with another board of the same model and manufacture. Check the add-in board documentation for IRQ information.

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Notices and FCC Information

FCC Standards

The FCC (Federal Communications Commission) restricts the amount of radiation and radio frequency emissions emanating from computing equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna. Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CSS Laboratories, Inc. is not responsible for any radio or television interference caused by unauthorized modifications to this equipment. Operation with non-certified peripherals is likely to result in interference to radio and TV reception.

To ensure compliance to FCC non-interference regulations, peripherals attached to this device require shielded I/O cables.

NOTICE: The use of a non-shielded I/O cable with this device is in violation of U.S. Federal law and will not allow the device to meet the maximum emission limits.

CAUTION: Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

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Glossary of Terms

Adapter

A circuit board that plugs into the computer motherboard. Used to communicate with a particular external device.

AGP

Accelerated Graphics Port. A connector on the motherboard for an accelerated graphics controller card.

APM

Advanced Power Management. An interface developed to conserve power in a computer system.

ATAPI

The interface used by the IBM PC AT system for accessing CD-ROM devices.

Backplane

A circuit board or framework that supports other circuit boards, devices, and the interconnections among devices, and provides power and data signals to supported devices

BIOS

Basic Input/Output System. A very basic set of instructions built into a computer that tells it how to execute input and output instructions.

Bus

An electronic pathway on which electronic information travels between the microprocessor and other computer parts.

Cache

A type of computer memory that is very fast in which the computer temporarily stores information.

CD

Compact Disc. A nonmagnetic, polished metal disc with a protective plastic coating that can hold large quantities of digital data.

-

CMOS

Complementary Metal-Oxide Semiconductor. 1. A semiconductor technology in which pairs of transistors are integrated on a single silicon chip. Generally used for RAM and switching applications, these devices have very high speed and extremely low power consumption. 2. The battery-backed memory used to store information needed to boot a computer, such as the type of disks and the amount of memory, as well as the clock/calendar time.

Configuration

A particular arrangement of elements or features. The way in which these elements are combined.

Configure

To prepare or customize hardware and/or software in a certain way.

Controller

One device that controls the operation and function of another. Typically, a controller is a circuit board installed inside the computer to which external devices such as monitors, printers or disk drives are connected.

CPU

Central Processing Unit. The "brain" of the computer, the chip that controls all computer functions.

Default

In computer terms, the setting that will be used if you don't instruct the computer to use something else.

DIMM

Dual Inline Memory Module. A type of memory chipset installed on the motherboard.

DIN

Deutsche Industrie Norm. A multipin connector conforming to the specification of the German national standards organization .

Diskette

A removable magnetic storage device encased in plastic. Also called a "floppy disk."

DMA

Direct Memory Access. Memory access that does not involve the microprocessor and is frequently used for data transfer directly between memory and an "intelligent" peripheral device, such as a disk drive.

-

DMI

Desktop Management Interface. A system for managing the configurations and status of PCs on a network from a central computer.

Driver

A special program that controls a device such as a mouse, CD-ROM or modem.

ECC

Error-Correcting Code. A code designed for transmission of electronic data so that transmission errors may be detected and corrected at the receiving end.

EDO

Extended Data Out. A type of dynamic random access memory (DRAM) that allows for faster read times than DRAM of comparable speed by allowing a new read cycle to begin while data is being read from a previous cycle.

EIDE

Stands for Enhanced Integrated Drive Electronics. An extension of the IDE standard, Enhanced IDE is a hardware interface standard for disk drive designs that house control circuits in the drives themselves. It allows for standardized interfaces to the system bus while providing for advanced features, such as burst data transfer and direct data access. Enhanced IDE accommodates drives as large as 8.4 gigabytes (IDE supports up to 528 megabytes). See also *IDE, SCSI*.

Ethernet

A local area network (LAN) standard that uses coaxial or twisted pair cable.

Hard Drive

A magnetically coated metal disk sealed in a box, used to store large quantities of data.

I/O address

Input/Output address. The place in computer memory where data from devices is read or written.

IDE

Integrated Drive Electronics or Intelligent Device Electronics. A type of interface for controlling hard disk drives.

IRQ

Interrupt ReQuest. Used to let the computer know that a device is ready to do something or that it has done something.

-

ISA

Industry Standard Architecture. A bus design that allows components to be added as cards plugged into computer expansion slots.

Jumper

A pair of prongs that are electrical contact points set into a computer motherboard or an adapter card. A small plastic plug placed on the prongs completes a contact in order to alter an aspect of the computer configuration. A group of jumpers is called a *jumper block.*

LAN

Local Area Network. A group of computers and other devices dispersed over a relatively limited area and connected by a communications link that enables any device to interact with any other on the network.

LED

Light Emitting Diode. A device that emits light when electricity passes through it.

LUN

Stands for Logical device or drive Unit Number. A device named by the logic of a software system, regardless of its physical relationship to the system.

Menu

A list of options from which a user can make a selection in order to perform a desired action.

MIS

Management Information Systems. Usually a department within a company that is responsible for running and repairing computers and software.

Motherboard

The main circuit board of a computer to which most other devices connect. A single board computer combined with a passive backplane form one complete motherboard with extended processing, power and device connection capabilities.

Parallel

The transmission of data eight or more at a time; a type of device, such as a "parallel port" that sends or receives data in this fashion. See also: *Serial.*

Passive Backplane

See *Backplane.*

-

PCI

Peripheral Component Interconnect A computer industry standard bus. See also: *Bus*.

Peripheral

External equipment or devices connected to the computer. Examples include monitor, printer, scanner, mouse and speakers.

Port

A jack in the back of the computer into which you can plug a peripheral device.

POST

Power On Self Test. This is the battery of tests the computer runs on itself when it starts.

P/S2

A bus designed with Micro Channel Architecture as found in most IBM PS/2 computers. The Micro Channel functions as either a 16-bit or a 32-bit bus. The P/S2 bus can be driven independently by multiple bus master processors.

RAID

Stands for Redundant Array Of Independent Disks. A data storage method in which data, along with information used for error correction is distributed among two or more hard disk drives in order to improve performance and reliability. The hard disk array is governed by array management software and a disk controller, which handles the error correction. RAID is generally used on network servers.

RAM

Random Access Memory. The internal memory of the computer, stored on chips installed on the Motherboard.

Reboot

To restart the computer. A "warm reboot" is done by pressing a reset switch. A "cold reboot" is done by turning the machine off and then on again.

SCSI

Small Computer System Interface, often pronounced "skuzzy." An industry standard for connecting hard disks, tape drives and scanners to computers.

SDRAM

Synchronous Dynamic Random-Access Memory (DRAM). SDRAM can run at higher clock speeds than conventional DRAM.

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Serial

The transmission of data one bit after another in single file; a device that sends or receives this kind of data transmission. See also: *Parallel*

Server

On a local area network (LAN), a computer running administrative software that controls access to the network and its resources, such as printers and disk drives, and provides resources to computers functioning as workstations on the network.

Single Board Computer

A computer that occupies only one circuit board, usually with no capacity for additional boards.

Terminate

With reference to hardware, to install a plug, jack, or other connector at the end of a wire or cable.

USB

Universal Serial Bus. A type of serial device connector.

VGA

Video Graphics Adapter. A video adapter that duplicates all the video modes of the EGA (Enhanced Graphics Adapter) and adds several more.

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