
User's Manual

E486C CPU Card

18203B
November, 1994
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Preface

Texas Micro's Model E486C CPU Card is an integrated EISA/AT 33-66 MHz computer system on a single, full-size EISA/AT form factor that can be inserted into a PCXI standard passive backplane. The E486C features multi-function I/O control, including IDE and floppy drive control, plus serial and parallel ports and a PS/2 mouse port. It can be operated with all AT-compatible accessory cards, such as serial and parallel I/O cards, video and disk controllers, etc. Features of the E486C include:

- Supported processors: 33 and 50 MHz 486DX, 50 and 66 MHz 486DX2 and DX4-33/99
- External cache support with 256 KBytes of data RAM
- Up to 64 MBytes of DRAM supported in 4MByte x 36 SIMM modules
- 256 KBytes of flash memory for BIOS and user application field upgrades
- Auxiliary boot ROM (in instances of Flash programming error or failure)
- IDE (Integrated Device Electronics) hard drive interface, allowing control of high-speed, high-capacity disk drives
- 3.5" and 5.25" floppy disk drive controller that allows access to all PC/AT standard formats, including 360 KBytes, 720 KBytes, 1.2 MBytes and 1.44 MBytes
- One (1) IBM PC/AT-compatible RS232 serial port with internal baud rate generation
- One (1) serial port configured as RS232, RS422 or RS485
- One (1) parallel port with bi-directional transfer capability or unidirectional printer-directed output
- One (1) PS/2-compatible bus mouse port
- One (1) AT keyboard connector

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HOW TO USE THIS MANUAL

Thank you for purchasing Texas Micro's E486C CPU Card.

Your E486C User's Manual is designed to provide easy access to information you need to operate the E486C CPU Card. It's also designed to accommodate all levels of users - from the novice to the experienced professional.

The E486C is configured for operation at the Texas Micro factory. When you receive your E486C, it's ready to be installed and used. This manual will guide you step-by-step through the procedures required to operate the E486C.

INEXPERIENCED USERS

Computer novices should use this manual as a training and reference tool as well as an installation/operation guide. Begin by reading Chapter 1, *Getting Started*. This chapter will describe the E486C and its components. It will also provide information necessary to verify the E486C's hardware configuration. Continue with Chapters 2, *E486C Installation*, and 3, *Connecting Peripherals*. By completing the steps outlined in Chapters 1, 2 and 3, you will have prepared the E486C for operation. Proceed with Chapter 4, *Power-up*.

Power-up will tell you what happens when power is introduced to the E486C and will guide you to Chapter 5, *Using the Setup Utility*, which will tell you how to verify the E486C's configuration. After you complete this chapter, you will be ready to place the E486C into operation. Later, you may decide that you need extra memory. Chapter 6, *Memory Configuration*, provides information.

Finally, Chapter 7, *General Maintenance*, provides guidelines for returning Texas Micro products for service or repair. If you have any questions, call our Technical Support Department at 1-800-627-8700.

ADVANCED USERS

The E486C User's Manual provides a "quickstart" path for advanced users. Read the *QuickStart* segment following Chapter 4.

The *QuickStart* segment will give a short outline of the installation and startup procedure. It will direct you to check switch and jumper settings as well as the E486C Setup Utility configuration. Appropriate chapters will be referenced.

Once you've verified the hardware configuration, installed the board, introduced power to the E486C and checked the Setup Utility, you can place the E486C into full operation. You can then use the manual as a reference guide.

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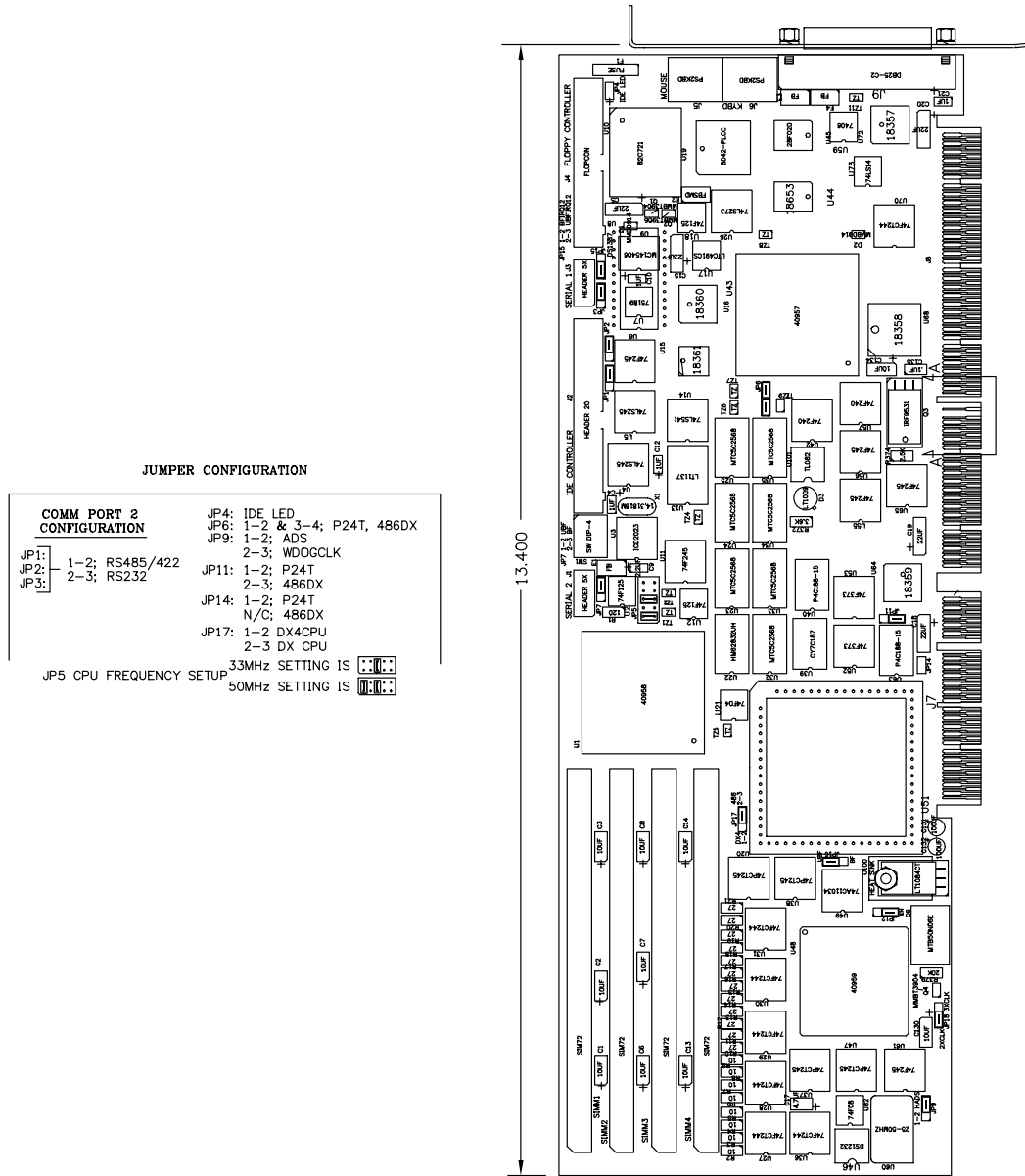
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This chapter is designed to provide the novice with enough information to verify the configuration of the E486C and prepare the board for installation and operation. Advanced users should read the “A Word About EISA Backplanes” notice in this section, then skip to the *Quickstart for Advanced Users* segment immediately following Chapter 4.

First, what is the E486C? It's an integrated EISA/AT computer system on a single, full-size EISA/AT form factor that can be inserted into a PCXI EISA standard passive backplane. The E486C features multi-function I/O control, including IDE and floppy drive control, plus serial and parallel ports and a PS/2 mouse port.

Let's begin by describing some of the E486C's main components. Figure 1 is an overall view of the E486C.

FIGURE 1



1.1 E486C Components

The E486C contains the components normally found on a plug-in CPU card: a microprocessor, “headers” and “connectors,” a “dip switch” block, “jumper” blocks, “SIMM” sockets, etc. Figure 1 provides the location of these components.

The **microprocessor** is the “brain” of the E486C, where basic arithmetic, logic and control functions are processed. The E486C supports a 33-50 MHz 486DX, 50-66 MHz 486DX2 and DX4-33/99 processors.

Headers (also called “header/connector”) are components used to connect peripherals (via connecting cables) to the E486C. For example, locate the “IDE Hard Drive” header on the E486C (see Figure 1). This header serves as a hard drive controller; you would use an appropriate cable to connect an IDE hard drive to this header. Other headers located on the E486C include:

- a floppy drive header
- a serial port header used to connect serial devices to the E486C
- a keyboard header

Connectors are also used to connect external components to the E486C, but, unlike headers, connectors are located on the I/O bracket at the end of the E486C board (which will make them accessible when you install the board, as we will discuss later). These include a PS/2 mouse port connector, a connector for a PS/2 or an AT keyboard, and a parallel port connector.

The E486C **dip switch block**, known as SW1, is located at the top of the board. It contains four (4) small dip switches, each of which controls a different function. These switches are discussed in detail in Section 1.2.1.

Jumper blocks are small electronic components that contain pins, or small electronic leads, some of which are connected via jumpers (or “shunts”), small conductors used to divert electrical current. These jumper blocks have certain functions, depending on their configuration. We’ll also discuss jumper blocks in Section 1.2.2.

SIMM (Single Inline Memory Module) sockets are located on the left side of the E486C Board. SIMM’s are “sticks” of DRAM (Dynamic Random Access Memory) that can be inserted into these sockets, providing extra memory. SIMM’s are discussed at length in “Memory Configuration” on page 92.

1.2 Before You Install the E486C

Now that you’re familiar with some key E486C components, let’s discuss those components you’ll need to check before you install your E486C.

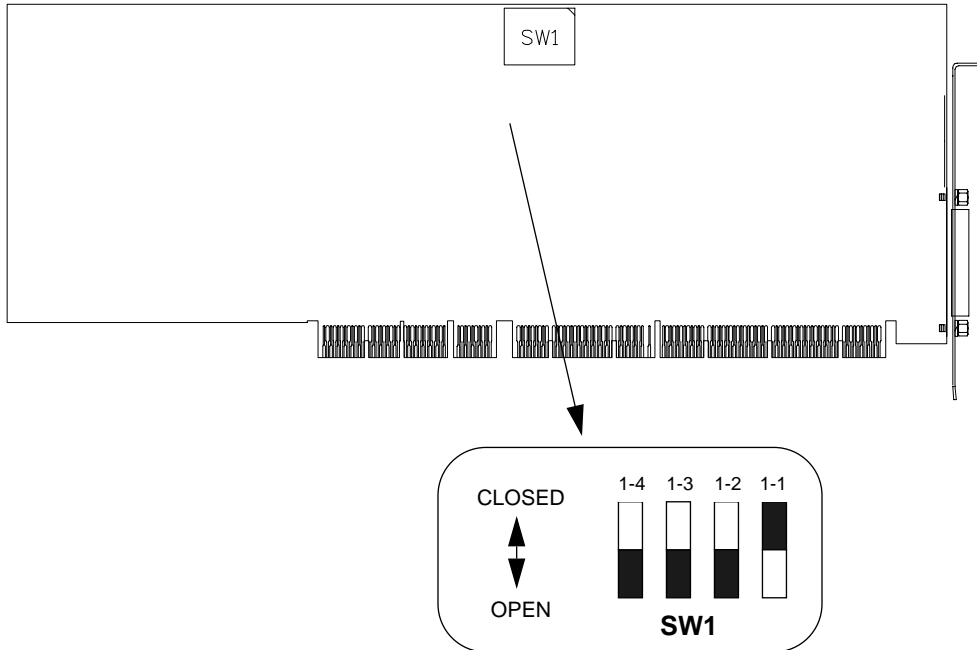
First, it is important to protect yourself and your equipment before you perform any of the following procedures. **Never touch the E486C while it is installed in the chassis and power is ON.** You should check the E486C configuration before you install the board. However, if the E486C is already installed in your system, remove power by turning all power switches OFF and disconnecting all power cords from their power sources. Follow all safety precautions outlined by the chassis manufacturer. *Only qualified, experienced electronics personnel should access the unit’s interior.*

Also, **do not touch the E486C unless you are wearing a static-dissipative device such as the grounding wrist strap provided with your E486C.** Static electricity can damage sensitive E486C components.

Before you install the E486C, check the dip switch and jumper settings outlined in Sections 1.2.1 and 1.2.2. Pay particular attention to the dip switch settings; the jumpers are preconfigured at the factory and are appropriate for most applications. Memory SIMM’s are also installed at the factory.

1.2.1 Checking the Dip Switch Settings

Locate Switch Block SW1, the four-switch block positioned at the top of the E486C board. Note that these switches are numbered, from right to left, one (1) through four (4). Thus, the switch on the far right side of the block is SW1, position 1, or SW1-1.



SW1-1 is used to set the default monitor type. When SW1-1 is CLOSED, the E486C is configured to run with a **color** monitor. When it is OPEN, SW1-1 is set to the **monochrome** monitor position. **The E486C is shipped with this switch CLOSED.** If you're using a color monitor, be sure that SW1-1 is CLOSED. If you're using a monochrome monitor, OPEN this switch (of course, make sure that no power is being fed to the E486C before you touch the switch).

SW1-2 controls the on-board ROM access. If you **OPEN** this switch, the Flash memory (special memory described in Appendix A at the back of this manual) is enabled and the auxiliary ROM is disabled. If this switch is **CLOSED**, the auxiliary ROM is enabled, and the Flash memory is disabled. **The E486C is shipped with this switch OPEN.**

SW1-3 is used in special cases when the CMOS RAM (Complementary Metallic Oxide Semiconductor Random Access Memory) becomes corrupted. This condition is usually accompanied by a “lock-up” of the system. The factory default values for E486C operation must then be reloaded into CMOS RAM. **Under normal conditions, SW1-3 should remain in the OPEN position.** However, when factory default values must be reloaded, see Section 5.3 for proper procedures.

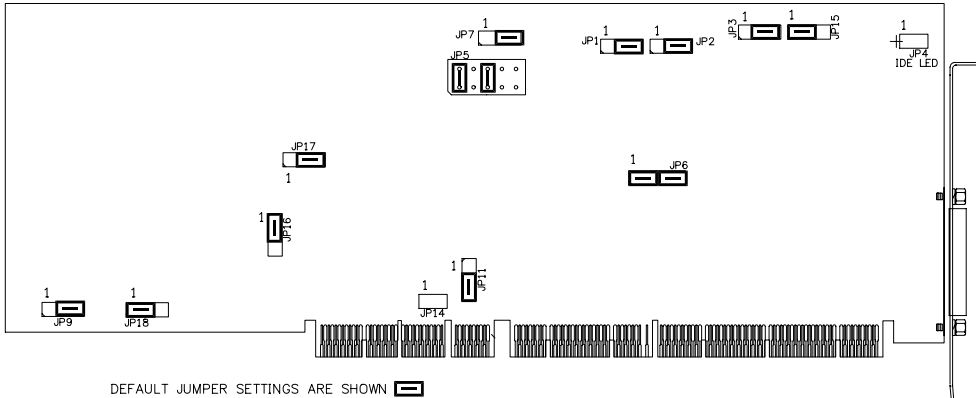
SW1-4 is used to configure the on-board I/O port:

- SW1-4 closed: I/O address is 370h
- SW1-4 open: I/O address is 270h

The default setting is 270h.

1.2.2 Checking the Jumper Block Settings

As discussed earlier, jumper blocks are small components containing electronic leads (called pins) sometimes connected by jumpers (small conductors). These blocks have specific functions that are affected by the presence and position of a jumper within the block. Locations of these blocks are shown in the figure below.

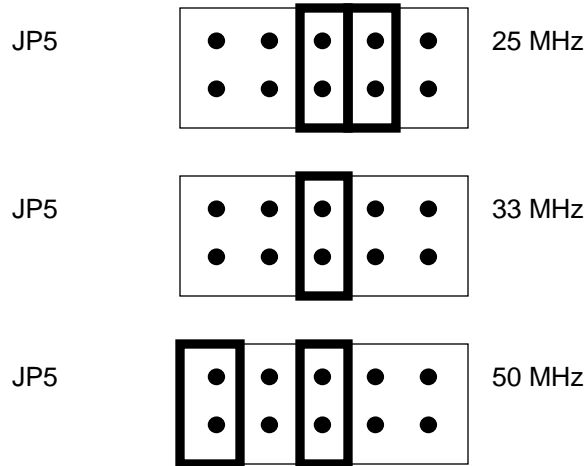


The following paragraphs provide more information about these jumper blocks. If, after reading the descriptions, you want to change the default jumper settings, do so with caution. **Only experienced electronics personnel should attempt to change these jumper settings. Make sure that no power is being fed to the E486C and that you are wearing the provided grounding wrist strap or other static-dissipative device.** If you have questions, call Texas Micro's Technical Support Department at 1-800-627-8700 or 1-713-541-8200.

Jumper Blocks JP1, JP2 and JP3 are three-pin blocks used to select the configuration of COM Port 2, the 10-pin header located at the top middle of the board (see Section 3.1). Jumpering Pins 2 and 3 of these three blocks will configure COM2 for RS232 operation, while jumpering Pins 1 and 2 of these blocks will select RS422/485 operation. **The default is Pins 2 to 3 jumpered, RS232 operation.**

Jumper Block JP4 is a two-pin block used to connect and enable the IDE hard drive controller's activity LED. Pin 1 is the anode; Pin 2 is the cathode.

Jumper Block JP5 determines the host 486 CPU frequency configuration and provides an 8.33 MHz oscillator for the EISA bus. The following illustration outlines possible settings for this block.



Jumper Blocks JP6, JP11, JP12 and JP14 are preset at the factory and should not be changed.

Jumper Block JP7 is used to buffer the bus clock.

JP7: Pin 1 jumpered to Pin 2 Bus clock unbuffered
Pin 2 jumpered to Pin 3 Bus clock buffered (default)

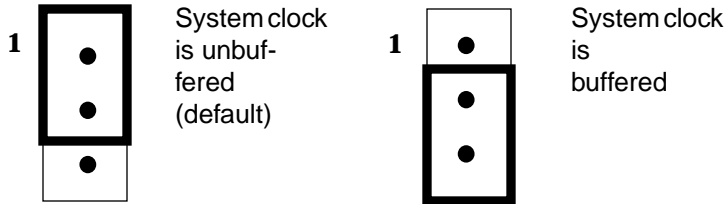
Use the unbuffered jumper setting if memory parity errors occur in a fully-loaded backplane.

Jumper Block JP9 determines the type of reset counter the E486C uses and, if the DS1232 reset counter is used, what the counter timing will be.

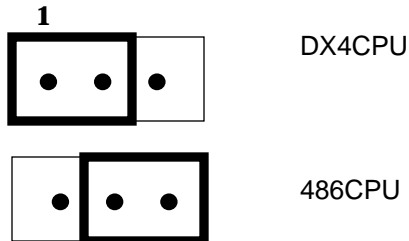
JP9: Pin 1 jumpered to Pin 2 CPU heartbeat (ADS)
Pin 2 jumpered to Pin 3 Free-running clock (default)

Jumper Block JP15 is used to “unbuffer” IRQ12 (mouse interrupt) in certain applications (see Chapter APPENDIX C - Application Notes for information about Next OS). The default setting (Pin 1 jumpered to Pin 2) is correct for most applications.

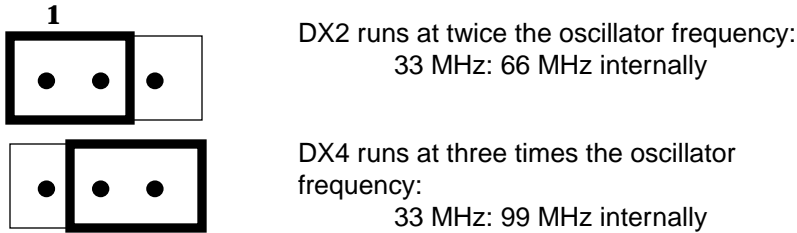
Jumper Block JP16 is used to buffer the system clock. This option is used in instances when the system exhibits DMA failures in a fully-loaded backplane.



Jumper Block JP17 is used to determine the CPU type.



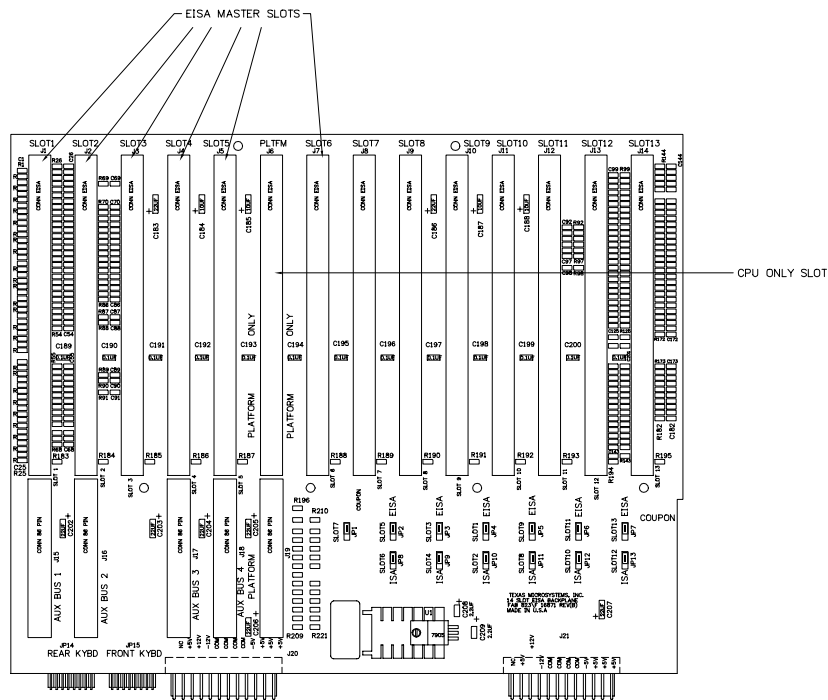
Jumper Block JP18 is used as a clock multiplier.



1.3 A Word About the EISA Backplane

The E486C CPU card is designed for use in an EISA (Extended Industry Standard Architecture) backplane. EISA backplanes are designed to accommodate the 486 processor, providing fast data transfers and multiprocessing support. The Texas Micro EISA passive backplane meets the PCXI EISA passive backplane standard.

Only one slot is used for the E486C CPU Card. With this CPU slot occupied, the remaining expansion slots are available for EISA or ISA expansion card support. The number of slots that support EISA bus master cards depends on the capabilities of the CPU card. The E486C supports six (6) slots as bus masters and the remaining slots as 32-bit EISA slaves. The CPU occupies Slot 0. The bus masters occupy Slot 1 through Slot 6 as shown on the backplane (see illustration below).



The Texas Micro EISA passive backplane is designed to operate as either an EISA or an ISA backplane. All slots (except the CPU slot) contain an ISA/EISA jumper for choosing the EISA slot-specific address enable or the ISA address enable. When jumpered to ISA, the slot is in the ISA address mode, with the signal AEN active to indicate I/O and DMA cycles. When jumpered to EISA, the slot is in the EISA address mode, with the signal AEN_x active, indicating that a particular slot will respond to I/O cycles.

By design, the ISA addressing mode is a subset of the EISA addressing mode. **Therefore, the default setting for the ISA/EISA jumper is EISA.**

Some ISA cards may experience timing problems with the ISA/EISA jumper set to EISA. **For these cards, set the jumper to ISA.**

If possible, reserve the bus mastering slots (Slots 1-6) for EISA bus mastering cards. If an ISA card is used in a bus mastering slot and the system does not operate correctly, set the ISA/EISA jumper to EISA or move the card to a non-mastering slot.

In order to implement the EISA Bus on a passive backplane, it is necessary to define an extension to the bus. This document defines two additional connector segments: P3 and P4.

- On slot 0, controller slot(s) P4 is used to route slot-specific signals to the corresponding slots.
- On all slots, including slot 0, slot(s) P3 is reserved for future definition for use in multiprocessing systems.
- On all non-slot 0 slots, P4 is a user-definable “P4 Auxiliary Bus.”
- Two types of extended edge-cards are defined. One is for slot 0 controller boards with special keying to fit only in slot 0 controller slots. The other is for P3 or P4 auxiliary bus boards with a different keying method to fit only into auxiliary bus slots (non-slot 0 slots).
- A special key is defined to slide into the P3/P4 connector to implement the two keying methods.

As previously mentioned, at least one slot on the backplane must be defined as a CPU slot or Slot 0 controller slot. There are no specifications for the placement of Slot 0. Lines implemented on the P4 extension of Slot 0 include the following.

ISA AEN	ISA Address enable line (goes low on any ISA operation)
AEN 1..15	Slot-specific Address Enable - EISA Slot 1..15
MREQ0..14	Bus Master Request - Master 0..14 - EISA Slot 1..15
MAK0..14	Bus Master Acknowledge - Master 0..14 - EISA Slot 1..15
PWRGD	Inhibits CPU boot-up until power is stable
KBDCLK	Clock line for keyboard
KBDDATA	Data for keyboard
KBDLOCK	Short to ground to inhibit keyboard operation
MOUSEDATA	PS/2-compatible mouse data
MOUSECLK	PS/2-compatible mouse clock
SPKR	Speaker data - tie speaker between this line and VCC
RST	Short to ground to reset system
GND	6 ground lines to reduce noise/crosstalk

- ISA AEN goes to pin A11 on any ISA-only slots
- AEN_x goes to pin A11 on slot *x*
- MREQ_x goes to pin G19 on slot *x* + 1
- MAK_x goes to pin H19 on slot *x* + 1
- Jumpers may be used on the backplane to allow any slot specific AEN to be tied to the ISA AEN line.
- Jumpers may also be used to provide a flexible means of determining which of the slots in the backplane is the CPU(Slot 0) slot. They may also be used to re-number slots; however, these schemes should be simple

Consult your EISA chassis manual for more information on the EISA backplane.

Once you have checked all switches and jumper blocks to ensure they match the desired configuration, you're ready to install the E486C into an AT-compatible chassis backplane. However, before installing the E486C Card, consult the documentation provided with the chassis.

CAUTION: *Always remove power from the system before installing the E486C. Follow all power-down procedures outlined in the chassis' user's manual. To ensure no injury occurs, disconnect the power cord from the power source. Only qualified, experienced electronics personnel should access the interior of a chassis.*

CAUTION: *The components of the E486C Card are very sensitive to static discharge. Therefore, Texas Micro provides a grounding wrist strap to remove all static electricity before touching the components. While out of the unit, E486C components should be placed on a static-dissipative surface or into a static-shielding bag.*

The procedure for installing the E486C into a Texas Micro chassis is described below.

1. Remove power from the chassis and disconnect all power cords. Follow all power-down procedures outlined in your chassis' user's guide.
2. Remove the chassis cover, then detach the circuit card hold-down bracket. This bracket stretches across the tops of the circuit cards and holds them in place.
3. Locate the desired bus location for installation (user's choice, although it is suggested that a location providing maximum distance between boards is chosen to allow proper ventilation).
4. Remove the I/O bracket spacer from the rear of the chassis. This spacer occupies the area where the card's I/O bracket is accessed through the back of the chassis.
5. Place the board ends into the appropriate card guide and card-end slot in the chassis. Lower the E486C into position and carefully push the card-edge connector into the slot. Ensure that the I/O bracket is accessible through the back of the chassis.
6. Secure the card-edge I/O bracket to the hold-down lip.
7. Attach any required cables, including the internal system keyboard connector cable to the E486C keyboard connector (see Section 3.2).
8. After installing the E486C and any other add-in cards desired, secure all PC boards by appropriately positioning the card hold-down bracket and securing it into place with the hardware provided for this purpose.
9. To install the E486C into a passive backplane not manufactured by Texas Micro, follow the instructions provided in this manual and the installation information provided by the backplane manufacturer.

Connecting Peripherals

The E486C provides several headers/connectors for attaching peripheral devices to the board:

- One (1) serial port
- One (1) configurable serial port (RS232 or RS422, 485)
- One (1) PS/2-compatible bus mouse port
- A PS/2 keyboard interface connector
- AT keyboard interface connector
- One (1) parallel port
- An IDE hard drive header/connector
- A floppy drive header/connector

This chapter supplies information and locations for each of these components. Pinouts of each connector are also included. A pinout identifies the function of each pin of a connector. Please note that, while this information is valuable to electronics personnel, it is not crucial to the everyday operation of the E486C. As long as the proper cable is used and the connecting plug is properly inserted, a supported peripheral should be operable when used with the E486C.

Please note the following cautions when connecting peripherals to the E486C CPU.

CAUTION: *Always remove power from the system before connecting peripherals to the E486C. To ensure no personal injury occurs, disconnect the power cord from the power source. **Only qualified, experienced electronics personnel should access the interior of a chassis.***

CAUTION: *The components of the E486C Card are very sensitive to static discharge. Therefore, Texas Micro provides a grounding wrist strap to remove all static electricity before touching the components. While out of the unit, E486C components should be placed on a static-dissipative surface or into a static-shielding bag.*

3.1 Serial Ports

Let's begin with the two serial ports. Serial ports allow you to connect serial devices (a serial mouse, serial printers, etc.) to the E486C via appropriate serial cables. Serial ports are also known as COM ports or UART (Universal Asynchronous Receiver/Transmitter) ports.

Note that one serial port (COM1 or UART 1), labeled J3, is located on the card's front surface (see Figure 2). If you've already installed your E486C, you must remove the chassis cover to access this port. Consult your chassis documentation for procedures on removing the chassis cover, **but remember to remove power from the system and unplug the power cord before you access the interior of the chassis. Most importantly, only qualified, experienced electronics personnel should access the interior of a chassis.**

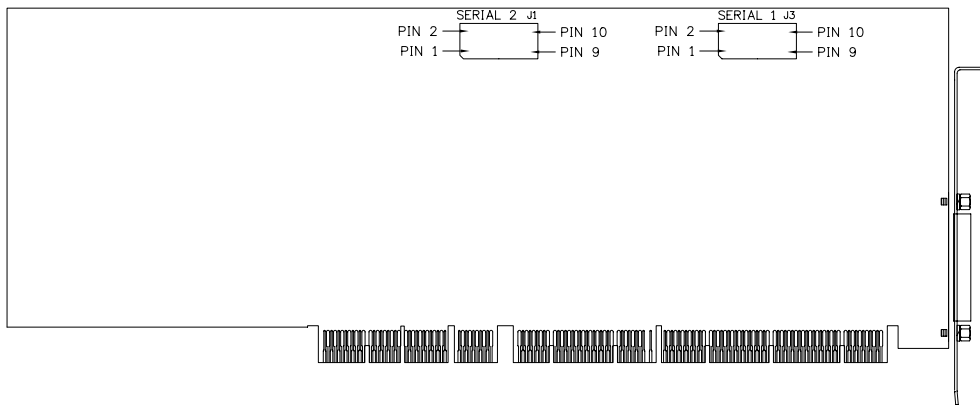
Note: The E486C uses type 16450 UART's.

The other serial port, COM2 (or UART 2), labeled J1, is also located on the card's front surface (see Figure 2). Again, if you've installed your E486C, accessing this port requires removal of the chassis cover. Consult your chassis documentation for procedures on removing the chassis cover, **but remember to remove power from the system and unplug the power cord before you access the interior of the chassis. Most importantly, only qualified, experienced electronics personnel should access the interior of a chassis.**

COM2 can be configured as an RS232 or an RS422/485 serial port via Jumper Blocks JP1, JP2 and JP3 (see Section 1.2.2). **The factory default is RS232.** Be sure to use the proper cable when connecting a serial device to the E486C (9-pin DB9 interface connector - Part No. SCF1).

More information about serial ports can be found in Section 5.2.1.

FIGURE 2



RS422/ 485 Pinout

Pin	Description
1	/Z Output (TX-)
2	/B Receive (RX-)
3	Y Output (TX+)
4	Not Connected
5	Not Connected
6	A Receive (RX+)
7	Not Connected
8	Not Connected
9	GND (Signal Ground)
10	VCC +5

RS232 Pinout

Pin	Description
1	DCD (Data Carrier Detect)
2	DSR (Data Set Ready)
3	RX (Receive Data)
4	RTS (Request To Send)
5	TX (Transmit Data)
6	CTS (Clear To Send)
7	DTR (Data Terminal Ready)
8	RI (Ring Indicator)
9	GND (Signal Ground)
10	VCC +5

3.2 Mouse and Keyboard Connectors

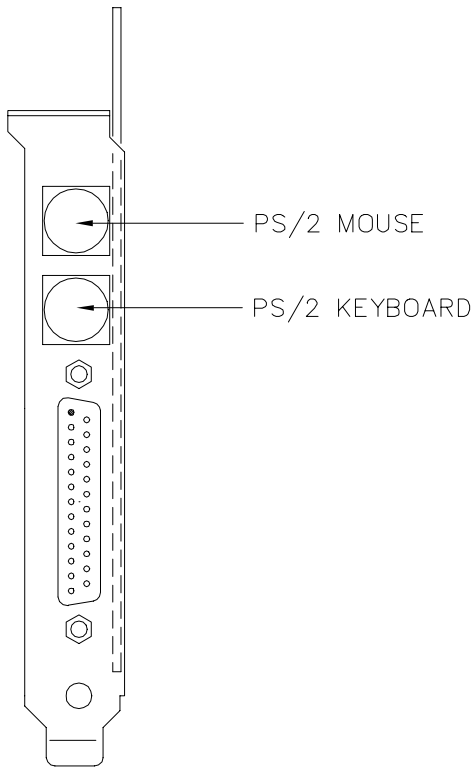
The E486C provides connectors for a PS/2-compatible bus mouse and keyboard. These connectors are located on the I/O bracket on the right edge of the E486C, above the 25-pin parallel port. Figure 3 provides illustrations of these connectors.

The top connector is used to link a PS/2 mouse to the E486C. Plug the mouse connector cable into the mouse port for operation (*Note: Follow the instructions included with your mouse to load mouse drivers and configure the system for mouse operation*).

The bottom connector is used for a PS/2 keyboard. If you wish to use an AT keyboard in the PS/2 connector, you must connect a mini-DIN 9/6 pin male/female adapter cable between the PS/2 connector and the AT keyboard. *Do not connect two keyboards at the same time.*

If you are running the E486C in a Texas Micro EISA chassis, you can also connect your AT keyboard to the system via the chassis' AT keyboard connector. Consult your system documentation for more information.

FIGURE 3



PS/2-compatible Bus Mouse Connector

Pin Number	Description
1	MOUSEDATA
2	NC (Not Connected)
3	GND (Signal Ground)
4	VCC (Fuse)
5	MOUSECLK (Mouse Clock)
6	NC (Not Connected)
7	GND (Signal Ground)
8	GND (Signal Ground)
9	GND (Signal Ground)

PS/2 Keyboard Connector

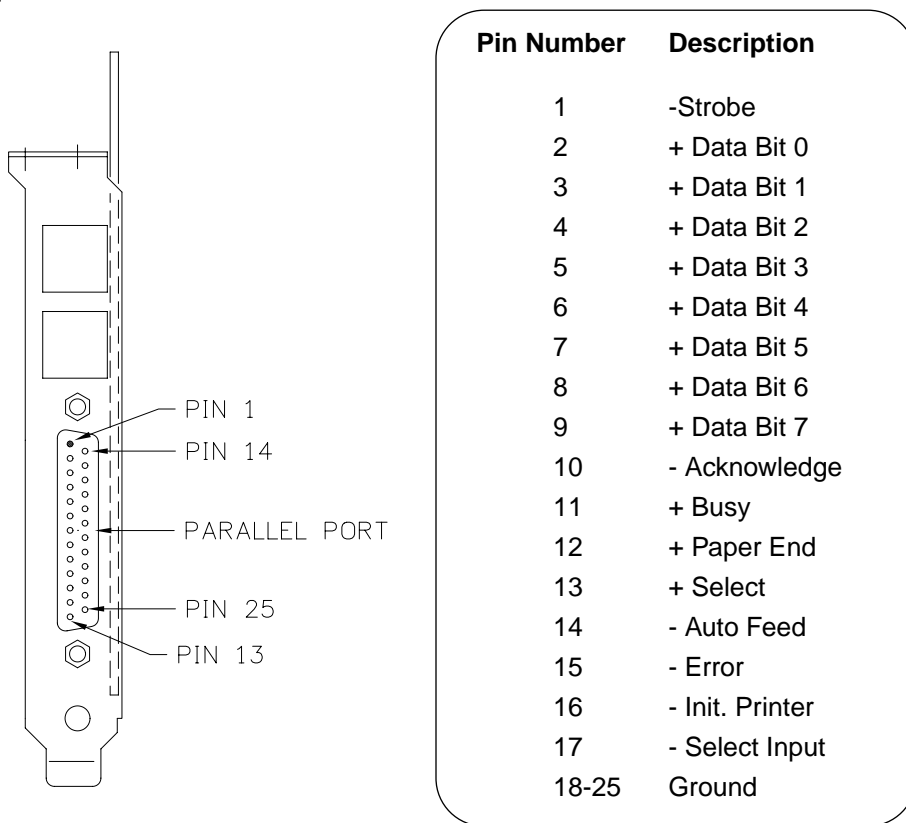
Pin Number	Description
1	KYBDDATA
2	NC (Not Connected)
3	GND (Signal Ground)
4	VCC (Fuse)
5	KYBDCLK (Keyboard Clock)
6	NC (Not Connected)
7	GND (Signal Ground)
8	GND (Signal Ground)
9	GND (Signal Ground)

3.3 Parallel Port

The parallel port (Connector J9) is normally used for connecting a printer to the E486C. This port is a 25-pin connector located on the right edge of the E486C (see Figure 4). Connect the 25-pin female D-sub miniature printer cable to this port for printer operation (for maximum safety, remove system power and disconnect the power cord).

More information on parallel ports and their configuration can be found in Section 5.2.2.

FIGURE 4

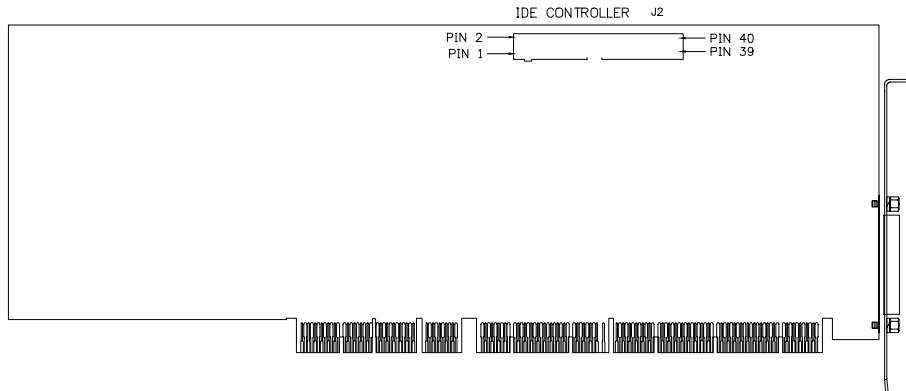


3.4 IDE Hard Drive Header/Connector

Two (2) Integrated Device Electronics (IDE) hard disk drives can be attached to the E486C board via J2 and a 40-conductor cable of a maximum length of two (2) feet. The pinout of J2, a 40-pin connector, is provided in Figure 5.

If the E486C has been installed, accessing this header requires removal of the chassis cover. Consult your chassis documentation for procedures on removing the chassis cover, **but remember to remove power from the system and unplug the power cord before you access the interior of the chassis. Only qualified, experienced electronics personnel should access the interior of a chassis.**

FIGURE 5



Pin Number	Description	Pin Number	Description
1	Reset, output	2	Ground
3	+ Data 7, input/output	4	+ Data 8, input/output
5	+ Data 6, input/output	6	+ Data 9, input/output
7	+ Data 5, input/output	8	+ Data 10, input/output
9	+ Data 4, input/output	10	+ Data 11, input/output
11	+ Data 3, input/output	12	+ Data 12, input/output
13	+ Data 2, input/output	14	+ Data 13, input/output
15	+ Data 1, input/output	16	+ Data 14, input/output
17	+ Data 0, input/output	18	+ Data 15, input/output
19	Ground	20	No connection
21	No connection	22	Ground
23	-I/O Write, output	24	Ground
25	-I/O Read, output	26	Ground
27	No connection	28	+ALE, output
29	No connection	30	Ground
31	+IRQ14, input	32	I/O CS16, output
33	+ADDR1, output	34	No connection
35	+ADDR0, output	36	+ADDR2, output
37	-CS0, output	38	CS1, output
39	Activity Light, output	40	Ground

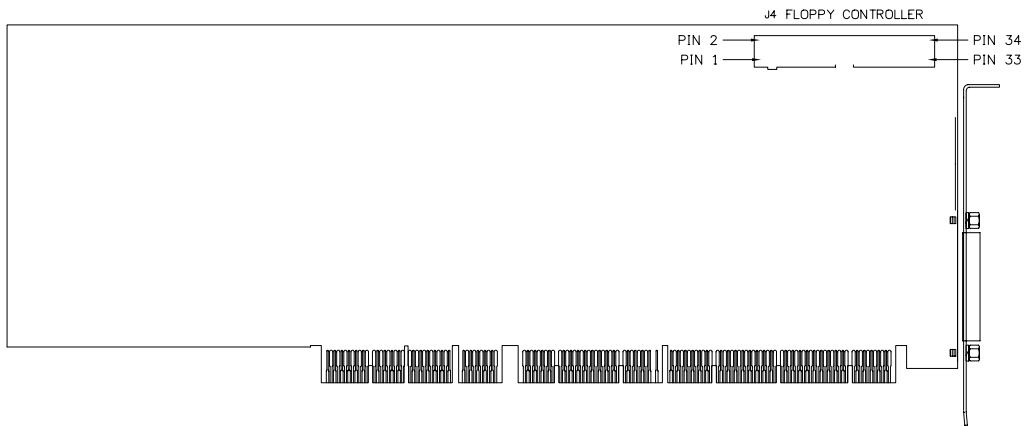
3.5 Floppy Drive Header/Connector

Two floppy disk drives can be attached to the E486C at J4 with a 34-conductor flat cable no more than three (3) feet in length. Two connectors are spaced the desired distance at the drive end of the cable, with Conductors 10 through 16 separated from the remainder of the cable and twisted 180° between the two drive connectors.

The two installed drives may be any combination of 360 KByte and 1.2 MByte 5.25" drives or 720 KByte and 1.44 MByte 3.5" drives. Both drives should be jumper-configured as Drive 1. DOS controls the floppy disk drives; therefore, consult the DOS manual for detailed information on disk operations. Consult Figure 6 for the J4 pinout. *Note: All inputs are terminated with 1K Ω pull-up resistors.*

If the E486C has been installed, accessing this header requires removal of the chassis cover. Consult your chassis documentation for procedures on removing the chassis cover, **but remember to remove power from the system and unplug the power cord before you access the interior of the chassis. Only qualified, experienced electronics personnel should access the interior of a chassis.**

FIGURE 6



Pin	Description	Pin	Description
1	Ground	2	Disk speed change, output
3	Ground	4	No connection
5	Ground	6	No connection
7	Ground	8	Index detect, input, active low
9	Ground	10	Motor enable Drive A, output, active low
11	Ground	12	Select Drive B, output, active low
13	Ground	14	Select Drive A, output, active low
15	Ground	16	Motor enable Drive B, output, active low
17	Ground	18	Head step pulse, output, active low
19	Ground	20	Head step pulse, output, active low
21	Ground	22	Write data, output, active low
23	Ground	24	Write gate, output active low
25	Ground	26	Track 0 detect, input, active low
27	Ground	28	Write protect sense, input, active low
29	Ground	30	Read data, input, active high
31	Ground	32	Head select, output
33	Ground	34	Diskette change detect, input, active low

After all jumpers and switches have been checked, the E486C has been installed and all desired peripheral devices have been connected to the board, the E486C is ready for power-up.

To power-up the E486C, simply connect all required power cables and turn the system on. Consult your chassis documentation for more information on power cable connection. However, before you power-up your system, ensure that the operating system you will be using is available on either Drive C or a diskette in Drive A.

4.1 BIOS

When you power the system up, the E486C BIOS (Basic Input Output System, a collection of driver and initialization software stored in on-board EPROM, or Electronically Programmable Read-Only Memory) will perform checks and diagnostics, then search for an operating system. The BIOS will not search for an operating system on drives other than C or A. Also, if a diskette that does not contain the operating system is engaged in Drive A, an error message ("Non-system disk or disk error") will be displayed. Remove the diskette and strike any key to "boot" (restart) the system.

4.2 Diagnostics

Upon power-up, the BIOS performs initialization routines, calculating memory size and configuration data to load into CMOS (Complementary Metallic Oxide Semiconductor) memory. The BIOS then performs internal diagnostics to compare the E486C's current physical configuration with the configuration information recorded in CMOS memory during setup. Following this verification, the E486C copies its BIOS into RAM and deactivates the EPROM, resulting in a significant increase in system performance. If inconsistencies exist, BIOS error messages are displayed.

Some errors noted during power-up may be quickly corrected by verifying the setup information (see Chapter 5). Errors of greater complexity or a more technical nature may require the aid of trained technical personnel. Contact Texas Micro's Technical Support Department at 1-800-627-8700 for assistance. Upon completion of the power-on diagnostics tests, the E486C loads the operating system from disk or other mass-storage device. However, if CMOS RAM contents are incorrect, the E486C will prompt you to invoke the Setup Utility (see Chapter 5).

4.3 Rebooting the E486C

If you wish to reboot the E486C, three (3) methods are acceptable:

1. Cycle power off and on.
2. Press and hold the CTRL, ALT and DEL keys.
3. Depress the system's reset switch.

Using any of these methods to reboot the E486C will result in system memory data loss. Therefore, it is suggested that, where possible, all processing be completed before reboot.

Next, you need to check all the configuration settings for the board before you begin using it. Turn to Chapter 5 for information on the E486C Setup Utility.

QuickStart for Advanced Users

This segment of the manual provides a “quickstart” feature for advanced computer users. Included are procedures for:

- checking dip switch default settings
- checking jumper block default settings
- installing the E486C
- connecting peripherals to the E486C
- powering the system up
- accessing the Setup Utility

To configure the E486C Board, perform the following:

1. Check dip switch settings.

Locate Switch Block SW1. The following are default settings.

- SW1-1 CLOSED - color monitor
- SW1-2 OPEN - flash ROM access
- SW1-3 OPEN - board uses setup configuration you provide through the Setup Utility (see Chapter 5)
- SW1-4 OPEN - I/O address is 270h

See Section Chapter 1.2.1 for more information.

2. Check jumper defaults.

Locate the E486C jumper blocks. The defaults for these blocks are as follows:

JP1, JP2, JP3 - COM2 configured for RS232 connection:

JP1 - Pins 2 and 3 connected.

JP2 - Pins 2 and 3 connected.

JP3 - Pins 2 and 3 connected.

JP4 - IDE activity LED connector (no jumper installed).

JP5 - depends on CPU type.

JP7 - Bus clock is buffered.

JP9 - Configured for ADS CPU heartbeat.

JP15 - see Appendix C - "Next OS"

JP16 - system clock is unbuffered.

JP17 - depends on CPU type (see Section 1.2.2).

JP18 - DX4 runs at twice the oscillator frequency.

See Section 1.2.2 for more information.

3. Install the E486C.

To install the E486C:

- Remove power from the system by turning all power switches OFF and disconnecting the power cord from the power source. Only qualified, experienced electronics personnel should access the interior of a chassis.
- Remove static electricity by wearing a static-dissipative device (such as a grounding wrist strap). Place the board on static-dissipative surfaces ONLY.
- Remove the I/O bracket spacer from the rear of the chassis.
- Carefully lower and push the board into the platform slot. Ensure that the I/O bracket is accessible through the back of the chassis.
- Secure the card-edge I/O bracket to the hold-down lip.
- Attach any required cables, including the internal system keyboard connector cable, to the E486C keyboard connector (see Section 3.2).

4. Connect peripherals to the E486C.

Before you connect any peripherals to the E486C, make sure that no power is being applied to the E486C Board and the peripherals.

CAUTION: Always remove power from the system and peripherals before connecting the peripherals. To ensure no injury occurs, disconnect all power cords from their power sources. Only qualified, experienced electronics personnel should access the interior of a chassis.

CAUTION: The components of the E486C Card are very sensitive to static discharge. Therefore, Texas Micro recommends using a grounding wrist strap to remove all static electricity before touching the components. While out of the unit, the components should be placed on a static-dissipative surface or into a static-shielding bag.

Consult Chapter 3 for connector locations and pinouts.

5. Power the system up.

The BIOS will perform power-on checks, operate diagnostics and invoke the internal setup routine. It will then direct the media device to search for and load the operating system, first on Drive A, then on Drive C. Other drives will not be searched.

6. Access the Setup Utility.

During the memory test, press <S> to enter the on-board Setup Utility. After the memory test, the Setup Utility will be displayed. Verify the settings in the Setup Utility to configure your board properly. Read the "A Word About EISA Configuration" notice on the next page, then turn to Chapter 5 for procedures.

After completing this step, configure the EISA for operation by loading the EISA Configuration Utility software provided with the E486C. Procedures for using this software are provided in the *E486C EISA Configuration Utility Manual*.

A Word About EISA Configuration

The E486C CPU card is designed for use in an EISA (Extended Industry Standard Architecture) backplane. EISA backplanes are designed to accommodate the 486 processor, providing fast data transfers and multiprocessing support. Special EISA Setup Utility diskettes are provided for configuring your E486C to take full advantage of EISA capabilities.

Procedures for configuring your E486C using the special EISA diskettes are provided in the accompanying EISA Configuration Utility User's Guide documentation. Included are steps to take whenever you want to add an additional board (EISA or ISA) to the system.

Texas Micro recommends that you use the provided EISA Setup Utility diskettes to configure the E486C. However, some configuration options are selected by use of the Setup Utility. These options include the size/type of floppy and fixed disks your system contains, customized hard drive table entry and shadowing of option ROM's. It is recommended that the Setup Utility be configured first. Then, if possible, copy the EISA Configuration Utility to a fixed disk (where it will run faster than it will off a floppy disk). Finally, run the EISA configuration program to complete E486C configuration.

Using the Setup Utility

After all switches and jumpers have been checked, the E486C has been installed, peripherals have been connected and power has been turned on, you are ready to access the E486C Setup Utility.

The E486C Setup Utility is a special set of commands residing in EPROM and used to set the computer time, date and configuration data. The Setup Utility can be accessed in two (2) ways:

- By pressing <S> during memory tests, or
- By pressing F2 when prompted by the BIOS during the power-up operation. This occurs if the BIOS encounters errors when trying to use the Setup Utility information (if desired, the user may press the F1 key to instruct the BIOS to continue its diagnostics checks and attempt to load the operating system).

The E486C Setup Utility begins by displaying the screen pictured in Figure 7. This screen is comprised of three (3) components:

- Options Menu
- Summary information
- Hot key descriptions

The Options Menu is located on the left side of the screen. This menu contains a list of system parameters you can modify to meet your system requirements. Use the UP/DOWN ARROW keys to move the cursor up and down the list. When the cursor is on the desired item, press the <ENTER> key to modify settings for that specific topic.

The “summary information” area displays current system settings and is located to the right of the Options Menu.

“Hot key” descriptions appear at the bottom of the screen. Press any of these keys to perform its assigned function.

FIGURE 7

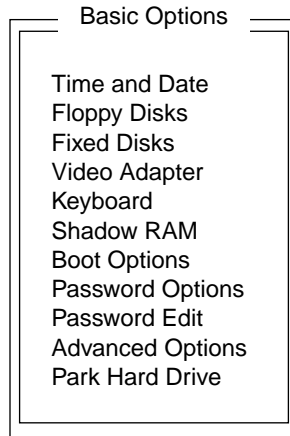
Texas Microsystems, Inc. Setup Utility
Model E486C-DX 33MHz BIOS Version 3.0.1.0

<p style="text-align: center;">Basic Options</p> <p>Time and Date Floppy Disks Fixed Disks Video Adapter Keyboard Shadow RAM Boot Options Password Options Password Edit Advanced Options Park Hard Drive</p>	<p>Time 10:18:28 Date..... Aug 30, 1993 Weekday..... Monday</p> <p>Drive A..... 3 1/2 Inch, 1.44 MB Drive B..... Not Installed Hard Disk 1..... SCSI Installed Hard Disk 2..... Not Installed Video Adapter..... VGA/EGA</p> <p>Base Memory 640K Extended Memory 3072K Floating Point Unit Not Present Fast Boot No Boot Drive Sequence Drive A: then C: 101-Keyboard NumLock..... Off Password Protection..... None Boot Errors: Keyboard:..... On Floppy: On Video:..... On</p>
---	---

↑↓ (select) Enter (execute) F5 (color on/off) ESC (save/reboot)

5.1 Basic Options Menu

Locate the “Basic Options” menu. This list outlines all the parameters you can change through the Setup Utility. This menu is pictured below.

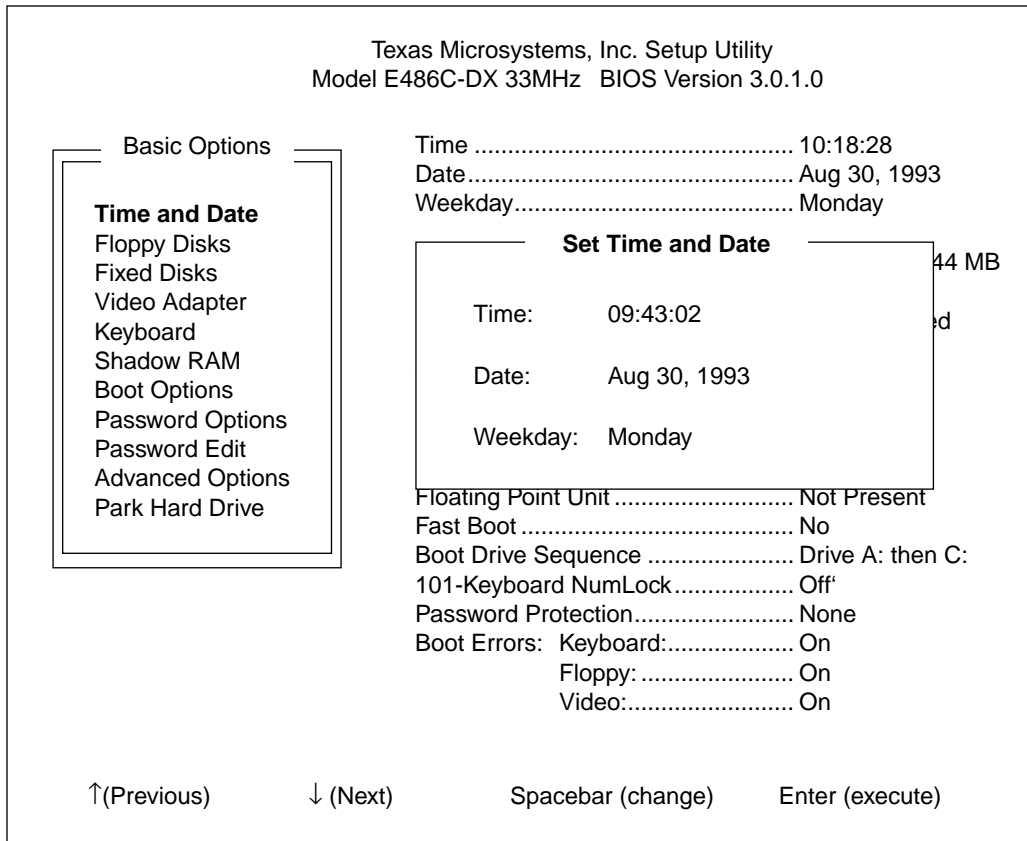


Note the “Advanced Options” item. Choosing this item will cause a new menu of options to be displayed. We’ll discuss this menu in Section 5.2. For now, let’s concentrate on each of the Basic Options menu items. Remember, use the UP/DOWN ARROW keys to highlight an item, then the <ENTER> key to select that item.

5.1.1 Time and Date

This option allows you to set the time and date in the battery-backed clock/calendar, which is used to set the DOS time and date before the operating system is loaded. The on-board battery is capable of saving CMOS RAM contents and maintaining time of day for approximately 100,000 hours.

FIGURE 8



5.1.2 Floppy Disks

This feature allows you to configure the floppy drive subsystem. The first menu asks if you want to enable the E486C on-board controller. In addition, the Setup Utility will request the drive types for floppy drives A: and B:. Finally, you will be asked if you want to enable or disable floppy drive configuration errors. If disabled, this option allows you to run the system without a floppy disk drive.

FIGURE 9 - A

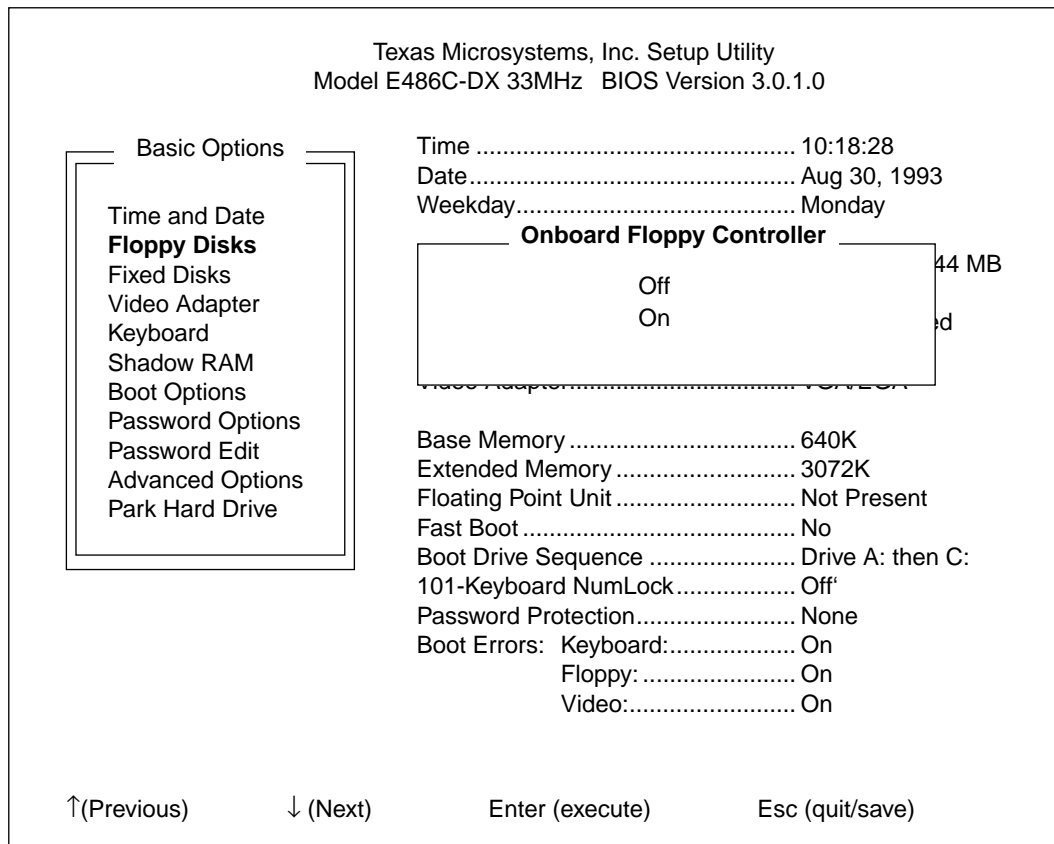


FIGURE 9 - B

Texas Microsystems, Inc. Setup Utility
Model E486C-DX 33MHz BIOS Version 3.0.1.0

Basic Options

- Time and Date
- Floppy Disks**
- Fixed Disks
- Video Adapter
- Keyboard
- Shadow RAM
- Boot Options
- Password Options
- Password Edit
- Advanced Options
- Park Hard Drive

Time 10:18:28
Date Aug 30, 1993
Weekday Monday

Select Drive A: Type

- Not Installed
- 5 1/4 Inch, 360 KB
- 5 1/4 Inch, 1.2 MB
- 3 1/2 Inch, 720 KB
- 3 1/2 Inch, 1.44 MB

Extended Memory 3072K
Floating Point Unit Not Present
Fast Boot No
Boot Drive Sequence Drive A: then C:
101-Keyboard NumLock Off
Password Protection None
Boot Errors: Keyboard: On
 Floppy: On
 Video: On

↑(Previous)↓(Next)Enter (execute)Esc (quit/save)

Basic Options Menu

FIGURE 9 - C

Texas Microsystems, Inc. Setup Utility
Model E486C-DX 33MHz BIOS Version 3.0.1.0

<p style="text-align: center;">Basic Options</p> <div style="border: 1px solid black; padding: 5px;"><p>Time and Date Floppy Disks Fixed Disks Video Adapter Keyboard Shadow RAM Boot Options Password Options Password Edit Advanced Options Park Hard Drive</p></div>	<p>Time10:18:28 DateAug 30, 1993 WeekdayMonday</p> <div style="border: 1px solid black; padding: 5px;"><p style="text-align: center;">Select Drive B: Type</p><table border="0" style="width: 100%;"><tr><td>Not Installed</td><td style="text-align: right;">44 MB</td></tr><tr><td>5 1/4 Inch, 360 KB</td><td style="text-align: right;">ed</td></tr><tr><td>5 1/4 Inch, 1.2 MB</td><td></td></tr><tr><td>3 1/2 Inch, 720 KB</td><td></td></tr><tr><td>3 1/2 Inch, 1.44 MB</td><td></td></tr></table></div> <p>Extended Memory3072K Floating Point Unit.....Not Present Fast Boot.....No Boot Drive SequenceDrive A: then C: 101-Keyboard NumLock.....Off Password ProtectionNone Boot Errors: Keyboard:On Floppy:On Video:On</p>	Not Installed	44 MB	5 1/4 Inch, 360 KB	ed	5 1/4 Inch, 1.2 MB		3 1/2 Inch, 720 KB		3 1/2 Inch, 1.44 MB	
Not Installed	44 MB										
5 1/4 Inch, 360 KB	ed										
5 1/4 Inch, 1.2 MB											
3 1/2 Inch, 720 KB											
3 1/2 Inch, 1.44 MB											

↑(Previous) ↓(Next) Enter (execute) Esc (quit/save)

FIGURE 9 - D

Texas Microsystems, Inc. Setup Utility
Model E486C-DX 33MHz BIOS Version 3.0.1.0

Basic Options

Time and Date
Floppy Disks
Fixed Disks
Video Adapter
Keyboard
Shadow RAM
Boot Options
Password Options
Password Edit
Advanced Options
Park Hard Drive

Time 10:18:28
Date Aug 30, 1993
Weekday Monday

Floppy Configuration Errors

Off 44 MB
On ed

Base Memory 640K
Extended Memory 3072K
Floating Point Unit Not Present
Fast Boot No
Boot Drive Sequence..... Drive A: then C:
101-Keyboard NumLock Off
Password Protection..... None
Boot Errors: Keyboard:..... On
 Floppy: On
 Video:..... On

↑(Previous)↓(Next)Enter (execute)Esc (quit/save)

5.1.3 Fixed Disks

This option allows the user to configure the fixed (hard) disk sub-system. When you select this field, you will be asked whether you want to turn the E486C IDE controller on or off. In addition, the Setup Utility will request the drive type for hard disk 1 (drive C:) and hard disk 2 (drive D:).

An "Auto ID" feature is invoked if you press F2 while the "Hard Disk 1" menu is displayed. This option will analyze your hard drive and provide a drive type ID, gleaned from the standard hard drive parameter table (HDPT), that most closely matches the characteristics of your hard drive.

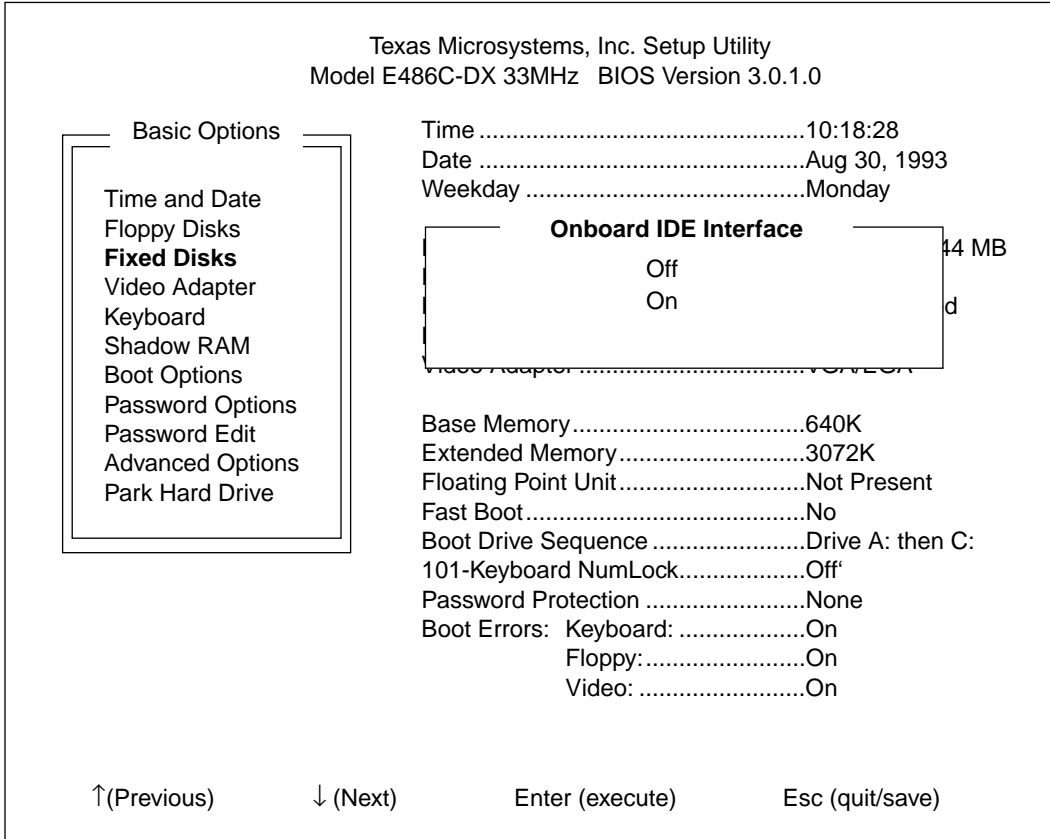
Note: This option is also available for the "Hard Disk 2" menu.

To accept this drive type ID, press ENTER. Pressing the PgUp key will invoke a search through the HDPT for the next closest match.

If you continue to press the PgUp key, the menu will eventually display the user-configurable types "46" and "47." Types 46 and/or 47 will also be offered if no HDPT match is found when the "Auto ID" feature is invoked. These types allow you to set the hard disk configuration fields to match the particular characteristics of your hard disks.

If you want to change any of the fields offered by type 46 or 47, press ENTER to accept the values shown. Again, invoke the "Fixed Disks" option from the "Basic Options" menu, then re-enter the "Set Hard Drive" menu. You may now set the fields of this menu to the desired values.

FIGURE 10 - A



Basic Options Menu

FIGURE 10 - B

Texas Microsystems, Inc. Setup Utility
Model E486C-DX 33MHz BIOS Version 3.0.1.0

<p style="text-align: center;">Basic Options</p> <div style="border: 1px solid black; padding: 5px;"><p>Time and Date Floppy Disks Fixed Disks Video Adapter Keyboard Shadow RAM Boot Options Password Options Password Edit Advanced Options Park Hard Drive</p></div>	<p>Time10:18:28 DateAug 30, 1993 WeekdayMonday</p> <div style="border: 1px solid black; padding: 5px;"><p style="text-align: center;">Set Hard Disk 1 Type</p><p>Type..... 44 44 MB Cylinders 820 d Heads..... 6 Landing Zone 820 Write Precomp-1 Sectors 17 Size 40</p></div> <p>Fast Boot.....No Boot Drive SequenceDrive A: then C: 101-Keyboard NumLock.....Off Password ProtectionNone Boot Errors: Keyboard:On Floppy:On Video:On</p>
--	--

Pg Up (next) Pg Down (previous) F2 (Auto ID) Enter (execute)

FIGURE 10 - C

Texas Microsystems, Inc. Setup Utility
Model E486C-DX 50MHz BIOS Version 3.0.1.0

<p style="text-align: center;">Basic Options</p> <p>Time and Date Floppy Disks Fixed Disks Video Adapter Keyboard Shadow RAM Boot Options Password Options Password Edit Advanced Options Park Hard Drive</p>	<p>Time10:18:28 DateAug 30, 1993 WeekdayMonday</p> <p style="text-align: center;">Auto ID</p> <table border="0"><tr><td style="padding-right: 10px;">Drive Reports:</td><td></td></tr><tr><td> Cylinders</td><td>1053</td></tr><tr><td> Heads</td><td>2</td></tr><tr><td> Sectors</td><td>40</td></tr><tr><td colspan="2">Drive Table Match:</td></tr><tr><td> Type</td><td>17</td></tr><tr><td> Cylinders</td><td>977</td></tr><tr><td> Heads</td><td>5</td></tr><tr><td> Landing Zone:</td><td>977</td></tr><tr><td> Write Precomp.....</td><td>300</td></tr><tr><td> Sectors</td><td>17</td></tr><tr><td> Size</td><td>40</td></tr></table> <p>101 MB</p> <p>Password ProtectionNone Boot Errors: Keyboard:On Floppy:On Video:On</p>	Drive Reports:		Cylinders	1053	Heads	2	Sectors	40	Drive Table Match:		Type	17	Cylinders	977	Heads	5	Landing Zone:	977	Write Precomp.....	300	Sectors	17	Size	40
Drive Reports:																									
Cylinders	1053																								
Heads	2																								
Sectors	40																								
Drive Table Match:																									
Type	17																								
Cylinders	977																								
Heads	5																								
Landing Zone:	977																								
Write Precomp.....	300																								
Sectors	17																								
Size	40																								

ENTER (Accept) Pg Up (Next match) ESC (Exit)

Basic Options Menu

FIGURE 10 - D

Texas Microsystems, Inc. Setup Utility
Model E486C-DX 50MHz BIOS Version 3.0.1.0

Basic Options

- Time and Date
- Floppy Disks
- Fixed Disks**
- Video Adapter
- Keyboard
- Shadow RAM
- Boot Options
- Password Options
- Password Edit
- Advanced Options
- Park Hard Drive

Time 10:18:28
Date Aug 30, 1993
Weekday Monday

Auto ID

Drive Reports:

- Cylinders.....1053
- Heads2
- Sectors.....40

Optional user configurable:

- Type47
- Cylinders.....1053
- Heads2
- Landing Zone:.....1053
- Write Precomp -1
- Sectors.....40
- Size.....41

101- MB

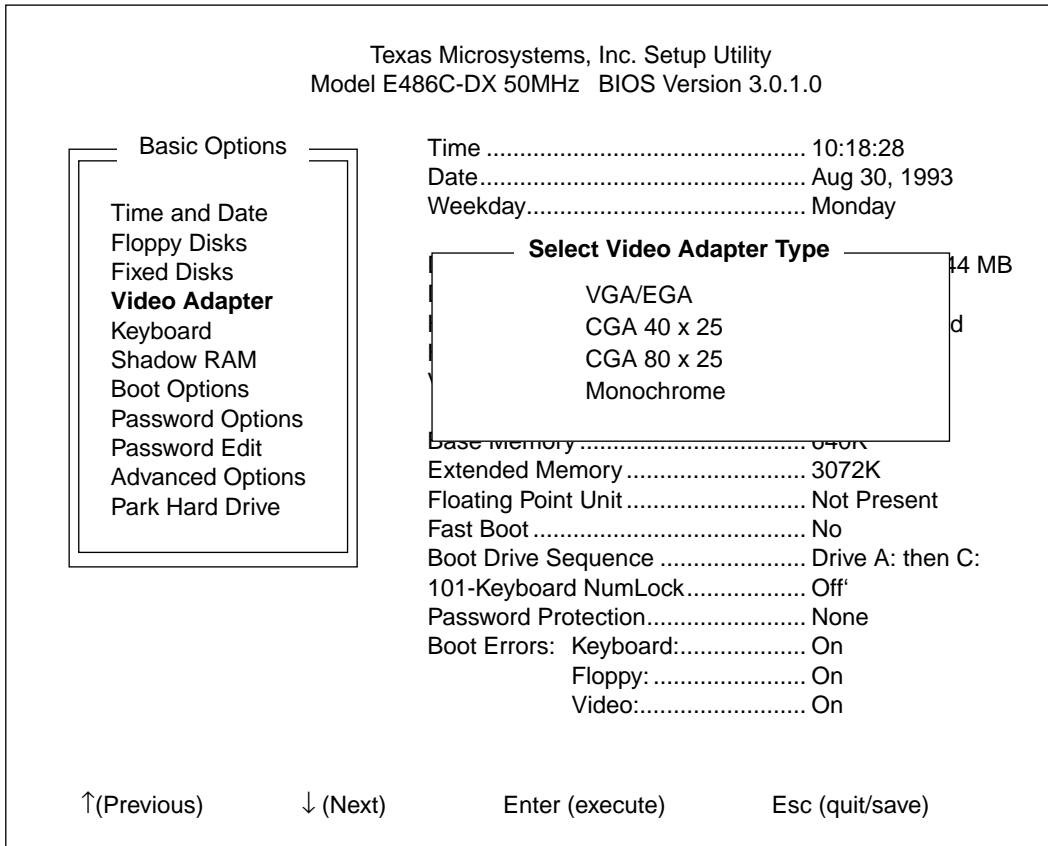
Password Protection None
Boot Errors: Keyboard: On
Floppy: On
Video: On

ENTER (Accept) ESC (Exit)

5.1.4 Video Adapter

This feature allows you to specify the type of video adapter installed in your system. In addition, video configuration errors can be disabled, allowing you to run your system without a video adapter.

FIGURE 11 - A



Basic Options Menu

FIGURE 11 - B

Texas Microsystems, Inc. Setup Utility
Model E486C-DX 50MHz BIOS Version 3.0.1.0

<p style="text-align: center;">Basic Options</p> <div style="border: 1px solid black; padding: 5px;"><p>Time and Date Floppy Disks Fixed Disks Video Adapter Keyboard Shadow RAM Boot Options Password Options Password Edit Advanced Options Park Hard Drive</p></div>	<p>Time 10:18:28 Date Aug 30, 1993 Weekday Monday</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"><p>Video Configuration Errors</p><p>Off On</p></div> <p>Base M Extend</p> <p>Floating Point Unit.....Not Present Fast Boot.....No Boot Drive Sequence Drive A: then C: 101-Keyboard NumLock Off Password Protection None Boot Errors: Keyboard: On Floppy:..... On Video: On</p>
---	---

↑(Previous) ↓(Next) Enter (execute) Esc (quit/save)

5.1.5 Keyboard

This option provides several functions. The first menu allows you to enable or disable keyboard configuration errors. If you choose to disable this option, you can run your system without a keyboard.

The next two menus offer you the ability to set the “Typematic” delay and rate. “Typematic delay” refers to the period that elapses between the time a key is held down until it begins to repeat. “Typematic rate” refers to the rate at which the character will repeat.

Note: Occasionally, .exe programs and TSR's that set the Typematic functions are run from the autoexec.bat file. If used, these programs have precedence over the Setup Utility's “Typematic” functions.

Basic Options Menu

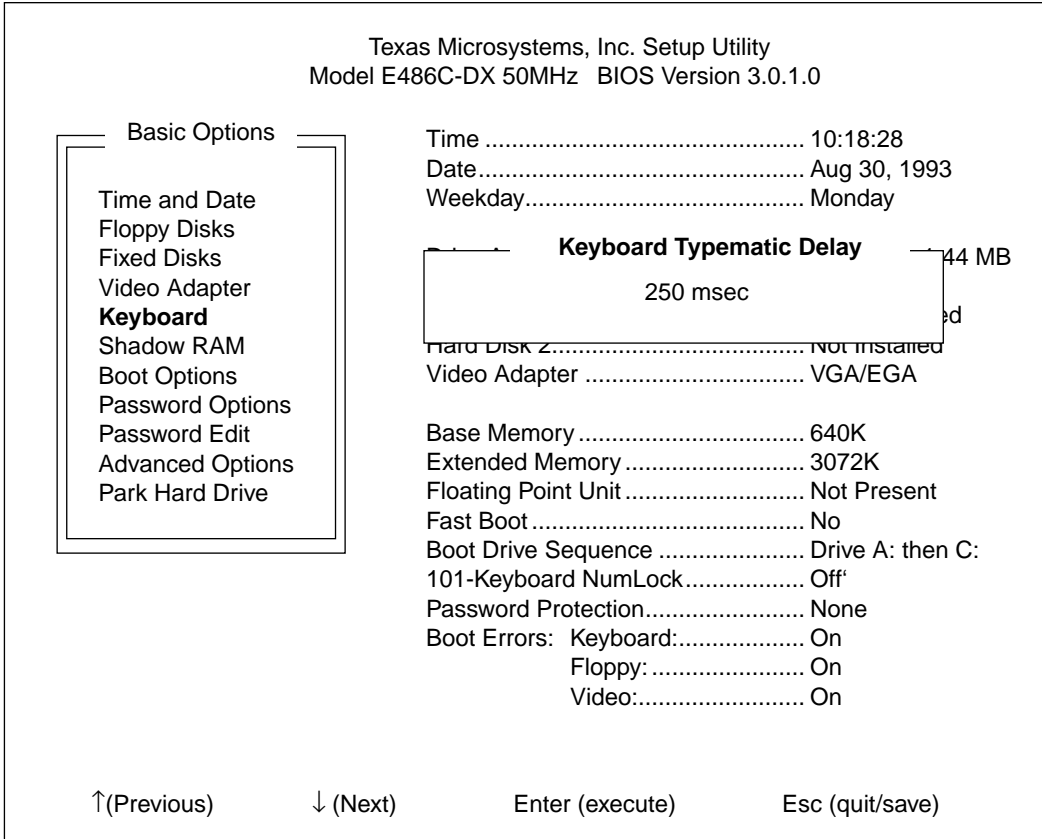
FIGURE 12 - A

Texas Microsystems, Inc. Setup Utility
Model E486C-DX 50MHz BIOS Version 3.0.1.0

<div style="border: 1px solid black; padding: 5px;"><p style="text-align: center;">Basic Options</p><p>Time and Date Floppy Disks Fixed Disks Video Adapter Keyboard Shadow RAM Boot Options Advanced Options Park Hard Drive</p></div>	<p>Time 10:18:28 Date..... Aug 30, 1993 Weekday..... Monday</p> <div style="border: 1px solid black; padding: 5px;"><p style="text-align: center;">Keyboard Configuration Errors</p><p style="text-align: center;">Off On</p></div> <p>Base Memory 640K Extended Memory 3072K Floating Point Unit Not Present Fast Boot No Boot Drive Sequence Drive A: then C: 101-Keyboard NumLock..... Off Password Protection..... None Boot Errors: Keyboard:..... On Floppy: On Video:..... On</p>
--	---

↑(Previous) ↓ (Next) Enter (execute) Esc (quit/save)

FIGURE 12 - B



Basic Options Menu

FIGURE 12 - C

Texas Microsystems, Inc. Setup Utility
Model E486C-DX 50MHz BIOS Version 3.0.1.0

Basic Options

- Time and Date
- Floppy Disks
- Fixed Disks
- Video Adapter
- Keyboard**
- Shadow RAM
- Boot Options
- Password Options
- Password Edit
- Advanced Options
- Park Hard Drive

Time 10:18:28
Date..... Aug 30, 1993
Weekday..... Monday

Keyboard Typematic Rate 4 MB
24 chars/sec

Hard Disk 2..... Not Installed
Video Adapter VGA/EGA

Base Memory 640K
Extended Memory 3072K
Floating Point Unit Not Present
Fast Boot No
Boot Drive Sequence Drive A: then C:
101-Keyboard NumLock..... Off
Password Protection..... None
Boot Errors: Keyboard:..... On
 Floppy: On
 Video:..... On

↑(Previous) ↓(Next) Enter (execute) Esc (quit/save)

5.1.6 Shadow RAM

This option requires you to specify where the optional ROM-BIOS code is to be located. When you select this option, a memory map that displays memory in 16 KByte blocks is displayed. If a ROM is found within that 16 KByte location, the Setup Utility will display the word "ROM" or "SHADOW," where:

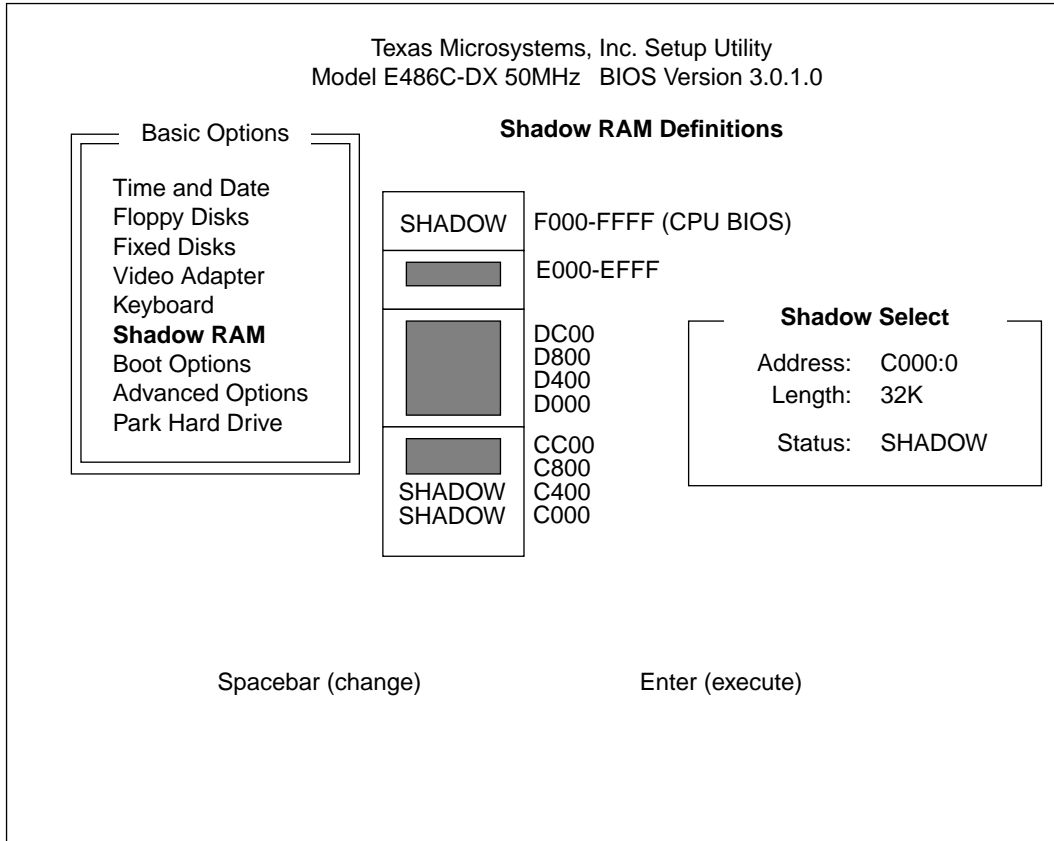
- **ROM** - the system will execute code directly from the EPROM on the option card, or
- **SHADOW** - the system will copy the code from the EPROM into DRAM at the same address, allowing code to run from the DRAM on the CPU card (dramatically improving the performance of the system).

A window will also appear to the right of the map. This window displays the following for each option ROM found in the system:

- Starting address of the option ROM
- Length of the option ROM
- Current status (ROM or SHADOW)

This window allows you to toggle between running the option ROM from the EPROM in which it resides (by selecting ROM), or directing the system to copy it into shadow RAM at power-up (by selecting SHADOW).

FIGURE 13



5.1.7 Boot Options

This function is a series of windows that allows you to set the following items:

- **Boot Drive Sequence** - you can specify the sequence in which drives are accessed (useful when attempting to load an operating system)
- **Set status of NumLock key at boot** - if a 101-key keyboard is installed, this option directs the BIOS to enable or disable the NumLock key before booting.

Basic Options Menu

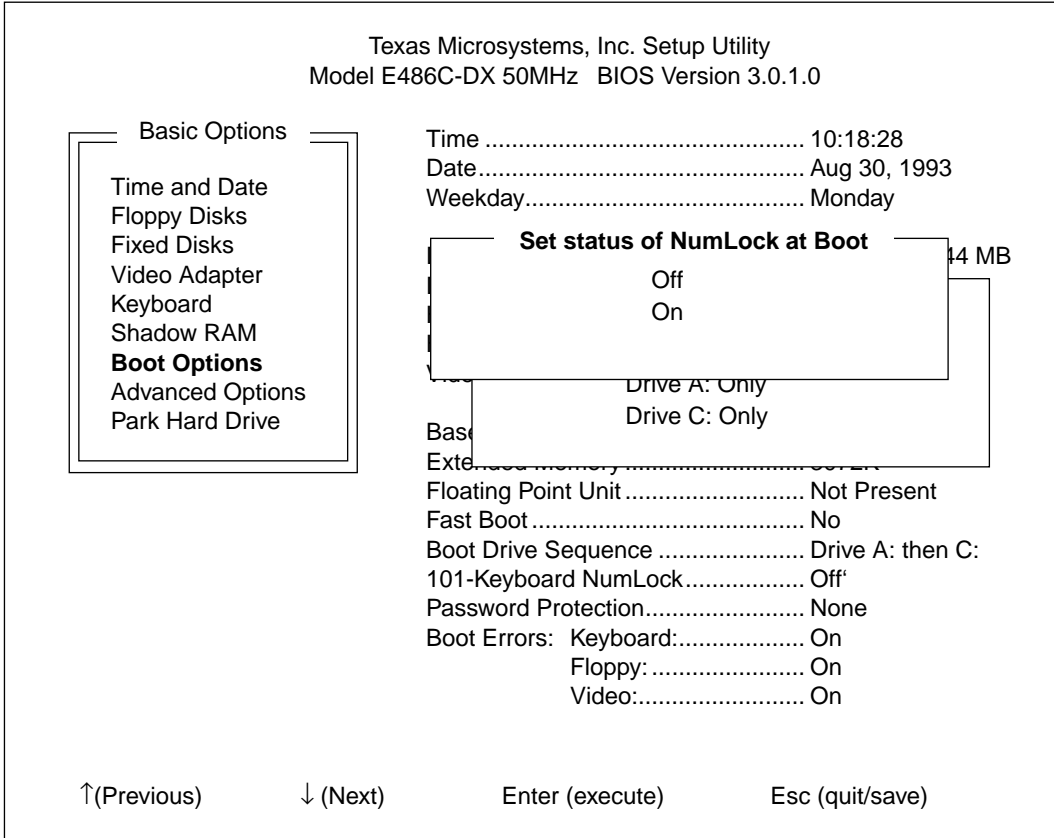
FIGURE 14 - A

Texas Microsystems, Inc. Setup Utility
Model E486C-DX 50MHz BIOS Version 3.0.1.0

<p style="text-align: center;">Basic Options</p> <ul style="list-style-type: none">Time and DateFloppy DisksFixed DisksVideo AdapterKeyboardShadow RAMBoot OptionsAdvanced OptionsPark Hard Drive	<p>Time10:18:28 DateAug 30, 1993 WeekdayMonday</p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"><p style="text-align: center;">Set Boot Drive Access</p><ul style="list-style-type: none">Drive A: then C:Drive C: then A:Drive A: OnlyDrive C: Only</div> <p>Extended Memory.....3072K Floating Point Unit.....Not Present Fast Boot.....No Boot Drive SequenceDrive A: then C: 101-Keyboard NumLock.....Off Password ProtectionNone Boot Errors: Keyboard:On Floppy:On Video:On</p>
--	---

↑(Previous) ↓(Next) Enter (execute) Esc (quit/save)

FIGURE 14 - B



5.1.8 Password Options

This feature allows you the option of having no password protection, requiring a password to enter the Setup Utility, or requiring a password to enter Setup and boot. The password is entered from this menu, and you are prompted to enter it again for verification. The password may consist of from one to 12 characters. Letters A to Z (case-sensitive) and numbers 0 to 9 are accepted. If a password is already entered, you must know the password in order to change it. Note that Switch SW1-3 will delete all password protection.

FIGURE 15 - A

Texas Microsystems, Inc. Setup Utility
Model E486C-DX 50MHz BIOS Version 3.0.1.0

<p style="text-align: center;">Basic Options</p> <p>Time and Date Floppy Disks Fixed Disks Video Adapter Keyboard Shadow RAM Boot Options Password Options Password Edit Advanced Options Park Hard Drive</p>	<p>Time10:18:28 DateAug 30, 1993 WeekdayMonday</p> <table border="1" style="margin-left: 20px;"><tr><td colspan="2" style="text-align: center;">Password Protect Options</td></tr><tr><td style="padding: 2px;">None</td><td style="padding: 2px;">Inch, 1.44 MB</td></tr><tr><td style="padding: 2px;">Setup Only</td><td style="padding: 2px;">Installed</td></tr><tr><td style="padding: 2px;">Setup and System Boot</td><td style="padding: 2px;">Installed</td></tr></table> <p>Base Memory640K Extended Memory3072K Floating Point UnitNot Present Fast BootNo Boot Drive SequenceDrive A: then C: 101-Keyboard NumLockOff Password ProtectionNone Boot Errors: Keyboard:On Floppy:On Video:On</p>	Password Protect Options		None	Inch, 1.44 MB	Setup Only	Installed	Setup and System Boot	Installed
Password Protect Options									
None	Inch, 1.44 MB								
Setup Only	Installed								
Setup and System Boot	Installed								

↑(Previous) ↓(Next) Enter (execute) Esc (quit/save)

Basic Options Menu

FIGURE 15 - B

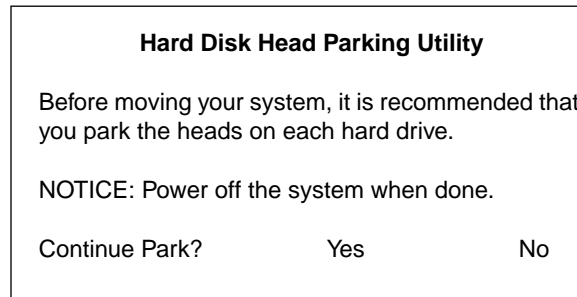
Texas Microsystems, Inc. Setup Utility
Model E486C-DX 50MHz BIOS Version 3.0.1.0

<div style="border: 1px solid black; padding: 5px;"><p style="text-align: center;">Basic Options</p><p>Time and Date Floppy Disks Fixed Disks Video Adapter Keyboard Shadow RAM Boot Options Password Options Password Edit Advanced Options Park Hard Drive</p></div>	<p>Time10:18:28 DateAug 30, 1993 WeekdayMonday</p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"><p style="text-align: center;">Password Edit</p><p>New Password *****</p></div> <p>Video AdapterVGA/EGA</p> <p>Base Memory640K Extended Memory3072K Floating Point UnitNot Present Fast BootNo Boot Drive SequenceDrive A: then C: 101-Keyboard NumLockOff Password ProtectionNone Boot Errors: Keyboard:On Floppy:On Video:On</p>
---	---

↑(Previous) ↓(Next) Enter (execute) Esc (quit/save)

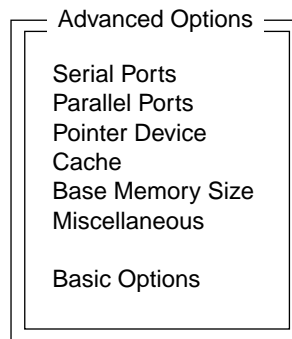
5.1.9 Park Hard Drive

When enabled, this feature allows you to park the heads on each hard drive and protect the drives whenever it is necessary to move or transport the computer. The menu will display a “Continue Park?” prompt. Press “Yes” to park the hard drives, “No” to discontinue this feature.



5.2 Advanced Options

Choosing the “Advanced Options” item from the “Basic Options” menu will cause a new menu of options to be displayed. We’ll discuss these options in the following sections. The Advanced Options menu is displayed below.



5.2.1 Serial Ports

You can select the port addresses for Serial Port 1 (UART1) and Serial Port 2 (UART2) using this option. The choices are as follows:

- 3F8
- 2F8
- 3E8
- 2E8
- Disabled

Note: 3F8 and 3E8 must use IRQ4, and 2F8 and 2E8 must use IRQ3. These items are not user-selectable.

If Serial Ports 1 and 2 are give the same base port address, a window will prompt you to enter a key that will solve the conflict. You cannot further configure the system until the serial ports no longer share the same address.

The E486C uses type 16450 UART's.

You can also specify IRQ “trigger” types. For ISA standard IRQ types, select the “Edge-triggered” option. If multiple devices are sharing the same IRQ, select the “Level-triggered” option.

Advanced Options

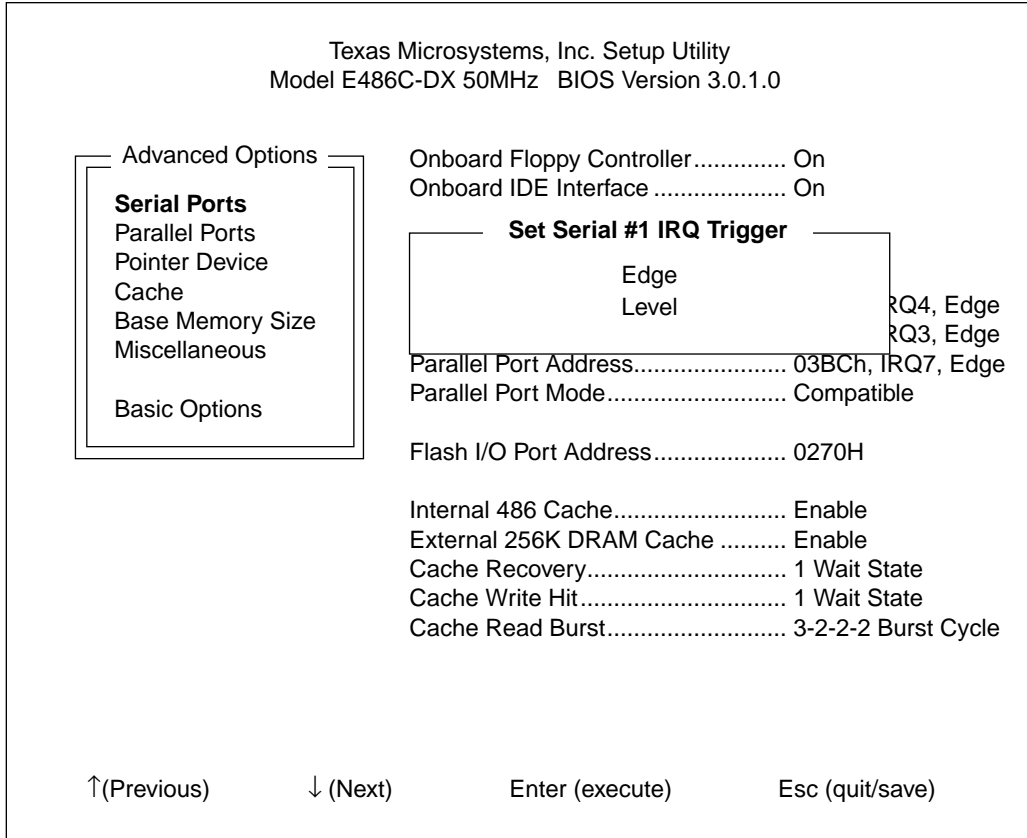
FIGURE 16 - A

Texas Microsystems, Inc. Setup Utility
Model E486C-DX 50MHz BIOS Version 3.0.1.0

<p style="text-align: center;">Advanced Options</p> <p>Serial Ports</p> <p>Parallel Ports</p> <p>Pointer Device</p> <p>Cache</p> <p>Base Memory Size</p> <p>Miscellaneous</p> <p>Basic Options</p>	<p>Onboard Floppy Controller..... On</p> <p>Onboard IDE Interface On</p> <p>Onboard Pointer Device Off</p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"><p style="text-align: center;">Select Serial Port 1 Address</p><p>03F8h, IRQ4</p><p>02F8h, IRQ3</p><p>03E8h, IRQ4</p><p>02E8h, IRQ3</p><p>Disabled</p></div> <p>External 256K DRAM Cache Enable</p> <p>Cache Recovery..... 1 Wait State</p> <p>Cache Write Hit..... 1 Wait State</p> <p>Cache Read Burst..... 3-2-2 Burst Cycle</p>
--	---

↑(Previous) ↓(Next) Enter (execute) Esc (quit/save)

FIGURE 16 - B



Advanced Options

FIGURE 16 - C

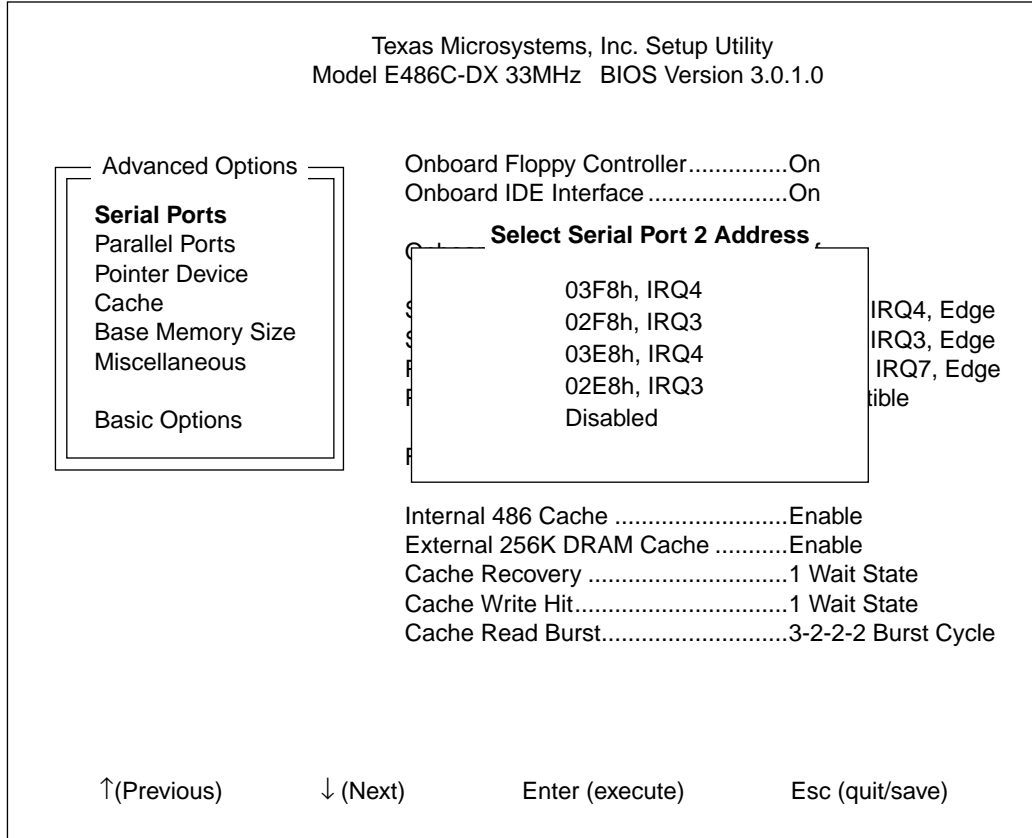
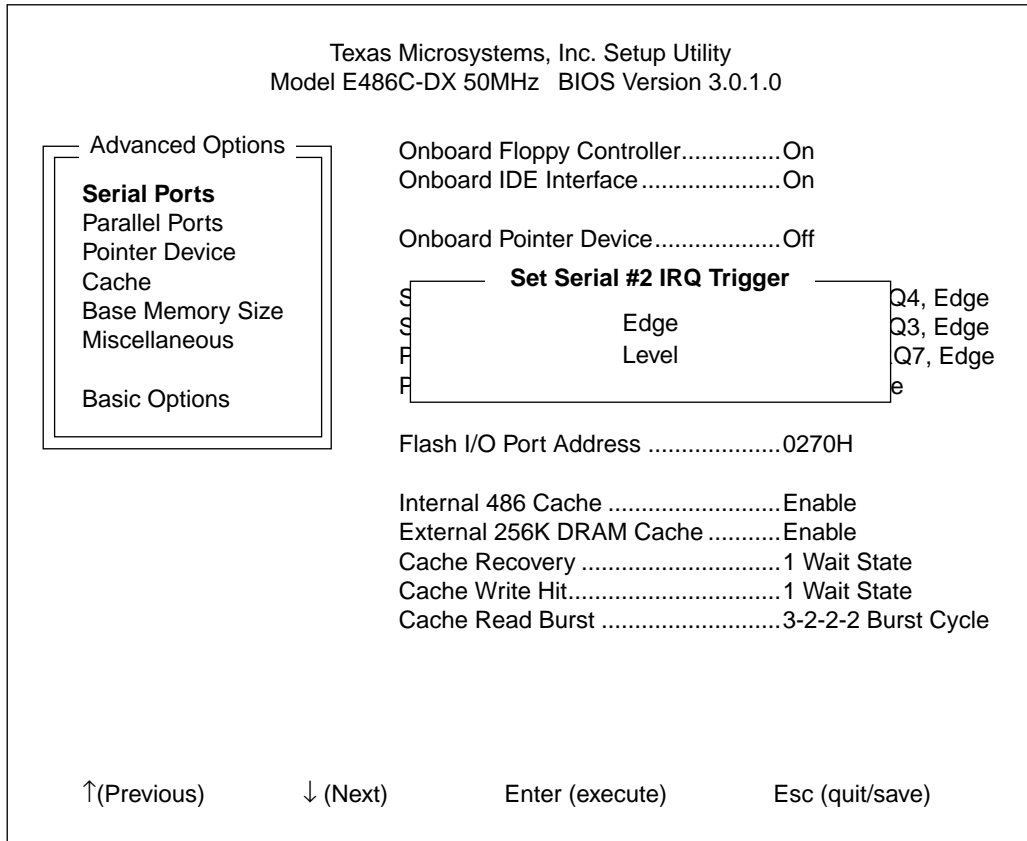


FIGURE 16 - D



5.2.2 Parallel Ports

Use this feature to select an address for the on-board parallel port. Standard addresses include:

- 3BC
- 378
- 278
- Disabled

Once you enable a port address, you may choose between IRQ5, IRQ7 and NO IRQ. As with the serial ports, you can also specify IRQ “trigger” types. For ISA standard IRQ types, select the “Edge-triggered” option. If multiple devices are sharing the same IRQ, select the “Level-triggered” option. The parallel port can also be configured as standard AT-compatible or bi-directional.

FIGURE 17 - A

Texas Microsystems, Inc. Setup Utility
Model E486C-DX 33MHz BIOS Version 3.0.1.0

Advanced Options Serial Ports Parallel Ports Pointer Device Cache Base Memory Size Miscellaneous Basic Options	Onboard Floppy Controller On Onboard IDE Interface On Select Parallel Port Address On Disabled Ser 03BCh Q4, Edge Ser 0378h Q3, Edge Par 0278h Q7, Edge Par Fla
--	---

Internal 486 Cache Enable
External 256K DRAM Cache Enable
Cache Recovery 1 Wait State
Cache Write Hit 1 Wait State
Cache Read Burst 3-2-2 Burst Cycle

↑(Previous) ↓(Next) Enter (execute) Esc (quit/save)

Advanced Options

FIGURE 17 - B

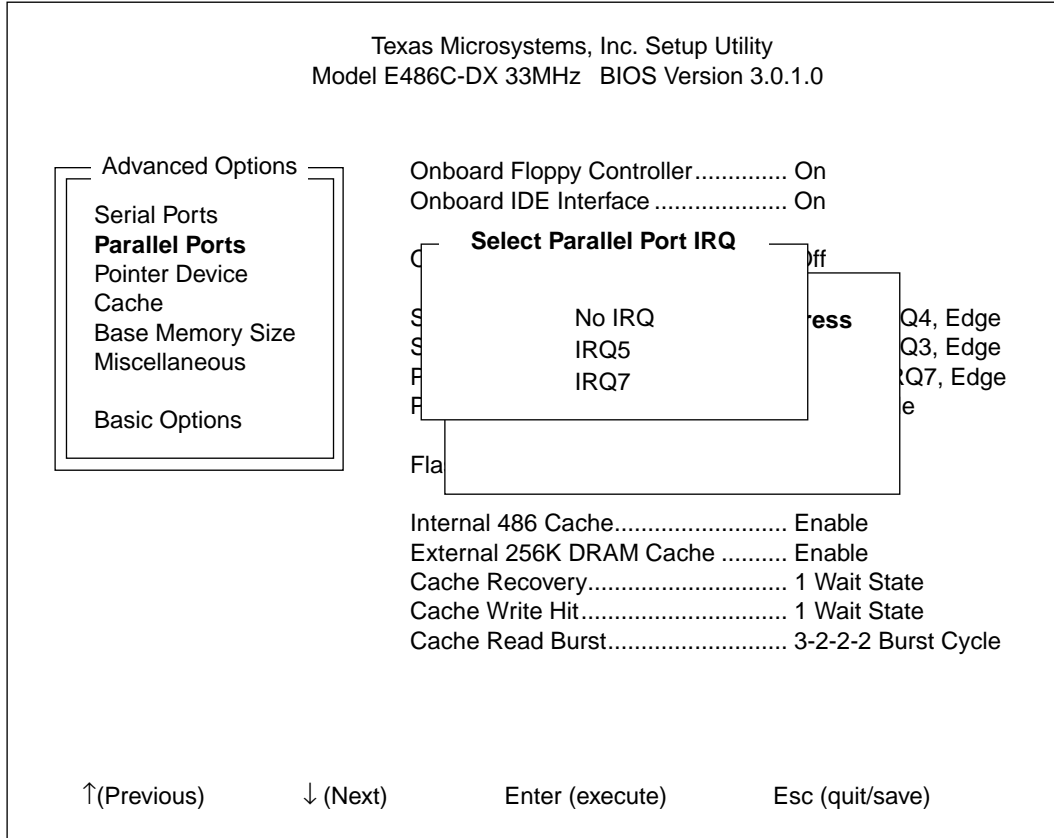


FIGURE 17 - C

Texas Microsystems, Inc. Setup Utility
Model E486C-DX 50MHz BIOS Version 3.0.1.0

<div style="border: 1px solid black; padding: 5px;"><p>Advanced Options</p><p>Serial Ports</p><p>Parallel Ports</p><p>Pointer Device</p><p>Cache</p><p>Base Memory Size</p><p>Miscellaneous</p><p>Basic Options</p></div>	<p>Onboard Floppy Controller..... On</p> <p>Onboard IDE Interface On</p> <p>Onboard Pointer Device Off</p> <p style="text-align: center;">Set Parallel IRQ Trigger</p> <table border="1" style="margin-left: auto; margin-right: auto;"><tr><td style="text-align: center;">Edge</td><td style="padding-left: 10px;">IRQ4, Edge</td></tr><tr><td style="text-align: center;">Level</td><td style="padding-left: 10px;">IRQ3, Edge</td></tr><tr><td></td><td style="padding-left: 10px;">IRQ7, Edge</td></tr><tr><td></td><td style="padding-left: 10px;">IRQ5, Edge</td></tr><tr><td></td><td style="padding-left: 10px;">IRQ6, Edge</td></tr><tr><td></td><td style="padding-left: 10px;">IRQ2, Edge</td></tr><tr><td></td><td style="padding-left: 10px;">IRQ1, Edge</td></tr></table> <p>Flash I/O Port Address..... 0270H</p> <p>Internal 486 Cache..... Enable</p> <p>External 256K DRAM Cache Enable</p> <p>Cache Recovery..... 1 Wait State</p> <p>Cache Write Hit..... 1 Wait State</p> <p>Cache Read Burst..... 3-2-2-2 Burst Cycle</p>	Edge	IRQ4, Edge	Level	IRQ3, Edge		IRQ7, Edge		IRQ5, Edge		IRQ6, Edge		IRQ2, Edge		IRQ1, Edge
Edge	IRQ4, Edge														
Level	IRQ3, Edge														
	IRQ7, Edge														
	IRQ5, Edge														
	IRQ6, Edge														
	IRQ2, Edge														
	IRQ1, Edge														

↑(Previous) ↓(Next) Enter (execute) Esc (quit/save)

Advanced Options

FIGURE 17 - D

Texas Microsystems, Inc. Setup Utility
Model E486C-DX 33MHz BIOS Version 3.0.1.0

Advanced Options

Serial Ports

Parallel Ports

Pointer Device

Cache

Base Memory Size

Miscellaneous

Basic Options

Onboard Floppy Controller..... On

Onboard IDE Interface On

Onboard Pointer Device Off

Set Parallel Port Mode

Bidirectional
Compatible

03E8h, IRQ4, Edge

03E9h, IRQ5, Edge

03EAh, IRQ7, Edge

Interr

Exter

Cache Recovery..... 1 Wait State

Cache Write Hit..... 1 Wait State

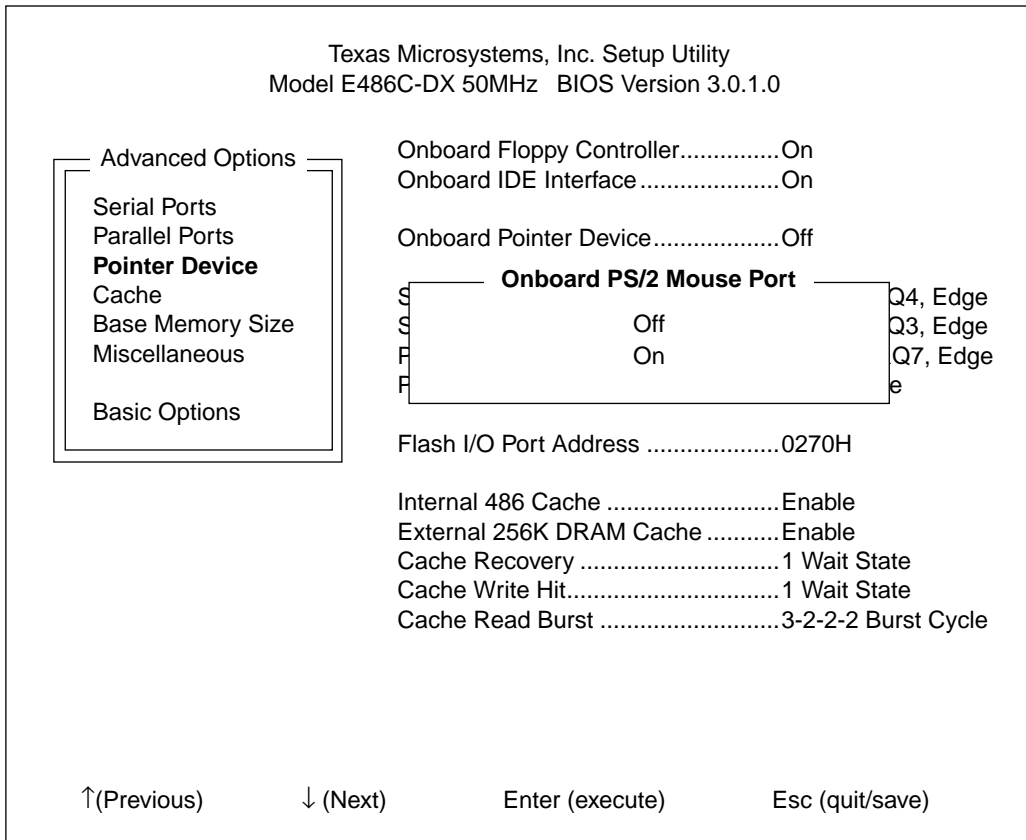
Cache Read Burst..... 3-2-2-2 Burst Cycle

↑(Previous)↓(Next)Enter (execute)Esc (quit/save)

5.2.3 Pointer Device (On-board PS/2 Mouse Port)

The E486C has a standard PS/2 mouse interface mounted on the I/O bracket. This option allows you to enable this interface. When enabled, the mouse port uses IRQ12.

FIGURE 18



5.2.4 Cache

The E486C contains a secondary DRAM, write-back cache as well as internal 8 KByte cache. This option allows you to enable both caches; *however, the internal cache must be enabled before the secondary cache can be used.*

Cache wait states are provided in the following table.

CPU Speed/Type	Cache Recovery	Cache Write Hit	Cache Read Burst
33 MHz DX	0 Wait States	0 Wait States	2-1-1-1
50 MHz DX	1 Wait State	1 Wait State	3-2-2-2
66 MHz DX2	0 Wait States	0 Wait States	2-1-1-1

The Setup Utility also allows you to define one non-cacheable block. After the cache enable options are configured, the “Non-Cacheable Memory Block” window appears, and the “Block Size” column is highlighted. To increment the block size, press the Page Up key; press the Page Down key to decrement. The block size options for the E486C are 512K, 1M, 2M, 4M, 8M and DISABLED.

Once the block size is selected, press the right arrow key to highlight the “Start Addr” column. This column is used to select the start address for the non-cacheable memory block. As with the “Block Size” column, press the Page Up key to increment, Page Down to decrement. The increment unit is the block size selected earlier.

FIGURE 19 - A

Texas Microsystems, Inc. Setup Utility
Model E486C-DX 33MHz BIOS Version 3.0.1.0

<p>Advanced Options</p> <p>Serial Ports Parallel Ports Pointer Device Cache Base Memory Size Miscellaneous</p> <p>Basic Options</p>	<p>Onboard Floppy Controller..... On Onboard IDE Interface On</p> <p style="text-align: center;">Internal 486 Cache</p> <table border="1" style="margin-left: auto; margin-right: auto;"><tr><td style="text-align: center;">Disable</td><td style="text-align: right;">8h, IRQ4, Edge</td></tr><tr><td style="text-align: center;">Enable</td><td style="text-align: right;">8h, IRQ3, Edge</td></tr><tr><td></td><td style="text-align: right;">Ch, IRQ7, Edge</td></tr><tr><td></td><td style="text-align: right;">Compatible</td></tr></table> <p>Flash I/O Port Address..... 0270H</p> <p>Internal 486 Cache..... Enable External 256K DRAM Cache Enable Cache Recovery..... 1 Wait State Cache Write Hit..... 1 Wait State Cache Read Burst..... 3-2-2 Burst Cycle</p>	Disable	8h, IRQ4, Edge	Enable	8h, IRQ3, Edge		Ch, IRQ7, Edge		Compatible
Disable	8h, IRQ4, Edge								
Enable	8h, IRQ3, Edge								
	Ch, IRQ7, Edge								
	Compatible								

↑(Previous) ↓(Next) Enter (execute) Esc (quit/save)

Advanced Options

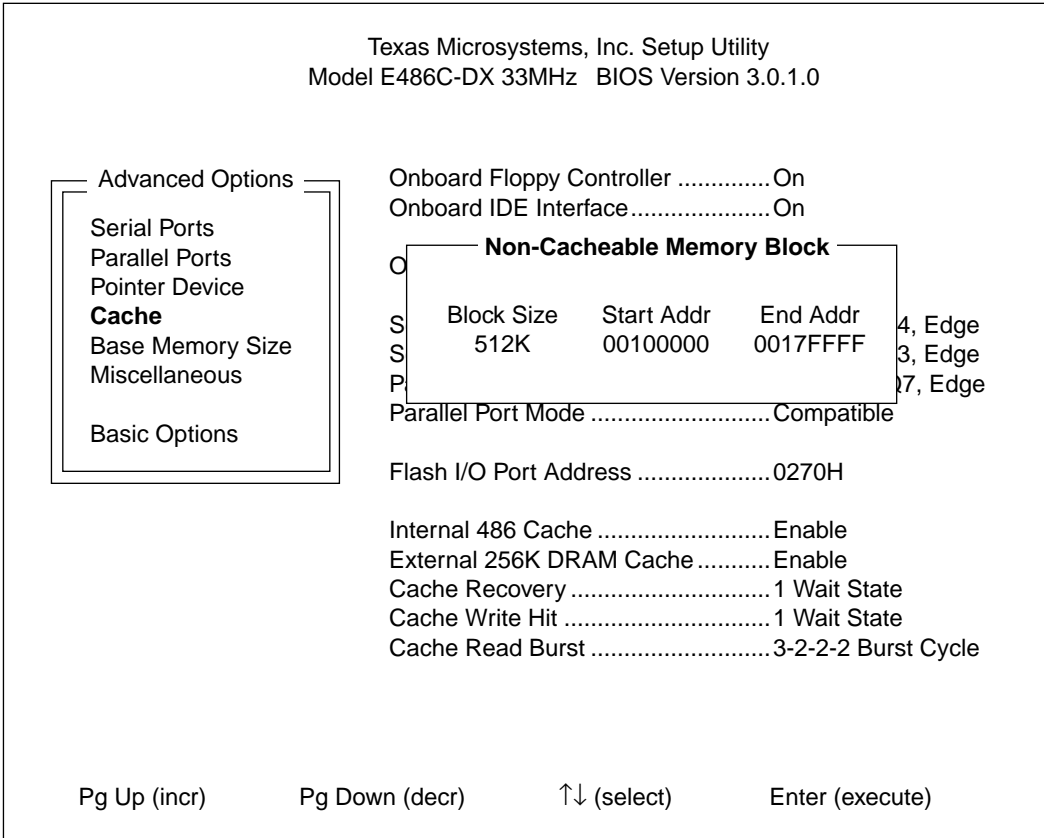
FIGURE 19 - B

Texas Microsystems, Inc. Setup Utility
Model E486C-DX 33MHz BIOS Version 3.0.1.0

<p style="text-align: center;">Advanced Options</p> <p>Serial Ports Parallel Ports Pointer Device Cache Base Memory Size Miscellaneous</p> <p style="text-align: center;">Basic Options</p>	<p>Onboard Floppy Controller..... On Onboard IDE Interface On</p> <p style="text-align: center;">External DRAM Cache</p> <table style="width: 100%; border-collapse: collapse;"><tr><td style="width: 60%; text-align: center;">Disable</td><td style="width: 40%;">8h, IRQ4, Edge</td></tr><tr><td style="text-align: center;">Enable</td><td>8h, IRQ3, Edge</td></tr></table> <p>Parallel Port Mode..... Compatible</p> <p>Flash I/O Port Address..... 0270H</p> <p>Internal 486 Cache..... Enable External 256K DRAM Cache Enable Cache Recovery..... 1 Wait State Cache Write Hit..... 1 Wait State Cache Read Burst..... 3-2-2-2 Burst Cycle</p>	Disable	8h, IRQ4, Edge	Enable	8h, IRQ3, Edge
Disable	8h, IRQ4, Edge				
Enable	8h, IRQ3, Edge				

↑(Previous) ↓(Next) Enter (execute) Esc (quit/save)

FIGURE 19 - C

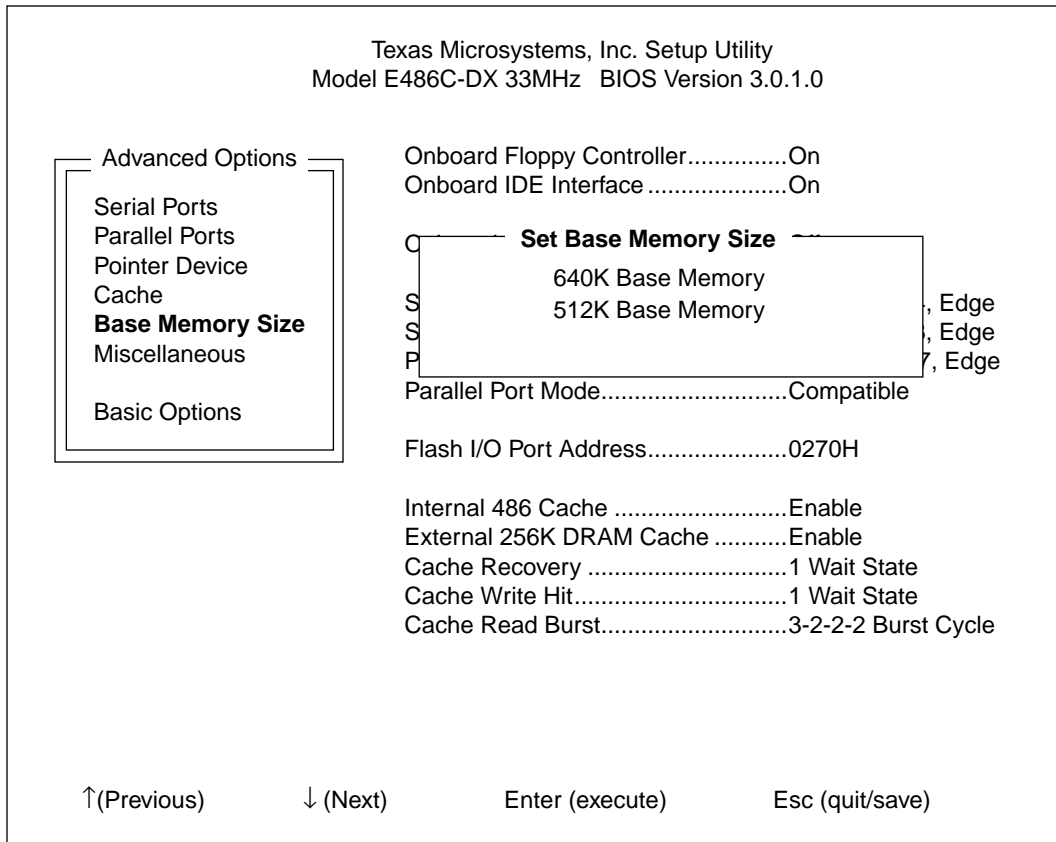


5.2.5 Base Memory

The E486C base memory can be set to either 640 KBytes (the usual amount of memory for an AT-compatible computer) or 512 KBytes. Since some add-on cards are mapped to the 512 - 640 KByte region, this option allows you to configure the system to run these cards in the 512 - 640 KByte area.

Note: If the 512 KByte option is chosen, memory addresses 8000:0 through 9000:FFFF are mapped to the ISA bus.

FIGURE 20



5.2.6 Miscellaneous

This menu selection provides access to the following.

16-bit Data Staggering Option - This option should be enabled to reduce data bus noise. However, since data staggering introduces a delay in 32-bit operations, some devices may have timing difficulties. Data staggering should be disabled in such cases.

A20 Option - The default selection is "Compatible A20" and should be the selection used under most circumstances. However, should rebooting or "warm booting" problems arise when running the iRMX™ operating system, using the "Fast A20" option should provide normal booting performance.

Additional options and menus will appear under "Miscellaneous" if certain optional "BIOS extensions" have been installed in BIOS memory. One such extension is the Serial Redirection BIOS. When installed, menus will appear that will permit selection of a serial port, baud rate and other options pertaining to that BIOS extension. Any installed BIOS extension will be accompanied with documentation covering options available under this Miscellaneous selection.

Advanced Options

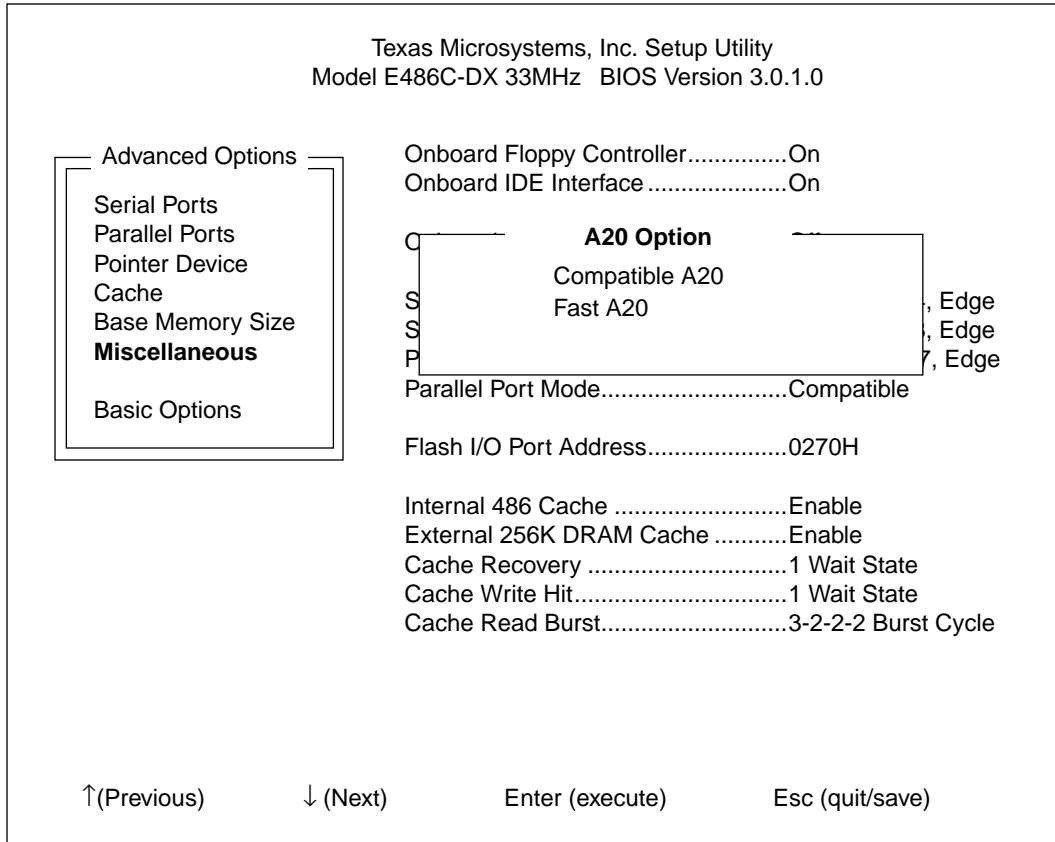
FIGURE 21 - A

Texas Microsystems, Inc. Setup Utility
Model E486C-DX 33MHz BIOS Version 3.0.1.0

<p style="text-align: center;">Advanced Options</p> <p>Serial Ports Parallel Ports Pointer Device Cache Base Memory Size Miscellaneous Basic Options</p>	<p>Onboard Floppy Controller.....On Onboard IDE Interface.....On</p> <p style="text-align: center;">16-Bit Data Staggering Option</p> <table style="width: 100%; border: 1px solid black;"><tr><td style="width: 30%; text-align: center;">O</td><td style="width: 40%; text-align: center;">Enabled</td><td style="width: 30%;"></td></tr><tr><td style="text-align: center;">S</td><td style="text-align: center;">Disabled</td><td style="text-align: center;">, Edge</td></tr><tr><td style="text-align: center;">S</td><td></td><td style="text-align: center;">, Edge</td></tr><tr><td style="text-align: center;">P</td><td></td><td style="text-align: center;">, Edge</td></tr></table> <p>Parallel Port Mode.....Compatible</p> <p>Flash I/O Port Address.....0270H</p> <p>Internal 486 CacheEnable External 256K DRAM CacheEnable Cache Recovery1 Wait State Cache Write Hit.....1 Wait State Cache Read Burst.....3-2-2-2 Burst Cycle</p>	O	Enabled		S	Disabled	, Edge	S		, Edge	P		, Edge
O	Enabled												
S	Disabled	, Edge											
S		, Edge											
P		, Edge											

↑(Previous) ↓(Next) Enter (execute) Esc (quit/save)

FIGURE 21 - B



5.3 Switch SW1-3 - Reload Default Setup Utility Values

Occasionally, you may encounter a situation when the CMOS RAM (Complementary Metallic Oxide Semiconductor Random Access Memory) becomes corrupted. This condition is usually accompanied by a “lock-up” of the system. The factory default Setup Utility values for E486C operation must then be reloaded into CMOS RAM.

Under normal conditions, SW1-3 should remain in the “OPEN” position. However, when factory default values must be reloaded, follow these procedures:

1. Remove power from the system and place SW1-3 in the “CLOSED” position.
2. Restore power to the system. The message “System Switch 3 is ON - Default System Configuration Loaded” will appear on the screen.
3. After waiting a few seconds, remove power from the system, place SW1-3 in the OPEN position and restore power.

Depending on the specifics of the system, the E486C may boot. If it does, you can modify the setup after pressing CTRL, ALT and S simultaneously during memory tests. If the E486C cannot boot, the messages “Invalid Configuration Information” and “Please Run Setup Program” and the prompts “Strike F1 to continue” and “Strike F2 for Setup” will appear on the screen. Strike the F2 key to recall the Setup Utility and reset the parameters as needed. Press the ESC key to save the setup parameter values and reboot the system.

Memory Configuration

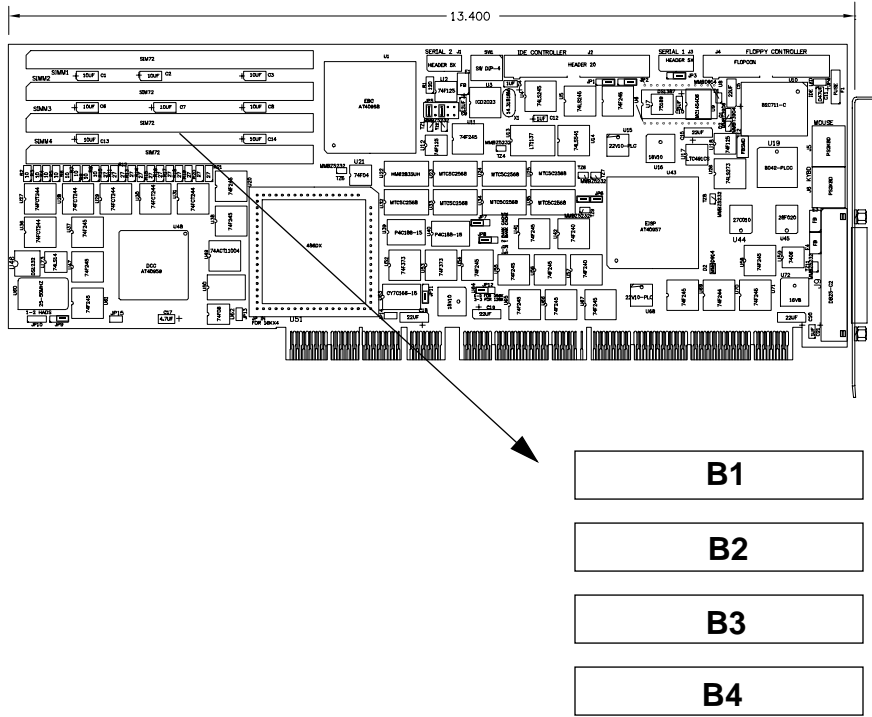
The E486C supports up to 64 MBytes of on-board memory in various configurations. Memory can be added to the E486C through the installation of SIMMs (Single Inline Memory Modules).

Three SIMM types (256 KByte, 1 MByte and 4 MByte x 36, 70ns) are supported by the E486C. These SIMM's may be installed in Banks 1, 2 3, or 4 (see next page).

CAUTION: Before installing SIMM's, remove power from the system by disconnecting the power cord from the power source. After power has been removed, remove the E486C Card. Only qualified, experienced electronics personnel should access the interior of a chassis. The components of the E486C Card are very sensitive to static discharge. Texas Microsystems provides a grounding wrist strap to remove all static electricity before touching the components. While out of the unit, E486C components should be placed on a static-dissipative surface or into a static-shielding bag.

E486C system memory decoding is handled automatically through the initialization software. For proper operation, you must configure system memory using the BIOS Setup Utility (see Chapter 5).

Switch SW1-3 - Reload Default Setup Utility Values



SIMM slot assignments

Table 1: Valid DRAM Configurations

B1	B2	B3	B4	Total
256K	-	-	-	1M
256K	256K	-	-	2M
256K	256K	256K	-	3M
256K	256K	256K	256K	4M
256K	256K	256K	256K	8M

Table 1: Valid DRAM Configurations

B1	B2	B3	B4	Total
1M	-	-	-	4M
1M	1M	-	-	8M
1M	1M	256K	256K	10M
1M	1M	1M	-	12M
1M	1M	1M	1M	16M
2M	2M	2M	2M	32M*
4M	-	-	-	16M
4M	4M	-	-	32M
4M	4M	4M	-	48M
4M	4M	4M	4M	64M

* Valid only when using “double-bank” SIMM’s

General Maintenance

As with any electronic hardware, an adequate maintenance program will enhance the E486C's ability to provide dependable performance. In general terms, maintenance includes periodic inspection of the E486C to ensure that it is clean and free from signs of dirt, dust, wear and stress. However, the E486C should be cleaned by a Texas Micro Service Representative only.

CAUTION: *Always remove power from the system prior to inspecting the E486C Card. Disconnect the power cord from the power source. Only experienced electronics personnel should access the chassis' interior.*

CAUTION: *No moisture or condensation may come in contact with the E486C electronic components or cables/connectors. Damage to sensitive components may occur.*

Inspect all cables and connectors to verify that they are securely fastened to their connecting component(s). Worn or stressed cables and connectors must be replaced. All peripheral equipment used with the E486C should be properly maintained. Malfunctioning equipment should be immediately replaced to prevent damage to the E486C CPU.

7.1 Return Procedure

In instances where Texas Microsystems products require service, the factory must be contacted and a Return Goods Authorization (RGA) must be obtained. **When requesting an RGA number, please provide the product serial number.** When authorization is given, a Return Goods Authorization number will be issued. This RGA number, along with the product serial number, must appear on all packing materials and correspondence to ensure proper handling. In all instances, including return for warranty repair, an RGA must be obtained and noted, or the factory will be unable to accept delivery.

7.2 Technical Support

Texas Microsystems provides on-line technical support available during weekdays from 7:00 a.m. to 6:00 p.m. (Central Time) for your convenience. Our staff of trained professionals welcomes the opportunity to answer your questions and assist you with your technical requirements. Just call us toll-free at:

1-800-627-8700

To expedite your request, please have available the Texas Microsystems product model and serial number.

Flash Programming Notes

NOTE: This section provides information on flash programming and is intended for programmers and advanced users.

The E486C features “flash memory,” special EEPROM memory that can be erased and reprogrammed. The E486C supports up to 256 KBytes of flash memory for BIOS and user application field upgrades. Flash memory is divided into 64 KByte segments addressable through a hardware register. The register value is defined in the Setup Utility.

NOTE: The default I/O address for the “config” register is 270h (see Paragraph 1.2.1).

User software must be aware of the flash memory size:

<u>Flash device size</u>	<u>Flash memory size</u>
512 KBits	64 KBytes
1 MBite	128 KBytes
2 MBitss	256 KBytes

Bits 3 and 4 of the config register control the upper two address lines of the Flash memory. The 1 MBit device requires manipulation of Bit 4 only. Bit 4 must be 0 to program the lower 64 KBytes, or 1 to program the upper 64 KBytes.

The 2 MBit flash requires manipulation of Bits 3 and 4. Bit 4 functions as explained above, but Bit 3 must be 0 to read or write to the lower half of the 2 MBit device or 1 to read or write to the upper half. Since only two bits of the config register are required for Flash access, it is necessary to read the stored config register value and toggle only the flash address bits to preserve the other configuration bits.

Setup Utility Default Settings

The following table represents the factory-default configuration settings for the E486C CPU Card. For more information on these options, see Chapter 5, *Using the Setup Utility*.

Setup Item	Default Setting
Time	00:00:00
Date	Jan 01, 1993
Weekday	Friday
Drive A:	5 1/4 Inch, 1.2 MB
Drive B:	Not Installed
Hard Disk 1	Not Installed
Hard Disk 2	Not Installed
Video Adapter	VGA/EGA
Keyboard Typematic Settings	Keyboard Controller defaults

Setup Utility Default Settings

Setup Item	Default Setting
Base Memory	Dynamic
Extended Memory	Dynamic
Floating Point Unit	Dynamic
Fast Boot	Off
Boot Drive Sequence	Drive A: then C:
101-Keyboard NumLock	Off
Password Protection	None
Password	None
Boot Errors: Keyboard	On
Boot Errors: Floppy	On
Boot Errors: Video	On
Floppy Controller	Off
IDE Interface	Off
Onboard Pointer Device	Off
Serial Port 1	Disabled
Serial Port 2	Disabled
Parallel Port	Disabled
Flash I/O Port Address	Switch #2 Off = 270H On = 370H
Internal 486 Cache	Enabled
External DRAM Cache	Disabled

This section provides application-specific information concerning the E486C CPU Card.

Memory Map

The memory address space E000:0 to E000:FFFF is reserved for on-board EPROM (BIOS). The 64 KByte block E000:0 to E000:FFFF is local to the CPU card and is not available to the ISA bus. If you have an adapter card and want to map the adapter BIOS at E000, the E486C will not detect the card on the AT bus.

If you need to use the 64 KBytes of memory between E000:0 and E000:FFFF, you can use the Flash Utility to flash your code into the 28F010 on the E486C. To do this you must have:

- Flash Utility, version 4.0 or newer
- E486C BIOS binary file
- The binary file containing your custom code.

Note: The file must be a binary image file for the Flash Utility to work properly.

To flash your code:

1. Type **flash** at the DOS prompt and press <ENTER>
2. Enter the model name (E486C)
3. Enter the file name for the CPU BIOS on line 1 and press <ENTER>
Example: V3030.BIN <ENTER>
4. Enter F000 <ENTER> for the target address of the CPU BIOS
5. Enter the file name of the binary file containing the custom code on line 2 and press <ENTER>
6. Enter E000 <ENTER> for the target address of the custom code
7. Press <CTRL> and <ENTER> to begin reading files

Once you read the files, press <ENTER> to begin flashing the on-board flash device.

Video Controllers

The E486C does not work well with 16-bit ROM VGA controllers. Some VGA controllers do not return the MCS16 signal soon enough to meet the EISA timing specification. An 8-bit ROM VGA controller does not exhibit this problem.

Fully-loaded Backplane

In a fully-loaded backplane (with all 13 slots occupied), some adapter cards load the bus clock more than do others. This could translate into DMA failures during disk accesses. Jumpers JP16 and JP7 provide a method to buffer or unbuffer the system clock, which feeds the EISA bus controller that generates the bus clock. The default setting for JP16 is unbuffered (UBF), while the default for JP7 is buffered (BF). Whenever memory parity errors are generated in a fully-loaded backplane, set JP7 in unbuffered mode (UBF).

Solaris OS

The E486C CPU Card will occasionally malfunction when Solaris OS is used. Until the problem is rectified, using Solaris OS is not recommended.

Next Step OS

When using Next Step OS, set the jumper JP15 to 2-3 for unbuffered IRQ12. If the jumper is in the other position (1-2), the keyboard will not respond in this application.

Type C DMA

Type C DMA (32-bit burst mode) does not work properly when data transfers start with misaligned bytes. The byte enable (BEQ-3) and terminal count (TC) signals on the EISA bus are not asserted at the proper time.

NOTES