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80386DX-33/40 MHZ

80486SX-20/25/40 M H ZI#473

80486DX-33/50 MHZ

80486DX2-50/66 MHZ

(E 3486) USER'S MANUAL

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386 chip **UP** grade 486™

PREPARATION OF YOUR MAINBOARD

SYSTEM ASSEMBLY

SYSTEM BIOS SETUP

APPENDIX

PREPARATION OF YOUR MAINBOARD

INTRODUCTION

Congratulations on your procurement of the EFAR-3486 mainboard. you are now the owner of one of the most powerful flexible and upgradable IBM PC AT compatible mainboards in the market.

The 3486 mainboard which employed EFAR-8290WB chipset has passed strict quality control procedure to ensure high degree of reliability and compatibility.

This mainboard is so designed to allow the flexibility of using any of the 386 and 486 CPUs exist in today's PC market, depending on the need of a user.

This feature of flexibility is achieved by using the EFAR-8290WB chipset, which integrates several components into three sophisticated Asic (application Specific Integrated Circuits) designs.

The chipset consist of three chips:

- * The 82EC495 System Controller (SC)
- * The 82EC392 Data Buffer Controller (DBC)
- * The 82C206 Integrated Peripheral Controller (IPC)

Product data and specification information as contained in this manual are subject to change without prior notice for the sake of technical improvement in performance and reliability, since we are permanently endeavoring to supply the best products possible.

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E3486 Mainboard

PREPARATION OF YOUR MAINBOARD

- Features
- Jumper Setting
- Connector Pinouts
- CPU Installation
- Math.Coprocessor Installation
- Memory Installation and Configuration
- Cache Memory Installation

FEATURES

The Significant Features of E 3486 Cache Mainboard.

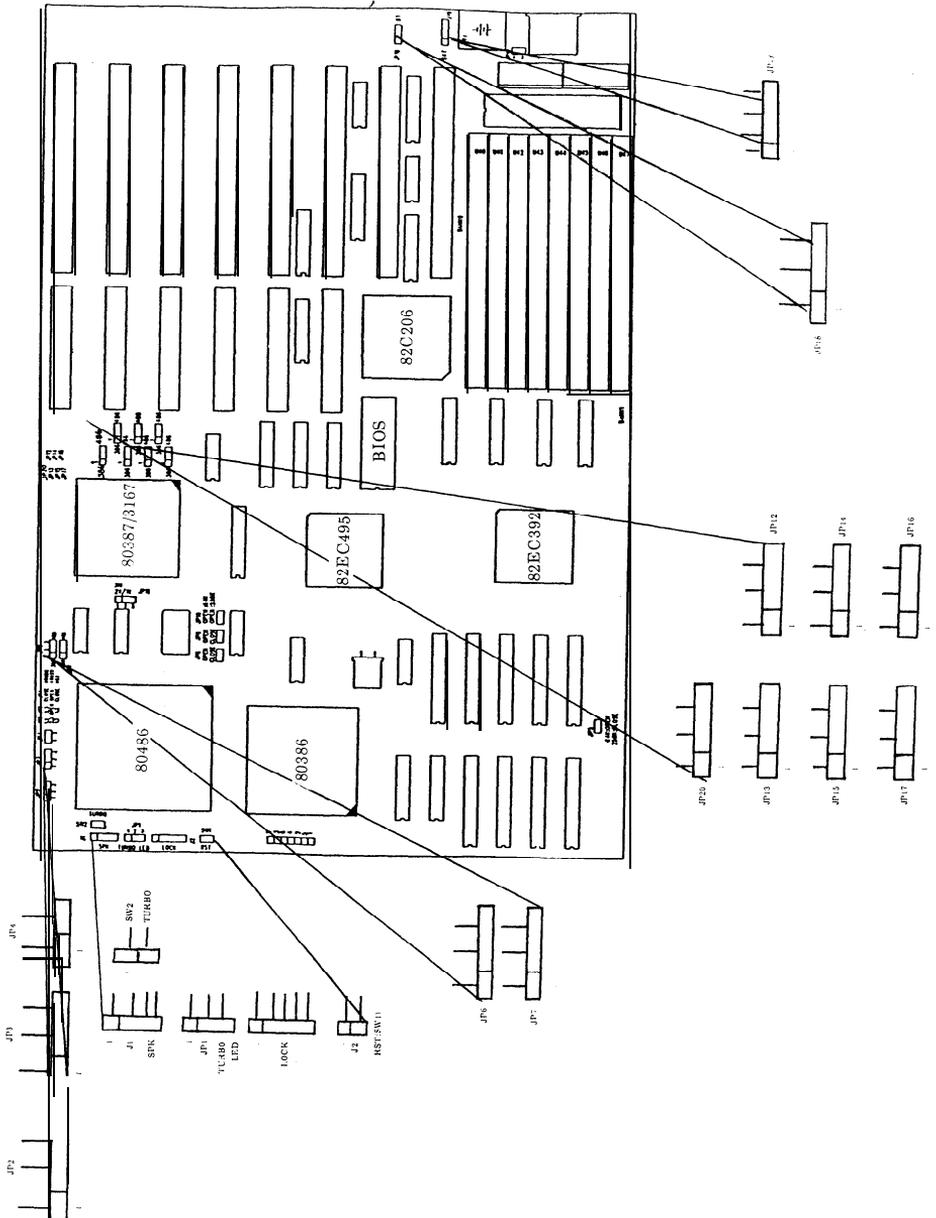
- Can be used with any of the following CPUs:
 - Intel 80386 DX-25,33
 - AMD 80386 DX-40
 - Intel 80486 SX-20,25
 - Intel 80486 DX-33,50
 - Intel 80486 DX2-50
 - Intel 80486 DX2-66
 - AMD 80486 SX-40
- Support Coprocessor (Weitek 3167 or, Intel 80387 optional) synchronous
- EFAR EF8290WB Chipset
- Support 8-bit ROM BIOS
- Write-Back Direct Mapped Cache
- Support 64K, 256K Cache Memory Size
- Support Shadow RAM for System and Video BIOS
- Page mode operation on any banks
- Fast Gate A20 and Reset Support
- DRAM parameters can be optimized via wait states
- Legal AM1 BIOS with built-in setup utilities
- Support 1 to 32MB on-board
 - Supports 256K/1M/4M DRAM (SIMM)

- Support mix DRAM types on different banks
- 8 Expansion Slots (two 8-bit & Six 16-bit)
(synchronous Bus Clock)
- Display Mode supported: 8514/A, VGA, EGA, CGA, MDA, and Hercules
- Operation System supported: MS DOS, OS/2, DR DOS, XENIX, and UNIX
- Network supported: Novell, 3Com, and D-Link
- Dual speed selectable via keyboard, software or hardware Turbo Switch
- On-board Real Time Clock/Calendar with rechargeable-battery
- On-board power good logic, active reset circuitries for stable power-on and power-off operations

The motherboard upgrade feature from 386DX to 486SX/DX processor is accomplished with as few as 8 (eight) jumper settings. In addition, there are the standard motherboard configuration jumpers for memory **and** accessory settings. The following tables identify the motherboard jumpers required.

JUMPER	POSITION	ACTION
JP1		Turbo Led
JP2	1-2	487sx,486dx
	3-4	486sx
JP3	1-2	487sx
	2-3	486dx
	OPEN	486sx
JP4	OPEN	486sx
	CLOSE	487sx,486dx
JP5	OPEN	64x
	CLOSE	256x
JP6	1-2	386dx
	2-3	486dx
JP7	1-2	386dx
	2-3	486dx
JP12	1-2	386dx
	2-3	486dx
JP13	1-2	386dx
	2-3	486dx
JP14	1-2	386dx
	2-3	486dx
JP15	1-2	386dx
	2-3	486dx
JP16	1-2	386dx
	2-3	486dx
JP17	1-2	386dx
	2-3	486dx
JP20	1-2	386dx
	2-3	486dx

JUMPER SETTING



CONNECTOR PINOUTS

Power Supply Connector (517,518).

Pin	Description
1	Power Good
2	+5 Vdc
3	+ 12 Vdc
4	- 12 Vdc
5	Ground
6	Ground
7	Ground
8	Ground
9	-5 Vdc
10	+5 Vdc
11	+5 Vdc
12	+5 Vdc

Keyboard Connector (520)

They keyboard cable connects to the system board through a 5-pin din connector.

The following table lists the connector pins and their signal names.

Pin	Description
1	Keyboard Clock
2	Keyboard Data
3	Keyboard Reset
4	Ground
5	+5 Vdc

Speaker Connector (J1)

This is a 4-pin header.

Pin	Description
1	Speaker Signal
2	+5 Vdc
3	Ground
4	+5 Vdc

Keylock and Front Panel Power LED Connector (J2)

This is a 5-pin header.

Pin	Description
1	LED Power
2	Not used
3	Ground
4	Keyboard inhibit
5	Ground

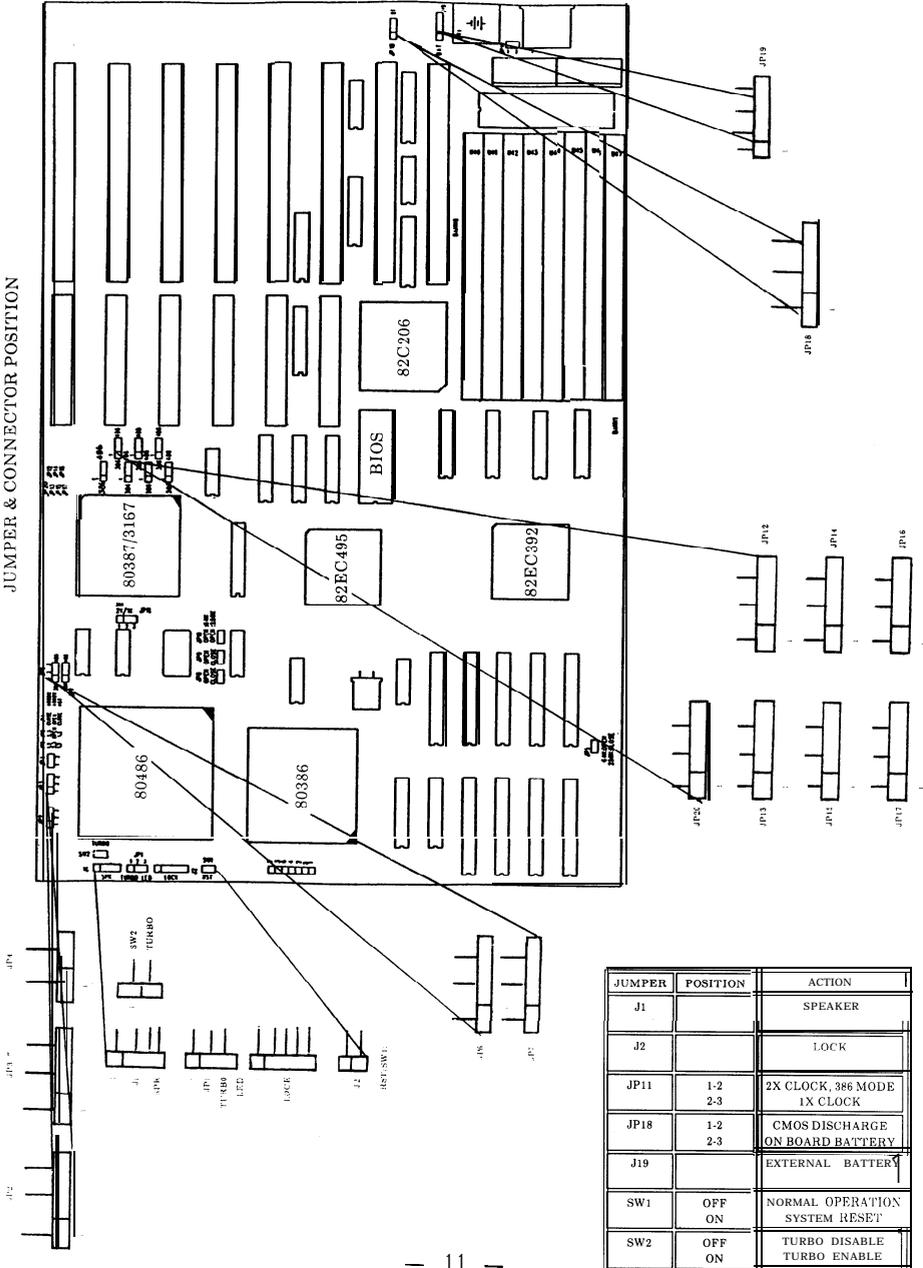
External Battery Connector (J19)

This is a 4-pin header.

Pin	Description
1	+6 Vdc
2	Not used
3	Ground
4	Ground

CONNECTOR PINOUTS

JUMPER & CONNECTOR POSITION



CPU INSTALLATION

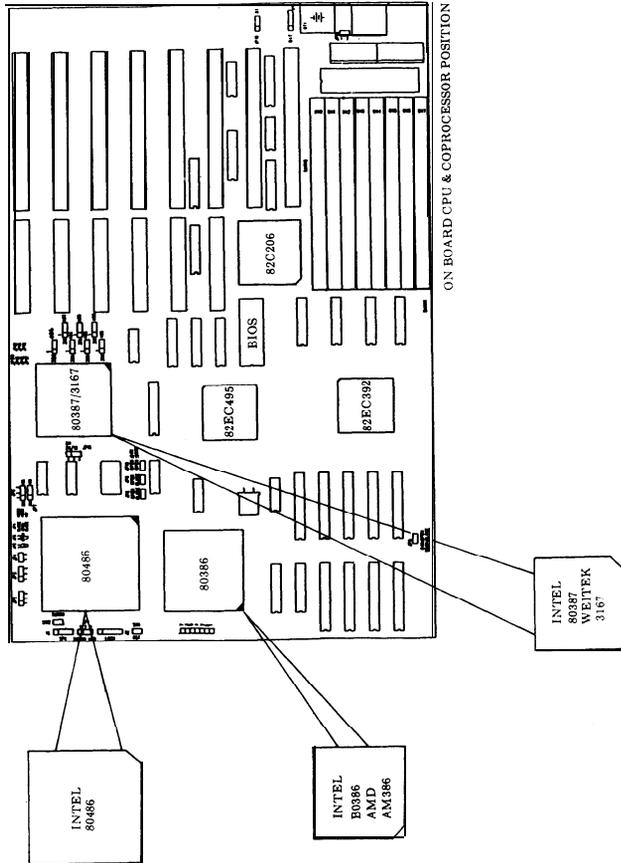
The E3486 Mainboard provides sockets for any 386DX, 486SX, 486DX and 486DX2. CPU's exist in today's PC Market. However, only one CPU Can be installed on the Mainboard, and the corresponding oscillator must be used properly. The following table shows the jumper settings and oscillator which must be used when a particular CPU is installed.

	JUMPER SETTING(JP11)	OSCILLATOR
Intel 386DX-25	1-2	50MHZ
Intel 386DX-33	1-2	66.667MHZ
AMD 386DX-40	1-2	80MHZ
Intel 486SX-20	1-2	40MHZ
Intel 486SX-25	1-2	50MHZ
Intel 386DX-33	1-2	66.667MHZ
Intel 486DX-50	2-3	50MHZ
Intel 486DX2-50	1-2	50MHZ
Intel 486DX2- 66	1-2	66.667MHZ

MATH CO-PROCESSOR INSTALLATION

Plug your Math Co-Processor Into the socket as Shown in the figure.

(Intel 80387 or weitek 3167) NO jumper setting is required.
However,proper BIOS setting is necessary.



MEMORY INSTALLION & CONFIGNATION

Eight SIMM sockets are available on the mainboard. The eights SIMM sockets are arranged into 2 banks; Bank 0 (U40-U43) and Bank 1 (U44-U47) with a minimum memory configuration of 1MB. (ie.4 memory modules of 256k by 9 bit occupying bank 0).

A Memory Configuration Table for other memory size listed is as follows

Memory Configuraftion Table

TOTAL MEMORY SIZE (BYTES)	BANK 0	BANK 1
1M	256K × 9,4 PCS	x
2M	256K × 9,4 PCS	256K × 9,4 PCS
4M	1M × 9,4 PCS	x
5M	256K × 9,4 PCS	1M × 9,4 PCS
8M	1M × 9,4 PCS	1M × 9,4 PCS
16M	4M × 9,4 PCS	x
20M	1M × 9,4 PCS	4M × 9,4 PCS
20M	4M × 9,4 PCS	1M × 9,4 PCS
32M	4M × 9,4 PCS	4M × 9,4 PCS

Remarks: 1. 70ns DRAM is recommended.

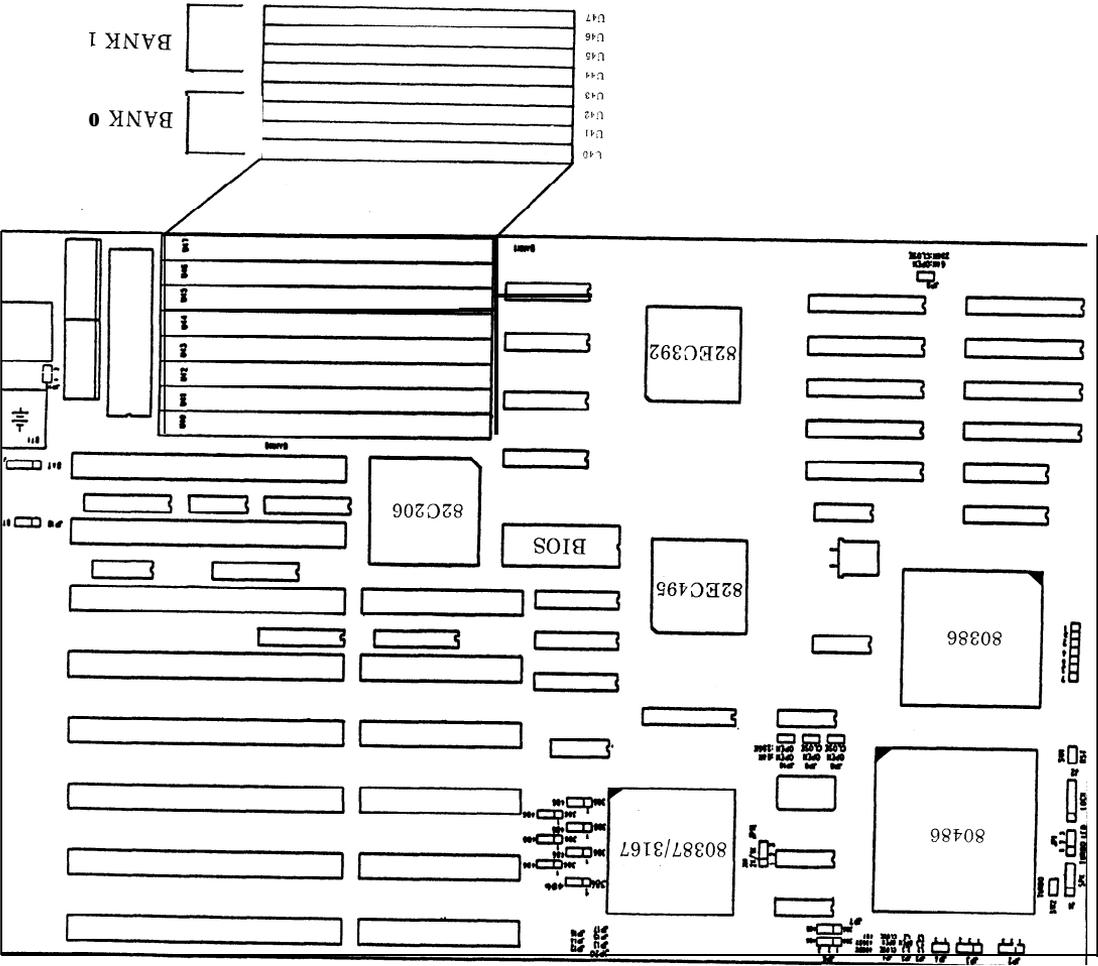
2. 256Kx9=256KB SIMM RAM Module.

1Mx9=1MB SIMM RAM Module.

EMS Emulator

A software EMS emulator is necessary to make use of the expanded memory. Many software EMS emulators are available in the market, contact your dealer for more information.

MEMORY INSTALLION & CONFIGNATION



CACHE MEMORY INSTALLATION

The 3486 Mainboard provides options of 64KB Cache or 256KB Cache memory for performance improvement. The location to install SRAM chips is shown in the figure. Use the proper combination of TAG RAM, SRAM and Jumper Settings to achieve desired cache size for your mainboard.

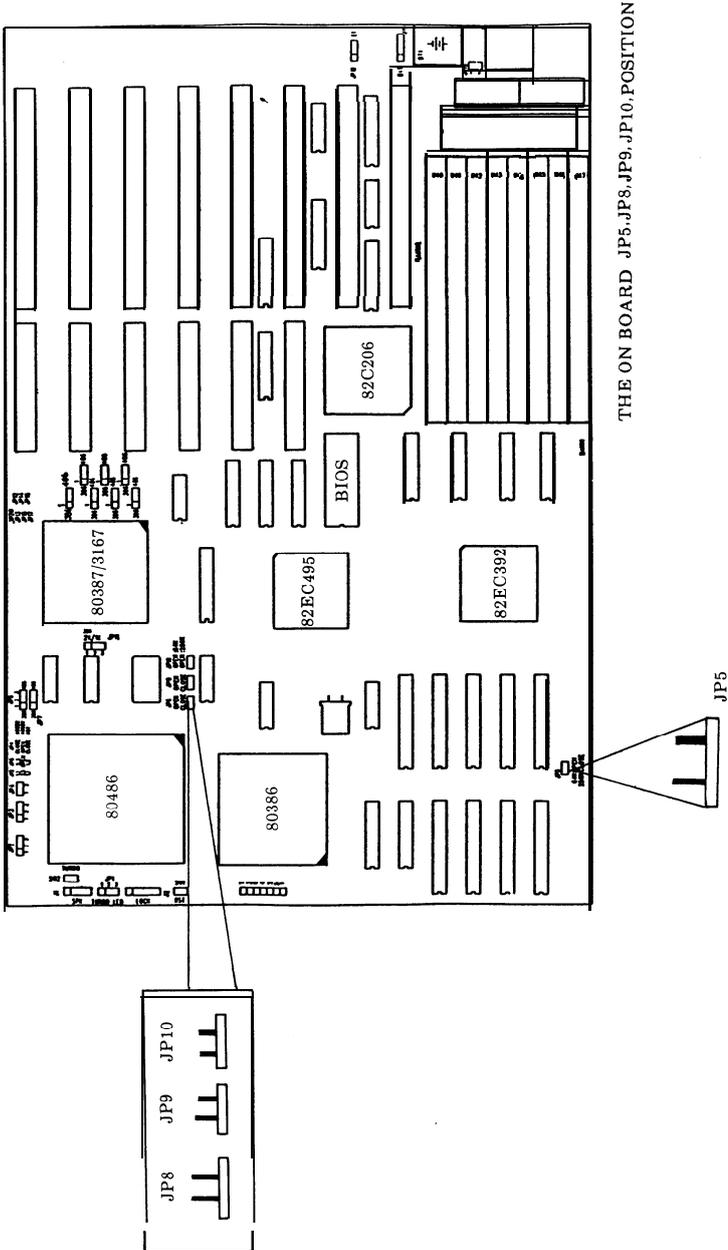
Cache and Tag Ram jumpers:

Cache Size	JP5	JP8	JP9	JP10	TAG Size	DATA SIZE
64k	OPEN	OPEN	OPEN	OPEN	8k × 8	8k × 8,8 pcs
256k	CLOSE	CLOSE	CLOSE	OPEN	32k × 8	32k × 8,8 pcs

NOTE

Any damage caused to the 3486 M/B due to incorrect installation procedures will invalidate all warranties.

CACHE MEMORY INSTALLATION



E3486 Mainboard

SYSTEM ASSEMBLY

- Installation in the System Case
- Connecting the Power Supply
- Connection the Keyboard
- Installing Interface Cards
- Power-On

Introduction

The E3486 Mainboard can be installed in most cases designed for AT compatible mainboards including “baby” AT sized cases. The actual dimensions of the board are 22cm wide and 33cm long. There are several mounting holes on the board which should allow you to mount the board no matter what kind of case you are using.

Installation in the System Case

When you install the E3486 Mainboard in your case, make sure it is correctly oriented with the interface card slots to the rear and the keyboard connector on the right as you face the front of your system case

Depending on the design of your case, the mainboard will be fixed in place either by plastic studs which can be inserted through the mounting holes from the bottom, or by screws which should be inserted through the mounting holes from the top. If screws are used, make sure each screw is fitted with a non-conductive washer to prevent any shorting on your mainboard.

With some cases, particularly those of compact design, it may be necessary to remove the power supply and/or disk drive housings. The procedure for doing this will vary from case to case, though it is usually a simple matter of removing a few screws. Please consult any instructions included with your system case for details. Under no circumstances bend the board or try to force it into place. Taking an extra five minutes to remove components if necessary is a far better solution than ending up with a cracked or damaged board which may well malfunction or fail to operate completely. If you are in any doubt as to how the 3486 Mainboard should be installed please consult a professional technician.

Connecting the Power Supply

The connector for the power supply is situated near the keyboard socket on the 3486 Mainboard. The connector is a standard AT switching power supply type, and you should be able to plug the leads from your power supply directly into this connector. Ideally, a power supply of at least 200 watts capacity should be used, especially if you have a hard disk drive installed in your system. Most standard AT compatible power supplies are ideal for the 3486 Mainboard.

Connecting the Keyboard

The 3486 Mainboard comes with a keyboard socket built on to the board next to the power supply connector. After the 3486 Mainboard has been installed in your computer case, you can plug your keyboard directly into this socket from the rear of your computer case. Note that an AT compatible keyboard must be used with the 3486 Mainboard. An XT compatible keyboard will not work.

Installing Interface Cards

The 3486 Mainboard has six AT (16-bit) slots, two XT (8-bit) slot. AT type (16-bit) interface cards have a single edge connector. XT interface cards may be installed in AT type slots by simply plugging the single card connector in the longer slot. AT interface cards may not be installed in the XT interface card slot.

When you install full length interface cards ensure that the card is correctly fitted into the guides at the front and back of your case and push the card firmly into the slot. You do not need to use the slots in any particular order. Any empty slot may be used to install any kind of interface card.

Power-ON

When you have installed the 3486 Mainboard in your case, check that you have carried out the following operations before turning on your computer:

SYSTEM ASSEMBLY,

1. Correctly set all jumper switches on the 3486 Mainboard according to the configuration of your system.
2. Connected all jumpers from the components on your system case, including power-on LED and keylock, reset switch, turbo switch, turbo LED and speaker.
3. Connected a power supply of the correct voltage and power output (at least 200 watts).
4. Installed a video graphics adapter such as an MGA, CGA, EGA or VGA card depending on the type of monitor you wish to use, into any empty slot.
5. Closed your computer case and connected the monitor to the back of the video graphics adapter.
6. Connected your keyboard to the keyboard connector on the 3486 M/B through the back of your system case.

If you have carried out all the steps above, you may turn on your computer and use the SETUP program in the BIOS on your 3486 Mainboard to configure the board to your hardware requirements. For details on how to use the SETUP program refer to the following section.

If your computer fails to boot at power-on and you hear a number of “beeps”, this probably means that you have forgotten to install a vital component, such as the video adapter or disk drive control card, or made a wrong connection. Check all the jumper settings you have made and ensure that they correspond to the actual configuration of the 3486 M/B. Also,, recheck all connections before trying again. In particular, check the connections from your disk drive(s) to the disk drive control card. Disk drive cables have one colored edge, usually red, indicating Line 1. The colored edge must be matched to Pin 1 of the connector on your disk drive control card and the disk drive.

If you are still having problems after thoroughly checking your system configuration, please consult the dealer from whom you purchased the 3486 Mainboard.

E3486 Mainboard

SYSTEM BIOS SETUP

- AM1 BIOS Register Setup
- Standard CMOS Setup
- Advanced CMOS Setup
- Auto Configuration
- Auto Configuration With Power-On Defaults
- Change Password
- Write To CMOS And Exit

SYSTEM BIOS SETUP

This chapter tells the user how to use the SETUP for 3486 mainboard. Please note that any improper use of this setup can cause damage to your system. Therefore please make sure you understand thoroughly before making any change or you may contact your dealer for more detailed information.

This chapter will describe briefly the BIOS written by AMI. (American MegatrendInc.) In the mean time do not use other BIOS than the one uses in this board as it will cause functional incompatibility.

AM1 BIOS Register Setup

The setup program is used to configure the system. These system options are stored in the CMOS. If the CMOS is good, the system is configured with the values stored in the CMOS. If the CMOS is bad, the system is configured with the default values stored in the ROM file. There are 2 sets of BIOS values stored in the ROM file: the **BIOS Setup default values and the Power-On default values.**

The BIOS Setup default values are the default values which should provide optimum performance for the system. They are the best case default values.

The Power-On default values, which are the worst case defaults, are the stable values for the system. They are to be used if the system is performing erratically because of hardware problems.

Listed below is an explanation of the keys displayed at the bottom of the screens accessed through the BIOS SETUP program:

ESC:Exit to previous screen.

Arrow keys: Use arrow keys (↑→↓←) to move cursor to desired selection

SYSTEM BIOS SETUP

PgUp/PgDn/Ctrl-PgUp/Ctrl-PgDn: Modify the default value of the options for the highlighted feature. If there are less than 10 available options, the Ctrl-pgUp and Ctrl-PgDn keys function the same as the PgUp and PgDn keys.

F1: Displays help screen for selected feature.

F2/F3: Change background and foreground colors.

F5: Retrieves the values which were resident when current setup session was started. These values will be CMOS values if the CMOS was uncorrupted at the start of the session, or they will be the BIOS Setup default values.

F6: Loads all features in the Advanced CMOS Setup/Advanced Chipset Setup with the BIOS Setup defaults.

F7: Loads all features in the Advanced CMOS Setup/Advanced Chipset Setup with the Power-On defaults.

F10: Saves all changes made to Setup and exits program.

Note: The default value for the prompts which occur when the <F5>, <F6>, and <F7> keys are pressed is always <N> (No.) Actually executing these options requires changing the <N> to <Y> (Yes) and pressing < ENTER > .

BIOS SETUP PROGRAM - AMIBIOS SETUP UTILITIES
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STANDARD CMOS SETUP
ADVANCED CMOS SETUP
ADVANCED CHIPSET SETUP
AUTO CONFIGURATION WITH BIOS DEFAULTS
AUTO CONFIGURATION WITH POWER-ON DEFAULTS
CHANGE PASSWORD
HARD DISK UTILITY
WRITE TO CMOS AND EXIT
DO NOT WRITE TO CMOS AND EXIT

Standard CMOS Setup for Changing Time, Date, Hard Disk Type, etc.

ESC:Exit ↓→↑Sel F2/F3:Color F10:Save & Exit

Standard CMOS Setup

The Standard CMOS Setup utility is used to configure the following features:

Date:Month, Date, and Year. Ranges for each value are listed below in prompt box in the lower right corner of the CMOS Setup Screen.

Time:Hour, Minute, and Second. Uses 24 hours format.

Daylight Savings:Disbaled or Enabled.

Hard Disk C and Hard Disk D:Hard disk types from 1 to 46 are standard ones; type 47 is user definable. The user must enter the hard disk parameters for each drive.

The drive types are identified by the following characteristics:

Type The number designation for a drive with certain identification parameters.

Cyl The number of cylinders found in the specified drive type.

Heads. The number of heads found in the specified drive type.

Wpcom The read delay circuitry which takes into account the timing

Standard CMOS Setup

differences between the inner and outer edges of the surface of the disk platter. The number designates the starting cylinder of the signal.

L-zone L-zone is the landing zone of the heads. This number determines the cylinder location where the heads will normally park when the system is shut down.

Capacity The formatted capacity of the drive based on the formula:

$(\text{NUMBER of heads}) \times (\text{NUMBER of cylinders}) \times (\text{NUMBER of secs/cyl.}) \times (512 \text{ bytes/sec})$

“Not Installed” is available for use as an option. This option could be used for diskless workstations and SCSI hard disk. Type 47 may be used for both hard disks C and D. The parameters for type 47 under Hard Disk C and Hard Disk D may be different.

Floppy Drive A and Floppy Drive B: The options are 360KB 5 $\frac{1}{4}$ ”, 1.2 MB 5 $\frac{1}{4}$ ”, 720 KB 3 $\frac{1}{2}$ ”, 1.44 MB 3 $\frac{1}{2}$ ”, and Not Installed. Not installed could be used as an option for diskless workstations.

Primary Display: Options are Monochrome, Color 40x25, VGA/PGA/EGA, Color 80x25, and Not Installed. The Not Installed option could be used for network file servers.

Keyboard: Options are Installed or Not Installed.

The advanced CMOS Setup program is equipped with a series of help screens, accessed by the <F1> key, which will display the options available for a particular configuration feature and special help for some of the options.

The following is a short description for each of the options on the Advanced CMOS Setup Screen.

Standard CMOS Setup

Above 1 MB Memory **Test:This** feature, when enabled, will invoke the POST memory routines on the RAM above 1 MB (if present on system). If disabled, the BIOS will nly check the first 1 MB of RAM.

Memory Test Tick Sound:This option will enable (turn on) or disable (turn off) the “ticking” sound during the memory test.

Memory Parity Error Check:If the motherboard doesn’t have parity RAM, user may disable the memory parity error checking routines in the BIOS.

Hit Message Display:Disabling this option, will present the message:

“Hit if you want to run SETUP”
displaying on the screen when the system boots-up.

Hard Disk **Type 47** RAM Area:The AMIBIOS SETUP features two userdefinable hard disk types. Normally, the data for these disk types are stored at **0:300** in lower system RAM. If a problem occurs with other software, this data can be located at the upper limit of the DOS Shell (640 KB). If the option is set to DOS 1 KB,the DOS Shell is shortened to 639 KB, and the top KB is used for the hard disk data storage.

Wait For **<F1> If Any Error:**Before the system boots-up, the BIOS will execute the POST routines, a series of system diagnostic routines. If any of these tests fail, but a non-fatal error has occurred and the system can still function, the BIOS will respond with an appropriate error message followed by the following statement:

“Press<F1> to continue”

If this option is disabled, any non-fatal error which occurs will not generate the above statement, but the BIOS will still display the appropriate error message. This will eliminate the need for any user response to a non-fatal error condition message.

Standard CMOS Setup

System Boot Up Num Lock:The user may turn off the “Num Lock” option on his Enhanced Keyboard when the system is powered on. This will allow him to use the arrow keys on the numeric keypad instead of using the other set of arrow keys on the Enhanced Keyboard. The BIOS will default to turning the “Num Lock” on.

Floppy Drive Seek At Boot:The default for this option is “Disabled” to allow a fast boot and to reduce the possibility of damage to the heads.

System Boot Up Sequence:The AM1 BIOS will default to boot from floppy drive A: (if present), and if unsuccessful, it will boot from hard disk C:.

Cache Memory:This option allows user to specify whether the external cache is enable or disable.

Internal Cache Memory:This option allows user to enable or disable the internal cache of the 80486 CPU.

Fast Gate A20 Option:Enable this option will optimize OS/2 environment.

Turbo Switch Function:This option allows users to enable or disable turbo switch.

Password Check Option:The password function can be used to prevent from unauthorized system boot-up or unauthorized use of BIOS SETUP.

The default option is “**Disabled**”: The prompt for the password will not appear when the system is re-booted.

If the “**Always**” option is chosen at Setup, each time the system is turned on, i.e. “booted,” the prompt for user password will appear.

If the “**Setup**” option is chosen at Setup, the password prompt will not appear when the system is turned on, but will appear if user want to enter the Setup program.

Standard CMOS Setup

The program allows three attempts to key in the correct password. After each incorrect attempt, the prompt to enter the current password will appear, followed by an 'X'. After the third incorrect attempt, the system will lock and it will be necessary to reboot. •

Video ROM Shadow **C000,32K**:Shadow RAM enabled or disabled at each different segment.

BIOS SETUP PROGRAM - STANDARD CMOS SETUP (C) 1991 American Megatrends Inc., All Rights Reserved									
Date (mn/date/year) : Wed, Apr 29 1992		Base memory: 640 KB							
Time (hour/min/sec) : 19:44:03		Ext. memory: 19456 KB							
Hard disk C: type : 47 = USER TYPE		Cyln Head Wpcmn LZone Sect Size							
Hard disk D: type : Not Installed		762 8 0 0 39 116 MB							
Floppy drive A:	: 1.2 MB, 5%"								
Floppy drive B:	: 1.44 MB, 3%"								
Primary display	: VGA/PGA/EGA								
Keyboard	: Installed								
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Month: Jan, Feb, ..., Dec</td> </tr> <tr> <td>Date : 01, 02, 03, ... 31</td> </tr> <tr> <td>Year : 1901, 1902, ... 2099</td> </tr> </table>							Month: Jan, Feb, ..., Dec	Date : 01, 02, 03, ... 31	Year : 1901, 1902, ... 2099
Month: Jan, Feb, ..., Dec									
Date : 01, 02, 03, ... 31									
Year : 1901, 1902, ... 2099									
		Sun	Mon	Tue	Wed	Thu	Fri	Sat	
		29	30	31	1	2	3	4	
		5	6	7	8	9	10	11	
		12	13	14	15	16	17	18	
		19	20	21	22	23	24	25	
		26	27	28	29	30	1	2	
		3	4	5	6	7	8	9	
Esc: Exit → ↑ Select F2/F3: Color									
Pu/PD: Modify									

Advanced CMOS Setup

BIOS SETUP PROGRAM - ADVANCED CMOS SETUP (C) 1991 American Megatrends Inc., all Rights Reserved			
Typematic Rate Programmng	: Disabled	Video ROM Shadow C000,16K	: Enabled
Typematic Rate Delay (msec)	: 500	Video ROM Shadow C400,16K	: Enabled
Typematic Rate (Chars/Sec)	: 15	Adaptor ROM Shadow C800,16K	: Disabled
Above 1 MB Memory Test	: Disabled	Adaptor ROM Shadow CC00,16K	: Disabled
Memory Test Tick Sound	: Enabled	Adaptor ROM Shadow C800,16K	: Disabled
Memory Parity Error Check	: Enabled	Adaptor ROM Shadow CC00,16K	: Disabled
Hit Message Display	: Enabled	Adaptor ROM Shadow C800,16K	: Disabled
Hard Disk Type 47 RAM Area	: DOS 1KB	Adaptor ROM Shadow CC00,16K	: Disabled
Wait For < F1 > If Any Error	: Enabled	Adaptor ROM Shadow C800,16K	: Disabled
System Boot Up Num Lock	: On	Adaptor ROM Shadow CC00,16K	: Disabled
Numeric Processor Test	: Enabled	Adaptor ROM Shadow C800,16K	: Disabled
Wei tek Processor	: Absent	Adaptor ROM Shadow CC00,16K	: Disabled
Floppy Drive Seek At Boot	: Disabled	Adaptor ROM Shadow C800,16K	: Disabled
System Boot Up Sequence	: C: A:	System ROM Shadow F000,64K	: Enabled
External Cache Memory	: Enabled		
Internal Cache Memory	: Enabled		
Turbo Switch Function	: Enabled		
Password Checking Option	: Setup		
ESC: Exit → ↑ Sel (Ctrl) Pu/Pd: Modify F1: Help F2/F3: Color F5: Old Values F6: BIOS Setup Defaults F7: Power-On Defaults			

AUTO CONFIGURATION

BIOS SETUP PROGRAM - AMIBIOS SETUP UTILITIES			
(C) 1991 American Megatrends Inc., All Rights Reserved			
Extra AT Cycle Wait State	: Disabled	RAS Precharge	: Normal
Single Ale Enable	: Disabled	DRAM Quick Read Mode	: Normal
Cache Memory Data Buffer	: Disabled	386 DRAM Quick Write Mode	: Normal
Cache Burst Wait State	: 0 W/S	Special Mode	: Normal
Cache Read Wait State	: 0 W/S	RAD to CAS Delay	: Normal
Cache Write Wait State	: 0 W/S	AT I/O Recovery Time dCycles	: Normal
Master Mode Byte Swap	: Disabled		
Slow Refresh	: Disabled		
Hidden Refresh	: Enabled		
AT BUS Clock Selection	: CLKI/4		
Fast Decode Enable	: Enabled		
DRAM Write Wait State	: 0 W/S		
DRAM Read Wait State	: 0 W/S		
Video BIOS Area Cacheable	: Enabled		
N on-Cacheable Block- 1 Size	: Disabled		
Non-Cacheable Block-1 Base	: OKB		
Non-Cacheable Block-Z Size	: Disabled		
Non-Cacheable Block-2 Base	: OKB		

ESC:Exit ↓ → ↑Sel Ctrl)Pu/Pd:Modify F1:Help F2/F3:Color
F5:Old Values F6: ICS Setup Defaults F7:Power-On Defaults

FEATURE	50 MHz	40MHz, 33MHz 25MHz, 20MHz	SIGNAL	MHz
Extra AT cycle wait state	disabled	disabled	CLK/6	50
Single ALE enable	disabled	disabled	CLK/5	40
Cache memory data buffer	enabled	disabled	CLK/4	33
Cache burst wait state	1	0	CLK/3	25
Cache read wait state	1	0	CLK/2.5	20
Cache write wait state	1	0		
Master mode byte swap	disabled	disabled		
Slow refresh	disabled	disabled		
Hidden refresh	enabled	enabled		
Fast mode	disabled	enabled		
DRAM write wait state	0 or 1	0		
DRAM read wait state	1	0		
Video BIOS area cacheable	enabled	enabled		

FEATURE	50 MHz	40MHz, 33MHz
Non-cacheable block-1 size	0	0
Non-cacheable block-1 base	disabled	disabled
Non-cacheable block-2 size	0	0
Non-cacheable block-2 base	disabled	disabled
RAS precharge	normal	normal
DRAM quick read mode	normal	normal
386 DRAM quick write mode	normal	normal
Special mode	normal	normal
RAS to CAS delay	normal	normal
AT I/O recovery time cycle	normal	normal

Auto Configuration

The Auto Configuration default system values before user changed any CMOS values. If the CMOS is corrupted, the BIOS defaults will automatically be loaded to the “Advanced CMOS Setup” and “Advanced CHIPSET Setup”. This default values will provide the optimum performance for the system.

Auto Configuration With Power-On Defaults

This feature uses the default Power-On values. You may wish to use this option as a diagnostic tool if your system is behaving abnormal.

Change Password

The BIOS SETUP program has optional password feature. The password function is enabled or disabled in Advanced CMOS Setup. The password function is enabled by choosing either “Always” or “Setup”.

The password, which will be stored in the CMOS, cannot exceed 6 ASCII characters. A default password, to be used if the CMOS is corrupted, is stored in the ROM. The default password is <AMI>

To change the user password, by using the arrow keys to move the cursor to this selection and pressing <Enter>, and follow the request, to ask for help by pressing F1 key when needed.

Once Setup is completed and the changed Password have been stored in the CMOS, the system be booted, the user will be prompted for the password if the function is present and has been enabled.

Write To CMOS And Exit

The features selected and configured in the Standard Setup, Advanced CMOS Setup, Advanced Chip Set Setup, and the new Password Setup will be stored in the CMOS when this option is taken. The CMOS checksum is calculated and written to the CMOS. Control is then passed back to BIOS. If user didn't need to save this new setting, go to 'DO NOT WRITE TO CMOS & EXIT' OPTION !

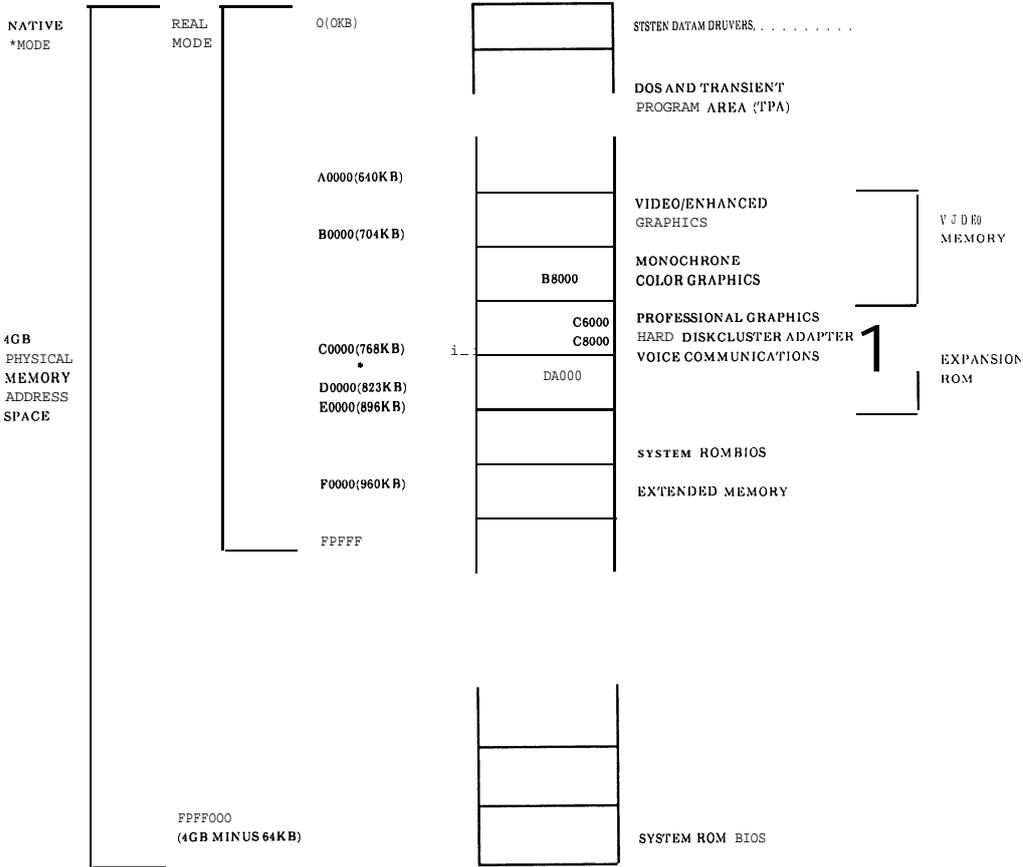
APPENDIX

- System Memory Map
- I/O Channel Pin Assignment
- I/O Signal Description
- Troubleshooting Your System
- EFAR EF8290WB Chip Set

SYSTEM MEMORY MAP

SYSTEM MEMORY MAP

a) Real-addressing Environment Address Slice of 80386



Note: * Video or Enhanced Graphics

SYSTEM MEMORY MAP

a) I/O Address Map

Hex Range	Devices	Usage
000-01F	DMA Controller 1,	System
020-03F	INT Controller 1, Master	System
040-05F	Timer	System
060-06F	8042(Keyboard)	System
070-07F	Real-Time Clock, NMI Mask	System
080-09F	DMA Page Register	System
0A0-0BF	INT Controller 2	System
0C0-0DF	DMA Controller 2	System
0F0	Clear Math Coprocessor Busy	System
0F1	Reset Coprocessor	System
0F8-0FF	Arithmetic Processor	System
1F0-1F8	Fixed Disk	I/O
200-207	Game I/O	I/O
278-27F	Parallel Printer Port 2	I/O
2F8-2FF	Serial Port 2	I/O
300-31F	Prototype Card	I/O
360-36F	Reserved	I/O
378-37F	Parallel Printer Port 1	I/O
380-38F	SDLC, Bisynchronous 2	I/O
3A0-3AF	Bisynchronous 1	I/O
3B0-3BF	Monochrome Display and Printer Adapter	I/O
3C0-3CF	Reserved	I/O
3D0-3DF	Color/Graphic Monitor Adapter	I/O
3F0-3F7	Floppy Diskette Controller	I/O
3F8-3FF	Serial Port 1	I/O

I/O CHANNEL PIN ASSIGNMENT

I/O CHANNEL PIN ASSIGNMENT

Pin No	Signal Name	I/O	Pin No	Signal Name	I/O
A1	-I/O CH CK	I	B1	Ground	
A2	SD7	I/O	B2	Reset Drive	0
A3	SD6	I/O	B3	+ 5 Vdc	
A4	SD5	I/O	B4	IRQ9	I
A5	SD4	I/O	B5	-5 Vdc	
A6	SD3	I/O	B6	DRQ2	I
A7	SD2	I/O	B7	-12 Vdc	
A8	SD1	I/O	B8	o w s	I
A9	SD0	I/O	B9	+ 12 Vdc	
A10	-I/O CH RDY	I	B10	Ground	
A11	AEN	I/O	B11	-SMEMW	0
A12	SA19	0	B12	-SMEMR	0
A13	SA18	I/O	B13	-IOW	I/O
A14	SA17	I/O	B14	-IOR	I/O
A15	SA16	I/O	B15	-DACK3	0
A16	SA15	I/O	B16	DRQ3	I
A17	SA14	I/O	B17	-DAQ3	0
A18	SA13	I/O	B18	-DACK1	I
A19	SA12	I/O	B19	-Refresh	I/O
A20	SA11	I/O	B20	CLK	0
A21	SA10	I/O	B21	IRQ7	I
A22	SA9	I/O	B22	IRQ6	I
A23	SA8	I/O	B23	IRQ5	I
A24	SA7	I/O	B24	IRQ4	I
A25	SA6	I/O	B25	IRQ3	I
A26	SA5	I/O	B26	-DACK3	0
A27	SA4	I/O	B27	T/C	0
A28	SA3	I/O	B28	BALE	0
A29	SA2	I/O	B29	+ 5 Vdc	
A30	SA1	I/O	B30	o s c	0
A31	SA0	I/O	B31	Ground	

I/O CHANNEL SIGNAL ASSIGNMENT

I/O CHANNEL PIN ASSIGNMENT

Pin No	Signal Name	I/O	Pin No	Signal Name	I/O
C1	SBHE	I/O	D1	-MEM CS16	I
c2	LA23	I/O	D2	-I/O CS16	I
c3	LA22	I/O	D3	IRQ10	I
c4	LA21	I/O	D4	IRQ11	I
c5	LA20	I/O	D5	IRQ12	I
C6	LA19	I/O	D6	IRQ15	I
C7	LA18	I/O	D7	IRQ14	I
C8	LA17	I/O	D8	-DACK0	0
C9	-MEMR	I/O	D9	-DRQ0	I
C10	-MEMW	I/O	D10	-DACK5	0
C11	SD8	I/O	D11	DRQ5	I
C12	SD9	I/O	D12	-DACK6	0
C13	SD10	I/O	D13	- -DRCQ6	I
C14	SD11	I/O	D14	DACK7	0
C15	SD12	I/O	D15	DRQ7	I
C16	SD13	I/O	D16	+5 Vdc	
C17	SD14	I/O	D17	-Master	I
C18	SD15	I/O	D18	Ground	

I/O CHANNEL SIGNAL DESCRIPTION

All signal lines are TTL-compatible with a maximum loading of two low-power (LS) devices.

CLK(Output)

This is the bus clock and synchronous CPU cycle clock, this clock has a 50 % duty cycle. This signal should only be used for synchronization, it is not intended for uses requiring a fixed frequency.

RESETDRV (Output)

This signal goes high momentarily during power up, low line-voltage or hardware rest.

SA-19 (Input/Output)

System address lines bit 0 to 19. These are latched on the falling edge of 'BALE',

LA17-23(Input/Output)

Latched address lines from bit 17 to 23.

SD0-15(Input/Output)

System data bit 0 to 15.

BALE (Output)

Buffered address latch enable is used to latch SA0-19 on the falling edge. This signal is forced high during DMA cycles.

-I/O CH CK(Input)

I/O channel check is an active low signal which indicates a parity error occurred on an I/O board.

I/O CH RDY (Input)

This signal lengthens the I/O or memory read/write cycle. It can be held low for a maximum of 2.5 microseconds.

IRQ3-7, 9-12, 14-15(Input)

Interrupt request signals indicate I/O service requests.

They are prioritized as following sequences:

Highest IRQ 9, 10, 11, 12, 14, 15

Lowest IRQ 3, 4, 5, 6, 7

-IOR(Input/Output)

I/O Read signal is an active low signal which instructs I/O device to read data from the data bus.

TROUBLESHOOTING YOUR SYSTEM

TROUBLESHOOTING YOUR SYSTEM

Display Problem	Action
" Blank screen plus no beep "	" Check to find out if: <ol style="list-style-type: none"><li data-bbox="416 482 835 535">1. The system unit power cord is plugged into a working electrical outlet.<li data-bbox="416 571 813 625">2. The cable connected to the system is switched ON.
" Blank screen or distorted display plus 1 beep "	Check to find out if: <ol style="list-style-type: none"><li data-bbox="416 736 813 820">1. Display power cord is plugged into a working electrical outlet and the display properly.<li data-bbox="416 856 813 940">2. Display is turned ON and the brightness and contrast controls are turned UP also.<li data-bbox="416 976 803 1061">3. Display signal cable is plugged into the correct connector if the system unit.<li data-bbox="416 1096 877 1258">4. The small slide switch on the Monochrome Graphics/Color Graphics Card is set Correctly. Set to "MDA" for monochrome TTL monitors, or "GGA" for RGB color monitors.

TROUBLESHOOTING YOUR SYSTEM

Error Message on Screen	Action
" System option not set "	1. Run the set-up program that comes with this manual and set the options for the system
" Keyboard error "	1. Check if the keyboard is plugged into the system unit. 2. Run the AT Diagnostic program to check for any defect in the keyboard.
" Memory size error "	1. Set the right memory size by running the set-up program.
" Parity error "	1. Your system unit needs service, please contact your dealer.
" Disk error "	1. Check the power cable and data cable connections of your drives. 2. Run the " setup " program to check if the option is set correctly. 3. Check if the latch on the disk drive is closed properly.
" No response from the keyboard "	1. Check if the keyboard lock is locked. 2. System crash. Restart your system unit by pressing the reset button. If necessary, turn your unit off, then on again. 3. keyboard cable not properly connected. check to make sure it is plugged in properly at the back of the system unit.

TROUBLESHOOTING YOUR SYSTEM

Problem in Internal Feature	Action
<p>“ Diskette Drive problem ” (cannot read or write data)</p>	<ol style="list-style-type: none"> 1. Replace the drive with another working diskette drive. 2. Your system needs service if the working diskette drive still does not function in the system. Contact your dealer. 3. Check if the latch on the disk drive is closed properly. 4. The diskette was not placed in the drive correctly. Make sure the label points up with the write-protect notch printing to the left. 5. The diskette is damaged. Try to use a different diskette. 6. Check if the diskette is unformatted.
<p>“ Printer problems ”</p>	<ol style="list-style-type: none"> 1. Check the specification of the printer to see if it is IBM PC compatible. 2. Check the cable connections and then configure your printer.
<p>“ Light on the front panel does not work ”</p>	<ol style="list-style-type: none"> 1. Change the light that does not light up when it should be.
<p>“ Cannot reset the computer while pressing the ‘ reset ’ button ”</p>	<ol style="list-style-type: none"> 1. Turn off your system. Turn it back on after a few seconds. 2. Your system needs service if item 1 cannot solve the problem. Contact your dealer.

Note: If the above suggestions do not solve your problem, you should contact your dealer.

EFAR EF8290WB

EFAR EF8290WB

82EC495 System Controller (SYSC)

SYSC monitors two reset sources, **RST1#** and **RST2#**, and generates **CPURST** and **NPRST** signals to CPU and coprocessor, respectively. The SYSC Controller contains Burst Line Fill Control Logic. The controller provides 2 DMA Upper Address Latches, Page Mode DRAM Controller, Clock Generation for CPU Processor and AT-Bus, two Noncacheable Address Comparators, CPU Interface Control, Integrated Write-back Cache Controller with Built-in Tag Comparator, Decoupling Refresh for Local DRAM and AT-Bus Memory.

82EC392 Data Buffer Controller (DBC)

The **82EC392** performs all of the data buffering functions. Under the control of the processor, the **82EC392** routes data to and from the local CPU Bus.

The DBC performs Data Bus Conversion when CPU accesses to 16 or 8 bit device through 32/16 bit instruction. The bus conversion is also supported for DMA/Master cycle for the transfer between local DRAM or cache memory and devices which resides on AT bus.

Parity Generation/Detection Logic will compare the parity bit and the parity generated from the data byte. If a mismatch happens, the parity error will be generated.

In order to reduce the components count, DBC provides the clock sources for the timer of **80C206** and **8042** Keyboard Controller.

The DBC also monitors both the **PWGDS#** (Powergood) signal from power supply and reset signal from the reset switch.

The DBC provides the Numeric Coprocessor support for 387 and 3167 without external logic components.

In addition, the DBC provides Chip Select for Keyboard Controller and RTC, Keyboard Reset and Gate A20 Emulation Logic, Speaker Control, and Nmi Logic.