

CW-DXI3-M40

MACRONIX

386DX/486DLC

System Board

User's Manual

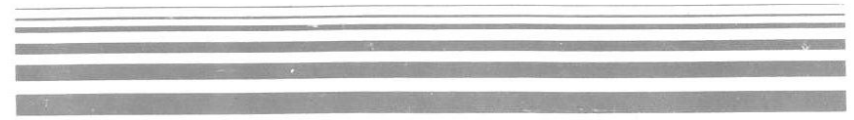


TABLE OF CONTENTS

INTRODUCTION	1
GENERAL SPECIFICATIONS	2
DRAM INSTALLING	3
JUMPER SETTING AND CONNECTOR	4
BIOS SETUP	6
Warning Information	7
Standard CMOS Setup	8
Auto Configuration with BIOS Defaults	10
Auto Configuration with Power-On Defaults	11
Advanced CMOS Setup	12
Change Password	16
Hard Disk Utility	17
Saving Your Settings	18
TECHNICAL REFERENCE	19
I/O Address Map	19
Interrupt Controllers	20
BLOCK DIAGRAM	21

AMENDMENT

Jumper Setting For MX 83C305/306

Board Size	:	220mm x 170mm
CPU Mode	:	For AMD386DX-25/33/40, CYRIX486DLC-25/33/40 CPU Type
J1	:	Keyboard Connector
J2	:	Power Connector
J3	:	External Battery Connector
J4	:	Keylock Connector
J5	:	Speaker Connector
J6	:	Hardware Turbo Switch Open : Turbo Short : Normal
J7	:	Hardware Reset Close : Reset
D5	:	Turbo LED Connector
JP1	:	DS1287 or MC146818 Selector 1-2 Short : DS1287 2-3 Short : MC146818 (Default)
JP2	:	Display Type Selector Open : Mono Close : Color
JP3	:	CPU Brand Selector 1-2 Short : INTEL/AMD 80386DX CPU 2-3 Short : CYRIX 486DLC CPU
JP4	:	CMOS Data Selector 1-2 Short : Hold CMOS Data (Default) 2-3 Short : Erase CMose Data
JS1, JS2, JS3	:	Clock Generator Frequency Selector Clock Speed : 80MHz 66MHz 50MHz 33MHz CPU Speed : 40MHz 33MHz 25MHz 16MHz JS1 : 1-2 2-3 1-2 1-2 JS2 : 2-3 1-2 1-2 2-3 JS3 : 2-3 2-3 2-3 1-2

INTRODUCTION

This motherboard which you received is a high performance MXIC 386DX single chip system motherboard.

It has passed our full quality control procedures to ensure trouble free operation.

It is compatible with IBM PC/AT computers. We are also confident that you will be complete satisfied with it's high performance capabilities and operation.

Actually, this motherboard contains a 80386DX microprocessor, a 32-bit memory access, and as it works, you can easily adjust the relationship between CPU, expansion bus, and on board memory. The result is a high degree of flexibility in the configuration of this motherboard.

Acknowledgement

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AWARD is a registered trademarks of Award Software, Inc.

Intel is a registered trademark of Intel Corporation.

GENERAL SPECIFICATIONS

The 386SX system board has the following general specifications:

- Support 386DX-25/33/40 cache system
- Built-in cache, performance excels 64KB secondary cache
- Do not need 206
- Half size 22x17cm main board
- Dynamic memory allocation without hardware or software switching
- Programmable wait states for 8-bit 16-bit bus operation
- Supports fast gate A20 and fast reset
- 160 pin QFP * 2
- Five 16-bit slots
- Supports non-parity check bit DRAM
- Maximum 32mb on board

DRAM INSTALLING

Before the system is ready to operate, the hardware must be configured to allow for various functions within the system. To configure the 386DX single chip system board is a simple task, only a few jumpers, connectors, and sockets needs to be selected.

The 386DX built-in cache board will support 2 DRAM banks, Bank 0 and Bank 1 in SIMM sockets, on board.

With the use of 256Kx9, 1Mx9, or 4Mx9 DRAM modules, 1M and up to 32MB of local memory can be anined. Please refer to the following table for the detailed installation

Memory Size	Bank 0	Bank 1
1M	256K	x
2M	256K	256K
4M	1M	x
5M	1M	256K
8M	1M	1M
16M	4M	x
17M	4M	256K
20M	4M	1M
32M	4M	4M

The corresponding part reference are as below:

The DRAM modules could mixed combination installed

Bank 1 - SIM1, SIM2, SIM3, SIM4 (SIMM SOCKET)

Bank 0 - SIM5, SIM6, SIM7, SIM8 (SIMM SOCKET)

JUMPER SETTING AND CONNECTOR

A connector is two or more pins that are used to made connections to one System standard accessories (such as power, battery, etc.). The following is a list of connectors on board, as well as descriptions of each individual connector.

- J1 : Power Connector
- J2 : Keyboard Connector
- J3 : External Battery Connector
- J4 : Hardware Turbo Switch
 - Open : Turbo
 - Close : Normal
- J5 : Hardware Reset
 - Close : Reset
- J6 : Speaker Connector
- J7 : Keylock Connector
- D4 : Turbo LED Connector

<i>JP1</i>	<i>Select DS1287 or MC146818</i>
1 - 2 Short	DS1287
2 - 3 Short	MC146818 (default)

<i>JP2</i>	<i>Select CMOS Data</i>
1 - 2 Short	Hold CMOS Data (default)
2 - 3 Short	Erase CMOS Data

<i>JP4</i>	<i>Select Display Type</i>
Open	Mono
Close	Color

<i>JP5</i>	<i>Select CPU Brand</i>
1-2 Short	INTEL or AMD 80386DX CPU
2-3 Short	CYRIX 486DLC CPU

<i>JS0, JS1</i>	<i>Clock Generator Frequency Selector</i>			
Clock Speed	80MHz	66MHz	50MHz	33MHz
CPU Speed	40MHz	33MHz	25MHz	16MHz
JS0	1-2	2-3	1-2	2-3
JS1	1-2	1-2	2-3	2-3

Note: CYRIX 486DLC CPU after version A5 is no difference on this jumper.

BIOS SETUP

AMI AT compatible BIOS (Basic Input Output System) is supplied along with the 386SX system board. The BIOS provides an on-screen interactive configuration setup utility. This setup utility allows setting of time, date, type of floppy drives, type of hard disk, type of display adapter, CPU speed, memory configuration, and BIOS shadow memory.

The SETUP utility is built-in with the BIOS. It can be invoked by pressing the DEL key as instructed on the screen after the system warm or cold start. A main menu will pop up as follows.

BIOS SETUP PROGRAM - AMI BIOS SETUP UTILITIES (C) 1990 American Megatrends Inc., All Rights Reserved
STANDARD CMOS SETUP ADVANCED CMOS 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

Use arrow keys to move cursor to the desired selection. For the ease of configuration, you can select "Auto Configuration With BIOS Defaults" first and then go to the "Standard CMOS Setup". You need not go through the "Advanced CMOS Setup" unless you have a good technical knowledge of the chipset or want to use some extended features.

Warning Information

A warning message, shown as below, is displayed each time when one of the first two options (Standard CMOS Setup and Advanced CMOS Setup) is selected, before any changes are allowed to any of the setup parameters.

BIOS SETUP PROGRAM - WARNING INFORMATION (C)1990 American Megatrends Inc., All Rights Reserved
Improper Use of Setup may Cause Problem !! If System Hangs, Reboot System and Enter Setup by Pressing the key Do any of the following After Entering Setup (i) Alter Options to make System Work (ii) Load BIOS Setup Defaults (iii) Load Power-On Defaults Hit <ESC> to Stop now. Any other key to Continue

Standard CMOS Setup

Standard CMOS Setup is the first option on the main setup menu. Press ENTER at the highlighted selection to access this option. The screen as below will appear.

BIOS SETUP PROGRAM - STANDARD CMOS SETUP								
(C)1990 American Megatrends Inc., All Rights Reserved								
Date (mn/date/year)	: Mon, Apr 22 1991	Base memory	: 640 KB					
Time (hour/min/sec)	: 10:42:44	Ext. memory	: 0 KB					
Daylight saving	: Disabled	Cyln	Head	WPcom	Lzone	Sect	Size	
Hard disk C: type:	: 17	977	5	300	977	17	41MB	
Hard disk D: type	: Not Installed							
Floppy drive A:	: 1.2 MB, 5 1/4"	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Floppy drive B:	: 1.44 MB, 3 1/2"	31	1	2	3	4	5	6
Primary display	: VGA/PGA/EGA	7	8	9	10	11	12	13
Keyboard	: Installed	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	10	11

Month: Jan, Feb,.....Dec
Date : 01, 02, 03.....31
Year : 1901, 1902.....2099

ESC:Exit ↓→↑←Select F2/F3:Color PU/PD:Modify

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

- i. **Date**
Enter in the format Month/Date/Year. Ranges for each value are listed below in prompt box in the lower left corner of the CMOS Setup Screen.
- ii. **Time**
Enter in the format Hour/Minute/Second. Uses 24 hour clock format.

iii. Hard Disk C and Hard Disk D

Hard disk types from 1 to 46 are standard ones. If the hard disk in your system which does not belong to any one of the standard types, you can choose type 47 for user definable type and enter hard disk parameters (Cylinders, Heads, Write-precompensation, Landing Zone).

iv. Floppy Drive A and Floppy Drive B

The options are 360KB 5 1/4", 1,2MB 5 1/4", 720KB 3 1/2", 1.44MB 3 1/2", and Not Installed. Not Installed could be used as an option for diskless workstations.

v. 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.

vi. Keyboard

Options are Installed or Not Installed

vii. Daylight saving

This option can be enabled or disabled.

Auto Configuration with BIOS Defaults

The Auto Configuration with BIOS feature uses the default system values before the user has changed any CMOS values. If the CMOS is corrupted, the BIOS defaults will automatically loaded. The system board will have the optimal performance with the BIOS defaults. Usually you need not alter the Advanced CMOS Setup once the BIOS defaults have been loaded.

BIOS SETUP PROGRAM - AMI BIOS SETUP UTILITIES (C)1990 American Megatrends Inc., All Rights Reserved
STANDARD CMOS SETUP ADVANCED CMOS SETUP AUTO CONFIGURATION WITH BIOS DEFAULTS
Load BIOS Setup Default Values from ROM Table (Y/N) ? N
Load BIOS Setup Defaults Values for Advanced CMOS and Advanced CHIPSET Setup
ESC: Exit ↓→↑←: Sel F2/F3: Color F10: Save & Exit

If you want to use the BIOS defaults, change the prompt to Y and press ENTER. The following message will appear on the screen.

"Default values loaded. Press any key to continue."

Auto Configuration with Power-On Defaults

This feature uses the default Power-On values. You may want to use this option as diagnostic aid if your system is behaving erratically.

BIOS SETUP PROGRAM - AMI BIOS SETUP UTILITIES (C)1990 American Megatrends Inc., All Rights Reserved
STANDARD CMOS SETUP ADVANCED CMOS SETUP AUTO CONFIGURATION WITH BIOS DEFAULTS AUTO CONFIGURATION WITH POWER-ON DEFAULTS
Load Power-On Default Values from ROM Table (Y/N) ? N
Load Power-On Defaults Values for Advanced CMOS and Advanced CHIPSET Setup
ESC: Exit ↓→↑←: Sel F2/F3: Color F10: Save & Exit

If you want to use the Power-On defaults, change the prompt to Y and press ENTER. The following message will appear on the screen.

"Default values loaded. Press any key to continue."

Advanced CMOS Setup

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 particular configuration feature and special help for some of the options.

BIOS SETUP PROGRAM - ADVANCED CMOS SETUP (C) 1990 American Megatrends Inc., All Rights Reserved			
Typematic Rate Programming	: Disabled	Adaptor ROM Shadow D000, 32K	: Disabled
Typematic Rate Delay (msec)	: 500	Adaptor ROM Shadow D800, 32K	: Disabled
Typematic Rate (Chars/Sec)	: 15	Adaptor ROM Shadow E000, 32K	: Disabled
Above 1 MB Memory Test	: Disabled	Adaptor ROM Shadow E800, 64K	: Disabled
Memory Test Tick Sound	: Enabled	Shadow Ram Option	: Both
Hit Message Display	: Enabled	Two way or Direct Map	: Two way
Hard Disk Type 47 RAM Area	: 0:300	Cas Read Wait State	: 3 W/S
Wait for <F1> If Any Error	: Enabled	Cas Write Wait State	: 2 W/S
System Boot up Num Lock	: On	AT Bus Clk	: SCLK/5
Numeric Processor Test	: Absent	Hidden Refresh	: Enabled
Floppy Drive Seek At Boot	: Disabled	Keyboard GA20 Emulation	: Disabled
System Boot up Sequence	: C, A		
System Boot up CPU Speed	: High		
External Cache Memory	: Enabled		
Cyrix Internal Cache	: Enabled		
Password Checking Option	: Always		
Adapter ROM Shadow C800,32K	: Disabled		

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

Typematic Rate Programming

By enabling this option, you can adjust the rate at which a keystroke is repeated. The options "Typematic Rate Delay" and "Typematic Rate" affect this rate. When a key is pressed and held down, the character appears on the screen and after a delay set by the Typematic Rate Delay, it keeps on repeating at a rate set by the Typematic Rate value. When two or more keys are pressed and held down simultaneously, only the last key pressed will be repeated at the typematic rate. This stops when the last key pressed is released, even if other keys are depressed.

Above 1MB Memory Test

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

Memory Test Tick Sound

This option will enable or disable the "ticking" sound during the memory test.

Memory Parity Error Check

If the system board does not have parity RAM, you may disable the memory parity error checking routines in the BIOS.

Hit Message Display

Disabling this option, will prevent the message "Hit if you want to run SETUP" from appearing on the screen when the system boot-up.

Hard Disk Type 47 Data Area

The AMI BIOS SETUP features two user-definable 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 (640KB). If the option is set to "DOS 1KB," the DOS Shell is shortened to 639KB, and the top 1KB is used for the hard disk data storage.

Wait for <F1> if Any Error

Enable or disable this item according to whether you wish to press <F1> when an error is encountered or not pressing <F1> enables you to enter the setup program and make any necessary changes.

System Boot Up Num Lock

Use to item to enable/disable the Num Lock on your keyboard automatically at power-on.

Floppy Drive Seek At Boot

The default for this option is "Disabled" to allow a fast boot and to decrease the possibility of damage to the heads.

System Boot up Sequence

The AMI BIOS will normally attempt to boot from floppy drive A: (if present), and if unsuccessful, it will attempt to boot from hard disk C:. This sequence can be switched using this option. If the option is set to "C:, A:" the system will attempt to boot from the hard disk C:, and then the A:. If the option is set to "A:, C:," the sequence is reversed.

System Boot Up CPU Speed

Select High to configure your system in the turbo speed mode at boot up; select Low to configure your system in normal speed mode. Whichever setting you choose you will still be able to use the turbo switch to toggle between the two modes during use.

Cyrix Internal Cache

This item should always be Enabled, if your system is Cyrix 486DLC CPU. Even if you have installed the external cache. If you have no external cache installed this item should be enabled to allow use of the internal 1K cache in the Cyrix 486DLC CPU.

Password Check Option

If you enable this item you can define a password which needs to be entered every time you boot up the system in order to gain access. Select Disabled for no password protection, select Setup program, and select Always to have password protection every time you boot up your system.

Adaptor Shadow

Enabling adaptor shadow allows the shadowing of the contents of ROM BIOS's of devices other than the video or main BIOS. If your system has devices with ROM BIOS, enable adaptor ROM shadow and this BIOS data will be shadowed at boot up.

System ROM Shadow

The same concept applies here as above, except that in this case, the system BIOS (64KB in length) is shadowed.

Change Password

The BIOS SETUP program has an optional password feature. The system can be configured so that the user is required to enter a password every time the system boots, or whenever an attempt is made to enter the setup program. The password function can also be disabled, which means that the prompt will not appear under any circumstances.

This section of the manual deals with changing the user password. The password check function is enabled or disabled in Advanced CMOS Setup (refer to previous). The password check function is enabled by choosing either "Always" or "Setup."

The password, which will be stored in the CMOS, cannot exceed 6 characters in length. 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, select the Change Password option from the main Setup screen, by using the arrow keys to move the cursor to this selection and press ENTER. The message "Enter CURRENT Password:" will appear.

The first time you select this option, enter the default password AMI, then press ENTER to complete your selection. The screen will not display the character entered. After the current password has been correctly entered, the message "Enter New Password:" will appear. After the new password is entered, the prompt message "Re-Enter New Password:" will appear. Rekey the new password and press ENTER.

Hard Disk Utility

Included within a BIOS is a program to allow you to format, auto interleave and carry out media analysis on hard disk drives installed in your system. Select Hard Disk Utility from the main menu and press <Enter>

A screen will appear with the specifications the screen according to the type number you entered for your hard disk drive(s) in the Standard CMOS Setup program. You may then select FORMAT, AUTO INTERLEAVE or MEDIA ANALYSIS to perform the relevant operations. The functions performed by the Hard Disk Utility can also be performed directly with various software packages such as Disk Manager and SpeedStor and MS-DOS which provide more comprehensive features and you may wish to use such software rather than the built in hard disk utility.

Saving Your Settings

When you have completed adjusting all the settings as required, you must have these setting into the CMOS RAM. Select *WRITE TO CMOS AND EXIT* and press <Enter>. When you confirm that you wish to save the settings your machine will be automatically rebooted and the changes you have made will be implemented. You may call up the setup program at any time to adjust any of the individual items by pressing the key during boot up.

If wish to cancel any changes you have made, select *DO NOT WRITE TO CMOS AND EXIT* and the original setting stored in the CMOS will be retained.

Technical Reference

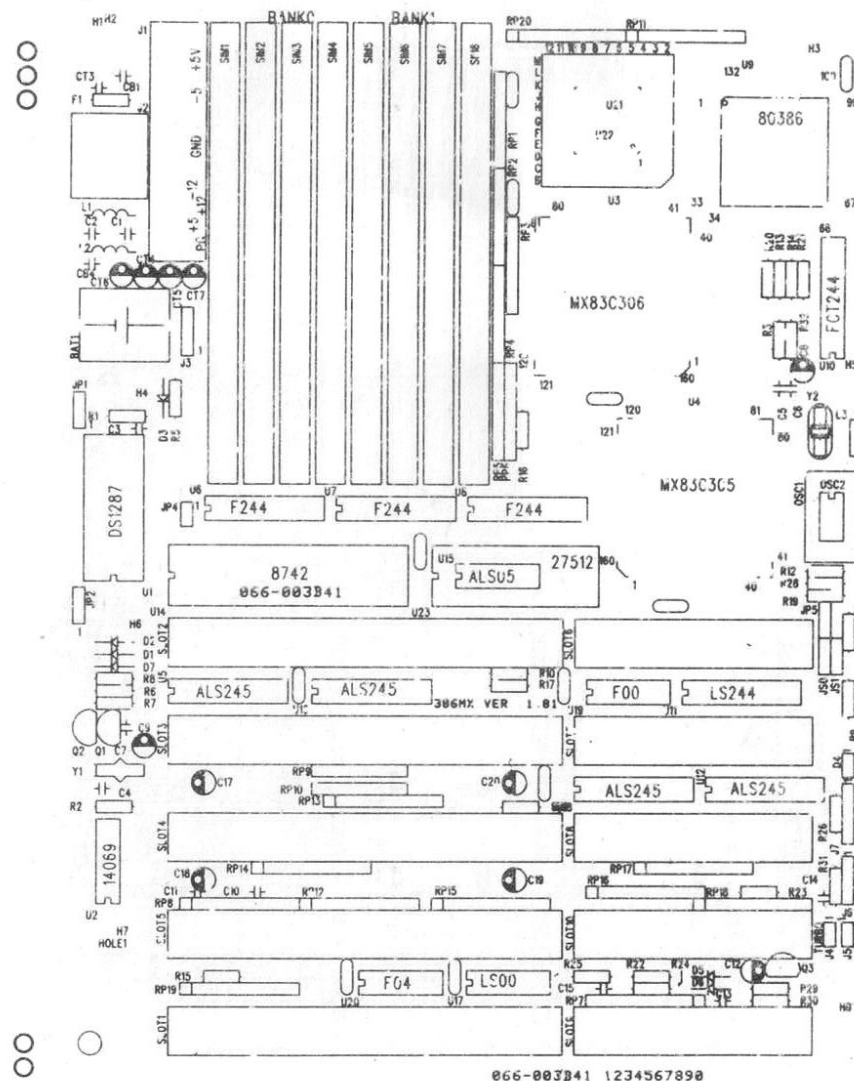
I/O Address Map

Address	Device
00-1F	Direct Memory Access Controller #1, DMA, 8237A-5, 8-bit devices
20-3F	Programmable Interrupt Controller #1, 8259A PIC
40-5F	Timer/Counter (8254)
60,64	Keyboard Controller (8742)
61	On-board testing registers
70,71	Clock/calender (146818)
70bit7	NMI Mask
78	On-board test stimulus register
80-9F	DMA page register (74LS612)
A0-BF	Programmable Interrupt Controller #2, 8259A PIC
C0-DF	Direct Memory Access Controller #2, DMA, 8237A-5, 16 bit pieces
F0	Clears the busy signal of the math coprocessor
F1	Reset the math coprocessor
F8-FF	Math coprocessor

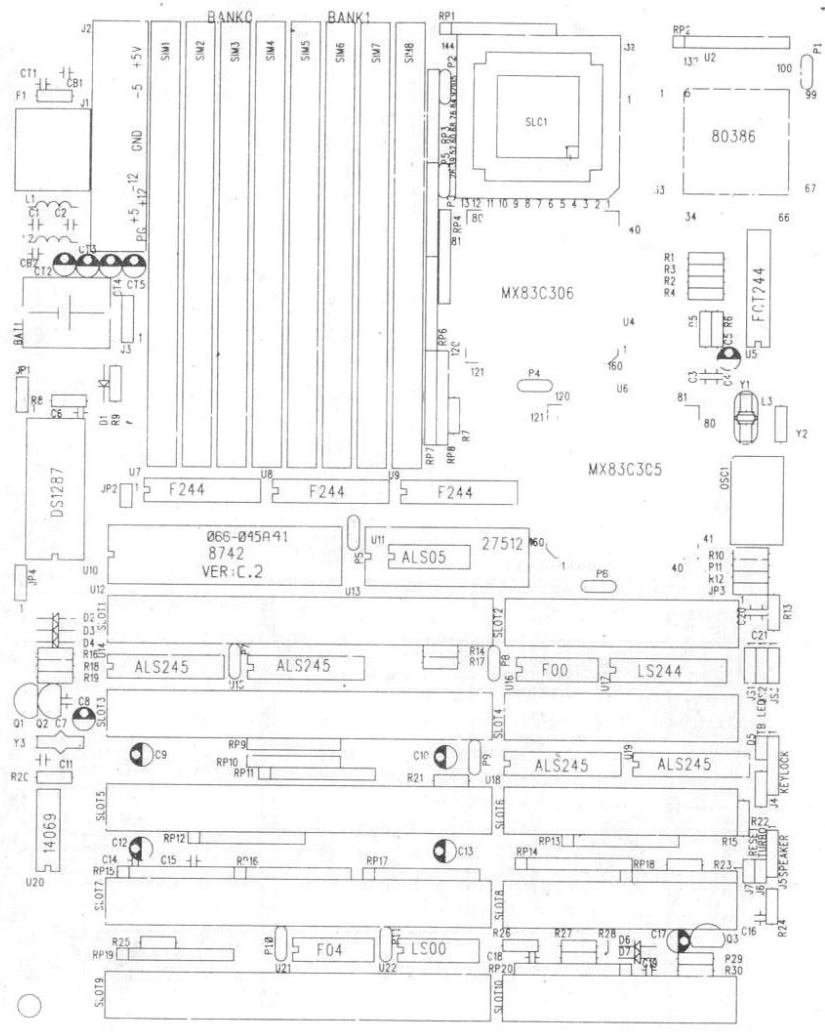
Interrupt Controllers

The interrupt lines are shown in the table belows:

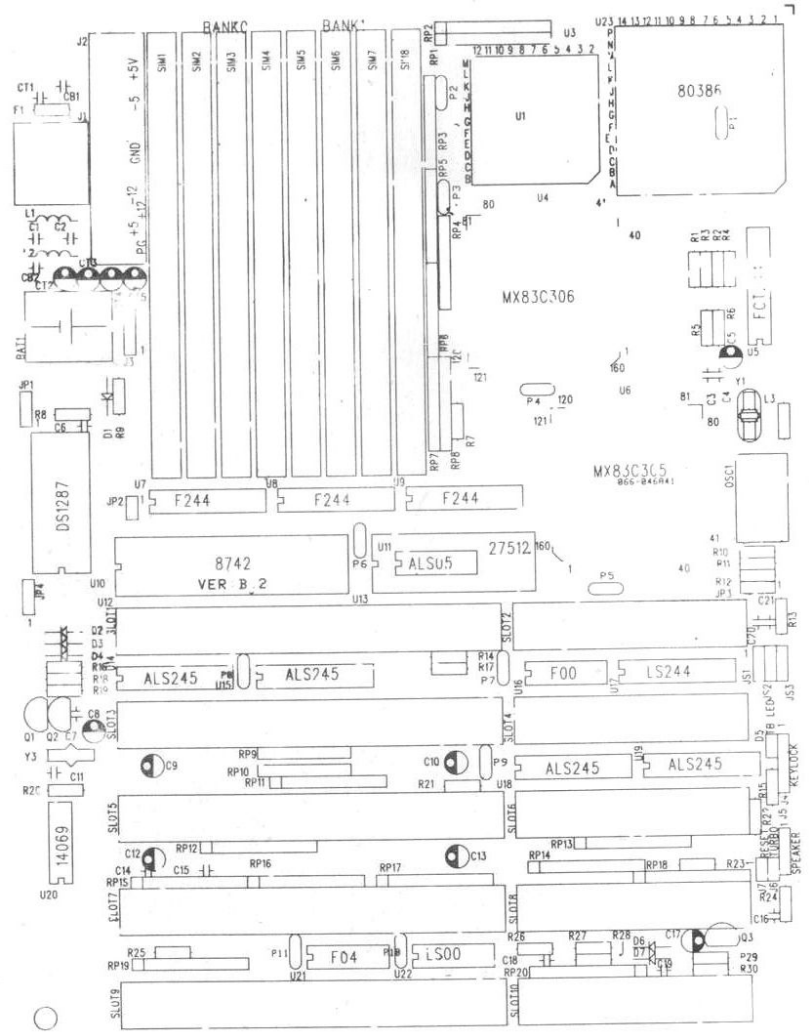
Priority	Source	Destination
0	Time channel 0	Master PIC, Interrupt 0
1	Keyboard Controller	Master PIC, Interrupt 1
2	Slave PIC	Master PIC, Interrupt 2
3	Clock/calendar, IRQ8	Slave PIC, Interrupt 0
4	8-bit slot, IRQ9	Slave PIC, Interrupt 1
5	16-bit slot, IRQ10	Slave PIC, Interrupt 2
6	16-bit slot, IRQ11	Slave PIC, Interrupt 3
7	16-bit slot, IRQ12	Slave PIC, Interrupt 4
8	Math coprocessor error, IRQ13	Slave PIC, Interrupt 5
9	16-bit slot, IRQ14	Slave PIC, Interrupt 6
10	16-bit slot, IRQ15	Slave PIC, Interrupt 7
11	8-bit slot, IRQ3, serial port	Master PIC, Interrupt 3
12	8-bit slot, IRQ4, serial port	Master PIC, Interrupt 4
13	8-bit slot, IRQ5, printer port	Master PIC, Interrupt 5
14	8-bit slot, IRQ6, FlexibleDisk port	Master PIC, Interrupt 6
15	8-bit slot, IRQ3, printer port	Master PIC, Interrupt 7



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MNU_MXIC386DX_01
USER'S MANUAL