

# **TD-70A N**

**80386SX / 486SLC**

**CPU Mother Board**

**User's Operation Manual**

## NOTICE TO USERS

Though every effort has been made to ensure accuracy, this manual may include technical or typographical errors. Contents of this manual may be changed from time to time due to product improvement. These changes will be incorporated in new editions of this manual. We disclaim liability for any changes, errors or omission.

Version 2.1 April, 1994.

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## 1. Introduction

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TD-70AN is a 80386SX / 486SLC CPU single chip mother board. Both the number of components and board size are greatly reduced. Therefore, the reliability and capability of the board are also increased.

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## 2. Features of TD-70AN Mother Board

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- 80386SX CPU / 486SLC
- Zero wait state page mode and 2 way interleave
- SIMM type DRAM supported
- Supports EMS LIM 4.0
- Shadow RAM support for system and video BIOS
- Legal BIOS
- Socket for 80387SX co-processor
- Hardware and software speed switching
- On board rechargeable battery maintaining RTC and CMOS setup
- For additional feature of 486SLC, please refer to page 14

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## 3. Connector & Jumper Description

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TD-70AN mother board provides the following connectors and jumpers for control panel, keyboard, power supply and system configuration:-

- Speaker Connector (SPK)
- Reset Switch Connector (RST)
- Keylock & Power LED Connector (LOCK)
- Display Select Jumper (DISP)
- Keyboard Connector (KB, EX-KB)
- Turbo Switch & Turbo LED Connector (TURBO)
- Power Supply Connector (POWER)
- External Battery Connector (EX-BAT)
- RTC Reset Jumper (CKRS)

## Speaker Connector (SPK)

A speaker should be connected to this connector. The pinout is as follows:

Pin	Description
1	Speaker -
2	Speaker -
3	Speaker +
4	Speaker +

## Reset Switch Connector (RST)

With a switch connected to RST, the computer will operate normally while the switch is open. If you momentarily close the switch, it will cause the system to reset. The pinout is as follows:-

Pin	Description
1	GND
2	Reset In

## Keylock & Power LED Connector (LOCK)

The keylock connector is located at LOCK on the mother board. The keyboard will be locked when the pins 4 and 5 are shorted. A power LED which is usually provided in the computer chassis should also be connected to this connector. The LED will be lit up when power is switched on.

Pin	Description
1	LED Anode
2	Polarization
3	LED Cathode
4	Key Lock
5	GND

## Display Select Jumper (DISP)

The system should be configured to match the display, whether Monochrome or CGA/EGA/VGA. The settings are as follows:-

- 1-2: Mono
- 2-3: Color (Default setting)

## Keyboard Connector (KB, EX-KB)

The keyboard connector is located at KB. EX-KB which located besides KB, is the external keyboard connector. This connector is useful for those computer chassis which having its keyboard connector at its front panel. The pinout of KB & EX-KB is as follows:-

Pin	Description
1	Keyboard Clock
2	Keyboard Data
3	NC
4	Ground
5	+5V

## Turbo Switch & Turbo LED Connector (TURBO)

The system speed can be switched between turbo mode and normal mode. The connector for the switch is located at TURBO on the mother board. Turbo mode is on while the Turbo Switch is close. When it is open, the system operates in normal mode.

The Turbo LED indicates operation in Turbo mode when it is lit. The Turbo LED connector is also located at TURBO on the mother board.

The pinout of the Turbo Switch & LED is as follows:-

Pin	Description
1	Anode
2	Cathode
3	Turbo In
4	GND

3,4 Open : Normal  
Close : Turbo

## Power Supply Connector (POWER)

The Power Supply Connector is a single plastic connector. Insert the plugs from the power supply onto this connector. The pin assignments of this connector are as follows:-

Pin	Description
1	NC
2	+5V
3	+12V
4	-12V
5	Ground
6	Ground
7	Ground
8	Ground
9	-5V
10	+5V
11	+5V
12	+5V

## External Battery Connector (EX-BAT)

If the mother board does not have rechargeable battery, or external battery is desired to use. External battery should be plugged to this connector. Pinout is as follows:-

Pin	Description
1	GND
2	Battery Out
3	Battery In
4	External Battery In

. 2-3 Close : Internal Battery

## RTC Reset Jumper (CKRS)

TD-70AN provides a function to reset Real Time Clock. User just puts a metal across two pins of the connector momentarily while machine is powered off. The system will prompt you to enter SETUP after power-on.

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**4. Installation of DRAM**

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TD-70AN supports 2 banks of SIMM RAM:-

Bank\_0 M1, M2  
Bank\_1 M3, M4

The possible configuration of DRAM is described as below:-

Memory Size	Bank 0	Bank 1
512 KB	256 KB	-----
1MB	256 KB	256 KB
2 MB	1 MB	-----
4 MB	1 MB	1 MB
8 MB	4 MB	-----
16 MB	4 MB	4 MB

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**5. Selection of Operating Speed**

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The operating speed can be controlled through hardware switch and software control. The hardware switch has been described in section 3, Turbo Switch & Turbo LED Connector (TURBO).



For the software control, which is a built-in function of TD-70AN you can press 3 specified keys on the keyboard simultaneously which is described as follows:-

Action	Operating Speed
Press Ctrl-Alt-"+" simultaneously	Turbo
Press Ctrl-Alt-"-" simultaneously	Normal

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## 6. TD-70AN CMOS Setup Function

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The setup function is used to configure the system. It is activated by pressing DEL key when a message:

"Hit < DEL > , if you want to run SETUP"

is shown on the screen during boot-up. System will then enter the BIOS SETUP PROGRAM. Use up/down arrow key to select STANDARD CMOS SETUP, then press "ENTER" key. Warning Information will be shown on the screen, please read it before pressing "ENTER" key to the STANDARD CMOS SETUP. The SETUP menu is shown below:-

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Date (mn/date/year) :	Wed, Jan 01 1992	Base memory :	640 KB
Time (hour/min/sec) :	16:01:00	Ext. memory :	1024 KB
		CylIn Head WPcom LZone Sect Size	
Hard disk C: type :	Not Installed		
Hard disk D: type :	Not Installed		
Floppy drive A:	: 1.2 MB, 5 1/4"		
Floppy drive B:	: Not Installed		
Primary display :	VGA/PGA/EGA		
Keyboard :	Installed		

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### 6.1 Date & Time

Date format is MM/DD/YY, where MM stands for month, DD stands for day and YY stands for year. Time format is HH:MM:SS, where HH stands for hour in 24 hours format, MM stands for minute and SS stands for second. User may press PgUp & PgDn keys to set date & time directly.

## 6.2 Hard Disk Drive Type

A table storing parameters of popular hard disk drives is provided in the BIOS. If user has a hard disk which parameters are not included in the table, type 47 (user defined type) should be chosen and parameters should be entered. Users may obtain the hard disk drive type number or parameter values from the hard disk's dealer.

Drive type table is listed in Appendix B.

## 6.3 Floppy Disk Drive Type

TD-70AN BIOS supports two floppy disk drives. In the setup menu, user should enter the correct drive type at positions DRIVE A and DRIVE B, both drives can be set to any one of **None**, **360K**, **1.2M**, **720K** and **1.44M**. PgUp and PgDn keys are used to modify their types.

## 6.4 Primary Display

Totally five display types are supported: **None**, **Color 40**, **Color 80**, **Monochrome** and **EGA/VGA**. User should check the display card and select the correct display type. Besides, there is a display type jumper (**DISP**) used to distinguish between color and monochrome monitors.

Note : **DISP** setup is: short pin 1 and pin 2 for monochrome monitors;  
short pin 2 and pin 3 for color monitors.

## 6.5 Base & Extended Memory

The TD-70AN BIOS can detect the memory size automatically, both base & extended memory can be read but cannot be changed.

## Appendix A Summary of Connectors & Jumpers

Name	Pinout	Function
Speaker (SPK)	1	Speaker-
	2	Speaker-
	3	Speaker +
	4	Speaker +
Reset Switch (RST)	1	GND
	2	Reset In
Keylock & Power LED (LOCK)	1	LED Anode
	2	Polarization
	3	LED Cathode
	4	Key Lock
	5	Ground
Display Select (DISP)	1-2	Monochrome
	2-3	Color (Default setting)
Keyboard (KB, EX-KB)	1	Keyboard Clock
	2	Keyboard Data
	3	NC
	4	Ground
	5	+5V
Turbo Switch & LED (TURBO)	1	Anode
	2	Cathode
	3	Turbo In
	4	Ground
3,4 Open : Normal: Close : Turbo		

<b>Power Supply (POWER)</b>	1	NC
	2	+5V
	3	+12V
	4	-12V
	5	Ground
	6	Ground
	7	Ground
	8	Ground
	9	-5V
	10	+5V
	11	+5V
	12	+5V

<b>External Battery (EX-BAT)</b>	1	Ground
	2	Battery Out
	3	Battery In
	4	External Battery In

<b>RTC Reset (CKRS)</b>	1	GND
	2	Reset In

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**Appendix B Table of Hard Disk Drive Type**

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Type	Cyls	Hds	Sect	Size
1	306	4	17	10 MB
2	615	4	17	20 MB
3	615	6	17	31 MB
4	940	8	17	62 MB
5	940	6	17	47 MB
6	615	4	17	20 MB
7	462	8	17	31 MB
8	733	5	17	30 MB
9	900	15	17	112 MB
10	820	3	17	20 MB
11	855	5	17	35 MB
12	855	7	17	50 MB
13	306	8	17	20 MB
14	733	7	17	43 MB
16	612	4	17	20 MB
17	977	5	17	41 MB
18	977	7	17	57 MB
19	1024	7	17	60 MB
20	733	5	17	30 MB
21	733	7	17	43 MB
22	733	5	17	30 MB
23	306	4	17	10 MB
24	925	7	17	54 MB
25	925	9	17	69 MB
26	754	7	17	44 MB
27	754	11	17	69 MB
28	699	7	17	41 MB
29	823	10	17	68 MB
30	918	7	17	53 MB
31	1024	11	17	94 MB
32	1024	15	17	128 MB
33	1024	5	17	43 MB
34	612	2	17	10 MB
35	1024	9	17	77 MB
36	1024	8	17	68 MB
37	615	8	17	41 MB
38	987	3	17	25 MB

<b>Type</b>	<b>Cyls</b>	<b>Hds</b>	<b>Sect</b>	<b>Size</b>
39	987	7	17	57 MB
40	820	6	17	41 MB
41	977	5	17	41 MB
42	981	5	17	41 MB
43	830	7	17	48 MB
44	830	10	17	69 MB
45	917	15	17	114 MB
46	1224	15	17	152 MB
47		User Defined		

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## Appendix C Electrical Specification

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**Static : (No Add-on Card, Keyboard nor DRAM)**

Voltage supply : +5V

Current : 0.3A

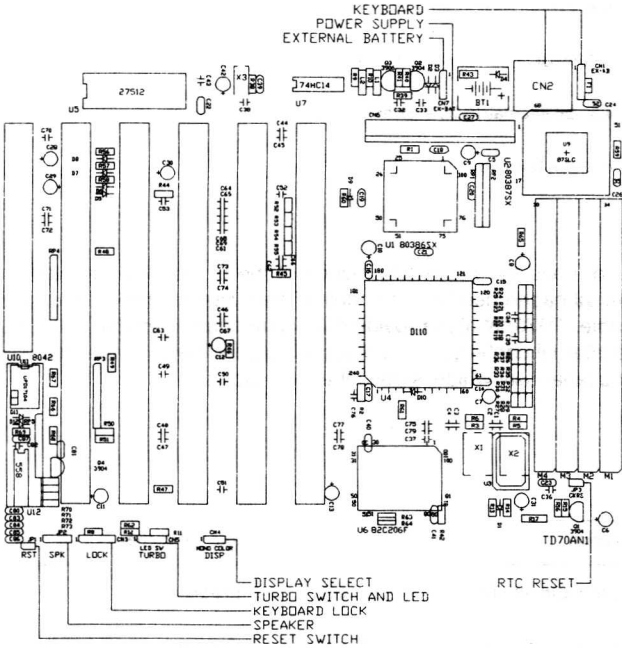
**Dynamic : (Keyboard, Supper I/O card, VGA card and 4MB DRAM installed.)**

**(Running Landmark speed test.)**

Voltage supply : +5V

Average Current : 1.3A

# Appendix D Layout of TD-70AN





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## Supplementary Note of 486SLC

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TD-70AN 386SX Motherboard can be upgraded to 486SLC with nothing to change.

### Features of the 486SLC

- 486SX instruction set compatible
- Runs DOS, Windows and Unix
- 32-bit internal/16-bit external data path
- 386SX bus compatible

To have the best performance of the of the CPU, the 486SLC internal cache need to be enabled. The system is now defaulted at enable. TD70AN also provide built-in function to enable or disable the internal cache you can press 4 specified keys on the keyboard simultaneously which is described as follows:-

Action	internal cache
press Ctrl-Alt-Shift "+" simultaneously	Enable
press Ctrl-Alt-Shift "-" simultaneously	Disable