

Tiger Cub

System User's Manual



Light Industrial Products...
<http://www.itox.com>





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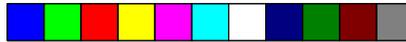


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Caution:

Danger of explosion if battery incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the battery manufacturer's instructions.





1

Tiger Cub User's Manual



FCC and DOC Statement on Class B

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

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

Notice:

1. The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
2. Shielded interface cables must be used in order to comply with the emission limits.

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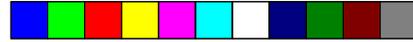


Table of Contents

Chapter 1 - Introduction

Tiger Cub System Concept	8
Specifications.....	8
System Configuration.....	10
Package Checklist.....	11

Chapter 2 - Hardware Installation and Setup

Removing the Access Cover.....	14
Installing Expansion Cards.....	14
Installing Disk Drives.....	15
Wall Mounting the Tiger Cub.....	16
Front View	18
Back View	19

Chapter 3 - Power up Sequence

Booting DOS and Running MIEZ and INTERLNK.....	22
--	----

Chapter 4 - General Software BIOS Setup Utility

The Basic Input/Output System.....	26
Standard CMOS Setup.....	26
Custom Configuration.....	30
Shadow Configuration.....	31
Standard Diagnostic Routines.....	32
Reset CMOS To Last Known Values.....	33
Reset CMOS To Factory Defaults.....	33
Write To CMOS and Exit.....	33
Exit Without Changing CMOS.....	33

Chapter 5 - File/Software Loading

Running INIERSRV and INTERLNK.....	36
------------------------------------	----



Appendix A - Board Layout

Connector/Jumper Setting Locations & Functions..	40
J1, J2 - IRQ/DACK Jumpers.....	41
J5 - Local LED Indicators.....	41
J6, J8 - Watchdog Timer	42
J12 - Enable COM1 IRQ	43
J13 - General Purpose Input/Output Connector.....	43
IRQ Assignments.....	44
System Board Connector Layout.....	45

Appendix B - Software Utilities

FIXELIN.COM.....	48
FIXELED.OBJ.....	49
FIXSCR.COM.....	49
BOOT.COM.....	49
Software Control of Watchdog Timer.....	50

Appendix C - Troubleshooting

Frequently Asked Questions.....	54
---------------------------------	----

Appendix D - Warranty

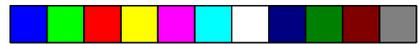
Warranty Terms.....	58
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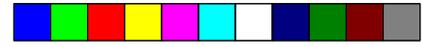
Appendix E - Year 2000 Compliance

Year 2000 Statement.....	62
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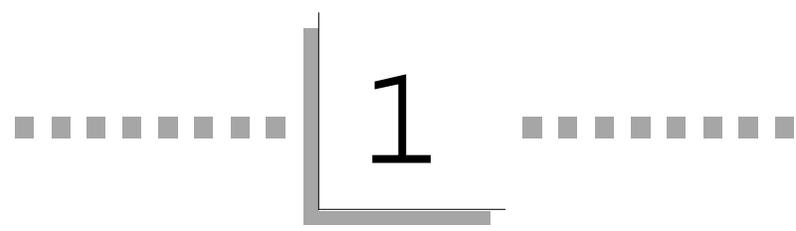
Index.....	63
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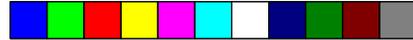


CHAPTER



Introduction





1

Tiger Cub User's Manual



Features and Specifications

Introduction

Tiger Cub System Concept

The ITOX Tiger Cub uses state-of-the-art design to provide a compact, low cost PC platform for Computer Telephony and industrial applications that require multiple, full length ISA interface cards.

The Tiger Cub is designed for unattended operation in light industrial environments. It is packaged in a small industrial enclosure that can be mounted on a wall or placed on a shelf or table. It is designed for turnkey systems that utilize auto-executing DOS application programs. Consequently, there is no need for a keyboard, mouse, video display or floppy disk in operational systems, and the most reliable, cost effective solution is achieved by not providing these items.

One of the Tiger Cub serial ports can be used to control the Tiger Cub during application development, diagnostic testing and for loading programs onto the Tiger Cub's hard disk. An on-board watchdog timer supports reliable operation in unattended applications by restarting the system automatically if the software hangs-up.

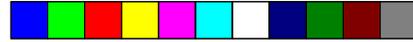
Specifications

The Tiger Cub's processor and memory chips are soldered in place on the motherboard. Consequently, the processor speed and memory size must be specified at the time of order.

ITOX-EAR Motherboard

Processor	AMD Élan enhanced AM486 single chip Microcontroller Available speeds – 33, 66 or 100 MHz (Factory configured)
------------------	--

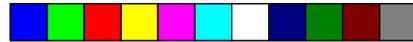
Cache	8 Kbyte unified, write-back
--------------	-----------------------------



RAM	4 Mbyte, 60 ns standard, 8 Mbyte available on special order
Watchdog Timer	Standard
Real-Time Clock	Standard, with Sony CR2032 battery or equivalent
Disk Controller	IDE controller: supports two drives up to 8GB each Two sockets for Disk-on-Chip flash memory based disks
Expansion Slots	3 full-length, full-height, 16 bit ISA Hold down bracket provided with case
Input/Output Ports	Parallel printer port, EPP/EPC compatible 2 serial ports, 16650 UART compatible 4 line general purpose I/O, TTL level
Board Size	13.1" (337 mm) x 3.9" (96 mm)
BIOS	General Software Embedded BIOS Ver.4 for AMD Élan

Chassis Components

Power Supply	100 to 240 VAC switch selectable, 50/60 Hz 90 watts, with internal cooling fan and ATX connector
Fan	Motherboard/expansion slot area cooled by 8 cm fan with air filter, 14 CFM
Disk Bays	3 disk drive bays, 3.5" (one externally accessible) All disks mount in removable drive tray.



1

Tiger Cub User's Manual



Weight	12.1 pounds(5.5 kgs) [not including disk drives]
Size	15.5"(394 mm)x 5.25"(133mm)x 10.5"(266 mm)
Operating Temperature	0 to 45 C (32 to 113 F)
Humidity	10% to 90% relative humidity, Non condensing
Options	DC input power supply

System Configuration

The basic Tiger Cub is configured with a 33 MHz processor and 4 MB of RAM memory. Higher speed processors and/or 8 MB of RAM are available as factory installed options.

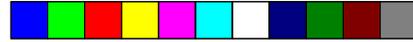
Several disk storage options are available and are not included in the basic configuration. Available options include 24 MB Disk-on-Chip Flash disk and 3 1/2" hard drives of various capacities.

The Disk-on-Chip may be configured as the first (boot) drive or the last drive. The Tiger Cub's internal IDE disk controller will support one primary drive and one slave drive.

The flash disk chips mount in sockets provided on the motherboard. Hard drives are mounted in a removable disk tray for easy assembly. The removable disk tray feature also allows field application software upgrades to be performed by shipping the user a preloaded hard drive mounted in a spare disk tray.

Floppy drives are not typically used with the Tiger Cub. However, applications requiring a floppy drive can be accommodated by installing a 3 1/2" floppy drive in the externally accessible drive bay and installing a floppy drive controller card in one of the Tiger Cub's ISA expansion slots.

The Tiger Cub is supplied with the Datalight ROM-DOS 6.22 operating system in the basic configuration. Optionally available operating systems include Microsoft MS DOS 6.22, IBM PC DOS 7.0, and Caldera DR-DOS.



The Tiger Cub is designed to allow console redirection through the serial port (COM1) for loading software and local control/debugging of application programs. This is accomplished by connecting COM1 of the Tiger Cub to the serial port of a notebook computer or other device with a null modem cable. The appropriate procedures are provided in Chapter 3 and Chapter 5 of this manual.

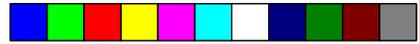
Package Checklist

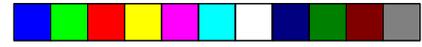
The Tiger Cub system package contains the following items:

- One Tiger Cub complete with motherboard and power supply
- One Power Cable
- One floppy disk with the following software
 - MTEZ terminal emulation software
 - BOOT.COM
 - ITOXBLIN.COM
 - ITOXSCR.COM
- One set of operating system software
- One Manual

Optional items such as disk drives may also be enclosed in the package. Check your packing list carefully.

If any of these items are missing or damaged, please contact your supplier for assistance.





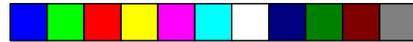
CHAPTER

2

Hardware Installation

and

Setup



2



II. Hardware Installation and Set Up

Caution: Always unplug the AC power cord from the Tiger Cub before opening the cabinet to prevent possible contact with the rotating fan blade or hazardous voltage. The Tiger Cub is designed so that all high voltage components remain enclosed in the lower portion of the cabinet when the access panel is removed. However, contact with potentially hazardous voltage is possible if tools or screws enter the lower portion of the case through the cable or cooling holes.

Set Input Voltage Selector Switch

The Tiger Cub is equipped with a dual range power supply for operation with AC input voltage from 100 to 240 VAC at 50/60 Mz. Set the AC voltage selector switch on the rear panel of the Tiger Cub to the appropriate position based table below.

AC Voltage Switch Settings	
Normal Input Voltage	Switch Setting
100-120 Vac	115
200-240 Vac	230

Removing the Access Cover

Remove the six screws on the side of the Tiger Cub cabinet (five on one side & one on the other side) and remove the access cover to install expansion cards and set jumpers. The Tiger Cub is supplied with a retaining bracket to hold expansion cards in place. Remove the screw at each end of the bracket and remove the bracket to provide access for installing expansion cards.

Installing Expansion Cards



Warning: Electrostatic discharge (ESD) can damage your processor, disk drives, add-in boards, and other components. Perform the instruction procedures described at an ESD workstation only. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the system



chassis. If a wrist strap is unavailable, establish and maintain contact with the system chassis throughout any procedures requiring ESD protection.

The Tiger Cub is designed to accept three full length, full height expansion cards utilizing the 16 bit ISA interface standard. Remove the appropriate number of filler plates from the back of the unit, install the cards in the normal manner, and secure them in place with the screw previously used to hold the filler plate in place.

The retaining bracket should be replaced after the cards have been installed. Then the black plastic pads supplied with the unit should be installed in the square holes in the bracket and positioned with the edge of the expansion card in the "V" groove of the pad. Install the screws supplied with the pads into the bracket so that they press on the pads at an angle to hold the expansion cards firmly in place. The access cover should be replaced after the jumpers have been set. See appendix A for the correct jumper setting for your system configuration.

Installing Disk Drives

The Tiger Cub uses a removable disk tray for quick and easy mounting of hard (and floppy) disk drives. Disks ordered from ITOX at the same time as the Tiger Cub will be pre-loaded with the appropriate software and pre-installed in the unit. This procedure should be followed for disks not installed by ITOX.

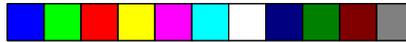
1. Pre-load your software onto the hard drive.

The hard drive must be loaded with the operating system including the appropriate file loading utilities identified in Chapter 5 (not required if the Tiger Cub has a floppy drive). Most users will find it convenient to pre-load all software required for the application at the same time.

2. Remove the drive tray from the front panel of the Tiger Cub.

It is not necessary to remove the access cover to install disk drives.

Verify that the Tiger Cub power cord is disconnected from the AC voltage source. Remove the two phillips head screws located closest to the outside edges of the lower portion of the front panel. Then slide the drive tray out the front of the unit.



2



3. Install the drive(s) in the drive tray.

The drive tray includes slots for mounting up to three 3 1/2" disk drives. Select the set of slots you want to use and mount the drive according to the manufacturer's instructions. The center drive position has a knock-out section that can be removed to provide exterior access to the drive. This position is typically reserved for floppy drives. Remove the knock-out **before** installing any of the drives if a floppy drive will be installed.

4. Connect the data and power cables.

Reach into the lower portion of the Tiger Cub case through the opening where the drive tray mounts. Gently guide the power cable and ribbon-type data cable through the opening so they can be connected to the disk drive. The connectors are keyed for proper attachment; make sure that the connectors are attached to the drive in the proper orientation.

5. Install the drive tray back into the Tiger Cub case.

Slide the drive tray back into the case; guide the cables into the opening while doing this to keep them away from any sharp edges and insure they remain fully engaged. Secure the drive tray in place with the two screws removed in step 2 above.

6. Specify the correct hard disk type in the BIOS setup.

Complete any other hardware installation procedures before power is applied to the unit. Enter the correct hard drive type (from disk manufacturer's instructions) in the Basic CMOS Configuration section of the BIOS setup (see Chapter 4).

Wall Mounting the Tiger Cub

The Tiger Cub is designed to be placed on a shelf, table or other flat surface, or wall mounted. Rubber feet are provided for table top operation. Four key-hole shaped mounting holes are provided in the side of the Tiger Cub for wall mounting. Use of all four wall mounting points is recommended and will result in the most secure installation; at least one of the front brackets and one of the rear brackets must be used to provide adequate support. A template for installing the mounting screws in the wall is provided in the Tiger Cub box.

The Tiger Cub mountings have a protective back plate that prevents narrow objects from entering the case. The mounting holes are designed to slip over the heads of screws mounted in the wall or other vertical



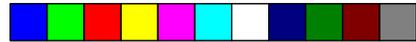
Hardware Installation and Setup

2

surface upon which the Tiger Cub is to be mounted. The holes are designed for ¼ inch (6 mm) pan head screws, but can be used with any screws with a head diameter between 0.35 inch (9 mm) and 0.55 inch (14 mm) and a maximum head height of 0.2 inch (5 mm). The screws should be installed to allow a clearance of 1/16 inch (1.5 mm) under the screw head to provide clearance for the thickness of the mounting bracket.

Once the screws are installed in the wall to the proper depth, place the Tiger Cub mounting holes over the screw heads and then slide the Tiger Cub down to secure it in place. It can be removed for servicing by sliding the unit up and lifting the unit off the screw heads.



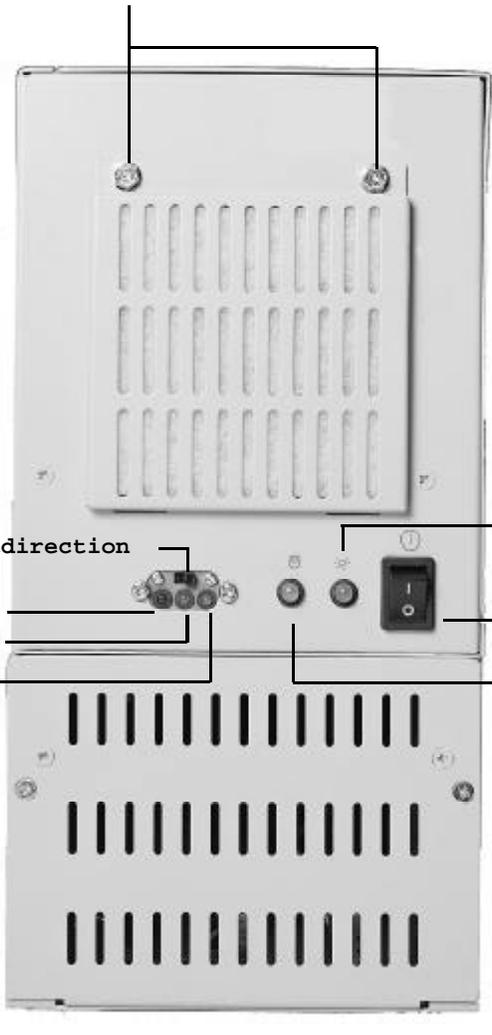


2



Front View of Tiger Cub System Connectors, Switches and Indicators

Air Filter Access Screws



Console Redirection
Switch

Yellow LED

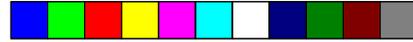
Green LED

Red LED

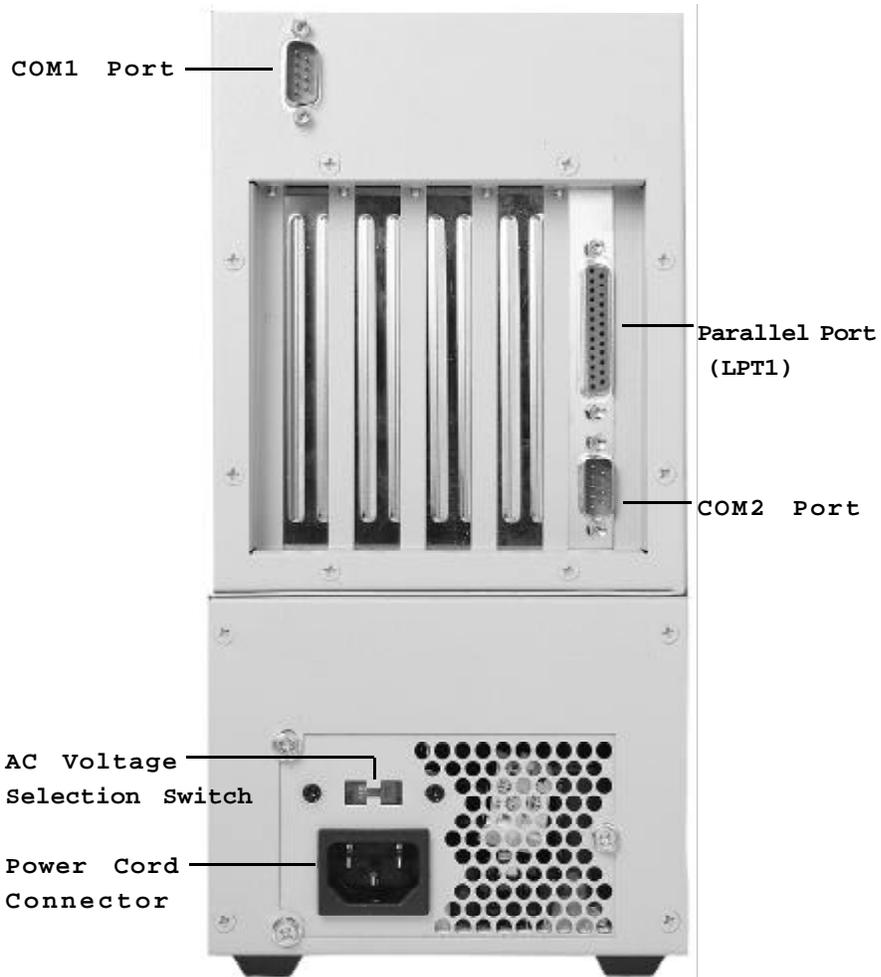
Power LED
(Green)

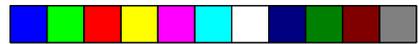
Power Switch

HD Active LED
(Yellow)



Back View of Tiger Cub System Connectors, Switches and Ports







CHAPTER

3

Power Up Sequence





3

Tiger Cub User's Manual



Power Up Sequence

A notebook (or desktop) computer will be needed for setting up the Tiger Cub's BIOS and loading software.

The console redirection feature of the Tiger Cub will be used to enable the notebook to serve as the keyboard and display of the Tiger Cub.

We recommend that you boot DOS directly from the DOS disk provided rather than running a Windows DOS box.

The floppy disk provided with the system contains the following programs:



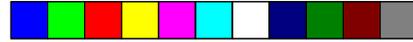
```
ITOXSCR.COM  
BOOT.COM  
ITOXBLN.COM  
MTEZ  
INTERLNK.EXE*
```



MTEZ must run on the notebook/PC from the floppy drive to enact the console redirection.

- 1) Start with both the notebook PC & the Tiger Cub turned off.
- 2) Plug one end of the null modem cable into the COM1 port on the Tiger Cub system (see chapter 2). The other end of the cable will be inserted into the serial port of your notebook/PC.
- 3) Turn on your notebook/PC.

* When purchased with MS DOS or IBM PC-DOS program. With Datalight ROM-DOS program will be REMDISK.EXE. With Caldera DR-DOS program will be FILELINK.EXE.



3



Power Up Sequence

4) Boot DOS from the supplied disk and run MTEZ.

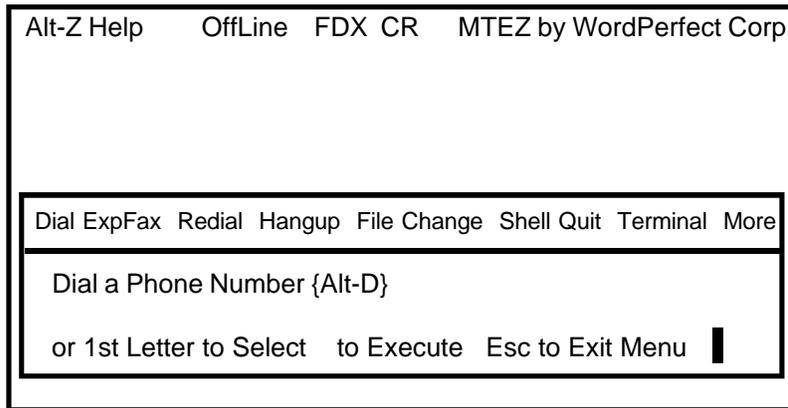
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cd MTEZ
A: \MTEZ>
A: \MTEZ>MTEZ (press enter)

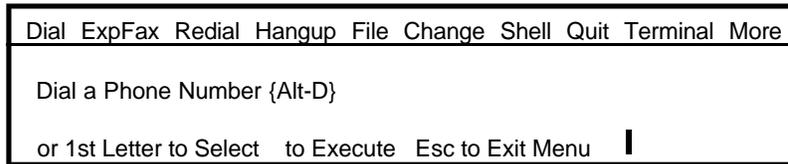
```

The Main Menu screen will appear.

Main Menu Screen

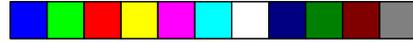


After seeing this screen select *ESCAPE* to clear the MTEZ menu box (below).



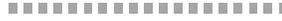
5) Now turn the Power switch located on the front of the Tiger Cub to the *ON* position.

The MTEZ Menu box will appear once more.



3

Tiger Cub User's Manual



6) Select **ESCAPE** again.

Now you have exited MTEZ and have control of the Tiger Cub.

The keyboard and display of the notebook now act as the keyboard and display of the Tiger Cub.

You may enter CMOS as described in chapter 4 or run your programs.

If you need to reboot the Tiger Cub at any time:

Type BOOT while in DOS when the keyboard and display are directed to Tiger Cub.

BOOT.COM must be installed on the Tiger Cub's hard drive to accomplish this task.

Use the following procedure to redirect the keyboard and display back to the notebook PC.

1) Press Alt +Tab

The main MTEZ menu will reappear.

2) Select SHELL

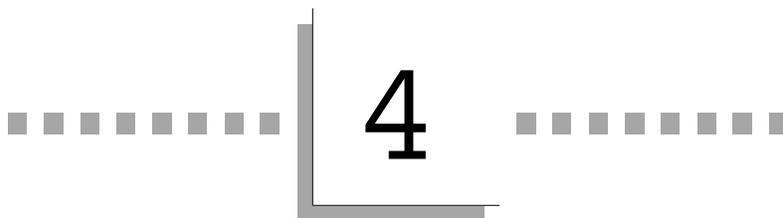
The keyboard and display can now be used to control the notebook.

3) Type EXIT (return) and then press Escape

to redirect the keyboard and display back to the Tiger Cub.



CHAPTER



BIOS Setup Utility

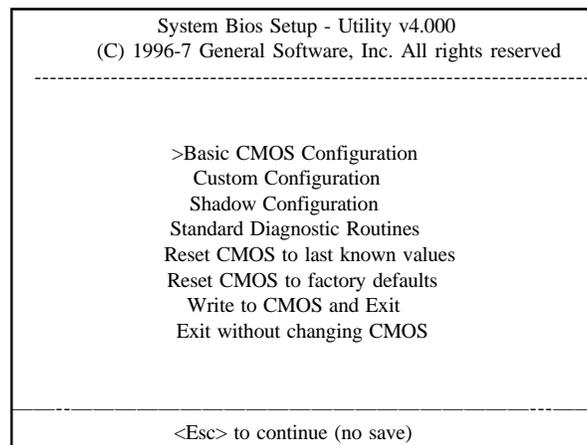


The Basic Input/Output System

The Basic Input/Output System (BIOS) is a program that takes care of the basic level of communication between the processor and peripherals. This chapter explains the Setup Utility for the General Software BIOS.

After you power up your system and connect a console device as described in chapter 3, the BIOS message appears on your screen and you will see the memory count begin. After the memory test, the following message will appear on the screen:

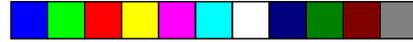
Press DEL or Control C to enter setup



Standard CMOS Setup

Navigation

Use the arrow keys to highlight "**Basic CMOS Configuration**" and press **<Enter>**. A screen similar to the one on the next page will appear.



```

System Bios Setup - Basic CMOS Configuration
(C) 1996-7 General Software, Inc. All rights reserved
-----
Base Memory      :>640          Date (month day year) : Mar 25, 1998
Extended Memory  : 7168        Time (hours:min:sec)  : 16 : 59 : 06
Drive A: type    : Not installed
Drive B: type    : Not installed  Cyln Heads WPcom LZone Sect  Size
Hard disk C: type : 49 = AUTOCONFIG, LBA GEOMETRY
Hard disk D: type : Not installed
-----
1st Boot Device   : Drive C:      Seek Floppy at Boot      : Disabled
2nd Boot Device   : (None)        Seek Hard Drive at Boot  : Enabled
3rd Boot Device   : (None)        System Configuration Box : Enabled
4th Boot Device   : (None)        Display "Hit <Del>..."  : Enabled
Primary Display   : MONO/None     Wait For F1 on Error     : Enabled
Typematic Keys    : (Unused)      NumLock State at Boot    : Disabled
Typematic Delay   : (Unused)      Memory Parity Check      : (Unused)
Typematic Rate    : (Unused)      Exhaustive Memory Test   : Disabled
Memory Test Tick  : Enabled
Test Above 1 MB   : Enabled
-----
^E/^X/<Tab> to select or +/- to modify

```

The settings on the screen are for reference only. Your version may not be identical to this one.

Date

The date format is <day>, <month>, <date>, <year>. Day displays a day, from Sunday to Saturday. Month displays the month, from January to December. Date displays the date, from 1 to 31. Year displays the year.

Time

The time format is <hour>, <minute>, <second>. The time is based on the 24-hour military-time clock. For example, 1 pm. is 13:00:00. Hour displays hours from 00 to 23. Minute displays minutes from 00 to 59. Second displays seconds from 00 to 59.

Memory

The base memory size and extended memory size cannot be altered; your computer automatically detects and displays them.

Base Memory The POST (Power On Self Test) will examine the amount of base (or conventional) memory installed in the system. The value of the base memory will always be 640K.

Preset at 640

Extended Memory The BIOS examines how much extended memory is present during the POST (Power On Self Test). This is the amount of memory located above 1MB in the CPU's memory address map.

A 4MB system is preset at 3072

A 8MB system is preset at 7168

Drive A and Drive B

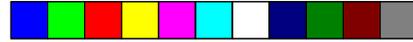
These categories identify the types of floppy disk drives installed. The options for drive A and B are:

Not installed No floppy drive is installed
360K, 5-1/4 in. drive; 360KB capacity
1.2M, 5-1/4 in. AT-type high-density drive; 1.2MB capacity
720K, 3-1/2 in. drive; 720KB capacity
1.44M, 3-1/2 in. drive; 1.44MB capacity
2.88M, 3-1/2 in. drive; 2.88MB capacity

Note:

Choosing an incorrect type might cause your system to format the floppy disk improperly and you may not be able to access your data.





Hard Disk 0 and 1

The default setting will be based on the specific configuration ordered.

Options:

- 1-46 PREDEFINED
- 47 USER TYPE
- 48 AUTOCONFIG, PHYSICAL GEOMETRY (*system will configure the hard drive's value*)
- 49 AUTOCONFIG, LBA GEOMETRY
- 50 AUTOCONFIG, PHOENIX CHS GEOMETRY

1ST BOOT DEVICE

Default Setting: Drive 0

2ND, 3RD, and 4TH BOOT DEVICE

Default Setting: None

Other options:

- None
- DOS IN ROM (Do NOT Select - or system will not boot)
- Drive A

PRIMARY DISPLAY

These options are only useful if you are using a video card.

Options:

- | | |
|-----------|--------------------------------------|
| MONO/NONE | No monitor or monochromatic monitor |
| AUTO | Auto selection usually 80 x 25 color |
| COLOR | 40 x 25 |
| COLOR | 80 x 25 |

4

TYPEMATIC SECTION

Default setting due to no keyboard being supported.

TYPEMATICKEYS : **Unused**

TYPEMATICDELAY : **Unused**

TYPEMATICRATE : **Unused**

MEMORY TEST TICK: **Enabled** is the default.

Enabled will be the **standard default** for all of the following:

SEEKFLOPPYATBOOT
SEEKHARDDRIVEATBOOT
SYSTEMCONFIGURATIONBOX
DISPLAY "HIT" ..."
WAITFORF1ONERROR

Unused will appear as the default for the following
NUMLOCK STATE AT BOOT (Due to no keyboard)
MEMORY PARITY CHECK

EXHAUSTIVE MEMORY TEST: **Disabled** is the **default**

Custom Configuration

Use the arrow key to highlight "**Custom Configuration**" and press <Enter>. This screen will appear.

System BIOS Setup - Custom Configuration			
(C) 1996-7 General Software, Inc. All rights reserved			

Enable COM2	:>Enabled	Enable LPT1	: Enabled
COM2 Base Address	: 2F8	LPT1 Base Address	: 378
DMA0 Channel	: 2	DMA1 Channel	: 6

^E/^X/<Tab> to select or +/- to modify			
<Esc> to return to main menu			



Enable COM2 (Options: Enabled or Disabled)

This field specifies whether the second serial port connector on the Tiger Cub is enabled or disabled. The default setting is *enabled*.

COM2 Base Address (Options: 2F8 or 3F8)

This specifies the base address of the internal serial port on the Tiger Cub. If set to *2F8* (the default setting), there will be two serial ports, if set to *3F8*, there will be one serial port and the first serial port connector will be disabled.

Enable LPT1 (Options: Enabled or Disabled)

This specifies whether the parallel port connector on the Tiger Cub is enabled or disabled. The default setting is *Enabled*.

LPT1 Base Address (Options: 278 or 378)

This specifies the base address of the internal parallel port on the Tiger Cub. The default setting is *378*.

Note: The DMA channels must be selected in the BIOS to match the jumper setting used for J1 and J2. Refer to appendix A.

DMA0 Channel (Options: 0, 2, or 3)

Select this field to access the first DMA channel. The **default** setting is *2*. Note that DMA channel two must be selected if a floppy drive is installed.

DMA1 Channel (Options: 5, 6, or 7)

This specifies the second DMA channel which may be accessed. The default setting is *6*.

Shadow Configuration

Shadowing is the standard feature in which ROMs are copied to faster RAM to improve system performance.

4

Tiger Cub User's Manual

System BIOS Setup - Shadow/Cache Configuration	
(C) 1996-7 General Software, Inc. All rights reserved	
Shadowing :>Chipset	Shadow 16KB ROM at C000 : Disabled
Shadow 16KB ROM at C400 : Disabled	Shadow 16KB ROM at C800 : Disabled
Shadow 16KB ROM at CC00 : Disabled	Shadow 16KB ROM at D000 : Disabled
Shadow 16KB ROM at D400 : Disabled	Shadow 16KB ROM at D800 : Disabled
Shadow 16KB ROM at DC00 : Disabled	Shadow 16KB ROM at E000 : Enabled
Shadow 16KB ROM at E400 : Enabled	Shadow 16KB ROM at E800 : Enabled
Shadow 16KB ROM at EC00 : Enabled	Shadow 64KB ROM at F000 : Enabled

^E/^X/<Tab> to select or +/- to modify
<Esc> to return to main menu

The defaults are

Shadowing: **Chipset**

Shadow 16KB ROM at E400, EC00, E000, and E800 : **Enabled**

Shadow 64KB ROM at F000: **Enabled**

All other regions: **Disabled**

STANDARD DIAGNOSTIC ROUTINES

Select this option for testing.

This screen will appear. If you do not want to test a particular item change enabled to disabled.

System Bios Setup - Standard Diagnostics	
(C) 1996-7 General Software, Inc. All rights reserved	
CPU Core : Enabled	BIOS Video Services : Enabled
Floating Point Core : No Hdwr	BIOS Block Disk Services : Enabled
Protected Mode : Enabled	BIOS Serial Services : Enabled
Low Memory (<1MB) : Enabled	BIOS Keyboard Services : Enabled
Extended Memory (>1MB): Enabled	BIOS Parallel Services : Enabled
Keyboard Controller : No Hdwr	Video Controller/RAM : No Hdwr
PC/AT Keyboard : Disabled	CMOS RAM & Battery : Enabled

Continuous Testing :Enabled	Tests Begin on ESC? : Enabled
-----------------------------	-------------------------------

^E/^X/<Tab> to select or +/- to modify
<Esc> to return to main menu



RESET CMOS TO LAST KNOWN VALUES

Select this option, if while editing CMOS, you have encountered a problem. It will reset the CMOS to the values set before your edit.

RESET CMOS TO FACTORY DEFAULTS

When selected, the CMOS options will be automatically reset to the factory defaults.

WRITE TO CMOS AND EXIT

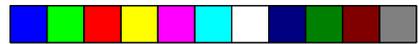
Select this option if you want the changes you made during this session to be made to the CMOS.

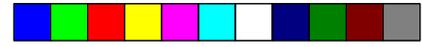
After making the changes, select exit and the system will reboot.

EXIT WITHOUT CHANGING CMOS

Select if you made any changes you do NOT want to save. The previous CMOS settings will be intact.





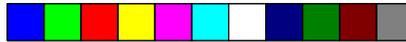


CHAPTER

5

File/Software

Loading



5



File/Software Loading

Files are typically loaded onto the Tiger Cub from a notebook or desktop PC via a null modem cable using file transfer utility programs provided with DOS. Data is transferred at a rate of up to 57600 bps. The Tiger Cub acts in a server capacity by making its hard drive available to the notebook PC. The notebook PC is considered the client and can then access the drive to load files onto it from the other drives of the notebook PC.

The appropriate file transfer programs for the available DOS operating systems are shown below:

DOS Operating System	Server Program (T. Cub)	Client Program (Notebook PC)
Datalight ROM-DOS	REMSERV.EXE	REMDISK.EXE
Caldera DR-DOS	FILELINK.EXE	FILELINK.EXE
IBM PC-DOS	INTERSRV.EXE	INTERLNK.EXE
Microsoft MS-DOS	INTERSRV.EXE	INTERLNK.EXE

The appropriate operating system with the server program will be preloaded on the Tiger Cub drive if both the operating system and the drive were purchased from ITOX. Drives not purchased from ITOX should be preloaded with the appropriate operating system prior to installing them in the Tiger Cub.

The client program can be run directly from the floppy drive of the notebook PC using the floppy disk provided with the Tiger Cub system.

The following steps illustrate the procedure for loading software with the MS-DOS or PC-DOS operating system located on the floppy drive of the notebook PC. The procedure for the other DOS operating systems is similar.



1) Connect the Tiger Cub and the notebook PC together with the null modem cable, and run the MTEZ program to connect the notebook keyboard and display to the Tiger Cub as described in Chapter 3.

2) Change the active directory of the Tiger Cub to the DOS directory

```
C:\>cd DOS (press enter)
```

3) Run INTERSRV on the Tiger Cub

```
C:\DOS>INTERSRV (press enter)
```

4) Move the null modem cable from COM1 to COM2 of the Tiger Cub.

Do not turn the Tiger Cub off when moving the cable

5) The MTEZ main menu will appear again on the notebook display screen.

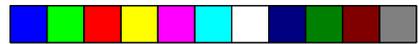
Select SHELL to switch control back to the notebook.

6) Run INTERLNK. from the floppy disk.

```
A:\MTEZ>cd.. (press enter)
```

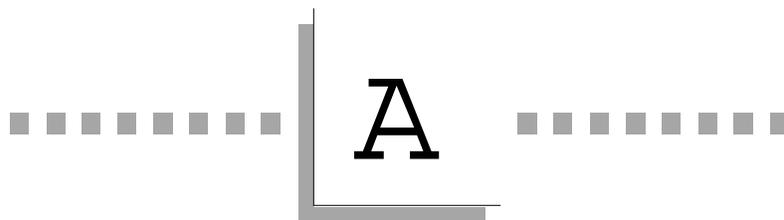
```
A:\>INTERLNK (press enter)
```

7) The hard drive of the Tiger Cub will be assigned the designation of the next available drive in your notebook PC (usually d: or e:) as shown in the chart on the notebook PC screen. You can now transfer your software to the Tiger Cub by copying it to that drive.





Appendix



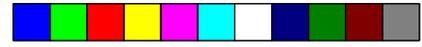
ITOX-EAR

Motherboard Layout

and

Jumpers





A

Appendix A

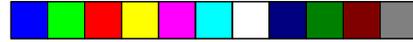


Connector Locations and Functions

The following connectors and jumper pins are provided on the ITOX-EAR motherboard. Connector locations on the Tiger Cub motherboard are shown on the figure in this appendix.

Refer to the appropriate figures in chapter two for the location of the external connectors

CONNECTOR	FUNCTION
J1	DRQ Setting jumpers
J2	DACK Setting jumpers
J3	IDE hard disk controller
J4	Power input to motherboard, ATX type
J5	Local LED indicators
J6	Watchdog timer, reboot enable/disable
J7	Fan power, 12 Vdc
J8	Watchdog timer, blinking power LED select
J9	COM1 serial port (console redirection)
J10	COM2 serial port
J11	Parallel port
J12	Enable COM1 IRQ
J13	General Purpose I/O port



A

J1, J2 - DRQ/DACK Jumpers

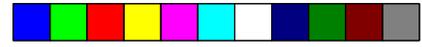
The Elan microprocessor supports two external DMA channels. J1 and J2 are jumper switch locations that are used to select the DMA channels to match those required by expansion boards. The correct channels must be selected by jumpers and in the BIOS set-up.

Install jumpers between the pin pairs identified in the chart below to select the appropriate pair of DMA channels. Note that each jumper block should not have more than two jumpers installed.

DMA Channels	J1	J2
0,5	1-2 , 7-8	1-2, 7-8
0,6	1-2, 9-10	1-2, 9-10
0,7	1-2, 11-12	1-2, 11-12
2,5	3-4, 7-8	3-4, 7-8
2,6	3-4, 9-10	3-4, 9-10
2,7	3-4, 11-12	3-4, 11-12
3,5	5-6, 7-8	5-6, 7-8
3,6	5-6, 9-10	5-6, 9-10
3,7	5-6, 11-12	5-6, 11-12

J5 - Local LED Indicators

Pin	Signal
1	HDD LED +
2	HDD LED -
15	Power LED +
16	Power LED -



A

Appendix A



J6, J8 - Watchdog Timer

The Tiger Cub has a watchdog timer that can be set to automatically reboot the system if it hangs up. This is very useful in unattended applications where there may not be a designated system operator to restart the system. If you choose to use the watchdog timer, you can enable it under software control by using the information provided in Appendix B.

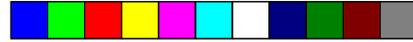
The watchdog counter is essentially a preset counter that counts down based on the system's real time clock. If the counter is not reset before it times out (count = 0), it causes the power light to blink and/or reboots the Tiger Cub based on the settings of J6 and J8 jumpers.

	Function	With Jumpers	Without Jumpers
J6	Reboot on time out	Yes	No *
J8	Flash power LED on time out	No	Yes*

* Indicates factory default settings

The power light will continue to blink after the system reboots even if the automatic reboot function is enabled.

When the J8 jumper is installed the light continues to blink so that service personal will be alerted to the fact that the hang up occurred even though the automatic rebooting may prevent any perceived interruption of service to the user. The blinking power can be reset to the off state by turning the Tiger Cub power switch off for at least 30 seconds.



A

J12, Enable Com1 IRQ

Jumper pins 1 and 2 together to enable IRQ generation. This is a factory default setting, do not alter.

J13 - General Purpose Input/Output (GPIO) Connector

The GPIO connector provides three low power output signals that drive LED indicators under software control.

	Connector Pins	Function
Green LED	5, LED - 6, LED +	Controlled by the utility program ITOXBLIN.COM which can be placed in AUTOEXEC.BAT to flash the green LED when DOS is running. See Appendix B.
Red LED	7, LED - 8, LED +	Controlled by application programs with C callable utility ITOXLED.OBJ. See Appendix B.
Yellow LED	3, LED - 4, LED +	Lights after successful completion of Tiger Cub's BIOS POST (power-on self test).
Switch	1 and 2	The unit is preconfigured to disable console redirection when the switch is set to the closed position. (slide switch away from power switch).

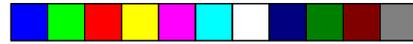
A

Appendix A

IRQ Assignments

IRQs 5, 10 and 11 are available for use by ISA expansion cards installed by the user.

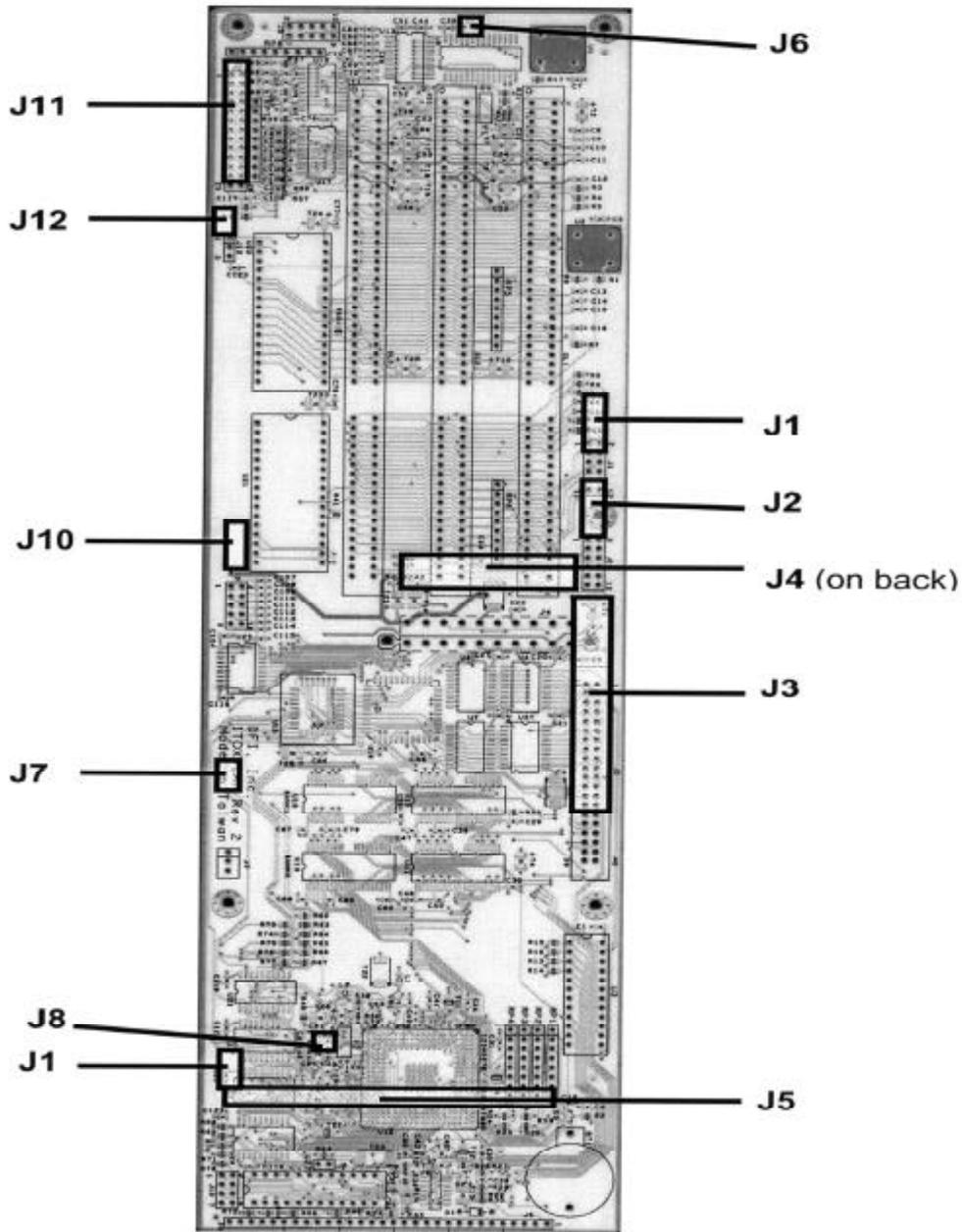
IRQ	Function
IRQ-3	COM 2
IRQ-4	COM 1
IRQ-5	Available
IRQ-6	FDD
IRQ-7	Parallel port
IRQ-10	Available
IRQ-11	Available
IRQ-14	HDD

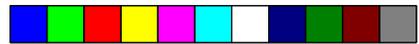


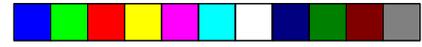
A

ITOX-EAR Motherboard Layout and Jumpers

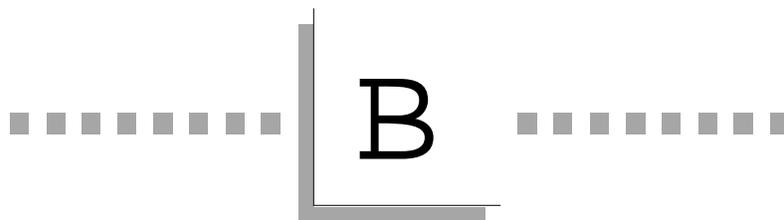
Tiger Cub Connector Locations





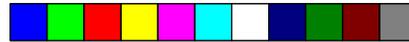


Appendix



Software Utilities





B

Appendix B



Software Utilities

The Tiger Cub has 3 LEDs and an external switch that may be addressed by software utilities provided with the system.

The first LED (colored yellow) will turn on upon successful completion of the BIOS Power On Self-Test (POST).

The second LED (colored green) will blink to indicate system activity when the ITOXBLIN utility is run.

The third LED (colored red) is user-controllable and may be turned on or off by using the routine ITOXLED provided in ITOXLED.OBJ.

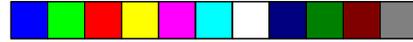
The Tiger Cub has a function known as console redirection which allows the Tiger Cub to be controlled remotely via a serial link. This function may be disabled by sliding the small switch on the Tiger Cub front panel away from the power switch (contacts closed).

ITOXBLIN.COM

This utility will cause the green LED to blink to indicate system activity.

Syntax: ITOXBLIN
 ITOXBLIN U

Install ITOXBLIN
Uninstall ITOXBLIN



B

ITOXLED.OBJ

This object file contains the C-callable function ITOXLED which allows the user to turn on/off the red LED from an application program.

ITOXLED(0)	turn off the red LED
ITOXLED(1)	turn on the red LED

ITOXSCR.COM

This utility will create a video buffer on systems without a VGA card. If a VGA card is present, an error message will be displayed. This program is useful when using a remote access program such as PC Anywhere or CoSession which requires a video buffer to function.

Syntax: ITOXSCR Enable video buffer.

BOOT.COM

This utility allows the system to be rebooted from the command line. BOOT.COM is a general purpose utility and will work on any system.

Syntax: BOOT	Perform a cold boot
BOOT W	Perform a warm boot (skips the memory tests)
BOOT S	Enter Setup

B

Appendix B

Software Control of Watchdog Timer

The Dallas DS1283 Watchdog Timer is mapped to the I/O range 1F8h-1FFh on the AMD Élan microprocessor. Only registers 1FBh-1FDh (where h signifies hexadecimal) are used for the watchdog timer.

Register	Function 1
F8h	Date (set to 0)
1F9h	Month (set to 0)
1FAh	Year (set to 0)
1FBh	Command register Bit 7 Transfer Enable 0=disable updates 1=allow updates Bit 6 Interrupt Switch (must be 0 on the Tiger Cub) 0=watchdog alarm output on INTA pin 1=watchdog alarm output on INTB pin Bit 4 Interrupt level mode 0=interrupt level mode 1=interrupt pulse mode Bit 3 Watchdog Alarm Mask 0=enable watchdog interrupt 1=disable watchdog interrupt Bit 1 Watchdog Alarm Flag 1=watchdog interrupt active



Register	Function 1
1FCh	Counter register (lo) bits 7-4 0.1 seconds bits 3-0 0.01 seconds
1FDh	Counter register (hi) bits 7-4 10 seconds bits 3-0 seconds
1FEh	User registers (unused)

Note: The watchdog timer may be set to any interval from 00.01 to 99.99 seconds, setting the interval to 0 will disable the watchdog timer.

Registers 1F8h bit 7 must be set to enable data transfer and bit 4 is set to enable the reset pulse. The watchdog timer interval (in BCD) should be set in registers 1FCh-1FDh

```

mov dx, 1fbh ;Point to command register
mov al, 90h ;Set transfer enable and pulse bits
out dx,al ;Output to port
inc dx ;Load watchdog alarm count index (lo)
mov al, 00h ;Load BCD interval (lo)
out dx,al ;Output to port
inc dx ;Load watchdog alarm count index (lo)
mov al, 05h ;Load BCD interval (hi)
out dx,al ;Output to port
inc dx ;Load watchdog alarm count
index (hi)
mov al, 5 ;Load BCD interval (hi)
out dx,al ;Output to port

```



B Appendix B



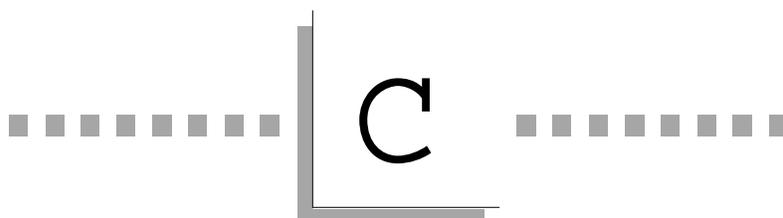
Once the watchdog timer is set, another program should periodically restart the watchdog timer counter before the interval expires. This may be done by reading either of the watchdog timer counter registers. If the interval expires then the system will be reset.

For more information on the DS1283 watchdog timer chip, look on the Dallas Semiconductor website at <http://www.dalsemi.com>.





Appendix



Troubleshooting Frequently Asked Questions & Answers



Frequently Asked Tiger Cub Questions

Q: I have MTEZ running on my notebook /desktop and I can not control the Tiger Cub.

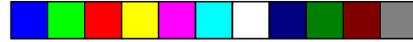
A: Make sure that the Console Redirection switch located on the front panel over the GPIO LED's is set to enabled (set to the right). If console redirection is disabled, the yellow LED on the GPIO LED display will not be illuminated. Set the switch to the right and reset the Tiger Cub by turning the power off and on.

Q: When I try to run my program I see a flashing cursor in the top right corner on my notebook /desktop.

A: If you have a flashing cursor most likely the program is running. However, you must put the driver ITOXSCR.COM in the AUTOEXEC.BAT file. This driver will create a video buffer as if there was a video card in the Tiger Cub. If you install a video card in the Tiger Cub you do not have to load ITOXSCR.COM.

Q: Can I configure the Tiger Cub, so that both a local technician and a remote support specialist can see the Tiger Cub's console screen and control it from their keyboard?

A: Yes. Run MTEZ (or another terminal emulation program) on the local notebook/desktop computer and connect it to the Tiger Cub using the console redirection mode. Run the host portion of PC Anywhere (or an equivalent program) on the Tiger Cub and run the remote part of PC Anywhere on the remote system which is connected via modem. With such a configuration, both the



C

..... Frequently Asked Questions

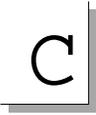
local notebook and the remote PC can both see the virtual display screen of the Tiger Cub and control it from their respective keyboards. Note that the local user will only see text based characters on his PC screen. Only one keyboard should be used at a time since the key entries from each keyboard will go into a common keyboard buffer.

Q: I installed a hard drive in my Tiger Cub and when I start I get two options press (R) to reboot and (S) to enter setup.

A: Even if the 1st boot device is set to C: drive you still need to set the drive type in the CMOS setup. You can use drive type 48 if the drive is 528Megs or less and drive type 49 if the drive is larger than 528Megs.

Q: I disabled certain tests in the Diagnostic program that is built into CMOS. When I save and exit CMOS, and then return to the Diagnostic program my changes are not saved.

A: If changes have been made to disable certain test in CMOS, those changes will only be for that diagnostic testing session. Any changes will default back to enabled whether you save and exit CMOS or not.

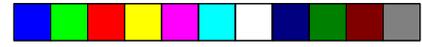


Appendix C

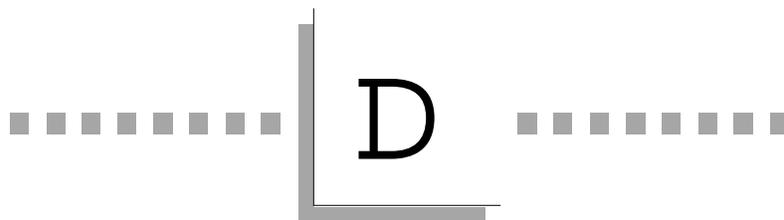


Q: I ran INTERSRV.EXE on my Tiger Cub and INTERLNK.EXE on my notebook /desktop. After the transfer of files was completed, I could not use my notebook /desktop to regain control of the Tiger Cub.

A: After file transfer is done hit ALT-F4 to exit INTERSRV.EXE.

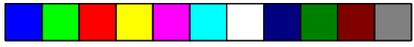


Appendix



Limited Warranty





D

Appendix D



Tiger Cub Limited Warranty



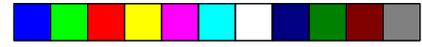
ITOX, Inc. warrants to the end user of this product that the product will be in good working condition and free from defects in materials and workmanship for a period of one year from the date of purchase by the original end user . Should the product, in the opinion of ITOX, malfunction during the warranty period, ITOX will at its option, repair or replace the product at no additional charge except as set forth below. Repair and replacement products will be furnished on an exchange basis, be either reconditioned or new and will be warranted for either the remainder of the original end user warranty period or 30 days, which ever is longer. All replaced parts and products will become the property of ITOX. This limited warranty does not include service to repair damage to the product resulting from accident, disaster, misuse, abuse, neglect, or non-ITOX authorized alterations, modifications, and/or repairs. Products requiring service under this limited warranty must be returned according to ITOX's Return Material Authorization (RMA) policy. ITOX shall make the final determination as to the existence and cause of any alleged defect.



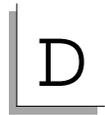
This limited warranty applies to hardware products only. This warranty is in lieu of any other warranty, expressed or implied. ITOX makes no other warranties, expressed or implied, including any warranty of fitness for a particular purpose or of merchantability. In no event shall ITOX be liable to the buyer or end-user for direct, indirect, special, or consequential damages such as loss of profits or business opportunities, and in no event, shall ITOX's liability exceed the original purchase price. This warranty gives you specific legal rights; you may also have other rights which may vary from state to state.

Purchasers requesting service under this limited warranty must contact the ITOX Customer Service Department at (800) 375-8842 or (732) 390-2815 to request a Return Material Authorization (RMA) number and provide the following information:

1. Item(s) to be returned
2. Serial number of each item
3. Invoice date, invoice number and reference number for each item
4. Detailed description of the technical failure



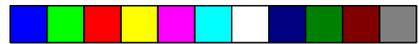
Limited Warranty

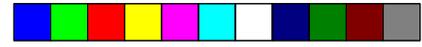


Upon confirmation of the above information, ITOX will issue a RMA number and appropriate shipping instructions. The item(s) and proof of purchase date (a copy of the invoice) must be shipped to ITOX freight prepaid. ITOX will return the repaired/replaced item by prepaid ground freight.

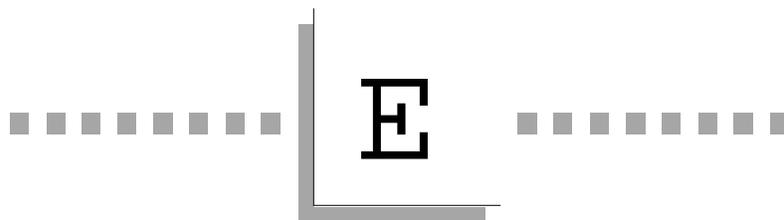
Check the ITOX website <http://www.itox.com> for additional warranty information and updates. This limited warranty is valid only within the United States. ITOX is not responsible for costs incurred due to shipping, insurance, customs or duties. International customers should contact ITOX for warranty information concerning their locality.





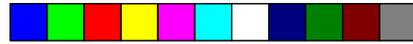


Appendix



Year 2000 Compliance





Appendix E



Year 2000 Compliance

The Tiger Cub supports dates beyond December 31, 1999 and is Year 2000 Compliant. Year 2000 compliance has been verified through use of the YMARK2000 test program developed by NSTL/National Software Testing Laboratories.



Document No. : SA-ML-002
Rev. 1

Printed in Taiwan