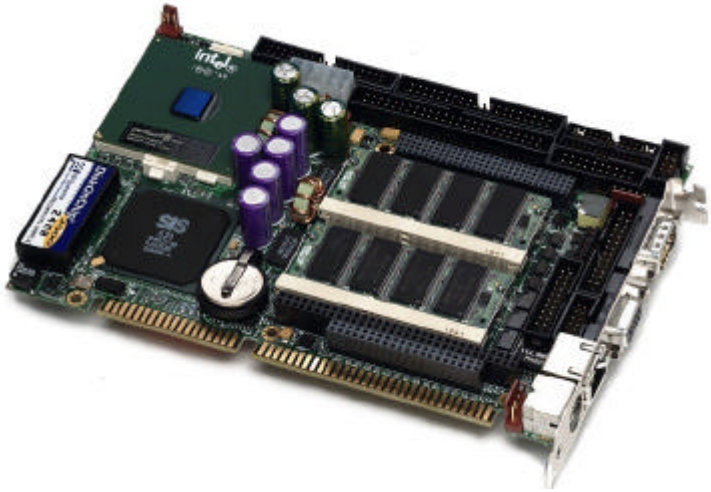
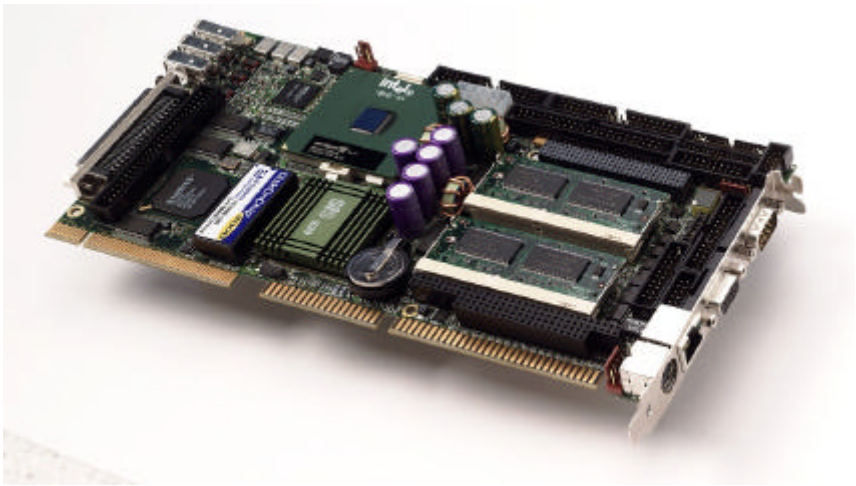
# User's Software Manual

# 786LCD/S, 786LCD/MG, 786LCD/3.5", 786LCD/ST

## Boards





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## Document revision history.

| Revision | Date | By | Comment |
|---|---|---|---|
| 1.0 | 1. Aug. 2000 | PJA | Initial release. |
| 1.1 | 12. Jan. 2001 | PJA | Manual updated. |
| 1.2 | 20. Feb. 2001 | PJA | Manual updated. |
| 1.3 | 22. Aug. 2002 | JSN | Manual updated. 786LCD/ST info added. |
| 1.4 | 14. Nov. 2002 | JSN | Manual updated. Driver installation corrections. |

# Table of contents

# 1. Introduction

This manual describes the software configuration of the 786LCD/S, 786LCD/ST, 786LCD/MG, and 786LCD/3.5” boards made by KONTRON Technology A/S.

These boards are based on the SIS630(ST) Chipset supporting the Pentium Celeron and Pentium-III Processors.

Use of this manual implies a basic knowledge of PC-AT hard- and software. This manual is focused on describing the 786LCD Board’s special features and is not intended to be a standard PC-AT textbook.

The software manual consists of two main sections:

- BIOS configuration. Which describe the configuration of the basic operation environment of the board. Examples of such configurations are Harddisk identification, Peripheral port configuration and additional features provided by Kontron Technology A/S.
- Driver installation for Windows 98, NT 4.0, Windows 2000, Windows XP and WINCE.net.

For a hardware description of the board (e.g. connector layout and signal definition), refer to the hardware manual.

# 2. BIOS configuration

This section describes the BIOS configuration in the 786 board family.
The BIOS is based on Phoenix PicoBIOS v. 4.0 which is extended with additional configuration items in order to support the extra features which are provided on this board.
The setup is divided in a hierarchy based on menu selections. This organisation provides a good overview of the configurable options of the board.
For each setup screen a configuration table showing possible settings is shown. Settings shown in **Bold** font is the default setting.

## 2.1 Entry to the BIOS setup

The BIOS setup may be entered in two ways:

- On user request by pressing <F2> or <Del>during or after the memory check
- In case of incorrect configuration values. The user may in this case continue by pressing <F1> or enter the setup by pressing <F2>.

The configuration is described in the following sections in a structure reflecting the hierarchy in the menus/screens.

## 2.2 Configuration screen overview

```
                              PhoenixBIOS Setup Utility
 Main     INSIDE Utilities     Advanced     Security     Power     Boot     Exit
                                                                Item Specific Help
   System Time:               [13:00:17]
   System Date:               [12/11/1998]

   Legacy Diskette A:         [1.44/1.25 MB  3½"]
   Legacy Diskette B:         [Disabled]

   Setup FSB/DRAM speed       [100/100]
   Local Bus IDE Adapter:     [Both]
?  Primary Master             [None]
?  Primary Slave              [None]
?  Secondary Master           [None]
?  Secondary Slave            [None]

?  Boot Options
?  Keyboard Features

   System Memory              640 KB
   Extended Memory            48128 KB

F1   Help    ??  Select Item    -/+    Change Values        F9   Setup Defaults
Esc  Exit    ??  Select Menu    Enter  Select ? Sub-Menu    F10  Save and Exit
```

## The Menu Bar

The Menu Bar at the top of the window lists these selections :

| | |
|---|---|
| **Main** | Use this menu for basic system configuration. |
| **Inside Utilities** | Use this menu for configuration of special features implemented by Kontron. |
| **Advanced** | Use this menu to set the Advanced Features available on your system's chipset. |
| **Security** | Use this menu to set User and Supervisor Passwords and the Backup and Virus- Check reminders. |
| **Power** | Use this menu to configure Power-Management Features. |
| **Boot** | Use this menu to set the Boot sequence. |
| **Exit** | Exits the current menu. |

Use the left / right < ← > / < → > arrow keys to make a selection.
See the section below, *"Exiting Setup"* for a description on exiting the Main Menu.

## The Legend Bar

Use the keys listed in the legend bar on the bottom to make your selections or exit the current menu. The chart on the following page describes the legend keys and their alternates :

| **Key** | **Function** |
|---|---|
| **<F1> or <Alt- H>** | General Help window (See below). |
| **<Esc>** | Exit this menu. |
| **< ¬ > or < ® > arrow keys** | Select a different menu. |
| **< - > or < ¯ > arrow keys** | Move cursor up and down. |
| **<Tab> or <Shift- Tab>** | Cycle cursor up and down. |
| **<Home> or <End>** | Move cursor to top or bottom of window. |
| **<PgUp> or <PgDn>** | Move cursor to next or previous page. |
| **<F5> or <->** | Select the Previous Value for the field. |
| **<F6> or <+> or <Space>** | Select the Next Value for the field. |
| **<F9>** | Load the Default Configuration values for this menu. |
| **<F10>** | Load the Previous Configuration values for this menu. |
| **<Enter>** | Execute Command or Select Submenu. |
| **<Alt-R>** | Refresh screen. |

**To select an item**, use the arrow keys to move the cursor to the field you want. Then use the plus- and- minus value keys to select a value for that field.
The Save Values command in the Exit Menu saves the values currently displayed in all the menus.
**To display a sub menu**, use the arrow keys to move the cursor to the sub menu you want. Then press **<Enter>**.
A pointer "**?**" marks all sub menus.

## The Field Help Window

The help window on the right side of each menu displays the help text for the currently selected field. It updates as you move the cursor to each field.

## The General Help Window

Pressing **<F1>** or **<Alt- H>** on any menu brings up the General Help window that describes the legend keys and their alternates:

The scroll bar on the right of any window indicates that there is more than one page of information in the window. Use **<PgUp>** and **<PgDn>** to display all the pages. Pressing **<Home>** and **<End>** displays the first and last page. Pressing **<Enter>** displays each page and then exits the window. Press **<Esc>** to exit the current window.

## 2.3 Main section

```
                              PhoenixBIOS Setup Utility
 Main     INSIDE Utilities     Advanced     Security     Power     Boot     Exit
                                                                  Item Specific Help
   System Time:              [13:00:17]
   System Date:              [12/11/1998]

   Legacy Diskette A:        [1.44/1.25 MB  3½"]
   Legacy Diskette B:        [Disabled]

   Setup FSB/DRAM speed      [100/100]
   Local Bus IDE Adapter:    [Both]
?  Primary Master            [None]
?  Primary Slave             [None]
?  Secondary Master          [None]
?  Secondary Slave           [None]

?  Boot Options
?  Keyboard Features


   System Memory             640 KB
   Extended Memory           48128 KB

F1   Help    ??  Select Item    -/+    Change Values        F9   Setup Defaults
Esc  Exit    ??  Select Menu    Enter  Select ? Sub-Menu    F10  Save and Exit
```

### Main Menu Selections

You can make the following selections on the Main Menu itself.
Use the sub menus for other selections.

| Feature | Options | Description |
|---|---|---|
| System Time | HH:MM:SS | Set the system time. |
| System Date | MM/DD/YYYY | Set the system date. |
| Legacy Diskette A:<br>Legacy Diskette B: | Disabled<br>360 Kb, 5 ¼"<br>1.2 MB, 5 ¼"<br>720 kB, 3 ½"<br>**1.44/ 1.25 MB, 3 ½"**<br>2.88 MB, 3 ½"<br>Not installed | Select the type of floppy- disk drive installed in your system. |
| Setup the FSB/DRAM Speed | **66/66**<br>66/100<br>100/100<br>133/100<br>133/133 | Select the Frontside Bus Speed / SDRAM Speed (FSB/SDRAM in MHz). After setting the desired speed, save and exit. At next boot the new setting will take effect.<br>Check that your CPU and SDRAM support the speed before applying the setting.<br>Displayed settings depend on board type. |
| Local Bus IDE Adapter | Disabled,<br>Primary,<br>Secondary,<br>**Both**. | Enables the integrated local bus IDE adapter. |

| | | |
|---|---|---|
| Primary Master,<br>Primary Slave,<br>Secondary Master,<br>Secondary Slave** | Sub-menu | Setup parameters for specific adapters. |
| Boot Options | Sub-menu | Contain different boot options. |
| Keyboard Features | Sub-menu | Setup concerning the keyboard. |
| System Memory | N/A | Displays amount of conventional memory detected during bootup. |
| Extended Memory | N/A | Displays the amount of extended memory detected during bootup. |

** **The Secondary Slave is Disabled as default, must be set as Auto to auto detect device attached.**

### 2.3.1 Harddisk configuration

You can set the boot sequence of the bootable drives by selecting Boot Sequence on the Main Menu or opening the Boot Menu.

## Masters and Slaves

The **Master** and **Slave** settings on the Main Menu control these types of devices :

- Hard- disk drives
- CD- ROM drives

*Phoenix* BIOS 4.04 supports up to two **IDE disk adapters**, called **primary** and **secondary** adapters. Each adapter supports one **master drive** and one optional **slave drive** in these possible combinations :

- **1 Master**
- **1 Master, 1 Slave**
- **2 Masters**
- **2 Masters, 1 Slave**
- **2 Masters, 2 Slaves**

On the 786LCD boards the primary IDE channel is offered through the IDE1 connector and supports one master and one slave drive. The secondary IDE channel is offered through the IDE2 connector and supports one master and one slave with no Compact flash inserted. If a Compact Flash is inserted in the backside slot the secondary channel master drive will be unavailable on the IDE2. It is not possible to detect a Slave device if no Master devices are attached. It is not possible to use a CDROM drive set as Master device.

When you enter Setup, the Main Menu displays the results of **Autotyping–** each drive provides information about its own size and other characteristics– and how they are arranged as Masters or Slaves on your machine.

**Note**: Do not attempt to change these settings unless you have an installed drive that does not autotype properly (such as an older hard- disk drive that does not support autotyping).

If you need to change your drive settings, use one of the Master or Slave sub- menu as explained in the following. Selecting one of the Master or Slave sub- menus on the Main Menu displays a menu like this:

```
                        PhoenixBIOS Setup Utility
 Main
          Primary Master  [Quantum LPS210A-(PM)]          Item Specific Help

   Type:                          [Auto]
                  CHS Format
   Cylinders:                     [ 16383]
   Heads:                         [    16]
   Sectors:                       [63]
   Maximum Capacity:              8455MB
                  LBA Format
   Total Sectors:                 33683328
   Maximum Capacity:              17246MB

   Multi-Sector Transfers:        [16 Sector]
   LBA Mode Control:              [Enabled]
   32 Bit I/O:                    [Disabled]
   Transfer Mode:                 [Fast PIO4]
   Ultra DMA Mode                 [Mode 4]

?  Controller Features

F1   Help    ??  Select Item    -/+    Change Values        F9   Setup Defaults
Esc  Exit    ??  Select Menu    Enter  Select ? Sub-Menu    F10  Save and Exit
```

Use the legend keys listed on the bottom to make your selections and exit to the Main Menu.
Use the chart on the following page to configure the hard disk drive with Advanced Hard Disk Features:

| Feature | Options | Description |
|---|---|---|
| Type | None<br>ATAPI Removable<br>IDE Removable<br>CD- ROM<br>User<br>**Auto** | None = Autotyping is not able to supply the drive type or end user has selected Disabling any drive that may be installed.<br>IDE Removable =Removable read-and-write media (e.g. IDE Zip drive).<br>ATAPI Removable = Read-and-write media (e.g., LS120,USB Floppy, USB Zip).<br>CD- ROM = CD-ROM drive.<br>User = You supply the hard- disk drive information in the following fields.<br>Auto = Autotyping, the drive itself supplies the information. |
| Cylinders | 1 to 65,536 | Number of cylinders. |
| Heads | 1 to 16 | Numbers of read/ write heads. |
| Sectors / Track | 1 to 63 | Number of sectors per track. |
| Multi- Sector Transfers | Disabled<br>2 sectors<br>4 sectors<br>8 sectors<br>16 sectors | Any selection except Disabled determines the number of sectors transferred per block for multiple sector transfers. |
| LBA Mode Control | Disabled<br>Enabled | Enabling LBA causes Logical Block Addressing to be used in place of Cylinders, Heads, and Sectors. |

| | | |
|---|---|---|
| 32- Bit I / O | Enabled<br>Disabled | Enables 32- bit communication between CPU and IDE card. Requires PCI or local bus. |
| Transfer Mode | Standard<br>Fast PIO 1<br>Fast PIO 2<br>Fast PIO 3<br>Fast PIO 4<br>FPIO 3 / DMA 1<br>FPIO 4 / DMA 2 | Selects the method for transferring the data between the hard disk and system memory. The Setup menu only lists those options supported by the drive and platform. |
| Ultra DMA Mode | Disabled<br>Mode 0<br>Mode 1<br>Mode 2<br>Mode 3<br>Mode 4<br>Mode 5 | Selects the Ultra DMA mode used for moving data to/from the drive. Autotype the drive to select the optimum transfer mode. Mode 4 supports ATA-66.<br>**Note : To use UDMA Mode 2, 3, 4 and 5 with a device, the harddisk cable used MUST be UDMA66/100 cable (80 conductor cable).** |

**WARNING : Incorrect settings can cause your system to malfunction.**

### 2.3.2 Boot Options

Selecting "Boot Options" on the Main Menu displays the Boot Options menu :

```
                        PhoenixBIOS Setup Utility
 Main
-------------------------------------------------------------------------------
          Boot Options                    |  Item Specific Help
-------------------------------------------------------------------------------
                                          |
  Summary screen:           [Disabled]    |
  Keyboard check:           [Disabled]    |
  Time and Date Check       [Enabled]     |
  Floppy Check              [Disabled]    |
  Extension Verification    [Enabled]     |
  Silent AUX speaker        [Disabled]    |
  QuickBoot Mode:           [Enabled]     |
                                          |
                                          |
                                          |
                                          |
                                          |
                                          |
                                          |
                                          |
                                          |
                                          |
-------------------------------------------------------------------------------
F1   Help   ??  Select Item    -/+    Change Values        F9   Setup Defaults
Esc  Exit   ??  Select Menu    Enter  Select ? Sub-Menu    F10  Save and Exit
```

Use the legend keys to make your selections and exit to the Main Menu.

Use the following chart to select your boot options:

| Feature | Options | Description |
|---|---|---|
| Summary screen | Enabled<br>**Disabled** | Displays system summary screen during bootup. |
| Keyboard Check | Enabled<br>**Disabled** | Allow the system to skip keyboard test, allows for boot without a keyboard attached. |
| Time and Date check | **Enabled**<br>Disabled | Will test if current date is prior to BIOS compile date and in that case display a warning during boot. |
| Floppy Check | Enabled<br>**Disabled** | Seeks diskette drives during boot-up. Disabling speed boot time. |
| Extension Verification | **Enabled**<br>Disabled | BIOS extensions on external Add-on boards are checked. |
| Silent AUX Speaker | Enabled<br>**Disabled** | Enable or Disable Beep during boot-up in external speakers. |
| QuickBoot Mode | **Enabled**<br>Disabled | Allows the system to skip certain tests while booting. |

### 2.3.3 Keyboard configuration

## Keyboard Features

Selecting "Keyboard Features" on the Main Menu displays the following menu :

```
                              PhoenixBIOS Setup Utility
 Main
┌──────────────────────────────────────────────────────┬──────────────────────┐
│                   Keyboard Features                  │   Item Specific Help │
│                                                      │                      │
│  Numlock:                      [Auto]                │                      │
│  Keyboard auto-repeat rate:    [30/sec]              │                      │
│  Keyboard auto-repeat delay:   [1/2 sec]             │                      │
│                                                      │                      │
│                                                      │                      │
│                                                      │                      │
│                                                      │                      │
│                                                      │                      │
│                                                      │                      │
│                                                      │                      │
│                                                      │                      │
└──────────────────────────────────────────────────────┴──────────────────────┘
F1   Help   ??  Select Item    -/+    Change Values        F9   Setup Defaults
Esc  Exit   ??  Select Menu    Enter  Select ? Sub-Menu    F10  Save and Exit
```

Use the legend keys to make your selections and exit to the Main Menu.

Use the following chart to configure the keyboard features:

| Feature | Options | Description |
|---|---|---|
| Numlock | **Auto**<br>On<br>Off | On or Off turns NumLock on or off at bootup. Auto turns NumLock on if it finds a numeric keypad. |
| Keyboard auto- repeat rate | **30/ sec**<br>26.7/ sec<br>21.8/ sec<br>18.5/ sec<br>13.3/ sec<br>10/ sec<br>6/ sec<br>2/ sec | Sets the number of times a second to repeat a keystroke when you hold the key down. |
| Keyboard auto-repeat delay | ¼ sec<br>**½ sec**<br>¾ sec<br>1 sec | Sets the delay time after the key is held down before it begins to repeat the keystroke. |

## 2.4 Inside section

Selecting “Inside Utilities” on the Main menu displays the following menu :

```
                        PhoenixBIOS Setup Utility
 Main     INSIDE Utilities     Advanced     Security     Power     Boot     Exit
                                                          Item Specific Help
? Version Info
? Hardware Monitor
? Voltage Monitor
? Display Setup

  Secure CMOS                 [Disabled]

  M-System Window             [Enabled]
  Onboard SCSI                [Enabled]
  Onb Network BIOS extension  [Disabled]

  Watchdog Timer / Base       [Disabled]

  Requested Core Voltage      1.60V

F1  Help   ??  Select Item   -/+   Change Values      F9   Setup Defaults
Esc Exit   ??  Select Menu   Enter Select ? Sub-Menu  F10  Save and Exit
```

Use the legend keys to make your selections and exit to the Main Menu.
Use the following chart to configure the Inside Utilities features:

| Feature | Options | Description |
|---|---|---|
| Version Info | Information | Contains HW, logic, SW version numbers and OUI Ethernet address. |
| Hardware Monitor | See sub-menu below | |
| Voltage Monitor | See sub-menu below | |
| Display Setup | See sub-menu below | |
| Secure CMOS: | **Disabled**<br>Enabled<br>Update | Disabled, use normal CMOS.<br>Enabled, use Flashcopy of CMOS if battery backup fails.<br>Update, store current CMOS settings in Flash. |
| M-System Window | Disabled<br>**Enabled** | If Enabled the Memory Area 000E0000-000E3FFFh is used as window for M-System Flash Disk. |
| Onboard SCSI | **Enabled**<br>Disabled | Enable/ Disable SCSI BIOS Extension. This have effect on 786LCD/MG boards only.<br>**Note: When enabled, SCSI BIOS settings cannot be changed.** |

| | | |
|---|---|---|
| Onboard Network BIOS Extension | Enabled<br>**Disabled** | Enable / Disable onboard network BIOS extension.<br>For 786LCD/S, /MG and /3.5" a RPL netboot BIOS extension is included.<br>For 786LCD/ST a PXE netboot BIOS extension in included. |
| Watchdog Timer / Base | **Disabled**<br>Seconds<br>Minutes<br>Hours | Software Watchdog utility. An interval of 5-255 Seconds, Minutes or Hours can be setup as timeout. The Watchdog is serviced by writing a timeout value to I/O address 804Ah. |
| Timeout value | 5-255 | Initial boot timeout value. |
| Requested Core Voltage | Information | Value determined from CPU. |

### 2.4.1 Supervision Setup

Selecting "Hardware Monitor" on the Inside Utilities menu displays the following menu :

```
                        PhoenixBIOS Setup Utility
            INSIDE Utilities
                    Hardware Monitor                    |  Item Specific Help
                                                        |
  Temp CPU    =                 35 °C / 95 °F           |
  CPU Temperature limit =       70 °C                   |
  CPU Overheat action =         none                    |
                                                        |
  Temp 2 & 3 Sensor Type        [Diode]                 |
  Temp.2 =                      0 °C / 32 °F            |
  Temp.3 =                      0 °C / 32 °F            |
                                                        |
  Fan 1 speed =                 5678 RPM                |
  Fan Low limit =               4000 RPM                |
  Fan Low action =              None                    |
  Fan 2 speed =                 No Function             |
                                                        |
  CPU Clock throttling          [12.5%]                 |
F1   Help   ??  Select Item    -/+    Change Values      F9   Setup Defaults
Esc  Exit   ??  Select Menu    Enter  Select ? Sub-Menu  F10  Save and Exit
```

Use the legend keys to make your selections and exit to the Inside Menu.

Use the following chart to configure the Supervision features:

| Feature | Options | Description |
|---|---|---|
| CPU Temperature limit | 0-127°C | Set Maximum allowed temperature. |
| CPU Overheat action | **None**<br>GPIO5<br>Speaker<br>CPU Slowdown | When maximum temperature is reached either GPIO5 (Feature connector) will toggle or speaker will be beep if selected. If CPU Slowdown is selected the CPU clock is throttled down as set below.<br>Violations must not be present when enabling this feature in the BIOS window. |
| Temp. 2&3 Sensor Type | **Diode**<br>Resistor | Adjust according to external sensor type. |
| Fan Low limit | 3000 RPM<br>**4000 RPM**<br>5000 RPM<br>6000 RPM | Set Minimum allowed Fan speed (onboard) |
| Fan Low speed action | **None**<br>GPIO7<br>Speaker<br>CPU Slowdown | When minimum fanspeed is reached either GPIO7 (Feature connector) will toggle or speaker will be beep if selected. If CPU Slowdown is selected the CPU clock is throttled down as set below.<br>Violations must not be present when enabling this feature in the BIOS window. |
| CPU Clock throttling | 12.5%<br>37.5%<br>62.5%<br>87.5% | Enabling CPU clock throttling above will insert stop-clocks in the CPU clock. This way the CPU heat dissipation / efficiency will be reduced proportional with the percentage selected. |

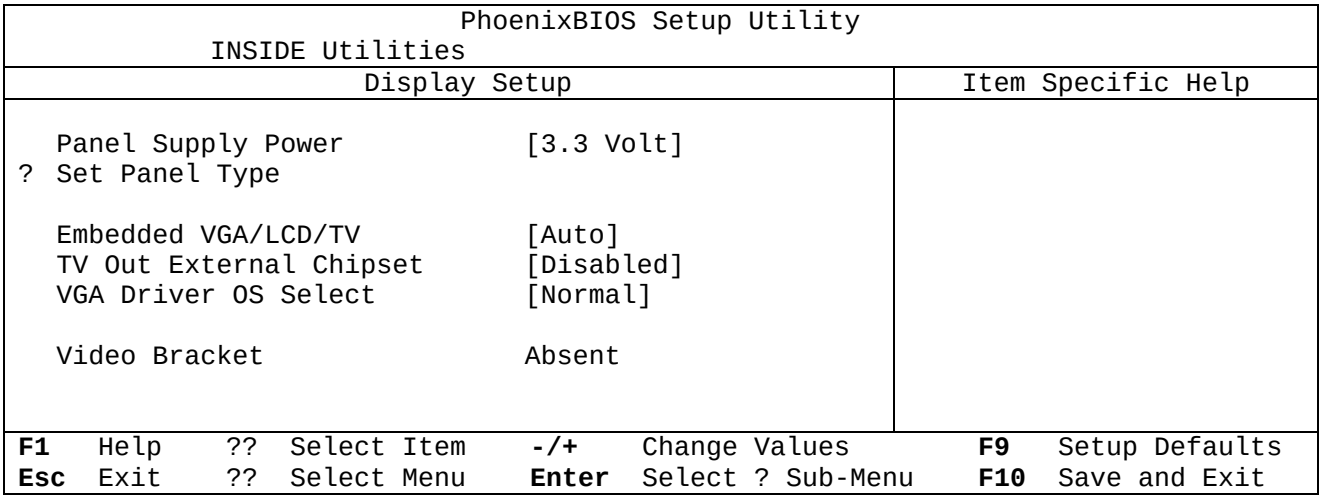
**Voltage Monitor**

Selecting “Voltage Monitor” on the Inside Utilities menu displays the following menu :

```
                        PhoenixBIOS Setup Utility
            INSIDE Utilities
                    Voltage Monitor                    |  Item Specific Help
                                                       |
  Vin0(Vcore) =                1.58 V                  |
  Vin1(VCC2.5)   =             2.48 V                  |
  Vin2(VCC3)  =                3.39 V                  |
  Vin5(V3vsb) =                3.39 V                  |
  Vin3(V+5)   =                5.08 V                  |
  Vin7(V5vsb) =                5.08 V                  |
  Vin4(V+12)  =                11.07 V                 |
  Vin6(V-12)  =                -11.89V                 |
  Vbat        =                2.94 V                  |
F1  Help   ??  Select Item   -/+   Change Values    F9  Setup Defaults
Esc Exit   ??  Select Menu   Enter Select ? Sub-Menu F10 Save and Exit
```

### 2.4.2 Display Setup

Selecting “Display Setup” on the Inside Utilities menu displays the following menu :




Use the legend keys to make your selections and exit to the Inside Menu.
Use the following chart to configure the Display Setup features:

| Feature | Options | Description |
|---|---|---|
| Panel Supply Power | **3.3 Volt**<br>5 Volt | Select supply voltage for the connected LCD Panel.<br>Signal levels will always be 3.3 Volt. |
| Set Panel Type | Display block<br>See Display Selection block next page. | Press Enter to enter Panel Type Setup<br>Select Panel Type according to Panel technology and resolution. |
| Embedded VGA/LCD/TV | **CRT1 Only**<br>CRT1+LCD<br>LCD<br>CRT1+CRT2<br>CRT2<br>CRT1+A-Video<br>A-Video<br>CRT1+S-Video<br>S-Video | Display Mode type selection. |
| TV Out External Chipset | **Disabled**<br>SiS301<br>LVDS<br>LVDS+Trumpion | TV-Out External Chipset Select |
| VGA Driver OS Select | **Normal**<br>Japanese | |

**Display Selection block for Panel Selection**.
Selections can be made with the keys ↑, ↓, Tab and Enter. When the 3 criteria are selected: Resolution, Technology and Manufacturer, possible display Partnumbers or “Non” will be displayed in the Code field to the right. Select the exact code according to the display.

```
                          Display module V4.00

     Resolution            Manufacturer                Code (*= unverified)

     320 X 240             (Standard)             >    LQ12S41
     640 X 480             CPT                         LQ121S1DG11
  => 800 X 600             Fujitsu                     LQ12S56
     1024 X 768            Hitachi                     LQ12S41 pl
     1280 X 1024           Hosiden
     Custom                Hyundai
                           IBM
     Technology            LG.Philips
                           NEC
   >  TFT Color            Panasonic
      Plasma               Pioneer
                           Samsung
                           Sanyo
                         > Sharp
                           Torisan
                           Toshiba
                           Unipac

                          Display driver : 01h
```

# 2.5 Advanced section

## The Advanced Menu

Selecting "Advanced" from menu bar on the Main Menu displays a menu like this:

```
                          PhoenixBIOS Setup Utility
Main     INSIDE Utilities     Advanced     Security     Power     Boot     Exit
                                                                Item Specific Help
                        Setup Warning
  Setting items on this menu to incorrect values
  may cause your system to malfunction.

  USB Host Controller             [Disabled]
  Default Primary Video Adapter   [PCI]
?  ISA Configuration
?  PCI Configuration
?  Advanced Chipset Control
?  I/O Device Configuration

  PS/2 Mouse                      [Auto Detect]

  Secured Setup Configurations    [No]
  Large Disk Access Mode:         [DOS]
  Installed O/S:                  [Other]
  Reset Configuration Data:       [No]

F1   Help    ??  Select Item    -/+    Change Values        F9   Setup Defaults
Esc  Exit    ??  Select Menu    Enter  Select ? Sub-Menu    F10  Save and Exit
```

Use the legend keys to make your selections and exit to the Main Menu. Use the following to make your selection.

| Feature | Options | Description |
|---|---|---|
| USB Host Controller | Enabled<br>**Disabled** | Enables or Disables the USB hardware and frees the resources. |
| USB BIOS Legacy support | Enabled<br>**Disabled** | Enables or Disables the USB Legacy support for USB Host controller 0 (USB Channel 0, 1, and 2). |
| Default Primary Video Adapter | **PCI**<br>AGP | Select Primary Video Adapter: AGP is onboard SIS630, PCI is external graphics adapter |
| PS/2 Mouse | Disabled<br>Enabled<br>**Auto Detect** | Disabled free up IRQ12.<br>Enabled forces the PS/2 mouse port to enabled regardless if a mouse is present.<br>Auto Detect will enable the PS/2 mouse only if present.<br>This setting must be set to Enabled to use Suspend To Disk. |
| Secured Setup Configurations | Yes<br>**No** | Yes prevents the Operating System from overriding selections you have made in Setup. |

| | | |
|---|---|---|
| Large Disk Access Mode | **DOS**<br>Other | Select DOS if you have DOS.<br>Select Other if you have another operating system such as UNIX. A large disk is one that has more than 1024 cylinders, more than 16 heads, or more than 63 tracks per sector. |
| Installed O/S | **Other**<br>Win95 | |
| Reset Configuration Data | Yes<br>**No** | Yes erases all configuration data in ESCD, which stores the configuration settings for non-PnP plug-in devices. Select Yes when required to restore the manufacturer's defaults. |

### 2.5.1 ISA Configuration

**ISA Configuration**

Selecting "ISA Configuration" from the Advanced menu displays a menu like this :

```
                        PhoenixBIOS Setup Utility
                             Advanced
ISA Configuration                                  Item Specific Help

  AT bus clock frequency        [PCICLK/4]
  8-bit I/O recovery time       [1 Sysclk]
  16-bit I/O recovery time      [1 Sysclk]
  ISA Refresh Cycles            [Disabled]

  IRQ 3                         [Available]
  IRQ 4                         [Available]
  IRQ 5                         [Available]
  IRQ 7                         [Available]
  IRQ 9                         [Available]
  IRQ 10                        [Available]
  IRQ 11                        [Available]
  IRQ 12                        [Available]

  Memory Hole 15-16Mb           [Disabled]
?  Memory Cache

F1   Help   ??  Select Item   -/+   Change Values        F9   Setup Defaults
Esc  Exit   ??  Select Menu   Enter Select ? Sub-Menu   F10  Save and Exit
```

Use the legend keys to make your selections and exit to the Main Menu. Use the following to make your selection.

| Feature | Options | Description |
|---|---|---|
| AT bus Clock frequency | **PCICLK/4**<br>PCICLK/3 | Setup the AT bus frequency SYSCLK. The PCICLK is 33MHz on the board. |
| 8-bit I/O recovery time | 3.5 Sysclks<br>0 Sysclk<br>**1 Sysclk**<br>2 Sysclk<br>3 Sysclk<br>4 Sysclk<br>5 Sysclk<br>6 Sysclk<br>7 Sysclk | Setup the 8-bit I/O recovery time. |
| 16-bit I/O recovery time | 3.5 Sysclks<br>4 Sysclks<br>**1 Sysclks**<br>2 Sysclks<br>3 Sysclks | Setup the 16-bit I/O recovery time. |
| ISA Refresh Cycles | Enabled<br>**Disabled** | Enable / Disable ISA Refresh Cycles |
| IRQ 3, 4, 5, 7, 9, 10, 11, 12 | **Available**<br>Reserved | This menu allows the user to reserve IRQs, if non-PnP ISA cards requires that interrupt. |
| Memory Hole 15-16Mb | **Enabled**<br>Disabled | Enable or Disable Memory hole between 15-16 Mb in Memory area. |
| Memory Cache | Sub-menu | Allows enabling or disabling of Memory cache and shadow. |

### 2.5.2 Memory cache

Enabling cache saves time for the CPU by holding data most recently accessed in regular memory (SDRAM) in a special storage area of static RAM (SRAM), which is faster. Before accessing regular memory, the CPU first accesses the cache. If it does not find the data it is looking for there, it accesses regular memory.

| Feature | Options | Description |
|---|---|---|
| Memory Cache | **Enabled**<br>Disabled | Sets the state of the memory cache. |
| Cache Base 0-512k | Uncached<br>Write Through<br>Write Protect<br>**Write Back** | Controls caching of 512k Base memory. |
| Cache Base 512k-640k | Uncached<br>Write Through<br>Write Protect<br>**Write Back** | Controls caching of 512k-640k Base memory. |
| Cache Extended Memory area | Uncached<br>Write Through<br>Write Protect<br>**Write Back** | Controls caching of system memory above one megabyte. |

| | | |
|---|---|---|
| Cache A000 – AFFF | **Disabled**<br>USWC Caching<br>Write Through<br>Write Protect<br>Write Back | |
| Cache B000 – BFFF | **Disabled**<br>USWC Caching<br>Write Through<br>Write Protect<br>Write Back | |
| Cache C800 – CBFF | **Disabled**<br>Write Through<br>Write Protect<br>Write Back | Settings controls **caching** of individual segments of memory usually reserved for shadowing system or option ROMs.<br><br>Disabled – This block is not cached.<br><br>USWC Caching – Uncached speculative Write Combined.<br><br>Write Through – Writes are cached and sent to main memory at once.<br><br>Write Protect – Writes are ignored.<br><br>Write Back – Writes are cached, but is not sent to main memory until necessary.<br><br>Enabling Shadow will shadow BIOS extensions to memory for faster execution. |
| Shadow C800 – CBFF | Enabled<br>**Disabled** | |
| Cache CC00 – CFFF | **Disabled**<br>Write Through<br>Write Protect<br>Write Back | |
| Shadow CC00 – CFFF | Enabled<br>**Disabled** | |
| Cache D000 – D3FF | **Disabled**<br>Write Through<br>Write Protect<br>Write Back | |
| Shadow D000 – D3FF | Enabled<br>**Disabled** | |
| Cache D400 – D7FF | **Disabled**<br>Write Through<br>Write Protect<br>Write Back | |
| Shadow D400 – D7FF | Enabled<br>**Disabled** | |
| Cache D800 – DBFF | **Disabled**<br>Write Through<br>Write Protect<br>Write Back | |
| Shadow D800 – DBFF | Enabled<br>**Disabled** | |
| Cache DC00 – DFFF | **Disabled**<br>Write Through<br>Write Protect<br>Write Back | |
| Shadow DC00 – DFFF | Enabled<br>**Disabled** | |

**WARNING:** Incorrect settings can cause your system to malfunction. To correct mistakes, return to Setup and restore the Setup Defaults with <F9>.

### 2.5.3 PCI Configuration

**PCI Configuration**

Selecting "PCI Configuration" from the Advanced menu displays a menu like this :

```
                    PhoenixBIOS Setup Utility
                       Advanced
PCI Configuration                          Item Specific Help

? PCI Device, Slot #1
? PCI Device, Slot #2
? PCI Device, Slot #3
? PCI Device, Slot #4

F1  Help   ??  Select Item   -/+   Change Values      F9   Setup Defaults
Esc Exit   ??  Select Menu   Enter Select ? Sub-Menu  F10  Save and Exit
```

For each Slot number a Sub-menu is displayed.

```
                    PhoenixBIOS Setup Utility
                       Advanced
PCI Device, Slot #2                        Item Specific Help

  Option ROM Scan              [Enabled]
  Enable Master                [Enabled]
  Latency Timer                [0040h]

F1  Help   ??  Select Item   -/+   Change Values      F9   Setup Defaults
Esc Exit   ??  Select Menu   Enter Select ? Sub-Menu  F10  Save and Exit
```

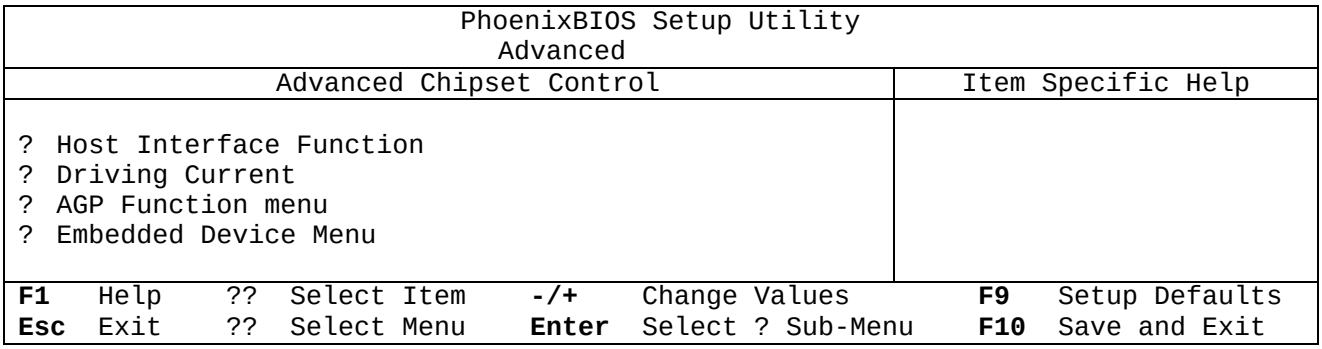
Use the legend keys to make your selections and exit to the Main Menu. Use the following to make your selection.

| Feature | Options | Description |
|---|---|---|
| Option ROM Scan | **Enabled**<br>Disabled | Set to Enabled to scan for ROM extensions in the given PCI slot. |
| Enable Master | **Enabled**<br>Disabled | Set to Enabled to enable PCI Bus Mastering in the given slot. |
| Latency Timer | Default<br>0020h<br>**0040h**<br>0060h<br>0080h<br>00A0h<br>00C0h<br>00E0h | Set the required Bus Acquisition Latency time. |

### 2.5.4 Advanced Chipset Control

**Advanced Chipset Control**

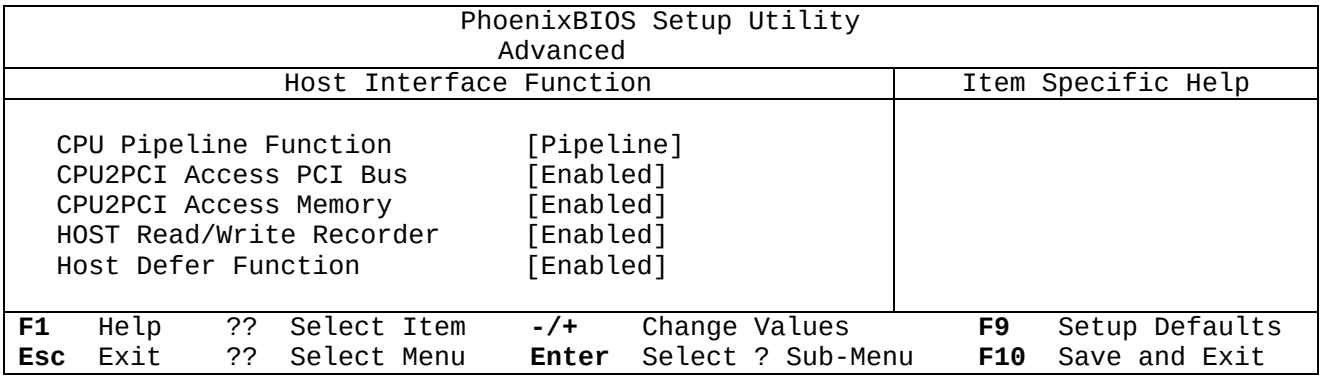
Selecting "Advanced Chipset Control" from the Advanced menu displays a menu like this :




The chipset is a computer chip that acts as an interface between the CPU and the system's hardware. You can use this menu to optimize the performance of your computer. Use the legend keys to make your selections and exit to the Main Menu.

#### 2.5.4.1 Host Interface Function

Selecting the Host Interface Function displays the Menu below:

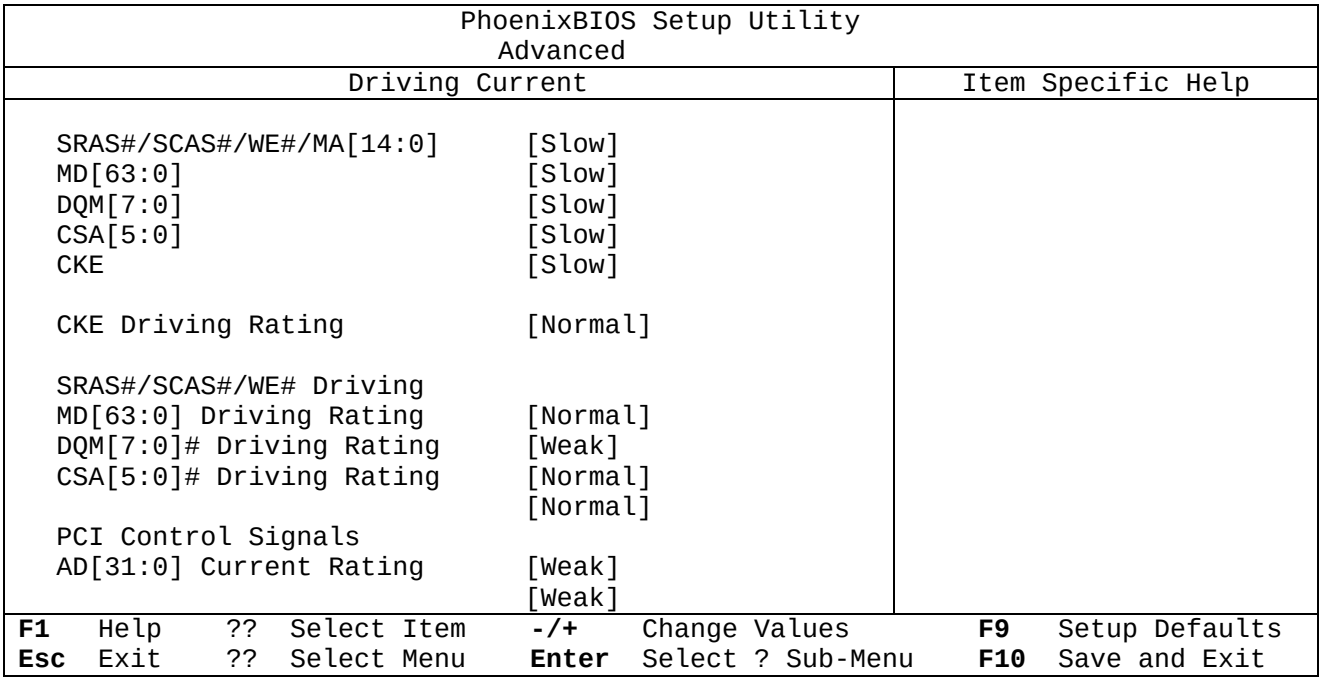



Use the legend keys to make your selections and exit to the Main Menu. Use the following to make your selection.

| Feature | Options | Description |
|---|---|---|
| CPU Pipeline Function | Non-Pipeline<br>**Pipeline** | |
| CPU2PCI Access PCI Bus | **Enabled**<br>Disabled | |
| CPU2PCI Access Memory | **Enabled**<br>Disabled | |
| HOST Read/Write Recorder | **Enabled**<br>Disabled | |
| Host Defer Function | **Enabled**<br>Disabled | |

### 2.5.4.2 Driving Current

Selecting the Driving Current displays the Menu below:




Use the legend keys to make your selections and exit to the Main Menu. Use the following to make your selection.

| Feature | Options | Description |
|---|---|---|
| SRAS#/SCAS#/WE#/MA[14:0] | Slow<br>Fast | System Memory.<br>SDRAM Pre-driver Slew Rate setting. |
| MD[63:0] | Slow<br>Fast | System Memory.<br>SDRAM Pre-driver Slew Rate setting |
| DQM[7:0] | Slow<br>Fast | System Memory.<br>SDRAM Pre-driver Slew Rate setting |
| CSA[5:0] | Slow<br>Fast | System Memory.<br>SDRAM Pre-driver Slew Rate setting |
| CKE | Slow<br>Fast | System Memory.<br>SDRAM Pre-driver Slew Rate setting |
| CKE Driving Rating | Weak<br>Normal<br>Strong<br>Strongest | System Memory.<br>Driving Rating |
| SRAS#/SCAS#/WE# Driving | Weak<br>Normal<br>Strong<br>Strongest | System Memory.<br>Driving Rating |
| MD[63:0] Driving Rating | Weak<br>Normal<br>Strong<br>Strongest | System Memory.<br>Driving Rating |
| DQM[7:0]# Driving Rating | Weak<br>Normal<br>Strong<br>Strongest | System Memory.<br>Driving Rating |

| | | |
|---|---|---|
| CSA[5:0]# Driving Rating | Weak<br>Normal<br>Strong<br>Strongest | System Memory.<br>Driving Rating |
| PCI Control Signals | Weak<br>Strong | Controls the buffer strength of FRAME#, IRDY#, TRDY#, DEVSEL#, STOP#, PAR, C/BE#[3:0], GNT[2:0] for onboard, PC104+ or PICMG devices. |
| AD[31:0] Current Rating | Weak<br>Strong | Controls the buffer strength of AD[31:0] for onboard, PC104+ or PICMG devices. |

**WARNING : Incorrect settings can cause your system to malfunction. Do not change these setting unless advised to.**

### 2.5.4.3 AGP Function Menu

Selecting the AGP Function Menu displays the Menu below:

```
                    PhoenixBIOS Setup Utility
                      Advanced
DRAM Function Control                          Item Specific Help

  Embedded Share Memory          [4MB]
  Share SDRAM Memory Size        [4MB]

  MDA Existence Control          [Not Exist]

F1  Help   ??  Select Item   -/+   Change Values      F9   Setup Defaults
Esc Exit   ??  Select Menu   Enter Select ? Sub-Menu  F10  Save and Exit
```

Use the legend keys to make your selections and exit to the Main Menu. Use the following to make your selection.

| Feature | Options | Description |
|---|---|---|
| Embedded Share Memory | 2M<br>**4M**<br>8MB<br>16MB<br>32MB<br>64MB<br>Disabled | Setup the amount of System Memory reserved for Video memory (UMA). Amount of video memory selected should always be less than System Memory. To disable onboard VGA controller set this setting to Disabled. |
| MDA Existence Control | **Not Exist**<br>Exist | |

### 2.5.4.4 Embedded Device Menu

Selecting the Embedded Device Menu displays the Menu below:

| PhoenixBIOS Setup Utility<br>Advanced | | | | | | | |
|---|---|---|---|---|---|---|---|
| Embedded Device Menu | | | | | | Item Specific Help | |
| Embedded Audio Device [Enabled]<br>Embedded Ethernet Device [Enabled]<br>Embedded Modem Device [Disabled] | | | | | | | |
| **F1** | Help | ?? | Select Item | **-/+** | Change Values | **F9** | Setup Defaults |
| **Esc** | Exit | ?? | Select Menu | **Enter** | Select ? Sub-Menu | **F10** | Save and Exit |

Use the legend keys to make your selections and exit to the Main Menu. Use the following to make your selection.

| Feature | Options | Description |
|---|---|---|
| Embedded Audio Device | **Enabled**<br>Disabled | SiS630 Embedded Audio Device<br>(SiS 7018 AC97). |
| Embedded Ethernet Device | **Enabled**<br>Disabled | SiS630 Embedded Ethernet Device<br>(SiS 900 10/ 100M Ethernet) |
| Embedded Modem Device | Enabled<br>**Disabled** | SiS630 Embedded Modem Device<br>(SiS 7013 S/W Modem)<br>Requires External AC97 Codec. |

### 2.5.5 I/O device configuration

Most devices on the computer require the exclusive use of **system resources** for operation. These system resources can include Input and Output (I/O) port addresses and Interrupt lines for getting the attention of the CPU.
Allocating these resources to various devices is called **device configuration.**
Your system has a separate on-board I/O chip, select "I/O Device Configuration" on the Advanced Menu to display this menu and specify how you want to configure these I/O Devices.
For 786LCD/3.5" boards Serial port C and D and RS422/485 Modes are not available.

```
                    PhoenixBIOS Setup Utility
                          Advanced
I/O Device Configuration                          Item Specific Help

  Serial port A:                 [Enabled]
    Base I/O address:            [3F8]
    Interrupt:                   [IRQ 4]
  Serial port B:                 [Auto]
    Mode                         [Normal]
  Serial A&B IRQ Sharing         [Enabled]
  Serial port C:                 [Auto]
  Serial port D:                 [Auto]
    Mode                         [Normal]
  Parallel port:                 [Auto]
    Mode:                        [EPP & ECP]
  Floppy disk controller:        [Enabled]
    Base I/O address:            [Primary]
    Floppy Drive Swap            [Disabled]
    IRQ 6 Sharing                [Disabled]
  Game Port                      [Auto]

F1  Help   ??  Select Item   -/+   Change Values      F9   Setup Defaults
Esc Exit   ??  Select Menu   Enter Select ? Sub-Menu  F10  Save and Exit
```

This menu lets you specify how the Input and Output ports are configured :

- Manually by the user.
- Automatically by the BIOS during POST, or by a PnP Operating System (such as Windows 98) after the Operating System boots.

Use the legend keys to make your selections and exit to the Main Menu. Use the following chart to configure the Input / Output settings :

| Feature | Options | Description |
|---|---|---|
| Serial port A: | Disabled<br>Enabled<br>**Auto** | Disabled turn off the port.<br>Enabled requires you to enter the base Input/ Output address and the Interrupt number on the next line.<br>Auto makes the BIOS or OS auto-configure the port. |
| Base I/ O Address | 3F8<br>2F8<br>3E8<br>2E8 | If you select Enabled, choose one of these addresses. |
| Interrupt | IRQ3<br>IRQ4 | If you select Enabled, choose one of these Interrupts. |
| Interface | **RS422**<br>RS485 | This selection will only appear if Jumper row RSSEL is moved to RS422/ RS485 setting.<br>Select Driver Mode |

| | | |
|---|---|---|
| Data Driver Enable | **Disabled**<br>DTR<br>/DTR<br>RTS<br>/RTS<br>Enabled | This selection will only appear if Jumper row RSSEL is moved to RS422/ RS485 setting.<br>Select signal for controlling Data Transceivers. |
| Control Driver Enable | **Disabled**<br>DTR<br>/DTR<br>RTS<br>/RTS<br>Enabled | This selection will only appear if Jumper row RSSEL is moved to RS422/ RS485 setting.<br>Select signal for controlling Control Transceivers. |
| Serial port B: | Disabled<br>Enabled<br>**Auto** | As for Serial port A above. |
| Mode | **Normal**<br>IrDA<br>ASK-IR | Set the Mode for Serial Port B. Support for IrDA |
| Serial port C: | Disabled<br>**Enabled**<br>Auto | Disabled turn off the port.<br>Enabled requires you to enter the base Input/ Output address and the Interrupt number on the next line.<br>Auto makes the BIOS or OS auto-configure the port. |
| Base I/ O Address | 3F8<br>2F8<br>**3E8**<br>2E8 | If you select Enabled, choose one of these addresses. |
| Interrupt | IRQ3<br>**IRQ5** | If you select Enabled, choose one of these Interrupts. |
| Serial port D: | Disabled<br>Enabled<br>**Auto** | As for Serial port C above. Interrupt can be selected as IRQ3, 5 or 11 (786LCD/S, /MG) or IRQ3, 7 (786LCD/ST). |
| Mode: | **Normal**<br>IrDA<br>ASK-IR | Set the Mode for Serial Port D. Support for IrDA |
| Parallel Port: | Disabled<br>Enabled<br>**Auto** | Disabled turn off the port.<br>Enabled requires you to enter the base Input / Output address and the Interrupt number below.<br>Auto makes the BIOS auto-configure the port during POST. |
| Mode | SPP<br>EPP<br>ECP<br>EPP & ECP | Selects Printer Port operation mode. |
| Base I/ O Address | 378<br>278<br>178 | If you select Enabled for the Parallel Port, choose one of these I/ O addresses. |
| Interrupts | IRQ3<br>IRQ7 | If you select Enabled for the Parallel Port, choose one of these interrupt options. |
| DMA Channel | DMA1<br>DMA3 | If you select ECP mode for the Parallel Port, choose one of these DMA channel options. |

| | | |
|---|---|---|
| Floppy Disk Controller | Disabled<br>**Enabled** | Enables the on-board legacy diskette controller. Disabled turn off all legacy diskette drives. |
| Floppy Drive Swap | **Disabled**<br>Enabled | Determines whether to swap the Floppy A & B drives. |
| IRQ 6 Sharing | Enabled<br>**Disabled** | Enables IRQ6 sharing |

**Warning :** If you choose the same I/ O address or Interrupt for more than one port, the menu displays an asterisk (*) at the conflicting settings. It also displays this message at the bottom of the menu :

*** Indicates a DMA, Interrupt, I/ O, or memory resource conflict with another device.**

Resolve the conflict by selecting other settings for one of the devices.

### 2.5.6 Serial port setup.

It is important to notice that not all combinations of the BIOS setup will work in Windows environments refer to the list below for details. This is a problem of the O/S.

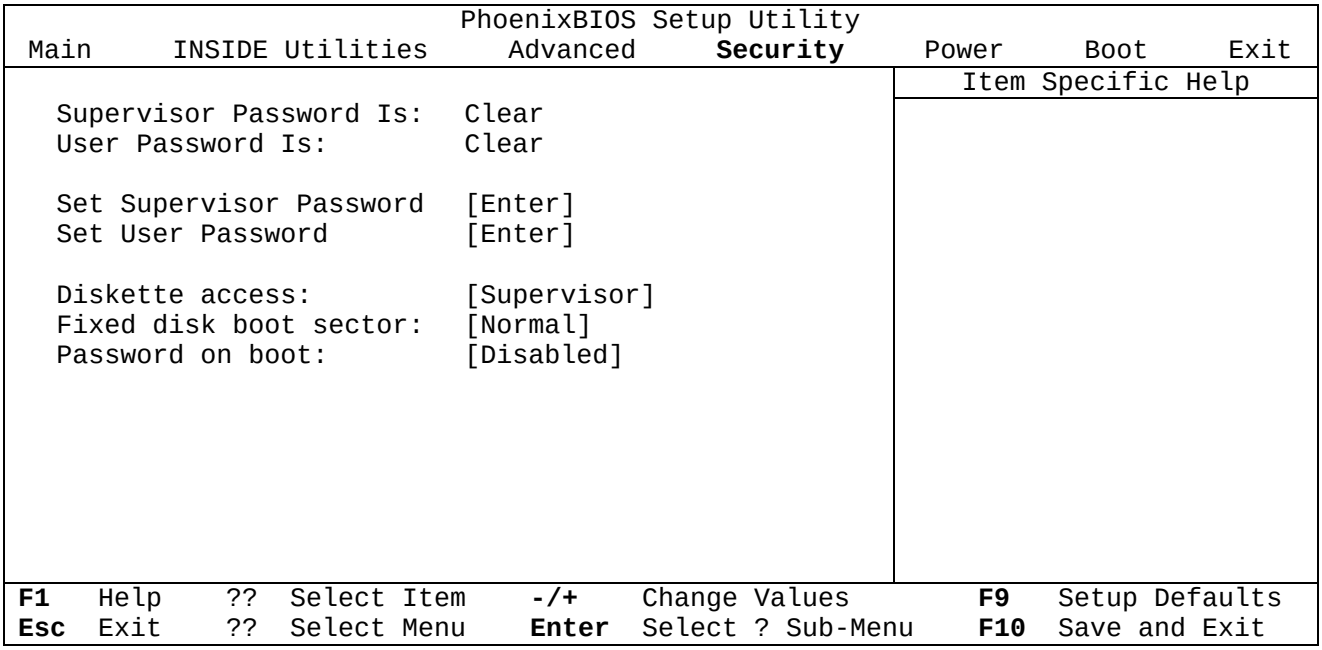
| BIOS Setting Serial Port A | BIOS Setting Serial Port B | BIOS Setting Serial Port C | BIOS Setting Serial Port D | WIN98 | WINNT | WIN2000 | WINXP |
|---|---|---|---|---|---|---|---|
| AUTO | AUTO | AUTO | AUTO | X | X | | |
| AUTO | AUTO | 3E8 / 5 | AUTO | | | X | |
| 3F8 / 4 | 2F8 / 3 | 3E8 / 5 | 2E8 / 3 | | | X | |
| 3F8 / 4 | 2F8 / 3 | 3E8 / 5 | 2E8 / 5 | | X | | |
| 3F8 / 4 | 2F8 / 3 | 3E8 / 5 | 2E8 / 11 | | X | | X |
| 3F8 / 4 | 2F8 / 4 | 3E8 / 3 | 2E8 / 3 | X | X | | |
| AUTO | AUTO | AUTO | Disabled | X | X | X | X |

Notice that when enabling Serial Port C and D in the BIOS the physical location of the Ports B and C are swapped.

Also note that to enable use of shared interrupts in WinNT and Win2000 the utility AllowShare.exe (available on Driver CD) must be executed in administrator mode.

## 2.6 Security section

Selecting "Security" from the Main Menu displays a menu like this :



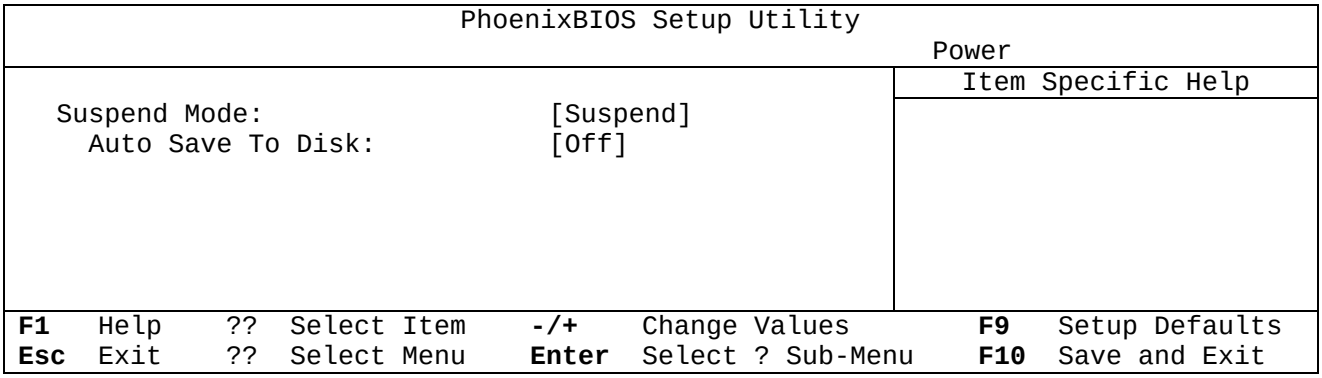

Use the legend keys to make your selections and exit to the Main Menu.
Enabling "Supervisor Password" requires a password for entering Setup. The passwords are not case sensitive.

Use the following chart to configure the system- security and anti- virus options:

| Feature | Options | Description |
|---|---|---|
| Set Supervisor Password | Up to seven alphanumeric characters | Pressing <Enter> displays dialog box for entering the supervisor password. This password gives full access to SETUP menus. |
| Set User Password | Up to seven alphanumeric characters | Pressing <Enter> displays the dialog box for entering the user password. This password gives restricted access to SETUP menus. Requires prior setting of Supervisor password. |
| Diskette Access | **Supervisor**<br>User | Supervisor restricts use of floppy drives to supervisor. Requires setting the Supervisor password. |
| Fixed disk boot sector | **Normal**<br>Write Protected. | Write protected helps prevent viruses. |
| Password on boot | Enabled<br>**Disabled**. | Enabled requires a password on boot. Requires prior setting of the Supervisor password.<br>If supervisor password is set and this option disabled, BIOS assumes user is booting. |

## 2.7 Power section

Selecting "Power" from the menu bar displays a menu like this :




Use this menu to specify your settings for Power Management.
A power- management system reduces the amount of energy used after specified periods of inactivity.
Further setup will be available in Windows Power Management Setup in the Control Panel.

Use the legend keys to make your selections and exit to the Main Menu. Use the following chart in making your selections:

| Feature | Options | Description |
|---|---|---|
| Suspend Mode: | **Suspend**<br>Save To Disk | Select *Suspend* to support Suspend To RAM under Windows 98. In this mode Memory is placed into a low power self refresh state and the remaining devices are powered down (ACPI State S3).<br>Select *Save To Disk* to support Save To Disk. In this mode the OS will save the context of all memory to the harddisk and power down (ACPI State S4). |

# 2.8 Boot section

## Boot Menu

After you turn on your computer, it will attempt to load the operating system (such as Windows 95) from the drive of your choice. If it cannot find the operating system on that drive, it will attempt to load it from one or more other drives in the order specified in the Boot Menu.

**Note:** Specifying any drive as a boot drive on the Boot Menu requires the installation of an operating system on that drive.

Selecting "Boot" from the Menu Bar displays the Boot menu, which looks like this:

```
                        PhoenixBIOS Setup Utility
                                                                  Boot
                                                          Item Specific Help
  -Removable Devices
      Legacy Floppy Drives
  -Hard Drive
      Seagate ST317221A-(PM)
      Bootable Add-in Cards
  ATAPI CD-ROM Drive
  Network Boot

F1  Help    ??  Select Item    -/+    Change Values        F9   Setup Defaults
Esc Exit    ??  Select Menu    Enter  Select ? Sub-Menu    F10  Save and Exit
```

You can arrange the **boot order list** at the top of this menu to specify the order of the devices from which the BIOS will attempt to boot the Operating System. To move a device, first select it with the up- or- down arrows, and move it up or down using the <+> and <-> keys.
The boot selection menu can also be displayed by pressing ESC during boot.

**Note:** If you have more than one hard drive, or more than one removable drive, use the sub menus to specify which one to use on the boot order list, as described in the following.

## Multiple Devices

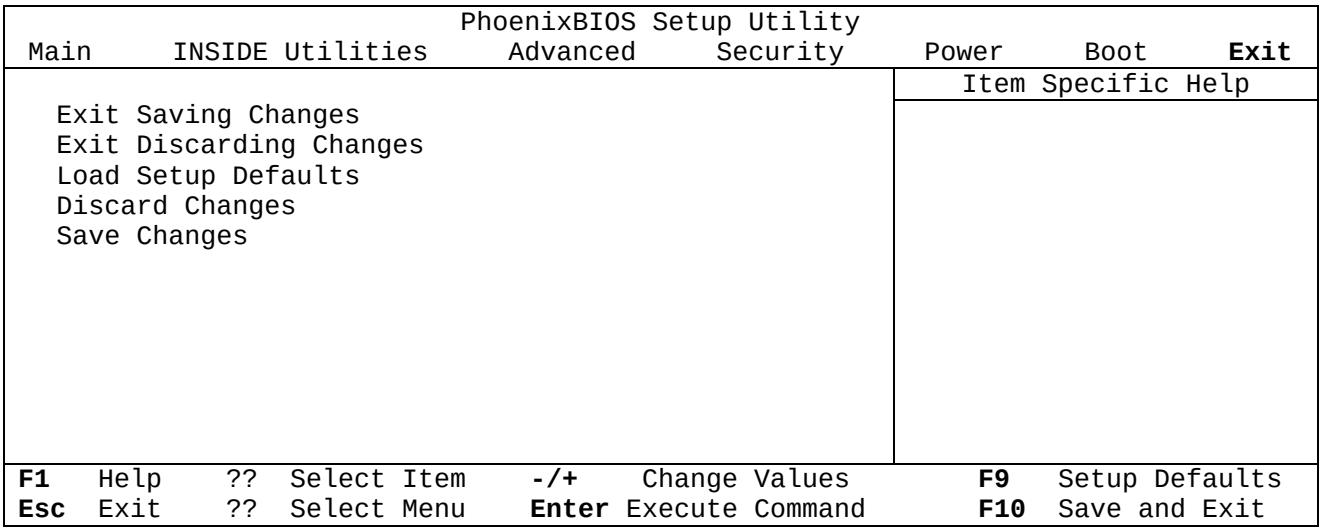
If you have more than one hard drive or removable device, Enter expands the view of devices with an “+” so the different detected drives appears.
Select the hard drive to use for booting by using the up- and- down arrows. Then move it to the top of this list using the <+> key.

## Network Boot

The Network ROM BIOS extension is enabled in the Inside Utilities menu: “onb Network BIOS extension”. The Memory Map location for this extension depends on the board, refer to the Memory Map section in the Hardware Manual.
For 786LCD/S, /MG and /3.5” boards a RPL netboot extension is included. For 786LCD/ST boards a PXE netboot extension is included.

# 2.9 Exit section

Selecting "Exit" from the menu bar displays this menu :




The following sections describe each of the options on this menu.

## Exit Saving Changes

After making your selections on the Setup menus, always select either "Exit Saving Changes" or "Save Changes". Both procedures store the selections displayed in the menus in **CMOS** (battery-backed CMOS RAM) a special section of memory that stays on after you turn your system off. The next time you boot your computer, the BIOS configure your system according to the Setup selections stored in CMOS.

If you attempt to exit without saving, the program asks if you want to save before exiting.

During bootup, *Phoenix* BIOS attempts to load the values saved in CMOS. If those values cause the system boot to fail, reboot and press **<F2>** to enter Setup. In Setup, you can get the Default Values (as described below) or try to change the selections that caused the boot to fail.

## Exit Discarding Changes

Use this option to exit Setup without storing in CMOS any new selections you may have made. The selections previously in effect remain in effect.

## Load Setup Defaults

To display the default values for all the Setup menus, select "Load Setup Default" from the Main Menu.

If, during bootup, the BIOS program detects a problem in the integrity of values stored in CMOS, it displays this message :

```
System CMOS checksum bad - run SETUP
Press <F1> to resume, <F2> to Setup
```

The CMOS values have been corrupted or modified incorrectly, perhaps by an application program that changes data stored in CMOS.
Press **<F1>** to resume the boot or **<F2>** to run Setup with the ROM default values already loaded into the menus. You can make other changes before saving the values to CMOS.

## Discard Changes

If, during a Setup Session, you change your mind about changes you have made and have not yet saved the values to CMOS, you can restore the values you previously saved to CMOS.
Selecting Discard Changes on the Exit menu updates all the selections.

## Save Changes

Save Changes saves all the selections without exiting Setup. You can return to the other menus if you want to review and change your selections.

## 2.10 RPL Netboot server setup (786LCD/S, /MG and /3.5")

Install the NT server 3.5, 3.51, 4.0 RPL server:

---

1. Install the Remoteboot Service on the NT Server.

   1.1 Choose Control Panel, Network, Add Software, Remoteboot Service,
   put NT server CD into CD-ROM drive, to install Remoteboot Service.

   [Note]
   To install RPL server, you must install DLC and NetBEUI protocols
   in your NT server first.

2. Install MS-DOS Files for Remoteboot workstation.

   Copy all the MS-DOS 6.22 files to
   ----> \\systemroot\RPL\RPLFILES\BINFILES\DOS622

```
copy c:\dos\*.* \\systemroot\RPL\RPLFILES\BINFILES\DOS622
attrib -s -h c:\io.sys
attrib -s -h c:\msdos.sys
copy c:\io.sys \\systemroot\RPL\RPLFILES\BINFILES\DOS622
copy c:\msdos.sys \\systemroot\RPL\RPLFILES\BINFILES\DOS622
attrib +s +h c:\io.sys
attrib +s +h c:\msdos.sys
```

3. Create Remoteboot configuration for new adapter

   3.1 Copy the MS-DOS device driver(NDIS2) for the Ethernet adapter to the
   \\systemroot\RPL\BBLOCK\NDIS directory.
   for example: SIS900.DOS NDIS2 driver for the PCI adapter.

```
copy Bootrom\NDIS2drv\*.* \\systemroot\RPL\BBLOCK\NDIS
```

   3.2 Create the directory \\systemroot\RPL\BBLOCK\NETBEUI\SIS900.
   Copy DOSBB.CNF, PROTOCOL.INI files from directory
   \\systemroot\RPL\BBLOCK\NETBEUI\NE2000.
   Modify DOSBB.CNF and PROTOCOL.INI.
   The templates for DOSBB.CNF and PROTOCOL.INI are stored at the
   \BOOTROM directory in this driver diskette.

   Sample for DOSBB.CNF:

```
; DOS on SiS900 PCI Fast Ethernet
BASE D0H
RPL BBLOCK\RPLBOOT.SYS
LDR BBLOCK\RPLSTART.COM ~
DAT BBLOCK\NETBEUI\SIS900\PROTOCOL.INI
DRV BBLOCK\RPLDISK.SYS ~ ~ ~
EXE BBLOCK\RPLPRO1.COM ~ 2 ~
EXE BBLOCK\I13.COM ~ ~ ~
EXE BBLOCK\RPLBIND2.EXE ~ ~
EXE BBLOCK\PROTMAN.EXE ~ ~
EXE BBLOCK\RPLBIND1.EXE ~ ~
```

```
;DRV BBLOCK\IPXNDIS.DOS ~ ~ ~
;DRV BBLOCK\TCPDRV.DOS /I:C:\LANMAN.DOS ~ ~
EXE BBLOCK\NETBEUI\NETBEUI.EXE ~ 10 ~
DRV BBLOCK\NDIS\SIS900.DOS ~ ~ ~
DRV BBLOCK\PROTMAN.DOS /I:C:\LANMAN.DOS ~ M
```

Sample for PROTOCOL.INI:

```
[protman]
  drivername = protman$
  dynamic = yes
  priority = netbeui

[netbeui_xif]
  drivername = netbeui$
  bindings = sis900_nif
  names = 6
  ncbs = 12
  packets = 20
  pipeline = 10
  sessions = 6
  stacksize = 512
  lanabase = 0

[xnsnb_xif]
  drivername = xnsnb$
  bindings = SIS900_nif
  load = xnsnb[cbr]
  lanabase = 1

[xnstp_xif]
  drivername = xnstp$
  bindings = sis900_nif
  load = xnstp[ub]
  lanabase = 1

[tcpip_xif]
  drivername = TCPIP$
  disabledhcp = (TCPIP_NO_DHCP)
  ipaddress0 = (TCPIP_ADDRESS)
  subnetmask0 = (TCPIP_SUBMASK)
  defaultgateway0 = (TCPIP_GATEWAY)
  tcpsegmentsize = 1450
  tcpwindowsize = 1450
  nbsessions = 6
  load = tcptsr[c],tinyrfc[c],emsbfr[cr]
  unload = "unloadt /notsr[dc]"
  bindings = sis900_nif
  lanabase = 1

[ipx_xif]
  drivername = ipx$
  load = ipxmark[u],ipx[u]
```

```
  unload = ipxrel[c]
  bindings = sis900_nif
  lanabase = 1

[msdlc_xif]
  drivername = msdlc$
  bindings = sis900_nif
  load = msdlc[ub]
  unload = msdlc[u]

[sis900_nif]
  drivername = SIS900$
```

3.3 Use RPLCMD utility to add a bblock record for new adapter.

Under MS-DOS Prompt, type <1>. NET START RemoteBoot
<2>. RPLCMD

3.4 You should follow the direction displayed on the screen.

```
;;; Add a new boot Block:
        Adapter Boot Config Profile Service Vendor Wksta [Quite] B
        Add Del Enum:A
        BootName=DOSX
       ; VendorName=00E006     ;for SiS900
  VendorName=002642     ;for SiS630E
        BbcFile=BBLOCK\NETBEUI\SIS900\DOSBB.CNF
       ; BootCommet=DOS SiS900 Fast Ethernet   ;SiS900
        BootComment=DOS SiS630E Onboard Lan    ;SiS630E
  WindowsSize=0

;;; Add a new config:
        Adapter Boot Config Profile Service Vendor Wksta [Quite] C
        Add Del Enum:A
       ; ConfigName=DOS622X      ;SiS900
  ConfigName=DOS622XX      ;SiS630E
        BootName=DOSX
        DirName=DOS
        DirName2=DOS622
        FitShared=FITS\DOS622.FIT
        FitPersonal=FITS\DOS622P.FIT
       ; ConfigComment=DOS 6.22 SiS900 Fast Ethernet ;SiS900
  ConfigComment=DOS SiS630E Onboard Lan       ;SiS630E
        DirName3=
        DirName4=

;;; Add new vendor ID:
        Adapter Boot Config Profile Service Vendor Wksta [Quite] V
        Add Del Enum: A
       ; VendorName=00E006         ;SiS900
  VendorName=002642          ;SiS630E
       ; VendorComment=SiS900 Fast Ethernet       ;SiS900
  VendorComment=SiS630E Onboard Lan         ;SiS630E
```

[Note] VendorName is OUI Number -- the first six digit of the MAC address on your card.
e.g. 1)SiS900: MAC address is 00E006000001
VendorName is 00E006
2)SiS630E:MAC address is 002642060008
VendorName is 002642

3.5 Shutdown Windows NT server, and reboot it.

4. Login to NT server as Administrator.

5. Install BootROM on remote client and power on remote client.

6. Start RemoteBoot service and Remoteboot manager.

6.1 Under MS-DOS Prompt, type "NET START Remoteboot"

6.2 In Network administrator, Remoteboot Manager
1.Choose Remoteboot, New Profile, to create an SiS900 Profile Name or SiS630E Profile Name.
2.Add new workstation for this Ethernet adapter and choose SiS900 or SiS630E Profile file.

[Note]
If the Node ID of workstation does not match with your Profile file, you can use "Convert Adapters" in Remoteboot menu of Remoteboot Manager to configure or cteate the Profile file.

## 2.11 PXE Netboot server setup (786LCD/ST)

How to test PXE ?

1.Environment Request:
-You should install NT server(4.0 SP3 or later)
-Install TCP/IP and Assign a static IP for server
-Ensure the GUEST account is enabled
-Get PDK from Intel web site.
http://developer.intel.com/ial/WfM/tools/pxepdk20/index.htm

2.Setup DHCP Server:
-Add DHCP service on NETWORK PANEL
-Start->Programs->Administrative Tools->DHCP Manager to create a range of scope

3.If PXE service and DHCP server installed on the same machine, you MUST add this tag to your server.
-Choose DHCP Options->Default to setting

4.Choose NEW PXE Option Tag

5.Assign Option 60 to Global

6.Create the boot files: APITEST.1 and DOSUNDI.1
-Create two 1.44 DOS format boot disk.
-Disk1=>Label APITEST
Copy HIMEM.SYS, RAMDRIVE.SYS, MORE.COM, and FC.COM into disk1.
-Disk2=>Label DOSUNDI
Copy MORE.COM into disk2
-Change to \\PDK\system\images\x86pc\undi\APITest and run "mktest.bat"

[Note]When system is installing, it will point the directory of NT CD,
you should point to "root". If you point to "\i386", system will
CANNOT find files.

-Change to \\PDK\system\images\x86pc\undi\DOSUNDI and run "mkdos.bat"

7.Config proxy DHCP Server

8.Add Bootserver List

9.Add type 3 and 65535

PS. For the details of PXE setting in NT server,
please refer to the PDK and SDK of PXE in Intel web site.

## 2.12 BIOS Post Beep Codes

When a recoverable error occurs during POST (Power On Self-Test), PhoenixBIOS displays an error message describing the problem. PhoenixBIOS also issues a number of beep tones depending of the error.
The beep codes are composed of 1 to 4 groups of beeps. In the table below are listed a number of beep codes and the corrective action.
Example: 1-3-1-1 means 1 beep pause 3 beeps pause 1 beep pause 1 beep.

| If it beeps… | Then… |
|---|---|
| 1-2-2-3 | Clear the CMOS memory or BIOS corrupted. |
| 1-3-1-1 or<br>1-3-4-1 or<br>1-3-4-3 | Re-insert or replace the SDRAM module. |
| 1-3-1-3 | Try a different keyboard. |
| 1-2 | Video configuration failed. Card not installed or faulty.<br>Check external option ROM devices. |

# 3. Driver Installation and SW Utilities.

For this manual, installation descriptions for Windows98, NT4.0, Win2K, WinXP and CE are included. For Linux Redhat 7.3 and WinXP Embedded support please refer to Kontron Manual and Driver CD or locate the BSPs on the Web.

## 3.1 786LCD Video Installation

The following steps will install the SiS630 Chipset VGA driver on the 786LCD family.

### 3.1.1 Windows 98

*Video installation:*

1. Insert the CD and enter the directory : Graphics / 9x.
2. Run the Setup.exe file to start the installation.
3. This installation will automatically install with a few questions to be answered.
4. Reboot when requested.

### 3.1.2 Windows 2000 & Windows XP

*Video installation:*

1. Insert the CD and enter the directory : Graphics / Win2k&XP
2. Run the Setup.exe file to start the installation.
3. This installation will automatically install with a few questions to be answered.
4. Reboot when requested.

### 3.1.3 Windows NT40

*Video Installation:*

1. Insert the CD in the CDROM drive.
2. Enter the Control Panel and double click the Display Icon.
3. Select the Settings tab and click the Display type.
4. Choose Change to select the driver on the CD.
5. Select Have disk and point to the directory : Graphics_1_08 / WinNT40.
6. Say Yes to install a third party driver.
7. Reboot when requested.

### 3.1.4 SIS AGP Driver installation (Win2K, WinXP, Win98)

1. Insert the CD in the CDROM drive.
2. Run Setup.exe in /Graphics/AGP/ folder, then it will install the "SiS AGP Driver" automatically on your Windows system.

**Note:** To get SIS301 TVOUT to show colors correctly, use the slide bar “Color calibration tool” which can be found in Advanced / TV menu.
Due to Macrovision protection issue (license), the TV-Out function with SIS301 is not supported with the latest graphics drivers. Previous releases (ver. 1.08) of graphics drivers can be used to enable TV-Out, they can be found on the driver CD in folder /Graphics_1_08

### 3.1.5 Installing Plasma support

*Installing Plasma Win98:*

1. Make sure the BIOS is setup to “Custom”, “Plasma” Technology, and that Plasma Manufacturer is selected in the Display Setup in the Inside Section.
2. Make sure no Graphics driver is installed on installation. If a driver is installed this must be un-installed. Reboot as requested.
3. Enter the directory Graphics / Plasma / Win98 directory and run one of the exe files.
4. Reboot.
5. Enter the directory Graphics / Plasma and run the Setup.exe file.
6. Reboot when requested.

*Installing Plasma Win2K & WinXP:*

1. Make sure the BIOS is setup to “Custom”, “Plasma” Technology, and that Plasma Manufacturer is selected in the Display Setup in the Inside Section.
2. Make sure no Graphics driver is installed on installation. If a driver is installed this must be un-installed. Reboot as requested.
3. Enter the directory Graphics / Plasma / Win2K&XP directory and run Setup.exe files.
4. Reboot.

*Installing Plasma WinNT support:*

1. Make sure the BIOS is setup to “Custom”, “Plasma” Technology, and that Plasma Manufacturer is selected in the Display Setup in the Inside Section.
2. Right click on the desktop and select “Update driver”. Select the driver in the directory Graphics / Plasma / WinNT.
3. Say yes to overwrite files if asked.
4. Reboot when requested.

### 3.1.6 Dual Display limitations

Due to operating system / driver limitations dual display with SIS301 video module is not supported in WinNT and in Win2K.
If plasma drivers are used dual display is not supported in any operating system.

## 3.2 Network Installation

The following steps will install the SiS900 network drivers for the 786LCD board family.
The Embedded Ethernet Device must set to Enabled in the Advanced / Embedded Device Menu in the BIOS before running this installation.

### 3.2.1 Windows 98, Windows 2000, Windows XP

*Network installation:*

1. Insert the CD in the CDROM drive.
2. Enter the directory : LAN.
3. Run the Setup.exe file.
5. This installation will automatically install with a few questions to be answered.
4. Reboot when requested.

### 3.2.2 Windows NT40

*Network installation:*

1. Insert the CD in the CDROM drive.
2. Enter the Control Panel and click the Network Icon.
3. Select the Adapters tab.
4. Choose add "Unlisted or updated driver ".
5. Enter the location of the driver on the CD : LAN / NT40.
6. This installation will automatically install with a few questions to be answered.
7. Reboot when requested.

## 3.3 Audio Installation.

The following steps describe the installation of the SiS7018 Audio drivers for the 786LCD board. The Embedded Audio Device must set to Enabled in the Advanced / Embedded Device Menu in the BIOS before running this installation.

### 3.3.1 Windows 98

*Audio installation:*

1. Insert the CD in the CDROM drive.
2. Enter the Audio directory
3. Windows 98 installations should run Setup.exe without any parameters.
4. SETUP.EXE Automatically installs WDM or VxD driver for Windows 95/98 base on the O.S version:
   -WDM driver is installed for Windows 98SE and
   -VxD is installed for Windows 98OEM (first edition, 4.10.1998) and Windows 95.
   To force installing VxD driver for Windows 98SE, please run "SETUP.EXE -vxd" using Windows Start->Run
   This installation will automatically install with a few questions to be answered.
5. Reboot when requested
6. Mute AUX and VIDEO in the Audio control Panel.

### 3.3.2 Windows NT 4.0

*Audio installation:*

1. Insert the CD in the CDROM drive.
2. Run Setup.exe from the Audio directory.
3. This installation will automatically install with a few questions to be answered.
4. Reboot when requested
5. Mute AUX and VIDEO in the Audio control Panel.

### 3.3.3 Windows 2000, Windows XP

*Audio installation:*

1. Insert the CD in the CDROM drive.
2. Run Setup.exe from the Audio directory.
3. This installation will automatically install with a few questions to be answered.
4. Reboot when requested.
5. Click the *Sounds and Multimedia Properties* in the Control Panel.
6. Click the *Audio* tab and select the *Volume* button in the playback section.
7. Mute AUX and VIDEO in the Audio control Panel.

## 3.4 Wake On Lan

The Wake On Lan feature allow 786LCD boards to be started over the LAN network after a Suspend To Disk (Hibernate).
For a freeware application providing Wake On Lan support, AMD's "Magic Packet Utility" can be found at : http://www.amd.com/products/npd/software/pcnet_family/drivers/magicpacket.html

**Win2000 / WinXP:**

To enable the "Wake on LAN" function, go into.

System Properties -> Hardware ->
Device Manager -> Properties on SiS 900 ->
SIS 900 Properties -> Power Management -> Mark both options.

Select "Shut down" in the taskbar and choose "Hibernate" or "Shut down".
By using the "Magic Packet Utility" or equivalent software another client can wake up the 786LCD over the LAN, by using the MAC/OUI address of the board to be waked.

**Win9x:**

Select "Shut down" in the taskbar and choose "Shut down" again depending on the Power Management setup in the Control Panel.
Now use the "Magic Packet Utility" or equivalent Software on another client to wake up the 786LCD over the LAN , by using the MAC/OUI address of the board to be waked.

The MAC/OUI address of the 786LCD board can be found in the Inside Section version info in the BIOS setup.

## 3.5 M-System

Support of M-System in WinNT and Win2K requires M-System driver installed.

*M-System driver installation:*

1) Insert the driver CD and enter the directory : M-System/WinNT
2) Right-Click on the file Trueffs.inf and choose install.
3) This installation will automatically copy files and register driver.
4) Reboot when requested.

# 3.6 KONTRON API Interface

This API was designed to enable users to access board features implemented on the 786LCD Boards family in Windows environment, Win98, WinNT4.0, Win2K and WinXP.

### 3.6.1 Installation

**The API contains the following files**

| | |
|---|---|
| NT Device Driver | Itapi2.sys |
| Win9x Device Driver | Itapi2.vxd |
| Dynamic programming library | Itlcd.dll |
| API function declaration | Itlcd.h |

1. Insert the CD in the CDROM drive.
2. Run Setup.exe from the directory. : API_SW / Monitor
3. This installation will automatically install the api monitor

All other files are platform independent and should be used within a programming project..

**API function descriptions:**

| |
|---|
| **DWORD OpenItlcd(VOID)**<br>This function opens the device driver Itlcd.sys for hardware communication and must be called in order to use any other functions within this API.<br><br>**Return** If the function succeeds, the return value is nonzero. Otherwise the value is zero. |
| **DWORD CloseItlcd(VOID)**<br>This function closes the device driver. After closing the driver no attempt to communicate with the driver will be accepted.<br><br>**Return** If the function succeeds, the return value is nonzero. Otherwise the value is zero. |
| **DWORD ReadMonitor(HWMON *Mon)**<br>This function takes a HWMON structure and fills the structure with valid data. For return structure see Itlcd.h for the individual data types.<br><br>**Return** If the function succeeds, the return value is nonzero. Otherwise the value is zero. |
| **DWORD SetClrGPIO(BOOL SetClr,UCHAR GPIO)**<br>This function set or clears a GPIO pin, located on the feature port. Make sure to set pin direction before calling this function.<br><br>**Return** If the function succeeds, the return value is nonzero. Otherwise the value is zero. |
| **DWORD ReadGPIO(UCHAR GPIO)**<br>This function reads a GPIO pin, located on the feature port. Make sure to set pin direction before calling this function.<br><br>**Return** If the function succeeds, the return value is nonzero. Otherwise the value is zero. |
| **DWORD SetGPIODir(UCHAR GPIO)**<br>This function set the direction of the GPIO pins, located on the feature port. Make sure to call this function before calling ReadGPIO or SetClrGPIO.<br><br>**Return** If the function succeeds, the return value is nonzero. Otherwise the value is zero. |
| **DWORD SetFanSpeed(UCHAR Speed)**<br>This function sets the fan speed in the interval between 0-127 where max. speed is 127. Any attempts to write values above 127 will be ignored.<br>**Return** If the function succeeds, the return value is nonzero. Otherwise the value is zero. |

**DWORD EnableWD(VOID)**
This function enables the watchdog timer. The user must call SetWDTimer and SetWDTimerInterval before calling this function to prevent immediately reboot.

**Return** If the function succeeds, the return value is nonzero. Otherwise the value is zero.

**DWORD DisableWD(VOID)**
This function disables the watchdog timer. Any attempts to modify watchdog timers after calling this function will have no effect.

**Return** If the function succeeds, the return value is nonzero Otherwise the value is zero.

**DWORD SetWDTimer(UCHAR Time)**
This function sets the watchdog timer. An application must service this function and reload the timer to prevent reboot; the number of units is between 0-255.

**Return** If the function succeeds, the return value is nonzero. Otherwise the value is zero.

**DWORD SetWDTimerInterval(UCHAR VAL)**
This function set the watchdog timer interval. The interval is multiplied with the WDTimer value and represents the time-out period. There are four selectable intervals listed in the Itlcd.h file. **4MS 1SEC 1MIN 1HOU**R.

**Return** If the function succeeds, the return value is nonzero. Otherwise the value is zero.

**DWORD SetCPUThrottle(UCHAR DUTY)**
This function set CPU throttle an application can call this function to slow down the CPU speed and save power. The selectable duty cycle intervals are listed in Itlcd.h.

**Return** If the function succeeds, the return value is nonzero Otherwise the value is zero.

**DWORD SetBLKControl(BOOL ON_OFF)**
This function turns on/off the backlight on the LCD display.

**Return** If the function succeeds, the return value is nonzero. Otherwise the value is zero.

**DWORD SetLCDVCCControl(BOOL ON_OFF)**
This function turns on/off the LCDVVC on the LCD display.

**Return** If the function succeeds, the return value is nonzero. Otherwise the value is zero.

**DWORD SetLCDVCC(BOOL VCC5_VCC3)**
This function sets the LCDVVC voltage on the LCD display.

**Return** If the function succeeds, the return value is nonzero. Otherwise the value is zero.

**DWORD SetSerialInterface(UCHAR INTERFACE)**
This function selects the serial interface. The following interfaces are provided: RS232, RS422, and RS485. The values to be used are listed in Itlcd.h.

**Return** If the function succeeds, the return value is nonzero. Otherwise the value is zero.

**DWORD SetSerialInterfaceDataControl(UCHAR PIN)**
This function selects the hardware data flow control used on RS422 and RS485 interfaces.

Selectable values are listed in Itlcd.h.

**Return** If the function succeeds, the return value is nonzero. Otherwise the value is zero.

**DWORD SetSerialInterfaceControl(UCHAR PIN)**
This function selects the hardware control flow control used on RS422 and RS485 interfaces.
Selectable values are listed in Itlcd.h.

**Return** If the function succeeds, the return value is nonzero. Otherwise the value is zero.

**DWORD ReadBoardHeader(PVOID Buffer)**
This function read the Kontron Header Info from the Memory Area. The argument passed to the function must be a pointer to a structure of minimum 8 Bytes. The information returned include Board name, Version of Hardware and Software, and OUI network address.

**Return** If the function succeeds, the return value is nonzero. Otherwise the value is zero.

**DWORD SelectFanTempTacChannel(UCHAR Channel)**

This function selects the hardware Fan/Temp and Tachometer channel default is channel 0.

**Return** If the function succeeds, the return value is nonzero. Otherwise the value is zero.

**DWORD SelectFanTempTacChannelType(UCHAR Type)**

This function selects the hardware sensor type a channel should be selected before calling this function the following sensor types are Diode/Transistor or Resistor.

**Return** If the function succeeds, the return value is nonzero. Otherwise the value is zero.

## 3.7 Windows CE.Net O/S Support

This section gives a brief introduction for installing and using the Kontron Technology 786LCD Boards Support Package for Windows CE.Net. This package can be used to generate Windows CE.Net images to be run on the 786LCD.
The use of the software supplied by Kontron Technology requires that the User has already installed Microsoft Windows CE.Net Platform Builder software on the Development system. Contact Your Microsoft distribution channel to purchase a copy of this.

The 786LCD Board Support Package provided by Kontron Technology will add a 786LCD Driver library to the Microsoft Windows CE.Net Platform Builder software environment. These drivers have been qualified to operate with the 786LCD board and should be added when building CE.Net image to be executed on 786LCD.

Currently most functions on the board have been qualified to operate however please read below for the current WinCE.Net support restriction for the 786LCD.

### 3.7.1 Current 786LCD Windows CE.Net Support:

| | |
|---|---|
| **Graphics** | |
| Direct X | Supported |
| LCD Panels | All Panels supported by BIOS is supported by WinCE:<br>320x200, 320x240, 640x480, 800x600, 848x480, 852x480, 853x480, 1024x768 & 1280x1024x8, Plasma. |
| Dual Display | Not Supported |
| **Communication** | |
| Ethernet | Supported |
| Wake on LAN | Not Supported |
| Serial ports 1+2 | Supported |
| Serial ports 3+4 | Supported |
| Parallel port | Supported |
| Floppy | Supported. |
| USB Channels | Channel 0 supported (USB port 1,4)<br>Channel 1 not supported (USB port 2,3,5) |
| | |
| **Sound** | |
| AC97/98 | Supported |
| DirectSound | Supported |
| | |
| **Other** | |
| M-System | Supported |
| Compact Flash | Supported |
| IDE Channel | |
| Primary | Supported |
| Secondary | Supported |
| IDE CDROM/DVD | Supported |
| Keyboard | Supported |
| PS/2 | Supported |
| | |
| Kontron API including: GPIO, CPU Temp., Fan rotation, Watchdog, CPU Throttle | Supported |
| | |
| Power Management | Not Supported |
| | |

### 3.7.2 786LCD Board Support Package Installation

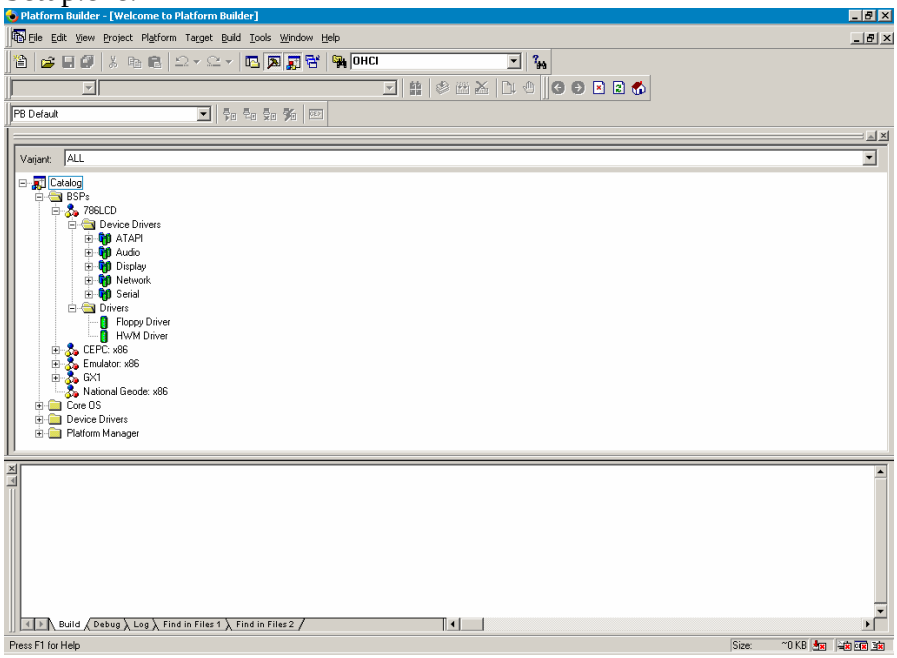
Prior to installation of the Kontron Technology Board Support the Microsoft Windows CE.Net Platform Builder must be installed on the Development platform.

The installation program will install all required files to create a Windows CE.Net platform OS based on KONTRON Technology 786LCD/S board hardware architecture. The setup creates an OAL platform within Windows CE.Net platform builder, and adds a hardware component group to the platform builder catalog tree. The developer can then add the desired components to a specific platform.

**Installation:**

The Setup.exe program file located on the CD must be executed to perform a complete installation. Make sure the Windows CE.Net Platform Builder is installed on your system before running the setup file. Setup will fail the installation if the Platform builder is not correctly installed.

Setup will copy all needed files to the Windows CE.Net Platform directory and will add a directory called 786LCD. This directory contains several source and device driver files, to create a Windows CE.Net OS image based on the 786LCD hardware architecture. Do not modify any of these files. The Setup.exe program also adds a “cec” file to the Platform builder containing information on the hardware components. If the package is already installed on your system the package will be removed and then reinstalled.
For future Board Support Package updates from Kontron Technology including modification to source or device driver files, the latest files can be copied to the directories by re-running the Setup.exe.



### 3.7.3 Installing the WinCE.Net boot loader

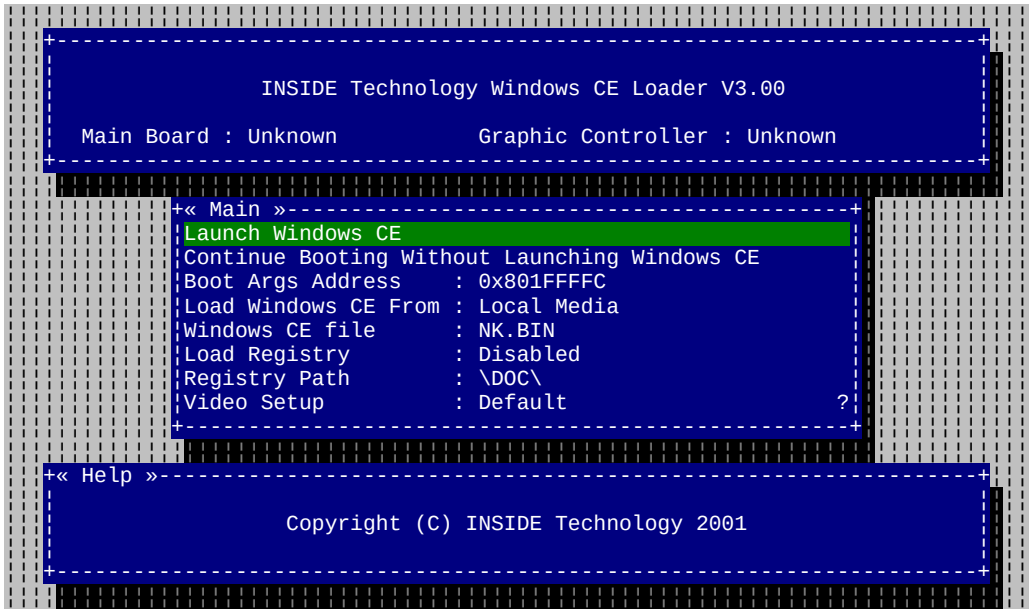
The Windows CE.Net Boot Loader is an utility offered by Kontron Technology to allow to change various settings on a completed WinCE .Net image on the Target system. Settings like Graphics resolution, Base addresses for onboard devices etc. can be changed.

**Installation:**

To install the loader on a HDD or flash disk follow the sequence below:

1.) First make a bootable DOS floppy disk, with FDISK and FORMAT
2.) Copy the loader.exe to the disk
3.) Use the disk to boot your Target Windows CE system.
4.) Use the FDISK and FORMAT to prepare the HDD / flash disk. Do not use SYS or FORMAT /s, the loader does not use DOS. The loader only supports FAT12 and FAT16. Not FAT32.
5.) Copy loader.exe to the root dir of the HDD / flash disk
6.) Change drive to HDD / flash disk
7.) Type “loader.exe /install bootsector” to install the loader.
8.) Remove the floppy disk and reboot the system.

Now the system will start the loader and show the menu:




### 3.7.4 Using the WinCE.Net boot loader

The following section described each Menu point displayed in the Loader.

**Launch Windows CE**

Start Windows CE

**Continue Booting Without Launching Windows CE / Exit To DOS**

Exit the loader

**Boot Args Address : 0x801FFFFC**

Address for a pointer to the boot arguments

**Load Windows CE From : Local Media**

Local Media

Load the image from a HDD / flash disk

Serial Port

Download the image over a serial port

Parallel Port

Download the image over a parallel port

Ethernet

Download the image over Ethernet

This function uses the eboot.bin file

**Windows CE file : NK.BIN**

NK.BIN

File name for the Windows CE image

EBOOT.BIN

File name for Ethernet boot image file

**Load Registry : Disabled**

INSIDE.REG

Use the last saved registry.

INSIDE.BAK

Use the pre registry, the backup is made the first time the Flushreg is called.
This function can be used as a last known good boot (registry)

Disabled

Do not load the registry

**Registry Path : \DOC**

The path for the boot drive inside Windows CE. To store the registry on a device you need a Windows CE driver for the device.

**Video Setup : Standard**

Standard

0 320x200, 1 480x240 (640x480), 2 640x480, 3 800x600, 4 1024x768, 5 480x240 (640x480), 6 320x240, 7 320x240-2 (640x480), 8 1280x1024

VESA

The loader scans the bios to se if the requested modes are available in 8,16,24 & 32 Bits colours modes 320x200, 320x240, 640x480, 800x600, 848x480, 852x480, 853x480, 1024x768 & 1280x1024x8

**Video Mode : 320x200x8**

Selected mode.

**Debug Port : Com2**

Disabled or address for serial debug port

**Debug Baud rate : 19200**

Speed for serial debug port, note that the standard eboot.bin only use 38400

**Parallel Port : LPT1: 0x3BC**
Base addresses for debug parallel port

**Ethernet Debug : Disabled**
Use an Ethernet card for debug

**Ethernet Card : NE 2000**
SMC 9000 SMC9000 base Ethernet card

NE 2000 : ne2000 based Ethernet card

RTL8029 (NE 2000 PCI)
The loader scans for a RTL8029 controller
The first found is used as debug card

**Ethernet IRQ : 10**
IRQ for debug Ethernet card

**Ethernet Base I/O : 0x0320**
Base address for debug Ethernet card

**Ethernet Debug IP : DHCP**
DHCP : use server to get Debug IP address
Static : use entered IP address

**EDBG Debug Zones : 0x0000**
Sets debug zones.

**Show loading picture : Disabled**
This function is not available in this version

**Menu popup : Always**
Always
Only if F1 Press during boot
Never

**Verbose : Disabled**
Disabled : no information under boot
Enable : display information about nk.bin under boot

**Store NK.BIN local : Disabled**
Enable
This function only works if serial or parallel is used to download.

**Install boot sector / Remove loader from boot sector**
For install or removing the boot sector

**Save menu options**
Save the menu settings to the loader.exe

# 3.8 Kontron Technology 786LCD Hardware API for WinCE.Net

## 3.8.1 Introduction

This API was designed to enable users to access board features implemented on the 786LCD Board family in Windows CE environment.

## 3.8.2 Installation

**The API contains the following files**

| | |
|---|---|
| WinCE Device Driver | Itlcd.dll |
| API function declaration | Itlcd.h |
| Test sample source | Ithwm.cpp |

Please take a look at the Ithwm.cpp source file, which illustrate how to use the device driver.

**API function descriptions:**

| |
|---|
| **DWORD InitHw(VOID)**<br>This function initializes the hardware and must be called in order to use any other functions within this API.<br><br>**Return** If the function succeeds, the return value is nonzero. Otherwise the value is zero. |
| **DWORD ReadMonitor(HWMON *Mon)**<br>This function takes a HWMON structure and fills the structure with valid data. For return structure see Itlcd.h for the individual data types.<br><br>**Return** If the function succeeds, the return value is nonzero. Otherwise the value is zero. |
| **DWORD SetClrGPIO(BOOL SetClr,UCHAR GPIO)**<br>This function set or clears a GPIO pin, located on the feature port. Make sure to set pin direction before calling this function.<br><br>**Return** If the function succeeds, the return value is nonzero. Otherwise the value is zero. |
| **DWORD ReadGPIO(UCHAR GPIO)**<br>This function reads a GPIO pin, located on the feature port. Make sure to set pin direction before calling this function.<br><br>**Return** If the function succeeds, the return value is the GPIO pin state. |
| **DWORD SerGPIODir(UCHAR GPIO)**<br>This function set the direction of the GPIO pins, located on the feature port. Make sure to call this function before calling ReadGPIO or SetClrGPIO.<br><br>**Return** If the function succeeds, the return value is nonzero. Otherwise the value is zero. |
| **DWORD SetFanSpeed(UCHAR Speed)**<br>This function sets the fan speed in the interval between 0-127 where max. speed is 127. Any attempts to write values above 127 will be ignored.<br><br>**Return** If the function succeeds, the return value is nonzero. Otherwise the value is zero. |
| **DWORD EnableWD(VOID)**<br>This function enables the watchdog timer. The user must call SetWDTimer and SetWDTimerInterval before calling this function to prevent immediately reboot.<br><br>**Return** If the function succeeds, the return value is nonzero. Otherwise the value is zero. |

**DWORD DisableWD(VOID)**
This function disables the watchdog timer. Any attempts to modify watchdog timers after calling this function will have no effect.

**Return** If the function succeeds, the return value is nonzero Otherwise the value is zero.

**DWORD SetWDTimer(UCHAR Time)**
This function sets the watchdog timer. An application must service this function and reload the timer to prevent reboot; the number of units is between 0-255.

**Return** If the function succeeds, the return value is nonzero. Otherwise the value is zero.

**DWORD SetWDTimerInterval(UCHAR VAL)**
This function set the watchdog timer interval. The interval is multiplied with the WDTimer value and represents the time-out period. There are four selectable intervals listed in the Itlcd.h file. **4MS 1SEC 1MIN 1HOU**R.

**Return** If the function succeeds, the return value is nonzero. Otherwise the value is zero.

**DWORD SetCPUThrottle(UCHAR DUTY)**
This function set CPU throttle an application can call this function to slow down the CPU speed and save power. The selectable duty cycle intervals are listed in Itlcd.h.

**Return** If the function succeeds, the return value is nonzero Otherwise the value is zero.

**DWORD SetBLKControl(BOOL ON_OFF)**
This function turns on/off the backlight on the LCD display.

**Return** If the function succeeds, the return value is nonzero. Otherwise the value is zero.

**DWORD SetLCDVCCControl(BOOL ON_OFF)**
This function turns on/off the LCDVVC on the LCD display.

**Return** If the function succeeds, the return value is nonzero. Otherwise the value is zero.

**DWORD SetLCDVCC(BOOL VCC5_VCC3)**
This function sets the LCDVVC voltage on the LCD display.

**Return** If the function succeeds, the return value is nonzero. Otherwise the value is zero.

**DWORD SetSerialInterface(UCHAR INTERFACE)**
This function selects the serial interface. The following interfaces are provided: RS232, RS422, and RS485. The values to be used are listed in Itlcd.h.

**Return** If the function succeeds, the return value is nonzero. Otherwise the value is zero.

**DWORD SetSerialInterfaceDataControl(UCHAR PIN)**
This function selects the hardware data flow control used on RS422 and RS485 interfaces.

Selectable values are listed in Itlcd.h.

**Return** If the function succeeds, the return value is nonzero. Otherwise the value is zero.

**DWORD SetSerialInterfaceControl(UCHAR PIN)**
This function selects the hardware control flow control used on RS422 and RS485 interfaces.
Selectable values are listed in Itlcd.h.

**Return** If the function succeeds, the return value is nonzero. Otherwise the value is zero.

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