FabiaTech Corporation

IPC Solution

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Embedded CPU Board

Low Power Series

FB2653 User' Manual

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- A list of your name, address, telephone, facsimile number, or email address where you may be reached during the day
- Description of you peripheral attachments
- Description of your software (operating system, version, application software, etc.) and BIOS configuration
- Description of the symptoms (Extract wording any message)

For updated BIOS, drivers, manuals, or product information, please visit us at <u>www.fabiatech.com</u>

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Chapter 1 Introducing the FB2653 System

Overview

The FB2653 series is a Low power AMD NX and all in one CPU board. This user's manual provides information on the physical features, installation, and BIOS setup of the FB2653.

Built to unleash the total potential of the AMD Geode[™], support 1GHz CPU, this board supports one IDE, one CF socket, one SATA interface, two 10/100/1000M Base –TX LAN ports, DDR-RAM, mini PCI socket for wireless LAN, Four USB2.0 ports, video out, audio and a VGA controller.

Each FB2653 has four ports for I/O communications. Three RS-232C ports and one RS232/RS422/RS485 are available.

The FB2653 is perfect for ATM machines, KIOSK, point-of-sales/point-ofinformation, gaming and infotainment, measurement technology, lotteries, banking and Thin Client and small Embedded Control. The unit is only the unit is only 146.0mm (D) X 203.0mm (W).

Series Comparison Table

Model	FB2653
Processor	Supports AMD Geode™
	NX-1500 and NX-1750 CPU's
Chipset	VIA KN400A+VT8237R Plus
1 184 Pin-DIMM (Max.)	1GB DDR333/266Mhz
CRT VGA	Yes(DVI)
Watchdog Timer	Yes
Multi I/O	Four Serial ports
Enhanced IDE and CF	One
SATA	One
Video Out	One
USB 2.0	Four
Audio	Line -Out And Mic
RJ45 WAN port	Тwo
(100/1000Mbps)	
Mini-PCI Socket	One
Dimensions (Unit: mm)	146.0mm(D) X 203.0mm(W)

Layout



Specifications

- □ Supports AMD Geode[™] NX1500 1GHz Low Power CPU and NX1750 1.4GHz CPU.
- □ 5.25" (CDROM) size embedded board with PCI expansion bus.
- □ On board VGA (VIA KN400A) Supports DVI, LCD and Video out with up to 64MB share memory.
- □ Provide one DIMM 184-pin Socket for up to 1GB DDR-333 maximum.
- One PCI IDE interface, one SATA interface and one Compact Flash socket.
- □ Supports three RS-232 and one RS232/RS422/RS485 ports.
- □ Four USB 2.0 ports and four TTL IO Lines.
- Build-In AC97-codec, Support Mic-In, and Line-out.
- □ Build-In two Realtek RTL8110S 10/100/1000 base-TX with RJ45 connectors.
- □ Support one mini-PCI socket for WLAN applications
- On board Buzzer, LED indicator and PS/2 compatible keyboard and mouse interface.
- Provides one CPU cooling fan connector and hardware monitoring function.
- Power requires +5V/3.5A,3.3V/1.5A,5VSB/750mA maximum. (Base On 1.0GHz CPU)
- □ Dimensions 146.0mm(D) X 203.0mm(W)

Packing List

Upon receiving the package, verify the following things. Should any of the mentioned happens, contact us for immediate service.

- Unpack and inspect the FB2653 package for possible damage that may occur during the delivery process.
- Verify the accessories in the package according to the packing list and see if there is anything missing or incorrect package is included.
- If the cable(s) you use to install the FB2653 is not supplied from us, please make sure the specification of the cable(s) is compatible with the FB2653 system.

Note: after you install the FB2653, it is recommended that you keep the diskette or CD that contains drivers and document files, and keep the document copies, or unused cables in the carton for future use.

The following lists the accessories that may be included in your FB2653 package. Some accessories are optional items that are only shipped upon order.

- One FB2653 all-in-one CPU board.
- One Ultra DMA cable for IDE.
- One SATA signal cable and one power cable.
- Two RS232 Serial port adapter cable.
- One DVI to CRT adapter cable.
- One Y-type (3-terminal) PS/2 keyboard plus mouse port adapter cable.
- One compact disc includes software utility.

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Chapter 2 Hardware Installation

This chapter introduces the system connectors & jumper settings, and guides you to apply them for field application.

Before Installation

Before you install the system board, make sure you follow the following descriptions.

- 1. Before removing the board from its anti-static bag, wear an anti-static strap to prevent the generation of Electricity Static Discharge (ESD). The ESD may be created from human body that touches the board. It may do damage to the board circuit.
- 2. Install or unplug any connector, module, or add-on card, be sure that the power is disconnected from the system board. If not, this may damage the system board components, module, or the add-on-card.
- 3. Installing a heat sink and cooling fan is necessary for heat dissipation from your CPU. If heat sink or cooling fan is not mounted, this may cause the CPU fail due to over-heating problem.
- 4. When you connect the connectors and memory modules, be careful with the pin orientations.

Hardware Features

The following lists the connectors and jumpers to install the FB2653.

Item	Description
CN1	40-pin IDE Connector
CN2	7-pin SATA Connector
CN3	40-pin LCD Connector
CN4	5-pin Power Connector for LCD
CN5	20-pin ATX Power Connector
CN6,CN7	10-pin IDC Connector for COM3 and COM4
CN9,CN10	RJ45-LAN Connector & USB ports Connector
CN11	Keyboard and Mouse Connector
CN12	Audio Micro In/Speaker Out
CN13	RCA Jack (Video Out Connector)
CN14	DVI Connector
CN17	Compact Flash slot
J2	16-pin Mixed I/O and Indicator Header
J3	3-pin for Case/CPU Cooling Fan Connector
J4	5-pin for TTL I/O Connector
J5,J8	2-pin LAN1/LAN2 Indicator LED's Header
J6	2-pin External Temp Sensor Header
J7	5-pin For IR Header
J10	3- pin for Touch Screen Header
J11	Select AGP 3.3V/1.5V Voltage
J12	2-pin Wake-On-LAN Select Jumper
JP1	3-pin Clear CMOS Jumper
JP2	3-pinSelect RS485 Terminal Resistor
JP3,JP4,JP5,JP8	2*3-pin Power Output Select for COM1~COM4
JP6	2*3-pin Audio Output Select
JP9	3-pin Master/Slave Select Compact Flash Device
LED1,LED2	Power and HDD LED's Indicator
BUS1	PCI Connector
BUS2	Mini-PCI Socket
DIMM1	DDR DIMM Socket 184-pin
DB1	COM1/COM2, DB-SUB 9 Connector
Bz1,J9	On board Buzzer ,External Speaker Header
SW1	User Defined Button

□ J3: Cooling Fan Connector

J3 is a 3-pin Molex connector and which is reserved for driving CPU or case cooling fan when non-low power CPU are used.



□ J2: Mixed I/O and Indicator Header

The J2 (1, 2 pin and 3, 4 pin) are Power and HDD LED's has two distinctive statues: off for inactive operation and blinking light for activity. And the J2 (5, 6 pin (LED1+/LED1-) and 7, 8 pin (LED2+/LED2-) for LAN ports. The LAN1 and LAN2 LED's indicate on-line/access status of LAN1 and LAN2 respectively.





J1	J1 Signal		Signal
1	P/W LED+	2	P/W LED -
3	HDD LED+	4	HDD LED -
5	LAN1 LED+	6	LAN1LED-
7	LAN2 LED+	8	LAN2 LED-
9	NC	10	NC
11	Ext-Temp.	12	GNDA
13	Reset	14	GND
15	PWR-SW+	16	PWR-SW-

1. The J2 pin 11, 12 is a 2-pin for connecting Resistive Temperature Sensor input header and pin 13, 14 is a 2-pin for connecting to system reset button. It is because hardware reset of FB2653 and restart system booting.



2. The J2 pin 15, 16 is a 2 pin connecting to PWE-SW; It's Pushing the PWE-SW button once will switch the FB2653 on and off. It's depending on system BIOS (Power Management Setup) or OS setting. Pushing the power button while in the on mode for more than 4 seconds will turn the system off.



□ CN11: Connecting the Keyboard and Mouse

The CN11 uses the included adapter cable you can attach standard PS/2 type keyboard and mouse. Standard PS/2 keyboard can be plugged into this connector without any adapter cable. If PS/2 keyboard and mouse will be used simultaneously, a Y-type (3-terminal) adapter cable is needed.



CN9, CN10 & J5, J8: Connecting the LAN ports and USB Ports

The RJ45 connector with 2 LED's for WAN/LAN. The left side LED (orange) indicates data is being accessed and the right side LED (green) indicates on-line status. (On indicates on-line and off indicates off-line) The following lists the pin assignment of CN9, CN10 and J5, J8:



The FB2653 supports a four port USB connector. Any USB device can be attached to USB ports with plug-and-play supported. The left side port is USB # 1/2 and the right side port is USB # 3/4



DB1 & CN6, CN7: Connecting the COM ports

The DB9 connector on bracket is 9-pin D-type male connector the serial port COM3 and COM4 adapter cables are used to transfer 10-pin IDC connector into standard DB9 connectors. The DB1 (COM1/2) is standard serial port connector. The following tables show the signal connections of these connectors. Serial port 2 is designed for multiple proposes. Use BIOS setting select the RS-232, RS422 or RS-485, and JP2 provides terminator select of RS-485 mode.



• JP3, JP4, JP5 & JP8: Select Power Source Jumper Select

All Serial ports provide power source will driver the "RI" signal pin if JP3, JP4 for COM3, COM4 and JP5, JP8 for COM1, COM2 were located on the power output position.



J10: Touch Screen Header

J10 provide basic RS-232C signals of serial port 2 respectively. The basic RS-232C signal is used to interface with touch screen controller internally.



• J7: 5-pin Infrared Header

The J7 provide infrared signal is used to interface with Infrared modules.



CN12: Connecting the Audio Microphone In/ Speak Out











J4	TTL Lines	Bit Location
1	Output Line 0	Bit 6 of 404eh
2	Output Line 1	Bit 7 of 404eh
3	Input Line 0	Bit 2 of 404bh
4	Input Line 1	Bit 3 of 404bh
5	Ground	-

□ CN1: IDE hard Disk Connector

CN1 is 40-pin 2.54mm IDC connectors. The IDE interface has one enhanced IDE channels and supports 2 IDE devices.



The following table lists the pin description of CN1.

	<u> </u>		
Pin	Signal	Pin	Signal
1	-RESET	2	GROUND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	GROUND	20	NOT USED
21	IDEDREQ	22	GROUND
23	-IOW A	24	GROUND
25	-IOR A	26	GROUND
27	IDEIORDYA	28	GROUND
29	-DACKA	30	GROUND
31	AINT	32	GROUND
33	SA 1	34	Not Used
35	SA 0	36	SA 2
37	CS 0	38	CS 1
39	HD LED A	40	GROUND

CN2: Serial ATA hard Disk Connector

Use the included SATA cables; you can attach SATA hard disk drives.



The following table lists the pin description of CN2.

Pin	Signal
1	GROUND
2	SATA-TXP
3	STAT-TXN
4	GROUND
5	SATA-RXN
6	STAT-RXP
7	GND

Note: Install Windows 2000 Service Pack4 or the Windows XP Service Pack 1 or later before when using Serial ATA

CN17 & JP9: Compact Flash Socket and Master/Slave Select

The Compact Flash socket CN17 (on the solder side) is optional and supports 3.3V Compact Flash and Micro Drives. JP9 is used to select master/slave device of this socket. Be sure to avoid the same master/slave setting with which connects to IDE#2 (CN1) connector, if you use CN17 and CN1 simultaneously.



□ BUS2: Mini-PCI Socket for WLAN Modules

The BUS2 is Mini-PCI socket (on the solder side) is ideal for wireless LAN module or other I/O modules.



DIMM1: DIMM Socket for DDR Modules

You may extend additional memory to FB2653 See as following figure and rear pictures. The DIMM socket supports 128/256/512 MB and 1GB of DDR RAM modules.



□ BUS 1: PCI Slot

BUS1 is designed to able to plug-in a PCI device card. The factory presetting is suitable for 5V slot cards and 3.3V slot card is optional.



□ CN5: ATX Power Connector

The connector connecting ATX power supply, you can connect CN5 to ATX power supply, and connect J2 (pin15 &pin16) to a push button switch as soft power switch.



□ SW1: User Defined Push Button Switch

This push button switch is located COM port connectors. User can read its status from input line of on-board GPIOs. (Please see the spots circled.)



□ JP1: CMOS Clear Jumper

The CMOS store information like system date, time, boot up device, password, IRQ... that are set up with the BIOS. To clear the CMOS, set JP1 to open or 2-3 and then return to 1-2. The default setting is 1-2.



D BZ1 & J9: On-Board Buzzer & External Speaker Header



J9: External Speaker Header

0	4
0	
0	
	1

PIN	Signal
1	Speaker+
2	Speaker-
3	Speaker-
4	Speaker-

□ J12: Wake On LAN Jumper Header

This header is support wake on LAN. It's power up the system when a wakeup packet or signal is received through the on board LAN. The default is 1, 2.



□ J11: AGP Power Option

The J11 is select DVI+S-Video or CRT (DVI) + LCD simultaneously. If you system is connect the CRT and LCD, You need set the jumper to 2, 3. The default is 1, 2.



□ LED1 & LED2:On-Board Power/HDD LED

LED1 (Green) indicates power is active when it lights, and LED2 (Red) is HDD LED has two distinctive statues: off for inactive operation and blinking light for activity.



□ J6: Temperature Sensor Header



Chapter 3 Installing CRT/LCD/Video

This chapter describes the configuration and installation procedure of LCD, CRT and TV-Out displays. Both CRT and LCD displays or CRT and TV-Out may be used at the same time. However, each type of LCD requires different BIOS setting. This section describes the configuration and installation procedure using display.

- LCD Flat Panel Display
- CRT & LCD Display
- CRT & Video Out



TV Display



CRT Monitor



LCD/Panel Display



LCD FLAT PANEL DISPLAY

Using the BIOS select setting for different types of LCD panel. Then set your system properly and configure BIOS setting for the right type of LCD panel you are using.



LCD



NOTE: Be careful with the pin orientation when installing connectors and the cables. A wrong connection can easily destroy your LCD panel. The pin 1 of the cable connectors is indicated with a sticker and the pin1 of the ribbon cable usually has a different color.

CRT & LCD DISPLAY

The board supports a CRT colored monitor and a LCD. It can be connected to create a compact video solution for the industrial environment. 32MB simulated VRAM allows a maximum CRT resolution of 1600X1200 with 64K colors.





LCD

CRT Monitor



NOTE: CN14 includes CRT signals, please use the included adapter cable for connecting to CRT monitors

DB1: DVI connector

The DVI connector is connecting the flat panel display cable to the DVI output port. Or you can use a DVI to VGA display adapter to CRT monitor.



DB15	Signal
1	Red
2	Green
3	Blue
13	Hsync
14	Vsync
12	DDC Data
15	DDC Clock
5 & 10	Digital Ground
6,7,8	Analog Ground
Others	Not Used

CN3 & CN4: LCD Connector and Power Connector

CN3 supports LCD signals, and CN4 is the power connector for inverter board.



Pin	CN4		
1	+12 V		
2	GND		
3	ENABLK		
4	N.C		
5	+5 V		

Pin	CN3	Pin	CN3
1	+5V	2	+5V
3	Ground	4	Ground
5	+3.3V	6	+3.3V
7	NC	8	Ground
9	FP0	10	FP1
11	FP2	12	FP3
13	FP4	14	FP5
15	FP6	16	FP7
7	FP8	18	FP9
19	FP10	20	FP11
21	FP12	22	FP13
23	FP14	24	FP15
25	FP16	26	FP17
27	FP18	28	FP19
29	FP20	30	FP21
31	FP22	32	FP23
33	Ground	34	Ground
35	SHFCLK	36	FP (VS)
37	DE	38	LP (HS)
39	FNVDD	40	ENAVEE

Note: If any trouble when connecting FB2653 with LCD panels, you could contact technical support division of FabiaTech Corporation.

CRT & TV-Out DISPLAY

The board supports a CRT colored monitor and a TV-Out. It can be connected to TV-Out and CRT Monitor.





TV-Out Display

CRT Monitor



□ CN13: Connecting the S-Video Out

The CN13 is RCA Jack support TV-Out display.



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Chapter 4 BIOS Setup

This chapter describes the BIOS setup.

Overview

BIOS are a program located on a Flash memory chip on a circuit board. It is used to initialize and set up the I/O peripherals and interface cards of the system, which includes time, date, hard disk drive, the ISA bus and connected devices such as the video display, diskette drive, and the keyboard. This program will not be lost when you turn off the system.

The BIOS provides a menu-driven interface to the console subsystem. The console subsystem contains special software, called firmware that interacts directly with the hardware components and facilitates interaction between the system hardware and the operating system.

The BIOS default values ensure that the system will function at its normal capability. In the worst situation the user may have corrupted the original settings set by the manufacturer.

All the changes you make will be saved in the system RAM and will not be lost after power-off.

When you start the system, the BIOS will perform a self-diagnostics test called Power on Self Test (POST) for all the attached devices, accessories, and the system. Press the [Del] key to enter the BIOS Setup program, and then the main menu will show on the screen.

Note: Change the parameters when you fully understand their functions and subsequence.

Phoenix - AwardBIOS CMOS Setup Utility				
 Standard CMOS Features Advanced BIOS Features Advanced Chipset Features Integrated Peripherals Power Management Setup PnP/PCI Configurations PC Health Status 	 Frequency/Voltage Control Load Fail-Safe Defaults Load Optimized Defaults Set Supervisor Password Set User Password Save & Exit Setup Exit Without Saving 			
Esc : Quit F10 : Save & Exit Setup	†↓→+ : Select Item			

Time, Date, Hard Disk Type...

□ BIOS Functions

On the menu, you can perform the following functions

- 1. Standard CMOS Features
- 2. Advanced BIOS Features
- 3. Advanced Chipset Features
- 4. Integrated Peripherals
- 5. Power Management Setup
- 6. PNP/PCI Configuration
- 7. PC Health States
- 8. Frequency/Voltage Control
- 9. Set Supervisor Password
- 10. Set User Password
- 11. Load Optimized Default: to auto configure the system according to optimal setting with pre-defined values. This is also the factory default setting of the system when you receive the board.
- 12. Load Fail-Safe Default: to configure the system in fail-safe mode with predefined values.
- 13. Save Settings and Exit: perform this function when you change the setting and exit the BIOS Setup program.
- 14. Exit without saving: perform this function when you want to exit the program and do not save the change.
Keyboard Convention

On the BIOS, the following keys can be used to operate and manage the menu:

Item	Function
ESC	To exit the current menu or message
Page Up/Page Down	To select a parameter
F1	To display the help menu if you do not know the purpose or function of the item you are going to configure
F6	Fail-Safe Default
F7	Optimized Default
F10	Save and exit
UP/Down Arrow Keys	To go upward or downward to the desired item

STANDARD CMOS Feature

This section describes basic system hardware configuration, system clock setup and error handling. If the CPU board is already installed in a working system, you will not need to select this option anymore.

Date (mm:dd:yy)	Thu, Apr 13 2006	Item Help
Time (hh:nm:SS) > IDE Channel 0 Master > IDE Channel 0 Slave > IDE Channel 1 Master > IDE Channel 1 Master > IDE Channel 2 Master > IDE Channel 2 Master > IDE Channel 3 Master > IDE Channel 3 Master > IDE Channel 3 Slave Video Halt On Base Memory Extended Memory Total Memory	14 : 17 : 55 [None] [None] [None] [None] [None] [None] [None] [None] [Bone] [EGA/VGA] [All , But Keyboard] 640K 194560K 195584K	Menu Level > Change the day, month, year and century

Date & Time Setup

Highlight the <Date> field and then press the [Page Up] / [Page Down] or [+]/ [-] keys to set the current date. Follow the month, day and year format.

Highlight the <Time> field and then press the [Page Up] / [Page Down] or [+]/ [-] keys to set the current date. Follow the hour, minute and second format.

The user can bypass the date and time prompts by creating an AUTOEXEC.BAT file. For information on how to create this file, please refer to the MS-DOS manual.

□ Hard Disk Setup

The BIOS supports various types for user settings, The BIOS supports <Pri Master>, <Pri Slave>, so the user can install up to two hard disks. For the master and slave jumpers, please refer to the hard disk's installation descriptions and the hard disk jumper settings.

You can select <AUTO> under the <TYPE> and <MODE> fields. This will enable auto detection of your IDE drives during boot up. This will allow you to change your hard drives (with the power off) and then power on without having to reconfigure your hard drive type. If you use older hard disk drives, which do not support this feature, then you must configure the hard disk drive in the standard method as described above by the <USER> option.

□ Video

This option selects the type of adapter used for the primary system monitor that must match your video display card and monitor. Although secondary monitors are supported, you do not have to select the type in Setup.

You have two ways to boot up the system:

When VGA set as primary and monochrome set as secondary, the selection of the video type is "VGA Mode".

When monochrome set as primary and VGA set as secondary, the selection of the video type is "Monochrome Mode".

□ Error Halt

This option determines whether the computer will stop if an error is detected during power up.

No errors	The system boot will not be stopped for any error that may be detected.
All errors	Whenever the BIOS detect a non-fatal error the system will be stopped and you will be prompted.
All, But Keyboard	The system boot will not stop for a keyboard error; it will stop for all other errors.
All, But Diskette	The system boot will not stop for a disk error; it will stop for all other errors.
All, But Disk/Key	The system boot will not stop for a keyboard or disk error; it will stop for all other errors.

Memory

This option is display-only which is determined by POST (Power On Self Test) of the BIOS.

Base Memory

The POST of the BIOS will determine the amount of base (or conventional) memory installed in the system. The value of the base memory is typically 512K for systems with 512K memories installed on the motherboard, or 640K for systems with 640K or more memory installed on the motherboard.

Extended Memory

The BIOS determines how much extended memory is present during the POST. This is the amount of memory located above 1MB in the CPU's memory address map.

Total Memory

System total memory is the sum of basic memory, extended memory, and other memory.

Advanced BIOS Features

This section describes the configuration entries that allow you to improve your system performance, or let you set up some system features according to your preference. Some entries here are required by the CPU board's design to remain in their default settings.

▶ Hard Disk Boot Priority	[Press Enter]	Iten Help
Virus Warning CPU Internal Cache External Cache Quick Power On Self Test First Boot Device Second Boot Device Boot Other Device Boot Other Device Boot Up NumLock Status Typematic Rate Setting x Typematic Rate (Chars/Sec x Typenatic Delay (Msec) Security Option Video BIOS Shadow	[Disabled] [Enabled] [Enabled] [Hard Disk] [CDROM] [LAN] [Enabled] [On] [Disabled] 250 [Setup] [Enabled]	Menu Level ≯ Select Hard Disk Boot Device Priority

• Hard Disk Boot Priority

This field specifies which device the system looks first boot device.

Available options: 1. Bootable Add-in Cards

Default setting: 1.Bootable Add-in Cards

□ Virus Warning

This option may flash on the screen. During and after the system boots up, any attempt to write to the boot sector or partition table of the hard disk drive will halt the system and the following error message will appear, in the mean time, you can run an anti-virus program to locate the problem.

Available Options: Disabled, Enabled

Default setting: Disable

□ CPU Internal & External Cache

This functions speeds up System access. The CPU has an internal cache.

Available options: Disabled, Enabled

Default setting: Enabled

Quick Power On Self Test

This option speeds up Power On Self Test (POST) after you power on the computer. If it is set to Enable, BIOS will shorten or skip some items' checks during POST.

Available options: Disabled, Enabled

Default setting: Enable

□ First /Second /Third/Boot Other Device/ Boot Device

This field specifies which device the system looks first upon power on.

<u>Available options:</u> LS120, Hard Disk, ZIP100, USB-ZIP, USB-CDROM, USB-HDD, LAN and Disable

Default setting: Hard Disk, CDROM, LAN

□ Boot Up Numlock status

This field is used to activate the Num Lock function upon system boot. If the setting is on, after a boot, the Num Lock light is lit, and user can use the number key.

Available options: On, Off

Default setting: On

□ Typematic rate Setting

This function specifies the keystroke repeat rate when a key is pressed and held down.

Available options: Disable, Enable

Default setting: Disable

□ Typematic Rate (Chars/Sec)

Typematic Rate sets the rate at which characters on the screen repeat when a key is pressed and held down.

Available options: 6, 8, 10, 12, 15, 20, 24, or 30 characters per second

Default setting: 6

□ Typematic Delay (Msec)

The number selected indicates the time period between two identical characters appearing on screen.

Available options: 250,500 750 and 1000

Default setting: 250

□ Security Option

This field enables password checking every time the computer is powered on or every time the BIOS Setup is executed. If *Always* is chosen, a user password prompt appears every time and the BIOS Setup Program executes and the computer is turned on. If *Setup* is chosen, the password prompt appears if the BIOS executed.

Available options: Setup, Always

Default setting: Setup

Video BIOS Shadow

These fields control the location of the contents of the video ROM beginning at the specified memory location. If no adapter ROM is using the named ROM area, this area is made available to the local bus.

- 1. **Disabled:** The video ROM is not copied to RAM. The contents of the video ROM cannot be read from or written to cache memory.
- 2. Enabled: The contents of C000h C7FFFh are written to the same address in system memory (RAM) for faster execution.

Available options: Disabled and Enabled

Default setting: Enable

Advanced Chipset Features

This section describes the configuration of the board's chipset features.

Phoenix - Adv	AwardBIOS CMO anced Chipset	S Setup Ut Features	ility	
▶ DRAM Clock/Drive Control	[Press Enter]		Ite	m Help
 AGP & P2P Bridge Control CPU & PCI Bus Control System BIOS Cacheable Video RAM Cacheable BIOS Write Portect 	[Press Enter] [Press Enter] [Enabled] [Enabled] [Disabled]		Menu Level	
14++:Move Enter:Select +/	-/PII/PD:Ualue	F10:Saue	ESC:Exit F	1:General Help

> DRAM Clock/Driver Control

• Current FSB/DRAM Frequency

This display sent by the CPU host clock and DDR-RAM memory clock

DRAM Clock

This Select equates are used for determining the DDR-RAM Memory Clock frequency. SPD represents Serial Presence Detect. It is an 8-bit, 2048 bits EEPROM, built on the SDRAM for different frequencies.

Available Options: By SPD, 133 MHz, 166 MHz and 200 MHz

Default setting: By SPD

DRAM Timing

If the installed SDRAM supports SPD function, select SPD. If not, you can select based on other access time of the SDRAM.

Available Options: Auto By SPD, Manual, Turbo and Ultra

Default setting: Auto By SPD

DRAM CAS Latency Time

This field specifies the latency for the Synchronous DRAM system memory signals.

Available Options: 1.5, 2, 2.5 and 3

Default setting: 2.5

> AGP & P2P Bridge Control

• AGP Aperture Size (MB)

This field specifies the system memory size that can be used by the Accelerated Graphics Port (AGP).

Available Options: 4MB, 8MB, 16MB, 32MB, 64MB, 128MB, 256MB, 512MB and 1GB

Default setting: 64 MB

• VGA Share Memory Size

This field specifies which VGA display memory. You can select either Video memory on the VGA. There are setting share onboard memory.

Available Options: 16MB, 32MB and 64MB

Default setting: 64MB

• Select Display Device

This field specifies which VGA display will be used when the system is boot. You can select the CRT+TV or the CRT booting on the VGA.

Available Options: CRT+TV, DVI, CRT+DVI, CRT+LCD, LCD and CRT

Default setting: CRT

- > CPU & PCI Bus Control
- PCI1/2 Master 0WS Write

This field specifies the PCI1/2 Master 0 wait state installed in the PCI expansion bus.

Available Options: Disable and Enable

Default setting: Enable

PCI1/2 Post Write

This field specifies the PCI1/2 post write installed in the PCI expansion bus.

Available Options: Disable and Enable

Default setting: Enable

□ System BIOS Cacheable

The contents of the named ROM area are written to the same address in system memory (RAM) for faster execution. Also, the contents of the RAM area can be read from and written to cache memory.

Available Options: Disabled, Enabled

Default setting: Enabled

Video RAM Cacheable

This field specifies selecting enabled allows caching of the video BIOS ROM, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

Available Options: Disabled, Enabled

Default setting: Enabled

□ BIOS Write Protect

This field specifies selecting enabled allows updating the system BIOS.

Available Options: Disabled, Enabled

Default setting: Disable

Integrated Peripherals

This section describes the function of peripheral features.

VIA OnChip IDE Device	[Press Enter]	Item Help
VIA OnChip PCI Device SuperIO Device Init Display First	(Press Enter) (Press Enter) [PCI Slot]	Menu Level 🔸

> VIA Onchip IDE Device

OnChip Primary/Secondary PCI IDE

This field specifies the IDE channel that can be applied when using IDE hard disk connector.

Available Options: Disabled, Enable

Default setting: Enable

IDE Primary/Secondary Master/Slave PIO

IDE hard drive controllers can support up to two separate hard drives. These drives have a master/slave relationship, which is determined by the cabling configuration used to attach them to the controller. Your system supports one IDE controller – a primary and a secondary – so you have the ability to install up to four separate hard disks.

PIO means Programmed Input/Output. Rather than have the BIOS issue a series of commands to affect a transfer to or from the disk drive, PIO allows the BIOS to tell the controller what it wants and then let the controller and the CPU perform the complete task by them. This is simpler and more efficient (and faster). Your system supports five modes, numbered from 0 to 4, which primarily differ in timing. When Auto is selected, the BIOS will select the best available mode.

IDE Primary/Secondary Master/Slave UMDA

Ultra DMA/33 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If you hard drive and your system software both support Ultra DMA/33, select Auto to enable This option allows your hard disk controller to use the fast block mode to transfer data to and from your hard disk drive (HDD).

• IDE HDD Block Mode

This option allows your hard disk controller to use the fast block mode to transfer data to and from your hard disk drive (HDD).

> VIA PCI Device

♦ VIA-3058AC'97 Audio

This field specifies the internal Audio Control.

Available Options: Disable, Enable

Default setting: Enable

• OnChip USB/EHCI Controller

Select enable if a USB device is installed to the system. If Disabled are selected, the system will not be able to use a USB device.

Available Options: Disabled, Enabled

Default setting: Enabled

• Onboard LAN Boot ROM

This field specifies the PXE boot ROM of the onboard LAN chip.

Available Options: Disabled, Enable

Default setting: Disable

LAN1/2 Chipset Controller

This field specifies the Enable or Disable of the onboard LAN chip.

Available Options: Disabled, Enable

Default setting: Enable

> Super IO Device

OnBoard UART/IRQ Port 1/2/3/4,

These fields select the I/O port address for each Serial port.

Available Options: Disabled, 3F8H/IRQ4, 2F8H/IRQ3, and 3E8H/IRQ11, 2E8H/IRQ10.

Default setting: 3F8/IRQ4, 2F8H/IRQ3, and 3E8H/IRQ11, 2E8H/IRQ10.

OnBoard UART 2 Mode Select

These fields item can select RS-232, RS-422 and RS-485 of select port 2.

Available Options: RS-232, RS-422 and RS485

Default setting: RS-232

□ Init Display First

This field specifies which VGA display will be used when the system is boot. You can select either the onboard AGP or the VGA card installed on the PCI bus.

Available Options: AGP, PCI Slot

Default setting: PCI

Power Management Setup

Phoenix - Po	AwardBIOS CMO wer Management	IS Setup Ut : Setup	ility	
ACPI function	[Enabled]		1	tem Help
Power Management Option HDD Power Down Suspend Mode Video Off Option Video Off Method Soft-Off by PWRBTN • IRQ/Event Activity Detect	[User Define] [Disable] [Suspend -> ([DPMS Support [Instant-Off [Press Enter		Menu Les	Jel ►
14++: Hove Enter: Select +/	-/PH/PD:Ualue	F10:Save	ESC:Exit	F1:General Help

□ ACPI Function

This filed specifies allow you enable Advanced Configuration and Power Management. When you use Windows/0S standby mode can set to enable.

Available Options: Disabled, Enabled

Default setting: Enable

Power Management Option

Select Enabled to activate the chipset Power Management and APM (Advanced Power Management) features.

Available Options: User Define, Min Saving, Max Saving

Default setting: User Define

□ Video Of Method

When enabled, this feature allows the VGA adapter to operate in a power saving mode.

V/H SYNC + Blank - This selection will cause the system to turn off the vertical and

horizontal synchronization ports and write blanks to the video buffer.

Blank Screen - This option only writes blanks to the video buffer.

DPMS - Select this option if your monitor supports the Display Power Management Signal (DPMS) standard of the Video Electronics Standards to select video power management values.

Available Options: V/H SYNC + Blank, Blank Screen and DPMS

Default setting: DPMS

□ Suspend Mode

This field specifies the When enabled and after the set time of system inactivity, all devices except the CPU will be shut off.

<u>Available Options:</u> Disabled, 1 Minute, 2 Minute, 4 Minute, 12 Minute, 20 Minute, 30 Minute, 40 Minute and 1 Hour

Default setting: Disabled

□ Soft-Off By PWR-BTTN

Pressing the power button for more than 4 seconds forces the system to enter the Soft-Off state when the system has "hung". The choices are Delay 4 Sec and Instant-Off.

Available Options: Instant-Off and Delay 4 sec.

Default setting: Instant-Off

- > IRQ/Event Activity Detect
- > IRQs Activity Monitoring
- ♦ IRQ3 ~IRQ15

This field specifies the power down mode of the system based on the device. When the system does not receive signals from the device, it will enter the Power Down mode immediately. To enable the power saving mode, select Monitor. To disable it, select Ignore.

PnP/PCI Configurations

Reset Configuration Data [Disabled] Resources Controlled By [Auto(ESCD)] x IRQ Resources Press Enter x DMA Resources Press Enter PCI/VGA Palette Snoop [Disabled] System Select No if you need the BIOS to configure non-boot devices	PNP OS Installed	nP/PCI Configurations	Item Help
	Reset Configuration Data Resources Controlled By × IRQ Resources × DMA Resources PCI/VGA Palette Snoop	[Disabled] [Auto(ESCD)] Press Enter Press Enter [Disabled]	Menu Level > Select Yes if you are using a Plug and Play capable operating system Select No if you need the BIOS to configure non-boot devices

Reset Configuration Data: Enable, Disable

If you select Enable to reset Extended System Configuration Data (ESCD) when you exit setup is you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operation operating system cannot boot.

Available Options: Enable, Disable

Default setting: Disable

Resources Controlled By: Auto [ESCD], Manual

If you select Auto, all the interrupt request (IRQ), DMA assignment, and Used DMA fields disappear, as the BIOS automatically assigns then. The default value is "Auto (ESCD) ".

Available Options: Auto (ESCD). , Manual

Default setting: Auto (ESCD)

> X IRQ/DMA Resources

IRQ-n/DMA-n Assigned: PCI Device and Reserved

You may assign each system interrupt/DMA a type, depending on the type of device using the interrupt/DMA.

D PCI/VGA Palette Snoop

When Enabled is selected, multiple VGA devices operating on different buses can handle data from the CPU on each set of palette registers on every video device. Bit 5 of the command register in the PCI device configuration space is the VGA Palette Snoop bit. (0 is disabled).

Available Options:

Disabled: Data read and written by the CPU is only directed to the PCI VGA devices palette registers.

Enabled: Data read and written by the CPU is directed to both the PCI VGA devices palette registers.

PC Health Status

On the Hardware Monitor Setup screen, you can monitor the system temperature, CPU voltage, and CPU fan speed...

Phoe	enix - AwardBIOS CM PC Health S	DS Setup Ut: tatus	ility	
System Temp	51°C/123°F		I	ten Help
EXT Temp CPU Temp Current CPUFAN1 Spee Vcore VTT_MEM VCC3 VCC25 +12V VCCAGP VBAT	0°C/ 32°F 51°C/123°F ed 0 RPM 0.99 V 1.20 V 3.34 V 2.38 V 12.16 V 3.34 V 3.00 V		Menu Lev	e1 ▶
11++: Move Enter:Selec	t +/-/PII/PD:Ualue	F18:Save	ESC:Exit	F1:General Help

□ System Hardware Monitor

In this field, you can monitor or detect the followings items. These items are view-only and cannot be changed.

- System Temp.
- Ext. Tempe.
- CPU Temp.
- Current CPU Fan1 Speed
- VCORE A
- VTT_MEM
- VCC3
- VC25
- +12.00V
- VCCAGP
- VBAT (V)

VBAT (On board Battery)

Frequency/Voltage Control

By choosing the Frequency/Voltage Control option from the Initial Setup Screen menu, the screen below is displayed.

Phoenix - Fre	AwardBIOS CMC quency/Voltage	IS Setup Ut Control	ility		
Auto Detect PCI/DIMM Clk	[Enabled]		I	tem Help	
Spread Spectrum CPU Host/AGP/PCI Clock	[Disabled] [Default]		Menu Lev	el ≯	
t↓++:Move Enter:Select +/	-/PU/PD:Value	F10:Saue	ESC:Exit	F1:General He	lp

Caution: Incorrect settings in Frequency/Voltage Control may damage the system CPU, video adapter, or other hardware.

Password Setup

There are two security passwords: Supervisor and User. Supervisor is a privileged person that can change the User password from the BIOS.

According to the default setting, both access passwords are not set up and are only valid after you set the password from the BIOS.

To set the password, please complete the following steps.

- 1. Select Change Supervisor Password.
- 2. Type the desired password (up to 8 character length) when you see the message, "Enter New Supervisor Password."
- 3. Then you can go on to set a user password (up to 8 character length) if required. Note that you cannot configure the User password until the Supervisor password is set up.
- 4. Enter Advanced BIOS Features screen and point to the Security Option field.
- 5. Select System or Setup.
- System: a visitor who attempts to enter BIOS or operating system will be prompted for password.
- Setup: a visitor who attempts to the operating system will be prompted for user password. You can enter either User password or Supervisor password.
- 6. Point to Save Settings and Exit and press Enter.
- 7. Press Y when you see the message, "Save Current Settings and Exit (Y/N)?"

Note: it is suggested that you write down the password in a safe place to avoid that password may be forgotten or missing.

To set the password, please complete the following steps.

- 1. Select Change Supervisor Password.
- 2. Press Enter instead of entering any character when you see the message, "Enter New Supervisor Password."
- 3. Thus you can disable the password.

Chapter 5 Software Installation

The enclosed diskette includes FB2653 VGA, Audio, USB, System and LAN driver. To install and configure you FB2653 system, you need to perform the following steps.

System Driver

WIN 98/2000/XP Driver

Install KN400A Chipset, IRQ Routing, USB, AGP Driver and PCI IDE Bus Master Driver.

- Step 1: To install the KN400A driver, insert the CD ROM into the CD ROM device, and enter DRIVER>SysChip>VIA4in1>VIA_HyperionPro_V504A.
- Step 2: Execute Setup.exe file.
- Step 3: The screen shows the SETUP type. Press any key to enter the main menu.
- Step 4: As the setup is completed, the system will generate the message as follows.

Yes, I want to restart my computer now. Installation is done!

No, I will restart my computer later.

System must be restart then complete the installation.

Note: In the Syschip> VIA4in1>VIA_HyperionPro_V504A directory, a Readme.htm file is included to provide installation information.

VGA Driver for WIN98SE/ME/2000/XP

- Step 1: To install the VGA driver, insert the CD ROM into the CD ROM device, and enter DRIVER>VGA>KN400A>Win2K&WinXP, Win9X&WinME.
- Step 2: Execute SETUP.EXE file.
- Step 3: The screen shows the SETUP type. Press any key to enter the main menu.
- Step 4: As the setup is completed, the system will generate the message as follows.

Yes, I want to restart my computer now. Installation is done!

No, I will restart my computer later.

System must be restart then complete the installation.

- Step 5: In the WINDOWS2000/XP/98SE/ME, you can find the <DISPLAYL> icon located in the {CONTROL PANEL} group.
- Step 6: Adjust the <Refresh Rate>, and <Resolution>.

Audio Drivers

WIN 98/2000/XP Driver

- Step 1: To install the AUDIO driver, insert the CD ROM into the CD ROM device, and enter DRIVER>AUDIO>VT8237R.
- Step 2: Execute SETUP.exe file.
- Step 3: The screen shows the SETUP type. Press any key to enter the main menu.
- Step 4: As the setup is completed, the system will generate the message as follows.

Yes, I want to restart my computer now. Installation is done!

No, I will restart my computer later.

System must be restart then complete the installation.

Note: In the DRIVER>AUDIO>VT8237R directory, a Readme.htm file is included to provide installation information.

USB 2.0 Driver

WIN 9X/ME Driver

- Step 1: To install the USB driver, insert the CD ROM into the CD ROM device, and enter DRIVER>USB>VT8237R.
- Step 2: Start the "Add New Hardware" wizard in control panel

(Click Start/Settings/Control Panel).

- Step 3: Select "Hardware" and click "Device Manager" button.
- Step 4: Double Click "USB Root Hub".
- Step 5: Select "Driver".
- Step 6: Click "Install" to install the driver.
- Step 7: Follow the instructions on the screen to complete the installation.
- Step 8: Click "Finish" after the driver installation is complete.

Note: In the DRIVER>USB>VT8237R directory, a Readme.doc file is included to provide installation information.

LAN Utility & Driver

Step 1: To install the LAN utility OR driver, insert the CD ROM into the CD ROM device, and enter DRIVER>LAN>RTL8110S>Diag or Windows. If your system is not equipped with a CD ROM device, copy the LAN driver from the CD ROM to CF.

Step 2: Execute install2KXP.exe/install98se.exe or setup.exe file.

Note: In the RTL8110S directory, a README.TXT is included to provide installation information.

BIOS Flash Utility

In the <UTILITY> directory, there is the AWDFLASH file.

- Step 1: Use the AWDFLASH.EXE program to update the BIOS setting.
- Step 2: And then refer to the chapter "BIOS Setup", as the steps to modify BIOS.
- Step 3: Now the CPU board's BIOS loaded with are the newest program; user can use it to modify BIOS function in the future, when the BIOS add some functions.

Watchdog Timer

This section describes how to use the Watchdog Timer, including disabled, enabled, and trigger functions.

The FB2653 is equipped with a programmable time-out period watchdog timer. You can use your own program to enable the watchdog timer. Once you have enabled the watchdog timer, the program should trigger the I/O every time before the timer times out. If your program fails to trigger or disable this timer before it times out, e.g. because of a system hang-up, it will generate a reset signal to reset the system. The time-out period can be programmed to be set from 1 to 255 seconds or minutes.



The CD –ROM includes a Watch Dog demo file. In the WATCHDOG/F81216D/TURBOC: Library and Test Program written in Turbo C⁺⁺

The WATCHDOG includes a demonstration program established for users who would like to configure the Watchdog timer by themselves.

Note: In the WATCHDOG/F81216D directory, README.TXT file is included to provide demo program information.

Watchdog Timer Setting

The watchdog timer is a circuit that may be used from your program software to detect system crashes or hang-ups. LED1 on this CPU board is the watchdog timer indicator, which is located at the upper-left corner above the USB connector. Whenever the watchdog timer is enabled, the LED will blink to indicate that the timer is counting. The watchdog timer is automatically disabled after reset.

Once you have enabled the watchdog timer, your program must trigger the watchdog timer every time before it times out. After you trigger the watchdog timer, it will be set to non-zero value to watchdog counter and start to count down again. If your program fails to trigger the watchdog timer before time-out, it will generate a reset pulse to reset the system.

The factor of the watchdog timer time-out constant is approximately 1 second. The period for the watchdog timer time-out is between 1 to FF timer factors.

If you want to reset your system when watchdog times out, the following table listed the relation of timer factors between time-out periods.

Time Factor	Time-Out Period (Seconds)	Time-Out Period (Minutes)
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
Ш	и	и
Ш	ш	ш
Ш	Ш	ш
FF	FF	FF

Watchdog Timer Enabled

To enable the watchdog timer, you have to output a byte of timer factor to the watchdog register whose address is 4Eh and data port is 4fH. The following is an Assemble program, which demonstrates how to enable the watchdog timer and set the time-out period at 28 seconds.

;------

; Enter the extended function mode, interruptible double-write

/	Mov	dy Joh	· Enter to ovtended function mode
	10100		, Enter to extended function mode
	Mov	al, 8/h	
	Out	dx,al	
	Out	dx,al	
	Mov	al,07h	; Select register index 0x07
	Out	dx.al	
·			

; Logical device 8, configuration IO Port 300H register, CR60 Bit 1,2,CR61 Bit 0~7

Mov Mov	dx,4fh al 08h	; Select LDN 8
Out	dx,al	
Mov	dX,4eh	
Mov	al,60h	; Select LDN 8 register index 0x60
Out	dx,al	
Mov	dx,4fh	
Mov	al,03h	; Set Watch Dog timer base address high byte to 0x03h
Out	dx,al	
Mov	dX,4eh	
Mov	al,61h	; Select LDN 8 register index 0x61
Out	dx,al	
Mov	dx,4fh	
Mov	al,00h	; Set Watch Dog Timer base address low byte to 0x00h
Out	dx,al	

; Logical device 8, configuration register, CR30 Bit 0, Enable Watch Dog Timer Device

Mov	dX,4eh
Mov	al,30h
Out	dx,al
Mov	dx,4fh
Mov	al,01h
Out	dx,al

; Enable Watch Dog Timer Device

; Select LDN 8 register index 0x30

;-----; Exit extended function mode

·	
Mov	dx,4eh
Mov	al,0aah
Out	dx,al

Watchdog Timer Trigger

After you enable the watchdog timer, your program must write the same factor as enabling to the watchdog register at least once every time-out period to its previous setting. You can change the time-out period by writing another timer factor to the watchdog register at any time, and you must trigger the watchdog before the new time-out period in next trigger.

;-----

;Set Watch Dog timer to 20 second used base address 0x300~0x301:

·-----

MOV AX,03H ;Select unit to one second and clear time out status MOV DX,300H OUT DX,AX MOV AX,14H ;Set timer to 20 second and enable time MOV DX,301H OUT DX,AX OUT DX,AX

Watchdog Timer Disabled

To disable the watchdog timer, simply write a 00H to the watchdog register.

;-----

; Enter the extended function mode, interruptible double-write

Mov Mov Out	dx, 4eh al, 77h dx,al	; Enter to extended function mode
Out	dx,al	
IVIOV	al,07n	; select register index 0x07
	ux,ai	
; Logical de	vice 8, config	uration register, CR30 Bit 0, Disable Watchdog Timer Device
•		
Mov	dx,4fh	; Select LDN 8
Mov Mov	dx,4fh al,08h	; Select LDN 8
Mov Mov Out	dx,4fh al,08h dx,al	; Select LDN 8
Mov Mov Out Mov	dx,4fh al,08h dx,al dX,4eh	; Select LDN 8
Mov Mov Out Mov Mov	dx,4fh al,08h dx,al dX,4eh al,30h	; Select LDN 8 ; Select LDN 8 register index 0x30
Mov Mov Out Mov Mov Out	dx,4fh al,08h dx,al dX,4eh al,30h dx,al	; Select LDN 8 ; Select LDN 8 register index 0x30
Mov Mov Out Mov Mov Out Mov	dx,4fh al,08h dx,al dX,4eh al,30h dx,al dx,4fh	; Select LDN 8 ; Select LDN 8 register index 0x30
Mov Mov Out Mov Mov Out Mov Mov	dx,4fh al,08h dx,al dX,4eh al,30h dx,al dx,4fh al,00h	; Select LDN 8 ; Select LDN 8 register index 0x30 ; Disable Watch Dog Timer Device

; Exit extended function mode

;	
Mov	dx,4eh
Mov	al,0aah
Out	dx,al

Programming RS-485

The majority communicative operation of the RS-485 is in the same of the RS-232. When the RS-485 precedes the transmission, which needs control the TXC signal, and the installing, steps are as follows:

Step 1: Enable TXC

Step 2: Send out data

Step 3: Waiting for data empty

Step 4: Disable TXC

Note: Please refer to the section of the "Serial Ports" in the Chapter "System Controllers" for the detail description of the COM port's register.

♦ Initialize COM port

- Step 1: Initialize COM port in the receiver interrupt mode, and /or transmitter interrupt mode. (All of the communication protocol buses of the RS-485 are in the same.)
- Step 2: Disable TXC (transmitter control), the bit 0 of the address of offset+4 just sets "0".

NOTE: Control the FB2653 CPU card's DTR signal to the RS-485 's TXC communication.

• Send out one character (Transmit)

- Step 1: Enable TXC signal, and the bit 0 of the address of offset+4 just sets "1".
- Step 2: Send out the data. (Write this character to the offset+0 of the current COM port address)
- Step 3: Wait for the buffer's data empty. Check transmitter holding register (THRE, bit 5 of the address of offset+5), and transmitter shift register (TSRE, bit 6 of the address of offset+5) are all sets must be "0".
- Step 4: Disabled TXC signal, and the bit 0 of the address of offset+4 sets "0"
- Send out one block data (Transmit the data more than two characters)
- Step 1: Enable TXC signal, and the bit 0 of the address of offset+4 just sets "1".
- Step 2: Send out the data. (Write all data to the offset+0 of the current COM port address)
- Step 3: Wait for the buffer's data empty. Check transmitter holding register (THRE, bit 5 of the address of offset+5), and transmitter shift register

(TSRE, bit 6 of the address of offset+5) are all sets must be "0".

Step 4: Disabled TXC signal, and the bit 0 of the address of offset+4 sets "0"

Receive data

The RS-485's operation of receiving data is in the same of the RS-232's.

Basic Language Example

a. Initial 86C450 UART

- 10 OPEN "COM1:9600,m,8,1" AS #1 LEN=1
- 20 REM Reset DTR
- 30 OUT &H3FC, (INP(%H3FC) AND &HFA)
- 40 RETURN

b. Send out one character to COM1

- 10 REM Enable transmitter by setting DTR ON
- 20 OUT &H3FC, (INP(&H3FC) OR &H01)
- 30 REM Send out one character
- 40 PRINT #1, OUTCHR\$
- 50 REM Check transmitter holding register and shift register
- 60 IF ((INP(&H3FD) AND &H60) >0) THEN 60
- 70 REM Disable transmitter by resetting DTR
- 80 OUT &H3FC, (INP(&H3FC) AND &HEF)
- 90 RETURN

• c. Receive one character from COM1

- 10 REM Check COM1: receiver buffer
- 20 IF LOF(1)<256 THEN 70
- 30 REM Receiver buffer is empty

- 40 INPSTR\$"
- 50 RETURN
- 60 REM Read one character from COM1: buffer
- 70 INPSTR\$=INPUT\$(1,#1)
- 80 RETURN

NOTE: The example of the above program is based on COM1 (I/O Address 3F8h). The RS-485 of the FB2653 uses COM2. If you want to program it, please refer to the BIOS Setup for COM2 address setup. FabiaTech Corporation

Chapter 6 Technical Reference

This section outlines the errors that may occur when you operate the system, and also gives you the suggestions on solving the problems.

Topic include:

- Trouble Shooting for Post Beep & Error Messages
- Technical Reference

Trouble Shooting for Post Beep and Error Messages

The following information informs the Post Beep & error messages. Please adjust your systems according to the messages below. Make sure all the components and connectors are in proper position and firmly attached. If the errors still exist, please contact with your distributor for maintenance.

POST BEEP

Currently there are two kinds of beep codes in BIOS setup.

- One indicates that a video error has occurred and the BIOS cannot initialize the video screen to display any additional information. This beep code consists of a single long beep followed by three short beeps.
- The other indicates that an error has occurred in your DRAM. This beep code consists of a constant single long beep.

• CMOS BATTERY FAILURE

When the CMOS battery is out of work or has run out, the user has to replace it with a new battery.

• CMOS CHECKSUM ERROR

This error informs that the CMOS has corrupted. When the battery runs weak, this situation might happen. Please check the battery and change a new one when necessary.

DISK BOOT FAILURE

When you can't find the boot device, insert a system disk into Drive A and press < Enter >. Make sure both the controller and cables are all in proper positions, and also make sure the disk is formatted. Then reboot the system.

• DISKETTE DRIVES OR TYPES MISMATCH ERROR

When the diskette drive type is different from CMOS, please run setup or configure the drive again.

• ERROR ENCOUNTERED INITIALIZING HARD DRIVE

When you can't initializes the hard drive, ensure the following things:

- 1. The adapter is installed correctly
- 2. All cables are correctly and firmly attached
- 3. The correct hard drive type is selected in BIOS Setup

• ERROR INITIALIZING HARD DISK CONTROLLER

When this error occurs, ensure the following things:

- 1. The cord is exactly installed in the bus.
- 2. The correct hard drive type is selected in BIOS Setup
- 3. Whether all of the jumpers are set correctly in the hard drive

• FLOPPY DISK CONTROLLER ERROR OR NO CONTROLLER PRESENT

When you cannot find or initialize the floppy drive controller, please ensure the controller is in proper BIOS Setup. If there is no floppy drive installed, ensure the Diskette Drive selection in Setup is set to NONE.

• KEYBOARD ERROR OR NO KEYBOARD PRESENT

When this situation happens, please check keyboard attachment and no keys being pressed during the boot. If you are purposely configuring the system without a keyboard, set the error halt condition in BIOS Setup to HALT ON ALL, BUT KEYBOARD. This will cause the BIOS to ignore the missing keyboard and continue the boot procedure.

MEMORY ADDRESS ERROR

When the memory address indicates error, you can use this location along with the memory map for your system to find and replace the bad memory chips.

MEMORY SIZE HAS CHANGED

Memory has been added or removed since last boot. In EISA mode, use Configuration Utility to re-configure the memory configuration. In ISA mode enter BIOS Setup and enter the new memory size in the memory fields.

MEMORY VERIFYING ERROR

It indicates an error verifying a value is already written to memory. Use the location along with your system's memory map to locate the bad chip.

OFFENDING ADDRESS MISSING

This message is used in connection with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem cannot be isolated.

REBOOT ERROR

When this error occurs that requires you to reboot. Press any key and the system will reboot.

SYSTEM HALTED

Indicates the present boot attempt has been aborted and the system must be rebooted. Press and hold down the CTRL and ALT keys and press DEL.

Appendix

Dimension


Technical Reference

Physical and Environmental

DC Inputs: 24V/40VA Minimum

Temperature: Operating 0°C ~ 50°C

Relative humidity 5 % to 95 % non-condensing

Surface Temperature of Chassis :

5°C to 45°C (W/HDD)/0°C to 50°C (W/CF card only)

Serial Ports

The ACEs (Asynchronous Communication Elements ACE1 to ACE2) are used to convert parallel data to a serial format on the transmit side and convert serial data to parallel on the receiver side. The serial format, in order of transmission and reception, is a start bit, followed by five to eight data bits, a parity bit (if programmed) and one, one and half (five-bit format only) or two stop bits. The ACEs are capable of handling divisors of 1 to 65535, and produce a 16x clock for driving the internal transmitter logic.

Provisions are also included to use this 16x clock to drive the receiver logic. Also included in the ACE a completed MODEM control capability, and a processor interrupt system that may be software tailored to the computing time required to handle the communications link.

DLAB	Port Address	Register
0	Base + 0	Receiver buffer (read)
		Transmitter holding register (write)
0	Base + 1	Interrupt enable
Х	Base + 2	Interrupt identification (read only)
Х	Base + 3	Line control
Х	Base + 4	MODEM control
Х	Base + 5	Line status
Х	Base + 6	MODEM status
Х	Base + 7	Scratched register
1	Base + 0	Divisor latch (least significant byte)
1	Base + 1	Divisor latch (most significant byte)

The following table is a summary of each ACE accessible register

Receiver Buffer Register (RBR)

Bit 0-7: Received data byte (Read Only)

• Transmitter Holding Register (THR)

Bit 0-7: Transmitter holding data byte (Write Only)

Interrupt Enable Register (IER)

Bit 0: Enable Received Data Available Interrupt (ERBFI)

Bit 1: Enable Transmitter Holding Empty Interrupt (ETBEI)

- Bit 2: Enable Receiver Line Status Interrupt (ELSI)
- Bit 3: Enable MODEM Status Interrupt (EDSSI)
- Bit 4: Must be 0
- Bit 5: Must be 0
- Bit 6: Must be 0
- Bit 7: Must be 0

Interrupt Identification Register (IIR)

- Bit 0: "0" if Interrupt Pending
- Bit 1: Interrupt ID Bit 0
- Bit 2: Interrupt ID Bit 1
- Bit 3: Must be 0
- Bit 4: Must be 0
- Bit 5: Must be 0
- Bit 6: Must be 0
- Bit 7: Must be 0

• Line Control Register (LCR)

Bit 0: Word Length Select Bit 0 (WLS0)

Bit 1: Word Length Select Bit 1 (WLS1)

WLS1	WLS0	Word Length
0	0	5 Bits
0	1	6 Bits
1	0	7 Bits
1	1	8 Bits

Bit 2: Number of Stop Bit (STB)

Bit 3: Parity Enable (PEN)

Bit 4: Even Parity Select (EPS)

- Bit 5: Stick Parity
- Bit 6: Set Break
- Bit 7: Divisor Latch Access Bit (DLAB)

MODEM Control Register (MCR)

- Bit 0: Data Terminal Ready (DTR)
- Bit 1: Request to Send (RTS)
- Bit 2: Out 1 (OUT 1)
- Bit 3: Out 2 (OUT 2)
- Bit 4: Loop
- Bit 5: Must be 0
- Bit 6: Must be 0
- Bit 7: Must be 0

• Line Status Register (LSR)

- Bit 0: Data Ready (DR)
- Bit 1: Overrun Error (OR)
- Bit 2: Parity Error (PE)
- Bit 3: Framing Error (FE)
- Bit 4: Break Interrupt (BI)
- Bit 5: Transmitter Holding Register Empty (THRE)
- Bit 6: Transmitter Shift Register Empty (TSRE)
- Bit 7: Must be 0

MODEM Status Register (MSR)

- Bit 0: Delta Clear to Send (DCTS)
- Bit 1: Delta Data Set Ready (DDSR)
- Bit 2: Training Edge Ring Indicator (TERI)
- Bit 3: Delta Receive Line Signal Detect (DSLSD)

Bit 4: Clear to Send (CTS)

Bit 5: Data Set Ready (DSR)

Bit 6: Ring Indicator (RI)

Bit 7: Received Line Signal Detect (RSLD)

• Divisor Latch (LS, MS)

	LS	MS
Bit O:	Bit 0	Bit 8
Bit 1:	Bit 1	Bit 9
Bit 2:	Bit 2	Bit 10
Bit 3:	Bit 3	Bit 11
Bit 4:	Bit 4	Bit 12
Bit 5:	Bit 5	Bit 13
Bit 6:	Bit 6	Bit 14
Bit 7:	Bit 7	Bit 15

Desired Baud Rate	Divisor Used to Generate 16x Clock
300	384
600	192
1200	96
1800	64
2400	48
3600	32
4800	24
9600	12
14400	8
19200	6
28800	4
38400	3
57600	2
115200	1