SI-304

User Manual



Revision	Release Date	
V1.0	2015/10/19	



Copyright © 2013 IBASE Technology Inc. All Rights Reserved.

No part of this manual, including the products and software described in it, may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language in any form or by any means, except documentation kept by the purchaser for backup purposes, without the express written permission of IBASE Technology INC. ("IBASE ").

Products and corporate names mentioned in this manual may or may not be registered trademarks or copyrights of their respective companies, and are used for identification purposes only. All trademarks are the property of their respective owners.

Every effort has been made to ensure that the contents of this manual are correct and up to date. However, the manufacturer makes no guarantee regarding the accuracy of its contents, and reserves the right to make changes without prior notice.

Table of Contents

Setting up your system	V
Care during use	vi
Acknowledgments	vii
CHAPTER 1 INTRODUCTION	
1.1 General Description	1
1.2 System Specifications	2
1.2.1 Hardware Specifications	2
1.2.2 Dimensions	3
1.2.3 I/O View	4
1.3 Exploded View of the SI-304 Assembly	5
1.3.1 Parts Description	5
1.4 Packing List	6
1.4.1 Optional Items module	6
1.5 Hardware Installation	7
1.5.1 Mounting Installation	7
	0
	8
2.1 Introduction	8
2.2 Installations	10
2.2.1 Installing the Memory	10
2.3 Setting the Jumpers	11
CHAPTER 3 BIOS SETUP	14
3 1 BIOS Introduction	14
3 2 BIOS Setun	14
CHAPTER 4 DRIVERS INSTALLATION	33
4.1 VGA Drivers Installation	33
4.2 Audio Drivers Installation	37
4.3 LAN Drivers Installation	38
Annendix	30
A ATI Evofinitity sotting	20
R I/O Port Address Man	
C Interrunt Dequest Lines (IDA)	4/0 +
D. Watchdog Timor Configuration	/4141 ۸۵
	48



Safety Information

Your SI-304 is designed and tested to meet the latest standards of safety for information technology equipment. However, to ensure your safety, it is important that you read the following safety instructions

Setting up your system

- Read and follow all instructions in the documentation before you operate your system.
- Do not use this product near water.
- Set up the system on a stable surface. Do not secure the system on any unstable plane.
- Do not place this product on an unstable cart, stand, or table. The product may fall, causing serious damage to the product.
- Slots and openings on the chassis are for ventilation. Do not block or cover these openings. Make sure you leave plenty of space around the system for ventilation. *Never insert objects of any kind into the ventilation openings*.
- This system should be operated from the type of power indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.
- Use this product in environments with ambient temperatures between 0°C and 45°C.
- If you use an extension cord, make sure that the total ampere rating of the devices plugged into the extension cord does not exceed its ampere rating.
- DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY GO BELOW -20° C (-4° F) OR ABOVE 80° C (167° F). THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVIRONMENT.

Care during use

- Do not walk on the power cord or allow anything to rest on it.
- Do not spill water or any other liquids on your system.
- When the system is turned off, a small amount of electrical current still flows. Always unplug all power, and network cables from the power outlets before cleaning the system.
- If you encounter the following technical problems with the product, unplug the power cord and contact a qualified service technician or your retailer.
 - > The power cord or plug is damaged.
 - Liquid has been spilled into the system.
 - The system does not function properly even if you follow the operating instructions.
 - > The system was dropped or the cabinet is damaged.

Lithium-Ion Battery Warning

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

NO DISASSEMBLY

The warranty does not apply to the products that have been disassembled by users

WARNING HAZARDOUS MOVING PARTS KEEP FINGERS AND OTHER BODY PARTS AWAY



Acknowledgments

- AMI is a registered trademark of AMI Software International, Inc.
- AMD and ATI are registered trademarks of AMD Corporation.
- Intel, Pentium, and Intel Core are registered trademarks or trademarks of Intel Corporation.
- Microsoft Windows is a registered trademark of Microsoft Corporation.
- FINTEK is a registered trademark of FINTEK Electronics Corporation.
- REALTEK is a registered trademark of REALTEK Electronics Corporation.
- All other product names or trademarks are properties of their respective owners.

CHAPTER 1 INTRODUCTION

1.1 General Description

The "Signature Book[™]" SI-304 is a professional digital signage system powered by 2nd Gen AMD Embedded R-series APU-based Signage Player with Radeon[™] HD 9000 series graphics. The SI-304 integrates 4 HDMI ports with EDID emulation function. Additionally, SI-304 has two dual-channel DDR3-2133 sockets to provide up to 32GB of memory. It also has dual Gigabit Ethernet, one mSATA and NGFF drive and IBASE's iSMART green technology for power on/off scheduling and power resume functions. The ruggedized design player's chassis provides passive cooling for better system reliability and quiet operation.



SI-304 overview

** The integrated four HDMI interface has built-in EDID emulation function. To use

the EDID function, turn off the power first. Then, connect the new display port. After

you turn on the power, SI-304 will detect new EDID data.



2

1.2 System Specifications

1.2.1 Hardware Specifications

Model Name	SI-304	
System Mainboard	MBD304	
CPU	2nd Gen. R-series QC RX-427BB 2.7/3.4G	
	DC RX-225BB 2.2/3.0G APU	
Memory	2x DDR3 2133 SO-DIMM, dual channel, Max. 32GB	
I/O Interface	4x HDMI	
	2x USB 3.0 ports	
	1x USB 2.0 port	
	2x RJ45 for LAN	
	1x RJ45 for RS232	
	1x Microjack audio connector for Line-in	
	Power LED / HDD LED, power on/off button	
	1x DC power jack	
Storage	1x mSATA	
	1x NGFF M key 22 x 80mm(2280)	
Expansion Slots	2x mPCle(x1) for WiFi + Bluetooth, 3G, GPS and TV tuner options	
	1x UIM/SIM card slot (for 3G/LTE adaptor in mPCIe slot)	
Construction	Aluminum + SGCC	
Mounting	Slim design with wall mounting holes	
Dimensions	269mm(W) x 193mm(D) x 29.5mm(H)	
	10.59"(W) x 7.6"(D) x 1.16"(H)	
Operating	0°C~ 45°C (32°F~113°F)	
Temperature		
Storage	-20°C ~ 80°C (-4°F~176°F)	
Temperature		
Relative Humidity	5~90% @ 45°C, (non-condensing)	
Vibration	SSD: 5 grms / 5~500Hz / random operation	
	HDD: 0.25 grms / 5~500Hz / random operation	
RoHS	Available	
Certification	CE, FCC, CCC, UL	

·This specification is subject to change without prior notice.



1.2.2 Dimensions





4

1.2.3 I/O View





** Based on the design of SI-304, the use of HDMI port has certain limitations. In order to have an image on the screen, the "odd number" port should be plugged in first. If the "even number" port is plugged in first, then there will be no image on the screen. This procedure also applies when using the two ports at the same time in order to have image on the screens. The only requirement is to always plugged in first the "odd number" port.



** In order to erase the EDID data, the system needs to be powered off and the HDMI connector has to be removed. Afterwards, press and hold the EDID button while power is introduced for five (5) seconds; then, release the EDID button.







1.3 Exploded View of the SI-304 Assembly

1.3.1 Parts Description

Part No.	Description	Part No.	Description
1	SI-304 Main Board	2	Thermal Module
3	System Fan	4	M.2 Module
5	Mini PCI-E	6	RAM
7	Die Casting-Case	8	Cover
9	I/O Plate	10	M.2 Bracket
11	Mounting Screw		

1.4 Packing List

Item No.	Description	Qty
1	Driver CD	1
2	Power adaptor	1
3	Power cord	1

1.4.1 Optional Items module

WiFi Solution	Description	
WiFi module	Wireless; PCI-E Mini Card 802.11B/G/N [AW-NE238H] (A008WLAWNE238H000P)	
External Antenna, 2pcs	WiFi Antenna (A055RFA02C2M20800P)	Contraction of the second
Internal cable, 2pcs	Internal Antenna 200mm [BTC130-1-70B-200-1] RoHS (A055RFA0000020000P)	11
Screw, 2pcs	SCREW;A31 M2.5*4mm RoHS (H0220613011200000P)	IL
Bracket, 1 set	Component BOM; MPCIE-EXT V-B2 Bracket (SC2MPCIEEXT0B2100P)	
3G Solution	Description	
3G	Wireless; 3.75G UMTS/HSPA [ZU202] RoHS (A008WIRELESS00520P)	
3G+GPS	Wireless; 3.75G UMTS/HSPA & GPS Module [ZU200] RoHS (A008WIRELESS00510P)	
WW-350U	Wireless; 3.75G UMTS/HSPA [NAVISYS WW-350U] RoHS (A008WIRELESS00530P)	
Cable	Cable; SMA IPX Cable For 3G 30CM [RF11030A] RoHS (A012INTENAL010000P)	
Antenna	3G [ANT0921Q2P] RoHS (A055ANT0921Q2P000P)	
COM Port Cable	Description	
EXT-311	Cable; EXT-311 2-HD 10C 150CM; DSUB-9F => RJ45-10M RoHS (C501EXT3110A12000P)	
EXT-312	Cable; EXT-312 2-HD 10C 150CM; DSUB-9M => RJ45-10M RoHS (C501EXT3120A12000P)	



1.5 Hardware Installation

1.5.1 Mounting Installation

1. Please install SI-304 to the intended location using 4x M4*0.7*6L screws, as shown in the picture.



8

CHAPTER 2 MOTHERBOARD INTRODUCTION

2.1 Introduction

MBD304 Jumpers and Connectors







iBASE



MBD304 Board Dimensions

2.2 Installations

2.2.1 Installing the Memory

The MBD304 board supports four DDR3 memory modules for a maximum total of 32GB in DDR3 SODIMM memory type.

Installing and Removing Memory Modules

To install the DDR3 modules, locate the memory slot on the board and perform the following steps:

- 1. Hold the DDR3 module so that the key of the DDR3 module aligned with that on the memory slot.
- 2. Gently push the DDR3 module in an upright position until the clips of the slot close to hold the DDR3 module in place when the DDR3 module touches the bottom of the slot.
- 3. To remove the DDR3 module, press the clips with both hands.





2.3 Setting the Jumpers

Jumpers are used on MBD304 to select various settings and features according to your needs and applications. Contact your supplier if you have doubts about the best configuration for your needs. The following lists the jumpers and connectors on MBD304 and their respective functions.

JP4/JP5	Setting	Function	
	Pin 1-3	121/	
1 2	Short/Closed	+120	
	Pin 3-4	וח	
5 🗖 🗖 6	Short/Closed	KI	
	Pin 3-5	. 5\/	
	Short/Closed	+0 V	

JP3, JP4: COM1/COM2 RS232 RI/+5V/+12V Power Setting

J2: Clear CMOS Setting

J2	Function
••• 123	Normal
••• 123	Clear CMOS

CN1: DC_IN Connector (+12V Adaptor 4 Pin)

	Pin #	Signal Name
	1	+12V
	2	+12V
	3	GND
	4	GND
	5	GND

Copyright \circledcirc 2013 IBASE Technology Inc. All Rights Reserved.

11

J1: Memory Voltage Setting

J1	Function
 123	1.5V
123	1.35V

COM1: COM1 Connector

COM1	Pin #	Signal Name		
	1	DSR, Data set ready		
	2	GND, ground		
	3	GND, ground		
	4	TXD, Transmit data		
> ■	5	RXD, Receive data		
	6	DCD, Data carrier detect		
	7	DTR, Data terminal ready		
	8	CTS, Clear to send		
	9	RTS, Request to send		
	10	RI, Ring indicator		

COM2: COM2 Connector

	Signal Name	Pin #	Pin #	Signal Name
	Data carrier detect	1	2	Data set ready
	Receive data	3	4	Request to send
	Transmit data	5	6	Clear to send
о П О	Data terminal	7	8	Ring indicator
	ready			
	Ground	9	10	No connect.



CN11: Audio Line out

JP2: SPI Flash Connector

J8: Half Mini PCIE Slot

J8: LPC Debug Port Connector

J22: Front Panel

Signal Name	Pin #	Pin #	Signal Name
Power BTN	1	2	Power BTN
HDD LED+	3	4	HDD LED-
Reset BTN	5	6	Reset BTN
VCC5V 7-8 FOR ID723 POWER USE	7	8	5VDUAL 7-8 FOR ID723 POWER USE

JP1: DASH Programming header

J4: ISMART MCU Programming header

J6 J7: EDID Emulator MCU Programming header

CN9: LAN RTL8111EP-CG DASH

CN10: LAN RT8111G

CN5: HDMI (DP3)

CN6: HDMI (DP2)

CN7: HDMI (DP1)

CN8: HDMI (DP0)

J10: M.2 Socket SATA Only

J11/J6: Mini PCI-E With SIM Card Slot

J15: mSATA/Mini PCI-E

SW2: EDID Clear Button

CHAPTER 3 BIOS SETUP

This chapter describes the different settings available in the AMI BIOS that comes with the board. The topics covered in this chapter are as follows:

3.1 BIOS Introduction

The BIOS (Basic Input/Output System) installed in your computer system's ROM supports Intel processors. The BIOS provides critical low-level support for a standard device such as disk drives, serial ports and parallel ports. It also password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

3.2 BIOS Setup

The BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When you turn on the computer, the BIOS is immediately activated. Pressing the key immediately allows you to enter the Setup utility. If you are a little bit late pressing the key, POST (Power On Self Test) will continue with its test routines, thus preventing you from invoking the Setup. If you still wish to enter Setup, restart the system by pressing the "Reset" button or simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys. You can also restart by turning the system Off and back On again. The following message will appear on the screen:

Press or <ESC> to Enter Setup

In general, you press the arrow keys to highlight items, <Enter> to select, the <PgUp> and <PgDn> keys to change entries, <F1> for help and <Esc> to quit.

When you enter the Setup utility, the Main Menu screen will appear on the screen. The Main Menu allows you to select from various setup functions and exit choices.



Main Settings

Aptio Setup Utility – Copyright $\textcircled{\sc c}$ 2012 American Megatrends, Inc.

Main	Advanced	Chipset	Boot	Security	Save & Exit
				Choose the	e system default language
System Date			[Tue 01/20/2015]		
System Time			[15:27:20]	\rightarrow \leftarrow Sel	ect Screen
Access Leve	I		Administrator	<pre>↑ ↓ Sele Enter: S +- Chan F1: Gene F2: Prev F3: Opti F4: Save ESC: Exi</pre>	ct Item Select ge Field ral Help ious Values mized Default t

System Date

Set the Date. Use Tab to switch between Data elements.

System Time

Set the Time. Use Tab to switch between Data elements.

Advanced Settings

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.

		A	Aptio Setup	Utility	
Main	Advanced	Chipset	Boot	Security	Save & Exit
Launch PCI Sul ACPI S CPU Ca IDE Co Shutdoo Shutdoo Shutdoo Shutdoo Shutdoo Shutdoo Shutdoo Shutdoo F81846 F81846	PXE OpROM bsystem Settings onfiguration nfiguration wn Temperature Con Controller 3.1 onfiguration nfiguration Configuration Super IO Configura b H/W Monitor	nfiguration	Disabl	ed	 → ← Select Screen ↑ ↓ Select Item Enter: Select +- Change Field F1: General Help F2: Previous Values F3: Optimized Default F4: Save ESC: Exit

PCI Subsystem Settings

Aptio Setup Utility

Main	Advanced	Chipset Boot	Security	Save & Exit
PCI Bus Driv	ver Version		V 2.0502	
► PCI Expre	ss Settings			 → ←Select Screen ↓ Select Item Enter: Select +- Change Field F1: General Help F2: Previous Values F3: Optimized Default F4: Save ESC: Exit



PCI Express Settings

Aptio Setup Utility

Main Ad	lvanced	Chipset	Boot	Security	Save	e & Exit
PCI Express Dev	vice Register S	ettings				
Relaxed Orderin	g		Ena	abled		
Extended Tag	-		Dis	abled		
No Snoop			Ena	abled		
Maximum Payloa	ad		Aut	0		
Maximum Read	Request		Aut	0		
PCI Express Link Register Settings ASPM Support WARNING: Enabling ASPM may cause		Dis	Disabled		← Select Screen ↓ Select Item hter: Select - Change Field L: General Help	
Extended Synch			Dis	abled	F2 F3 F4	2: Previous Values 3: Optimized Default 4: Save ESC: Exit
Link Training Re	try		5			
Link Training Tim	neout (uS)		100)		
Unpopulated Lin	ks		Ke	ep Link ON		
Restore PCIE Re	egisters		Dis	abled		

Relaxed Ordering

Enables or disables PCI Express Device Relaxed Ordering.

Extended Tag

If ENABLED allows device to use 8-bit Tag field as a requester.

No Snoop

Enables or disables PCI Express Device No Snoop option.

Maximum Payload

Set Maximum Payload of PCI Express Device or allow System BIOS to select the value.

Maximum Read Request

Set Maximum Read Request Size of PCI Express Device or allow System BIOS to select the value.

ASPM Support

Set the ASPM Level: Force LOs – Force all links to LOs State:

AUTO – BIOS auto configure : DISABLE – Disables ASPM.

Extended Synch

If ENABLED allows generation of Extended Synchronization patterns.

Link Training Retry

Defines number of Retry Attempts software will take to retrain the link if previous training attempt was unsuccessful.

Link Training Timeout (uS)

Defines number of Microseconds software will wait before polling 'Link Training' bit in Link Status register. Value range from 10 to 1000 uS.

Copyright $\textcircled{\mbox{\scriptsize C}}$ 2013 IBASE Technology Inc. All Rights Reserved.

Unpopulated Links

In order to save power, software will disable unpopulated PCI Express links, if this option set to 'Disable Link'.

Restore PCIE Registers

On non-PCI Express aware OS's (Pre Windows Vista)some devices may not be correctly reinitialized after S3.Enabling this restors PCI Express device configuration on S3 resume Warning : Enabling this may cause issues with other hardware after S3 resume.



ACPI Settings

Advanced Main **Chipset Boot** Security Save & Exit **ACPI Settings** \rightarrow \leftarrow Select Screen ↑↓ Select Item Enter: Select +- Change Field F1: General Help Enabled Enable Hibernation F2: Previous Values F3: Optimized Default **ACPI Sleep State** S3 (Suspend to R...) F4: Save ESC: Exit Lock Legacy Resources Disabled

Aptio Setup Utility

Enable Hibernation

Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.

ACPI Sleep State

Select ACPI sleep state the system will enter, when the SUSPEND button is pressed.

Lock Legacy Resources

Enabled or Disabled Lock of Legacy Resources.

CPU Configuration

This section shows the CPU configuration parameters.

Main	Advanced	Chipset Boot	Secur	ity Save & Exit
CPU Configu	uration			
Module AGESA	Version: 4.6.5.4 Trin Version: 1.1.0.7	 → ←Select Screen ↑ ↓ Select Item Enter: Select +- Change Field F1: General Help F2: Previous Values F3: Optimized Default 		
PSS Support	t E	nable		F4: Save ESC: Exit
PSTATE Adj	ustment P	state 0		
PPC Adjustn	nent P	estate 0		
► Node 0 Information	rmation			

PSS Support

Enable/disable the generation of ACPI_PPC, _PPC, _PSS, and _PCT objects.

PSTATE Adjustment

Provide to adjust startup P-state level.

PPC Adjustment

Provide to adjust _PPC object.

Node 0 Information

View memory information related to Node 0.



IDE Configuration

		Aptio Setup Utility		
Main	Advanced	Chipset Boot	Security	v Save & Exit
IDE Configura	ation			→ ←Select Screen ↑ ↓ Select Item
SATA Port0	Not	Present		+- Change Field F1: General Help
SATA Port1	Not	Present		F2: Previous Values F3: Optimized Default F4: Save ESC: Exit

Shutdown Temperature Configuration

Aptio Setup Utility

Main	Advanced	Chipset	Boot	Security	Save & Exit
APCI Shutdo	wn Temperature	80 C/176 F			→ ←Select Screen ↑ ↓ Select Item Enter: Select +- Change Field F1: General Help F2: Previous Values F3: Optimized Default F4: Save ESC: Exit

ACPI Shutdown Temperature

The default setting is 80 C/176 F.

Aptio Setup Utility

iSmart Controller 3.1

Aptio Setup Utility

Main	Advanced	Chipset B	Boot Security	/ Save & Exit
Auto Power O	n Schedule			
Power-On afte	er Power failure	Enable		
PWR Resume	e Delay	Disable		→ ←Select Screen
Temperature	Guardian	Disable		↑↓ Select Item Enter: Select +- Change Field
Schedule Slot	: 1	None		F1: General Help F2: Previous Values F3: Optimized Default F4: Save
Schedule Slot	2	None		ESC: Exit

Power-On after Power failure

This field sets the system power status whether *Disable or Enable* when power returns to the system from a power failure situation.

PWR Resume Delay

Enable or disable power on resume delay.

Temperature Guardian

Generate the reset signal when system hangs up on POST.

Schedule Slot 1 / 2

Setup the hour/minute for system power on.



ASF Configuration

0		Aptio Setup Utility		
Main	Advanced	Chipset Boot	Security	Save & Exit
Alert Standard	I Format (ASF) Cor	figuration		
ASF Support		Disabled		→ ← Select Screen
ASF BIOS Mo	ode	ON		↑↓ Select Item Enter: Select
ASF WatchDo	og Timer	Disabled		+- Change Field F1: General Help
WatchDog	Timer : BIOS	0		F2: Previous Values F3: Optimized Default F4: Save ESC: Exit
WatchD	Dog Timer : OS	0		

ASF Support

ASF Support Enable/Disable

MCTP Configuration

	Aptio Setup Utility					
Main	Advanced	Chipset Boot	Security	Save & Exit		
Managemen	t Component Transpor	t Protocol(MCTP) Co	onfiguration			
Realtek LAN	I card DASH function	Disabled		 → E Select Screen ↑ ↓ Select Item Enter: Select +- Change Field F1: General Help F2: Previous Values 		
MCTP Supp	ort	Disabled		F3: Optimized Default F4: Save ESC: Exit		

Realtek LAN card DASH function

Realtek LAN card DASH function Enable/Disable

USB Configuration

Aptio Setup Utility

Main /	Advanced	Chipset	Boot	Security	Save & Exit
USB Configur	ation				
USB Module V	Version	8.10.31			
USB Devices: 1 Keyboa	rd, 1 Mouse				
Legacy USB S XHCI Hand-of EHCI Hand-of USB Mass Support Port 60/64 En USB hardware	Support if Storage Drive nulation e delays and time	Enabled Enabled Enabled TEnabled Enabled			→ ←Select Screen ↑↓ Select Item Enter: Select +- Change Field F1: General Help F2: Previous Values F3: Optimized Default F4: Save ESC: Exit
USB Transfer Device reset t Device power	time-out ine-out -up delay	20 sec 20 sec Auto			

Legacy USB Support

Enables Legacy USB support.

AUTO option disables legacy support if no USB devices are connected.

DISABLE option keeps USB devices available only for EFI applications.

USB3.0 Support

Enable/Disable USB3.0 (XHCI) Controller support.

XHCI Hand-off

This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.

EHCI Hand-off

Enabled/Disabled. This is a workaround for OSes without EHCI hand-off support. The EHCI

ownership change should be claimed by EHCI driver.

USB Transfer time-out

The time-out value for Control, Bulk, and Interrupt transfers.

Device reset time-out

USB mass Storage device start Unit command time-out.

Device power-up delay

Maximum time the device will take before it properly reports itself to the Host Controller. 'Auto' uses default value: for a Root port it is 100ms, for a Hub port the delay is taken from Hub descriptor.



F81846 Super IO Configuration

Aptio Setup Utility

Main	Advanced	Chipset	Boot	Security	Save & Exit
F81866 S	Super IO Configuratio	n			
F81866 S ▶ Serial ▶ Serial	Super IO Chip Port 0 Configuration Port 1 Configuration		F818	46	→ ←Select Screen ↑↓ Select Item Enter: Select +- Change Field F1: General Help F2: Previous Values F3: Optimized Default F4: Save ESC: Exit

Serial Port Configuration

Set Parameters of Serial Ports. User can Enable/Disable the serial port and Select an optimal settings for the Super IO Device.

F81846 H/W Monitor

Aptio Setup Utility

Main	Advanced	Chipset Boot	Security	Save & Exit
PC Health S	itatus			
Fan1 smart Fan2 smart CPU temper System temp Fan1 Speed Fan2 Speed Vcore Vcc5V Vcc12V Memory Vol VSB5V	fan control fan control rature perature tage		50 C 50C +56 C +45 C N/A N/A 1.008 V +5.171 V +11.968 V +1.512 V 5.1122 V	 → ←Select Screen ↑ ↓ Select Item Enter: Select +- Change Field F1: General Help F2: Previous Values F3: Optimized Default F4: Save ESC: Exit

Temperatures/Voltages

These fields are the parameters of the hardware monitoring function feature of the motherboard. The values are read-only values as monitored by the system and show the PC health status.

Chipset Settings

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.

Aptio Setup Utility								
Main	Advanced	Chipset	Boot	Security	Save & Exit			
 ▶ GFX C ▶ South ▶ North I 	Configuration Bridge Bridge				→ ←Select Screen ↑ ↓ Select Item Enter: Select +- Change Field F1: General Help F2: Previous Values F3: Optimized Default F4: Save ESC: Exit			

```
Aptio Setup Utility
```

Main	Advanced	Chipset	Boot	Securit	y Save & Exit
GFX Conf	iguration				→ ← Select Screen ↑↓ Select Item Estat: Select
Integrated	Graphics		Force		+- Change Field F1: General Help
UMA Fram	ne Buffer Size		2G		F2: Previous Values F3: Optimized Default
PSPP Poli	су		Disabled		F4: Save ESC: Exit

Integrated Graphics

Options are Auto Disabled and Force

UMA Frame Buffer Size

Set UMA FB Size

PSPP Policy

PCIe Speed Power Policy



Aptio Setup Utility

Main	Advanced	Chipset	Boot	Securi	ity Save & Exit
AMD Refe	erence code Vers	on:	Trinity P	ז 1.1.0.7	Options for SATA Configuration
► SB SA	TA Configuration	n			<pre>→ ← Select Screen ↑↓ Select Item Enter: Select +- Change Field F1: General Help F2: Previous Values F3: Optimized Default F4: Save ESC: Exit</pre>

Aptio Setup Utility

Main	Advanced	Chipset	Boot	Securit	ty Save & Exit
OnChip S/ OnChip S/	ATA Channel ATA Type	Enabled AHCI			 → ←Select Screen ↑ ↓ Select Item Enter: Select +- Change Field F1: General Help F2: Previous Values F3: Optimized Default F4: Save ESC: Exit

OnChip SATA Channel

Enabled or Disabled.

OnChip SATA Type

Native IDE /n RAID /n AHCI /n AHCI /n Legacy IDE /n IDE->AHCI /n HyperFlash

Aptio Setup Utility

Main	Advanced	Chipset	Boot	Securi	ty Save & Exit
North Brid	dge Configuratio	n			
Memory Ir	nformation				→ ← Select Screen ↑↓ Select Item Enter: Select - Change Field
Total mem ► Socket	nory: 2048 MB (DI 0 Information	DR3)			F1: General Help F2: Previous Values F3: Optimized Default F4: Save ESC: Exit

Aptio Setup Utility

Main	Advanced	Chipset	Boot	Securi	ty Save & Exit
Socket 0	Information				
Starti	ng Address: 0KB Ending Address: 209	97151 KB			 → ← Select Screen ↑ ↓ Select Item Enter: Select +- Change Field F1: General Help F2: Previous Values F3: Optimized Default
Di	mm0: size=2048 M	B,Dimm speed	=1600 MHz		F4: Save ESC: Exit
Di	mm1: Not Present				





Boot Settings

This section allows you to configure the boot settings.

		Aptio Setup Uti	lity		
Main Advanced	Chipset	Boot	Security	Sav	ve & Exit
Boot Configuration Setup Prompt Timeout Bootup NumLock State Quiet Boot Fast Boot Boot Mode select		1 C C L	lff isabled isabled EGACY		
 FIXED BOOT ORDER Priorit Boot Option #1 Boot Option #2 Boot Option #3 Boot Option #4 Boot Option #5 Boot Option #6 Boot Option #7 ► CSM16 parameters CSM parameters ► USB Key Drive BBS Priorit 	ies	ן כי כי ד ני ני ני	Hard Disk] CD / DVD] JSB Hard Disk] JSB CD / DVD] JSB Key lash…] JSB Floppy] Network]	:USB	 → ←Select Screen ↑ ↓ Select Item Enter: Select +- Change Field F1: General Help F2: Previous Values F3: Optimized Default F4: Save ESC: Exit

Setup Prompt Timeout

Number of seconds to wait for setup activation key.

65535(0xFFFF) means indefinite waiting.

Bootup NumLock State

Select the keyboard NumLock state.

Quiet Boot

Enables/Disables Quiet Boot option.

Fast Boot

Enables/Disables boot with initialization of a minimal set of devices required to launch active boot

option. Has no effect for BBS boot options.

FIXED BOOT ORDER Priorities

Sets the system boot order.

CSM parameters

OpROM execution, boot options, filter, etc.

Copyright $\ensuremath{\textcircled{\sc c}}$ 2013 IBASE Technology Inc. All Rights Reserved.

CSM parameters

This section allows you to configure the boot settings.

		Арті	o Setup Othry		
Main	Advanced	Chipset	Boot	Security	Save & Exit
Launch CS Boot optio Launch P Launch St Launch Vi Other PCI	SM n filter KE OpROM policy orage OpROM pol deo OpROM policy device ROM priori	Always UEFI a Do not icy Legacy / Legacy ty UEFI C	nd Legacy launch r only r only DpROM		 → ←Select Screen ↑ ↓ Select Item Enter: Select +- Change Field F1: General Help F2: Previous Values F3: Optimized Default F4: Save ESC: Exit

Launch CSM

This option controls if CSM will be launched.

Boot option filter

This option controls what devices system can boot to.

Launch PXE OpROM policy

Controls the execution of UEFI and Legacy PXE OpROM.

Launch Storatge OpROM policy

Controls the execution of UEFI and Legacy Storage OpROM.

Launch Video OpROM policy

Controls the execution of UEFI and Legacy Video OpROM.

Other PCI device ROM priority

For PCI devices other than Network, Mass storage or Video defines which OpROM to launch.



Security Settings

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.

Aptio Setup Utility								
Main	Advanced	Chipset	Boot	Secur	ity Save & Exit			
Password If ONLY th then this or asked for v If ONLY th power on p or enter Se Administra The passw in the follow Minimum k Maximum I Administra User Pass	Description e Administrator's pa hly limit access to S when entering Setup e User's password i bassword and must etup. In Setup the Us tor rights ord length must be wing range: ength ength tor Password word	assword is set ietup and is or j. is set, then thi be entered to ser will have	, s is a boot 3 20		 → ←Select Screen ↑ ↓ Select Item Enter: Select +- Change Field F1: General Help F2: Previous Values F3: Optimized Default F4: Save ESC: Exit 			

Administrator Password

Set Setup Administrator Password.

User Password

Set User Password.

Secure Boot control

Secure Boot flow control.

Secure Boot is possible only if System runs in User Mode.

Secure Boot Policy

Select Secure Boot mode extended options: Internal FV, Option ROM, Removable Media, Fixed Media.

Administrator Password

Set Setup Administrator Password

21

Save & Exit Settings

Main	Advanced	Chipset	Boot	Security	Save & Exit
Save Cha Discard C	nges and Exit hanges and Exit				
Save Cha	nges and Reset				
Discard C	hanges and Reset				
Save Opti	ions				\rightarrow \leftarrow Select Screen
Save Cha	nges				↑↓ Select Item
Discard C	hanges				Enter: Select +- Change Field F1: General Help
Restore D)efaults				F2: Previous Values
Save as L	Jser Defaults				F3: Optimized Default
Restore L	lser Defaults				F4: Save ESC: Exit

Save Changes and Exit

Exit system setup after saving the changes.

Discard Changes and Exit

Exit system setup without saving any changes.

Save Changes and Reset

Reset the system after saving the changes.

Discard Changes and Reset

Reset system setup without saving any changes.

Save Changes

Save Changes done so far to any of the setup options.

Discard Changes

Discard Changes done so far to any of the setup options.

Restore Defaults

Restore/Load Defaults values for all the setup options.

Save as User Defaults

Save the changes done so far as User Defaults.

Restore User Defaults

Restore the User Defaults to all the setup options.



CHAPTER 4 DRIVERS INSTALLATION

IMPORTANT NOTE:

After installing your Windows operating system, you must install first the Intel Chipset Software Installation Utility before proceeding with the drivers installation.

4.1 VGA Drivers Installation

1. Insert the drivers DVD that comes with the system. Click System, then SI-304 Series Products.



2. Click AMD Bald Eagle Graphics Drivers.

Inside T	Version : SI-2.2a
System	AMD Bald Eagle Graphics Drivers Realtek High Definition Audio Driver Realtek GbE _FE Ethernet PCI-E NIC Driver

Copyright © 2013 IBASE Technology Inc. All Rights Reserved.

MD - Catalyst™ Install N	1anager - Version: 08.00.0916
Welcome	
Welcome	Catalyst™ Install Manager is used to install and update the software for your graphics products
	CLanguage Support — Which language would you like Catalyst™ Install Manager to display?
CATALYST SOFTWARE	English
	http://www.amd.com
	Next > Cancel

3. When the welcome screen appears, click Next.

- 4. Select the language you would like to be displayed and click Next.
- 5. Click *Next* to continue the installation process.



istaller We	Icome
Welcome	- Welcome
Analyze	Express
Customize	Custom
Install	Default Installation Location: C:\Program Files\AMD Browse
Finished	
SOFTWARE	

6. Select Express and the installation location and click Next.

7. Click Accept to accept the End User License Agreement.



8. To reboot the system, click Yes.





4.2 Audio Drivers Installation

1. Insert the drivers DVD that comes with the syste0. Click Realtek High Definition Audio Driver.



2. When the Welcome screen to the InstallShield Wizard appears, click Next.

3. InstallShield Wizard is now complete, click **Finish** to restart the system and for changes to take effect.

4.3 LAN Drivers Installation

- 1. Insert the drivers DVD that comes with the syste0. Click LAN Card.
- 2. Click *Realtek GbE_FE Ethernet PCI-E NIC Drivers*.

Inside T	Version : SI-2.2a
System	AMD Bald Eagle Graphics Drivers Realtek High Definition Audio Driver Realtek GbE _FE Ethernet PCI-E NIC Driver

- 3. When the Welcome screen appears, click Next.
- 4. click *Install* to begin the installation.
- 5. InstallShield Wizard is complete. Click *Finish*.



Appendix

A. ATI Eyefinitity setting

After finishing AMD VGA driver installation, you can start to use "AMD Catalyst Control Center".



Choose **"AMD Eyefinity Multi-Display"** for Video wall display configuration setting.



Select "Create Eyefinity Display Group"









Make the displays arrangement

	AMD Catalyst Control Center	×
Search 👂 <	Create Eyefinity Display Group	?
> Pinned	Create an AMD Eyefinity display group. Combine multiple displays to work together as a single desktop.	
> Presets > AMD FirePro™	Supported configurations for your display group (2x2): Show more standard mixed dimension mixed alignment	<u>re</u>
Desktop Management Common Display Tasks	Rearrange your displays as needed.	
AMD Eyefinity™ Multi-Display My Digital Flat-	Start arrangement	
> Video		
Power V Audio		
> Information		
	1 3 4	
	2 4 4	
	Back	



Complete the settings

	AMD Catalyst Control Center	Preferences
Search 👂	Create Eyefinity Display Group	* ?
> Pinned	Create an AMD Eyefinity display group. Combine multiple displays to work together as a	single desktop.
> Presets		
> AMD FirePro™	Save Eyefinity Display Group	th 4 displays (2 x
Management Common Display Tasks AMD Eyefinity™ Multi-Display My Digital Flat- Panels > Video > Power > Audio > Information	() () () () () () () () () ()	
	My Display Group 2011Feb11_0108	
	We suggest: Adjust Bezel Compensation Arrange Eyefinity Display Group Create Eyefinity Display Group Disable Eyefinity Display Group Defaults Dis	card Apply

Now, you can use Screen resolution to check your setting.

×	AMD Catalyst Control Center	
	View	•
	Sort by	►
	Refresh	
	Paste	
	Paste shortcut	
	New	•
E	Screen resolution	
	Gadgets	
1000	Personalize	

A screen with 7680 X 4320 is the correct setting for 2 x 2 Display configuration. (Monitor: ASUS PB287Q with 3840 * 2160 resolution support.)

Change the appearance of your disp	lay	ľ
------------------------------------	-----	---

	0	Detect
isplay: esolution:	1. ASUS PB287Q 7680 × 4320	
		Advanced settings
Connect to a p	rojector (or press the 🞥 key and tap P)	
Make text and o	other items larger or smaller	
	Contract of the second s	



Remarks:

3 and 4 Displays configurations





Copyright $\textcircled{\mbox{\scriptsize c}}$ 2013 IBASE Technology Inc. All Rights Reserved.

B. I/O Port Address Map

Each peripheral device in the system is assigned a set of I/O port addresses, which also becomes the identity of the device. The following table lists the I/O port addresses used.

Address	Device Description
0000h-03AFh	PCI bus
0000h-03AFh	Direct memory access controller
0010h-001Fh	Motherboard resources
0020h-0021h	Programmable interrupt controller
0022h-003Fh	Motherboard resources
0040h-0043h	System timer
0044h-005Fh	Motherboard resources
0060h-0060h	Standard PS/2 Keyboard
0061h-0061h	System speaker
0063h-0063h	Motherboard resources
0064h-0064h	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
0065h-0065h	Motherboard resources
0070h-0071h	System CMOS/real time clock
0072h-007Fh	Motherboard resources
0081h-0083h	Direct memory access controller
0084h-0086h	Motherboard resources
0084h-0087h	Direct memory access controller
00A0h-00A1h	Programmable interrupt controller
00A2h-00BFh	Motherboard resources
00A2h-00BFh	Direct memory access controller
00B1h-00B1h	Motherboard resources
00F0h-00FFh	Numeric data processor
0170h-0177h	ATA Channel 1
01F0h-01F7h	ATA Channel 0
0238H-023Fh	Communications Port (COM5)
02E8H-02EFh	Communications Port (COM4)
02F8H-02FFh	Communications Port (COM2)
0338H-033Fh	Communications Port (COM6)
03E8H-03EFh	Communications Port (COM3)
03F8H-03FFh	Communications Port (COM1)



C. Interrupt Request Lines (IRQ)

Peripheral devices use interrupt request lines to notify CPU for the service required. The following table shows the IRQ used by the devices on board.

Level	Function
IRQ 0	System timer
IRQ 1	Standard 101/102-Key
IRQ 3	Communications Port (COM2)
IRQ 4	Communications Port (COM1)
IRQ 6	Communications Port (COM3)
IRQ 6	Communications Port (COM4)
IRQ 8	System CMOS/real time clock
IRQ 10	Communications Port (COM5)
IRQ 10	Communications Port (COM6)
IRQ 12	PS/2 Compatible Mouse
IRQ 13	Numeric data processor
IRQ 16	High Definition Audio Controller
IRQ 16	PCI standard PCI-to-PCI bridge
IRQ 17	Standard Enhanced PCI to USB Host Controller
IRQ 17	Standard Enhanced PCI to USB Host Controller
IRQ 18	High Definition Audio Controller
IRQ 18	Standard Open HCD USB Host Controller
IRQ 18	Standard Open HCD USB Host Controller
IRQ 18	Standard Open HCD USB Host Controller
IRQ 18	Standard Open HCD USB Host Controller
IRQ 19	PCI standard PCI-to-PCI bridge
IRQ 19	AMD SATA Controller (IDE Mode)

Copyright @ 2013 IBASE Technology Inc. All Rights Reserved.

D. Watchdog Timer Configuration

The WDT is used to generate a variety of output signals after a user programmable count. The WDT is suitable for use in the prevention of system lock-up, such as when software becomes trapped in a deadlock. Under these sorts of circumstances, the timer will count to zero and the selected outputs will be driven. Under normal circumstance, the user will restart the WDT at regular intervals before the timer counts to zero.

SAMPLE CODE:

//
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//
#include <dos.h></dos.h>
#include <conio.h></conio.h>
#include <stdio.h></stdio.h>
#include <stdlib.h></stdlib.h>
#include "F81866.H"
//
int main (int argc, char *argv[]);
void EnableWDT(int);
void DisableWDT(void);
//
int main (int argc, char *argv[])
{
unsigned char bBuf;
unsigned char bTime;
char **endptr;
char SIO;
printf("Fintek 81866 watch dog program\n");

SIO = Init_F81866();



```
if (SIO == 0)
printf("Can not detect Fintek 81866, program abort.\n");
return(1);
}//if (SIO == 0)
if (argc != 2)
{
printf(" Parameter incorrect!!\n");
return (1);
}
bTime = strtol (argv[1], endptr, 10);
printf("System will reset after %d seconds\n", bTime);
if (bTime)
{EnableWDT(bTime); }
else
{DisableWDT();}
return 0;
}
//-----
void EnableWDT(int interval)
{
unsigned char bBuf;
bBuf = Get_F81866_Reg(0x2B);
bBuf &= (~0x20);
Set_F81866_Reg(0x2B, bBuf);
/Enable WDTO
Set_F81866_LD(0x07);
//switch to logic device 7
Set_F81866_Reg(0x30, 0x01);
 //enable timer
bBuf = Get_F81866_Reg(0xF5);
bBuf &= (~0x0F);
```

bBuf |= 0x52;

```
Set_F81866_Reg(0xF5, bBuf);
```

//count mode is second

Set_F81866_Reg(0xF6, interval); //set timer

bBuf = Get_F81866_Reg(0xFA); bBuf |= 0x01;

Set_F81866_Reg(0xFA, bBuf);

//enable WDTO output

 $bBuf = Get_F81866_Reg(0xF5);$

bBuf |= 0x20;

Set_F81866_Reg(0xF5, bBuf);

//start counting

```
}
```

//-----

void DisableWDT(void)

{

unsigned char bBuf;

Set_F81866_LD(0x07);

//switch to logic device 7

bBuf = Get_F81866_Reg(0xFA);

bBuf &= ~0x01;

Set_F81866_Reg(0xFA, bBuf);

//disable WDTO output

bBuf = Get_F81866_Reg(0xF5); bBuf &= ~0x20;

bBuf |= 0x40;

Set_F81866_Reg(0xF5, bBuf);

//disable WDT

}

//-----



//
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//
#include "F81866.H"
#include <dos.h></dos.h>
//
unsigned int F81866_BASE;
void Unlock_F81866 (void);
void Lock_F81866 (void);
//
unsigned int Init_F81866(void)
{
unsigned int result;
unsigned char ucDid;
F81866_BASE = 0x4E;
result = F81866_BASE;
ucDid = Get_F81866_Reg(0x20);
if (ucDid == 0x07)
//Fintek 81866
{goto Init_Finish; }
F81866_BASE = 0x2E;
result = F81866_BASE;
ucDid = Get_F81866_Reg(0x20);
if (ucDid == 0x07)
//Fintek 81866
{goto Init_Finish; }
F81866_BASE = 0x00;
result = F81866_BASE;

Copyright @ 2013 IBASE Technology Inc. All Rights Reserved.

```
Init_Finish:
return (result);
}
//-----
void Unlock_F81866 (void)
{
outportb(F81866_INDEX_PORT, F81866_UNLOCK);
outportb(F81866_INDEX_PORT, F81866_UNLOCK);
}
//-----
void Lock_F81866 (void)
{
outportb(F81866_INDEX_PORT, F81866_LOCK);
}
//-----
void Set_F81866_LD( unsigned char LD)
{
Unlock_F81866();
outportb(F81866_INDEX_PORT, F81866_REG_LD);
outportb(F81866_DATA_PORT, LD);
Lock_F81866();
}
//-----
void Set_F81866_Reg( unsigned char REG, unsigned char DATA)
{
Unlock_F81866();
outportb(F81866_INDEX_PORT, REG);
outportb(F81866_DATA_PORT, DATA);
Lock_F81866();
}
//-----
```



unsigned char Get_F81866_Reg(unsigned char REG)
{
unsigned char Result;
Unlock_F81866();
outportb(F81866_INDEX_PORT, REG);
Result = inportb(F81866_DATA_PORT);
Lock_F81866();
return Result;
}
//
//
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WIT

THOUT WARRANTY OF ANY // KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE // IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR // PURPOSE.

//

//-----

#ifndef __F81866_H #define ___F81866_H

//-----

//
#define
F81866_INDEX_PORT
(F81866_BASE)
#define
F81866_DATA_PORT
(F81866_BASE+1)

Copyright @ 2013 IBASE Technology Inc. All Rights Reserved.

1

#define F81866_REG_LD 0x07 //-----#define F81866_UNLOCK 0x87 #define F81866_LOCK 0xAA //----unsigned int Init_F81866(void); void Set_F81866_LD(unsigned char); void Set_F81866_Reg(unsigned char, unsigned char); unsigned char Get_F81866_Reg(unsigned char); //-----#endif

//__F81866_H

