

AMI311-970

User Manual

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IBASE Technology Inc.

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Safety Information

Your AMI311-970 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 40°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 THESTORAGE TEMPERATURE MAY GO BELOW -20° C (-4° F) OR ABOVE 80° C (176° 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



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CHAPTER 1 INTRODUCTION

1.1 General Description

AMI311-970 Fanless Embedded Box PC comes with 3rd Gen. Intel[®] Core[™] i7/i5/i3 Celeron Quad Core/Dual Core processors and Intel HD Integrated Graphics Engine with high computing performance. It supports DVI-I/DVI-D/DisplayPort display output, 2 x USB 3.0, 6 x USB 2.0, 1x PCI-E x(16) expansion slot, and 2 x Gigabit LAN giving a great selection for data communication in display applications. The rugged design 231 x 199 x 97.75 mm chassis come with one full-size internal PCI Express Mini Card slot and one half-size Mini Card slot to connect wireless through 3G or LTE. This embedded box computer is ideal for digital signage player, Kiosk, entry-level gaming, video surveillance, and other automation & embedded application.



1.2 System Specifications



1.2.1 Hardware Specifications

Engineer Specifications

SPECIFICATION -SYSTEM		
CPU		
Model	Intel® 3 nd Generation Core™ i7/i5/i3/Pentium AMI311-970F-1020E (Intel® Celeron™ 1020E 2.2 GHz) AMI311-970F-3120ME (Intel® Core™ i3-3120ME 2.4 GHz) AMI311-970F-3610ME (Intel® Core™ i5-3610ME 2.7 GHz) AMI311-970F-3612QM (Intel® Core™ i7-3612QM 2.1 GHz) Up to 2.7 GHz (Intel® Core™ i7-3612QM 2.1 GHz)	
Cache	Up to 6MB Intel® Smart Cache	
Socket	rPGA988B	
Memory		
Configuration	2 x 4GB DDR3 SO-DIMM (non ECC) P/N : C0373900400080312P	
Max. Support	Up to 16 GB	
Rear I/O		
Display	Intel® 3 nd Generation Core™ i5 Processor integrated HD Graphics 4000 - 1 x DVI-I + 1 x DVI-D (Dual Stack) - 1 x Display port	
LAN / PHY	 1st: Intel® 82579V GbE PHY 2nd: Intel® 82583V GbE LAN 2 x Gigabit RJ45 connector with 4 x USB 2.0 	
Audio	 Realtek ALC892 Audio Codec 1 x 3 Port Audio Jack 	
USB 2.0 / 3.0	 4 x USB 2.0 (with RJ-45) 2 x USB 3.0 	
LPCI/O	- 1 x RS-232 + 1 x RS-232/422/485(Dual Stack)	
Expansion slot	 1 x PCle x 16 Slot Description: RISER CARD;PCIE x16 [錦茂 CLKF797+797S16X] P/N: A008RSPCIE0201000P 	

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	• P/N: A005PS120WM020000P	
Certification	CE/FCC/LVD	
Environmental		
Temperature	Operating Temperature: 0°C~45°C (32°F~113°F)	
	Storage Temperature: -20°C ~ 80° C	
Humidity	5%~90%@45°C ,non-condensing	
Shock	IBASE Standard	
Vibration	CFD: 1g rms / 5~500 MHZ random operation	
	HDD: 0.25g 5~500 MHZ random operation	
Other	RoHS	

SPECIFICATION - MAINBOARD		
Model	M1970F	
	P/N:ZD16MI97012A20P	
Form Factor	MINI-ITX	
	CPU	
Model	3rd Generation Intel® Core™ i7 / i5 / i3 / Celeron® QC/ DC	
	processors	
Speed	Up to 3.60 GHz (TDP=35W)	
Cache	Up to 6MB Intel® Smart Cache	
Socket	rPGA988B	
	CHIPSET	
Model	Intel® HM76 Express Chipset	
BIOS		
Model	AMI BIOS, support ACPI Function	
MEMORY		
Configuration	2 x DDR3 SO-DIMM sockets	
Max. Support	16GB	
I/0		
Display	Processor graphics (Gen 5.75 graphics engine)	
	Supports CRT, DVI-I, DVI-D, LVDS and Display Port	
	Supports 24-bit dual channel LVDS display	

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LAN / PHY	Intel® 82579V Gigabit LAN PHY	
	Intel® 82583V PCI-E Gigabit LAN	
	2 x RJ-45 on board	
Audio	Intel® HM76 PCH built-in high definition audio controller with	
	Realtek ALC892 for 7.1 CH Audio	
USB 2.0 / 3.0	4 USB 3.0 ports (2 ports on board, 2 ports via pin header)	
	8 USB 2.0 ports (4 ports on board, 4 ports via pin header)	
LPCI/O	Fintek F81866AD-I	
	Rear: 1 x RS-232 + 1 x RS232/422/485	
	Internal: 2 x RS-232	
Serial ATA	4 x SATA II and 2 x SATA III	
Expansion Slot	1 x PCle x 16	
	2 x PCIe x 1 (1x Half-Size, 1x Full-Size)	
Other	Digital I / O 4 in & 4 out	
Rear I / O	Dual DB9 stack connector for COM 1 & 2	
	1 x DVI-I + DVI-D Dual stack connector	
	1 x Dual USB 3.0 stack connector + 1 x Display Port	
	2 x RJ-45 GbE + dual USB 2.0 stack connector	
	1 x 3 HD Audio Jack	
Header /	2 x SATA III, 4 x SATA II	
Connector	2 x Mini PCIe Socket(1 x Full size & 1 x Halt Size)	
	4 X USB 2.0, 1 X DUGI LVDS, 2 X USB 3.0	
	1 x LCD backlight control	
	1 x Front panel audio	
	1 x IrDA	
	SUPPORT	
Watchdoa	Yes (256 segments, 0, 1, 2255 sec/min)	
H/W Monitor	Yes	
EuP/ErP	Yes	
ismart	Yes	
RoHS	Yes	
	DEPLOYMENT	
Dimension	170mm x 170mm	
Power	ATX Main Power	
	iBASE	

Certification	N/A	
Environmental		
Temperature	Operating: 0°C~60°C (32°F~140°F) Storage: -20°C~80°C (-4°F~176°F)	
Humidity	10%~90% (non-condensing)	
Shock	N/A	
Vibration	N/A	

 $\cdot \mbox{This specification is subject to change without prior notice.}$

1.2.2 Dimensions





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1.3 Exploded View of the AMI311-970 Assembly

1.3.1 Parts Description

項次編號	零件名稱	數量
1	ami-300a_base fp	1
2	brazen post m3x33	1
3	AMI311-970FNX_front plt_A1	1
4	驊陞_USB	1
5	IB881-sw	1
6	dc jack_scd554	1
7	ami-300_name plt	1
8	AMI311-970FNX_rear plt_A1	1
9	MI970-10	1
10	AMI200-970_HS_A1	1
11	AMI200-970_HS-1_A1	1
12	AMI200-970_heat pipe_A1	1
13	AMI200-970_HS-2_A1	1
14	JAS190C-B_1	4
15	JAT222-A	1
16	brazen post m3x10	2
17	AMI200-970_HS brk_A1	1
18	PCI2 board	1
19	EZ S Driver module	1
20	CLKF797+797S 16X加線材	1
21	AMI311-970FNX_PCI brk_A1	1
22	AMI311-970FNX_HS-1_A1	1
23	ami-300_base	1
24	AMI311-970FNX_HSa_A1	1
25	AMI311-970FNX_HSa_A1	1
26	Power ID450	1
27	AMI311-970FNX_Rubber_A1	1
28	TM600 thermal pad	1
29	AMI311-970FNX_gasket_A1	2

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1.4 Packing List

Item No.	Description	Qty
1	Driver CD	1
2	User manual	1
3	Wall mount kit	2

1.4.1 Optional Items

WiFi Solution	Description	
WiFi module	WIRELESS;PCI-E MINI CARD 802.11B/G/N [AW-NE238H] (A008WLAWNE238H000P)	The second
External Antenna	WiFi Antenna (A055RFA02C2M20800P)	And a second sec
Internal cable-1/2	From Wifi module to Rear/Front panel (A055RFA0000021000P/A055RFA0000032000P)	
Bracket	MPCIE-EXT V-B1 Bracket, RoHS; Extend Half to Full size. (SC2MPCIEEXT0B1100P)	
3G Solution	Description	
ZU 202	Wireless; 3.75G UMTS/HSPA [ZU202] RoHS (A008WIRELESS00520P)	
ZU 200	Wireless; 3.75G UMTS/HSPA & GPS Module [ZU200] RoHS (A008WIRELESS00510P)	
Cable	Cable; Antenna-2 30CM P 2pcs (C501ANT0200300000P)	
Antenna	Antenna; 3G, P, 2pcs (A055ANT0921Q2P000P)	

CHAPTER 2 MOTHERBOARD INTRODUCTION

2.1 Introduction

The IB908F is a Mini-ITX motherboard computer based on the Intel[®] HM76 chipset processors. The platform supports 3rd generation Intel[®] Core processor family with rPGA988B packing and feature an integrated dual-channel DDR3 memory controller as well as a graphics core.

The MI970F platform is well-suited for low-power and high-performance designs in a broad range of markets including Industrial Control & Automation, Digital Signage, Thin Client, Electronic Gaming Machines, and SMB storage appliances.

MI970F Features:

- Supports Intel[®] 3rd Generation Core i7/i5/i3 QC/DC mobile processors
- Two DDR3 SO-DIMM, 1066/1333/1600MHz, Max. 16GB memory
- Dual Intel[®] PCI-Express Gigabit LAN
- Integrated Graphics for DVI-I, DVI-D/DisplayPort/LVDS displays
- 4x SATA 2.0, 2x SATA 3.0, 8x USB 2.0, USB 3.0 (4 ports),
- 4x COM, Watchdog timer
- 1x PCI-E (x16), 2x Mini PCI-E
- Optional AMT (MI970VF only)

Product Name	MI970F	
Form Factor	Mini-ITX	
СРИ Туре	- Intel® 3rd Generation Core TMi7/i5/i3 mobile processors	
	- rPGA package, 37.5 mm x 37.5mm	
	- TDP: QC = 45W/ DC = 35W	
	**Ivy Bridge CPU socket is compatible with Sandy Bridge	
	CPU**	
CPU Speed	Up to 2.7GHz	
Cache	Up to 8MB	
Chipset	Intel® QM77Platform Controller Hub (MI970VF)	
	Intel® HM76Platform Controller Hub (MI970F)	
	25 x 27 mm package size	



BIOS	AMI BIOS [16MB SPI ROM]	
Memory	Intel® Ivy-Bridge mobile processors integrated memory	
	controller	
	DDRIII 1066/1333/1600 MHz	
	- SO-DIMM [204-pin vertical type]x 2 (Non-ECC), Max.	
	16GB	
Display	- Intel® Ivy-Bridge mobile processor integrated Gfx, supports	
	3 independent displays, Direct X 11, OpenGL 3.1, Open CL	
	1.1	
	●DVI-I X 1 (thru Level shifter ASM1442)	
	●DVI-D X 1 (thru DP to DVI converter ANX9830C)	
	●DisplayPort x 1	
	●LVDS : DF13 x 2 for dual channel 24-bit support	
LAN	1. Intel® Lewisville 82579LM GbE PHY [MI970VF only]	
	or Intel® Lewisville 82579V GbE PHY [MI970F only]	
	2. Intel® 82583V as 2nd GbE	
USB (Universal Serial Bus)	USB 2.0 host controller [Panther Point integrated], supports	
	8 ports	
	- 4 ports in the rear panel	
	- 2 ports via onboard pin header (2.0mm pitch)	
	- 2 ports via MiniPCIe sockets	
	USB 3.0 host controller [Panther Point integrated], support 4	
	ports	
	- 2 ports in the rear panel	
	- 2 ports via onboard box-header type [Blue color]	
Serial ATA Ports	Intel® QM77 PCH built-in SATA controller, supports total 6	
	ports	
	2 x SATA (3.0) 6Gbps+ 4 x SATA (2.0) 3Gbps ports	
Audio	Intel® QM77 PCH built-in High Definition Audio controller +	
	Realtek ALC892 w/ 7.1 channels	
LPC I/O	Fintek F81866AD-I (128-pin LQFP [14mm x 14 mm])	
	COM1 (RS232/422/485)	
	[EXAR SP339EER1 232/422/485 transceiver x 1 for jumper-less]	
	COM2/COM3/COM4 (RS232), Hardware	
	Monitor (2 thermal inputs,4 voltage monitor inputs & 2 Fan	
	headers) [CPU FAN & SYS FAN(DC Fan type, 3-pin	
	connector)]	
	COM1/2 with pin-9 with power for 2 ports (500 mA for each	

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	port)	
Digital IO	4 in & 4 out	
Expansion Slots	- PCI-Express (16x) x1 [Gen 3.0 PEG]	
	- Mini PCI-Express x1 port [Full-sized] w/mSATA +USB 2.0	
	support	
	- Mini PCI-Express x1 port [Half-sized] w/ USB 2.0 support	
Edge Connector	Dual DB9 stack connector for COM #1 / #2	
	DVI-D + DVI-I stack connector x 1	
	USB(3.0) dual stack + DP connector x1	
	RJ-45 + dual USB(2.0) stack connector x2	
	Triplet type Jack 3 x 1 for HD Audio	
On Board Header/Connector	2 ports x SATA III [Blue color] , 4 ports x SATA II ,	
	mSATA (w/JEDEC MO-300) [Share with SATA #5]	
	DF-11 8 pins connector x 1 for 2 ports USB 2.0	
	DF-13 20 pins connector x 2 for dual –channel LVDS	
	2x10 pins box-header x 1 for 2 ports USB 3.0 [Blue color]	
	2x5 pins pin-header x 1 for front panel audio [Support 7.1	
	Channel]	
	2x5 pins pin-header x 2 for COM3 & COM4	
	2x5 pins pin-header x 1 for Digital IO	
	4 pins box header x 1 for LCD backlight control	
Watchdog Timer	Yes (256 segments, 0, 1, 2255 sec/min)	
System Voltage	ATX standard 20-pin type	
	4 pin type (+12V only)[For full system loading usage]	
RoHS	Yes	
Board Size	170mm x 170mm	
OS supporting	- Windows 7 / Embedded	
	- Linux	



2.2 Board Dimensions



2.3 Setting the Jumpers

Jumpers are used on MI970F 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 connectors on MI970F and their respective functions.

2.4 Jumper Locations on MI970





JP1: LPC debug Connector (Factory use only)

JP2	Setting	Function
	Pin 1-2	. 12)/
	Short/Closed	+12V
	Pin 3-4	Ы
5 0 06	Short/Closed	KI
	Pin 5-6	. 5)/
	Short/Closed	+5V

JP2: COM1 RS232 RI/+5V/+12V Power Setting

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

JP3	Setting	Function	
1	Pin 1-2	121/	
	Short/Closed +12V		
	Pin 3-4	Ы	
5 🗖 🗖 6	Short/Closed	KI	
	Pin 5-6	. 5)/	
	Short/Closed	+5V	

JP4, JP5: LVDS Connectors (1st channel, 2nd channel)

The LVDS connectors on board consist of the first channel (LVDS1) and second channel (LVDS2).

	Signal	Pin #	Pin #	Signal
	Name			Name
-	TX0-	2	1	TX0+
	Ground	4	3	Ground
	TX1-	6	5	TX1+
	5V/3.3V	8	7	Ground
	TX3-	10	9	TX3+
20[1 1]19	TX2-	12	11	TX2+
	Ground	14	13	Ground
	TXC-	16	15	TXC+

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5V/3.3V	18	17	ENABKL
+12V	20	19	+12V

JP6: LCD Backlight Connector

	Pin #	Signal Name
	1	+12V
00	2	Backlight Enable
	3	Brightness Control
	4	Ground

JP7: USB4/USB5 Connector

1

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	Signal	Pin #	Pin #	Signal
2011	Name			Name
00	Vcc	1	2	Ground
8007	D0-	3	4	D1+
	D0+	5	6	D1-
	Ground	7	8	Vcc

JP8: SPI Flash connector (Factory use only)

JP9: SPDIF I/O

	Pin #	Signal Name
	1	SPDIF IN
1 ■ □ 2 3 □ □ 4	2	Ground
5 5 5 4	3	SPDIF OUT
	4	Ground

J13: Flash Descriptor Security Override (Factory use only)

	Flash Descriptor
J13	Security
	Override



Open	Disabled (Default)
Close	Enabled

J14: LCD Panel Power Selection

J14	LCD Panel Power
••• 123	3.3V
• • • 1 2 3	5V

J16: Clear ME Contents

J16	Setting	Function
<u> </u>	Pin 1-2 Short/Close d	Normal
123	Pin 2-3 Short/Close d	Clear

J17: Clear CMOS Contents

J17	Setting	Function
	Pin 1-2	
	Short/Close	Normal
ΙΖĴ	d	
	Pin 2-3	
	Short/Close	Clear CMOS
	d	



Connector Locations on MI970F





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CN1: COM1 and COM2 Serial Ports

	Pin #	Signal Name		
COM1		RS-232	R2-422	RS-485
0()0	1	DCD	TX-	DATA-
	2	RX	TX+	DATA+
	3	ТХ	RX+	NC
COM2	4	DTR	RX-	NC
	5	Ground	Ground	Ground
	6	DSR	NC	NC
6 9	7	RTS	NC	NC
	8	CTS	NC	NC
	9	RI	NC	NC
	10	NC	NC	NC

CN2: DVI-D and DVI-I Connector

	Signal Name	Pin	Pin	Signal
		#	#	Name
	DATA 2-	1	16	HOT POWER
ω D	DATA 2+	2	17	DATA 0-
	Shield 2/4	3	18	DATA 0+
	DATA 4-	4	19	SHIELD 0/5
∾°	DATA 4+	5	20	DATA 5-
	DDC CLOCK	6	21	DATA 5+
3	DDC DATA	7	22	SHIELD CLK
	N.C	8	23	CLOCK -
	DATA 1-	9	24	CLOCK +
	DATA 1+	10	C1	Analog Red
	SHIELD 1/3	11	C2	Analog Green
	DATA 3-	12	C3	Analog Blue
	DATA 3+	13	C4	Analog HYNC
	DDC POWER	14	C5	A GROUND2
	A GROUND 1	15	C6	A GROUND3

	Signal Name	Pin	Pin	Signal
\bigcirc		#	#	Name
	DATA 2-	1	16	HOT POWER
	DATA 2+	2	17	DATA 0-
	Shield 2/4	3	18	DATA 0+
24 505 4 °	DATA 4-	4	19	SHIELD 0/5
	DATA 4+	5	20	DATA 5-
\bigcirc	DDC CLOCK	6	21	DATA 5+
	DDC DATA	7	22	SHIELD CLK
DVI-I	N.C	8	23	CLOCK -
	DATA 1-	9	24	CLOCK +
	DATA 1+	10	C1	N.C.
	SHIELD 1/3	11	C2	N.C.
	DATA 3-	12	C3	N.C.
	DATA 3+	13	C4	N.C.
	DDC POWER	14	C5	N.C.
	A GROUND 1	15	C6	N.C.



CN3: USB3

CN4: DisplayPort

CN6: Gigabit LAN (82579LM/V) +USB2 12/13

CN10: Gigabit LAN (82583V) + USB2 8/9

CN13: HDA Audio connector



CN5: USB3 Connector

F		1	Signal Name	Pin	Pin	Signal
10		1		#	#	Name
19	00		Vcc	1	Х	
		J	P1_SSRX-	2	19	Vcc
			P1_SSRX+	3	18	P2_SSRX-
11	00	10	GND	4	17	P2_SSRX+
] 10	P1_SSTX-	5	16	GND
			P1_SSTX+	6	15	P2_SSTX-
			GND	7	14	P2_SSTX+
			P1_U2_D-	8	13	GND
			P1_U2_D+	9	12	P2_U2_D-
			NC	10	11	P2_U2_D+



CN7: SATA3 Connector Port2

CN8: SATA3 Connector Port1

CN9: SATA2 Connector Port4

CN11: SATA2 Connector Port3

CN12: SATA2 Connector Port6 (Share with mSATA)

CN14: SATA2 Connector Port5

J1: Digital I/O Connector (4 in, 4 out)

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	Signal Name	Pin #	Pin #	Signal Name
1 0 2	Ground	1	2	+5V
000	Out3	3	4	Out1
90010	Out2	5	6	Out0
	IN3	7	8	IN1
	IN2	9	10	IN0

J4, J2: COM3, COM4 RS232 Serial Ports

r			Signal Name	Pin #	Pin #	Signal Name
	0	5	DCD#	1	6	DSR#
9			SIN#	2	7	RTS#
6	0	1	SOUT	3	8	CTS#
L			DTR#	4	9	RI#
			GND	5	Х	KEY

J3: ATX Power Supply Connector

10 6	<u></u> 20_20	Signal Name	Pin #	Pin #	Signal Name
		3.3V	11	1	3.3V
		-12V	12	2	3.3V
		Ground	13	3	Ground
		PS-ON	14	4	+5V
1		Ground	15	5	Ground
L		Ground	16	6	+5V
		Ground	17	7	Ground
		-5V	18	8	Power good
		+5V	19	9	5VSB
		+5V	20	10	+12V

J6: ATX 12V Power Connector

This connector supplies the CPU operating voltage.



	Pin #	Signal Name
	1	Ground
	2	Ground
	3	+12V
	4	+12V

J8: DDR SO-DIMM Channel A

J9: DDR SO-DIMM Channel B

J11: Mini-PCIE Connector

J12: Mini-PCIE Connector and mSATA/share with CN12

J18: Audio Pin Header for Chassis Front Panel

	Signal	Pin #	Pin #	Signal
	Name			Name
1 0 2	MIC IN_L	1	2	Ground
000	MIC IN_R	3	4	DET
90010	LINE_R	5	6	Ground
	Sense	7	8	KEY
	LINE_L	9	10	Ground

Signal Name

Power BTN

HDD LED-

Reset BTN

Power LED-

J20: Front Panel

	Signal Name	Pin #	Pin #	
1 🗖 O 2	Power BTN	1	2	
	HDD LED+	3	4	
7008	Reset BTN	5	6	
	Power LED+	7	8	ſ

J21: PCIE Configuration (Support from PCB V1.1)

104	PCIE
JZI	Configuration
	PCIE X16
OPEN	(DEFAULT)
CLOSE	PCIE X8, X8

SYS_FAN1: CPU Fan Power Connector

	Pin #	Signal Name
	1	Ground
	2	+12V
321	3	Rotation
		detection

SYS_FAN2: System Fan Power Connector

E.

		Pin #	Signal Name
		1	Ground
		2	+12V
321		3	Rotation
			detection



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:

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.

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 <F2> 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.

Warning: It is strongly recommended that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both AMI and your system manufacturer to provide the absolute maximum performance and reliability. Changing the defaults could cause the system to become unstable and crash in some cases.

Main Settings

Main	Advanced	Chipset	Boot	Securit	y Save & Exit
BIOS Inform	ation				Choose the system default
					language
System Lang	guage		[English]		\rightarrow \leftarrow Select Screen
System Date	•		[Tue 01/20/2009]		↑↓ Select Item
System Time	9		[00.00.00]		Enter: Select
Access Leve	9		Administrator		+- Change Field
/ 100000 2010					F1: General Help
					F2: Previous Values
					F3: Optimized Default
					F4: Save ESC: Exit

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.

Main	Advanced Chipset	Boot	Security	Save & Exit	
► PCI Su	bsystem Settings				
► ACPI S	Settings				
► Wake u	up event setting				
► Trusted	Computing				
► CPU C	onfiguration				
► SATA (Configuration				
Shutdo	wn Temperature Configuration				
► iSmart	Controller				
► AMT C	onfiguration				→ ←Select Screen
 Acousti 	ic Management Configuration				↑↓ Select Item
► USB C	onfiguration				+- Change Field
► F81866	Super IO Configuration				F1: General Help
► F81866	6 H/W Monitor				F2: Previous Values
► CPU P	PM Configuration				F3: Optimized Default
					F4: Save ESC: Exit

Aptio Setup Utility

PCI Subsystem Settings

Main Advanced Chipset	Boot	Security	y Save & Exit
PCI Bus Driver Version		V 2.0502	
			\rightarrow \leftarrow Select Screen
 PCI Express Settings 			†↓ Select Item
			Enter: Select
			+- Change Field
			F1: General Help
			F2: Previous Values
			F3: Optimized Default
			F4: Save ESC: Exit

Aptio Setup Utility


PCI Express Settings

Main	Advanced Chipset	Boot	Security	y Save & Exit
PCI Expre	ess Device Register Settings			
Relaxed 0	Drdering	Disabled		
Extended	Тад	Disabled		
No Snoop	,	Enabled		
Maximum	Payload	Auto		\rightarrow \leftarrow Select Screen
Maximum	Read Request	Auto		†↓ Select Item
				Enter: Select
PCI Expre	ess Link Register Settings			+- Change Field
	SS Link Register Octungs			F1: General Help
ASPM Su	pport	Disabled		F2: Previous Values
WARNING	G: Enabling ASPM may cause	Disabled		F3: Optimized Default
	some PCI-E device	S		F4: Save ESC: Exit
to fail				
Extended	Synch	Disabled		
Link Train	ing Retry	5		
Link Train	ing Timeout (uS)	100		
Unpopula	ted Links	Keep Link ON		

Aptio Setup Utility

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.

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ASPM Support

Set the ASPM Level: Force L0s – Force all links to L0s 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.

Unpopulated Links

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

ACPI Settings

Aptio Setup Utility

Main	Advanced Chipset	Boot Secur	ity Save & Exit
ACPI Set	lings		
			\rightarrow \leftarrow Select Screen
Enable Hi	bernation	Enabled	†↓ Select Item
ACPI Slee	ep State	S3 (Suspend to R)	Enter: Select
Lock Lega	acy Resources	Disabled	+- Change Field
S3 Video	Repost	Disabled	F1: General Help
			F2: Previous Values
			F3: Optimized Default
			F4: Save
			ESC: Exit

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.

S3 Video Repost

Enable or disable S3 Video Repost.

Wake up event settings

Aptio Setup Utility					
Main	Advanced Chipset	Boot	Security	Save & Exit	
Wake on	Ring	Disabled			
Wake on	PCI PME	Disabled			
Wake on	PCIE Wake Event	Disabled			
				\rightarrow \leftarrow Select Screen	
				↑↓ Select Item	
				Enter: Select	
				+- Change Field	
				F1: General Help	
				F2: Previous Values	
				F3: Optimized Default	
				F4: Save ESC: Exit	

Wake on PCIE PME Wake Event

The options are Disabled and Enabled.

Trusted Computing

Main	Advanced Chipset	Boot	Security	/ Save & Exit
TPM Cont	figuration			
TPM SI	JPPORT	Disabled		\rightarrow \leftarrow Select Screen
				↑↓ Select Item
Current T	PM Status Information			Enter: Select
TPM SI	JPPORT OFF			+- Change Field
				F1: General Help
				F2: Previous Values
				F3: Optimized Default
				F4: Save ESC: Exit

TPM Support

This configuration is supported only with MI970VF. Enables or Disables TPM support. O.S. will not show TPM. Reset of platform is required.

Security Device Support

Enables or disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.



CPU Configuration

Main	Advanced Chipset	Boot	Security	/ Save & Exit
CPU Conf	iguration			
Intel®	Core ™ i7-3770 CPU @ 3.40	GHz		
Processor	Stepping	306a8		
Microcode	Revision	с		
Max CPU	Speed	3400 MHz		
Min CPU S	Speed	1600 MHz		
CPU Spee	ed	3400 MHz		
Processor	Cores	4		
Intel HT T	echnology	Supported		
Intel VT-x	Technology	Supported		
Intel SMX	Technology	Supported		
64-bit		Supported		
				\rightarrow \leftarrow Select Screen
				↑↓ Select Item
Hyper-thre	eading	Enabled		Enter: Select
Active Pro	cessor Cores	All		+- Change Field
Limit CPU	ID Maximum	Disabled		F1: General Help
Execute D	isable Bit	Enabled		F2: Previous Values
Intel Virtua	alization Technology	Disabled		F3: Optimized Default
Hardware	Prefetcher	Disabled		F4: Save ESC: Exit
Adjacent (Cache Line Prefetch	Enabled		

Aptio Setup Utility

Hyper-threading

Select the performance state that the BIOS will set before OS handoff.

Active Processor Cores

Number of cores to enable in each processor package.

Overclocking lock

Flex_RATIO(194)MSR

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Limit CPUID Maximum

Disabled for Windows XP.

Execute Disable Bit

XD can prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS

Intel Virtualization Technology

When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

CPU AES

Enabled/Disabled CPU Advanced Encryption Standard instructions

EIST

Enabled/Disabled Intel Speedstep.

SATA Configuration

SATA Devices Configuration.



Main Advanced Chipset	Boot Sec	urity Save & Exit
SATA Controller(s)	Enabled	
SATA Mode Selection	AHCI	
Aggressive LPM Support	Enabled	
SATA Controller Speed	Gen3	
SATA Port0	Empty	$\rightarrow \leftarrow \texttt{Select Screen}$
Software Preserve	Unknown	↑↓ Select Item
SATA Port1	Empty	Enter: Select
Software Preserve	Unknown	+- Change Field
SATA Port2	Empty	F2: Previous Values
Software Preserve	Unknown	F3: Optimized Default
SATA Port3	Empty	F4: Save ESC: Exit
Software Preserve	Unknown	
SATA Port4	Empty	
Software Preserve	Unknown	
SATA Port5	Empty	
Software Preserve	Unknown	

Aptio Setup Utility

SATA Controller(s)

Enable / Disable Serial ATA Controller.

SATA Mode Selection

- (1) IDE Mode.
- (2) AHCI Mode.
- (3) RAID Mode.

Hot Plug

Designates this port as Hot Plugable.

Main	Advanced	Chipset	Boot	Security Save & Exit
APCI Shu	utdown Temperatu	re	Disabled	 → ← Select Screen ↑ ↓ Select Item Enter: Select +- Change Field F1: General Help F2: Previous Values F3: Optimized Default F4: Save ESC: Exit

Shutdown Temperature Configuration

Aptio Setup Utility

ACPI Shutdown Temperature

The default setting is Disabled.

iSmart Controller

Aptio Setup Utility

Main	Advanced	Chipset	Boot	Securi	ity S	Save & Exit
iSmart Co	ontroller					
Power-O	n after Power failur	e	Disab	ble	$\rightarrow \leftarrow \uparrow \downarrow :$ Ente	Select Screen Select Item er: Select
Schedule	Slot 1		None		+- (F1: (Change Field General Help
Schedule	Slot 2		None		F2:1 F3: F4:	Previous Values Optimized Default Save ESC: Exit

ISmart Controller

Setup the power on time for the system.

Schedule Slot 1 / 2

Setup the hour/minute for system power on.



Unconfigure ME

This configuration is supported only with IB902VF (with iAMT function). Perform AMT/ME unconfigure without password operation.

Amt Wait Timer

Set timer to wait before sending ASF_GET_BOOT_OPTIONS.

Activate Remote Assistance Process

Trigger CIRA boot.

PET Progress

User can Enable/Disable PET Events progress to receive PET events or not.

Watchdog Timer

This configuration is supported only with IB902VF (with iAMT function). Enable/Disable Watchdog Timer.

Acoustic Management Configuration

Aptio Setup Utility Main Advanced Chipset Boot Security Save & Exit Acoustic Management Configuration \rightarrow \leftarrow Select Screen Acoustic Management Disabled ↑↓ Select Item Enter: Select Change Field +-F1: General Help F2: Previous Values F3: Optimized Default F4: Save ESC: Exit

10.00					
	Main	Advanced Chipset	Boot	Security	/ Save & Exit
I	USB Config	uration			
	USB Device	95:			
	2	Hubs			
	Legacy USE	3 Support	Enabled		
	USB3.0 Sup	oport	Enabled		
	XHCI Hand	-off	Enabled		$\rightarrow \leftarrow \texttt{Select Screen}$
	EHCI Hand	-off	Enabled		↑↓ Select Item
	Port 60/64 E	Emulation	Enabled		Enter: Select
					F1: General Help
	USB hardwa	are delays and time-outs:			F2: Previous Values
	USB Transf	er time-out	20 sec		F3: Optimized Default
	Device rese	t tine-out	20 sec		F4: Save ESC: Exit
	Device pow	er-up delay	Auto		

USB Configuration

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.

Aptio Setup Utility

F81866 Super IO Configuration

Main Advanced Chipset	Boot	Security	y Save & Exit
Super IO Configuration			
			\rightarrow \leftarrow Select Screen
F81866 Super IO Chip	F81866		↑ ↓ Select Item
F81866 ERP Support	All Enable		Enter: Select
 Serial Port 0 Configuration 			+- Change Field
 Serial Port 1 Configuration 			F1: General Help
Serial Port 2 Configuration			F2: Previous Values
 Serial Port 3 Configuration 			F3: Optimized Default
► IR Configuration			F4. Save ESC. Exit
LVDS Backlight Level Control	[Level-1 (3.3V)]		

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.

F81866 H/W Monitor

	Aptio Setup Utility				
Main	Advanced Chipset	Boot	Security	Save & Exit	
PC Health	Status				
CPU temp	erature	+41 C			

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SYS temperature	+35 C	
CPU FAN Speed	2115 RPM	
SYS FAN Speed	N/A	
Vcore	+1.000 V	
+Vcc5V	+5.213 V	
+Vcc12V	+12.408 V	$\rightarrow \leftarrow \texttt{Select Screen}$
+1.5V	+1.544 V	↑ ↓ Select Item
.)/0.0)/	.0.404.1/	Enter: Select
+vcc3.3v	+3.424 V	+- Change Field
		F1: General Help
Fan1 smart fan control	Disabled	F2: Previous Values
Fan2 smart fan control	Disabled	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.

Fan1/Fan2 Smart Fan Control

This field enables or disables the smart fan feature. At a certain temperature, the fan starts turning. Once the temperature drops to a certain level, it stops turning again.



CPU PPM Configuration

		Aptio Setup	Utility	
Main	Advanced Chipset	Boot	Security	/ Save & Exit
CPU PPM Configuration				
EIST		Enabled		
Turbo Mo	de	Enabled		
				$\rightarrow \ \leftarrow \texttt{Select Screen}$
				↑↓ Select Item
				Enter: Select
				+- Change Field
				F1: General Help
				F2: Previous Values
				F3: Optimized Default
				F4: Save ESC: Exit

EIST

Enable/Disable Intel SpeedStep.

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.

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A	ριιο	Setu	5 01	inty

Main	Advanced Chipset	Boot	Security	Save & Exit
► PCH-IC	Configuration			
► System	Agent (SA) Configuration			\rightarrow \leftarrow Select Screen

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$\uparrow\downarrow$ Select Item
Enter: Select
+- Change Field
F1: General Help
F2: Previous Values
F3: Optimized Default
F4: Save ESC: Exit



PCH-IO Configuration

This section allows you to configure the North Bridge Chipset.

Main Advanced	Chipset	Boot	Security Save &
Exit			
Intel PCH RC Version		1.1.0.0	
Intel PCH SKU Name	Q77		
Intel PCH Rev ID	O4/C1		
 PCI Express Configuration 	1		
 USB Configuration 			
 PCH Azalia Configuration 			
PCH LAN Controller	Enabled		
Wake on LAN	Enabled		
High Precision Event Timer C	Configuration		
High Precision Timer	Enabled		→ ←
			Select Screen
SLP_S4 Assertion Width	4-5 Seconds		Fotor: Solost
Restore AC Power Loss	Power On		t- Change Field
Nestore AO Fower 2033	i ower on		F1: Ceperal Help
			F2. Proviews Values
			F2: Previous values
			rs: Optimized Derault
			F4: Save ESC: Exit

Aptio Setup Utility

PCH LAN Controller

Enable or disable onboard NIC.

Wake on LAN

Enable or disable integrated LAN to wake the system. (The Wake On LAN cannot be disabled if ME is on at Sx state.)

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SLP_S4 Assertion Width

Select a minimum assertion width of the SLP_S4# signal.

Restore AC Power Loss

Select AC power state when power is re-applied after a power failure.



PCI Express Configuration

Main	Advanced	Chipset	Boot	Security Save &
Exit				
PCI Expre	ess Configuration			
PCI Expre	ess Clock Gating	Enabled		
DMI Link	ASPM Control	Enabled		
DMI Link	Extended Synch Control	Disabled		
PCIe-USE	3 Glitch W/A	Disabled		
Subtractiv	ve Decode	Disabled		
► PCI Ex	press Root Port 1			
► PCI Ex	press Root Port 2			
► PCI Ex	press Root Port 3			$\rightarrow \leftarrow$
► PCI Ex	press Root Port 4			Select Screen
► PCI Ex	press Root Port 5			Enter: Select
PCI-	E Port 6 is assigned to L	AN		+- Change Field
► PCI Ex	press Root Port 7			F1: General Help
► PCI Ex	press Root Port 8			F2: Previous Values
				F3: Optimized Default
				F4: Save ESC: Exit

PCI Express Clock Gating

Enable or disable PCI Express Clock Gating for each root port.

DMI Link ASPM Control

The control of Active State Power Management on both NB side and SB side of the DMI link.

PCIe-USB Glitch W/A

PCIe-USB Glitch W/A for bad USB device(s) connected behind PCIE/PEG port.

Main	Advanced	Chipset	Boot	Security Save &
Exit				
USB Cont	figuration			
XHCI Pre	-Boot Driver	Enabled		
xHCI Mod	le	Smart Auto		
HS P	ort #1 Switchable	Enabled		
HS P	ort #2 Switchable	Enabled		
HS	S Port #3 Switchable	Enabled		
HS	S Port #4 Switchable	Enabled		$\rightarrow \leftarrow$
xHCI	Streams	Enabled		Select Screen
				Enter: Select
EHCI1		Enabled		+- Change Field
				F1: General Help
EHCI2		Enabled		F2: Previous Values
				F3: Optimized Default
USB Port	s Per-Port Disable Contro	I Disabled		F4: Save ESC: Exit

USB Configuration

HS Port #1/2/3/4 Switchable

Allows for HS port switching between xHCI and EHCI. If disabled, port is routed to EHCI. If HS port is routed to xHCI, the corresponding SS port is enabled.

xHCI Streams

Enable or disable xHCI Maximum Primary Stream Array Size.

EHCI1/2

Control the USAB EHCI (USB 2.0) functions. One EHCI controller must always be enabled.

USB Ports Per-Port Disable Control

Control each of the USB ports (0~13) disabling.



PCH Azalia Configuration

Main	Advanced	Chipset	Boot	Security Save &
Exit				
PCH Azali	a Configuration			
				\rightarrow \leftarrow
Azalia		Auto		Select Screen
				↑↓ Select Item
				Enter: Select
				+- Change Field
				F1: General Help
				F2: Previous Values
				F3: Optimized Default
				F4: Save ESC: Exit

Azalia

Control Detection of the Azalia device.

Disabled = Azalia will unconditionally disabled.

Enabled Azalia will be unconditionally enabled.

Auto = Azalia will enabled if present, disabled otherwise.

System Agent (SA) Configuration

Aptio Setup Utility

Main	Advanced	Chipset	Boot	Security	Save &
Exit					
System A	gent Bridge Name		IvyBridge		
System A	gent RC Version	1.1.0.0			
VT-d Cap	ability	Supported			
VT-d		Enabled			
CHAP De	vice (B0:D7:F0)	Disabled		\rightarrow \leftarrow Select Sc	reen
Thermal [Device (B0:D4:F0)	Disabled		†↓ Select It	em
Enable N	B CRID	Disabled		Enter: Select	
BDAT AC	PI Table Support	Disabled		+- Change Fi	eld

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C-State Pre-Wake	Enabled	F1: General Help
		F2: Previous Values
 Graphics Configuration 		F3: Optimized Default
Memory Configuration		F4: Save ESC: Exit

VT-d

Check to enable VT-d function on MCH.

Enable NB CRID

Enable or disable NB CRID WorkAround.

C-State Pre-Wake

Controls C-State Pre-Wake feature for ARAT, in SSKPD[57].



Graphics Configuration

	Aptio Setup Utility						
Main	Advanced	Chipset	Boot	Security Save &			
Exit							
Graphics Co	onfiguration						
IGFX VBIOS	S Version	2132					
IGfx Freque	ncy	350 MHz					
Primary Disp	play	Auto					
Internal Gra	phics	Auto		\rightarrow \leftarrow Select Screen			
GTT Size		2MB		†↓ Select Item			
Aperture Siz	ze	256MB		Enter: Select			
DVMT Pre-A	Allocated	64M		+- Change Field			
DVMT Total	Gfx Mode	Disabled		F1: General Help			
► LCD Con	trol			F3: Optimized Default			
				F4: Save ESC: Exit			

Primary Display

Select which of IGFX/PEG/PCI graphics device should be primary display or select SG for switchable Gfx.

Internal Graphics

Keep IGD enabled based on the setup options.

DVMT Pre-Allocated

Select DVMT 5.0 Pre-Allocated (Fixed) graphics memory size used by the internal graphics device.

DVMT Total Gfx Mem

Select DVMT 5.0 total graphics memory size used by the internal graphics device.

Gfx Low Power Mode

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This option is applicable for SFF only.

Primary IGFX Boot Display (LCD Control)

Select the Video Device that will be activated during POST. This has no effect if external graphics present. Secondary booty display selection will appear based on your selection. VGA modes will be supported only on primary display.



Memory Configuration

Aptio Setup Utility Chipset Main Advanced Boot Security Save & Exit Memory Information Memory Frequency 1333 MHz Total Memory 8192 MB (DDR3) 2048 MB (DDR3) DIMM#0 $\leftarrow \texttt{Select Screen}$ 2048 MB (DDR3) DIMM#1 ↑↓ Select Item DIMM#2 2048 MB (DDR3) Enter: Select 2048 MB (DDR3) DIMM#3 +- Change Field CAS Latency (tCL) 9 F1: General Help Minimum delay time F2: Previous Values CAS to RAS (tRCDmin) 9 F3: Optimized Default Row Precharge (tRPmin) 9 F4: Save ESC: Exit Active to Precharge (tRASmin) 24

Boot Settings

This section allows you to configure the boot settings.

Main	Advanced Chipset	Boot	Security	Save & Exit	
Boot Config	uration				
Setup Prom	pt Timeout	1			
Bootup Num	hLock State	On			

Aptio Setup Utility

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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.

GateA20 Active

UPON REQUEST - GA20 can be disabled using BIOS services.

ALWAYS – do not allow disabling GA20; this option is useful when any RT code is executed above 1MB.

Option ROM Messages

Set display mode for Option ROM. Options are Force BIOS and Keep Current.

INT19 Trap Response

Enable: Allows Option ROMs to trap Int 19.

Boot Option Priorities

Sets the system boot order.

CSM parameters

This section allows you to configure the boot settings.

Aptio Setup Utility				
Main	Advanced Chipset	Boot	Security	/ Save & Exit
Launch CSM	Л	Always		
Boot option	Boot option filter		Legacy	
Launch PXE	OpROM policy	Do not lau	unch	
Launch Stor	rage OpROM policy	Legacy or	nly	
Launch Vide	eo OpROM policy	Legacy or	nly	
				\rightarrow \leftarrow Select Screen
Other PCI d	evice ROM priority	Legacy O	pROM	†↓ Select Item
				Enter: Select
				+- Change Field
				F1: General Help
				F2: Previous Values
				F3: Optimized Default
				F4: Save ESC: Exit

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	Sec	Curity Save & Exit	
Password D	escription				
If ONLY the	Administrator's password is se	et, then			
this only limi	t access to Setup and is only a	asked			
for when en	tering Setup.			\rightarrow \leftarrow Select Screen	
If ONLY the	User's password is set, then the	his is a		↑↓ Select Item	
power on pa	ssword and must be entered t	o boot		Enter: Select	
or enter Set	up. In Setup the User will have			+- Change Field	
Administrato	or rights			F1: General Help	
The passwo	rd length must be			F2: Previous Values	
in the follow	ing range:			F3: Optimized Default	
Minimum ler	ngth	3		F4: Save ESC: Exit	
Maximum le	ngth	20			
Administrato	or Password				
User Passw	ord				

Administrator Password

Set Setup Administrator Password.

User Password

Set User Password.

Save & Exit Settings

		Aptio Setup Ut	ility	
Main	Advanced Chipset	Boot	Security	/ Save & Exit
Save Chan	ges and Exit			
Discard Cha	anges and Exit			
Save Chan	ges and Reset			
Discard Cha	anges and Reset			\rightarrow \leftarrow Select Screen
				↑↓ Select Item
Save Option	ns			Enter: Select
Save Chan	nes			+- Change Field
5. 101	5			F1: General Help
Discard Chi	anges			F2: Previous Values
				F3: Optimized Default
Restore De	faults			F4: Save ESC: Exit
Save as Us	er Defaults			
Restore Us	er Defaults			

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

This section describes the installation procedures for software and drivers. The software and drivers are included with the motherboard. If you find the items missing, please contact the vendor where you made the purchase.

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 Intel Chipset Software Installation Utility

The Intel Chipset Drivers should be installed first before the software drivers to enable Plug & Play INF support for Intel chipset components. Follow the instructions below to complete the installation.

1. Insert the CD that comes with the board. Click Intel and then Intel(R) 7 Series Chipset Drivers.



2. Click Intel(R) Chipset Software Installation Utility.



	side T	his CD Version : 8.7.5D @4
Sand	Intel	Intel(R) Chipset Software Installation Utility
Sound	AMD	Intel(R) Core(TM) i3/i5/i7 Graphics Driver Realtek High Definition Audio Driver
0000	VIA	Intel(R) PRO LAN Network Drivers
	LAN Card	Intel(R) iAMT 8.0 Drivers Intel(R) USB 3.0 Drivers
1	Tools	
	8	Update Windows OS with Plug and Play feature and allow the OS to conrectly identify the Intel chipset components and properly configure the system.

3. When the Welcome screen to the Intel® Chipset Device Software appears, click *Next* to continue.



4. Click **Yes** to accept the software license agreement and proceed with the installation process.





5. On the Readme File Information screen, click *Next* to continue the installation.



6. The Setup process is now complete. Click *Finish* to restart the computer and for changes to take effect.



4.2 VGA Drivers Installation

NOTE: Before installing the *Intel(R) Q77 Chipset Family Graphics Driver*, the Microsoft .NET Framework 3.5 SPI should be first installed.

To install the VGA drivers, follow the steps below.

1. Insert the CD that comes with the board. Click Intel and then Intel(R) Q7 Series Chipset Drivers.



2. Click Intel(R) Q77 Chipset Family Graphics Driver.





3. When the Welcome screen appears, click *Next* to continue.



4. Click **Yes** to to agree with the license agreement and continue the installation.



5. On the Readme File Information screen, click *Next* to continue the installation of the Intel® Graphics Media Accelerator Driver.

Intel® Installation Framework	- • •
Intel® HD Graphics Driver	
Readme File Information	(intel)
Refer to the Readme file below to view the system requirements and installati	on information.
Production Version Releases Microsoft Windows* 7 64 Microsoft Windows* Embedded Standard 7-64(1) (1)These operating systems supported for embedded designs and usage models only. Driver Revision: 15.26.6.64.2669 March 5, 2012	A III
Sector Se	<u>C</u>ancel Installation Framework

6. On Setup Progress screen, click *Next* to continue.



7. Setup complete. Click *Finish* to restart the computer and for changes to take effect.


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4.3 Realtek HD Audio Driver Installation

Follow the steps below to install the Realtek HD Audio Drivers.

1. Insert the CD that comes with the board. Click *Intel* and then *Intel(R)* Q7 Series Chipset Drivers.



2. Click Realtek High Definition Audio Driver.



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3. On the Welcome to the InstallShield Wizard screen, click *Next* to proceed with and complete the installation process.

Realtek High Definition Audio D	river Setup (3.15) R2.57	×
	Welcome to the InstallShield Wizard for Realtek High Definition Audio Driver The InstallShield Wizard will install Realtek High Definition Audio Driver on your computer. To continue, click Next.	
Install Shield	< Back Canc	el

4. The InstallShield Wizard Complete. Click *Finish* to restart the computer and for changes to take effect.

Realtek High Definition Audio D	Inver Setup (3.15) R2.57
	InstallShield Wizard Complete The InstallShield Wizard has successfully installed Realtek High Definition Audio Driver. Before you can use the program, you must restart your computer. Yes, I want to restart my computer now. No, I will restart my computer now. No, I will restart my computer now. Remove any disks from their drives, and then click Finish to complete setup.
InstallShield	< <u>B</u> ack Finish Cancel



4.4 LAN Driver Installation

1. Insert the CD that comes with the board. Click Intel and then Intel(R) Q7 Series Chipset Drivers.



2. Click Intel(R) PRO LAN Network Driver.



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3. Click Install Drivers and Software.



4. When the Welcome screen appears, click Next.





5. Click *Next* to to agree with the license agreement.

HIntel(R) Network Connections - InstallShield Wizard	X			
License Agreement Please read the following license agreement carefully.	el			
INTEL SOFTWARE LICENSE AGREEMENT				
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.				
Do not copy, install, or use this software and any associated materials (collectively, the "Software") provided under this license agreement ("Agreement") until you have carefully read the following terms and conditions. By copying, installing, or otherwise using the Software, you agree to be bound by the terms of this Agreement. If you do not agree to the terms of this Agreement, do not copy, install, or use the Software.				
I accept the terms in the license agreement Print				
\bigcirc I $\underline{d}o$ not accept the terms in the license agreement				
InstallShield				
< <u>Back</u> <u>N</u> ext > Cance	1			

6. Click the checkbox for **Drivers** in the Setup Options screen to select it and click **Next** to continue.

Intel(R) Network Connections	X
Setup Options Select the program features you want installed.	(intel)
Install:	
Drivers — Intel(R) PROSet for Windows* Device Manager — Manager — Intel(R) Network Services — Intel(R) Network Connections SNMP Agent	
Feature Description	
< <u>Back</u> Next>	Cancel

7. The wizard is ready to begin installation. Click *Install* to begin the installation.



8. When InstallShield Wizard is complete, click *Finish*.





Intel® Management Engine Interface

REMARKS: The Intel iAMT 8.0 Drivers can be installed on MI970VF, not MI970F.



Follow the steps below to install the Intel Management Engine.

1. Insert the CD that comes with the board. Click Intel and then Intel(R) AMT 8.0 Drivers.

	side T	his CD Version : 8.7.5D @4
-	Intel	Intel(R) Chipset Software Installation Utility
See	AMD	Intel(R) Core(TM) i3/i5/i7 Graphics Driver Realtek High Definition Audio Driver
Control .	VIA	Intel(R) PRO LAN Network Drivers
- 	LAN Card	Intel(R) iAMT 8.0 Drivers Intel(R) USB 3.0 Drivers
\$	Tools	
	8	Intel(R) iAMT 8.0 Drivers

2. When the Welcome screen to the InstallShield Wizard for Intel® Management Engine Components, click the checkbox for **Install Intel® Control Center** & click *Next*.



3. Click Yes to to agree with the license agreement.





4. When the Setup Progress screen appears, click *Next*. Then, click *Finish* when the setup progress has been successfully installed.





Intel® USB 3.0 Drivers

1. Insert the CD that comes with the board. Click *Intel* and then *Intel(R)* **Q7** Series *Chipset Drivers*.



2. Click Intel(R) USB 3.0 Drivers.





3. When the Welcome screen to the InstallShield Wizard for Intel® USB 3.0 eXtensible Host Controller Driver, click *Next*.

Intel® Installation Framework	×			
Intel® USB 3.0 eXtensible Host Controller Driver				
Welcome to the Setup Program	under			
This setup program will install the following components: • Intel® USB 3.0 eXtensible Host Controller Driver • Intel® USB 3.0 Hub Driver • Intel® USB 3.0 Host Controller Switch Driver • Intel® USB 3.0 Monitor				
Click Next to continue.				
< Back Next >	Cancel			

4. Click **Yes** to to agree with the license agreement and continue the installation.

5. On the Readme File Information screen, click *Next* to continue the installation of the Intel® USB 3.0 eXtensible Host Controller Driver.

6. Setup complete. Click *Finish* to restart the computer and for changes to take effect.

Appendix

Mounting AMI311-970 to the Wall

You can install AMI311-970 on plastic (LCD monitor), wood, drywall surface over studs, or a solid concrete or metal plane directly. Ensure the installer uses at least four M3 length 6mm screws to secure the system on wall. *Four M3 length 6mm screws [Four M3 length 4.4mm for VESA mounting] are recommended to secure the system on wall.*

Fasteners are not included with the unit, and must be supplied by the installer. The types of fasteners required are dependent on the type of wall construction. Choose fasteners that are rated either "Medium Duty" or "Heavy Duty." To assure proper fastener selection and installation, follow the fastener manufacturer's recommendations.

Wall Mounting Requirements

Note: Before mounting the system on wall, ensure that you are following all applicable building and electric codes.

When mounting, ensure that you have enough room for power and signal cable routing. And have good ventilation for power adapter. The method of mounting must be able to support weight of the CSB110-902 plus the suspend weight of all the cables to be attached to the system. Use the following methods for mounting your system:



Mounting to hollow walls

- Method 1: Wood surface – A minimum wood thickness – 38mm (1.5in.) by 25.4 cm (10in.) – of high, construction – grade wood is recommended. Note: This method provides the most reliable attachment of the unit with little risk that the unit will come loose or require ongoing maintenance.
- Method 2: Drywall walls Drywall over wood studs is acceptable.

Mounting to a solid concrete or brick wall - Mounts on a flat smooth surface.

Selecting the Location

Plan the mounting location thoroughly. Locations such as walkway areas, hallways, and crowded areas are not recommended. Mount the unit to a flat, sturdy, structurally sound column or wall surface.

The best mounting surface is a standard countertop, cabinet, table, or other structure that is minimally the width and length of the unit. This recommendation reduces the risk that someone may accidentally walk into and damage the device. Local laws governing the safety of individuals might require this type of consideration.