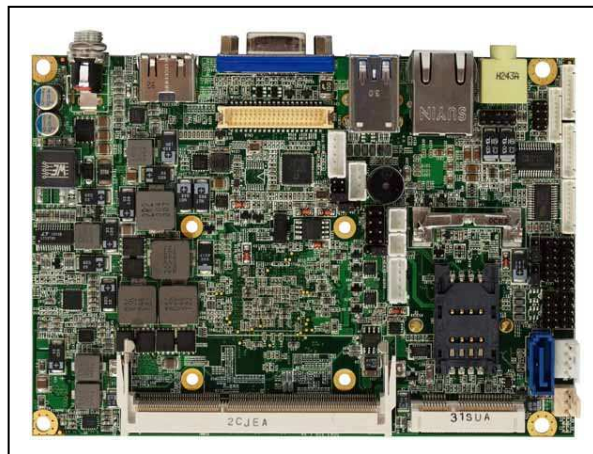


User Manual

EM-6335

3.5" SBC with AMD® Embedded G-Series SOC with AMD Radeon™ HD Graphics, DDR3 up to 8GB, 1 x Intel® Giga LAN, Onboard VGA, 24-bit LVDS, HDMI, audio, SATA, USB3.0, 4 x COM, 8-bit GPIO, 2 x Mini-PCIE, LPC, DC 8V ~ 32V input



Ver.	Release Date	Update
1.0	2013.08.22	Release
1.1	2013.09.14	Page 37: Correct the LVDS backlight header pin-1 location Page 40: Correct the LVDS connector pin-1 location
1.2	2013.10.14	Update Memory support from 4GB to 8GB

Copyright

The content of this document and software with this product are copyrighted by AEWIN technologies Co., Ltd,

This document contains proprietary information protected by copyright. All rights are reserved; no part of this manual may be reproduced, copied, translated or transmitted in any form or by any means without prior written permission of the manufacturer.

The content of this document is intended to be accurate and reliable; the original manufacturer assumes no responsibility for any inaccuracies that may be contained in this manual. The original manufacturer reserves the right to make improvements to the products described in this manual at any time without prior notice.

Trademark

All other product names mentioned herein are used for identification purpose only and may be trademarks and/or registered trademarks of their respective companies.

Limitation of liability

While reasonable efforts have been made to ensure the accuracy of this document, the manufacturer and distributor assume no liability resulting from errors or omissions in this document, or from the use of the information contained herein.






For more information or other AEWIN products, please visit our website <http://www.aewin.com.tw>.

For technical supports, please send your inquiry to sales@aewin.com.tw

Packing list

Before use this product, please make sure that the following materials have been shipped.

- ▶ 1 x EM-6335 3.5" SBC
- ▶ 1 x CPU cooling Fan (P/N: 49L-F0056-00)
- ▶ 1 x SATA cable, L/ 200mm (P/N: 46L-SATA11-00)
- ▶ 1 x 12V/5V SATA power cable , L/ 150mm (P/N: 46L-IPOW41-00)
- ▶ 1 x COM port, DB9 type, L/ 180mm, without bracket (P/N: 46L-ICOM34-01)
- ▶ 1 x dual USB 2.0 cable, L/ 245mm, without bracket (P/N: 46L-IUSB03-00)
- ▶ 1 x CD Utility

49L-F0056-00	46L-SATA11-00	46L-IPOW41-00	46L-ICOM34-01	46L-IUSB03-00
				

Model Name	Description
EM-6335A-D10	AMD® Embedded GX-210HA SOC (D/C 1.0 GHz) , HDMI, VGA, LVDS, GLAN, COM, USB, SATA, Mini-PCIe, DC 8V ~ 32V input
EM-6335A-D16	AMD® Embedded GX-217GA SOC (D/C 1.6 GHz) , HDMI, VGA, LVDS, GLAN, COM, USB, SATA, Mini-PCIe, DC 8V ~ 32V input
EM-6335A-Q15	AMD® Embedded GX-415GA SOC (Q/C 1.5 GHz) , HDMI, VGA, LVDS, GLAN, COM, USB, SATA, Mini-PCIe, DC 8V ~ 32V input
EM-6335A-Q20	AMD® Embedded GX-420CA SOC (Q/C 2.0 GHz) , HDMI, VGA, LVDS, GLAN, COM, USB, SATA, Mini-PCIe, DC 8V ~ 32V input

* If any of those items are missing or damaged, please contact with sales representative or distributor.

Optional Accessory

Photo	Model Name	
	P/N:	46L-ICOM34-01
	Single COM port, DB9 type, L/ 180mm, without bracket	
	P/N:	46L-IUSB03-00
	Dual USB cable, L/ 245mm, without bracket	
	P/N:	46L-IAUD15-01
	Line-out , Line-In , Mic-In audio cable, L/ 180mm, without bracket	

Safety Information

- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
- When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.
- Before connecting or removing signal cables from the motherboard, ensure that all power cables are unplugged.
- Seek professional assistance before using an adapter or extension cord. These devices could interrupt the grounding circuit.
- Make sure that your power supply is set to the correct voltage in your area.
- If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your retailer.

Operation Safety

- Before installing the motherboard and adding devices on it, carefully read all the manuals that came with the package.
- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.
- Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.
- Place the product on a stable surface.
- If you encounter technical problems with the product, contact a qualified service technician or your retailer.

Contents

Chapter 1	General Information	8
1.1	Introduction	8
1.2	Specification	9
1.3	Block Diagram	11
1.4	Board layout Dimension	12
1.5	IO / Connector	14
Chapter 2	Hardware installation	16
2.1	The location of onboard connectors	16
2.2	The location of onboard jumpers	18
2.3	The function list of onboard jumpers setting	19
2.3.1	JP1 for Power AT/ATX mode select.....	19
2.3.2	JP2 for Memory module voltage select.....	20
2.3.3	JP3 for Clear CMOS.....	21
2.3.4	JP4 for LVDS Panel backlight control mode select	22
2.3.5	JP5 for LVDS Panel power level select.....	23
2.4	The pin define of onboard pin header	24
2.4.1	CN1 for 3-pin Fan connector.....	24
2.4.2	CN2 for Full-size Mini-PCIe socket.....	25
2.4.3	CN3 for SATA and SATA power connector	26
2.4.4	CN5 for SIM card socket	27
2.4.5	CN6 & 7 for internal USB2.0 pin header	28
2.4.6	CN8 for SMBus pin header	29
2.4.7	CN9 for Low Pn Count pin header	30
2.4.8	CN10 for GPIO header	31
2.4.9	CN11 for WLAN LED indictor of Half-size Mini-PCIe socket	32
2.4.10	CN13 for WLAN LED indictor of Full-size Mini-PCIe socket.....	33
2.4.11	CN14 for internal COM2 pin header.....	34
2.4.12	CN15 for LVDS Panel backlight adjustment	36
2.4.13	CN16 for LVDS Panel inverter power connector	37
2.4.14	CN17 for internal COM3 pin header.....	38

2.4.15	CN18 for 24-bit Dual Channel LVDS onnector	39
2.4.16	CN19 for internal Audio pin header	41
2.4.17	CN20 for front panel pin header	42
2.4.18	CN21 for internal COM1 pin header.....	43
2.4.19	CN25 for internal COM3 pin header.....	44
2.4.20	CN30 for Half-size Mini-PCle socket.....	45
2.4.21	CN31 for battery connector.....	47

Chapter 3 BIOS Menu Setting48

Chapter 4 Programming WDT & GPIO72

4.1	GPIO DOS sample code	72
4.2	WatchDog timer DOS sample code	79

Chapter 5 Device Resources83

1.1 Introduction

EM-6335 is a 3.5" SBC with onboard AMD® Embedded G-Series SOC with AMD Radeon™ HD Graphics. Integrated graphics for three display options include HDMI, VGA and 24-bit dual-channel LVDS. One DDR3 SO-DIMM supports a maximum of 8GB DDR3 1600 of system memory.

There're two flexible Mini-PCIe sockets for expansion, one is Full-size type and the other one is half-size type. Both of them are support standard Mini-PCIe card for PCIe & USB signal-base, such as WIFI. Besides that, A SIM card holder that could install SIM card when install a Full-size Mini-PCIe 3G module for wireless connection. For the Half-size Mini-PCIe socket, it's also support mSATA SSD as storage device.

Regarding I/O ports , EM-6335 provides plenty of connectivity , such as 1 x Intel® gigabit Ethernet provided by Intel® i211AT controller, 1 x RS232/422/485 & 3 x RS232, 6 x USB, Audio, 1 x SATA 6Gb/s, 1 x LPC pin-header that could support AEWIN's TPM module if customer need to protect information.

EM-6335 that could accept wide range DC 8V ~ 32V input, a external DC locking power jack or a 4-pin internal power connector for easier power integration.

EM-6335 is a small form-factor embedded platform equip with AMD® high performance Radeon™ HD Graphics and also rich IO ports, make EM-6335 suitable for a wide range of applications in digital signage, POS, kiosks, and factory automation. Fanless design are allowed for high temperature and dusty environments.

AEWIN offers reliable and solid products which are produced under Management System Standards: ISO9001-2000 Certificate. The certificate keeps us focused on our quality objectives of management and environmental production. Its willingness to customize standard products for meet unique customer needs makes AEWIN different. All ODM projects are welcome. Years of experiences enables AEWIN to fulfill the customer's vision, by delivering products to exact specifications. AEWIN R&D team is proud of its strong engineering background. R&D professionals account for 25% of the AEWIN workforce. We focus on developing new products for both emerging and established markets.

For more information about OEM/ODM, please contact us :

Email: sales@awin.com.tw

TEL: +886-2-8692-6677

1.2 Specification of board

System	
Form Factor	3.5" SBC
CPU	AMD Embedded GX-210HA SOC with AMD Radeon™ HD 8210E Graphics (EM-6335A-D10) AMD Embedded GX-217GA SOC with AMD Radeon™ HD 8280E Graphics (EM-6335A-D16) AMD Embedded GX-415GA SOC with AMD Radeon™ HD 8330E Graphics (EM-6335A-Q15) AMD Embedded GX-420CA SOC with AMD Radeon™ HD 8400E Graphics (EM-6335A-Q20)
Chipset	Integrated
Memory	1 x DDR3 SO-DIMM / 1600 MHz up to 8GB, without ECC support
BIOS	AMI SPI BIOS
SSD	1 x Half-size Mini-PCle socket support mSATA
Watchdog timer	255 levels, 1 ~ 255 sec
Expansion	1 x Full-size Mini-PCle socket w/SIM slot. With PCIe X1 & USB signal 1 x Half-size Mini-PCle socket. With PCIe X1 / SATA signal & USB single
Board Size	146mm x 101mm
Operating Temp.	0°C~60°C (32°F~140°F)
Storage Temp.	-20°C~80°C (-4°F~176°F)
Operating Hum.	10%~90% (non-condensing)

Display	
Chipset	AMD Embedded G-series SOC integrated
Display interface	1 x external VGA 1 x external HDMI 1.4a w/ lockable connector 1 x internal 18/24-bit Dual Channel LVDS

I/O	
Series Port	Internal : 1 x RS232/422/485 (COM2), 3 x RS232 (COM 1/3/4)
SATA	1 x SATAIII-600MB/s
USB	External : 2 x USB3.0 (compatible with USB 2.0) Internal : 4 x USB2.0
Ethernet	External : 1 x Intel I211AT Gigabit Ethernet
Audio	External : 1 x Line-out Internal : Line-in/out , Mic-in
Digital I/O	8-bit GPIO interface
LPC	1 x LPC header for Optional TPM module

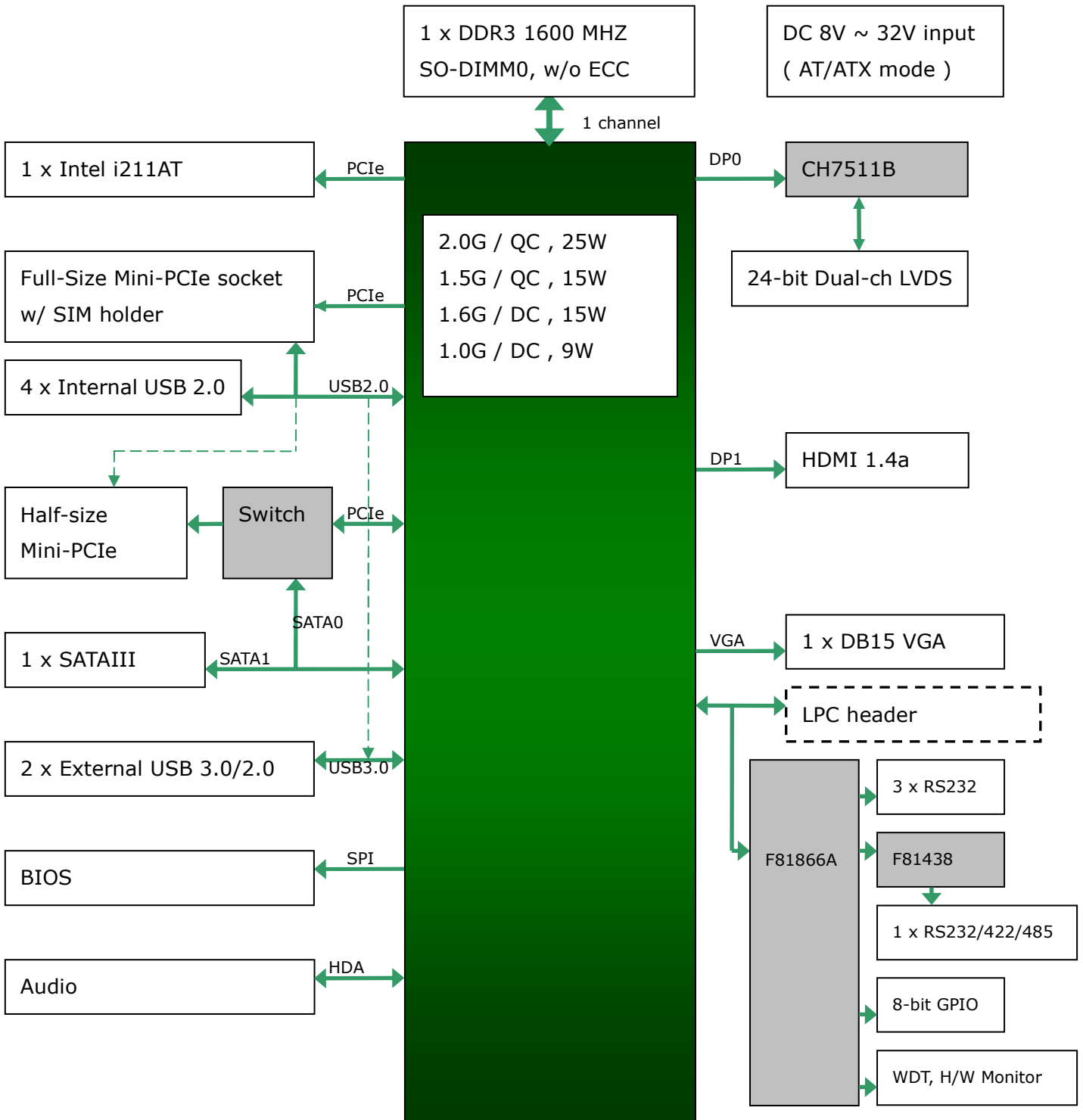
Others	1 x 3-pin PWM Fan header 1 x Front Panel header for power on/off, reset, HDD/power LED indicator 1 x 2-pin header for battery, 1 x 4-pin 12V/5V DC out for SATA HDD 1 x LVDS Backlight/inverter pin-header, LVDS voltage select. 2 x 2-pin for Full-size/Half-size Mini-PCIe LED indicator header
---------------	---

Power	
--------------	--

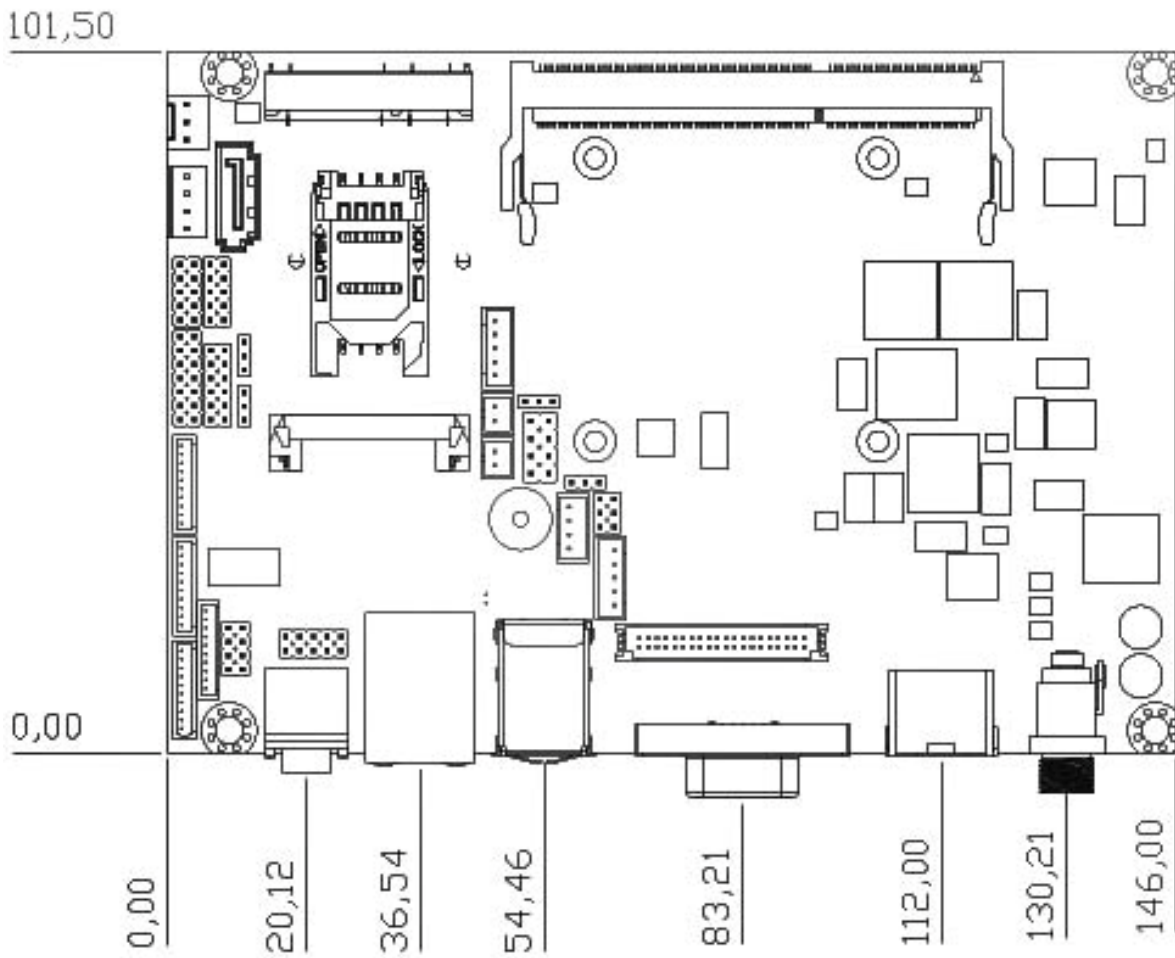
Power in	DC 8V ~ 32V input (AT/ATX mode jumper selectable)
Power connector	1 x external DC Jack connector with lockable (Optional for P4 4-pin internal header)

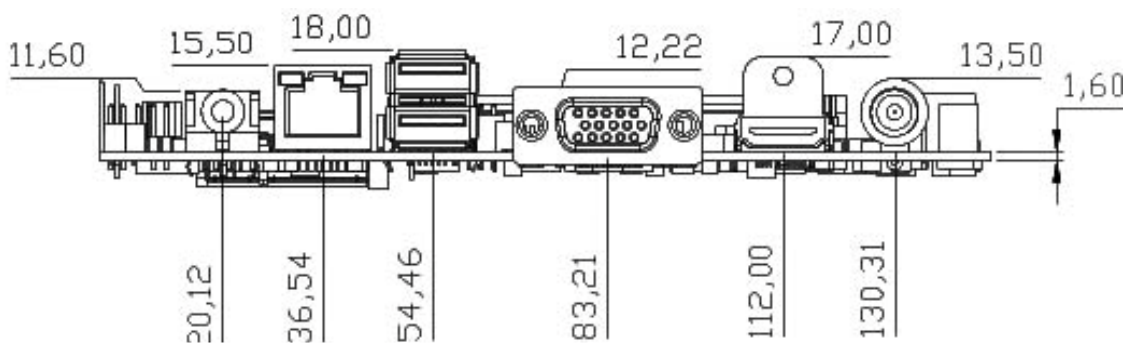
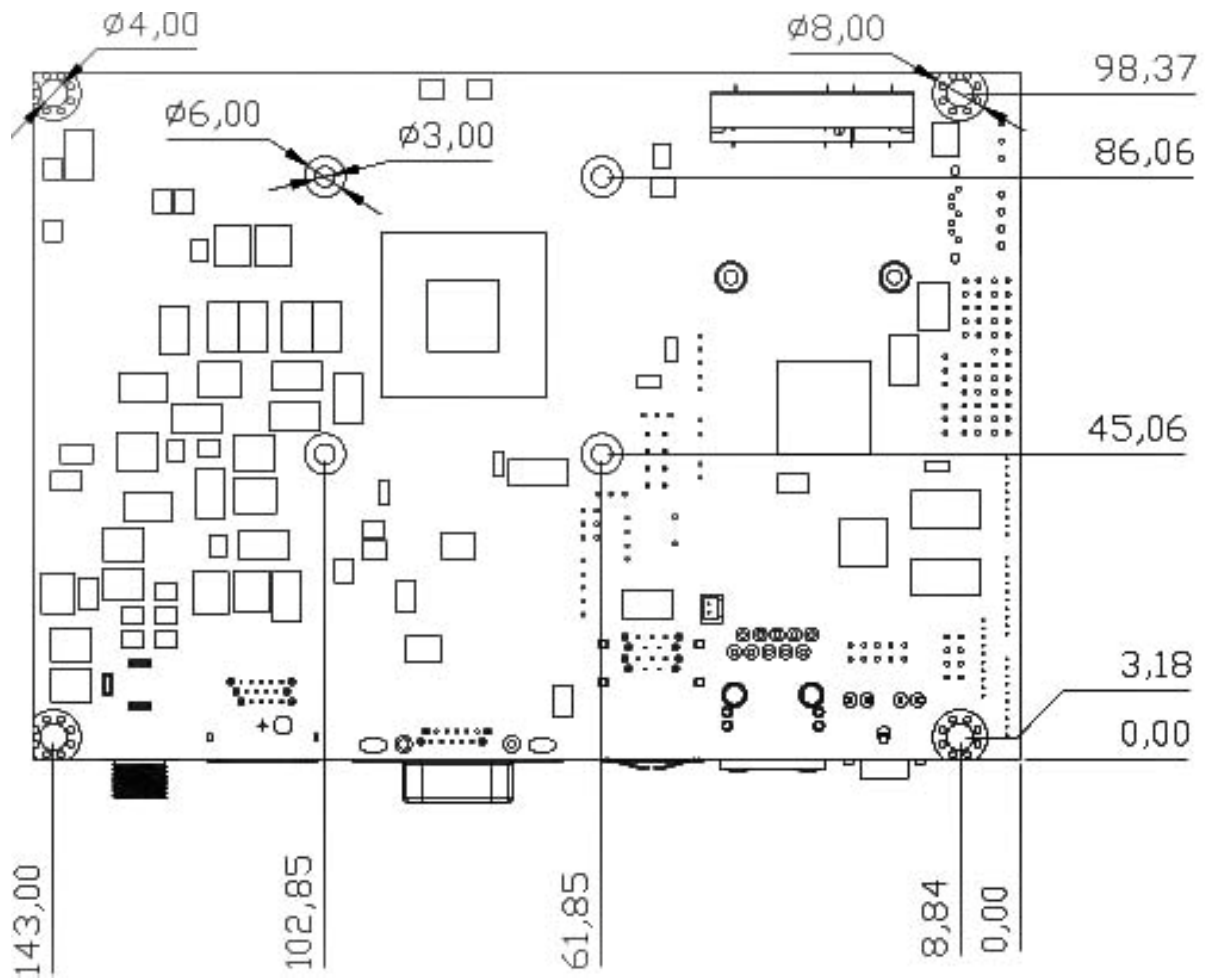
Note : All specifications and photos are subject to change without notice.

1.3 Block Diagram

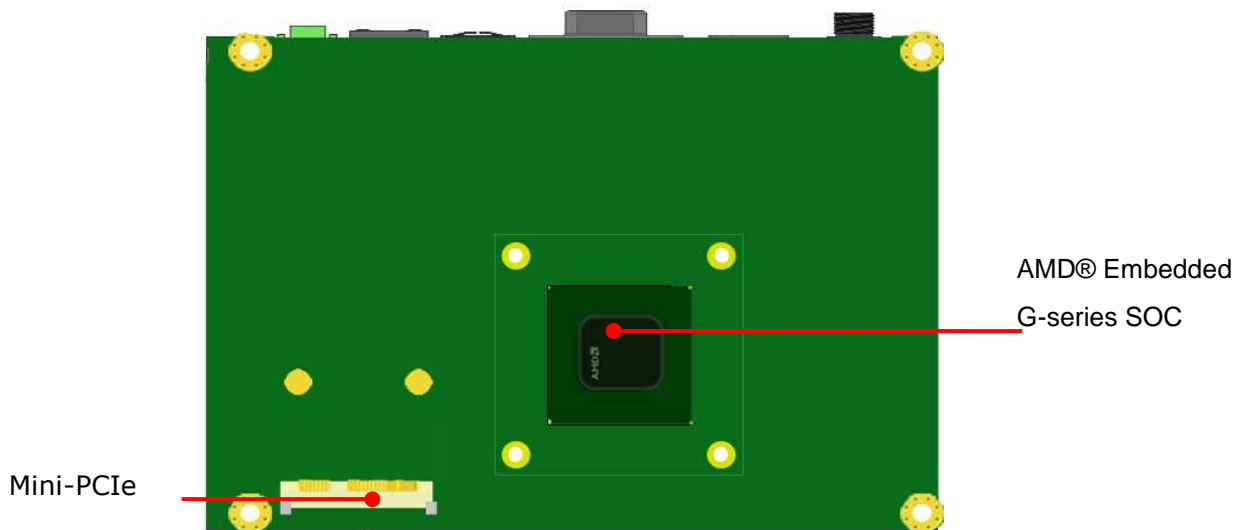
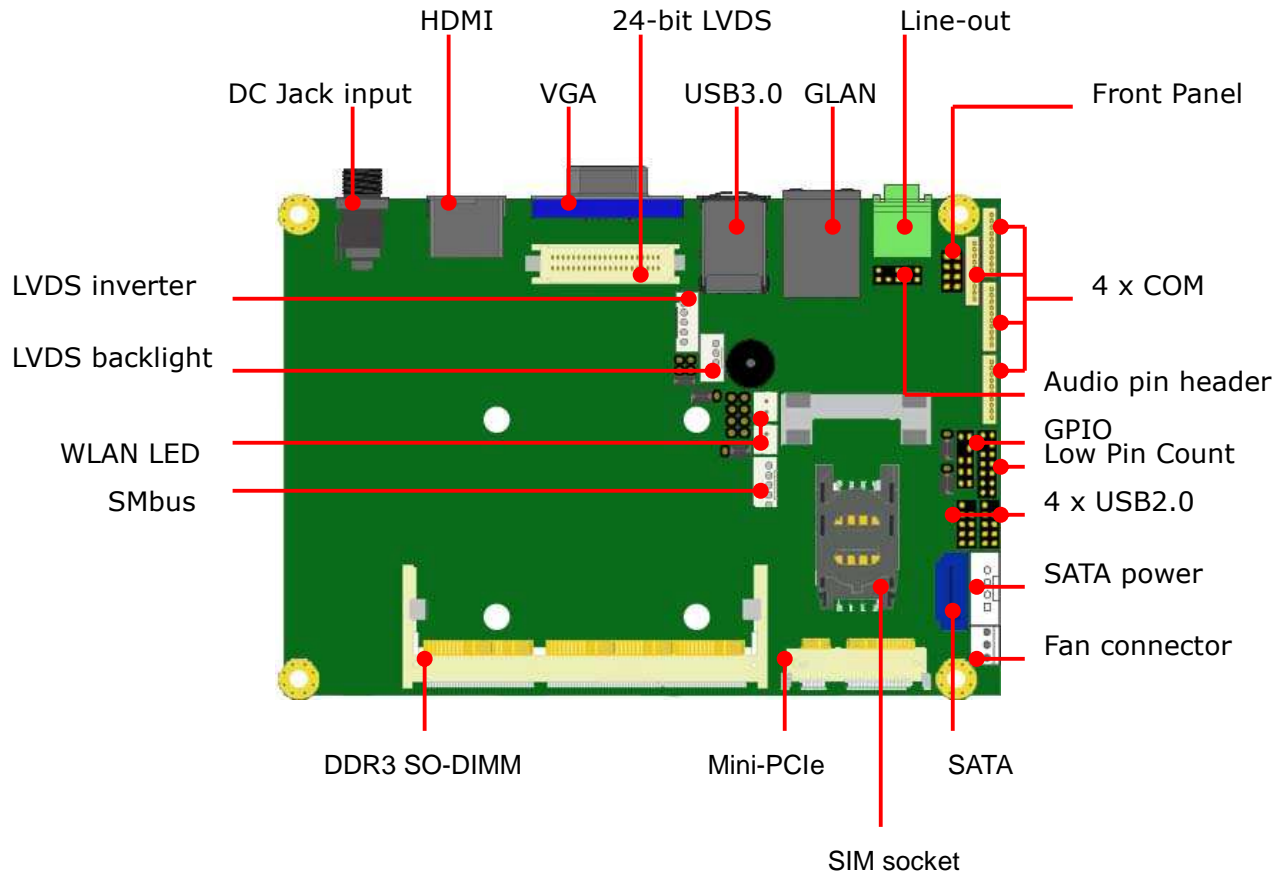


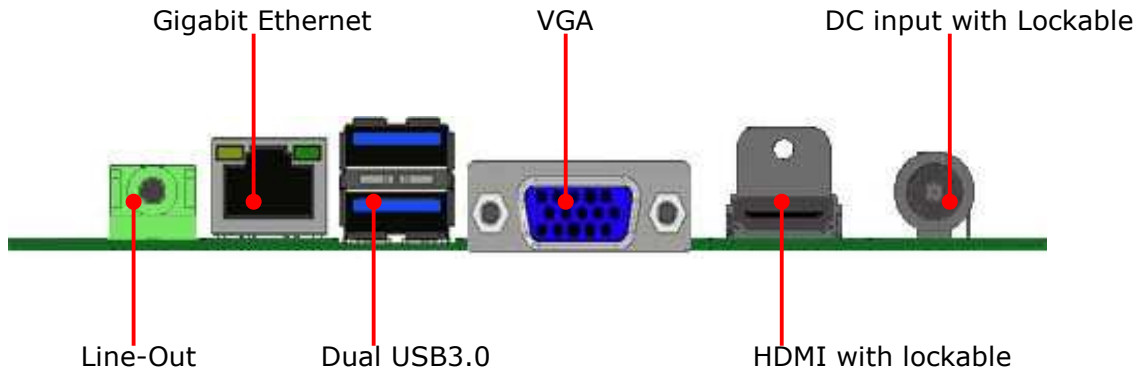
1.4 Board Layout Dimension



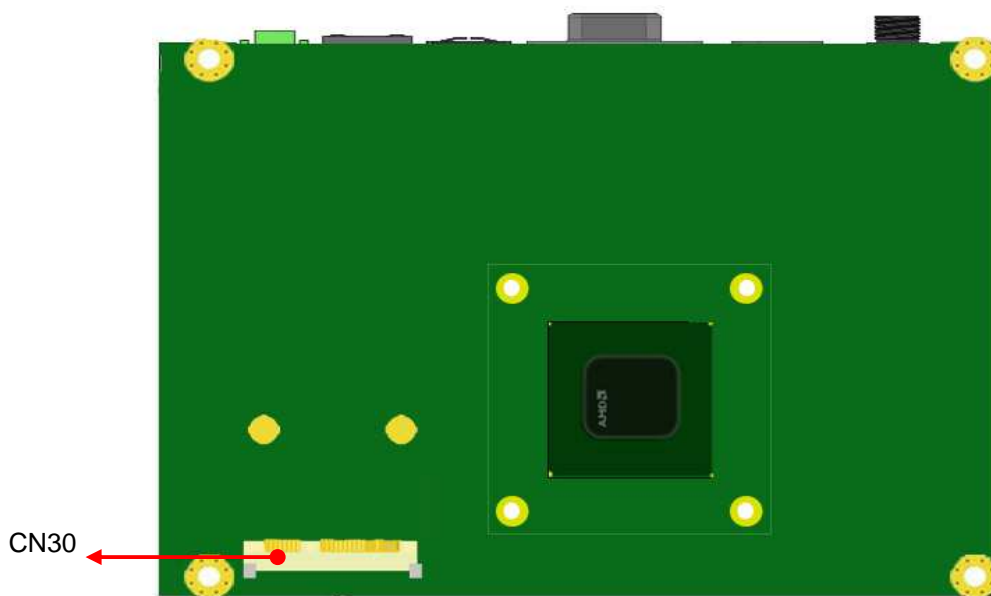
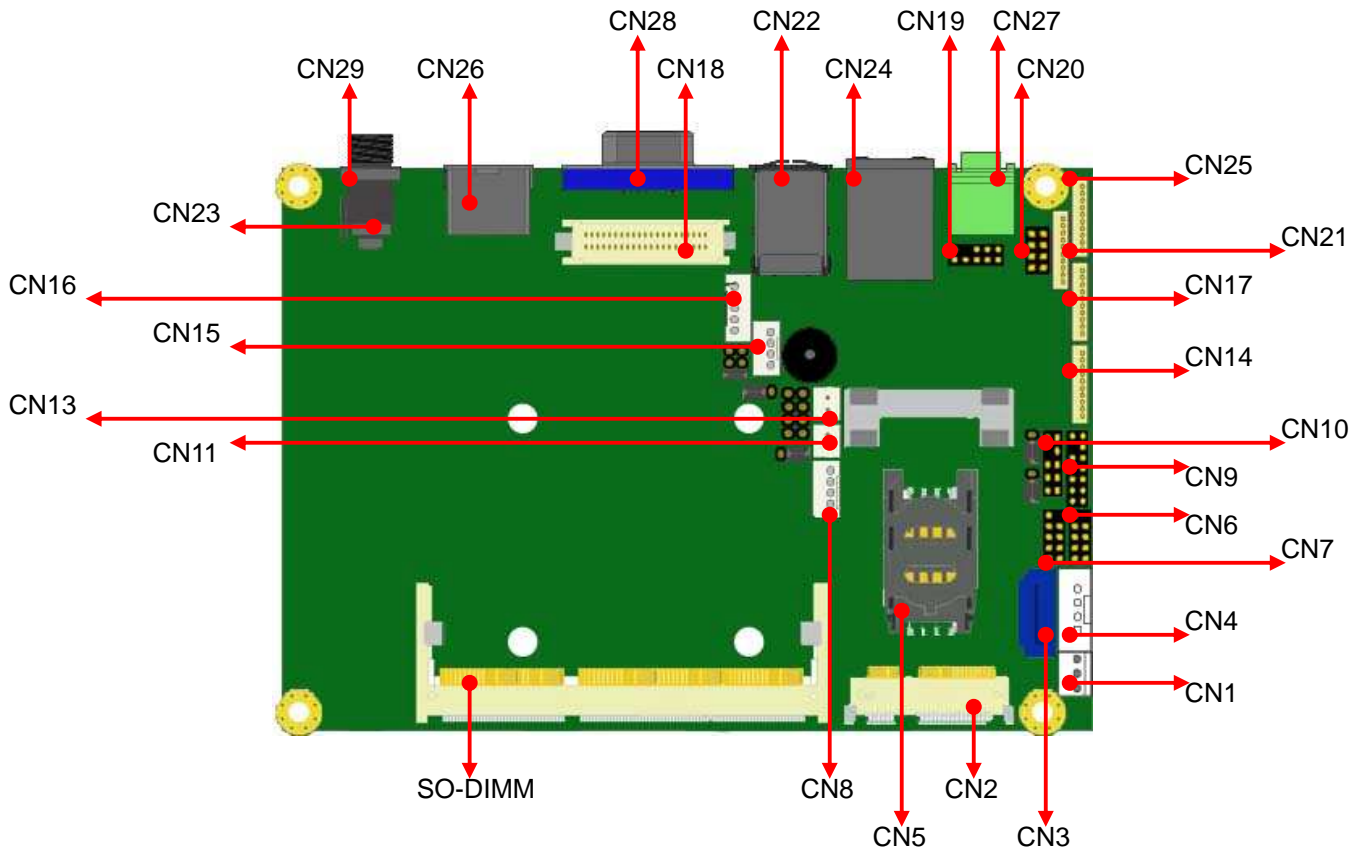


1.5 IO ports





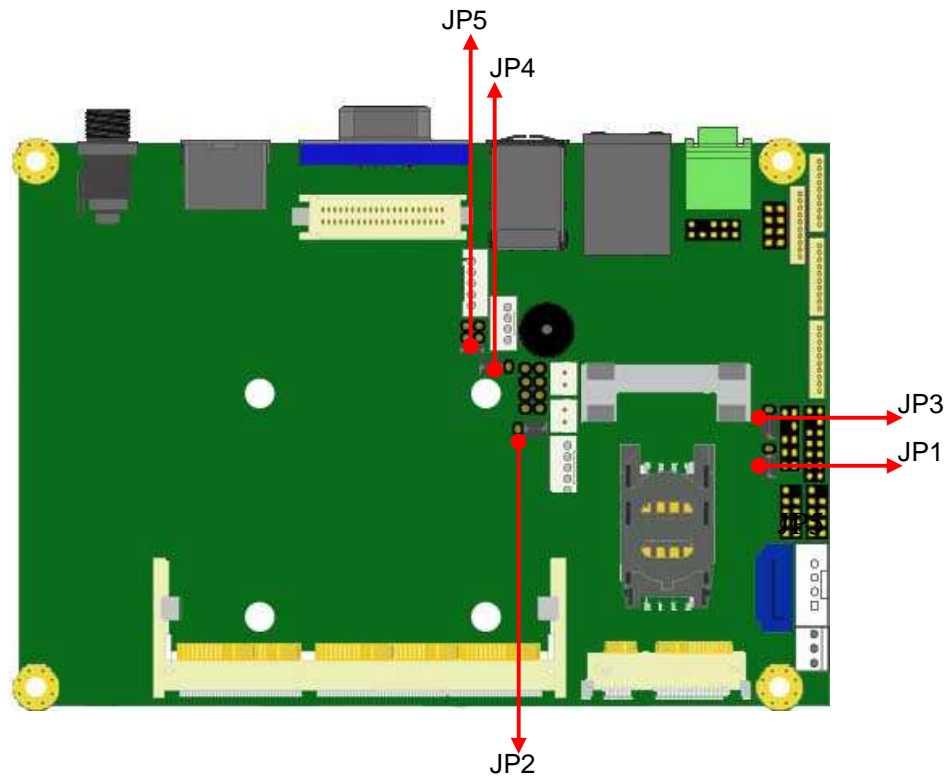
2.1 The location of onboard connectors



Label	Function
CN1	3-pin Fan connector
CN2	Full-size Mini-PCIe socket
CN3	SATA connector
CN4	SATA power connector
CN5	SIM card socket
CN6	USB2.0 port 4/5 pin header
CN7	USB2.0 port 2/3 pin header
CN8	5-pin SMBus pin header
CN9	Low Pin Count pin header
CN10	GPIO pin header
CN11	WLAN LED connector for Half-size
CN12	N/A
CN13	WLAN LED connector for Full-size
CN14	COM2 / RS232/422/485 Pin header
CN15	LVDS backlight adjustment connector
CN16	LVDS inverter connector

Label	Function
CN17	COM4 / RS232 Pin header
CN18	24-bit LVDS connector
CN19	Audio pin header
CN20	Front panel Pin header
CN21	COM1 / RS232 Pin header
CN22	Dual USB3.0 connector
CN23	P4 4-pin power connector (Optional)
CN24	RJ45 LAN connector
CN25	COM3 / RS232 Pin header
CN26	HDMI connector
CN27	Line-out connector
CN28	VGA connector
CN29	DC Jack power input connector
CN30	Half-size Mini-PCIe socket
CN31	Battery connector
N/A	

2.2 The location of onboard jumpers



Label	Function
JP1	AT/ATX mode select (1-2 short : *AT mode , 2-3 short : ATX mode)
JP2	DDR3 Voltage Select (1-2 short : *1.5V , 2-3 short : 1.35V)
JP3	Clear CMOS (1-2 short : *Normal , 2-3 short : Clear CMOS)
JP4	LVDS Panel backlight control mode select (1-2 short : PWM mode , *2-3 short : DC mode)
JP5	LVDS Panel power level select (1-2 short : *3.3V , 3-4 short : 5V , 5-6 short : 12V)

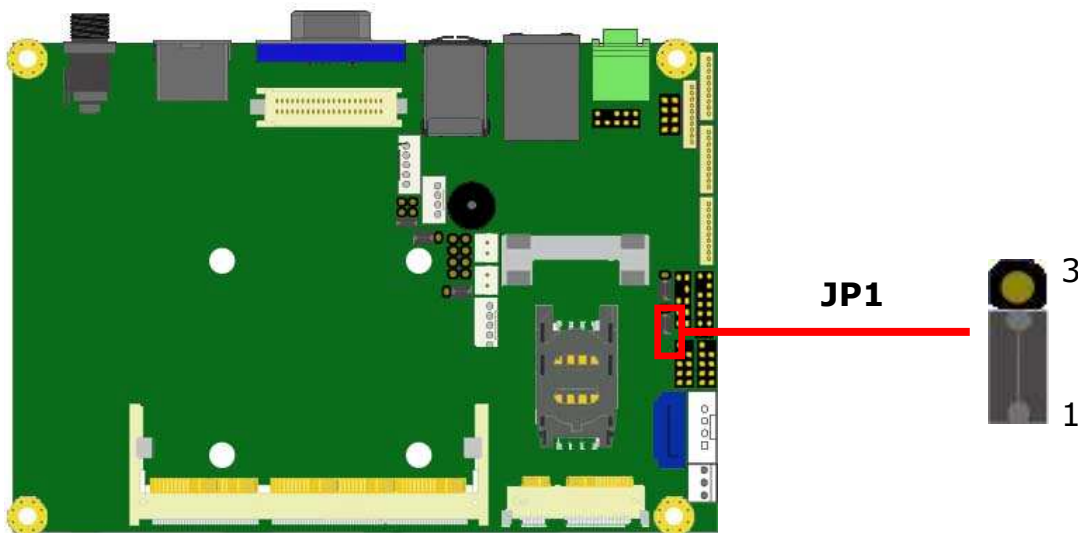
* Default setting

2.3 The function list of onboard jumpers setting

- 2.3.1 : JP1 for AT/ATX mode select

JP1 : 1 x 3 header , pitch 2.0 mm	
Closed Pin	Result
1-2 *	AT mode
2-3	ATX mode

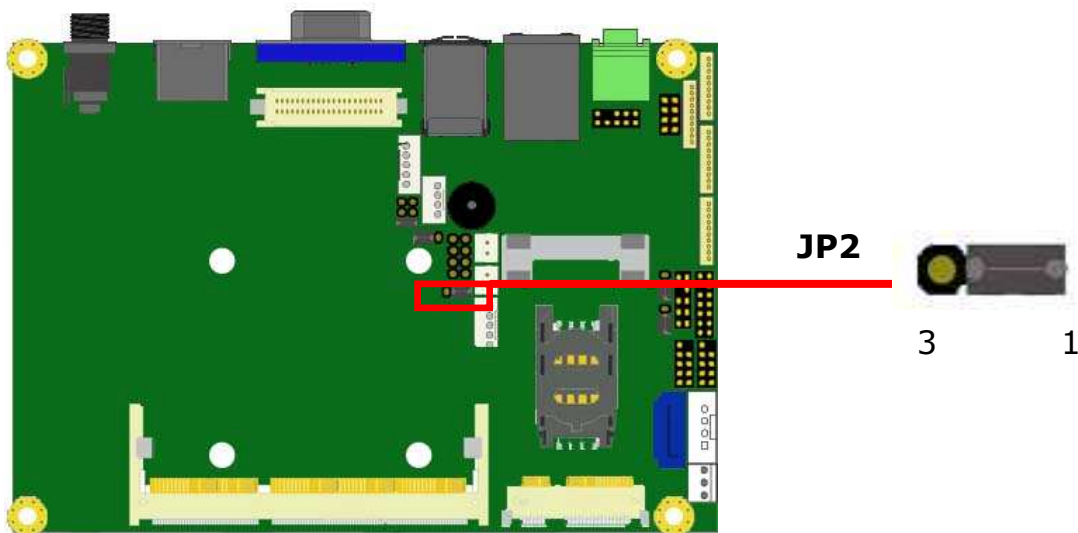
* Default setting



- 2.3.2 : JP2 for DDR3 voltage select

JP2 : 1 x 3 header , pitch 2.0 mm	
Closed Pin	Result
1-2 *	Support DDR3 /1.5V memory module
2-3	Support DDR3 /1.35V memory module

* Default setting

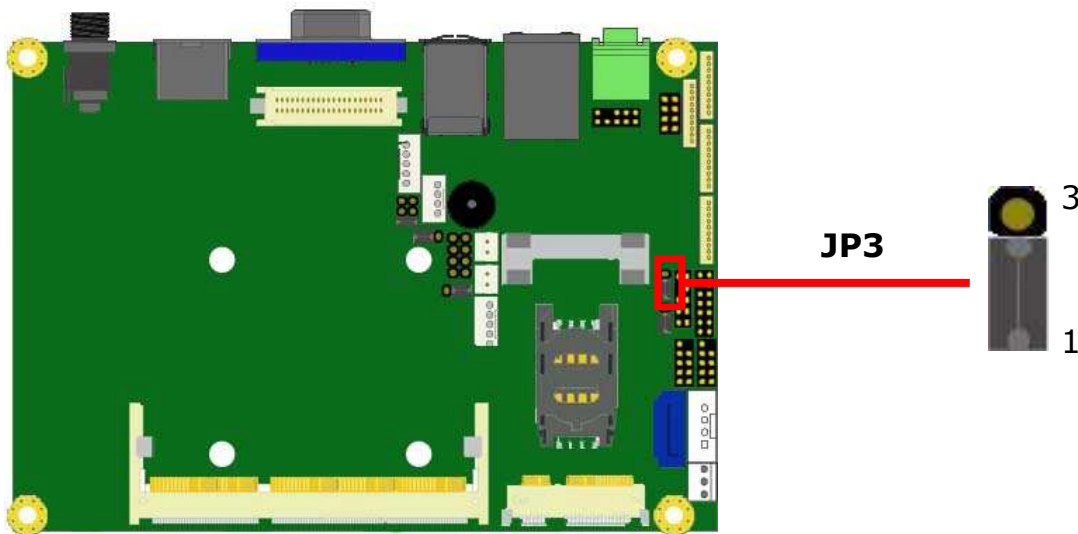


- 2.3.3 : JP3 for Clear CMOS

If you want to clean the CMOS data, set jumper to 2-3 just for few seconds, Then, Move the jumper to 1-2 pin.

JP3 : 1 x 3 header , pitch 2.0 mm	
Closed Pin	Result
1-2 *	Normal
2-3	Clear CMOS

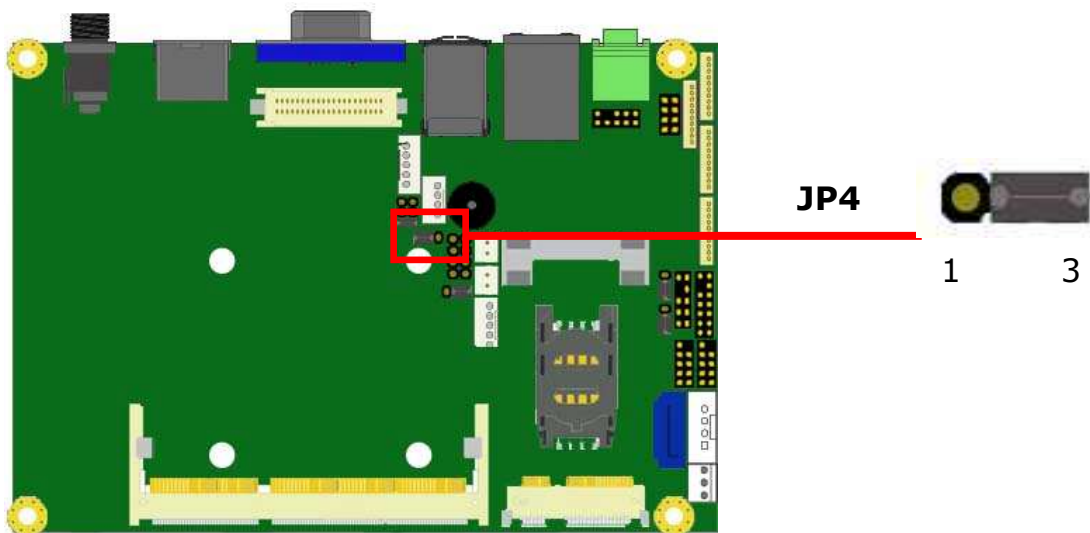
* Default setting



- 2.3.4 : JP4 for LVDS panel backlight control mode select

JP4 : 1 x 3 header , pitch 2.0 mm	
Closed Pin	Result
1-2	PWM mode
2-3 *	DC mode

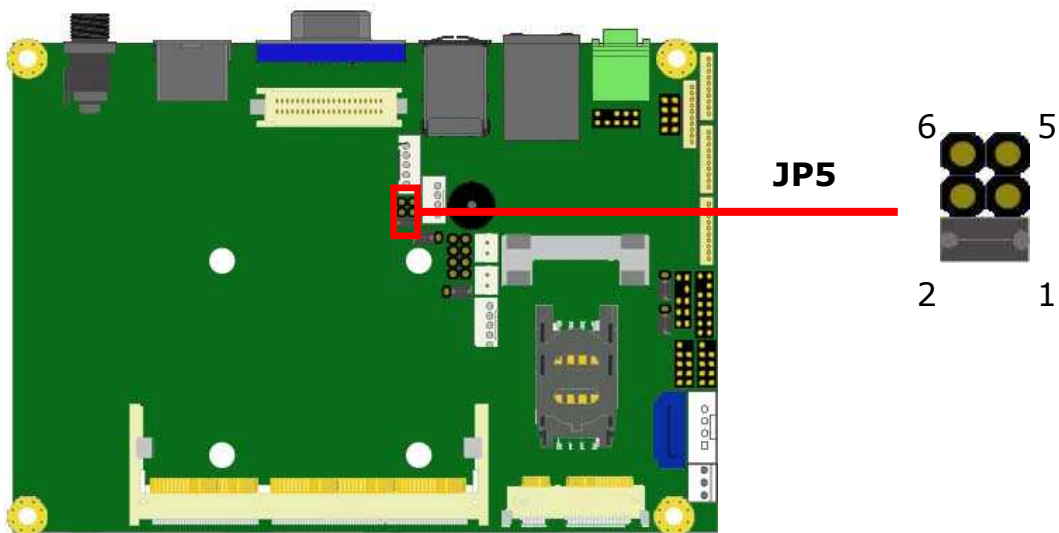
* Default setting



- 2.3.5 : JP5 for LVDS panel power level select

JP5 : 2 x 3 header , pitch 2.0 mm	
Closed Pin	Result
1-2 *	+3.3V for LVDS_VCC
3-4	+5V for LVDS_VCC
5-6	+12V for LVDS_VCC

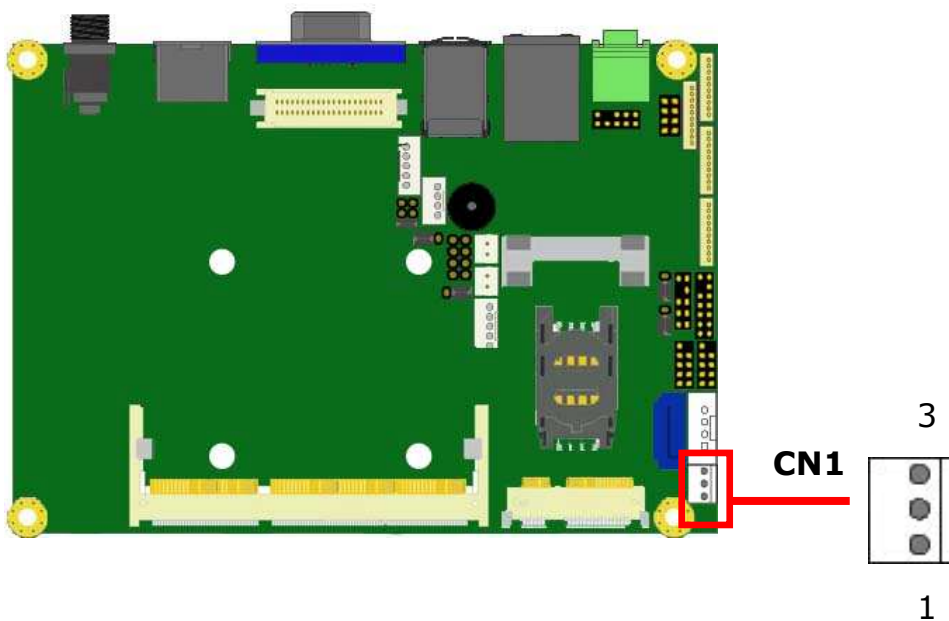
* Default setting



2.4 The pin define of onboard pin header

- 2.4.1 : CN1 for 3-pin Fan connector

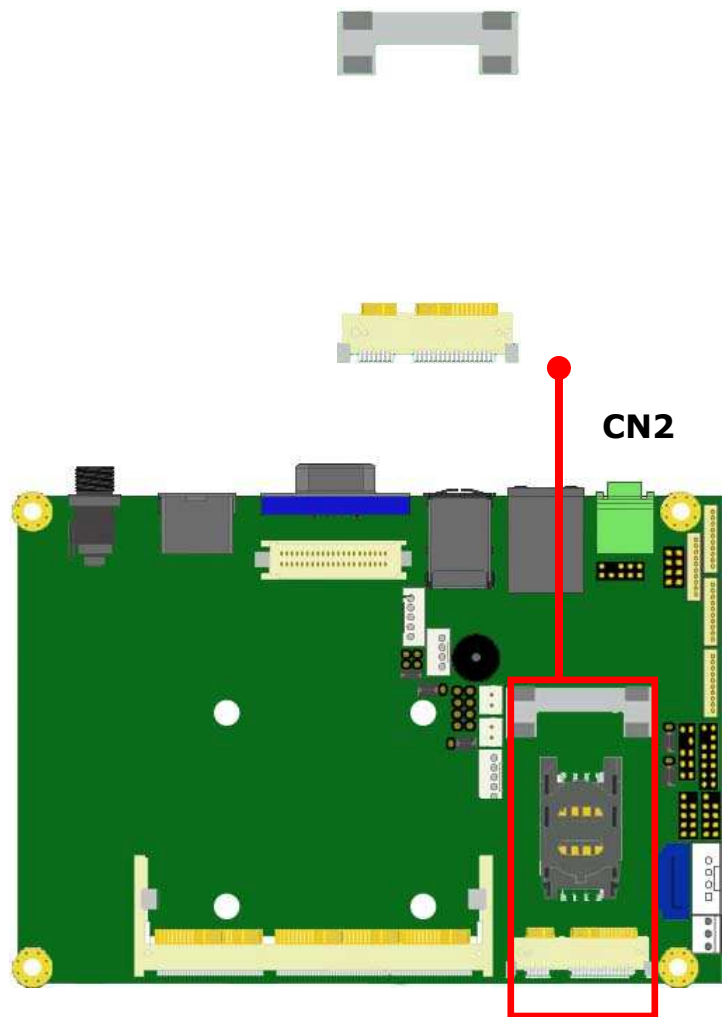
CN1: 1 x 3 wafer			
Pin	Signal	Pin	Signal
1	GND	2	+12V
3	Sensor		



- 2.4.2 : CN2 for Full-size Mini-PCIe socket

Note: Full-size Mini-PCIe only support PCIe + USB signal,
Don't support SATA signal, such as mSATA SSD ...

Pin	Signal	Pin	Signal
1	WAKE	27	GND
2	+3.3V AUX	28	+1.5V
3	N/C	29	GND
4	GND	30	SMBCLK
5	N/C	31	PETNO
6	+1.5V	32	SMBDATA
7	CLKREQ	33	PETP0
8	UIM_PWR	34	GND
9	GND	35	GND
10	UIM_DATA	36	USB_D-
11	REFCLK-	37	GND
12	UIM_CLK	38	USB_D+
13	REFCLK+	39	+3.3V AUX
14	UIM_RESET	40	GND
15	GND	41	+3.3V AUX
16	UIM_VPP	42	LED_WWAN
17	UIM_C8	43	GND
18	GND	44	LED_WLAN
19	UIM_C4	45	N/C
20	W_Disable	46	N/C
21	GND	47	N/C
22	PERST	48	+1.5V
23	PERNO	49	N/C
24	+3.3V AUX	50	GND
25	PERP0	51	N/C
26	GND	52	+3.3V AUX

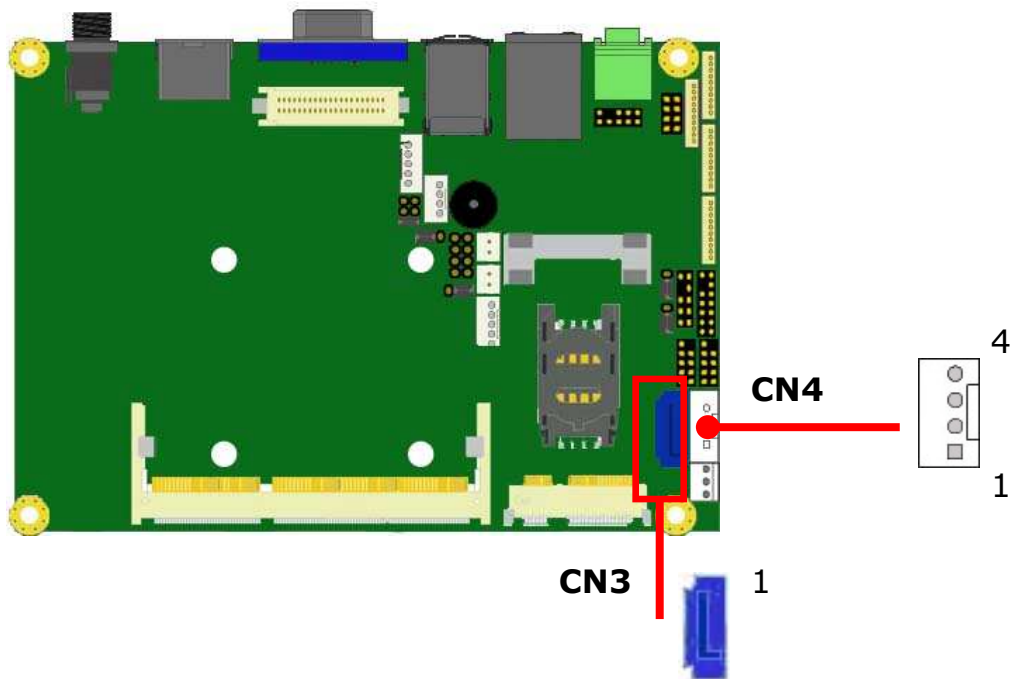


- 2.4.3 : CN3 & CN4 for SATA 3.0 connector and SATA power connector

CN3 : SATA 3.0 connector			
Pin	Signal	Pin	Signal
1	GND	2	SATA_TX_P0
3	SATA_TX_N0	4	GND
5	SATA_RX_N0	6	SATA_RX_P0
7	GND		

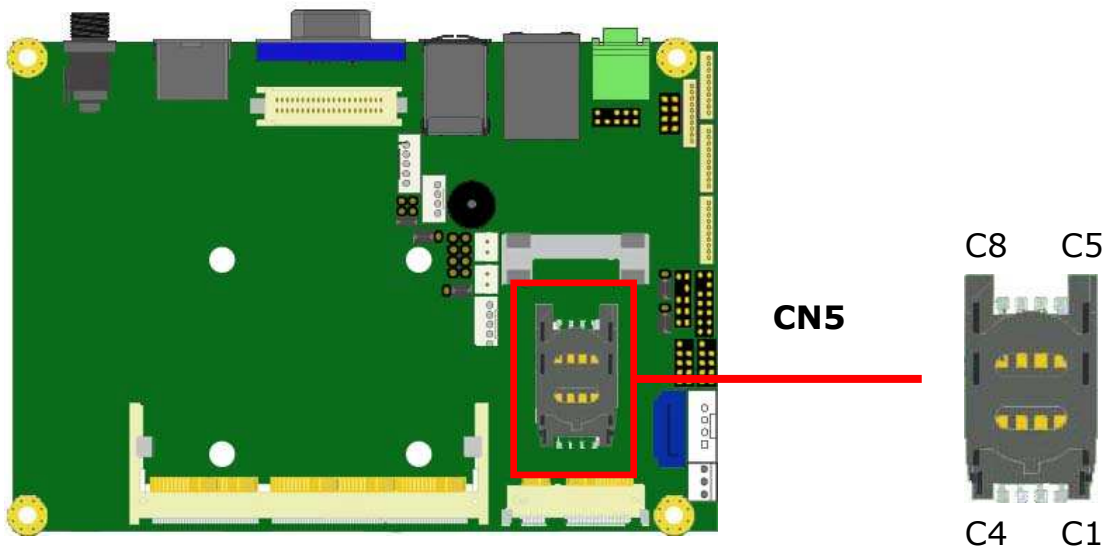
CN4 : 4-pin wafer for SATA power connector			
Pin	Signal	Pin	Signal
1	+12V	2	GND
3	GND	4	+5V

Note: Maximum output current 12V/1A, 5V/1A.



- 2.4.4 : CN5 for SIM card socket

CN5 : SIM card holder			
Pin	Signal	Pin	Signal
C1	SIM_PWR	C2	SIM_RESET
C3	SIM_CLK	C4	Reserved
C5	GND	C6	SIM_VPP
C7	SIM_DATA	C8	Reserved

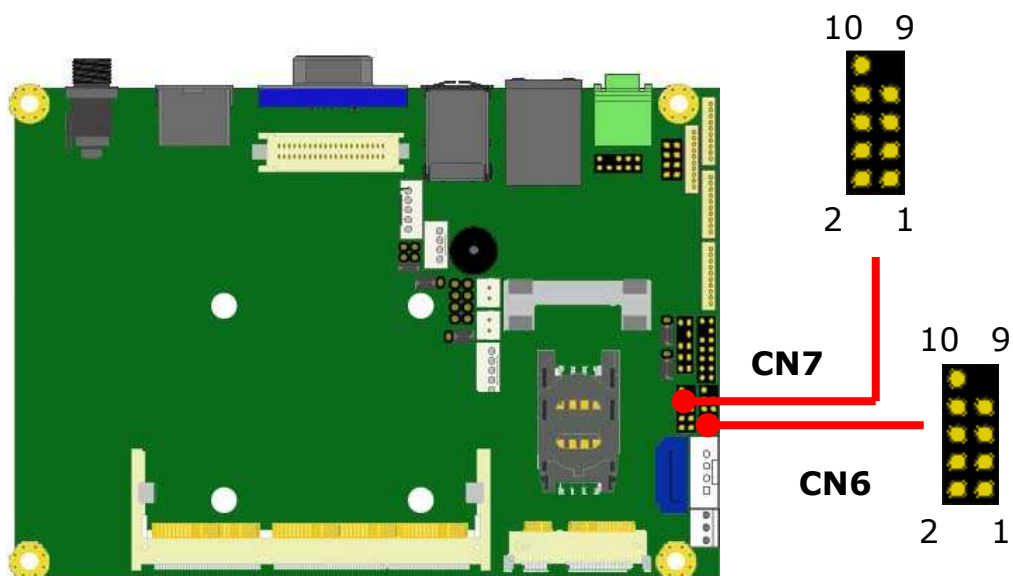


2.4.5 : CN6 for USB2.0 port pin header

CN6: 2 x 5 header , pitch 2.0 mm			
Pin	Signal	Pin	Signal
1	+5V	2	+5V
3	USB D-	4	USB D-
5	USB D+	6	USB D+
7	GND	8	GND
9	Key	10	GND

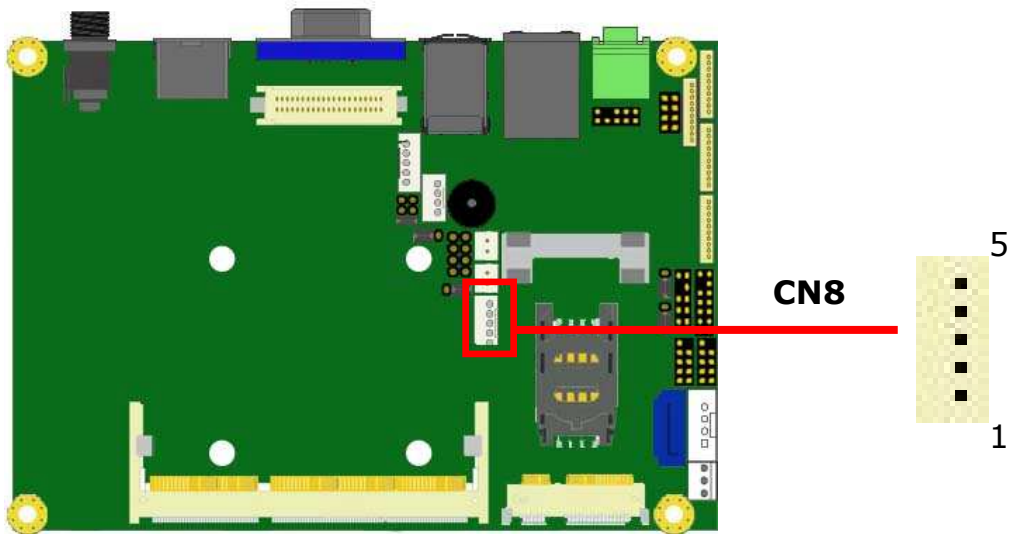
CN7 for USB2.0 port pin header

CN7: 2 x 5 header , pitch 2.0 mm			
Pin	Signal	Pin	Signal
1	+5V	2	+5V
3	USB D-	4	USB D-
5	USB D+	6	USB D+
7	GND	8	GND
9	Key	10	GND



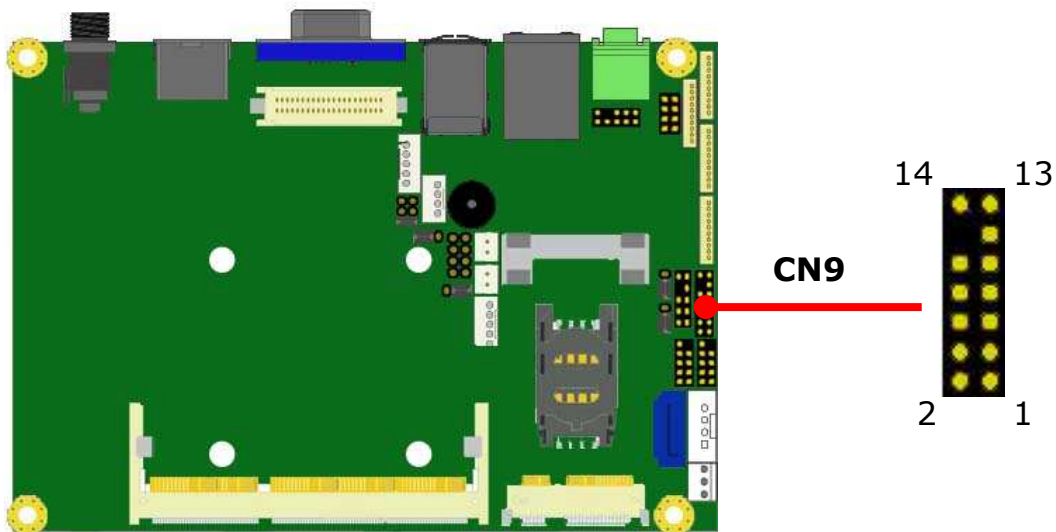
- 2.4.6 : CN8 for SMBus pin header

CN8 : 1 x 5 wafer			
Pin	Signal	Pin	Signal
1	+3.3V	2	Clock
3	Data	4	Key
5	GND		



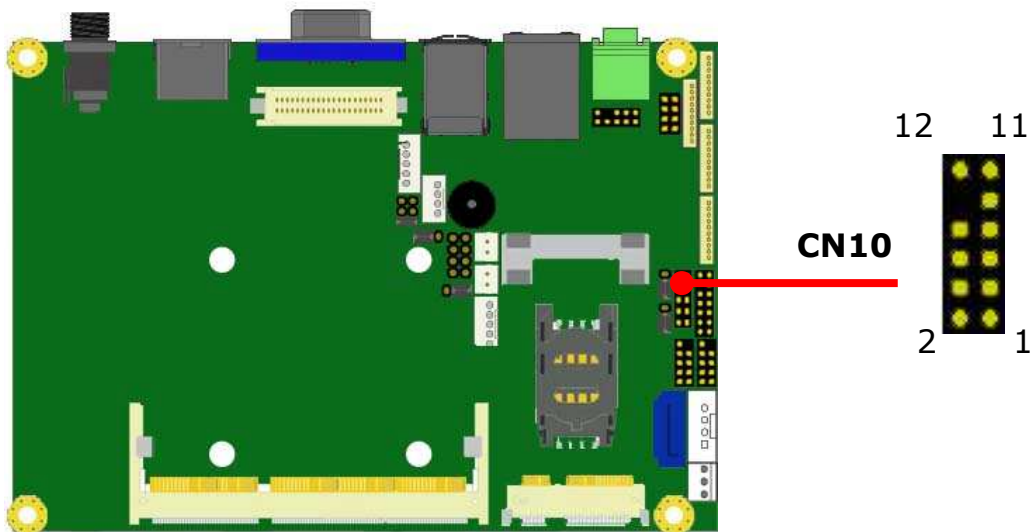
- 2.4.7 : CN9 for Low Pin Count pin header

CN9 : 2 x 7 header , pitch 2.0 mm			
Pin	Signal	Pin	Signal
1	+3.3V	2	LAD0
3	LAD1	4	LAD2
5	LAD3	6	LFRAME_N
7	PLTRST_N	8	+5V
9	LPC_Clock	10	GND
11	GND	12	Key
13	SERIRQ	14	LPC_DREQ



- 2.4.8 : CN10 for GPIO pin header

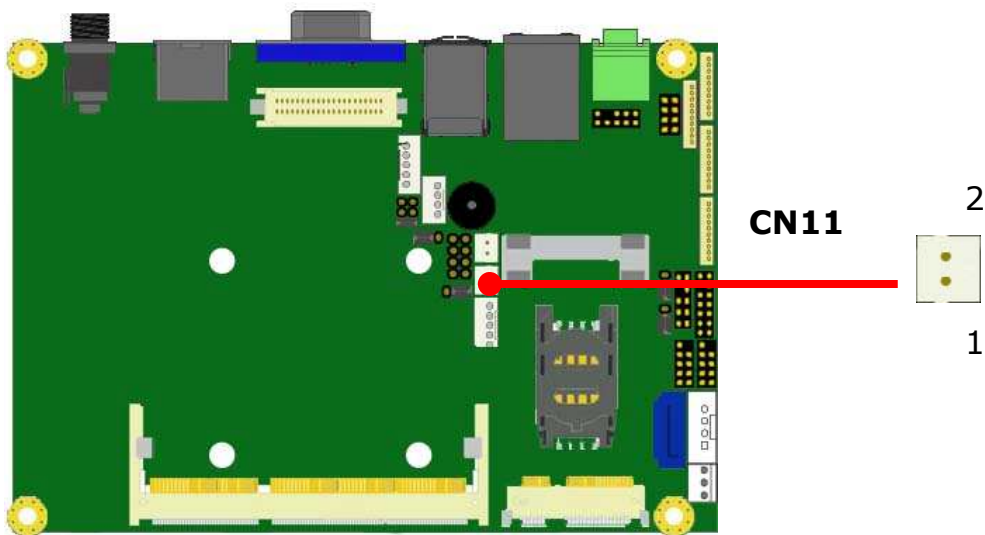
CN10 : 2 x 6 header , pitch 2.0 mm			
Pin	Signal	Pin	Signal
1	+3.3V	2	GPIO0
3	GPIO1	4	GPIO2
5	GPIO3	6	GPIO4
7	GPIO5	8	GPIO6
9	GPIO7	10	Key
11	+5V	12	GND



- 2.4.9 : CN11 for WLAN LED connector for Half-size Mini-PCIe socket

CN11 : 1 x 2 wafer			
Pin	Signal	Pin	Signal
1	+3.3V	2	LED-

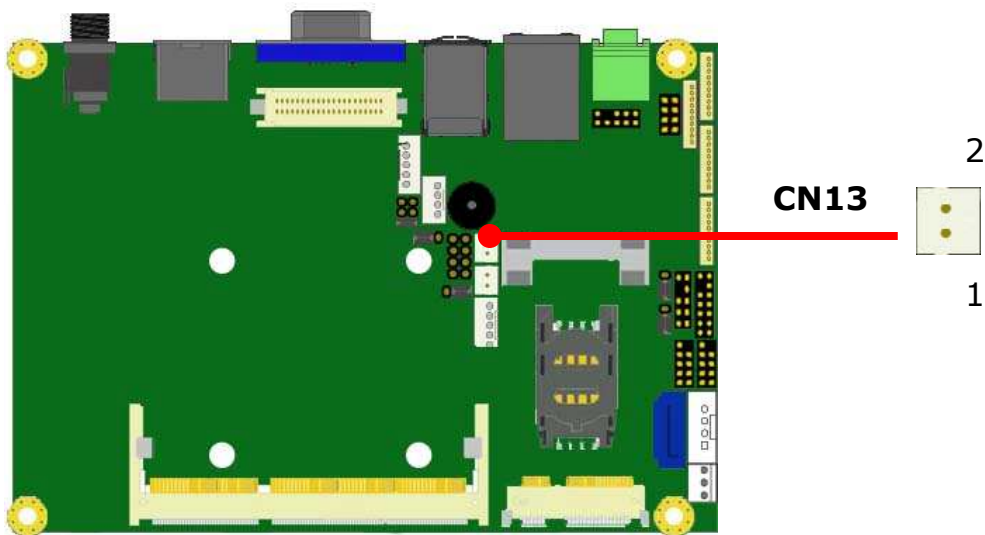
Note: Support wireless LAN signal only



- 2.4.10 : CN13 for WLAN LED connector for Full-size Mini-PCIe socket

CN13 : 1 x 2 wafer			
Pin	Signal	Pin	Signal
1	LED-	2	+3.3V

Note: Support WWAN / wireless LAN signal

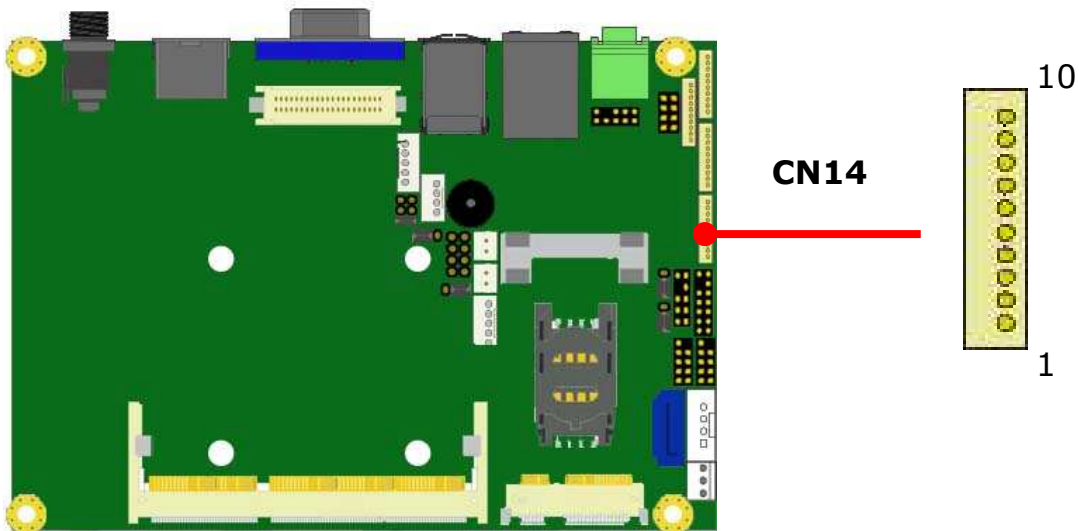


- 2.4.11 : CN14 for COM 2 , RS232/422/485

Note: COM2 RS-232/422/485 can be set by BIOS setting. Default is RS-232.

CN14 : Wafer 1 x 10 header, pitch 1.25 mm, connector type : YIMTEX 501MW1*10STR

Pin	RS232 mode	RS422 mode	RS485 mode
1	DCD, Data carrier detect	TXD-	TXD-
2	DSR, Data set ready		
3	RXD, Received Data	TXD+	TXD+
4	RTS, Request to send		
5	TXD, Transmitted Data	RXD+	
6	CTS, Clear to sent		
7	DTR, Data terminal ready	RXD-	
8	RI, Ring indicator		
9	GND		
10	N/C		

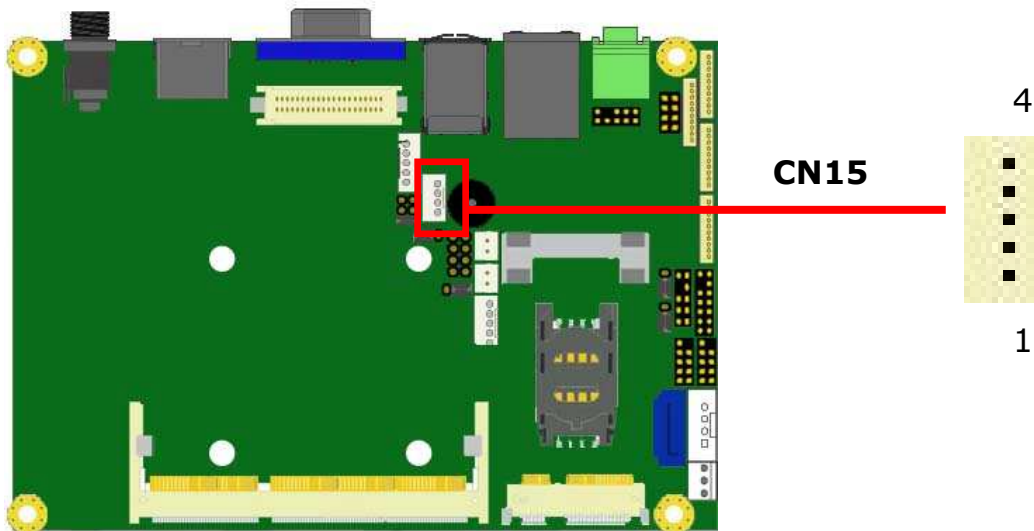


BIOS setting manual :

Advanced		InsydeH20 Setup Utility	Rev. 3.7
SB On-chip Devices Configuration		Enable/Disable TPM physical presence. Need to reboot when set from disable to enable before selecting TPM Operation.	
Trust Platform Module	<Disabled>		
Mini PCI-E Type Selection	<PCI-E>		
Serial Port A	<Enabled>		
Base I/O Address	<3F8>		
Interrupt	<IRQ4>		
Serial Port B	<Enabled>		
Base I/O Address	<2F8>		
Interrupt	<IRQ3>		
COM Port Select	<RS232 250kbs Port>		
Serial Port C	<Enabled>		
Base I/O Address	<3E8>		
Interrupt	<IRQ4>		
Serial Port D	<Enabled>		
Base I/O Address	<2E8>		
Interrupt	<IRQ3>		
F1 Help	↑↓ Select Item	F5/F6 Change Values	F9 Setup Defaults
Esc Exit	↔ Select Menu	Enter Select ▶ SubMenu	F10 Save and Exit

- 2.4.12 : CN15 for LVDS panel backlight adjustment connector

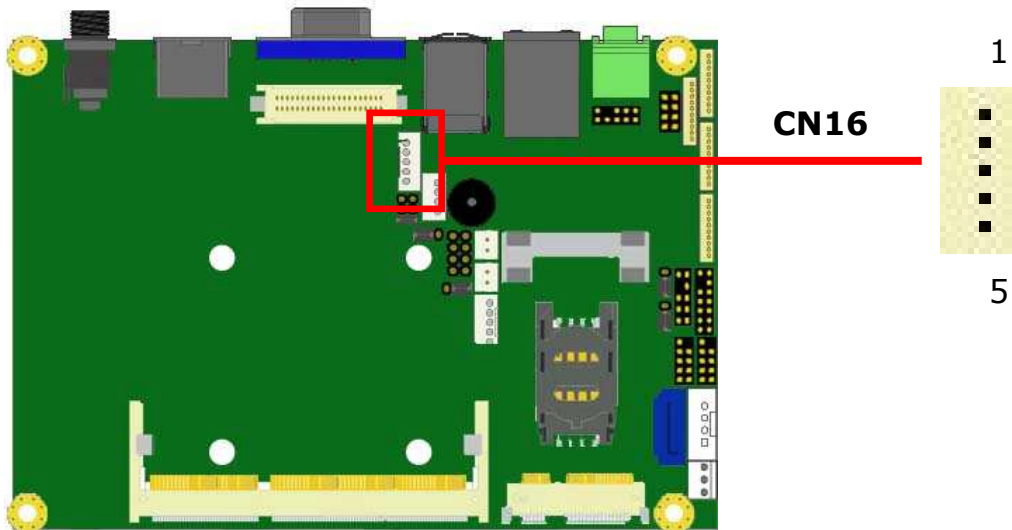
CN15 : 1 x 4 wafer			
Pin	Signal	Pin	Signal
1	LVDS_BLUP	2	GND
3	GND	4	LVDS_BLDN



- 2.4.13 : CN16 for LVDS panel inverter power connector

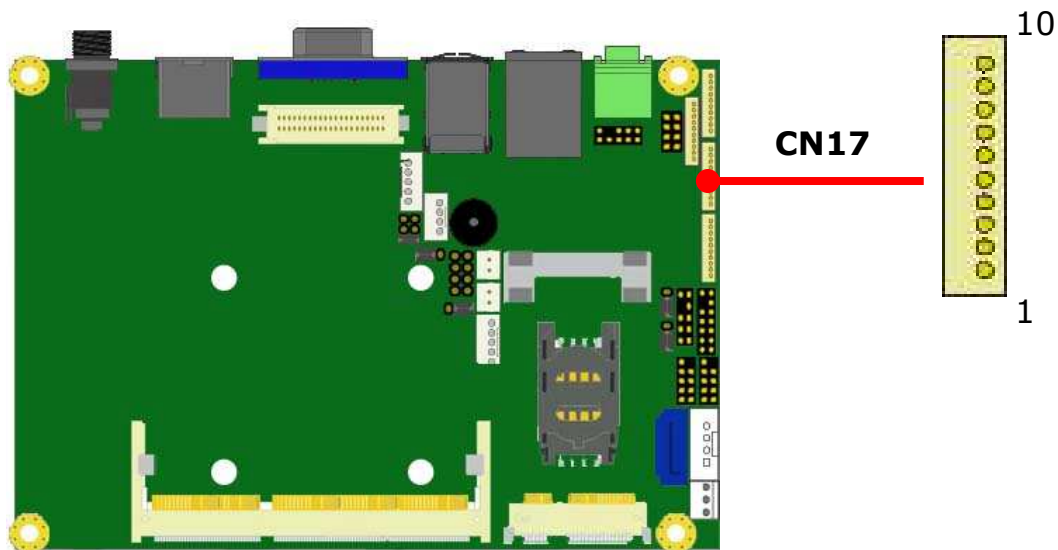
CN16 : 1 x 5 wafer , Pitch : Pitch 2.0 mm

Pin	Signal	Pin	Signal
1	+12V	2	GND
3	Backlight Enable	4	Backlight control
5	+ 5V		



- 2.4.14 : CN17 for COM 3 , RS232

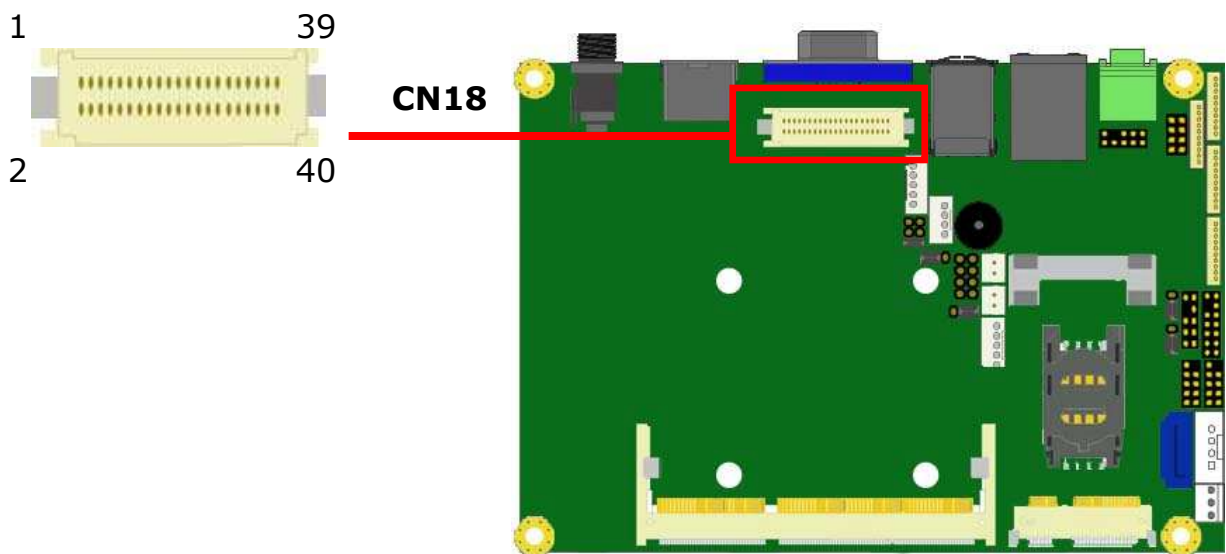
CN17 : Wafer 1 x 10 header, pitch 1.25 mm, connector type : YIMTEX 501MW1*10STR			
Pin	Signal	Pin	Signal
1	DCD, Data carrier detect	2	DSR, Data set ready
3	RXD, Receive data	4	RTS, Request to send
5	TXD, Transmit data	6	CTS, Clear to se
7	DTR, Data terminal ready	8	RI, Ring indicator
9	GND	10	+5V



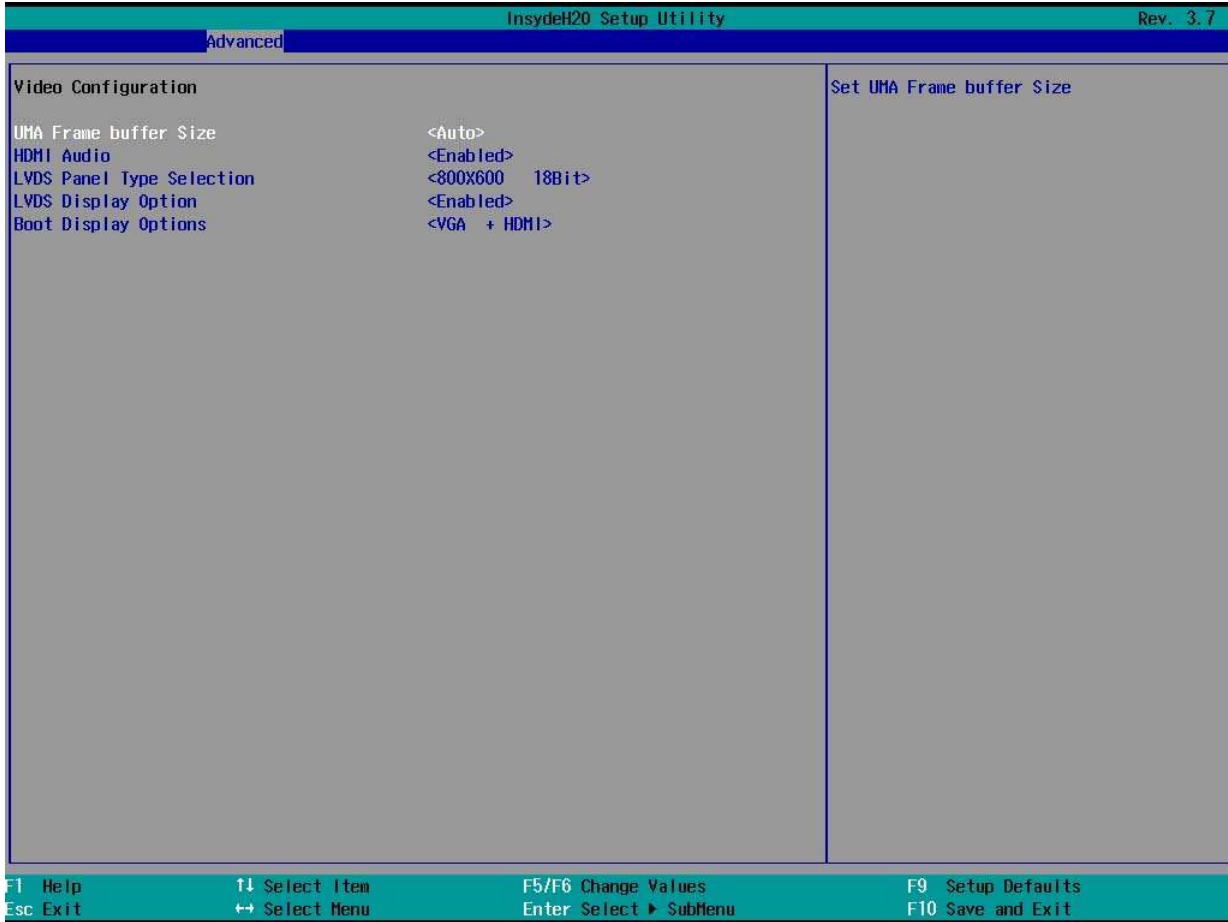
- 2.4.15 : CN18 for LVDS connector

CN18 : connector type : DF13A-40DP-1.25V					
Pin	Signal	Pin	Signal	Pin	Signal
1	LVDS_VCC	15	LVDSA_1+	29	GND
2	LVDS_VCC	16	LVDSB_1+	30	GND
3	LVDS_VCC	17	GND	31	DDC_Clock
4	LVDS_VCC	18	GND	32	DDC_Data
5	GND	19	LVDSA_2-	33	GND
6	GND	20	LVDSB_2-	34	GND
7	LVDSA_0-	21	LVDSA_2+	35	LVDSA_3-
8	LVDSB_0-	22	LVDSB_2+	36	LVDSB_3-
9	LVDSA_0+	23	GND	37	LVDSA_3+
10	LVDSB_0+	24	GND	38	LVDSB_3+
11	GND	25	LVDSA_Clock-	39	SMB_Clock
12	GND	26	LVDSB_Clock-	40	SMB_Data
13	LVDSA_1-	27	LVDSA_Clock+		
14	LVDSB_1-	28	LVDSB_Clock+		

Note: Please select LVDS_VCC for 3.3V/5V/12V by JP5.

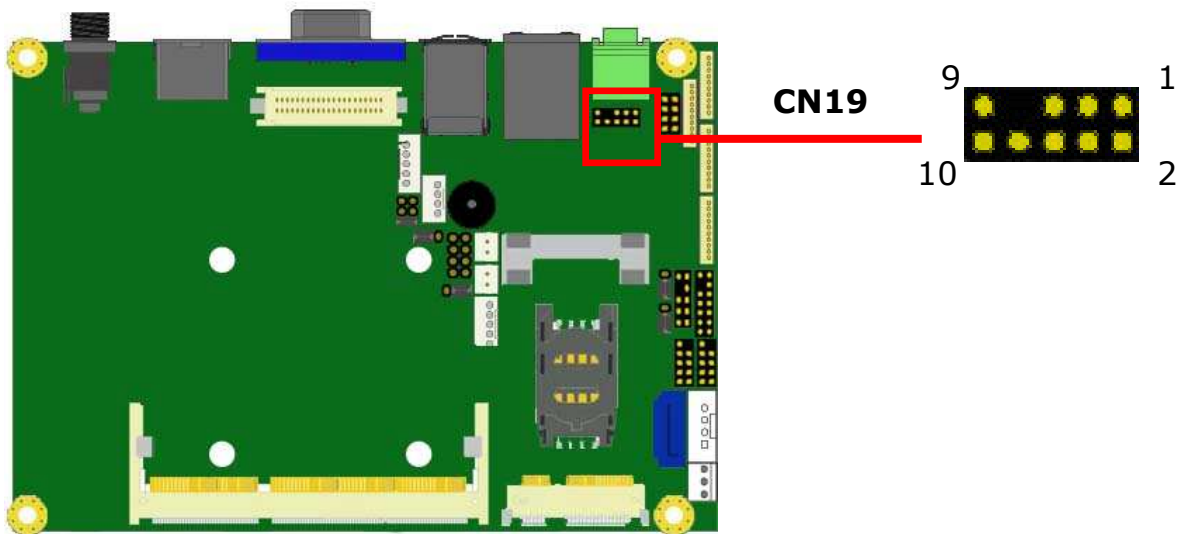


BIOS setting for LVDS Resolution:



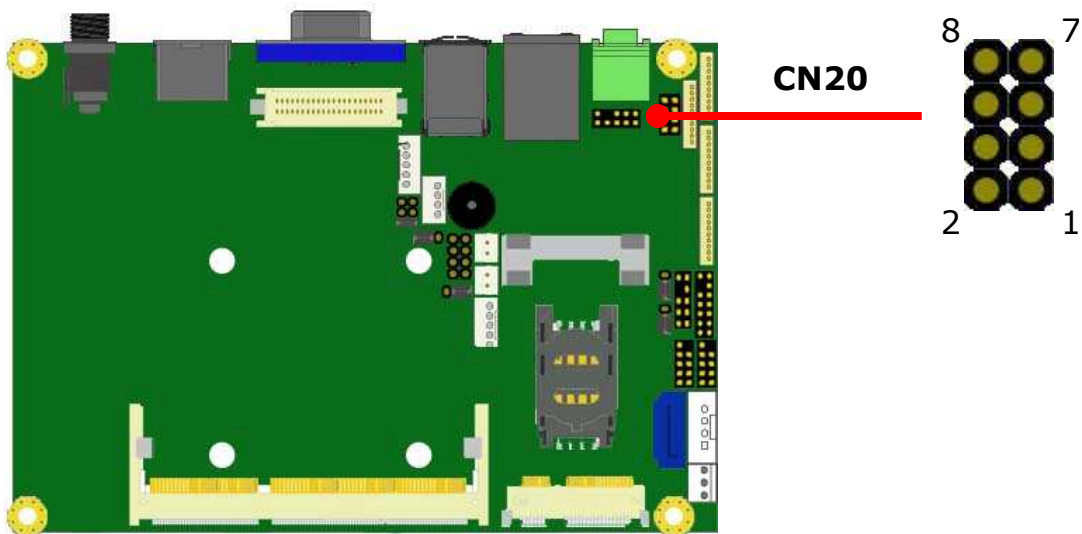
- 2.4.16 : CN19 for Audio pin header

CN19: 2 x 5 header , Pitch 2.0mm			
Pin	Signal	Pin	Signal
1	LINE1-L	2	LINE1-R
3	GND	4	GND
5	MIC1_L	6	MIC1_R
7	key	8	GND
9	FRONT_L	10	FRONT_R



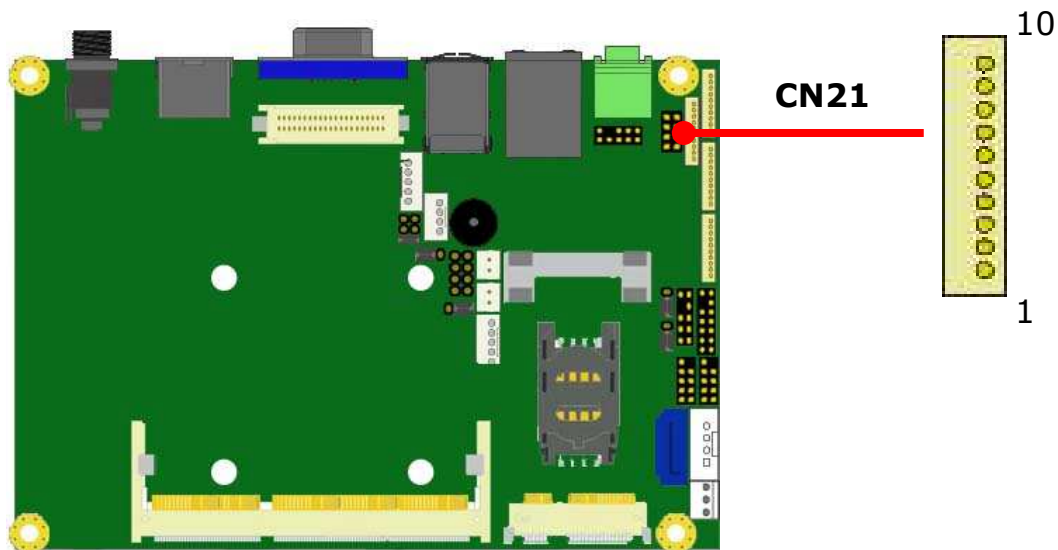
- 2.4.17 : CN20 for front Panel pin header

CN20 : 2 x 4 header , pitch 2.00 mm			
Pin	Signal	Pin	Signal
1	Power_LED+	2	Power_LED-
3	HDD_LED+	4	HDD_LED-
5	GND	6	Power on/off
7	Reset	8	GND



- 2.4.18 : CN21 for COM 1 , RS232

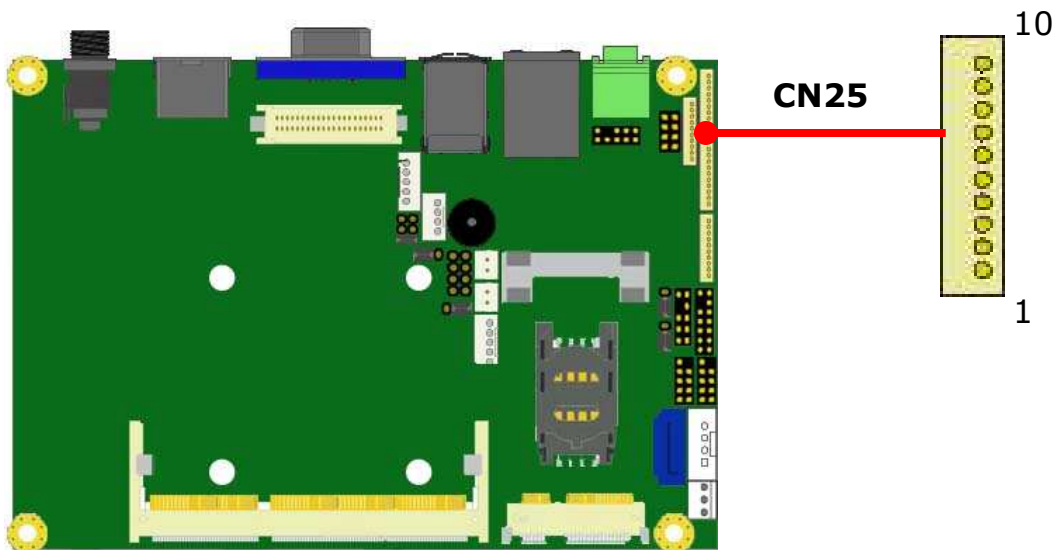
CN21 : Wafer 1 x 10 header, pitch 1.25 mm, connector type : YIMTEX 501MW1*10STR			
Pin	Signal	Pin	Signal
1	DCD, Data carrier detect	2	DSR, Data set ready
3	RXD, Receive data	4	RTS, Request to send
5	TXD, Transmit data	6	CTS, Clear to se
7	DTR, Data terminal ready	8	RI, Ring indicator
9	GND	10	+5V



- 2.4.19 : CN25 for COM 3 , RS232

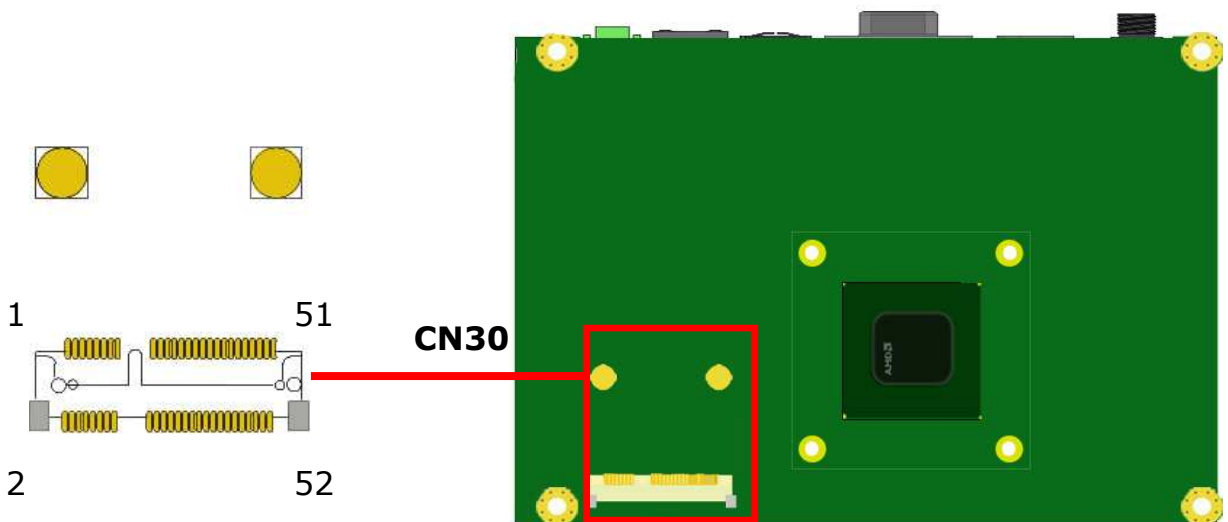
CN25 : Wafer 1 x 10 header, pitch 1.25 mm, connector type : YIMTEX 501MW1*10STR

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



- 2.4.20 : CN30 for half-size Mini-PCIe socket

CN30 : Half-size Mini-PCIe socket					
Pin	Signal	Pin	Signal	Pin	Signal
1	MSATA_WAKE	19	N/C	37	N/A
2	+3.3V	20	N/C	38	USB_D+
3	N/C	21	GND	39	V3P3_MSATA
4	GND	22	PLTRST_BUF1_N	40	GND
5	N/C	23	MSATA_RXN4	41	V3P3_MSATA
6	+1.5V	24	MSATA_AUX33	42	LED_WWAN
7	MCLKREQ	25	MSATA_RXP4	43	N/A
8	N/C	26	GND	44	LED_WLAN
9	GND	27	GND	45	N/A
10	N/C	28	+1.5V	46	LED_WPAN
11	MSATA_PE_CLKN	29	GND	47	N/A
12	N/C	30	ICH_SMBCLK	48	+1.5V
13	MSATA_PE_CLKP	31	MSATA_TXN4	49	N/A
14	N/C	32	ICH_SMBDATA	50	GND
15	GND	33	MSATA_TXP4	51	N/A
16	N/C	34	GND	52	+3.3V
17	N/C	35	GND	-	
18	N/C	36	USB_D-	-	



Note:

Half-size Mini-PCIe card could support USB + SATA or USB + PCIE signal.

The default setting is set as USB + PCIE signal.

Please into BIOS and select SATA or PCIE signal to match your device.

For example :

Please into BIOS and set " SATA " when you install a half-size add-on card, such as mSATA SSD.

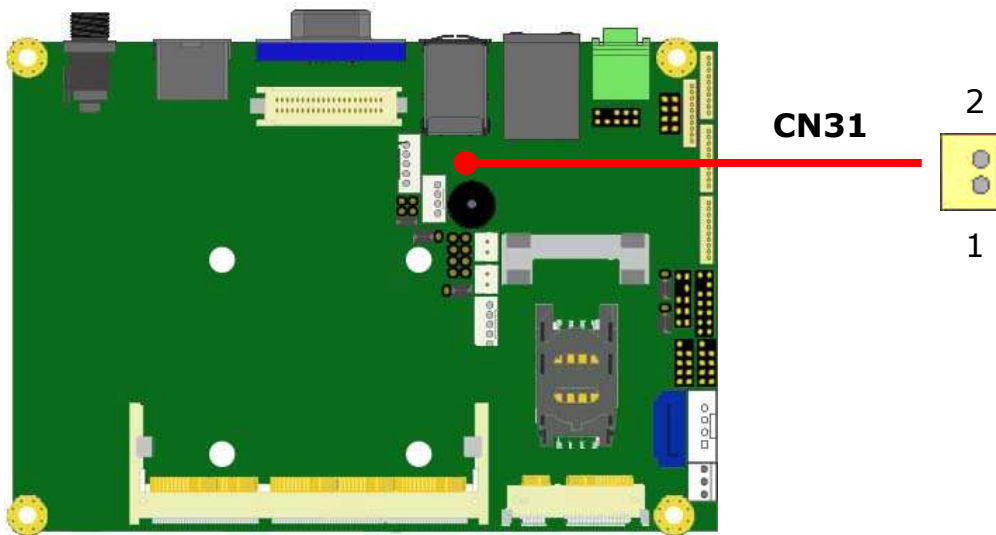
Please into BIOS and set " PCIE " when you install a half-size add-on card, such as WIFI card.



- 2.4.21 : CN31 for Battery connector

CN31 : 1 x 2 header , pitch 2.0 mm

Pin	Signal	Pin	Signal
1	+3V	2	GND



3. BIOS setting Menu

- 3.1 Overview

This section explains the BIOS, which displays system configuration settings and allows the changing of these settings to configure the system. The BIOS Utility consists of a menu-based interface that makes navigating and selecting various BIOS functions a simple process.

The BIOS Setup Utility can be utilized to view and change BIOS settings for the motherboard. Press <ESC> key on keyboard during the Power-On Self-Test (POST) routine to enter the Front Page and select the SCU item to enter the InsydeH2O BIOS Setup Utility.

Use <<> and <>> keys on the keyboard to navigate to each menu. The <↑> and <↓> arrow keys allow user to navigate to items within each menu. Press <Enter> key to select the item and navigate the item submenu (if available). Use <ESC> key at any time to return to the previous respective submenu or menu. You can also refer to the bottom portion of the BIOS Setup Utility screen for quick navigation instructions.

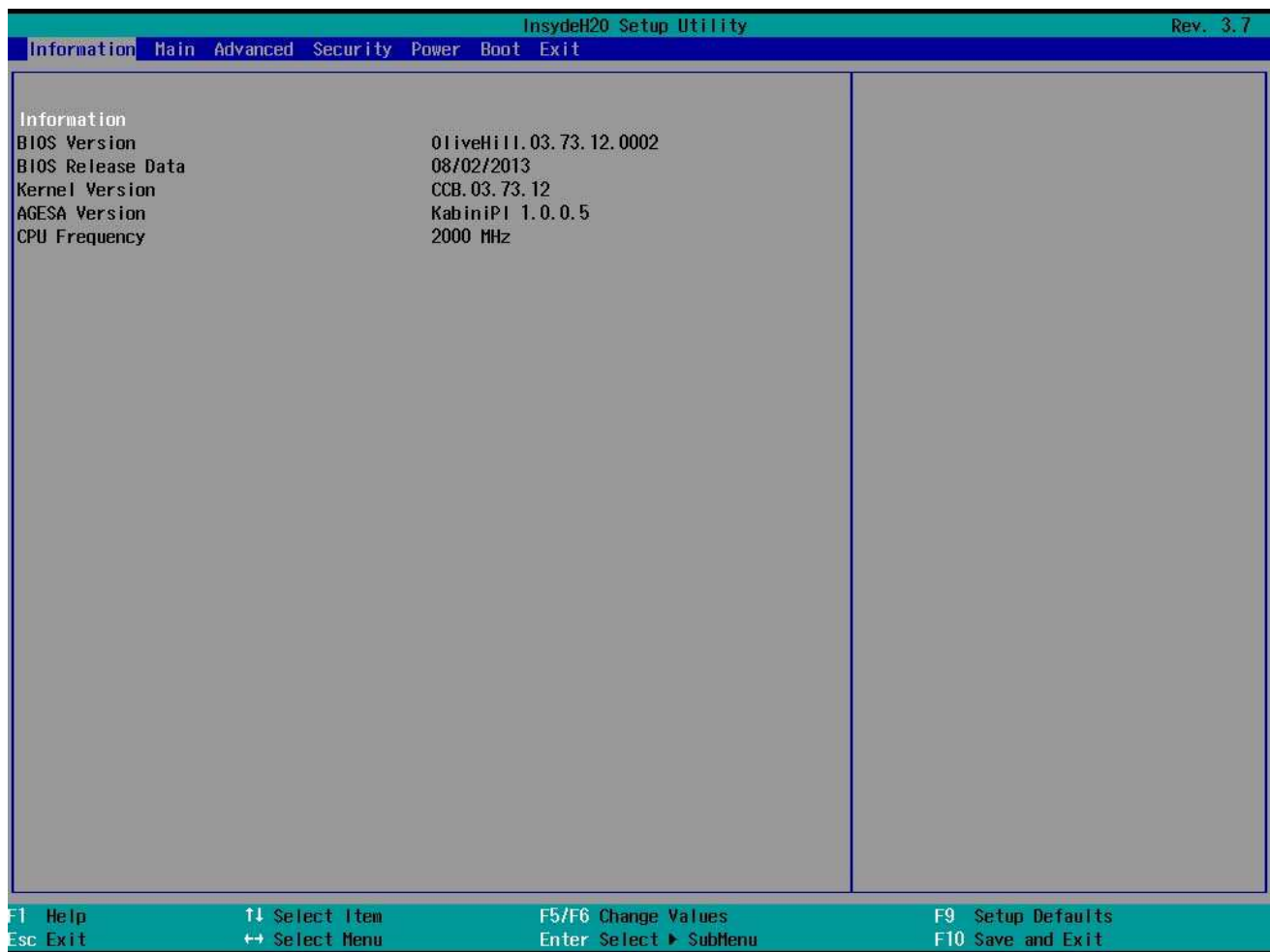
InsydeH2O Setup Utility						
Information	Main	Advanced	Security	Power	Boot	Exit

Menu Name	Description
Information	Display BIOS version, Release Date, Kernel, AGENSA version, etc.
Main	Display system information such as CPU type and speed, system bus speed, system memory speed, total installed memory current language and system date & time, etc.
Advanced	Allow configuration of advanced system settings such as boot configuration, ACPI features, and chipset configuration, etc.
Security	Set passwords and security functions.
Power	Configure power management functions.
Boot	Set boot options such as Quick Boot or USB Boot.
Exit	Allow user to save or discard BIOS changes, and load optimal or custom default settings.

3.2 BIOS Setup Utility

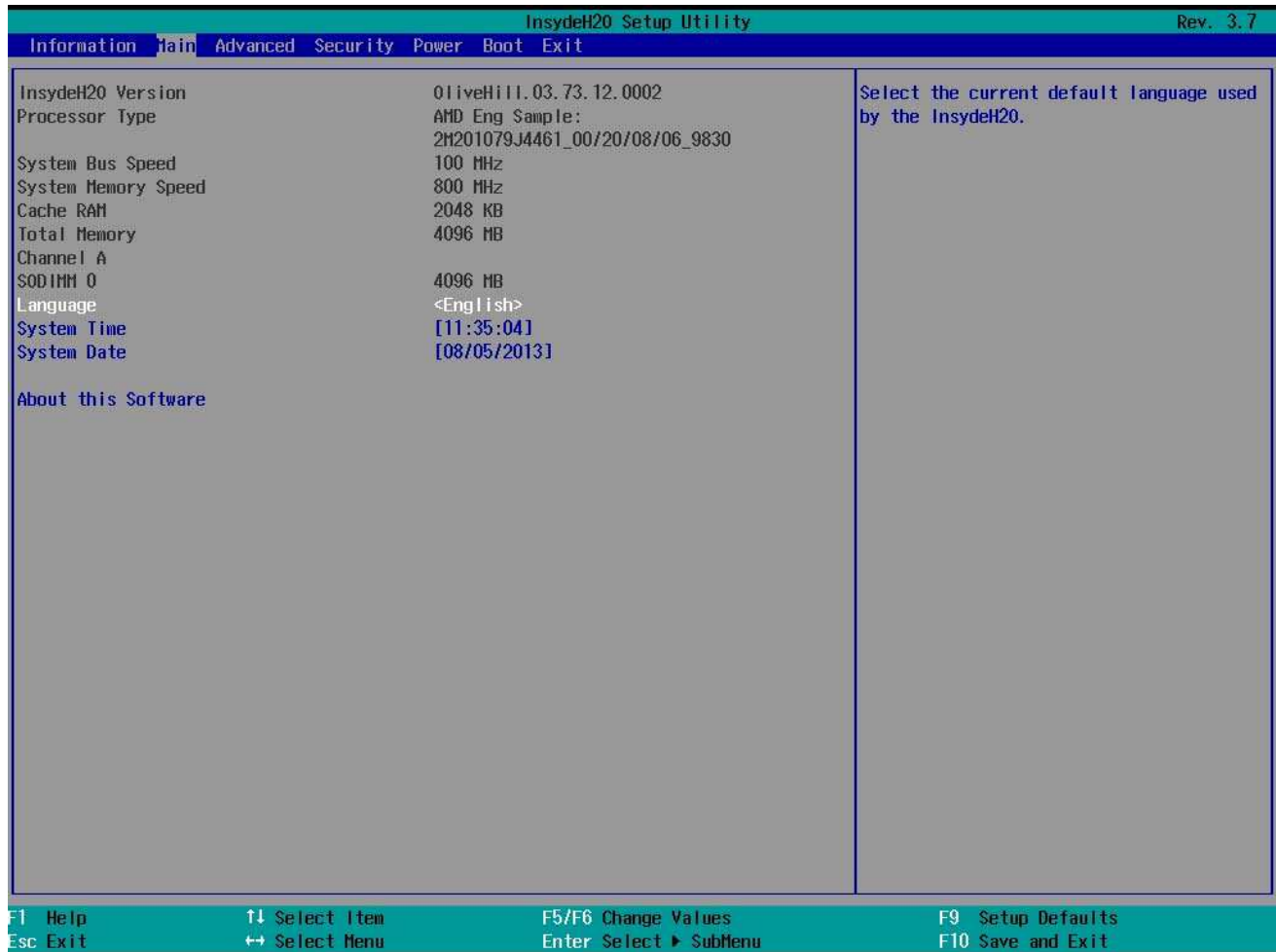
- 3.2.1 Information Menu

The Information Menu of BIOS Setup Utility provide a quick overview of BIOS version and Reference code version



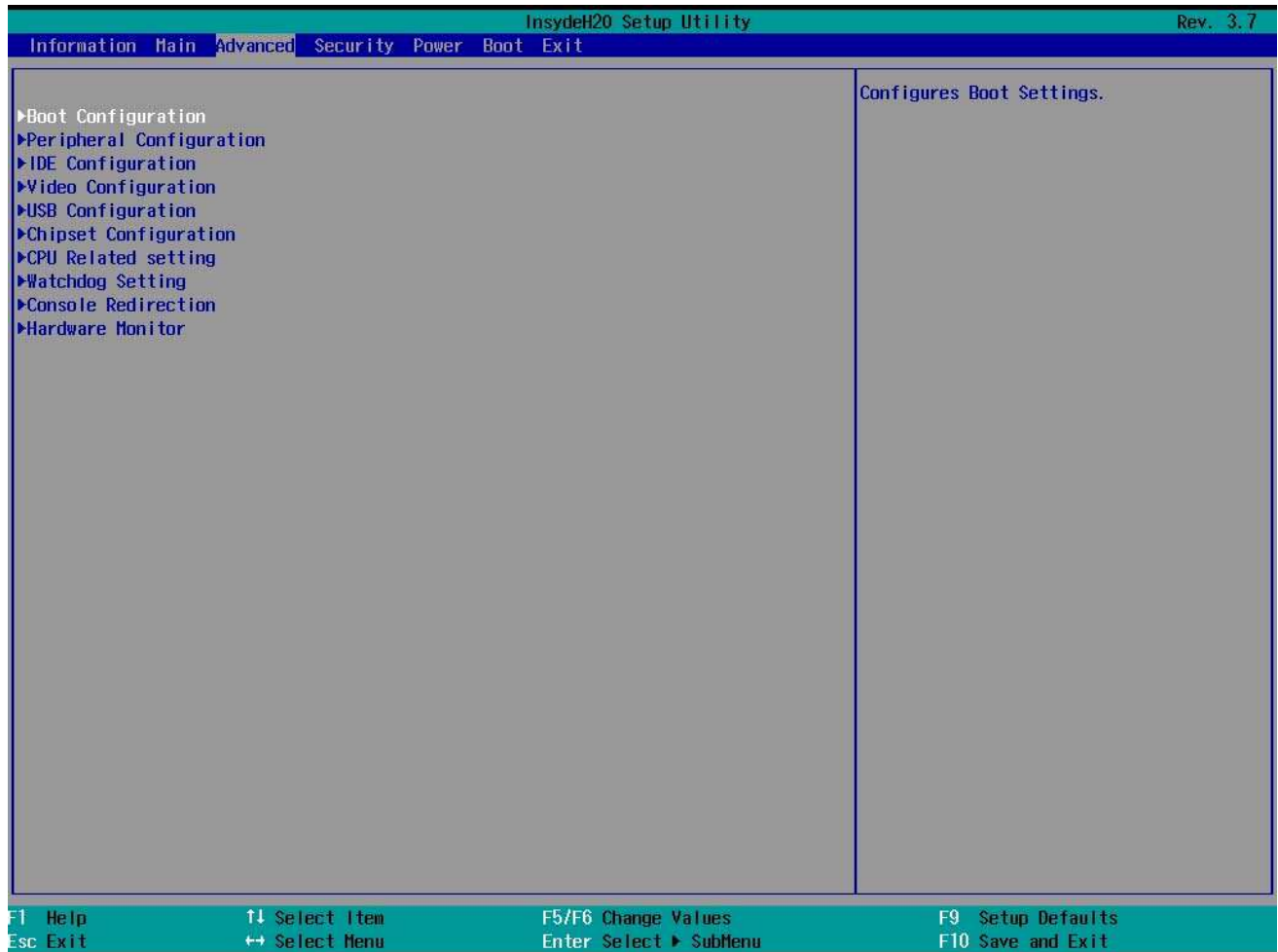
- 3.2.2 Main Menu

The Main Menu of BIOS Setup Utility provide a quick overview of basic system information and the ability to change the display language, system time, and copyright description.



- 3.2.3 Advanced Menu

The Advanced Menu of BIOS Setup Utility allows users to configure advanced system settings.

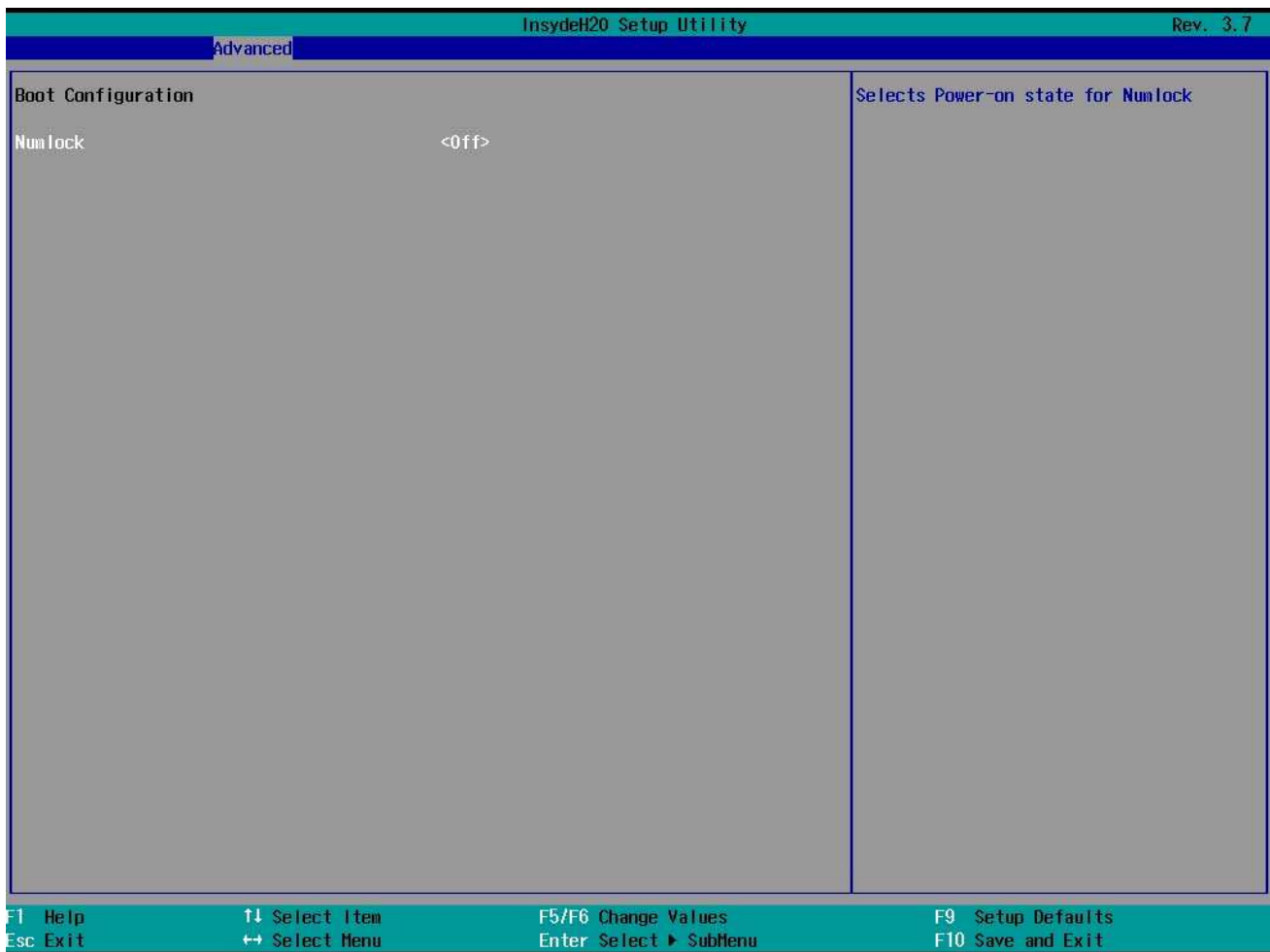


- 3.2.3-1 Advanced Menu

Boot Configuration :

Numlock < Off/On >

Description : Select Power-on state for Numlock. Default setting is <Off>



- 3.2.3-2 Advanced Menu

SB On-chip Devices Configuration:

Mini PCI-E Type Selection < PCIE/SATA >

Description : Onboard Half-size Mini-PCIe socket support PCIe X1 or SATA signal, customer could select different mode to meet customer's need. For example :

If select < PCIE >, Half-size Mini-PCIe will support Mini-PCIe module, like WIFI , 3G ...

If select < SATA >, Half-size Mini-PCIe will support Mini-PCIe module, like mSATA SSD ...

Default setting is <PCIE>

SB On-chip Devices Configuration:

Serial Port B < RS232/422/485 >

Description : Serial Port B could support RS232/422/485 mode and customer could select here

Default setting is <RS232>



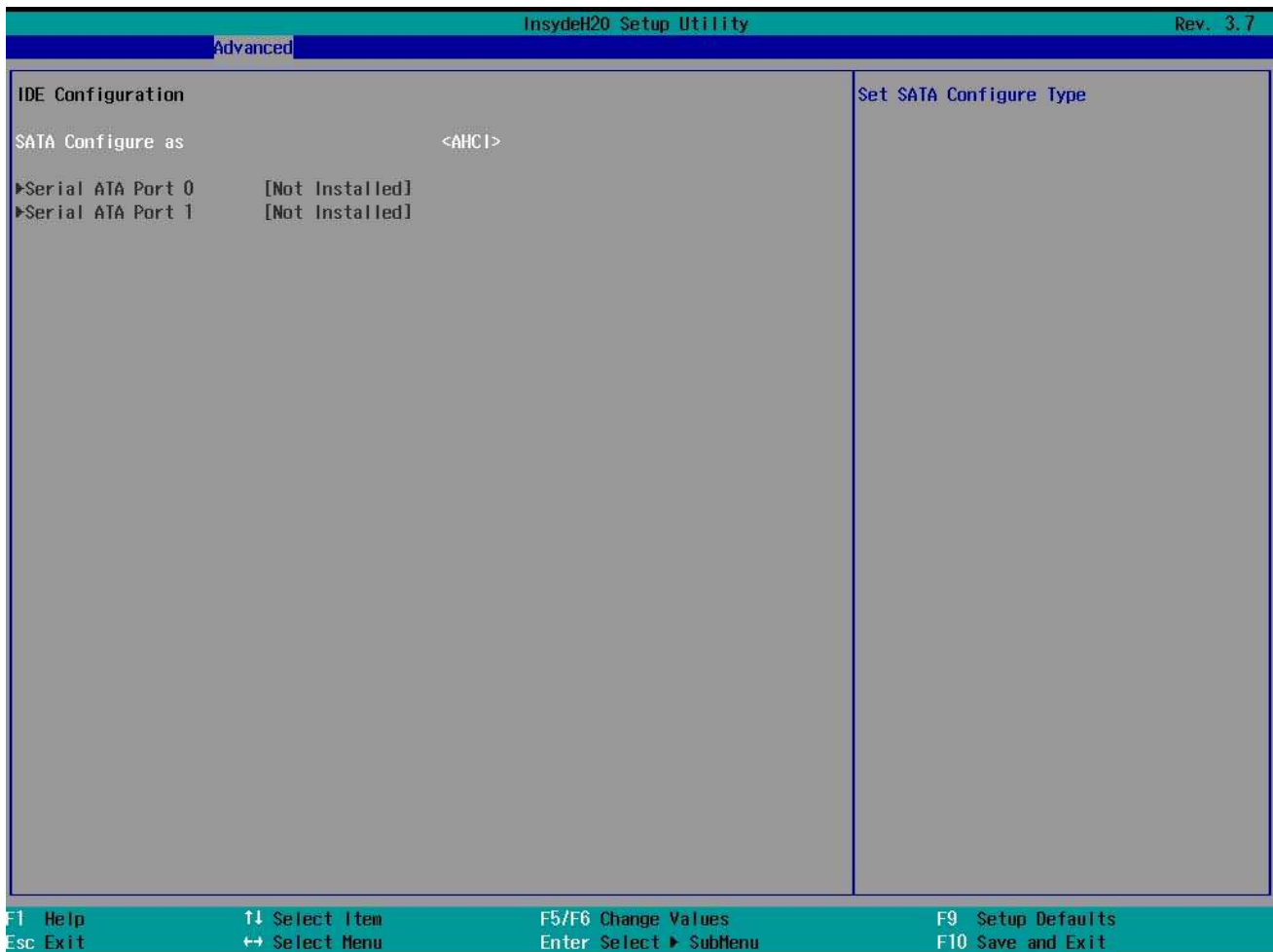
- 3.2.3-3 Advanced Menu

IDE Configuration:

SATA Configure < AHCI/RAID/IDE >

Description : Select SATA hard disk driver type installed in system

Default setting is <AHCI>



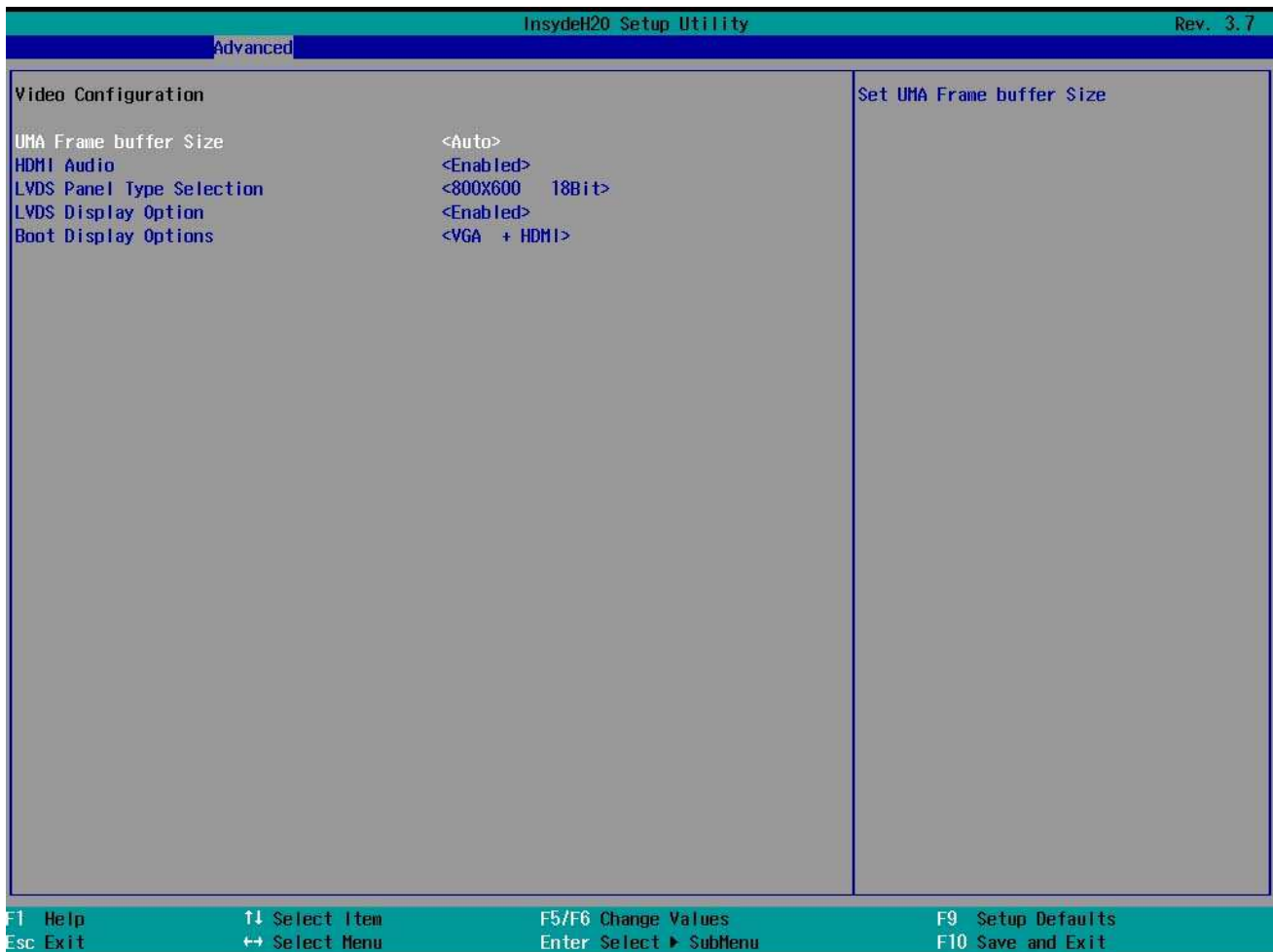
- 3.2.3-4 Advanced Menu

Video Configuration:

UMA Frame buffer Size < Auto >

Description : Set UMA Frame buffer Size

Default setting is <Auto>



- 3.2.3-4.1 Advanced Menu

Video Configuration:

LVDS Panel Type Selection < 800x600 18bit >

Description : Select Panel resolution and 18/24-bit channel

Default setting is <800x600 18Bit>



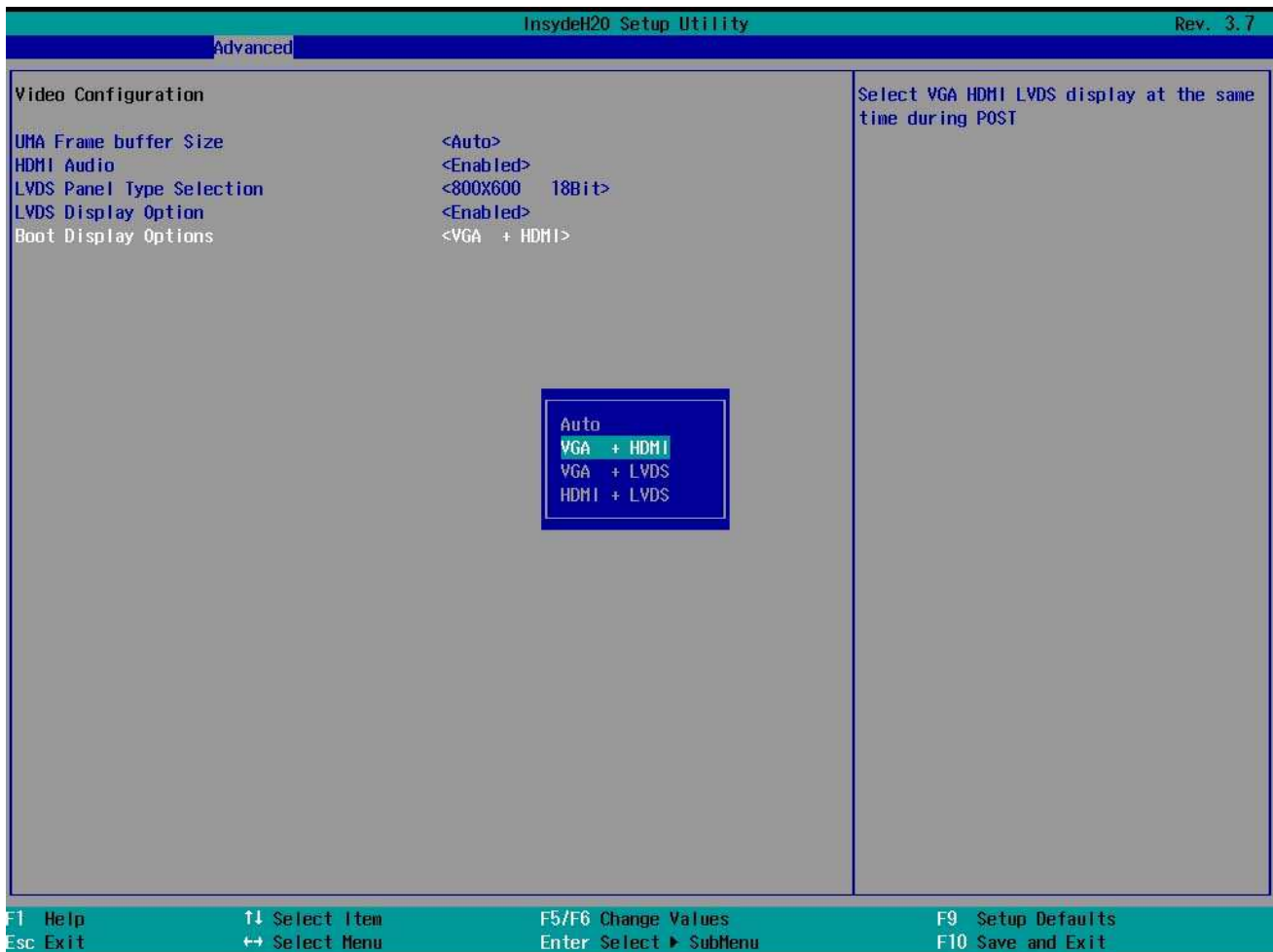
- 3.2.3-4.2 Advanced Menu

Video Configuration:

Boot Display Options < VGA + HDMI >

Description : Select VGA / HDMI / LVDS display at the same time during the POST

Default setting is <VGA + HDMI>



- 3.2.3-5 Advanced Menu

USB Configuration:

USB2.0 < Enabled/Disabled >

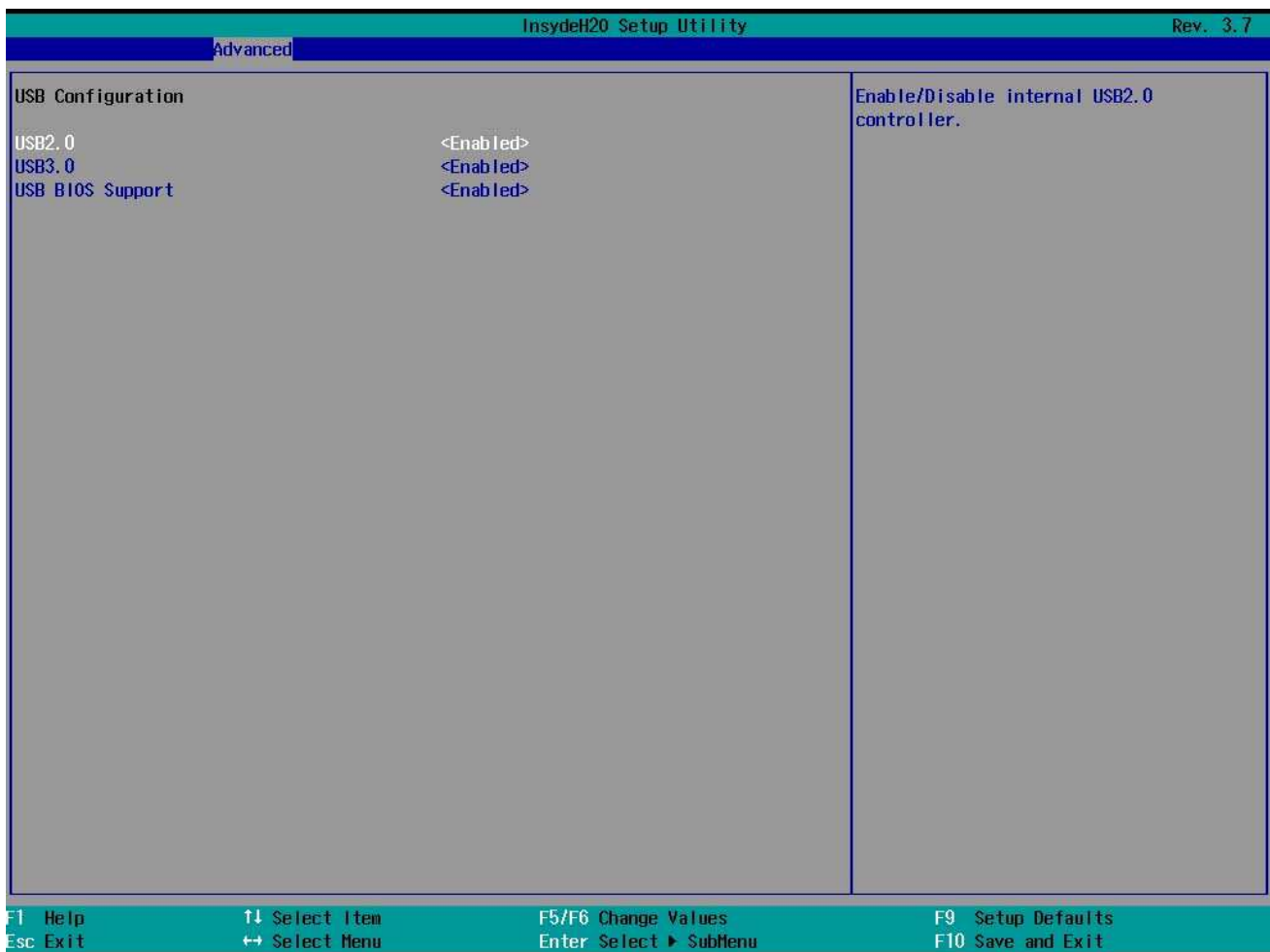
Description : Enable/Disable USB internal 2.0 controller.

Default setting is <Enable>

USB BIOS Support < Enabled/Disabled >

Description : USB keyboard/mouse/storage support under TEFI and DOS environment.

Default setting is <Enable>

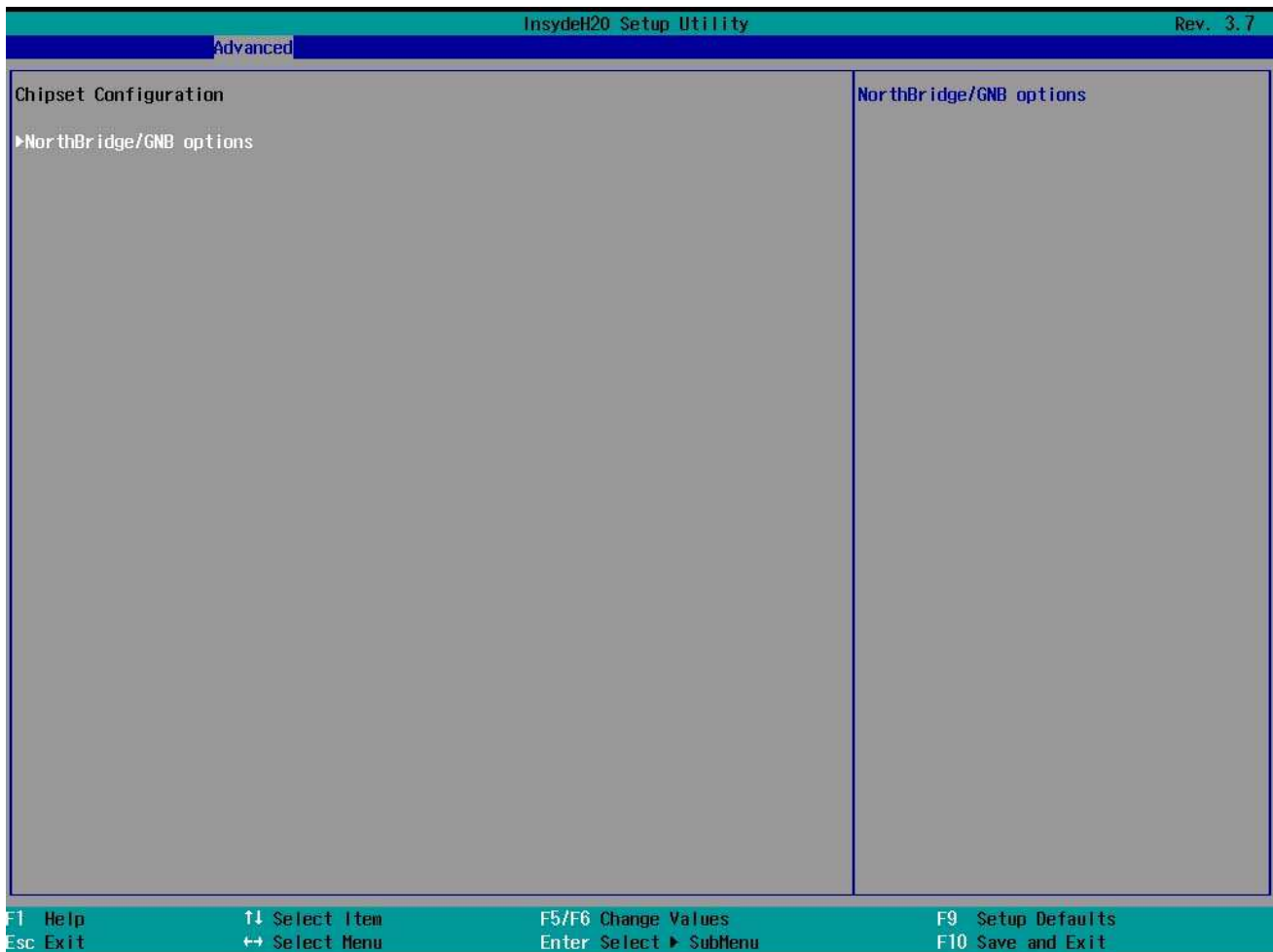


- 3.2.3-6 Advanced Menu

Chipset Configuration:

North Bridge / GNB options

Description : North Bridge / GNB options



- 3.2.3-7 Advanced Menu

CPU Related setting:

CPU P-State Setting < Auto/lowest Speed >

Description : CPU P-State Setting

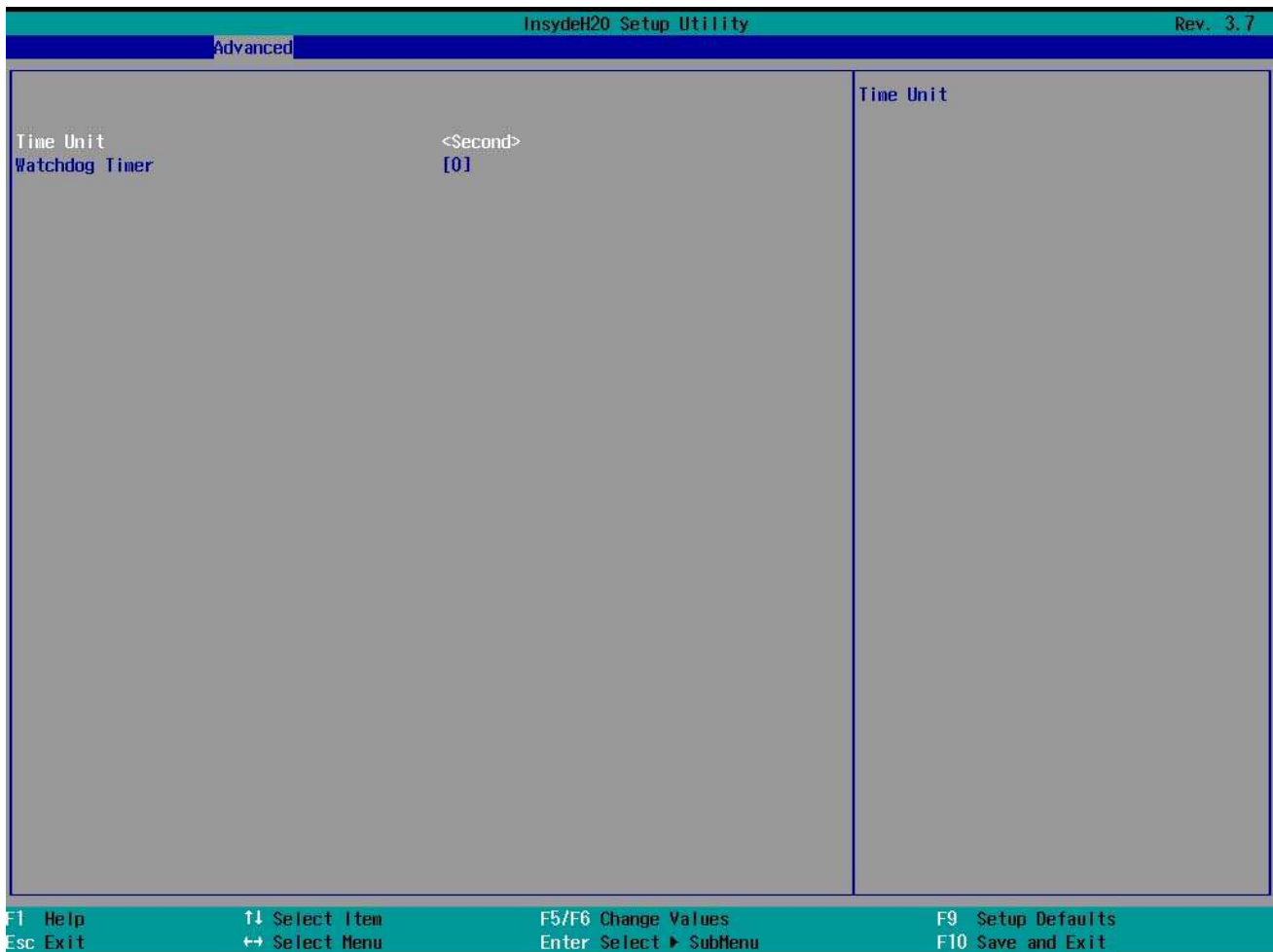


- 3.2.3-8 Advanced Menu

Watch Dog Timer:

Watch Dog Timer

Description: Customer could select Time unit here



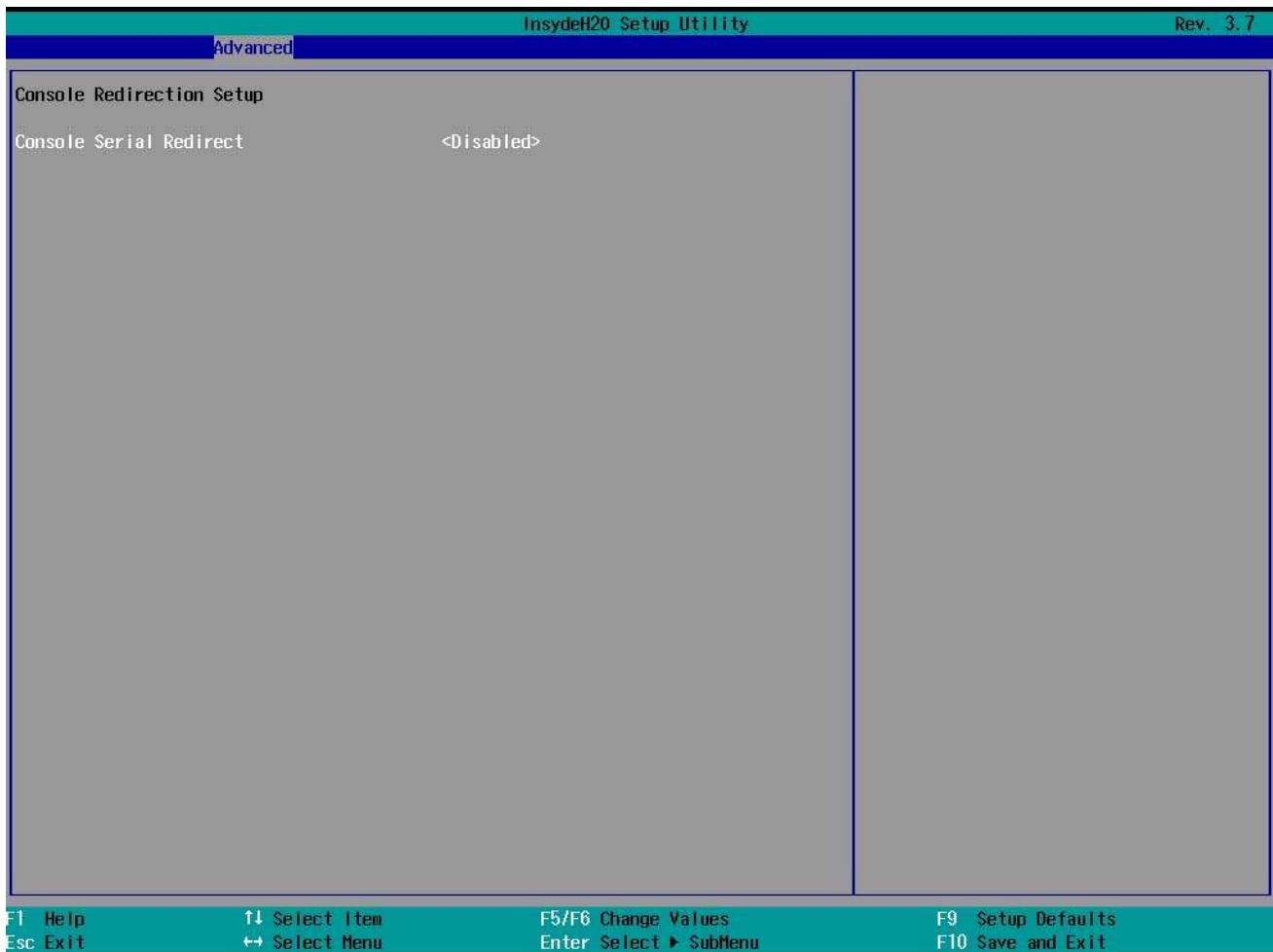
- 3.2.3-9 Advanced Menu

Console Redirection Setup:

Console Serial Redirect < Disabled/enabled >

Description: Customer could enabled/disabled Console function here.

Default setting is <Disabled>

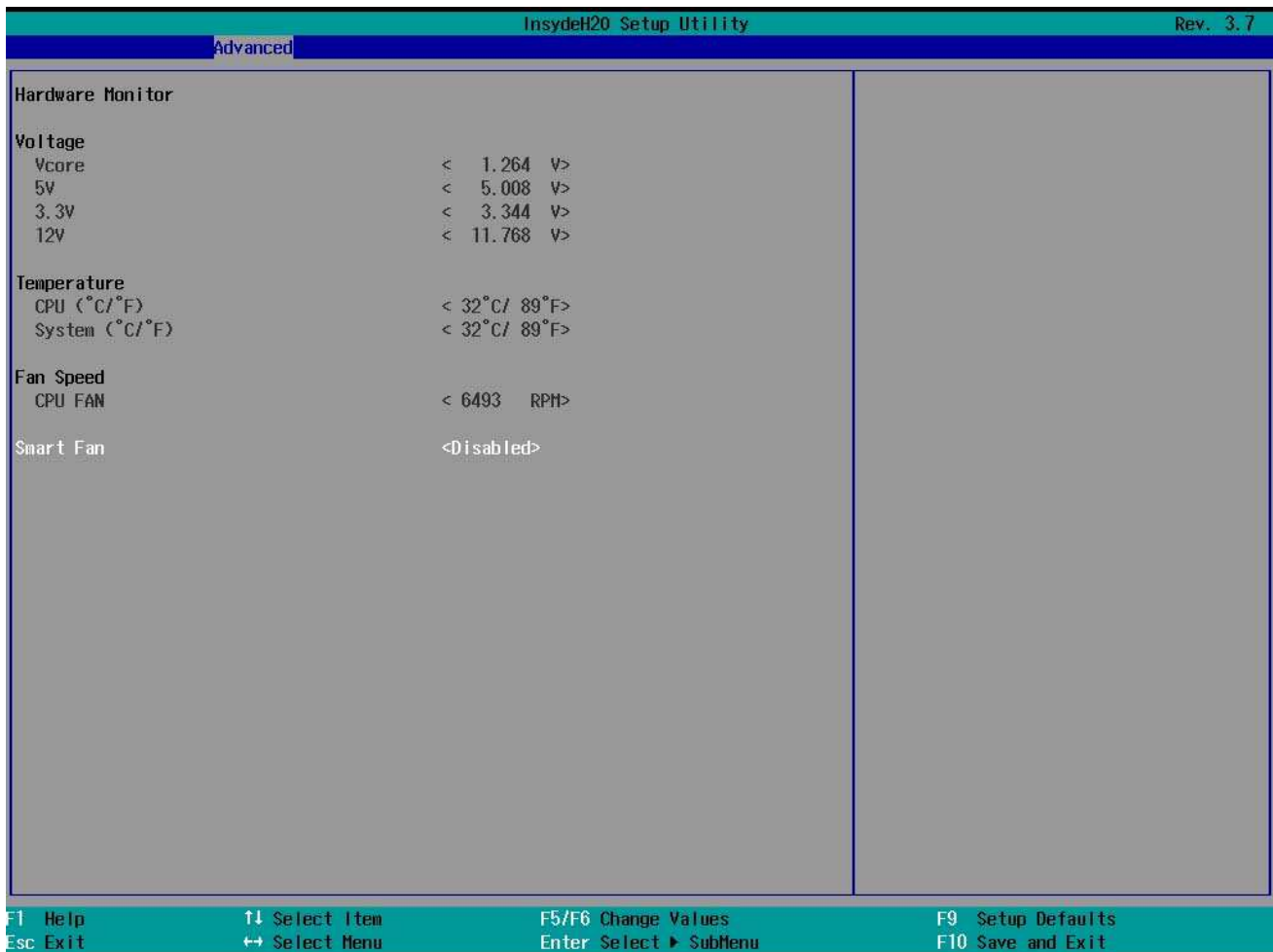


- 3.2.3-10 Advanced Menu

Hardware Monitor:

Voltage / Temperature / Fan Speed

Description: Monitor the system Voltage / temperature / Fan speed

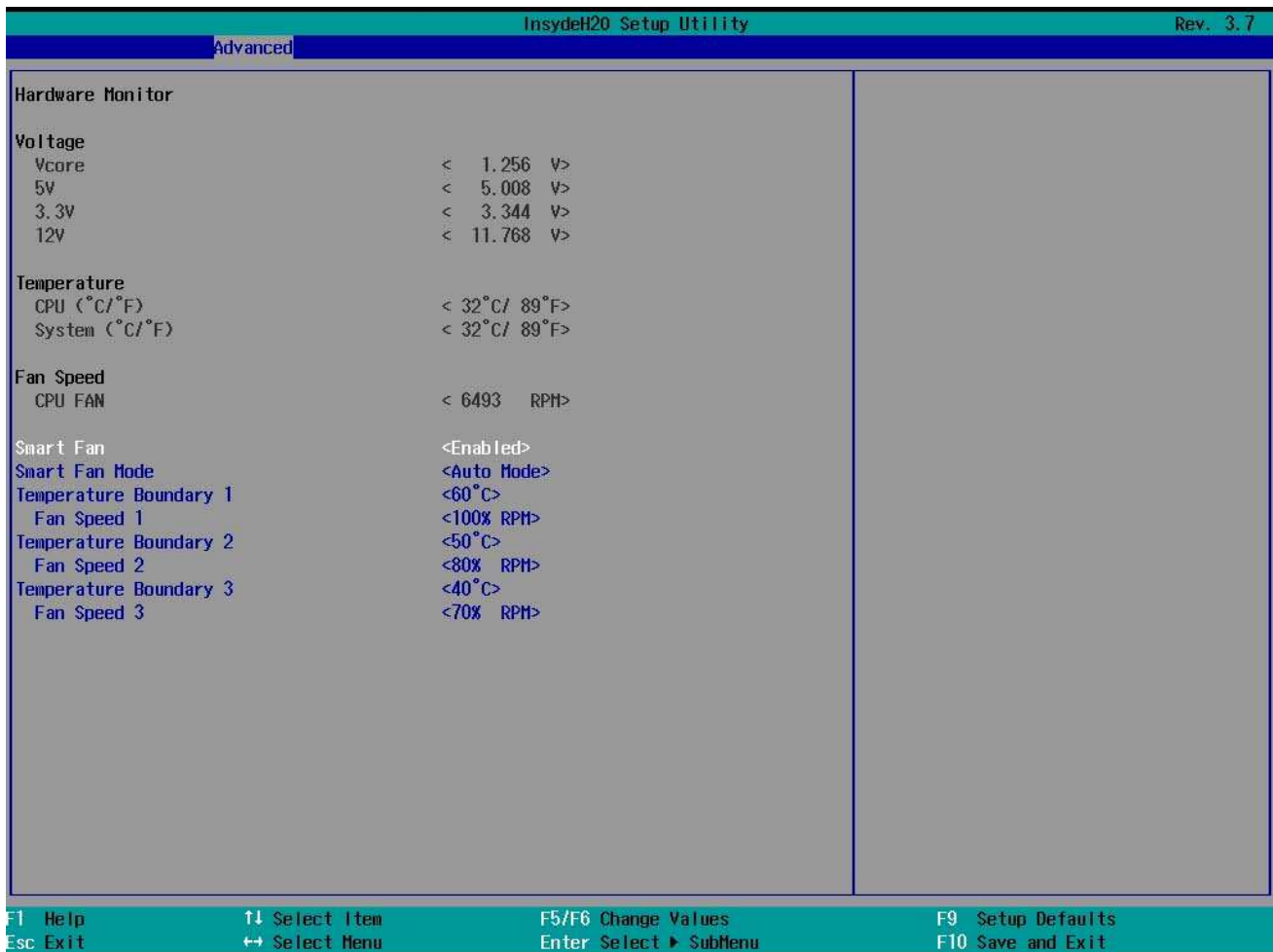


- 3.2.3-11 Advanced Menu

Hardware Monitor:

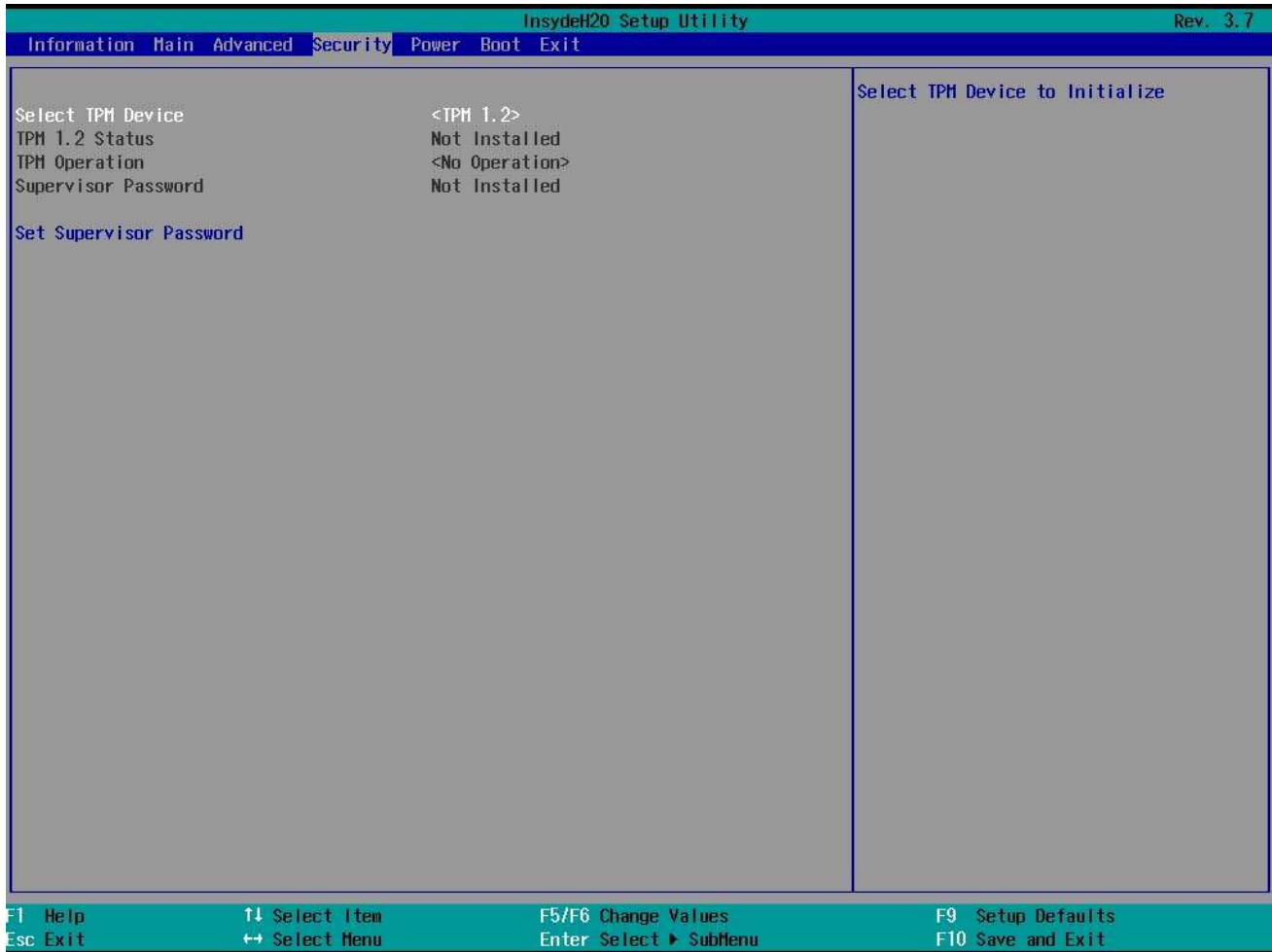
Smart Fan < Disabled/enabled >

Description: Enabled/Disabled Smart Fan function here.



- 3.2.4 Security Menu

Security Menu of BIOS setup Utility provides configurations for the security settings of the system.



- 3.2.4-1 Security Menu

Select TPM Device:

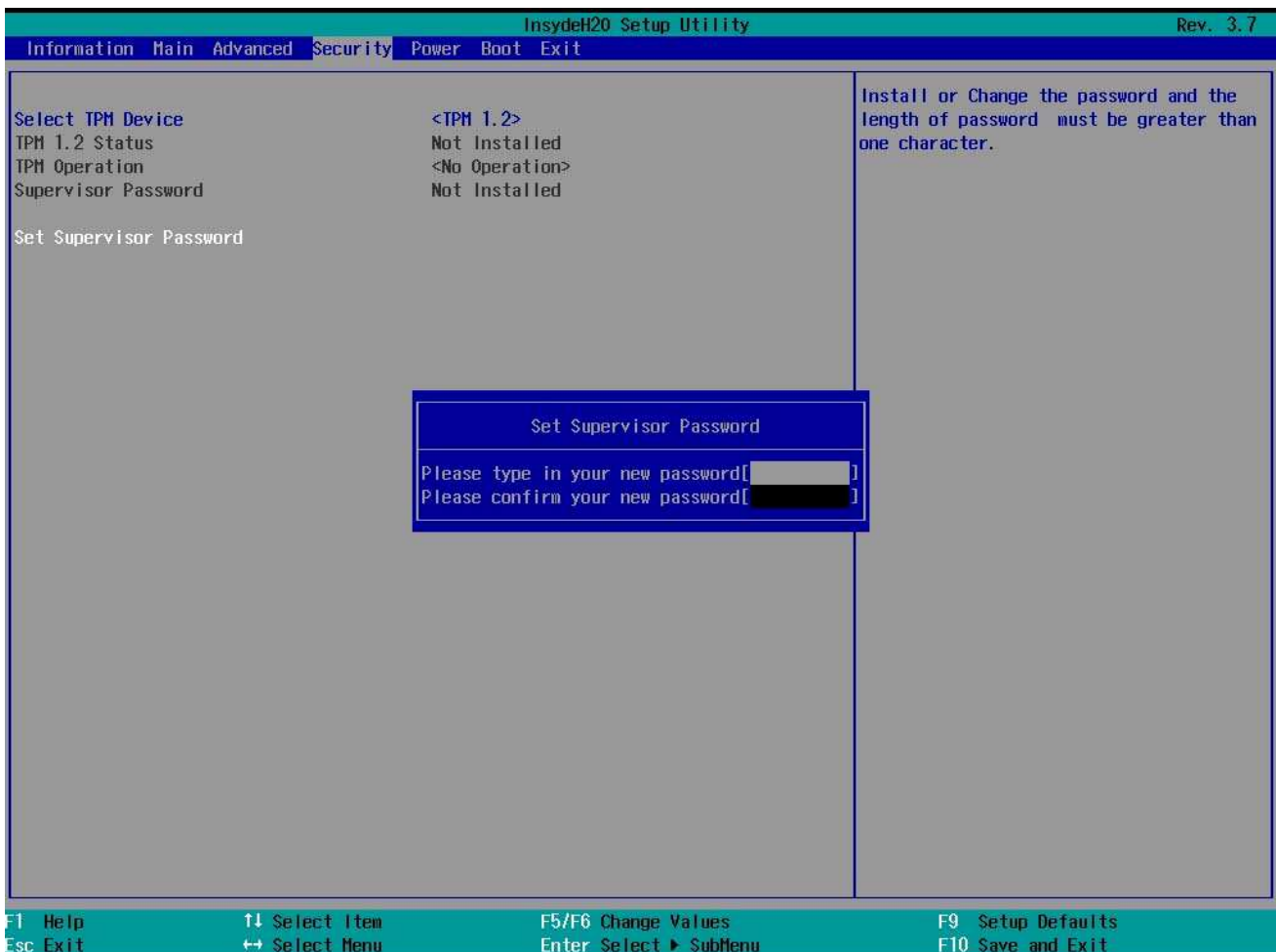
TPM 1.2 Status < *TPM 1.2* >

Description: If there is no TPM device on platform, TPM status is No Installed, or it will be enable and active.

Enabled/Disabled TPM function. This option will automatically return to No-operation.

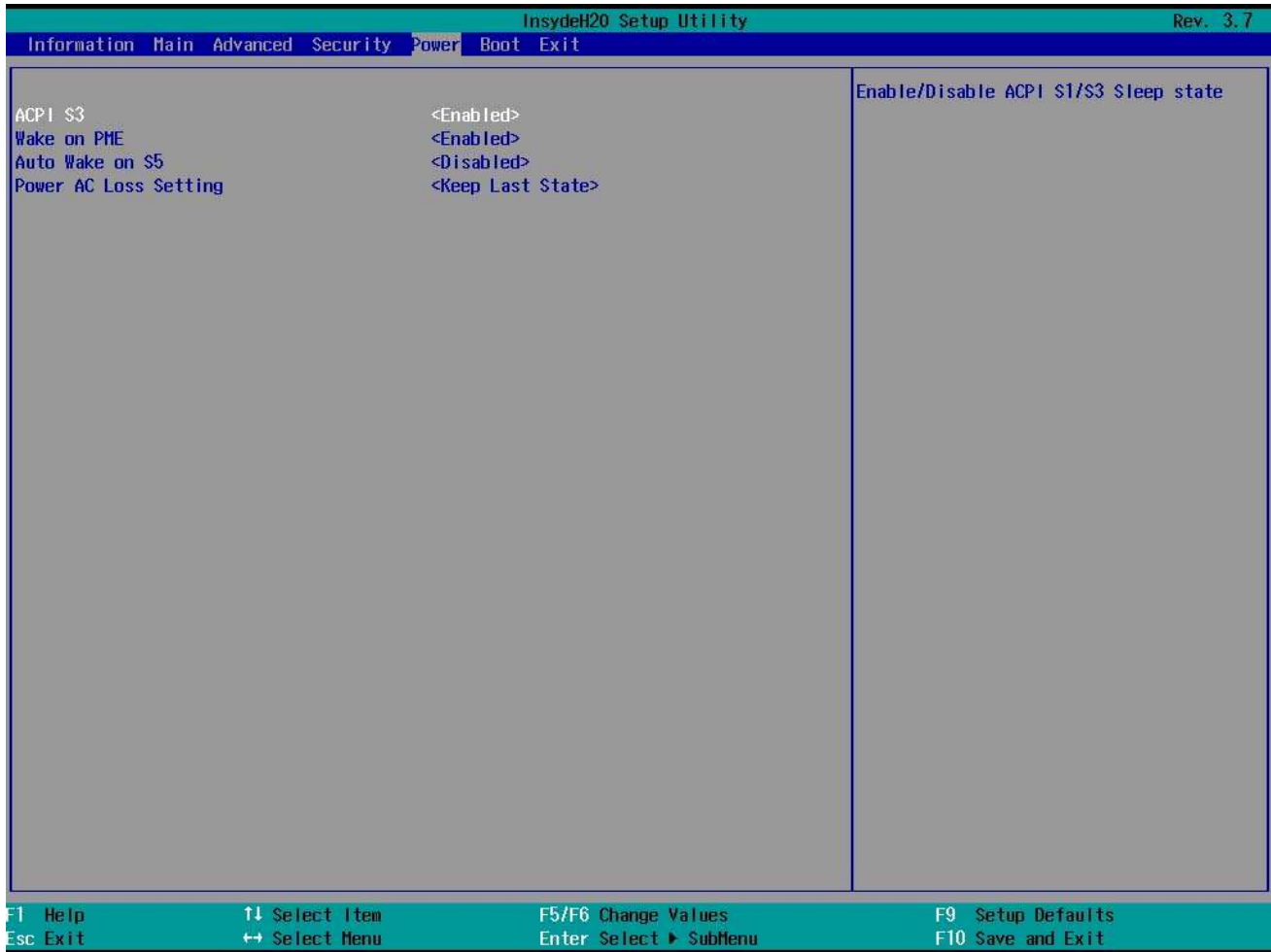
Set Supervisor Password

Description: Install or Change the password and the length of password must be greater than one character.



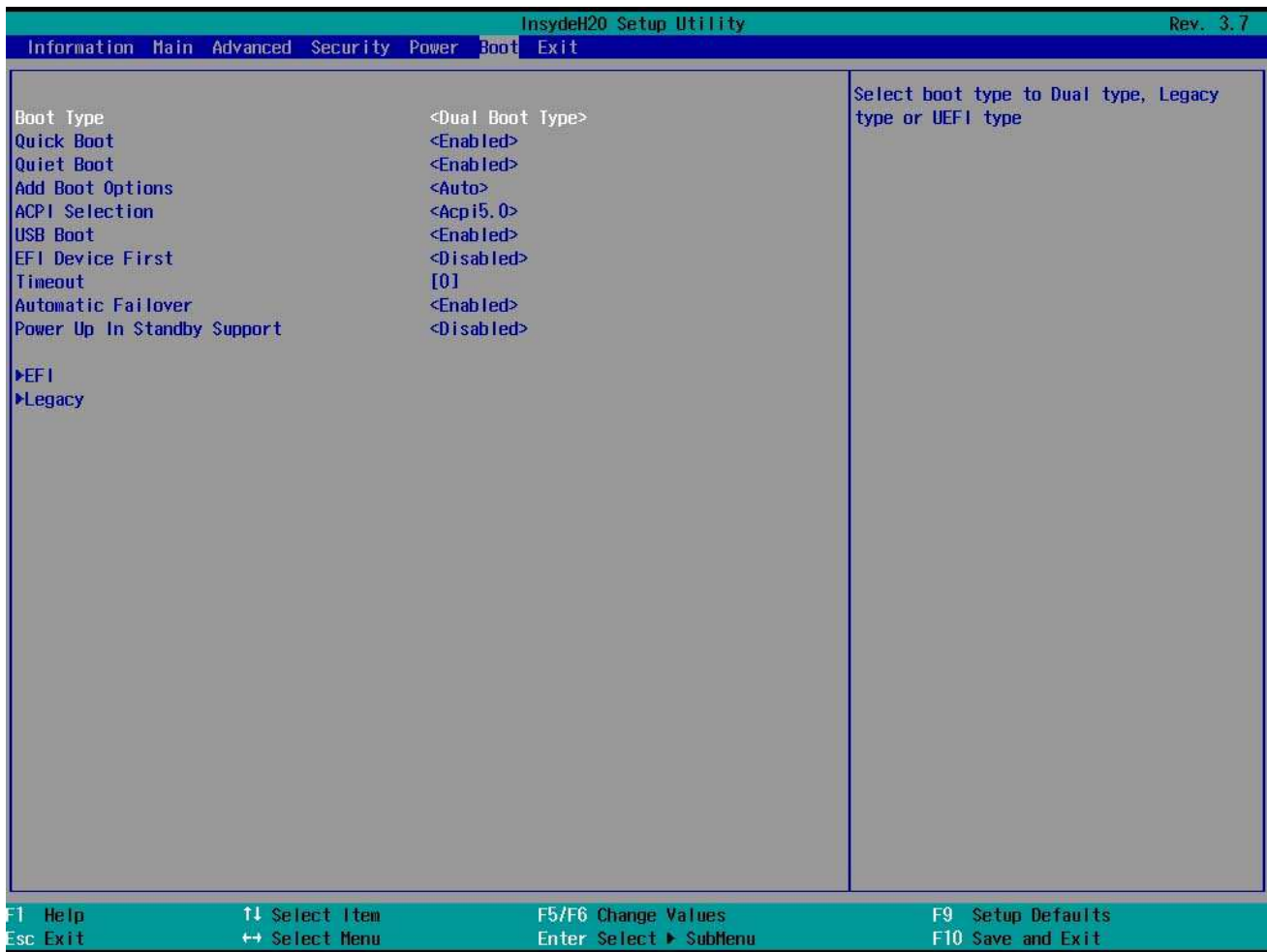
- 3.2.5 Power Menu

The power Menu of BIOS Setup Utility allows users to set or control various parameters on CPU power management, and platform power management.



- 3.2.6 Boot Menu

The boot Menu of BIOS Setup Utility allows users to set bot options.



- 3.2.6-1 Boot Menu

Boot Device Priority:

Normal boot Menu < Normal >

Description: Select Normal Boot Option Priority or Advance Boot Option Priority.

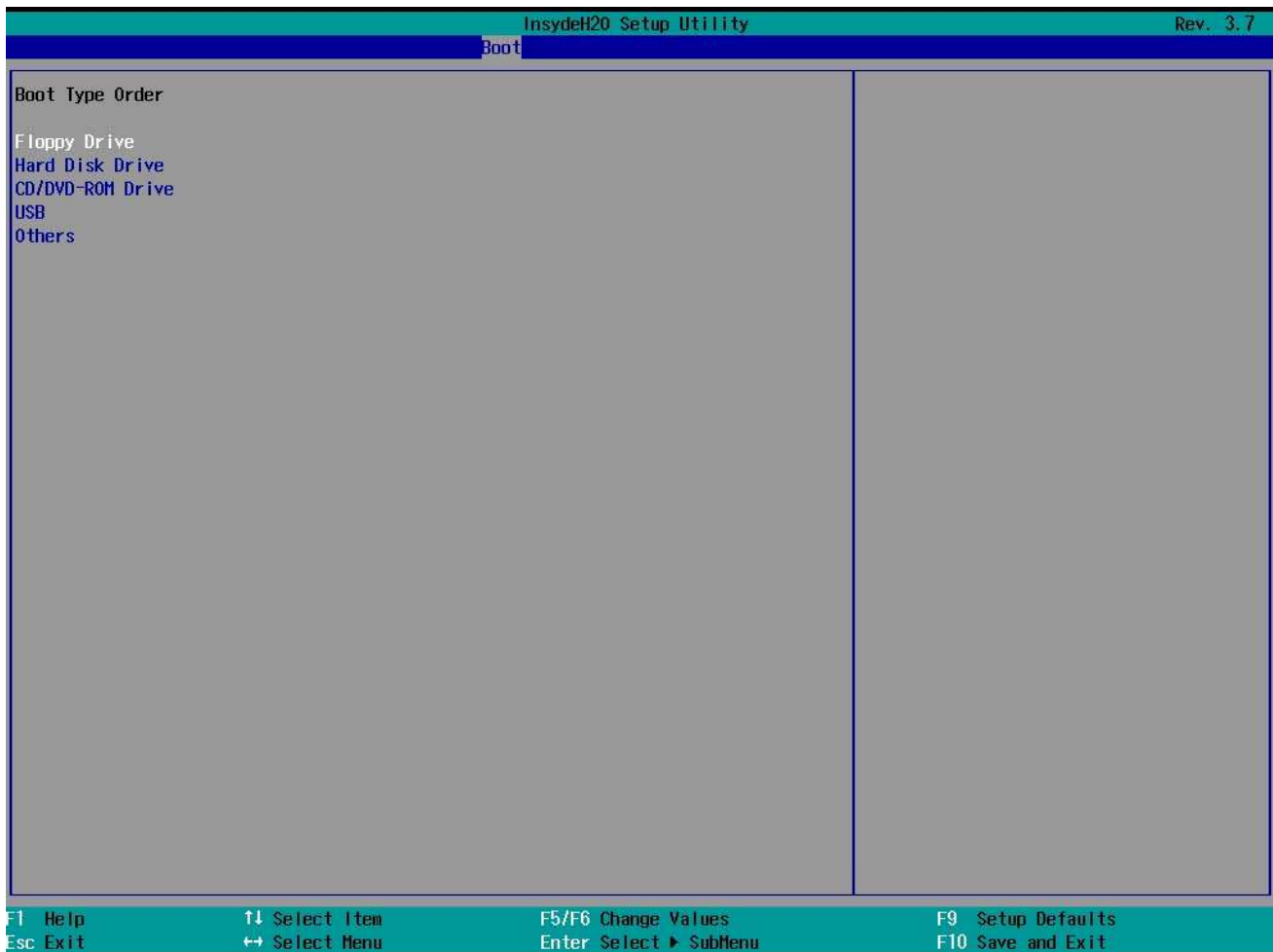


- 3.2.6-2 Boot Menu

Boot Device order:

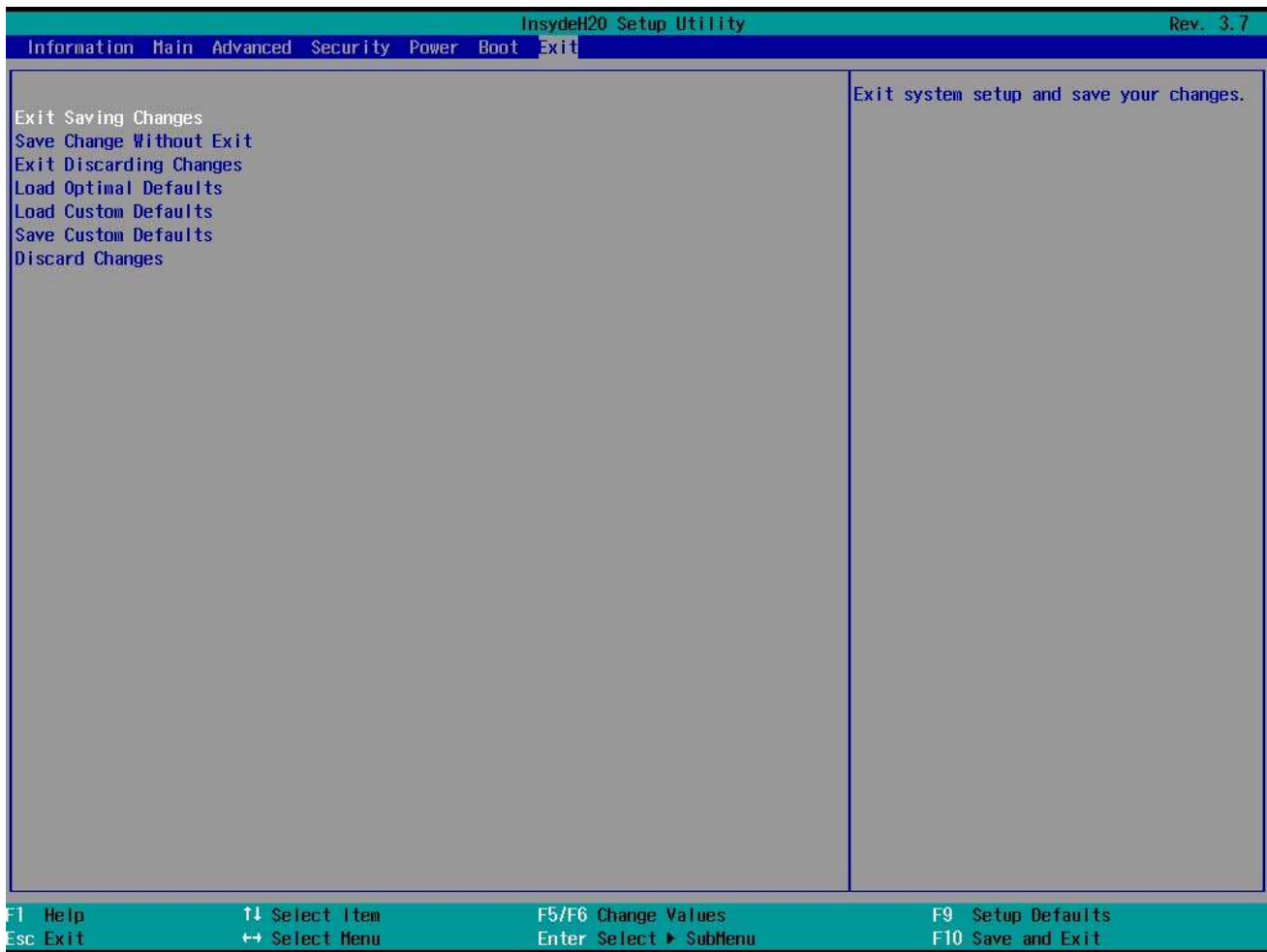
Floppy

Description: Change different devices boot Order.



- 3.2.7 Exit Menu

The Exit Menu of BIOS Setup Utility provides options for user to decide to save changed setting or not.



4. GPIO and WatchDpg Timer sample code

- 4.1 GPIO Sample Program for DOS environment

```
//AEWIN GPIO Program for EM-6335(DOS Version)
```

```
#include <stdio.h>
```

```
#include <string.h>
```

```
#include <dos.h>
```

```
#include <stdlib.h>
```

```
#include <inlines/pc.h>
```

```
#define index_port 0x2E
```

```
#define data_port 0x2F
```

```
void help();
```

```
void Enter_SIO();
```

```
void Exit_SIO();
```

```
int main(int argc, char *argv[])
```

```
{
```

```
    int data_rw8, val;
```

```
    if (argc!=2){
```

```
        help();
```

```
        return;
```

```
    }
```

```
    Enter_SIO();
```

```
    if(strcmp(argv[1], "-80h") == 0){
```

```
        val = 0x01;
```

```
        outportb(index_port, 0x89);
```

```
        data_rw8 = inportb(data_port)&(~val);
```

```
        data_rw8 |= val;
```

```
        outportb(data_port, data_rw8);
```

```
        printf("(Set GP80 to high)\n");
```

```
    }
```

```
    else if(strcmp(argv[1], "-80l") == 0){
```



```
    val = 0x01;
    outportb(index_port, 0x89);
    data_rw8 = inportb(data_port)&(~val);
    outportb(data_port, data_rw8);
    printf("(Set GP80 to low)\n");
}
else if(strcmp(argv[1], "-81h") == 0){
    val = 0x02;
    outportb(index_port, 0x89);
    data_rw8 = inportb(data_port)&(~val);
    data_rw8 |= val;
    outportb(data_port, data_rw8);
    printf("(Set GP81 to high)\n");
}
else if(strcmp(argv[1], "-81l") == 0){
    val = 0x02;
    outportb(index_port, 0x89);
    data_rw8 = inportb(data_port)&(~val);
    outportb(data_port, data_rw8);
    printf("(Set GP81 to low)\n");
}
else if(strcmp(argv[1], "-82h") == 0){
    val = 0x04;
    outportb(index_port, 0x89);
    data_rw8 = inportb(data_port)&(~val);
    data_rw8 |= val;
    outportb(data_port, data_rw8);
    printf("(Set GP82 to high)\n");
}
else if(strcmp(argv[1], "-82l") == 0){
    val = 0x04;
    outportb(index_port, 0x89);
    data_rw8 = inportb(data_port)&(~val);
    outportb(data_port, data_rw8);
    printf("(Set GP82 to low)\n");
}
else if(strcmp(argv[1], "-83h") == 0){
```

```
    val = 0x08;
    outportb(index_port, 0x89);
    data_rw8 = inportb(data_port)&(~val);
    data_rw8 |= val;
    outportb(data_port, data_rw8);
    printf("(Set GP83 to high)\n");
}
else if(strcmp(argv[1], "-83l") == 0){
    val = 0x08;
    outportb(index_port, 0x89);
    data_rw8 = inportb(data_port)&(~val);
    outportb(data_port, data_rw8);
    printf("(Set GP83 to low)\n");
}
else if(strcmp(argv[1], "-84h") == 0){
    val = 0x10;
    outportb(index_port, 0x89);
    data_rw8 = inportb(data_port)&(~val);
    data_rw8 |= val;
    outportb(data_port, data_rw8);
    printf("(Set GP84 to high)\n");
}
else if(strcmp(argv[1], "-84l") == 0){
    val = 0x10;
    outportb(index_port, 0x89);
    data_rw8 = inportb(data_port)&(~val);
    outportb(data_port, data_rw8);
    printf("(Set GP84 to low)\n");
}
else if(strcmp(argv[1], "-85h") == 0){
    val = 0x20;
    outportb(index_port, 0x89);
    data_rw8 = inportb(data_port)&(~val);
    data_rw8 |= val;
    outportb(data_port, data_rw8);
    printf("(Set GP85 to high)\n");
}
```

```
else if(strcmp(argv[1], "-851") == 0){
    val = 0x20;
    outportb(index_port, 0x89);
    data_rw8 = inportb(data_port)&(~val);
    outportb(data_port, data_rw8);
    printf("(Set GP85 to low)\n");
}
else if(strcmp(argv[1], "-86h") == 0){
    val = 0x40;
    outportb(index_port, 0x89);
    data_rw8 = inportb(data_port)&(~val);
    data_rw8 |= val;
    outportb(data_port, data_rw8);
    printf("(Set GP86 to high)\n");
}
else if(strcmp(argv[1], "-86l") == 0){
    val = 0x40;
    outportb(index_port, 0x89);
    data_rw8 = inportb(data_port)&(~val);
    outportb(data_port, data_rw8);
    printf("(Set GP86 to low)\n");
}
else if(strcmp(argv[1], "-87h") == 0){
    val = 0x80;
    outportb(index_port, 0x89);
    data_rw8 = inportb(data_port)&(~val);
    data_rw8 |= val;
    outportb(data_port, data_rw8);
    printf("(Set GP87 to high)\n");
}
else if(strcmp(argv[1], "-87l") == 0){
    val = 0x80;
    outportb(index_port, 0x89);
    data_rw8 = inportb(data_port)&(~val);
    outportb(data_port, data_rw8);
    printf("(Set GP87 to low)\n");
}
```

```
else if(strcmp(argv[1], "-hhh") == 0){
    val = 0xFF;
    outportb(index_port, 0x89);
    data_rw8 = inportb(data_port);
    data_rw8 |= val;
    outportb(data_port, data_rw8);
    printf("(Set GP80~87 to high)\n");
}
else if(strcmp(argv[1], "-lll") == 0){
    val = 0x00;
    outportb(index_port, 0x89);
    data_rw8 = inportb(data_port);
    data_rw8 &= val;
    outportb(data_port, data_rw8);
    printf("(Set GP80~87 to low)\n");
}
else if(strcmp(argv[1], "-lte") == 0){
    val = 0x0F;
    outportb(index_port, 0x89);
    data_rw8 = inportb(data_port)&0x00;
    data_rw8 |= val;
    outportb(data_port, data_rw8);
    printf("(Set GP80~83 to high, GP84~87 to low)\n");
}
else if(strcmp(argv[1], "-ltd") == 0){
    val = 0xF0;
    outportb(index_port, 0x89);
    data_rw8 = inportb(data_port)&0x00;
    data_rw8 |= val;
    outportb(data_port, data_rw8);
    printf("(Set GP80~83 to low, GP84~87 to high)\n");
}
else if(strcmp(argv[1], "-gpr") == 0){
    outportb(index_port, 0x8A);

    val = 0x01;
    data_rw8 = inportb(data_port)&(val);
```

```
if(data_rw8==val)printf("(GP80 is high)\n");  
else printf("(GP80 is low)\n");
```

```
val = 0x02;  
data_rw8 = inportb(data_port)&(val);  
if(data_rw8==val)printf("(GP81 is high)\n");  
else printf("(GP81 is low)\n");
```

```
val = 0x04;  
data_rw8 = inportb(data_port)&(val);  
if(data_rw8==val)printf("(GP82 is high)\n");  
else printf("(GP82 is low)\n");
```

```
val = 0x08;  
data_rw8 = inportb(data_port)&(val);  
if(data_rw8==val)printf("(GP83 is high)\n");  
else printf("(GP83 is low)\n");
```

```
val = 0x10;  
data_rw8 = inportb(data_port)&(val);  
if(data_rw8==val)printf("(GP84 is high)\n");  
else printf("(GP84 is low)\n");
```

```
val = 0x20;  
data_rw8 = inportb(data_port)&(val);  
if(data_rw8==val)printf("(GP85 is high)\n");  
else printf("(GP85 is low)\n");
```

```
val = 0x40;  
data_rw8 = inportb(data_port)&(val);  
if(data_rw8==val)printf("(GP86 is high)\n");  
else printf("(GP86 is low)\n");
```

```
val = 0x80;  
data_rw8 = inportb(data_port)&(val);  
if(data_rw8==val)printf("(GP87 is high)\n");  
else printf("(GP87 is low)\n");
```

```
    }
    else{
        help();
    }

    Exit_SIO();
    return;
}

void Enter_SIO()
{
    outportb(index_port, 0x87);
    delay(1);
    outportb(index_port, 0x87);
    outportb(index_port, 0x07);
    outportb(data_port, 0x06);
}

void Exit_SIO()
{
    outportb(index_port, 0xAA);
}

void help()
{
    printf("AEWIN GPIO test program\n");
    printf("=====\n");
    printf("gpio -hhh (Set GP80~87 to high)\n");
    printf("gpio -lll (Set GP80~87 to low )\n");
    printf("gpio -lte (Set GP80~83 to high, GP84~87 to low)\n");
    printf("gpio -ltd (Set GP80~83 to low, GP84~87 to high)\n");
    printf("gpio -gpr (Read GPIO status)\n");
    printf("gpio -xxh (Set xx to high)\n");
    printf("gpio -xxl (Set xx to low)\n");
    printf("    (xx=80~87)\n");
    printf("=====\n");
}
```

4.2 Watchdog timer Sample Program for DOS environment

```
//AEWIN Watch dog program for EM-6335(Dos Version)
#include <stdio.h>
#include <string.h>
#include <dos.h>
#include <stdlib.h>
#include <inlines/pc.h>

#define index_port 0x2E           //Super IO Index port address
#define data_port  0x2F         //Super IO Data port address

void Enter_sio_config();
void Exit_sio_config();
void help();

int main(int argc, char *argv[])
{
    int data_rw8, time;

    if (argc<2){
        help();
        return;
    }

    if(strcmp(argv[1], "-s") == 0){
        //Show Watchdog Register Settings
        Enter_sio_config();
        outportb(index_port, 0xF5);
        data_rw8 = inportb(data_port)&0x08;
        if(data_rw8 == 0x00){
            //second mode
            outportb(index_port, 0xF6);
            data_rw8 = inportb(data_port);
            printf("Second mode: %d second\n", data_rw8);
        }
    }
}
```

```
else{
    //minute mode
    outportb(index_port, 0xF6);
    data_rw8 = inportb(data_port);
    printf("Minute mode: %d minute\n", data_rw8);
}
}
else if(strcmp(argv[1], "-t") == 0 ){
    //Set Time-out Value
    if(argv[2] == NULL){
        help();
        return;
    }
    else{
        Enter_sio_config();
        outportb(index_port, 0xF6);
        outportb(data_port , 0x00);           //Clear Status
        outportb(index_port, 0xF5);
        data_rw8 = 0x32;
        outportb(data_port, data_rw8);
        sscanf(argv[2], "%d", &time);
        outportb(index_port, 0xF6);
        outportb(data_port,  time);
        if(time==0){
            //Disable count
            outportb(index_port, 0xF5);
            data_rw8 = inportb(data_port)&0xCF;
            outportb(data_port , data_rw8);
        }
        else{
            outportb(index_port, 0xFA);
            outportb(data_port , 0x01);           //Enable reset function
        }
        printf("Watchdog Timer will count down for %d second(s)\n", time);
    }
}
else if(strcmp(argv[1], "-m") == 0 ){
```



```
//Set Time-out Value
if(argv[2] == NULL){
    help();
    return;
}
else{
    Enter_sio_config();
    outportb(index_port, 0xF6);
    outportb(data_port , 0x00);           //Clear Status
    outportb(index_port, 0xF5);
    data_rw8 = 0x32;
    data_rw8 |= 0x08;
    outportb(data_port, data_rw8);
    sscanf(argv[2], "%d", &time);
    outportb(index_port, 0xF6);
    outportb(data_port, time);
    if(time==0){
        //Disable count
        outportb(index_port, 0xF5);
        data_rw8 = inportb(data_port)&0xCF;
        outportb(data_port , data_rw8);
    }
    else{
        outportb(index_port, 0xFA);
        outportb(data_port , 0x01);       //Enable reset function
    }
    printf("Watchdog Timer will count down for %d minute(s)\n", time);
}
}
Exit_sio_config();
return;
}

void Enter_sio_config()           //Enter W83627EHF Configuration
{
    outportb(index_port, 0x87);
    delay(1);                     //Delay some time
}
```

```
    outportb(index_port, 0x87);
    outportb(index_port, 0x07);           //Super IO Selct Bank Register Number
    outportb(data_port , 0x07);         //Select logical device 7
}

void Exit_sio_config()                  //Exit W83627EHF Configuration
{
    outportb(index_port, 0xAA);
}

void help()
{
    printf("AEWIN Watchdog Timer Program\n");
    printf("Usage: WDT -s      (Show Watchdog Register Settings)\n");
    printf("Usage: WDT -t xxx (Set Time-out Value)\n");
    printf("          xxx = 1 ~ 255 seconds\n");
    printf("          xxx = 0 : Time-out Disable \n");
    printf("Usage: WDT -m xxx (Set Time-out Value)\n");
    printf("          xxx = 1 ~ 255 minutes\n");
    printf("          xxx = 0 : Time-out Disable \n");
}
```

Device Resources

Resource	Share	Device Description
DMA 04	Exclusive	Direct memory access controller
IRQ 00	Exclusive	High precision event timer
IRQ 01	Exclusive	Standard PS/2 Keyboard
IRQ 03	Shared	Communications Port (COM4)
IRQ 04	Shared	Communications Port (COM2)
IRQ 04	Shared	Communications Port (COM3)
IRQ 08	Exclusive	High precision event timer
IRQ 100	Exclusive	Microsoft ACPI-Compliant System
IRQ 101	Exclusive	Microsoft ACPI-Compliant System
IRQ 102	Exclusive	Microsoft ACPI-Compliant System
IRQ 103	Exclusive	Microsoft ACPI-Compliant System
IRQ 104	Exclusive	Microsoft ACPI-Compliant System
IRQ 105	Exclusive	Microsoft ACPI-Compliant System
IRQ 106	Exclusive	Microsoft ACPI-Compliant System
IRQ 107	Exclusive	Microsoft ACPI-Compliant System
IRQ 108	Exclusive	Microsoft ACPI-Compliant System
IRQ 109	Exclusive	Microsoft ACPI-Compliant System
IRQ 110	Exclusive	Microsoft ACPI-Compliant System
IRQ 111	Exclusive	Microsoft ACPI-Compliant System
IRQ 112	Exclusive	Microsoft ACPI-Compliant System
IRQ 113	Exclusive	Microsoft ACPI-Compliant System
IRQ 114	Exclusive	Microsoft ACPI-Compliant System
IRQ 115	Exclusive	Microsoft ACPI-Compliant System
IRQ 116	Exclusive	Microsoft ACPI-Compliant System
IRQ 117	Exclusive	Microsoft ACPI-Compliant System
IRQ 118	Exclusive	Microsoft ACPI-Compliant System

IRQ 119	Exclusive	Microsoft ACPI-Compliant System
IRQ 12	Exclusive	PS/2 Compatible Mouse
IRQ 120	Exclusive	Microsoft ACPI-Compliant System
IRQ 121	Exclusive	Microsoft ACPI-Compliant System
IRQ 122	Exclusive	Microsoft ACPI-Compliant System
IRQ 123	Exclusive	Microsoft ACPI-Compliant System
IRQ 124	Exclusive	Microsoft ACPI-Compliant System
IRQ 125	Exclusive	Microsoft ACPI-Compliant System
IRQ 126	Exclusive	Microsoft ACPI-Compliant System
IRQ 127	Exclusive	Microsoft ACPI-Compliant System
IRQ 128	Exclusive	Microsoft ACPI-Compliant System
IRQ 129	Exclusive	Microsoft ACPI-Compliant System
IRQ 13	Exclusive	Numeric data processor
IRQ 130	Exclusive	Microsoft ACPI-Compliant System
IRQ 131	Exclusive	Microsoft ACPI-Compliant System
IRQ 131071	Exclusive	PCI Express standard Root Port
IRQ 132	Exclusive	Microsoft ACPI-Compliant System
IRQ 133	Exclusive	Microsoft ACPI-Compliant System
IRQ 134	Exclusive	Microsoft ACPI-Compliant System
IRQ 135	Exclusive	Microsoft ACPI-Compliant System
IRQ 136	Exclusive	Microsoft ACPI-Compliant System
IRQ 137	Exclusive	Microsoft ACPI-Compliant System
IRQ 138	Exclusive	Microsoft ACPI-Compliant System
IRQ 139	Exclusive	Microsoft ACPI-Compliant System
IRQ 140	Exclusive	Microsoft ACPI-Compliant System
IRQ 141	Exclusive	Microsoft ACPI-Compliant System
IRQ 142	Exclusive	Microsoft ACPI-Compliant System
IRQ 143	Exclusive	Microsoft ACPI-Compliant System
IRQ 144	Exclusive	Microsoft ACPI-Compliant System
IRQ 145	Exclusive	Microsoft ACPI-Compliant System
IRQ 146	Exclusive	Microsoft ACPI-Compliant System
IRQ 147	Exclusive	Microsoft ACPI-Compliant System

IRQ 148	Exclusive	Microsoft ACPI-Compliant System
IRQ 149	Exclusive	Microsoft ACPI-Compliant System
IRQ 150	Exclusive	Microsoft ACPI-Compliant System
IRQ 151	Exclusive	Microsoft ACPI-Compliant System
IRQ 152	Exclusive	Microsoft ACPI-Compliant System
IRQ 153	Exclusive	Microsoft ACPI-Compliant System
IRQ 154	Exclusive	Microsoft ACPI-Compliant System
IRQ 155	Exclusive	Microsoft ACPI-Compliant System
IRQ 156	Exclusive	Microsoft ACPI-Compliant System
IRQ 157	Exclusive	Microsoft ACPI-Compliant System
IRQ 158	Exclusive	Microsoft ACPI-Compliant System
IRQ 159	Exclusive	Microsoft ACPI-Compliant System
IRQ 16	Shared	High Definition Audio Controller
IRQ 160	Exclusive	Microsoft ACPI-Compliant System
IRQ 161	Exclusive	Microsoft ACPI-Compliant System
IRQ 162	Exclusive	Microsoft ACPI-Compliant System
IRQ 163	Exclusive	Microsoft ACPI-Compliant System
IRQ 164	Exclusive	Microsoft ACPI-Compliant System
IRQ 165	Exclusive	Microsoft ACPI-Compliant System
IRQ 166	Exclusive	Microsoft ACPI-Compliant System
IRQ 167	Exclusive	Microsoft ACPI-Compliant System
IRQ 168	Exclusive	Microsoft ACPI-Compliant System
IRQ 169	Exclusive	Microsoft ACPI-Compliant System
IRQ 17	Shared	Standard Enhanced PCI to USB Host Controller
IRQ 17	Shared	Standard Enhanced PCI to USB Host Controller
IRQ 170	Exclusive	Microsoft ACPI-Compliant System
IRQ 171	Exclusive	Microsoft ACPI-Compliant System
IRQ 172	Exclusive	Microsoft ACPI-Compliant System
IRQ 173	Exclusive	Microsoft ACPI-Compliant System
IRQ 174	Exclusive	Microsoft ACPI-Compliant System
IRQ 175	Exclusive	Microsoft ACPI-Compliant System
IRQ 176	Exclusive	Microsoft ACPI-Compliant System

IRQ 177	Exclusive	Microsoft ACPI-Compliant System
IRQ 178	Exclusive	Microsoft ACPI-Compliant System
IRQ 179	Exclusive	Microsoft ACPI-Compliant System
IRQ 18	Shared	Standard OpenHCD USB Host Controller
IRQ 18	Shared	Standard OpenHCD USB Host Controller
IRQ 180	Exclusive	Microsoft ACPI-Compliant System
IRQ 181	Exclusive	Microsoft ACPI-Compliant System
IRQ 182	Exclusive	Microsoft ACPI-Compliant System
IRQ 183	Exclusive	Microsoft ACPI-Compliant System
IRQ 184	Exclusive	Microsoft ACPI-Compliant System
IRQ 185	Exclusive	Microsoft ACPI-Compliant System
IRQ 186	Exclusive	Microsoft ACPI-Compliant System
IRQ 187	Exclusive	Microsoft ACPI-Compliant System
IRQ 188	Exclusive	Microsoft ACPI-Compliant System
IRQ 189	Exclusive	Microsoft ACPI-Compliant System
IRQ 19	Shared	AMD SATA Controller
IRQ 190	Exclusive	Microsoft ACPI-Compliant System
IRQ 45	Shared	High Definition Audio Controller
IRQ 65536	Exclusive	Intel(R) I211 Gigabit Network Connection
IRQ 65536	Exclusive	Intel(R) I211 Gigabit Network Connection
IRQ 65536	Exclusive	Intel(R) I211 Gigabit Network Connection
IRQ 65536	Exclusive	Intel(R) I211 Gigabit Network Connection
IRQ 65536	Exclusive	Intel(R) I211 Gigabit Network Connection
IRQ 65536	Exclusive	Intel(R) I211 Gigabit Network Connection
IRQ 65536	Exclusive	AMD Radeon HD 8400
IRQ 65536	Exclusive	AMD USB 3.0 Host Controller
IRQ 65536	Exclusive	AMD USB 3.0 Host Controller
IRQ 65536	Exclusive	AMD USB 3.0 Host Controller
IRQ 65536	Exclusive	AMD USB 3.0 Host Controller
IRQ 65536	Exclusive	AMD USB 3.0 Host Controller
IRQ 65536	Exclusive	AMD USB 3.0 Host Controller
IRQ 65536	Exclusive	AMD USB 3.0 Host Controller
IRQ 65536	Exclusive	AMD USB 3.0 Host Controller

IRQ 65536	Exclusive	AMD USB 3.0 Host Controller
IRQ 65539	Shared	Communications Port (COM1)
IRQ 81	Exclusive	Microsoft ACPI-Compliant System
IRQ 82	Exclusive	Microsoft ACPI-Compliant System
IRQ 83	Exclusive	Microsoft ACPI-Compliant System
IRQ 84	Exclusive	Microsoft ACPI-Compliant System
IRQ 85	Exclusive	Microsoft ACPI-Compliant System
IRQ 86	Exclusive	Microsoft ACPI-Compliant System
IRQ 87	Exclusive	Microsoft ACPI-Compliant System
IRQ 88	Exclusive	Microsoft ACPI-Compliant System
IRQ 89	Exclusive	Microsoft ACPI-Compliant System
IRQ 90	Exclusive	Microsoft ACPI-Compliant System
IRQ 91	Exclusive	Microsoft ACPI-Compliant System
IRQ 92	Exclusive	Microsoft ACPI-Compliant System
IRQ 93	Exclusive	Microsoft ACPI-Compliant System
IRQ 94	Exclusive	Microsoft ACPI-Compliant System
IRQ 95	Exclusive	Microsoft ACPI-Compliant System
IRQ 96	Exclusive	Microsoft ACPI-Compliant System
IRQ 97	Exclusive	Microsoft ACPI-Compliant System
IRQ 98	Exclusive	Microsoft ACPI-Compliant System
IRQ 99	Exclusive	Microsoft ACPI-Compliant System
Memory 000A0000-000BFFFF	Shared	AMD Radeon HD 8400
Memory 000A0000-000BFFFF	Shared	PCI bus
Memory 000C0000-000C3FFF	Shared	PCI bus
Memory 000C4000-000C7FFF	Shared	PCI bus
Memory 000C8000-000CBFFF	Shared	PCI bus
Memory 000CC000-000CFFFF	Shared	PCI bus
Memory 000D0000-000D3FFF	Shared	PCI bus
Memory 000D4000-000D7FFF	Shared	PCI bus
Memory 000D8000-000DBFFF	Shared	PCI bus
Memory 000DC000-000DFFFF	Shared	PCI bus
Memory 000E0000-000E3FFF	Shared	PCI bus

Memory 000E0000-000FFFFFF	Exclusive	System board
Memory 000E4000-000E7FFF	Shared	PCI bus
Memory 000E8000-000EBFFF	Shared	PCI bus
Memory 000EC000-000EFFFF	Shared	PCI bus
Memory E0000000-EFFFFFFF	Exclusive	AMD Radeon HD 8400
Memory E0000000-F7FFFFFF	Shared	PCI bus
Memory F0000000-F00FFFFF	Exclusive	PCI Express standard Root Port
Memory F0100000-F013FFFF	Exclusive	AMD Radeon HD 8400
Memory F0140000-F0143FFF	Exclusive	High Definition Audio Controller
Memory F0144000-F0147FFF	Exclusive	High Definition Audio Controller
Memory F0148000-F0149FFF	Exclusive	AMD USB 3.0 Host Controller
Memory F014A000-F014A0FF	Exclusive	Standard Enhanced PCI to USB Host Controller
Memory F014B000-F014BFFF	Exclusive	Standard OpenHCD USB Host Controller
Memory F014C000-F014C0FF	Exclusive	Standard Enhanced PCI to USB Host Controller
Memory F014D000-F014DFFF	Exclusive	Standard OpenHCD USB Host Controller
Memory F014E000-F014E3FF	Exclusive	AMD SATA Controller
Memory F0800000-F0FFFFFF	Exclusive	AMD Radeon HD 8400
Memory F1000000-F101FFFF	Exclusive	Intel(R) I211 Gigabit Network Connection
Memory F1000000-F1FFFFFF	Exclusive	PCI Express standard Root Port
Memory F1020000-F1023FFF	Exclusive	Intel(R) I211 Gigabit Network Connection
Memory FC000000-FED3FFFF	Shared	PCI bus
Memory FEC00000-FEC01FFF	Exclusive	Motherboard resources
Memory FED00000-FED003FF	Exclusive	High precision event timer
Memory FED45000-FFFFFFF	Shared	PCI bus
Memory FEE00000-FEE00FFF	Exclusive	Motherboard resources
Memory FFC00000-FFFFFFF	Exclusive	System board