User's Manual

Fanless Computing Solution

Intel® Atom™ or Celeron® Processor Affordable Fanless Embedded Computer

DA-1000

Contents

Prefaces

Revision

Revision	Description	Date
1.0	Manual Released	2016/03/14
1.1	Content Revised	2017/01/05
1.2	BIOS OS Selection Revised	2017/01/12
1.3	Side Mount Bracket	2017/05/15
1.31	Modified 3.4 Mini PCI-e Card photos	2017/09/14
1.40	Add DIO Connector Definitions	2018/01/02
1.41	Modified MINIPCIE1 Pin Define Table	2018/09/07
1.50	Correction Made	2018/11/20

Copyright Notice

Acknowledgement

Disclaimer

This manual is intended to be used as a practical and informative guide only and is subject to change without notice. It does not represent a commitment on the part of Cincoze. This product might include unintentional technical or typographical errors. Changes are periodically made to the information herein to correct such errors, and these changes are incorporated into new editions of the publication.

Declaration of Conformity

FCC

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CE

The product(s) described in this manual complies with all application European Union (CE) directives if it has a CE marking. For computer systems to remain CE compliant, only CE-compliant parts may be used. Maintaining CE compliance also requires proper cable and cabling techniques.

Product Warranty Statement

Warranty

Cincoze products are warranted by Cincoze Co., Ltd. to be free from defect in materials and workmanship for 2 years from the date of purchase by the original purchaser.
During the warranty period, we shall, at our option, either repair or replace any product that proves to be defective under normal operation.
Defects, malfunctions, or failures of the warranted product caused by damage resulting from natural disasters (such as by lightening, flood, earthquake, etc.), environmental and atmospheric disturbances, other external forces such as power line disturbances, plugging the board in under power, or incorrect cabling, and damage caused by misuse, abuse, and unauthorized alteration or repair, and the product in question is either software, or an expendable item (such as a fuse, battery, etc.), re not warranted.

RMA

Before sending your product in, you will need to fill in Cincoze RMA Request Form and obtain a RMA number from us. Our staff is available at any time to provide you with the most friendly and immediate service.

■ RMA Instruction

- Customers must fill in Cincoze Return Merchandise Authorization (RMA) Request Form and obtain a RMA number prior to returning a defective product to Cincoze for service.
- Customers must collect all the information about the problems encountered and note anything abnormal and describe the problems on the "Cincoze Service Form" for the RMA number apply process.
- Charges may be incurred for certain repairs. Cincoze will charge for repairs to products whose warranty period has expired. Cincoze will also charge for repairs to products if the damage resulted from acts of God, environmental or atmospheric disturbances, or other external forces through misuse, abuse, or unauthorized alteration or repair. If charges will be incurred for a repair, Cincoze lists all charges, and will wait for customer's approval before performing the repair.
- Customers agree to insure the product or assume the risk of loss or damage during transit, to prepay shipping charges, and to use the original shipping container or equivalent.
- Customers can be send back the faulty products with or without accessories (manuals, cable, etc.) and any components from the system. If the components were suspected as part of the problems, please note clearly which components are included. Otherwise, Cincoze is not responsible for the devices/parts.
- Repaired items will be shipped along with a "Repair Report" detailing the findings and actions taken.

Limitation of Liability

Cincoze' liability arising out of the manufacture, sale, or supplying of the product and its use, whether based on warranty, contract, negligence, product liability, or otherwise, shall not exceed the original selling price of the product. The remedies provided herein are the customer's sole and exclusive remedies. In no event shall Cincoze be liable for direct, indirect, special or consequential damages whether based on contract of any other legal theory.

Technical Support and Assistance

1. Visit the Cincoze website at www.cincoze.com where you can find the latest information about the product.
2. Contact your distributor or our technical support team or sales representative for technical support if you need additional assistance. Please have following information ready before you call:
   - Product name and serial number
   - Description of your peripheral attachments
   - Description of your software (operating system, version, application software, etc.)
   - A complete description of the problem
   - The exact wording of any error messages

Conventions Used in this Manual

WARNING

This indication alerts operators to an operation that, if not strictly observed, may result in severe injury.

CAUTION

This indication alerts operators to an operation that, if not strictly observed, may result in safety hazards to personnel or damage to equipment.

NOTE

This indication provides additional information to complete a task easily.

Safety Precautions

Before installing and using this device, please note the following precautions:

1. Read these safety instructions carefully.
2. Keep this User's Manual for future reference.
3. Disconnected this equipment from any AC outlet before cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.
7. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
8. Use a power cord that has been approved for using with the product and that it matches the voltage and current marked on the product's electrical range label. The voltage and current rating of the cord must be greater than the voltage and current rating marked on the product.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
12. Never pour any liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.

    If one of the following situations arises, get the equipment checked by service personnel:

    - The power cord or plug is damaged.
    - Liquid has penetrated into the equipment.
    - The equipment has been exposed to moisture.
    - The equipment does not work well, or you cannot get it work according to the user's manual.
    - The equipment has been dropped and damaged.
    - The equipment has obvious signs of breakage.

14. CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.

Package Contents

Before installation, please ensure all the items listed in the following table are included in the package.

Item	Description	Q'ty
1	DA-1000 Embedded System	1
2	Utility DVD Driver	1
3	Power Terminal Block Connector	1
4	Screw Pack (For HDD / Mini-PCIe / Wall & VESA Mounting)	1
5	Wall Mount Kit	1
6	DVI-I to VGA Adapter	1
7	Power On/Off Terminal Block Connector	1

Note: *Notify your sales representative if any of the above items are missing or damaged.*

Ordering Information

Model Name	Product Description
DA-1000	Intel® Atom™ Processor E3826 Affordable Fanless Embedded Computer
DA-1000-E45	Intel® Atom™ Processor E3845 Affordable Fanless Embedded Computer
DA-1000-J19	Intel® Celeron® Processor J1900 Affordable Fanless Embedded Computer

Optional Modules & Accessories

Model No.	Description
CMI-COM102/UB0403	CMI Module with 2x RS232/422/485, 1x Universal Bracket (96 x 15 mm)
CMI-DIO100/UB0415	CMI Module with 8x Optical Isolated DIO (4 in/4 out), 1x Universal Bracket (96 x 15 mm)
CMI-DP101/UB0406	CMI Module with 1x Display Port, 1x Universal Bracket (96 x 15 mm)
CMI-DVI101/UB0407	CMI Module with 1x DVI-D Connector, 1x Universal Bracket (96 x 15 mm)
CMI-LPPS102/UB0409	CMI Module with 1x LPT Port, 1x PS/2, 1x Universal Bracket (96 x 15 mm)
CMI-VGA101/UB0416	CMI Module with 1x VGA Port, 1x Universal Bracket (96 x 15 mm)
MEC-LAN-M002-R1/UB0411	Mini-PCIe Module with 2x LAN Ports, 1x Universal Bracket (96 x 15 mm)
MEC-USB-M002/UB0414	Mini-PCIe Module with 2x USB 3.0 Ports, 1x Universal Bracket (96 x 15 mm)
SIDE-DA	DA Series Side Mount Kit
DINRAIL	Diamond Series Din-Rail Mount Kit

Chapter 1

Product Introductions

1.1 Overview

DA-1000 Series is an ultra-compact size fanless embedded computer powered by Intel® Atom™ or Celeron® Processors; it integrated HD graphics processor supporting dual display. This can bring economic advantages on budget and also fulfill the needs for industrial computing tasks. DA-1000 Series manages to pack a diverse array of I/O into its small form factor, with one DVI-I port, two RS-232/422/485 COM ports, dual Gbe LAN ports, four USB ports and one set of Mic-in and Line-out.

DA-1000 Series supports Combined Multiple I/O (CMI) interface and modules which are specially designed for flexible I/O expandability; it allows users to extend various I/Os according to their needs. CMI modules are including COMs, DIO, DisplayPort, DVI, LPT/PS2 or VGA. The rugged construction, wide operating temperature and high tolerance for shock and vibration enable DA-1000 Series to deploy in a harsh environment and for critical applications, and it is totally maintenance-free.

1.1.1 Key Features

- Onboard Intel® Atom™ or Celeron® Processors
- One DDR3L SO-DIMM Socket, Support Up to 8G
- Support Dual Display, Output from One DVI-I Port
- Dual Intel® I210-AT GbE LAN Ports, Support WoL, Teaming, PXE
- Ultra Compact Size (150x105x56.02mm)
- Support -25˚C~70˚C Extended Operating Temperature
- Support 9~48VDC Input, Support AT/ATX Power Mode
- CMI (Combined Multiple I/O) Interface for I/O Module Expandability
- Various Mounting Options (VESA, DIN-Rail, Side/Wall Mounting)

1.1.2 Photo of Front Panel

1.1.3 Photo of Rear Panel

1.2 Hardware Specification

Processor
- Intel® Atom™ Processor E3826 (1M Cache, Up to 1.46 GHz SoC, 7W TDP)
- Intel® Atom™ Processor E3845 (2M Cache, Up to 1.91 GHz SoC, 10W TDP)
- Intel® Celeron® Processor J1900 (2M Cache, Up to 2.42 GHz SoC, 10W TDP)

BIOS
- AMI 64Mbit SPI BIOS

Memory
- 1x 204-Pin SO-DIMM DDR3L 1066/1333MHz (Un-buffered and Non-ECC) Max. Up to 8GB

Graphics
- Intel® HD Graphics Max. 667 MHz
- Support Dual Display (with optional split cable)

Expansion
- 2x Full-size Mini-PCIe
- 1x SIM Socket (Internal)
- 1x CMI (Combined Multiple I/O) Interface

Storage
- 1x 2.5" SATA HDD Bay (Internal)
- 1x Internal mSATA Slot (Shared by 1x Mini-PCIe socket)

External I/O Interface
- 1x DVI-I Port
- 2x GbE LAN Ports (Intel® I210, Support Wake On Lan, Teaming, Jumbo Frame, PXE)
- 2x COM Ports (DB9, RS232/RS422/RS485 with Auto Flow Control)
- 1x USB 3.0 Ports
- 3x USB 2.0 Ports
- 1x Mic-in and 1x Line-out (Codec: Realtek ALC888S)
- 1x Power On/Off Switch
- 1x AT/ATX Switch
- 1x Remote Power On/Off Connector (2-pin Terminal Block)
- 1x Universal I/O Bracket
- 2x Antenna Holes

Watchdog Timer
- Software Programmable Supports 1~255 sec. System Reset

Power Requirement
- Support AT/ATX Power Mode
- Power Input Voltage 9~48VDC
- One 3-pin Terminal Block Connector
- Optional Power Adapter AC/DC 12V/5A 60W
- Power Consumption Typical 8.3W, Max.15W

Physical
- Dimension: 150 (W) x 105 (D) x 56.02 (H) mm
- Weight: 0.86kg
- Construction: Aluminum Chassis with Fan-less Design
- Mounting: VESA/Wall Mounting (Optional DIN-Rail/Side Mounting)
- Cable-less Design

Environment
- Operating Temperature: -25˚C to 70˚C (With extended temperature peripherals; Ambient with Air Flow by IEC60068-2-1, IEC60068-2-2, IEC60068-2-14)
- Storage Temperature: -40˚C to 85˚C
- Relative Humidity: 95% RH @ 40˚C (Non-Condensing)
- Shock: 50 Grms (With SSD According to IEC 60068-2-27, Half Sine, 11ms Duration)
- Vibration: Random: 5 Grms (With SSD According to IEC 60068-2-64, 5~500Hz, 1 hr/axis)

Protection
- Reverse Power Input Protection Supported
- Over Voltage Protection (OVP) Up to 51V
- Over Current Protection (OCP) 120V/ 20A
- ESD Protection Air Discharge: 8 kV; Contact Discharge: 4 kV (by IEC 61000-4-2)

Operating System
- Windows® 10
- Windows® 8.1
- Windows® 7

Certification
- CE
- FCC Class A

1.3 System I/O

Front Panel

Power On/Off Switch
Press to power-on or power-off the system

AT/ATX Mode Select Switch
Used to select AT or ATX power mode

Power LED
Indicates the power status of the system

HDD LED
Indicates the status of the hard drive

Remote Power Terminal Block
Used to plug a remote power on/off switch with terminal block

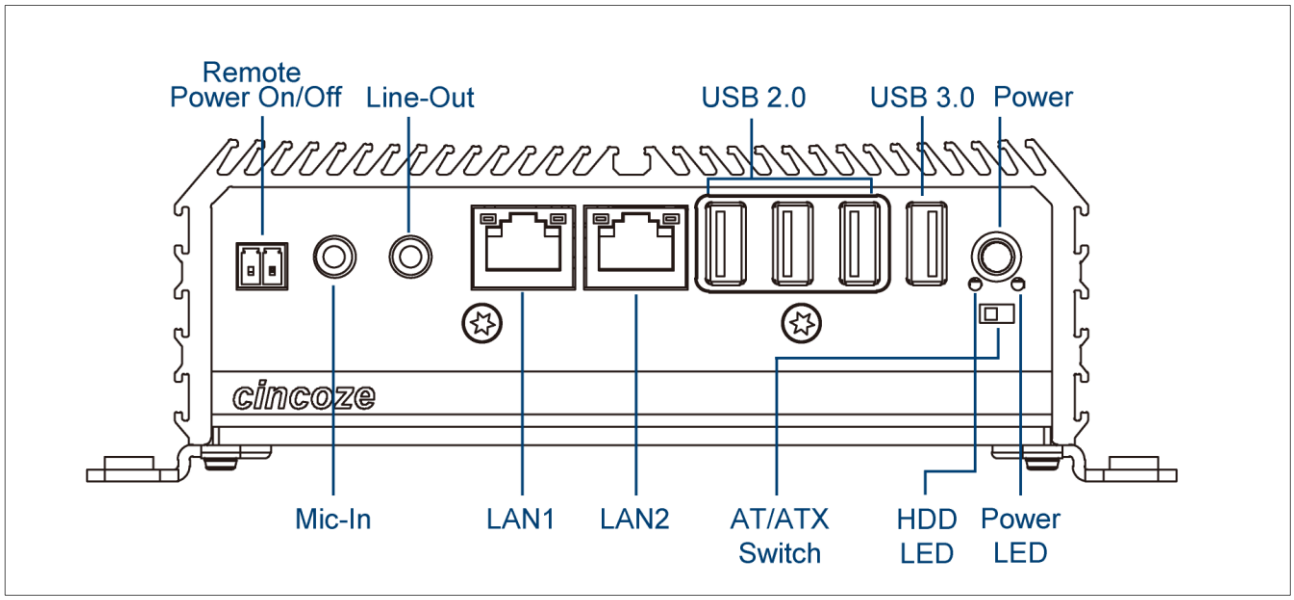
USB 3.0 Port
Used to connect USB 3.0/2.0/1.1 device

USB 2.0 Port
Used to connect USB 2.0/1.1 device

LAN Port 1 & 2
Used to connect the system to a local area network

Mic-in
Used to connect a microphone

Line-out
Used to connect a speaker



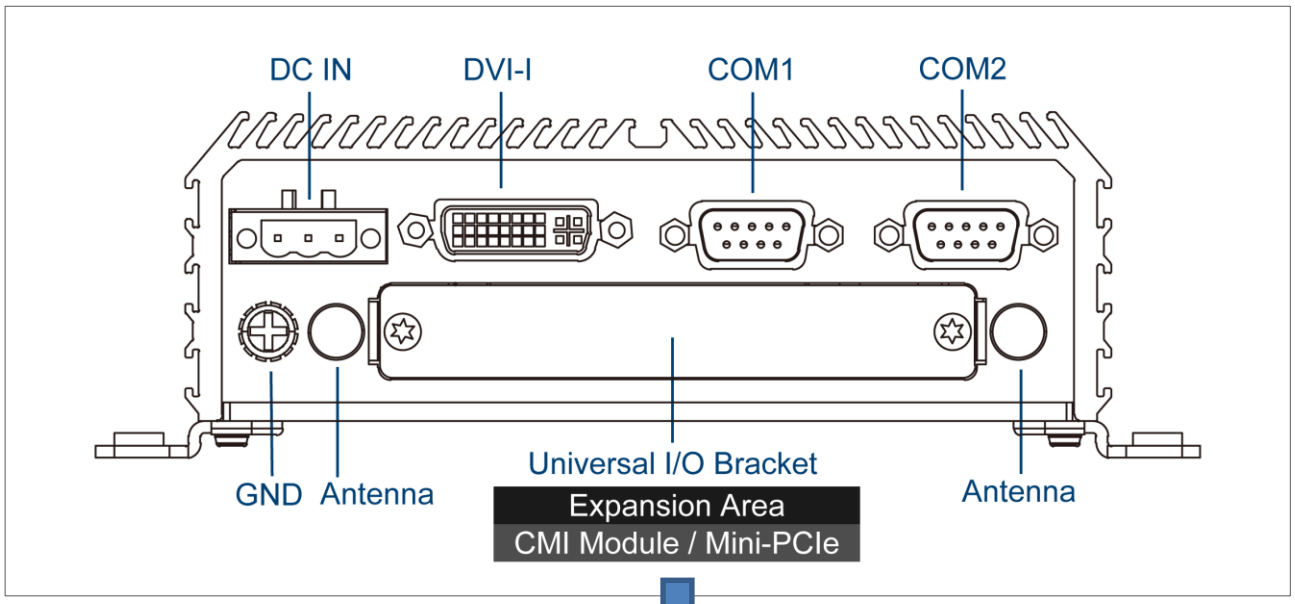
Rear Panel

DC IN Terminal Block
Used to plug a DC power input with terminal block

DVI-I Port
Used to connect a DVI monitor or connect optional split cable for dual display mode

Antenna Hole
Used to connect an antenna for optional Mini-PCIe WiFi module

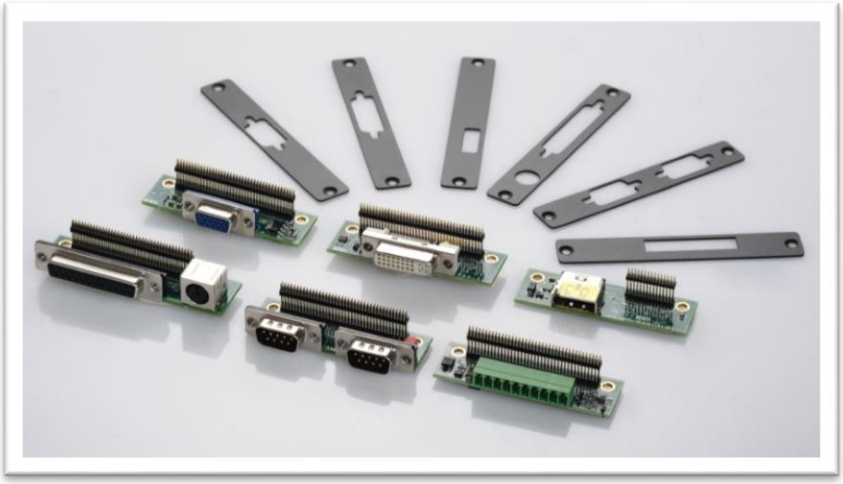
COM Port
COM 1 ~ COM 2 support RS232/422/485 serial device



Universal I/O Bracket

This expansion area is reserved for Mini-PCIe expansion or Cincoze own pin-defined interface (CMI). CMI interface supports various type of I/O modules such as COM / DIO / DisplayPort / DVI / LPT & PS2 / VGA.

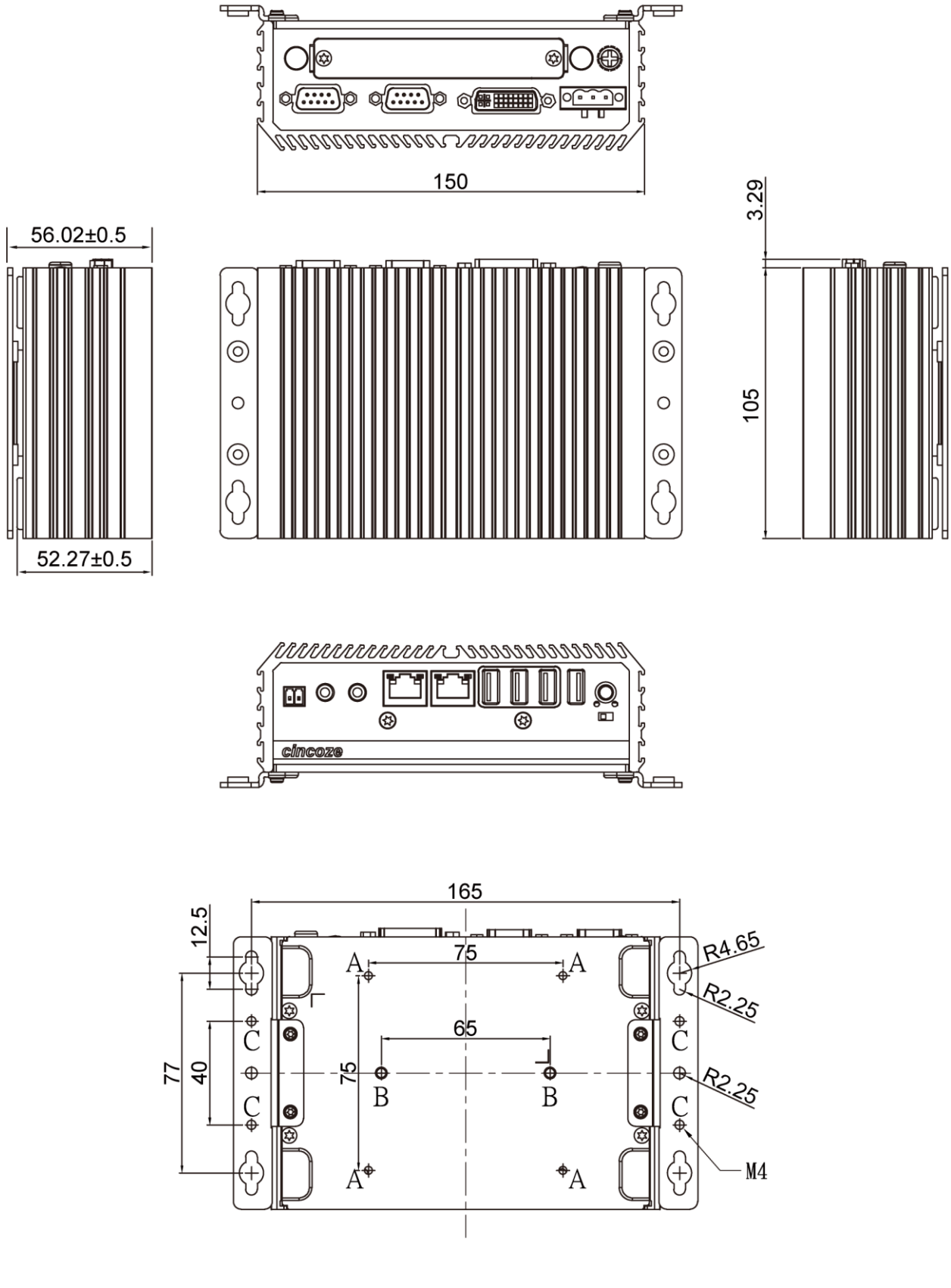
Do not change the CMI module by yourself, it may cause damage to your DA-1000. Please contact with your regional dealer for more information about it.



1.4 Mechanical Dimensions

Each of DA-1000 series computers has the same mechanical dimension.

Unit: mm



Chapter 2

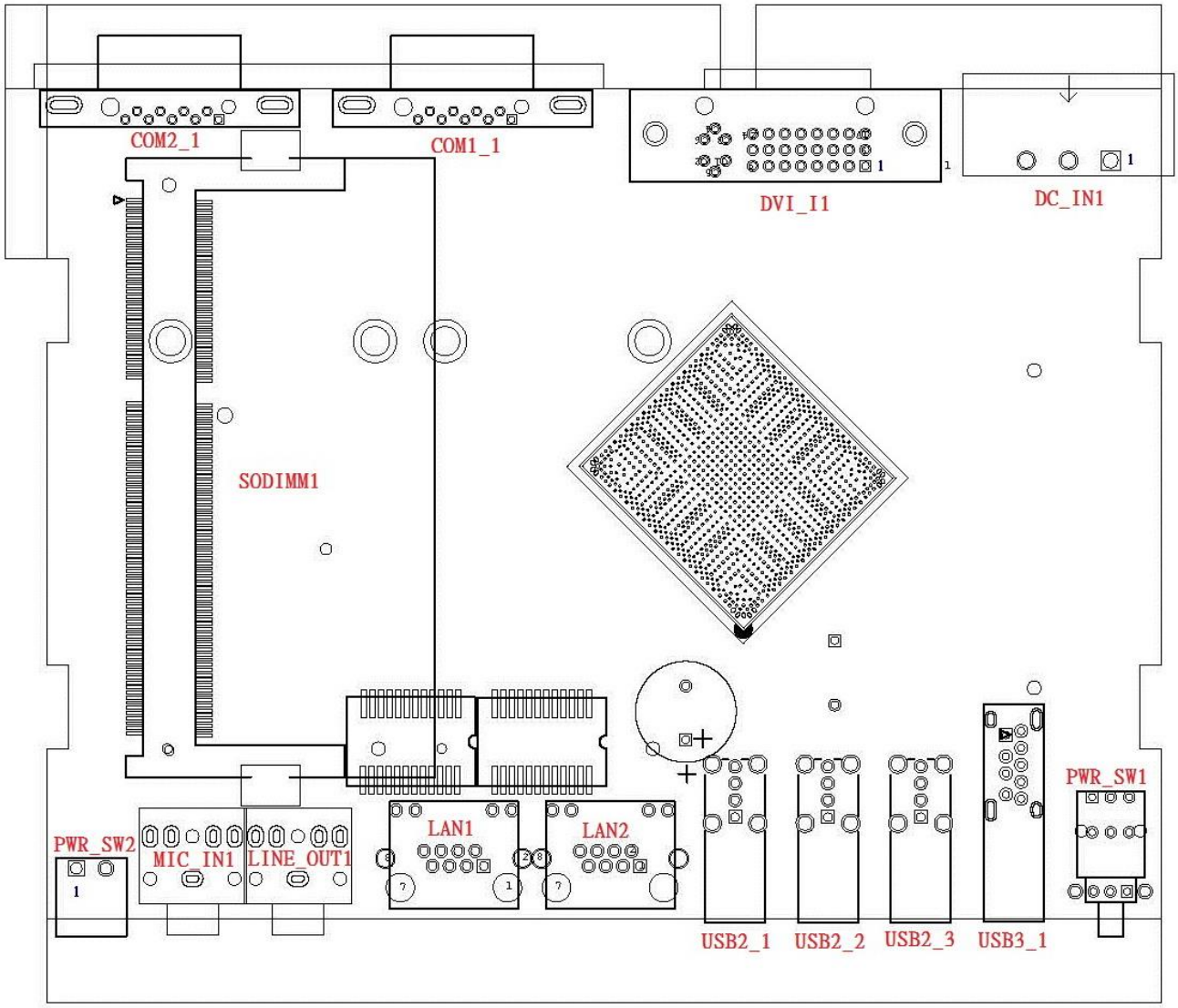
Jumpers and Connectors

2.1 Jumpers Settings

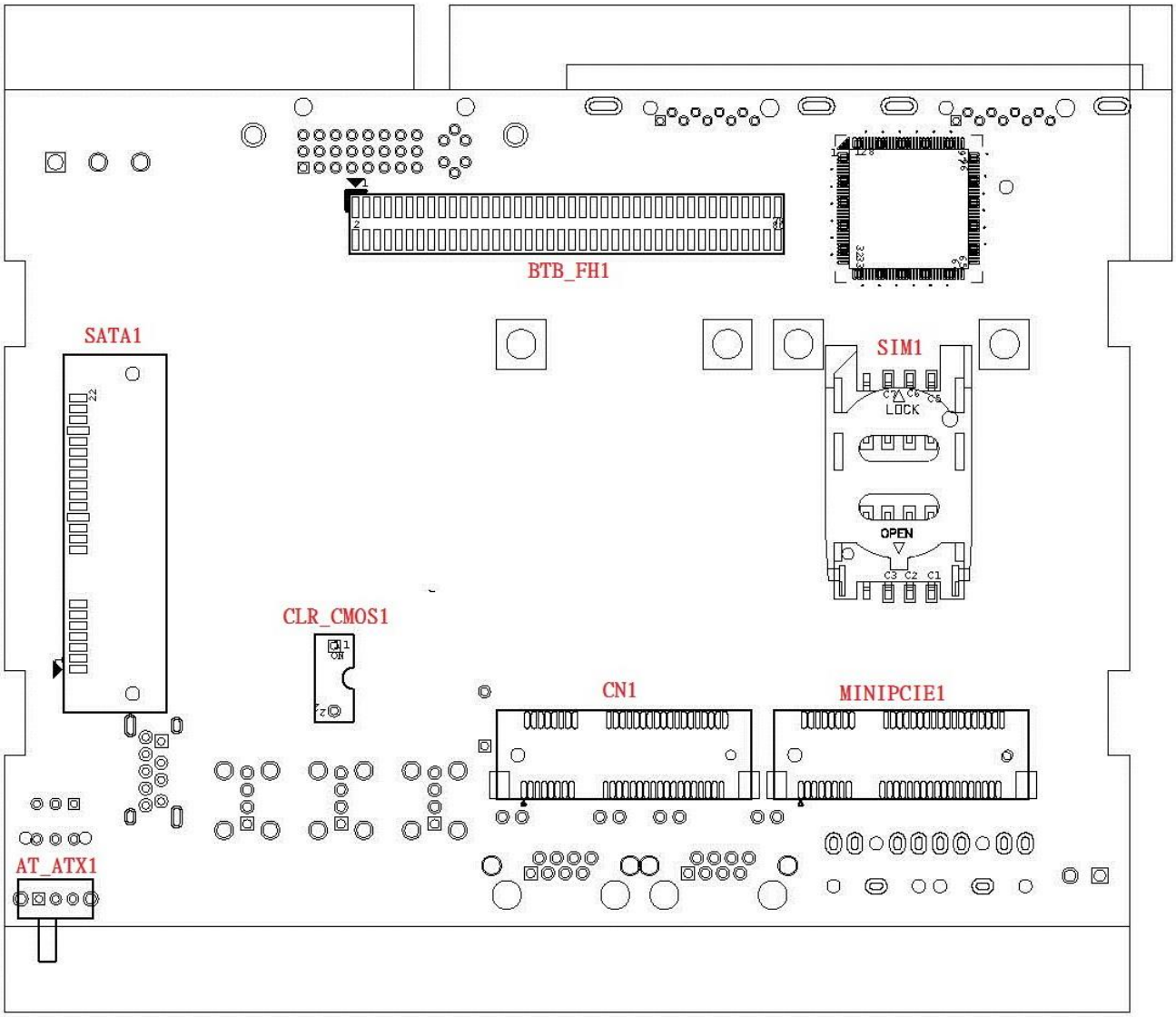
DA-1000 is featured with jumper-free design.

2.2 Locations of the Switches and Connectors

2.2.1 Top View



2.2.2 Bottom View



2.3 List of Switches and Connectors

List of Switches

Switches Location	Definition
AT_ATX1	AT / ATX Power Mode Switch
CLR_CMOS1	Clear CMOS Switch
PWR_SW1	Power Button

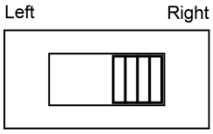
List of Connectors

Connector Location	Definition
CN1	Mini PCI-Express / mSATA Socket
COM1_1, COM2_1	RS232 / RS422 / RS485 Connector
DC_IN1	3-pin DC 9~48V Power Connector
DVI_I	DVI-I Connector
LAN1 / LAN2	RJ45 with LED Connector
LED	Power / HDD Access LED Status
LINE_OUT1	Audio Line-out Jack
MIC_IN1	Microphone-in Jack
MINIPCIE1	Mini PCI-Express Socket
PWR_SW2	External Power Connector
SATA1	SATA with Power Connector
SIM1	SIM Card Socket (apply with MINIPCIE1)
USB2_1 / USB2_2 / USB2_3	USB 2.0 Connector
USB3_1	USB 3.0 Connector

2.4 Switches Definitions

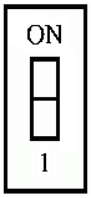
AT_ATX1：AT / ATX Power Mode Switch

Switch	Definition
Right	ATX Power Mode（Default）
Left	AT Power Mode



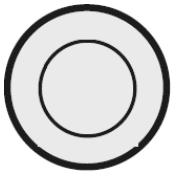
CLR_CMOS1：Clear CMOS Switch

Switch	Definition
ON	Clear CMOS
OFF	Normal Status (Default)



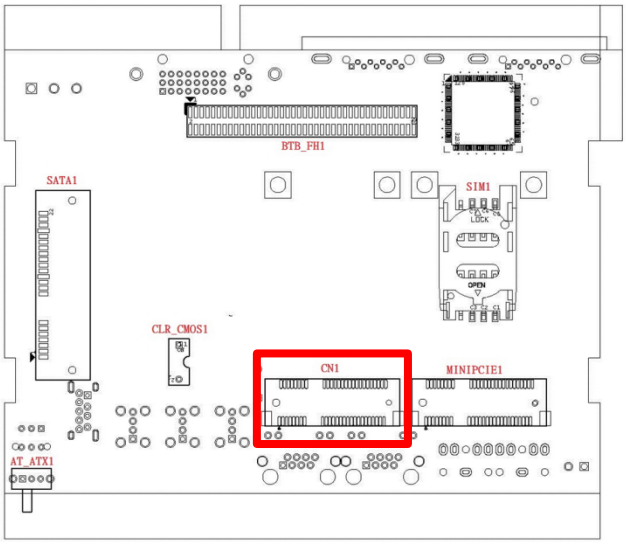
PWR_SW1：Power Switch

Pin	Definition
1	NC
2	Power Button
3	NC
4	GND
5	NC
6	GND



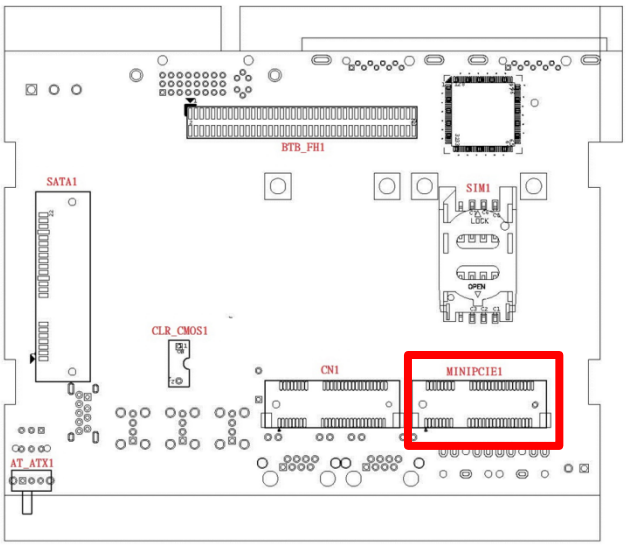
2.5 Connectors Definitions

2.5.1 CN1：Mini PCI-Express / mSATA Socket



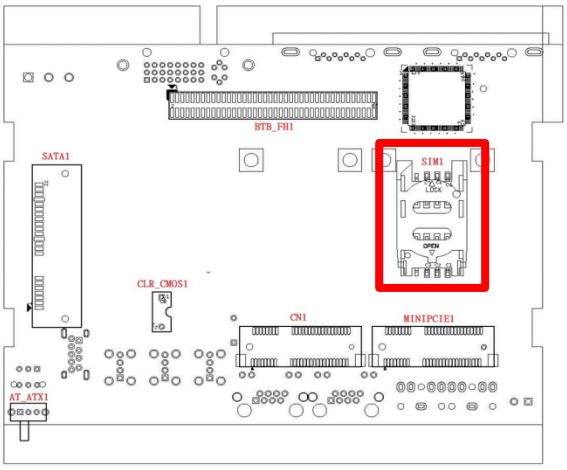
Pin	Definition	Pin	Definition
1	WAKE#	27	GND
2	+3.3V	28	+1.5V
3	NC	29	GND
4	GND	30	SMB_CLK
5	NC	31	MINIPCIE_TXN3/SATA_TXN1
6	+1.5V	32	SMB_DATA
7	CLKREQ#	33	MINIPCIE_TXP3/SATA_TXP1
8	NC	34	GND
9	GND	35	GND
10	NC	36	USB_6N
11	MINIPCIE_CLKN3	37	GND
12	NC	38	USB_6P
13	MINIPCIE_CLKP3	39	+3.3V
14	NC	40	GND
15	GND	41	+3.3V
16	NC	42	NC
17	NC	43	GND
18	GND	44	NC
19	NC	45	NC
20	+3.3V	46	NC
21	GND	47	NC
22	MINIPCIE RST#	48	+1.5V
23	MINIPCIE_RXN3/SATA_RXP1	49	NG
24	+3.3V	50	GND
25	MINIPCIE_RXP3/SATA_RXN1	51	NC
26	GND	52	+3.3V

2.5.2 MINIPCIE1：Mini PCI-Express Socket



Pin	Definition	Pin	Definition
1	WAKE#	27	GND
2	V3P3SB	28	V1P5S
3	NC	29	GND
4	GND	30	SMBCLK
5	NC	31	PCIE_MINI_TXN
6	V1P5S	32	SMBDATA
7	PCIE_CLKREQ	33	PCIE_MINI_TXP
8	P_UIM_PWR	34	GND
9	GND	35	GND
10	P_UIM_DATA	36	USB_DN
11	CLK_MINIPCIE1_N	37	GND
12	P_UIM_CLK	38	USB_DP
13	CLK_MINIPCIE1_P	39	V3P3SB
14	P_UIM_RST	40	GND
15	GND	41	V3P3SB
16	P_UIM_VPP	42	NC
17	NC	43	GND
18	GND	44	NC
19	NC	45	NC
20	N98654222	46	NC
21	GND	47	NC
22	PCIE1_RST#	48	V1P5S
23	PCIE_MINI_RXN	49	NC
24	V3P3SB	50	GND
25	PCIE_MINI_RXP	51	NC

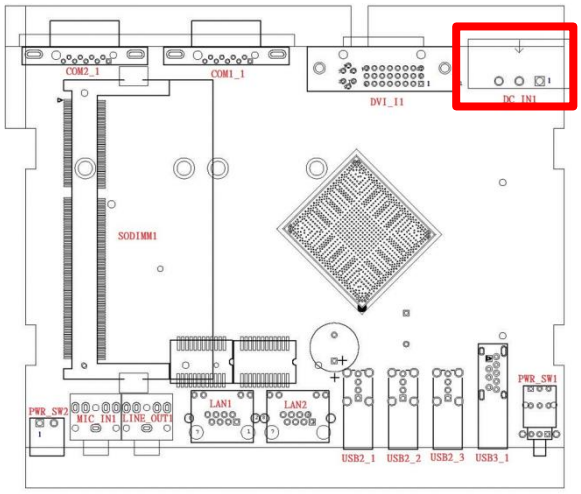
2.5.3 SIM1：SIM Card Socket

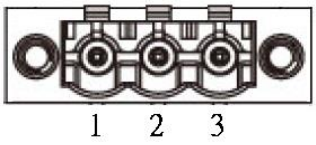


Pin	Definition
C1	UIM_PWR
C2	UIM_RESET
C3	UIM_CLK
C5	GND
C6	UIM_VPP
C7	UIM_DATA
CD	NC
COM	GND

2.5.4 DC_IN1：DC Power Input Connector (9~48V)

Connector Type：Phoenix 1X3 3-pin, 5.0mm pitch

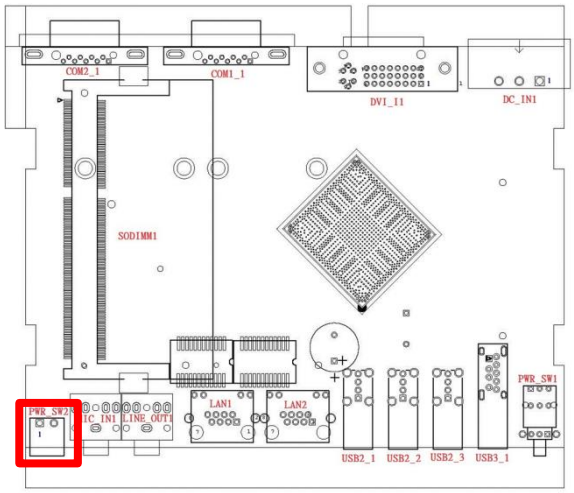


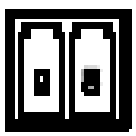


Pin	Definition
1	+9~48V IN
2	Ignition (IGN)
3	GND

2.5.5 PWR_SW2：External remote power on/off switch

(Note: Please do not apply power to the pins.
This port is used to apply a switch.)

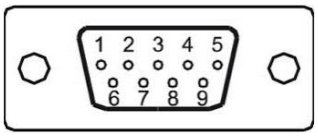




Pin	Definition
1	GND
2	PWR_ON

2.5.6 COM1_1：RS232 / RS422 / RS485 Connector

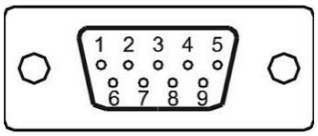
Connector Type：9-pin D-Sub



Pin	RS232 Definition	RS422 / 485 Full Duplex Definition	RS485 Half Duplex Definition
1	DCD1	TX1-	DATA1-
2	RxD1	TX1+	DATA1+
3	TxD1	RX1+	N/A
4	DTR1	RX1-	N/A
5	GND1	N/A	N/A
6	DSR1	N/A	N/A
7	RTS1	N/A	N/A
8	CTS1	N/A	N/A
9	RI1	N/A	N/A

2.5.7 COM2_1：RS232 / RS422 / RS485 Connector

Connector Type：9-pin D-Sub



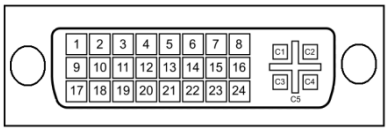
Pin	RS232 Definition	RS422 / 485 Full Duplex Definition	RS485 Half Duplex Definition
1	DCD2	TX2-	DATA2-
2	RxD2	TX2+	DATA2+
3	TxD2	RX2+	N/A
4	DTR2	RX2-	N/A
5	GND2	N/A	N/A
6	DSR2	N/A	N/A
7	RTS2	N/A	N/A
8	CTS2	N/A	N/A
9	RI2	N/A	N/A

NOTE： (For CMI-COM102 only) The optional CMI module having 2 COM ports <RS232 / RS422 / RS485> is with +5/+12VDC for RI pin (Pin 9).

2.5.8 COM3、COM4：Voltage Select

PIN 1-3, PIN 2-4	5V
PIN 3-5, PIN 4-6	12V
PIN 7-9, PIN 8-10	RI (Default)

2.5.9 DVI_I1：DVI-I Connector

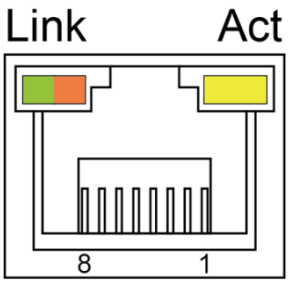


Pin	Definition	Pin	Definition
1	DVI_TX2-	16	DVI Hot Plug Detect
2	DVI_TX2+	17	DVI_TX0-
3	GND	18	DVI_TX0+
4	NC	19	GND
5	NC	20	NC
6	DDC_CLOCK	21	NC
7	DDC_DATA	22	GND
8	VGA VSYNC	23	DVI_TXCLK+
9	DVI_TX1-	24	DVI_TXCLK-
10	DVI_TX1+	C1	VGA_RED
11	GND	C2	VGA_GREEN
12	NC	C3	VGA_BLUE
13	NC	C4	VGA_HSYNC
14	+5V	C5	GND
15	GND		

2.5.10 LAN1：RJ45 with LED Connector

Act LED Status	Definition
Blinking Yellow	Data Activity
Off	No Activity

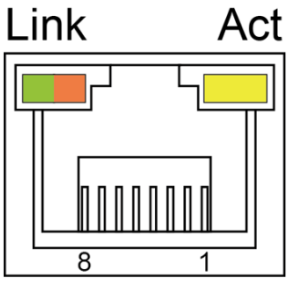
Link LED Status	Definition
Steady Green	1Gbps Network Link
Steady Amber	100Mbps Network Link
Off	10Mbps Network Link



2.5.11 LAN2：RJ45 with LED Connector

Act LED Status	Definition
Blinking Yellow	Data Activity
Off	No Activity

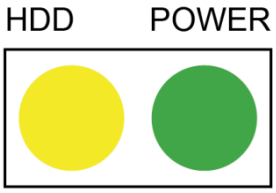
Link LED Status	Definition
Steady Green	1Gbps Network Link
Steady Amber	100Mbps Network Link
Off	10Mbps Network Link



2.5.12 LED1：Power / HDD Access LED Status

Pin	Definition
1	HDD LED+
2	HDD LED-
3	POWER LED+
4	POWER LED-

LED Status	LED Color
HDD	Yellow
POWER	Green

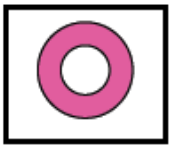


2.5.13 LINE_OUT1：
Line-out Jack (Green)
Connector Type：5-pin Phone Jack

Pin	Definition
1	GND
2	OUT_R
3	NC
4	GND
5	OUT_L

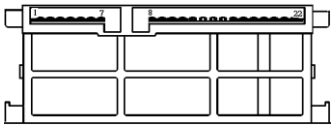
2.5.14 MIC1：
Microphone Jack (Pink)
Connector Type：5-pin Phone Jack

Pin	Definition
1	GND
2	MIC_R
3	NC
4	GND
5	MIC_L



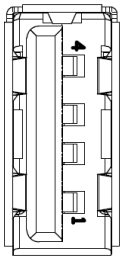
2.5.15 SATA1：SATA Connector

Pin	Definition	Pin	Definition
1	GND	12	GND
2	TX+	13	GND
3	TX-	14	+5V
4	GND	15	+5V
5	RX-	16	+5V
6	RX+	17	GND
7	GND	18	GND
8	+3.3V	19	GND
9	+3.3V	20	+12V
10	+3.3V	21	+12V
11	GND	22	+12V



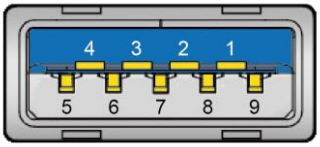
2.5.16 USB2_1、USB2_2 、 USB2_3：USB2.0 Connector, Type A

USB2_1		USB2_2		USB2_3	
Pin	**Definition**	**Pin**	**Definition**	**Pin**	**Definition**
1	+5V	1	+5V	1	+5V
2	USB_DATA3-	2	USB_DATA2-	2	USB_DATA1-
3	USB_DATA3+	3	USB_DATA2+	3	USB_DATA1+
4	GND	4	GND	4	GND



2.5.17 USB3_1：USB3.0 Connector, Type A

USB4	
Pin	**Definition**
1	+5V
2	USB3_DATA0-
3	USB3_DATA0+
4	GND
5	USB3_Rx0-
6	USB3_Rx0+
7	GND
8	USB3_Tx0-
9	USB3_Tx0+



Chapter 3

System Setup

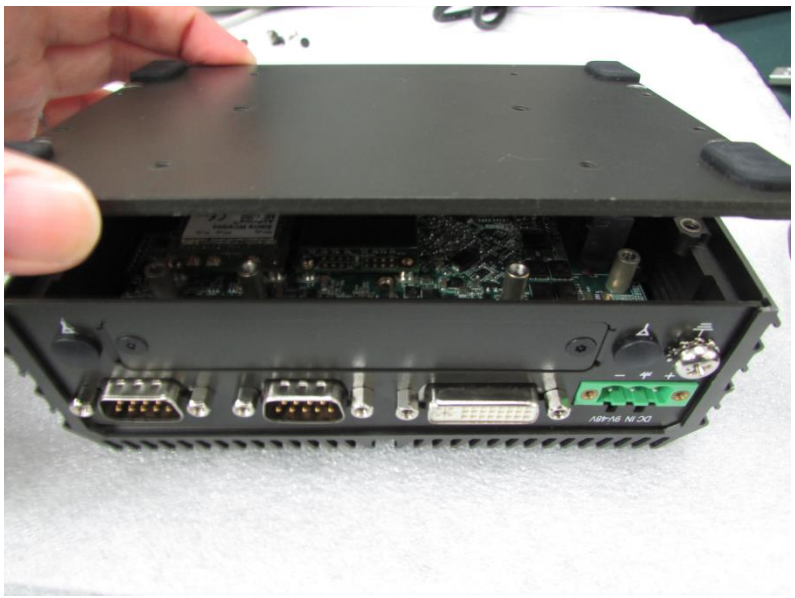
3.1 Removing the Chassis Bottom Cover

WARNING

In order to prevent electric shock or system damage, before removing the chassis cover, must turn off power and disconnect the unit from power source.

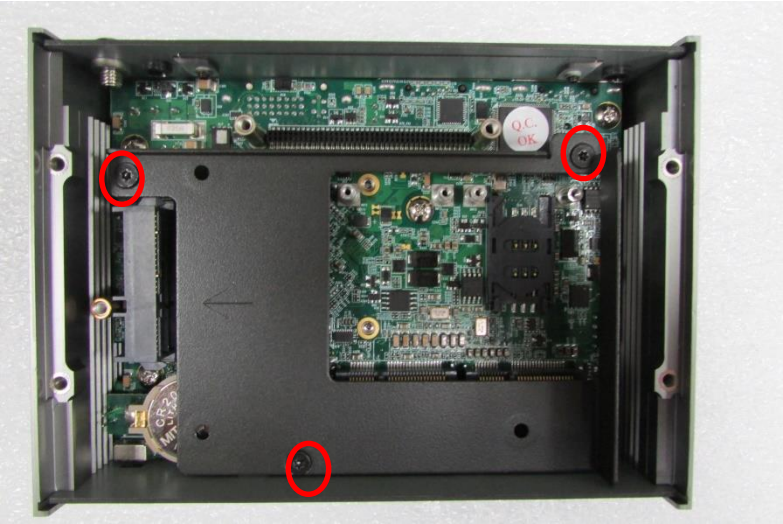
1. Turn over the unit to have the bottom side face up, loosen the 4 screws of bottom cover and place them aside.

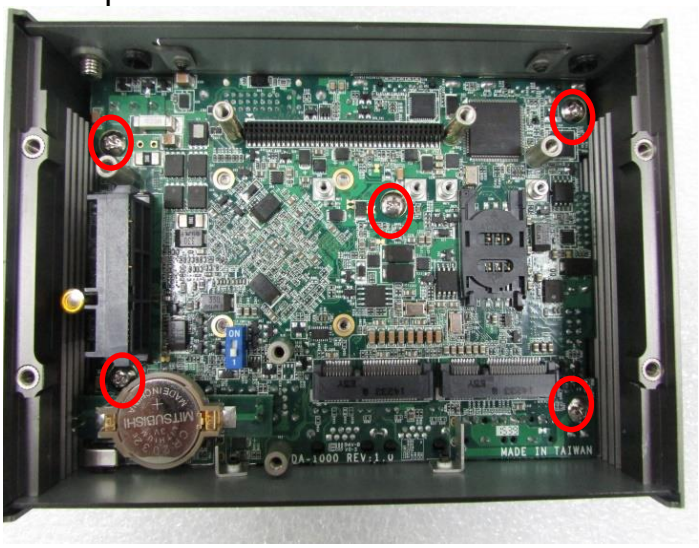
2. Remove the cover from the chassis.



3.2 Removing the Chassis

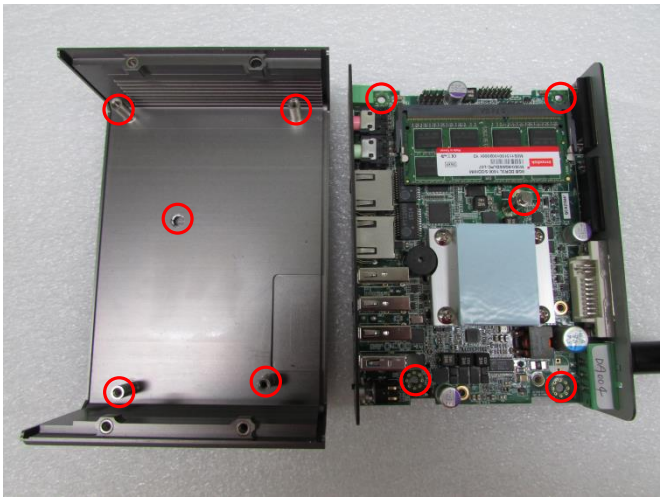
1. Loosen the 3 screws (left picture) and remove HDD base plate. Loosen the 5 screws (right picture) as marked on photo and place them aside.





2. Hold front and rear panel and lift up the body of unit vertically.

3. Turn over the body of the unit and place it gently.



3.3 Installing the Antennas

1. Remove the antenna hole covers at back panel.

2. Have antenna jack penetrate through the hole.

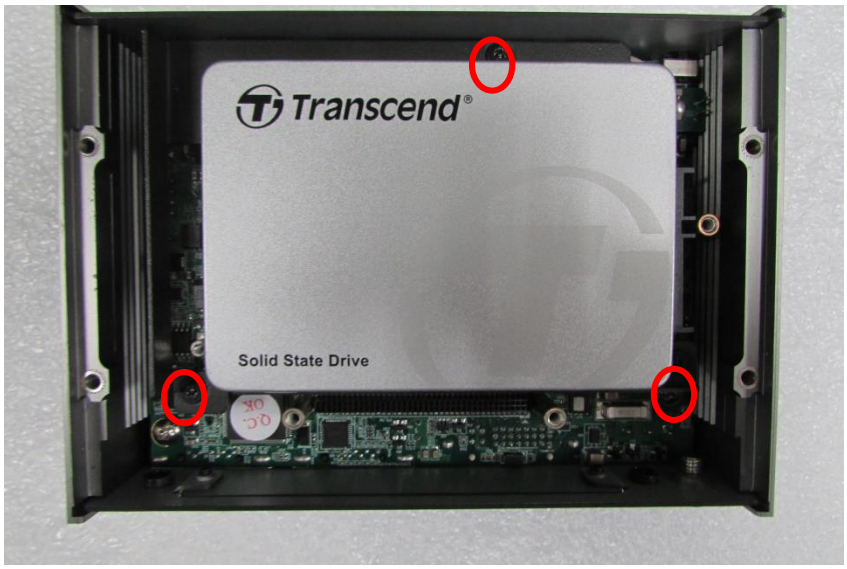
3. Put on washer and fasten the nut with antenna jack.

4. Assemble the antenna and antenna jack together.

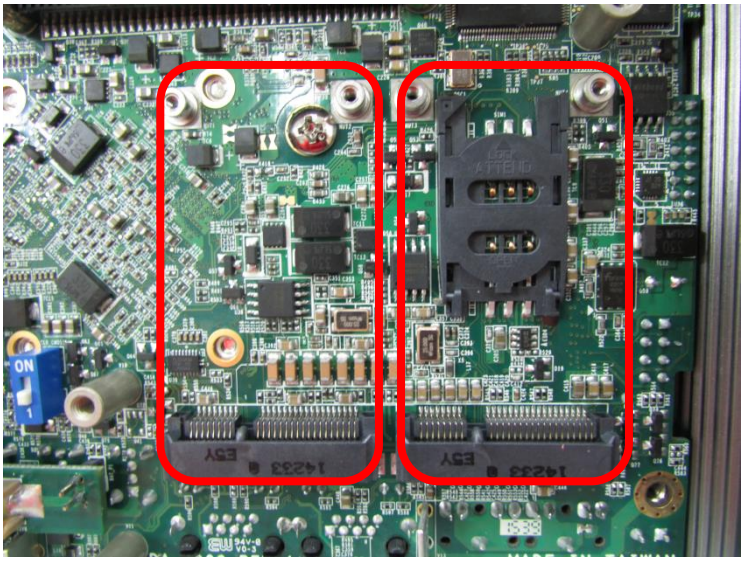
5. Attach the RF connector at another end of cable onto the module.

3.4 Installing a Full-Size Mini PCIe Card on Bottom Side, including Half-Size Mini PCIe card

1. Turn over the body of unit. Unscrew the 3 screws on HDD bracket and remove the bracket.



2. Locate the Mini PCIe slots. Please note that the left connector is shared mSATA/Mini-PCIe interface, and right connector (with SIM socket underneath) is Mini-PCIe interface.



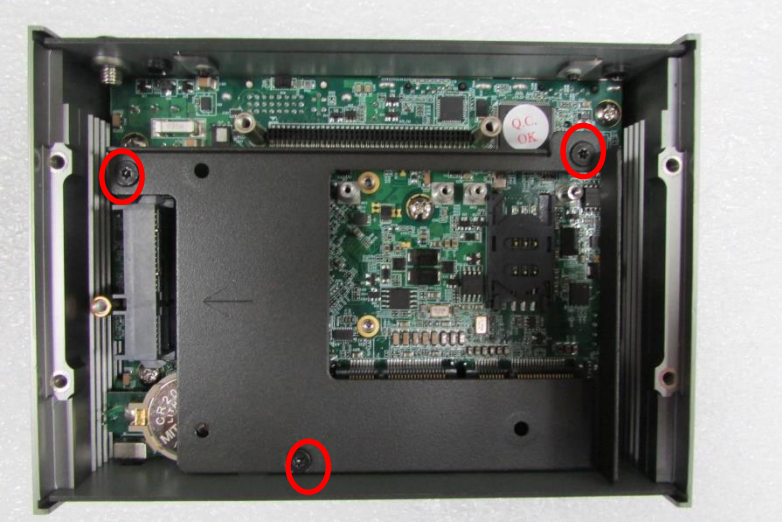
3. Tilt the Mini PCIe modules at 45 degree angle and insert it to the slot until the gold-pated connector of module contacted firmly with the slot.

4. Press down the module and use the two screws to fix the module.

5. If you have a Half-size Mini-PCIe card, make sure use extender to make it Full-size as shown below.

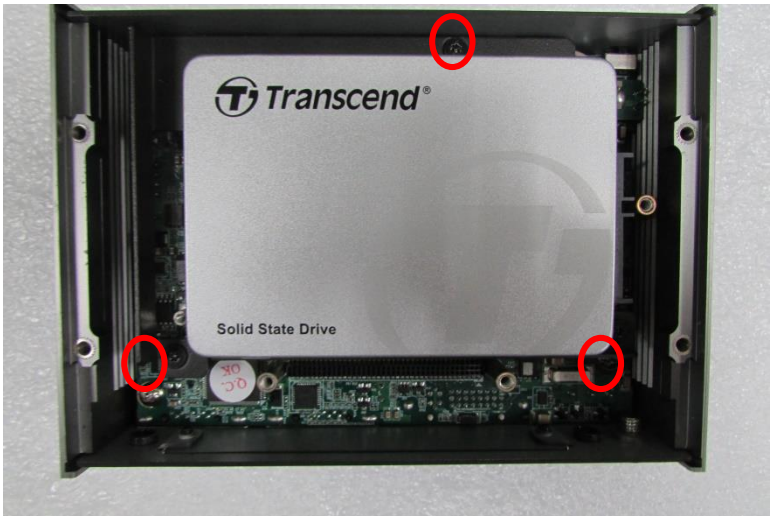
3.5 Installing a SATA Hard Drive

1. Lift up the empty HDD bracket by unscrewing the 3 screws.



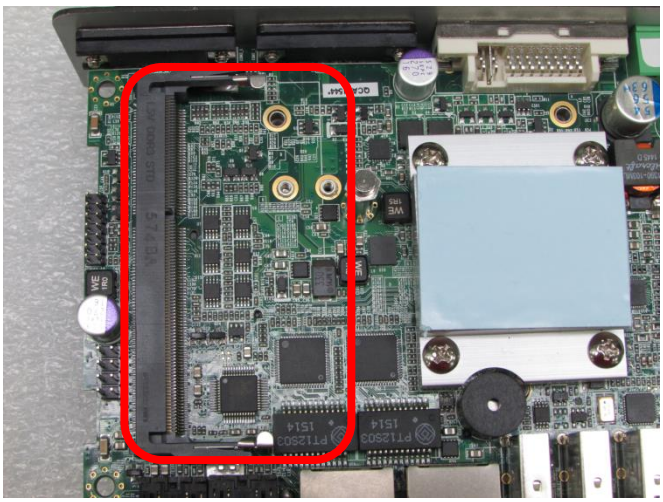
2. Make the PCB side of the HDD face up, place the HDD bracket on it. Ensure the direction of bracket is correct and use 3 provided screws to assemble HDD and HDD bracket together.

3. Turn over the HDD bracket. Connect the HDD bracket to the SATA connector of the unit and fasten the 3 screws.

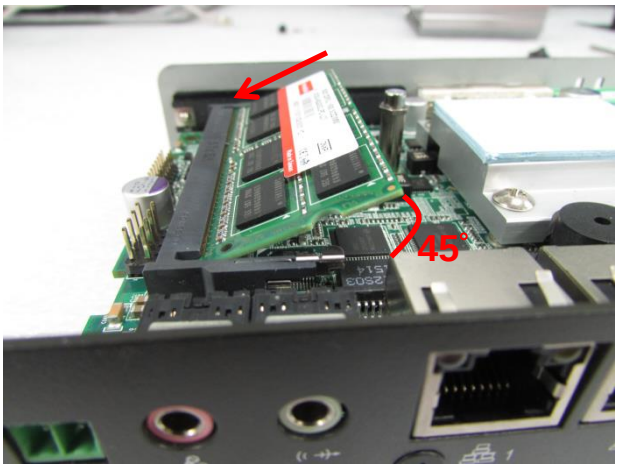


3.6 Installing a SODIMM

1. Locate SODIMM socket.



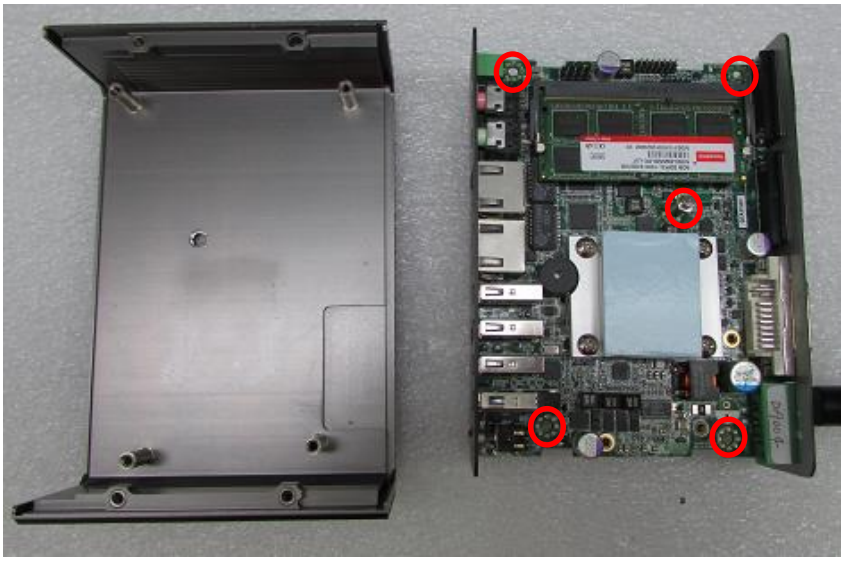
2. Tilt the SODIMM module at a 45 degree angle and insert it to SODIMM socket until the gold-pated connector of module contacted firmly with the socket.



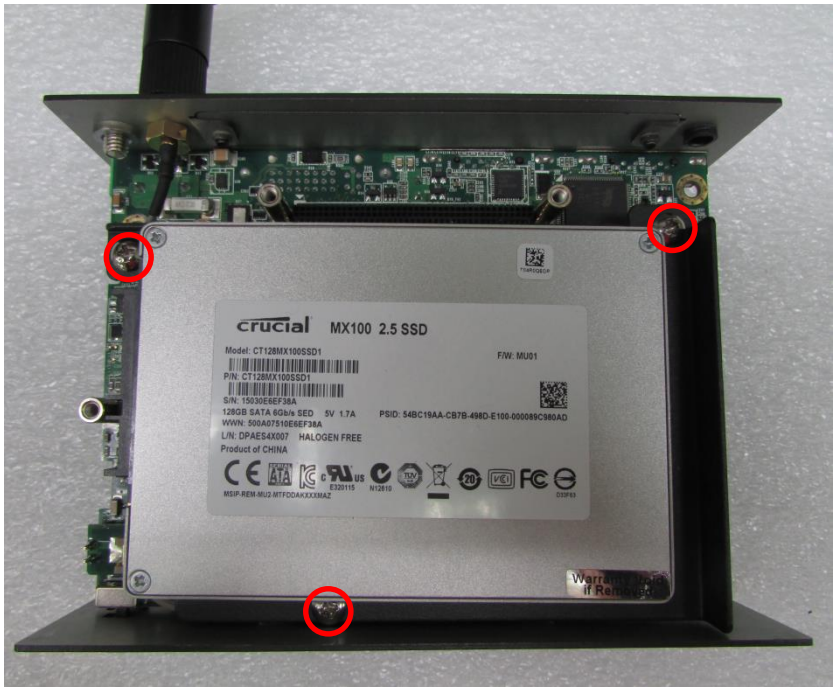
3. Press the module down until it's fixed firmly by the two locking latches on the sides.

3.7 Installing the Chassis

1. Hold the body of unit, level the 5 screw holes with the hollow studs on the chassis.



2. Make sure the either sides of front and rear panels are in the chassis grooves and insert the body of unit into Chassis. Use the 3 screws to fasten the body and chassis together.



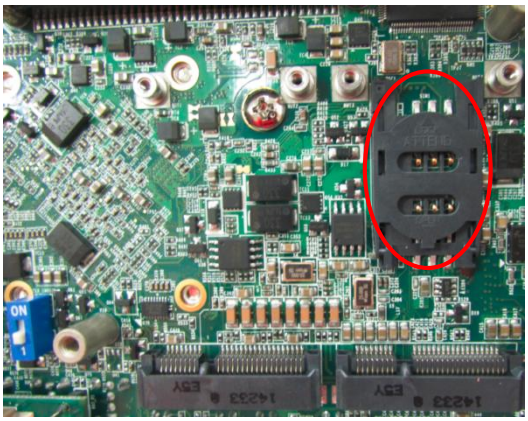
3.8 Installing the Chassis Bottom Cover

1. Level the grooves on bottom cover with front and rear panels. Put on the cover.

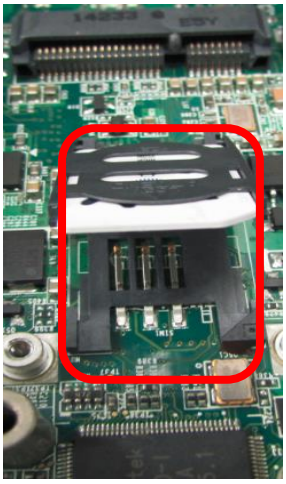
2. Fasten the 4 screws to fix the cover.

3.9 Installing a SIM Card

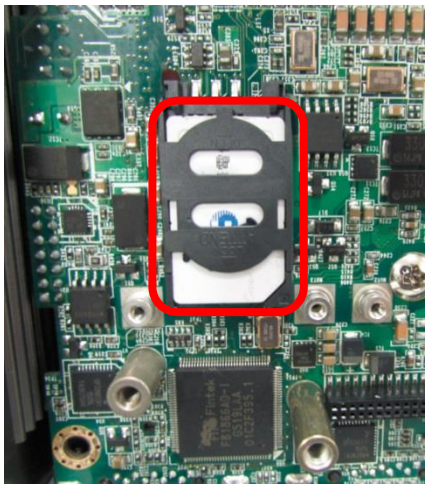
1. Locate the SIM card socket.



2. Insert the SIM card.



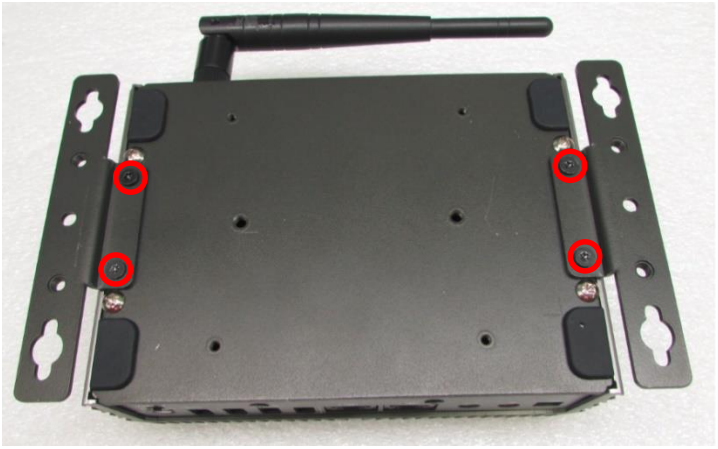
3. Press down the socket of SIM card to lock the location.



3.10 Wall Mount Brackets

DA-1000 offers Wall Mount that customers can install system on the wall in convenient and economical way.

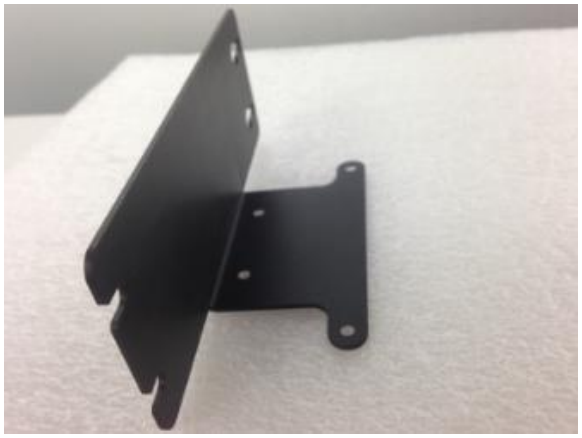
1. The mounting holes are at the bottom of system. Use provided 4 screws to fasten the bracket with each side of system together.



2. Fasten the screws through the bracket mounting hole to mount system on the wall.

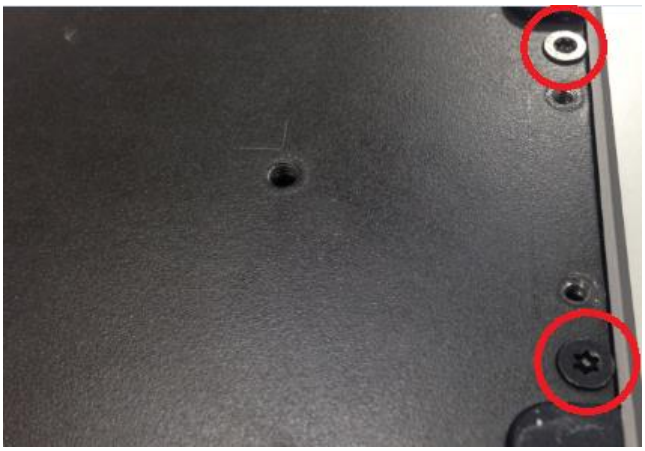
3.11 Side Mount Bracket

DA-1000 offers Side Mount that customer can install system to the right or left side of wall to create effective of space.

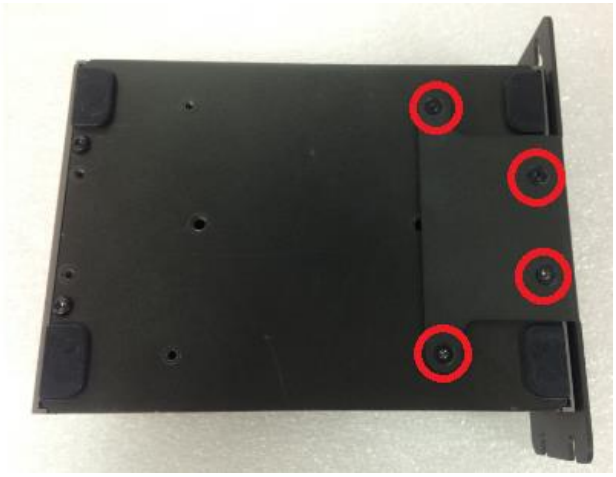


1. The mounting holes are at the bottom of system. Remove the 2 screws at right side of bottom plate.

2. Replace them with 2 longer flat-head screws that come with the side mount screw pack.



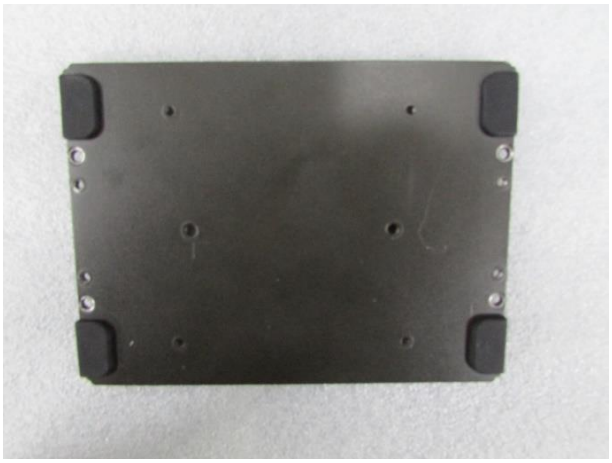
3. Place the side mount bracket on bottom of system as picture below, and fasten the rest of 4 screws to fix it with system together.



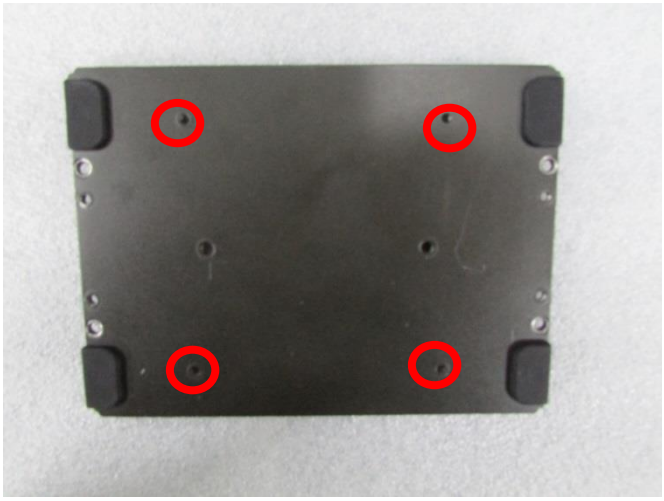
4. Fasten the screws through the bracket mounting hole to mount system on the wall.

3.13 VESA Mount Brackets

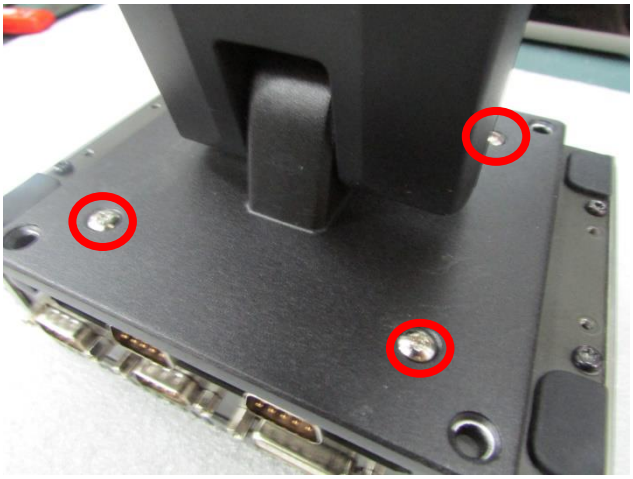
DA-1000 offers VESA Mount that customer can mount system with panel complying with VESA 75mm and 100 mm standard for various usage.



1. Provided below is the base of the system unit and screw holes specified to be mounted from VESA stand.



2. Provided below is mounted with VESA stand.



3. Provided below is completion of mounting with VESA stand.

3.14 DIN-Rail Mount Bracket

DA-1000 offers DIN-Rail Mount that customer can install system on the DIN Rail.

1. The mounting holes are at the bottom of system. Fasten the 2 screws to fix the DIN-Rail mount bracket with system together.

Chapter 4

BIOS Setup

4.1 BIOS Introduction

BIOS (Basic Input/Output System) is a program located on a Flash Memory on the motherboard. When you start the computer, the BIOS program will gain control. The BIOS first operates an auto-diagnostic test called POST (power on self test) for all the necessary hardware, it detects the entire hardware device and configures the parameters of the hardware synchronization.

4.1.1 BIOS Setup

Power on the computer, and pressing <Del> key immediately allows you to enter BIOS Setup. If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning the system OFF and then ON, or pressing <Ctrl>+<Alt>+<Delete> keys simultaneously.

Below is table of keys used in BIOS setup.

Control Keys	
<↑> <↓> <←> <→>	Move to select screen
<Enter>	Select item
<Esc>	Quit the BIOS Setup
<+>	Increases the numeric value or makes changes
<->	Decreases the numeric value or makes changes
<Tab>	Select setup fields
<F1>	General help
<F7>	Select boot device
<F9>	Load Optimized defaults
<F10>	Save configuration and Exit

4.1.2 Main Menu

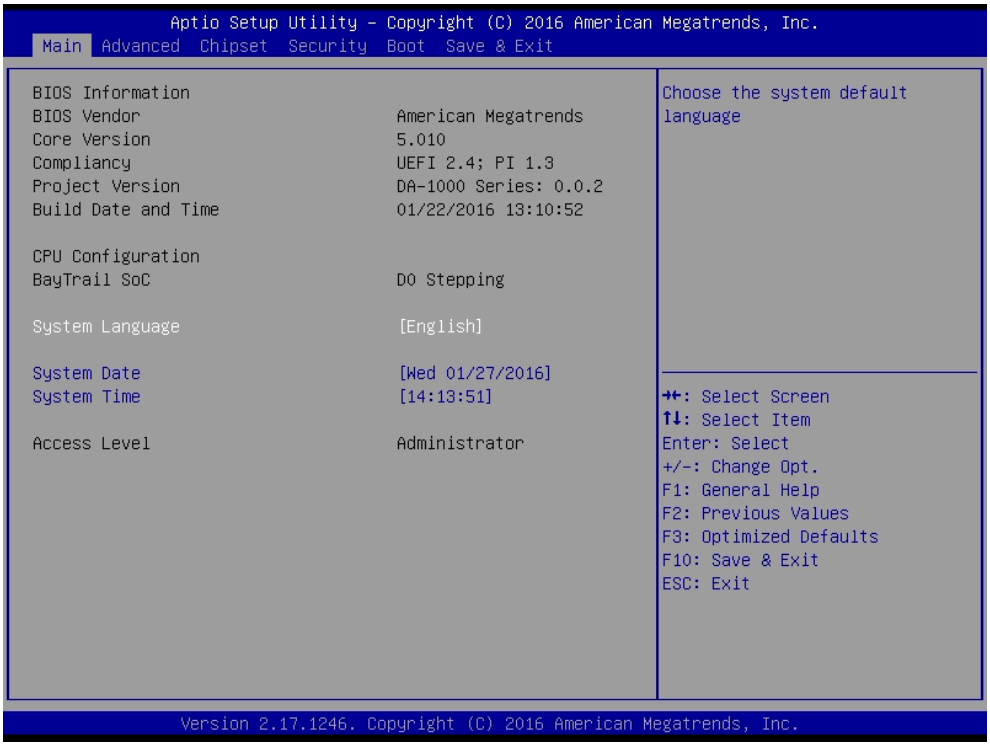
The main menu lists the setup functions you can make changes to. You can use the arrow keys (↑↓) to select the item. The on-line description of the highlighted setup function is displayed at the bottom of the screen. On the upper right box there is online help for the field to be changed.

4.1.3 Sub-Menu

If you find a right pointer symbol appears to the left of certain fields that means a sub-menu can be launched from this field. A sub-menu contains additional options for a field parameter. You can use arrow keys (↑↓) to highlight the field and press <Enter> to call up the sub-menu. Then you can use the control keys to enter values and move from field to field within a sub-menu. If you want to return to the main menu, just press the <Esc>.

4.2 Main Setup

Press <Del> to enter BIOS CMOS Setup Utility, the Main Menu (as shown below) will appears on the screen. Use arrow keys to move among the items and press <Enter> to accept or enter a sub-menu.



4.2.1 System Date

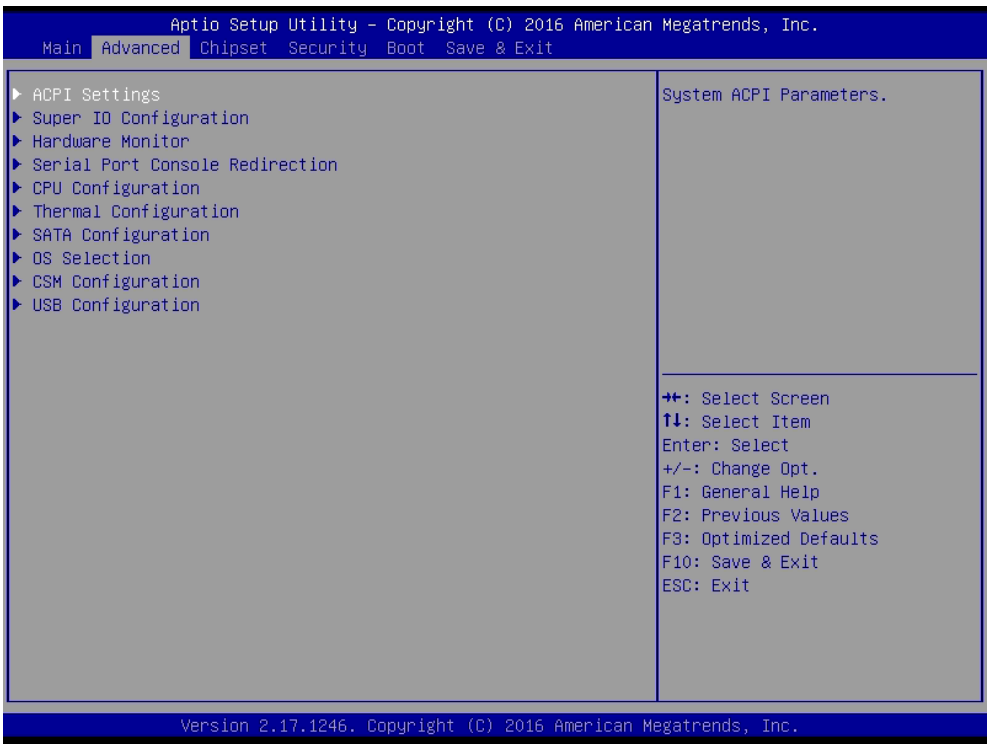
Set the date. Please use <Tab> to switch between time elements.

4.2.2 System Time

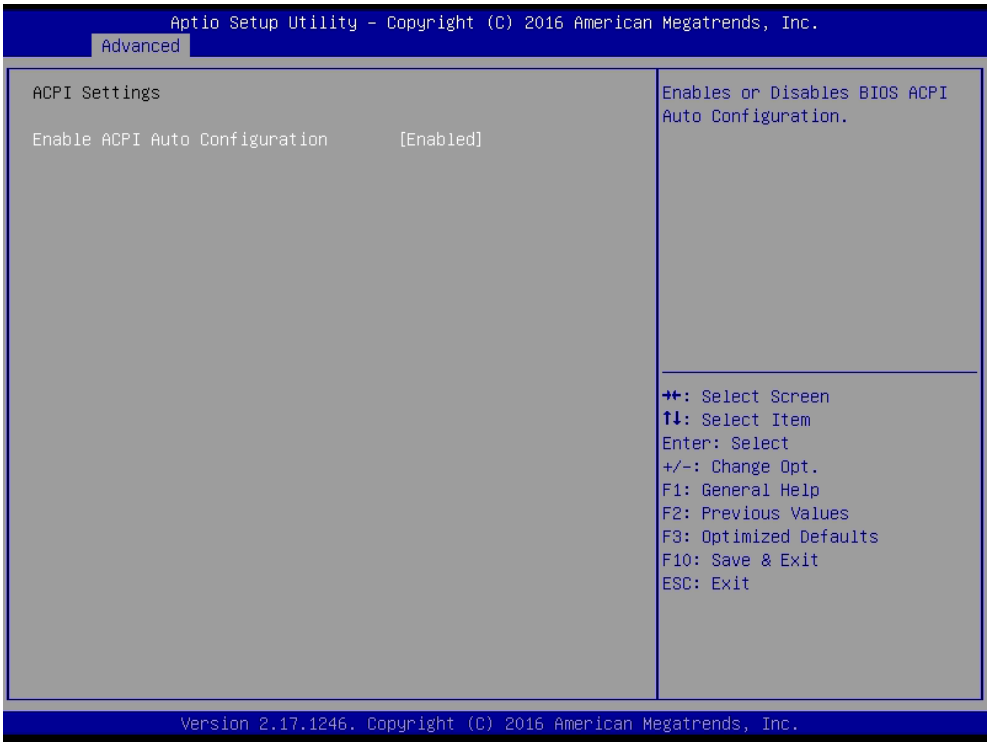
Set the time. Please use <Tab> to switch between date elements.

4.3 Advanced Setup

The Advanced menu allows users to set configuration of the CPU and other system devices. You can select any of the items in the left frame of the screen to go to the sub menus.



4.3.1 ACPI Settings

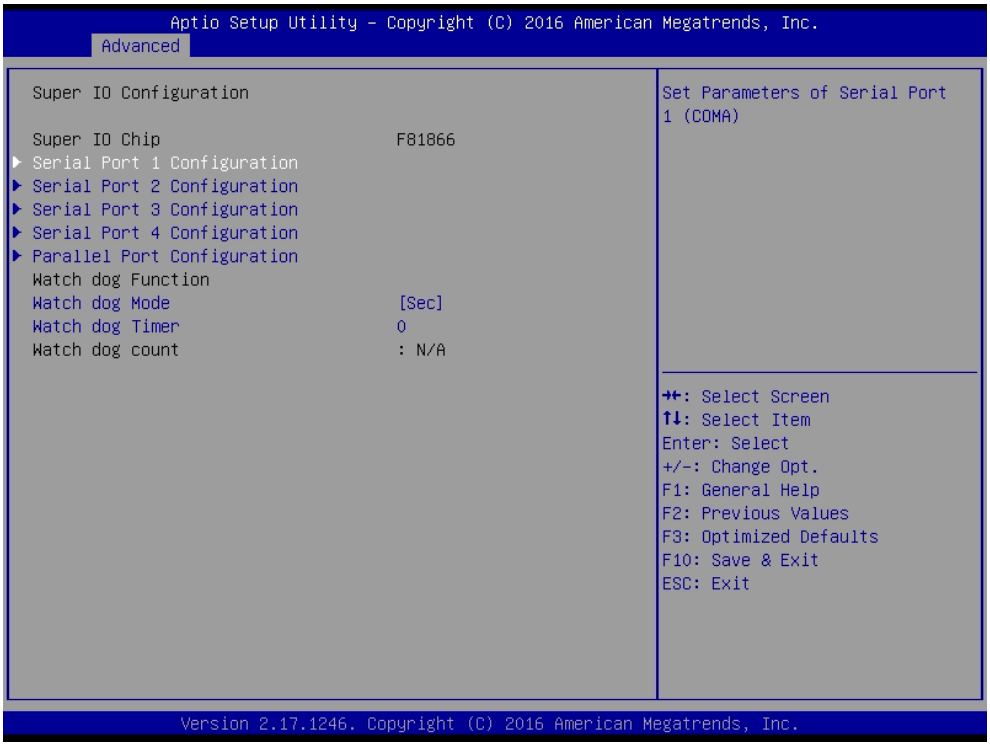


■ Enable ACPI Auto Configuration

This enables ACPI power management of the system.

4.3.2 Super I/O Configuration

This allows you to configure legacy ports such as serial and parallel ports. It also has watch dog function embedded in the Super I/O chip.



■ **Serial Port 1 Configuration**
This allows you to configure serial port 1.

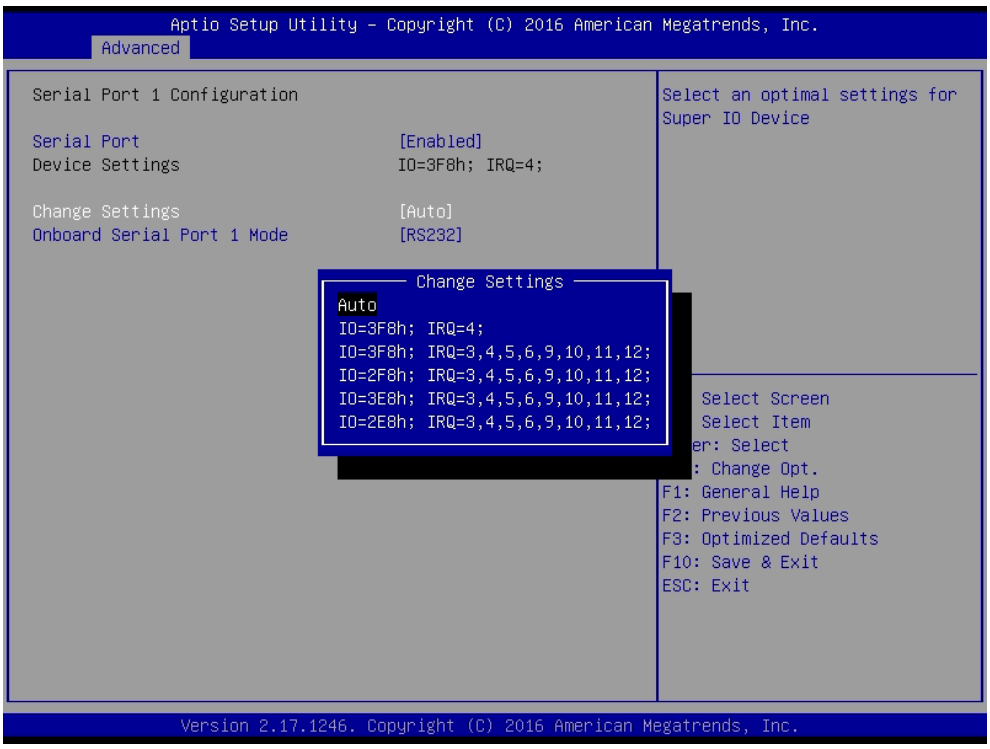
■ **Serial Port 2 Configuration**
This allows you to configure serial port 2.

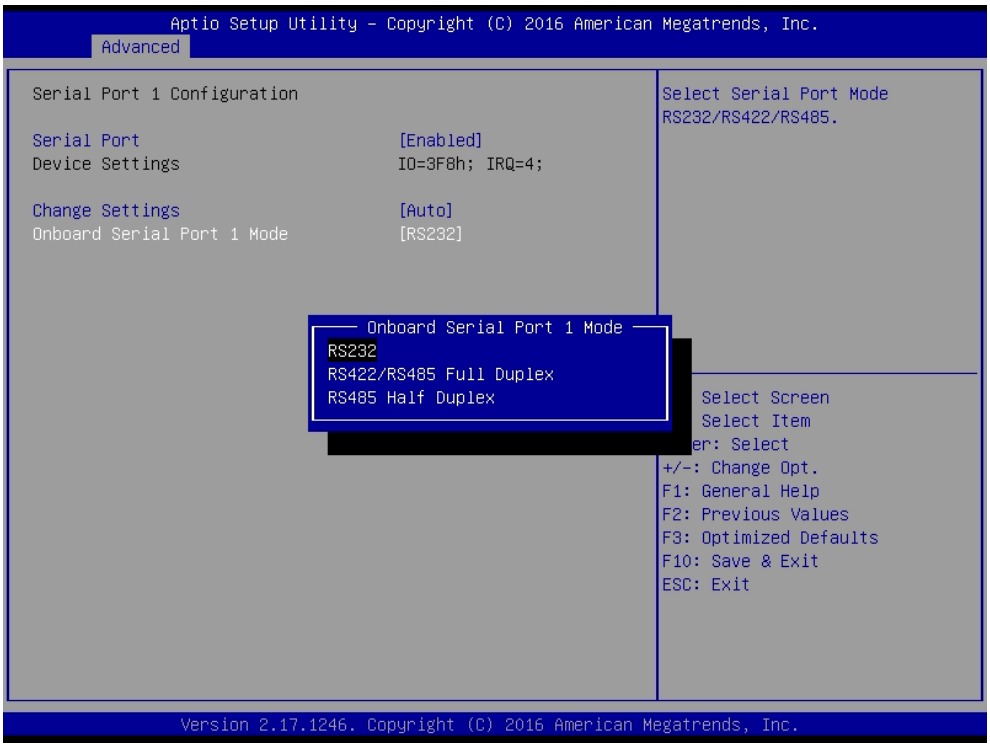
■ **Serial Port 3 Configuration**
This allows you to configure serial port 3.

■ **Serial Port 4 Configuration**
This allows you to configure serial port 4.

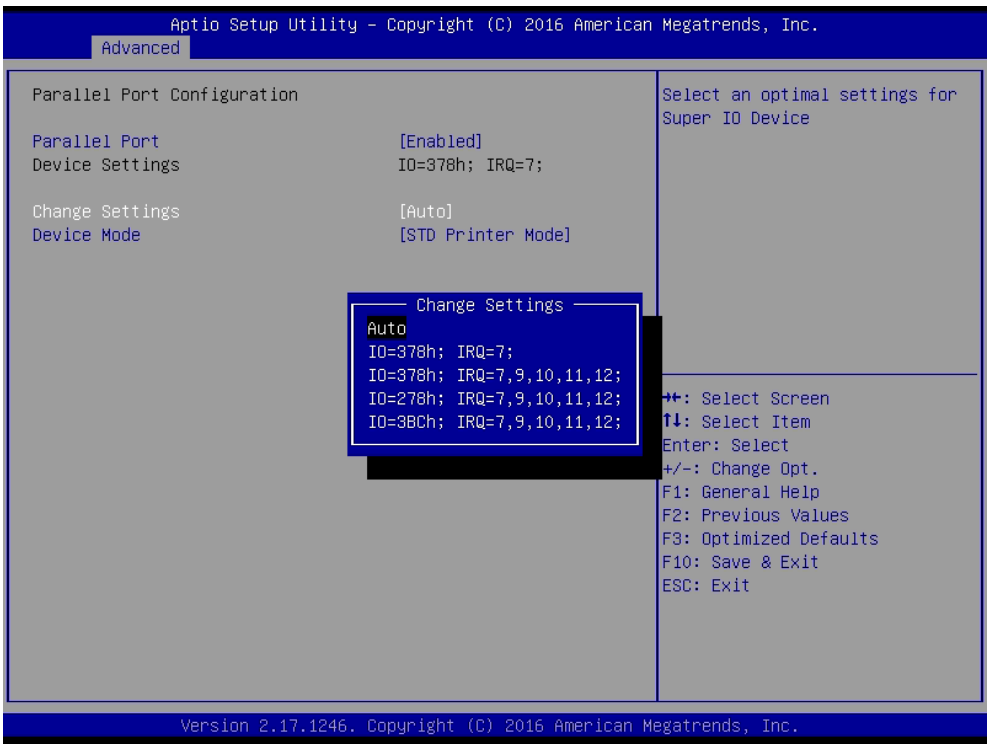
We'll use serial port 1 configuration as an example in the manual. Similar settings apply to other serial ports configuration.

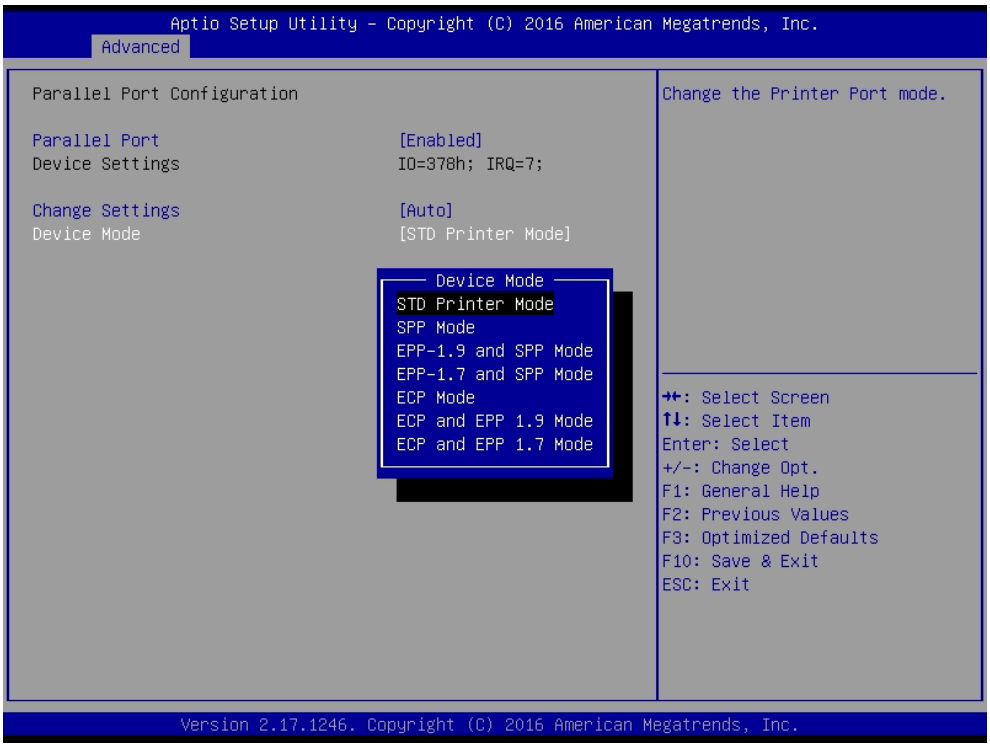
Entering **serial port 1 configuration** allows you to enable or disable the port ,and also to configure settings and mode of operations. To avoid conflicted setting with other serial ports, default setting is recommended.



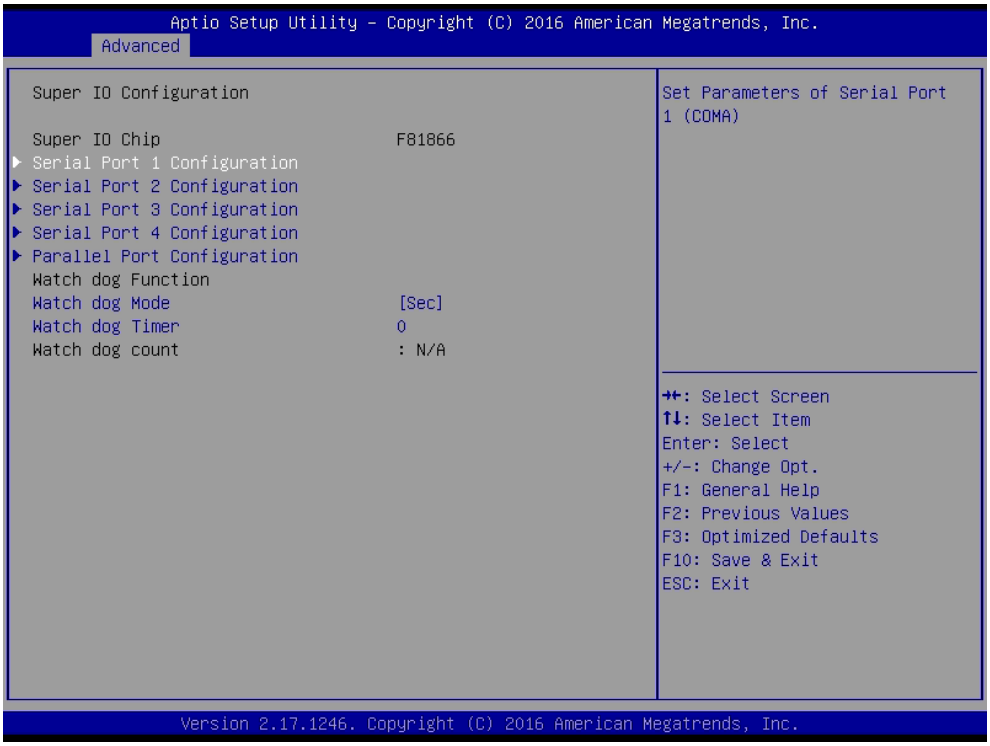


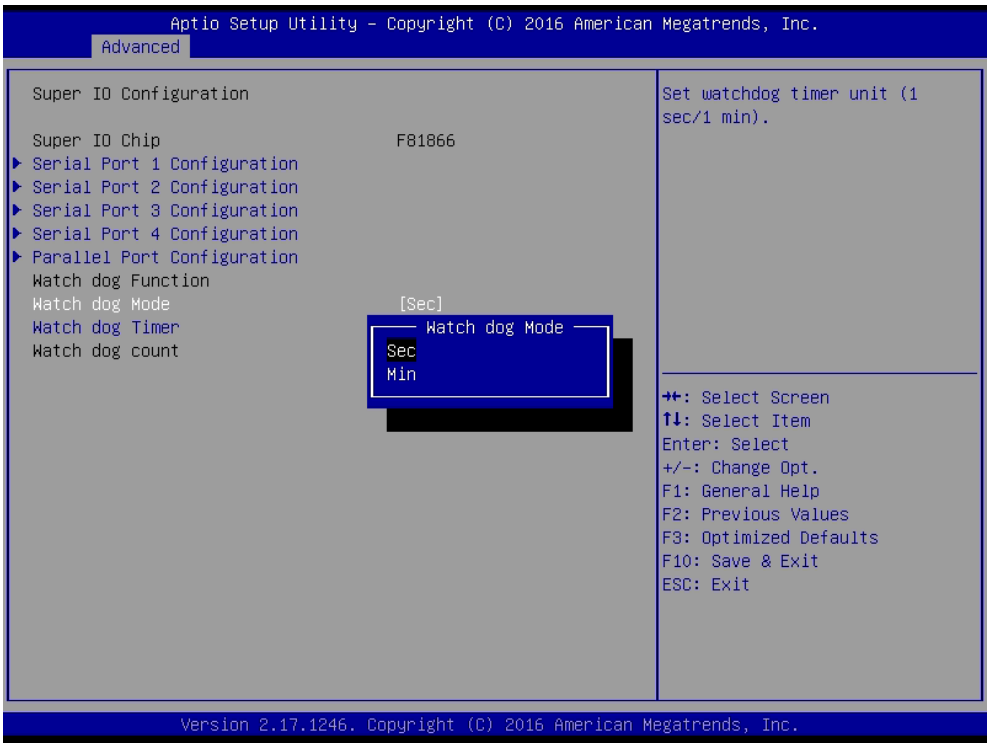
Entering **parallel port configuration** allows you to enable or disable the port ,and also to configure settings and mode of device operation. Default setting is recommended.





Watch dog timer allows you to set timer and count down time in seconds or minutes to reset the system via hardware. If you have set a timer value, the system will reset the system in accordance with the timer value set, regardless of existence and state of Operating System.





■ Watch dog Mode

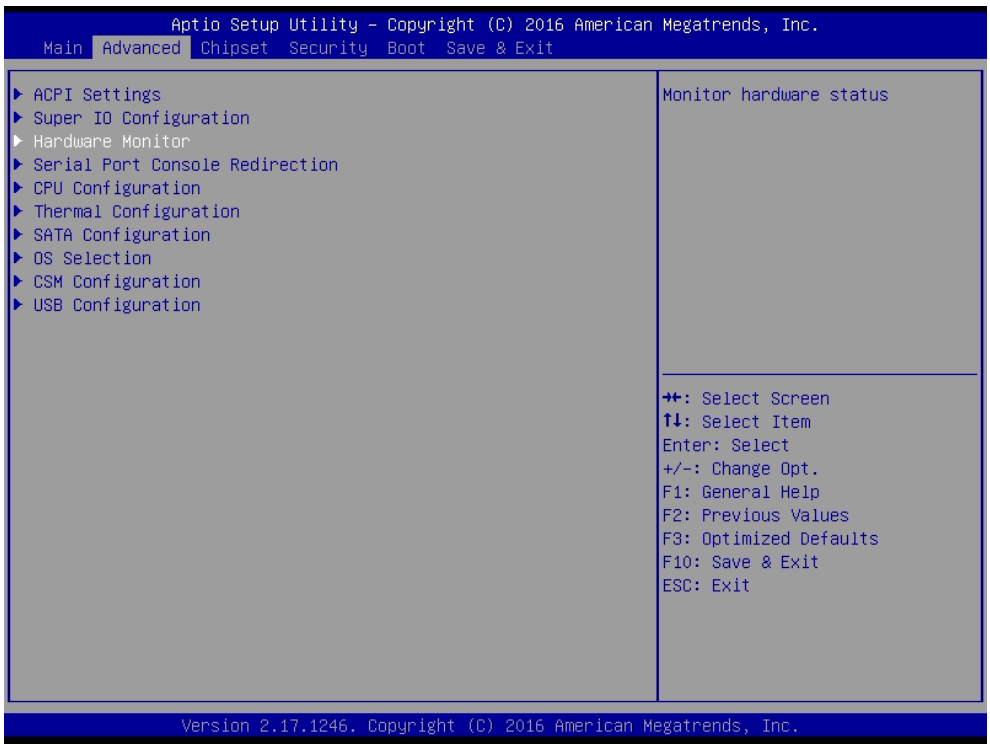
This allows you to set the timer unit in seconds or minutes.

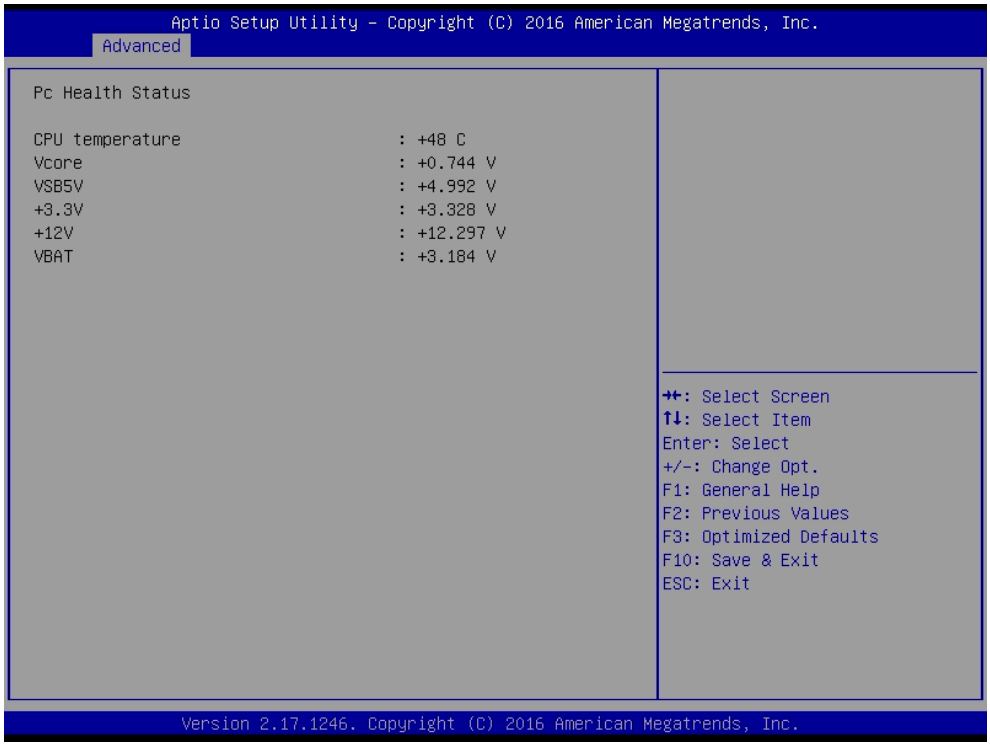
■ Watch dog Timer

This allows you to set between 0 and 255 in unit that was set in Watch dog Mode.

4.3.3 Hardware Monitor

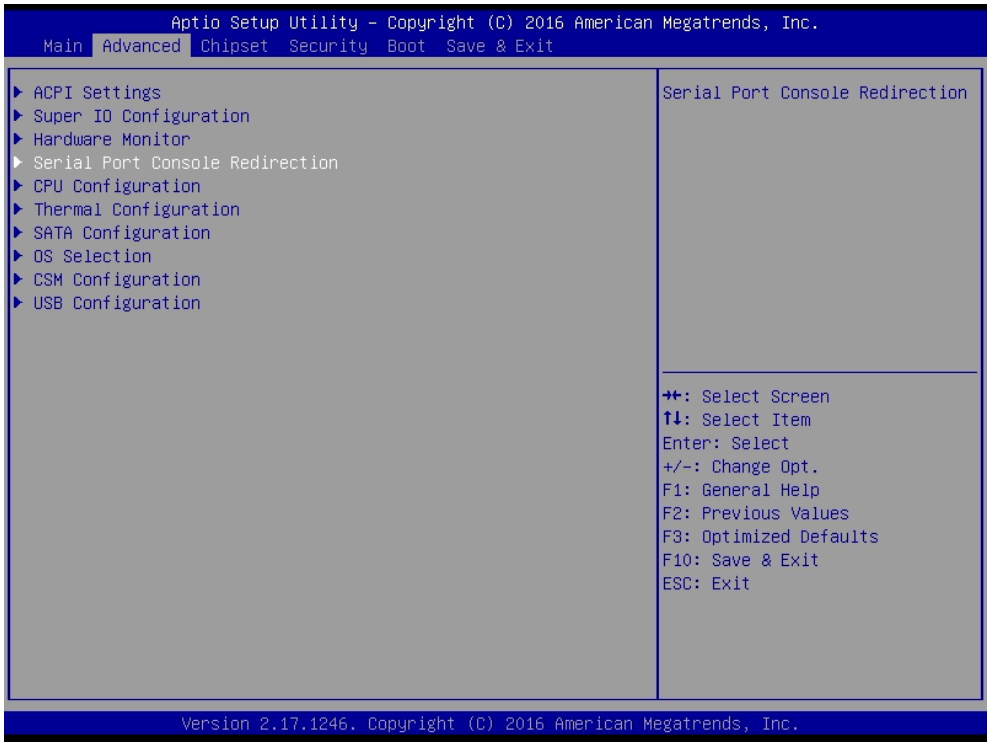
This allows you to monitor system's CPU temperature and voltages.

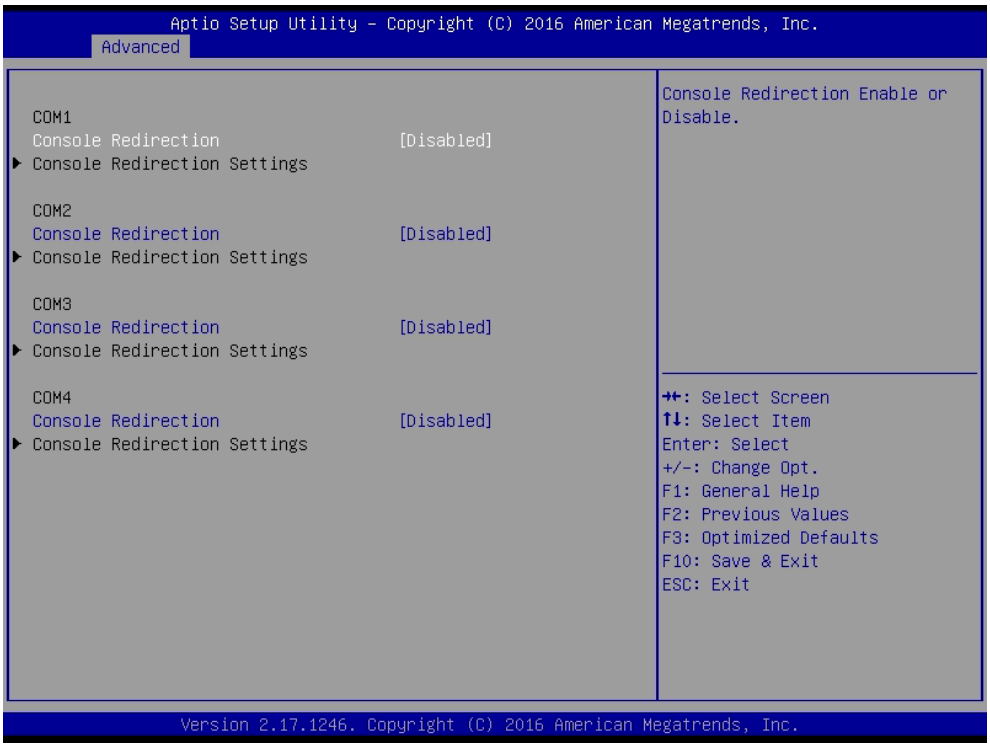




4.3.4 Serial Port Console Redirection

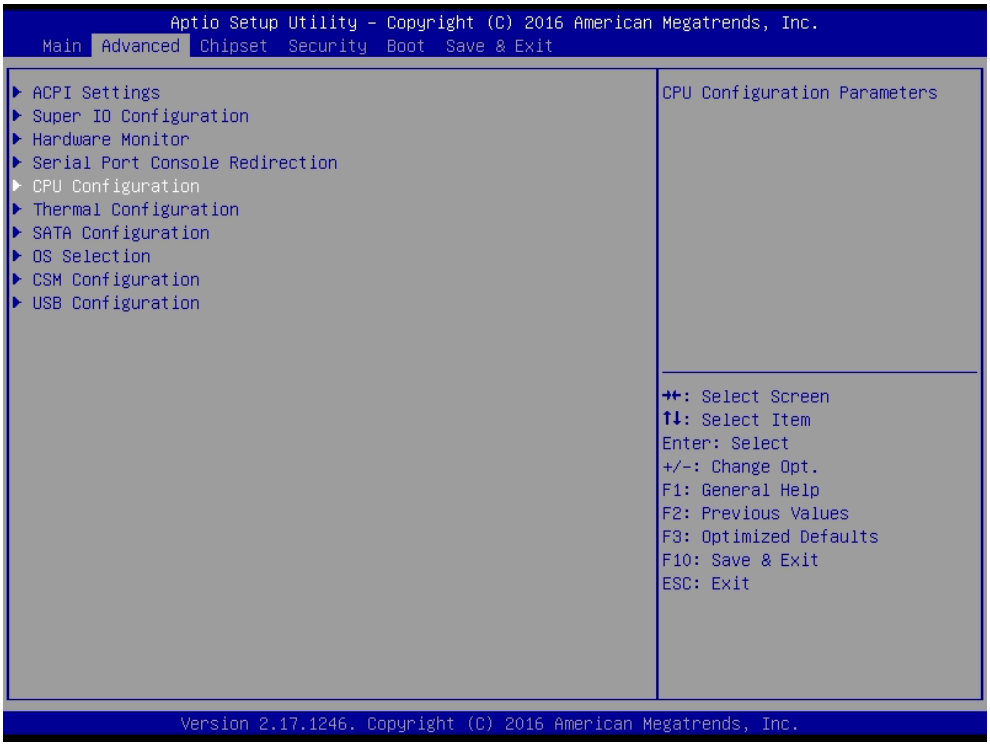
This allows you to enable and disable serial (COM) port(s) for console use. Default setting is disabled.

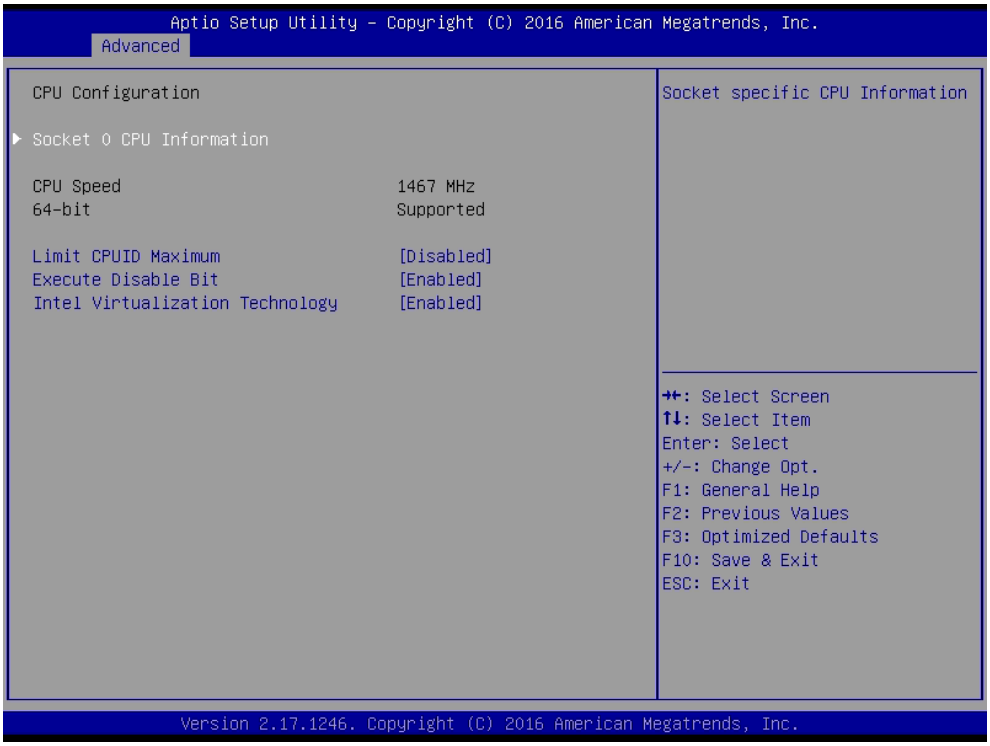




4.3.5 CPU Configuration

This allows you to configure CPU settings such as enabling or disabling of Intel virtualization technology. Use of default setting is recommended in the section.



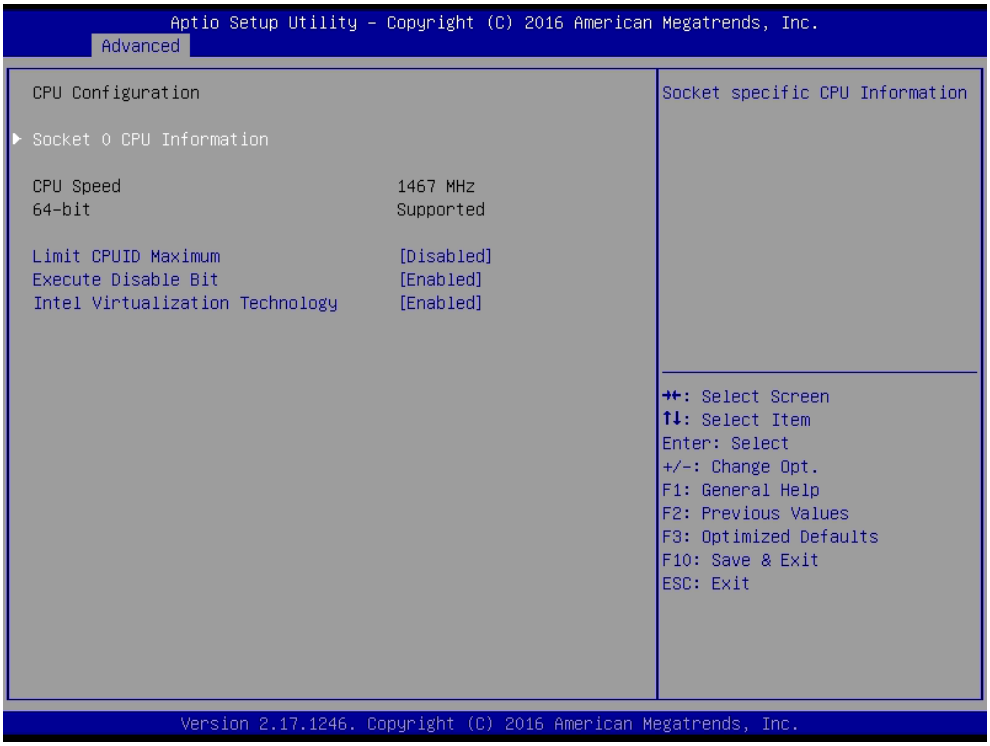


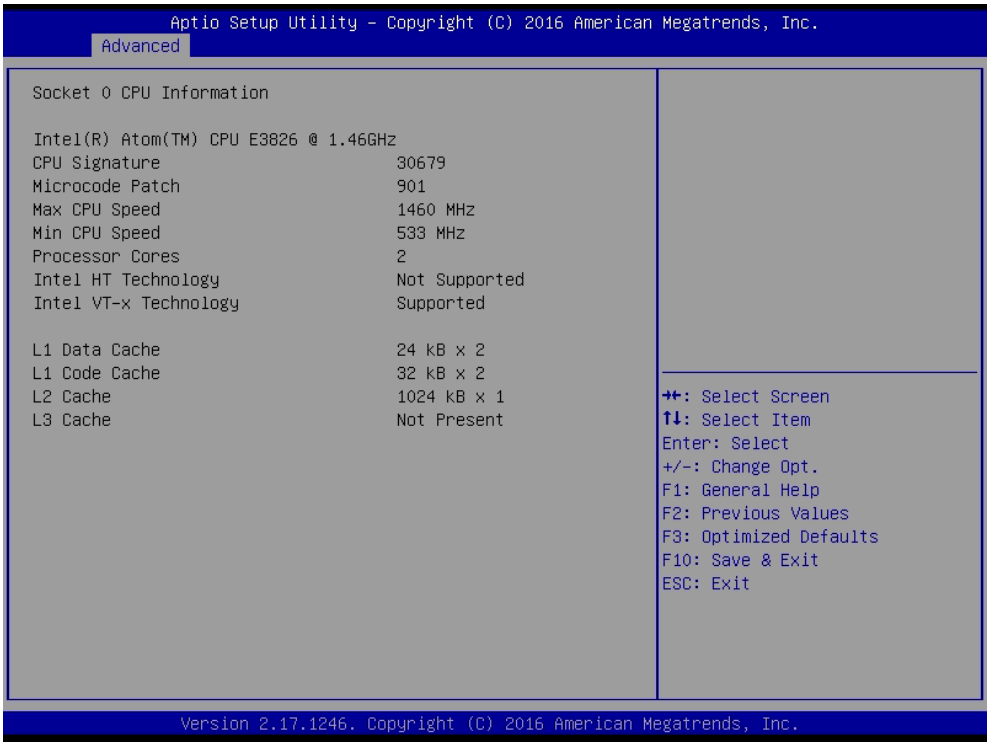
■ **Limit CPUID Maximum**
Default is Disabled.

■ **Execute Disable Bit**
Default is Enabled.

■ **Intel Virtualization Technology**
Default is Enabled.

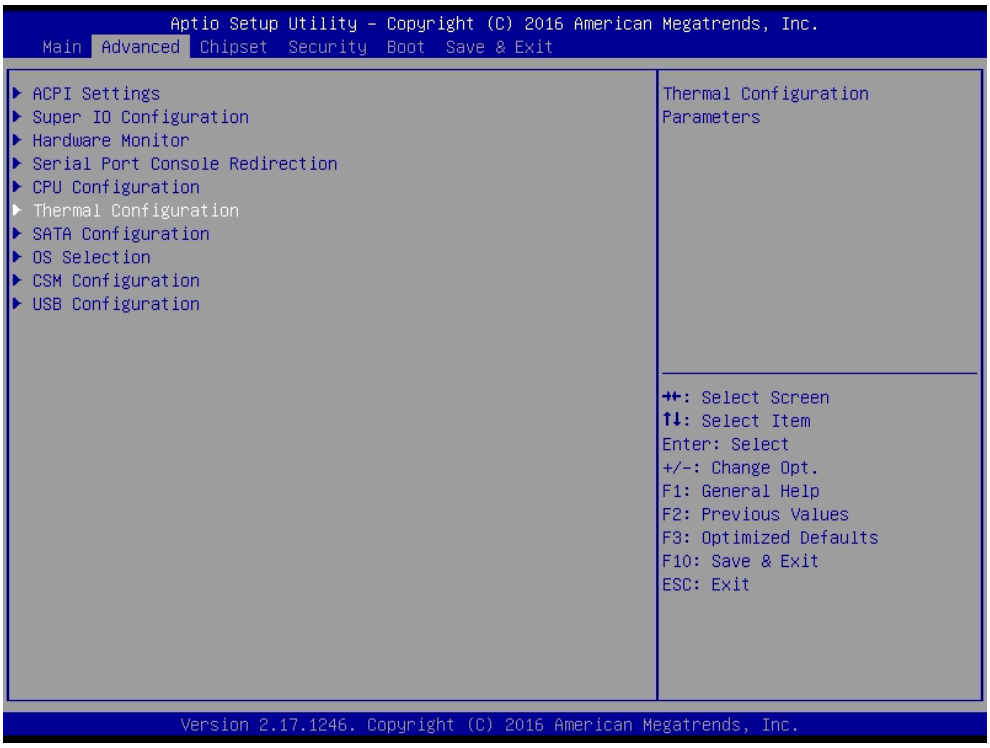
Entering **Socket 0 CPU Information** shows CPU hardware details and supported features.

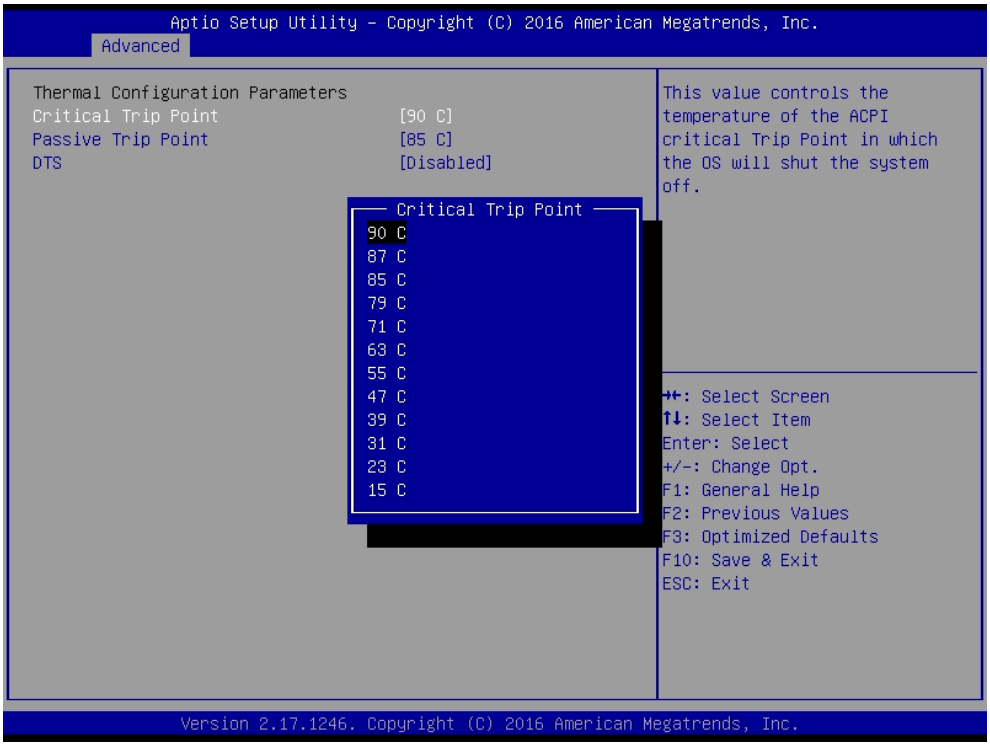




4.3.6 Thermal Configuration

This allows you to configure temperature of ACPI of OS to trip or shut down the system, or to begin throttling CPU. Use of default setting is recommended in the section.





■ Critical Trip Point

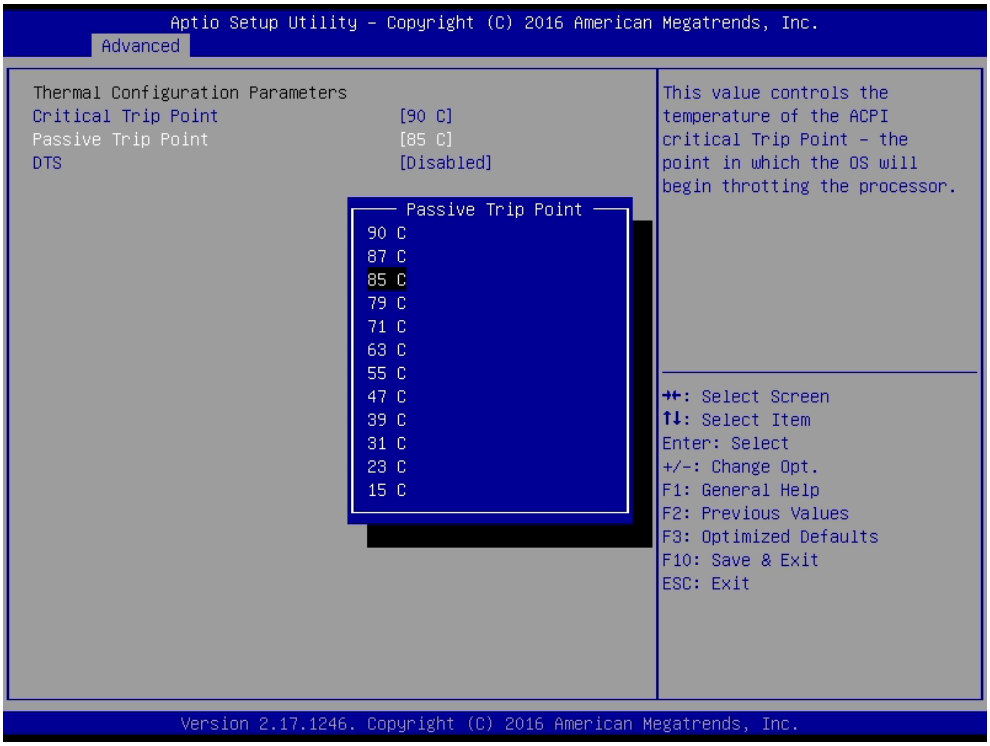
This allows 90C (default), 87C, 85C, 79C, 71C, 63C, 55C, 47C, 39C, 31C, 23C, 15C.

■ Passive Trip Point

This allows 90C, 87C, 85C (default), 79C, 71C, 63C, 55C, 47C, 39C, 31C, 23C, 15C.

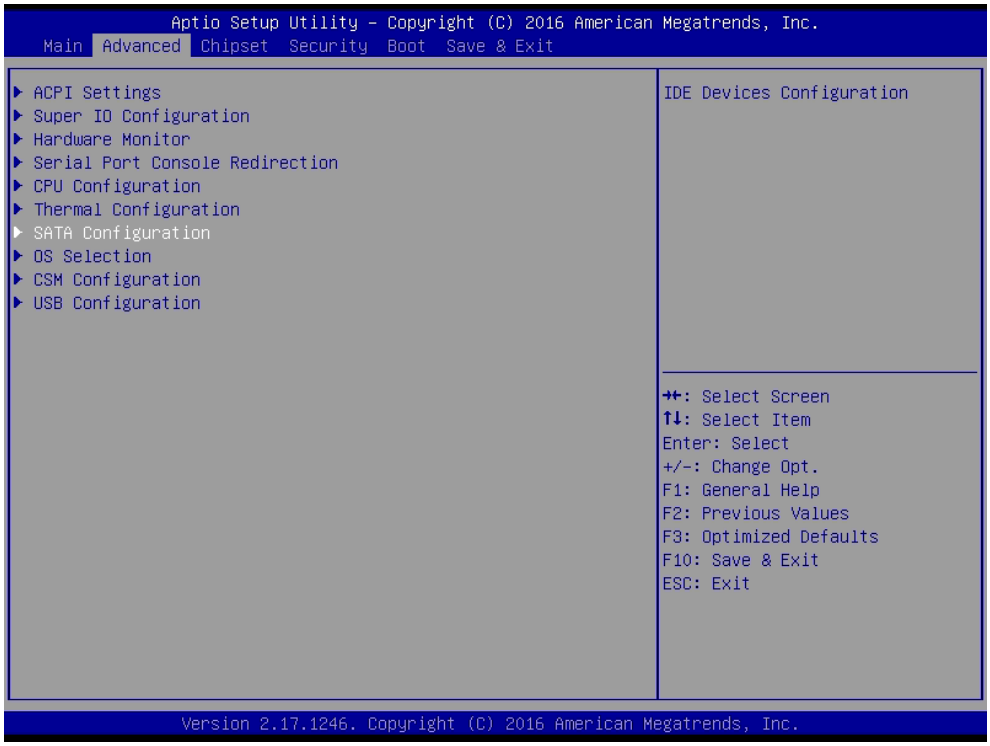
■ DTS

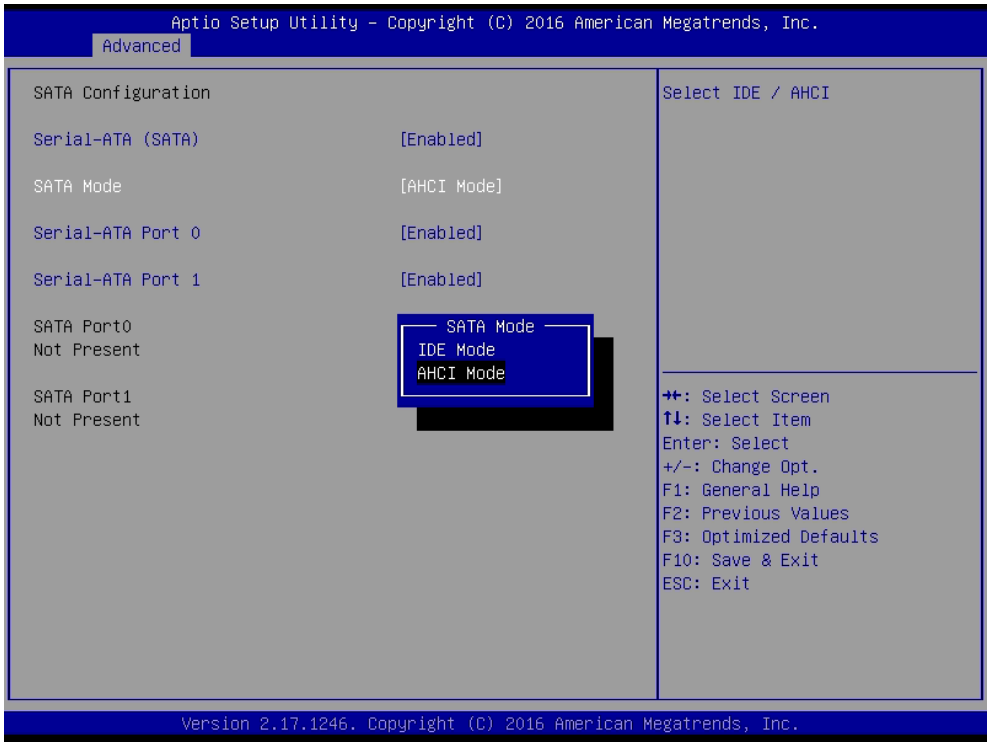
Default is Disabled.



4.3.7 SATA Configuration

This allows you to configure mode of operation and to enable or disable for the SATA interfaces. Use of default setting is recommended in the section.





■ **SATA Mode**

This allows to set AHCI mode (default) or IDE mode.

■ **Serial-ATA Port 0**

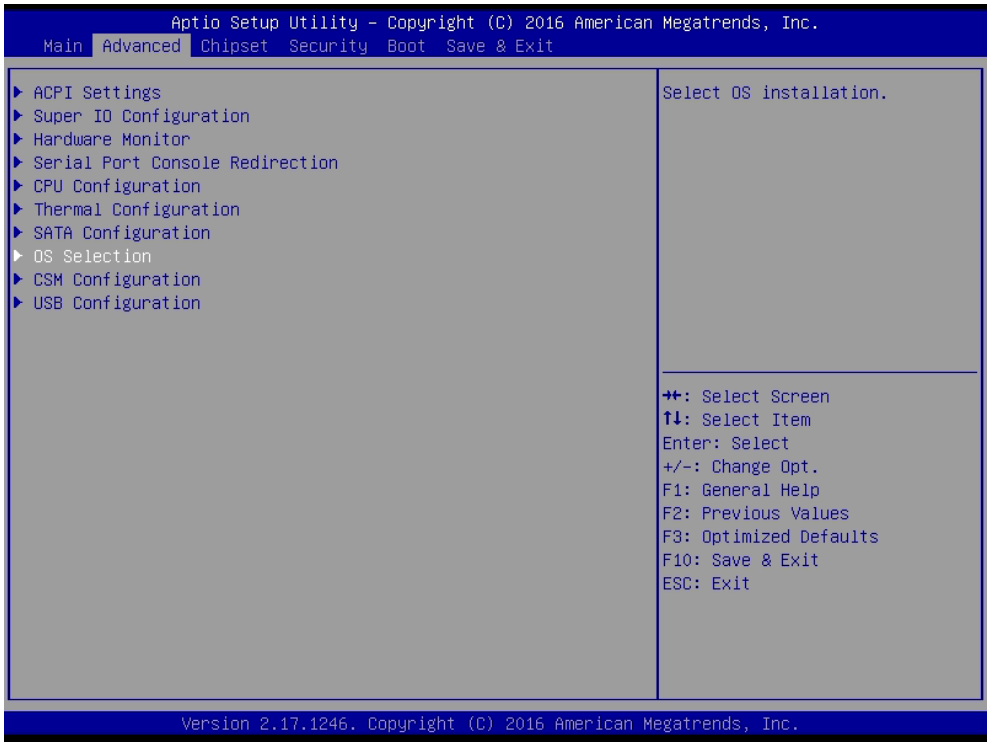
Default is Enabled.

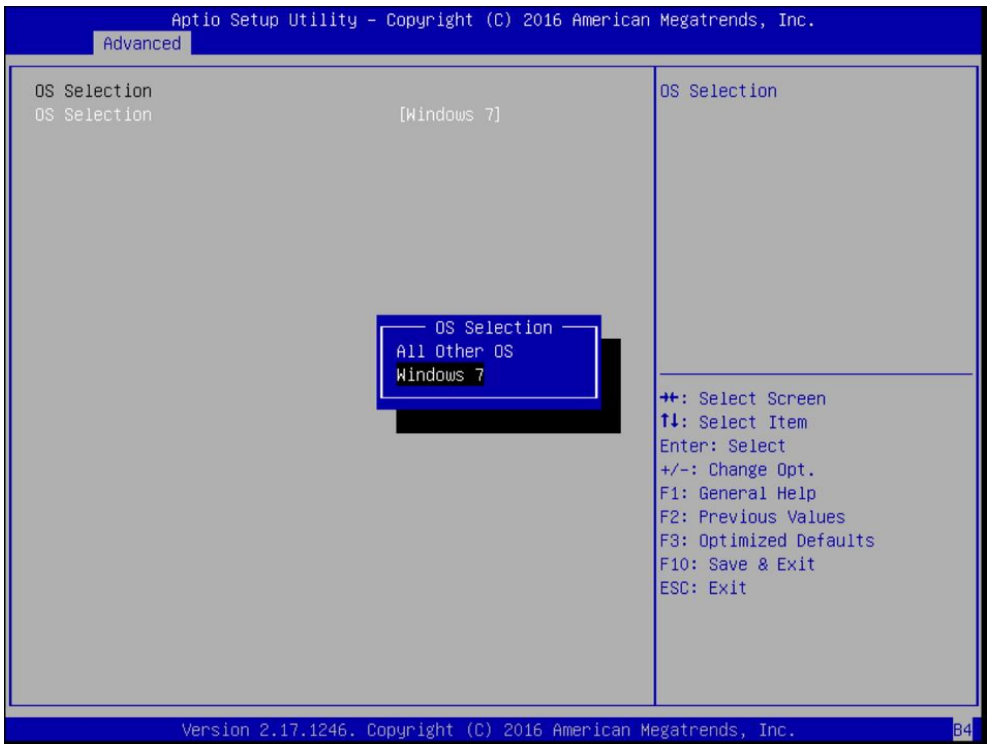
■ **Serial-ATA Port 1**

Default is Enabled.

4.3.8 OS Selection

This allows you to configure Windows OS version to install. The purpose of this is to enable USB 3.0 controller interface. If you set Windows 7 and install the OS, you will need to install USB 3.0 driver at the OS level to fully support USB 3.0 interfaces. If you set all other OS and install it or later OS, the Windows OS will easily support USB 3.0 interfaces.



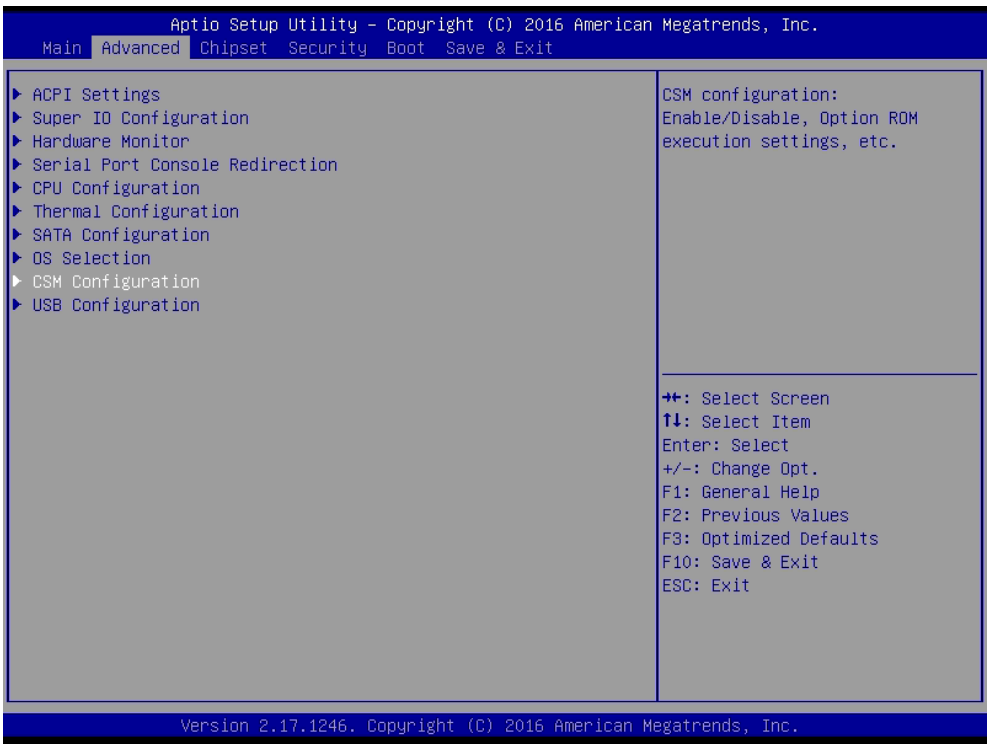


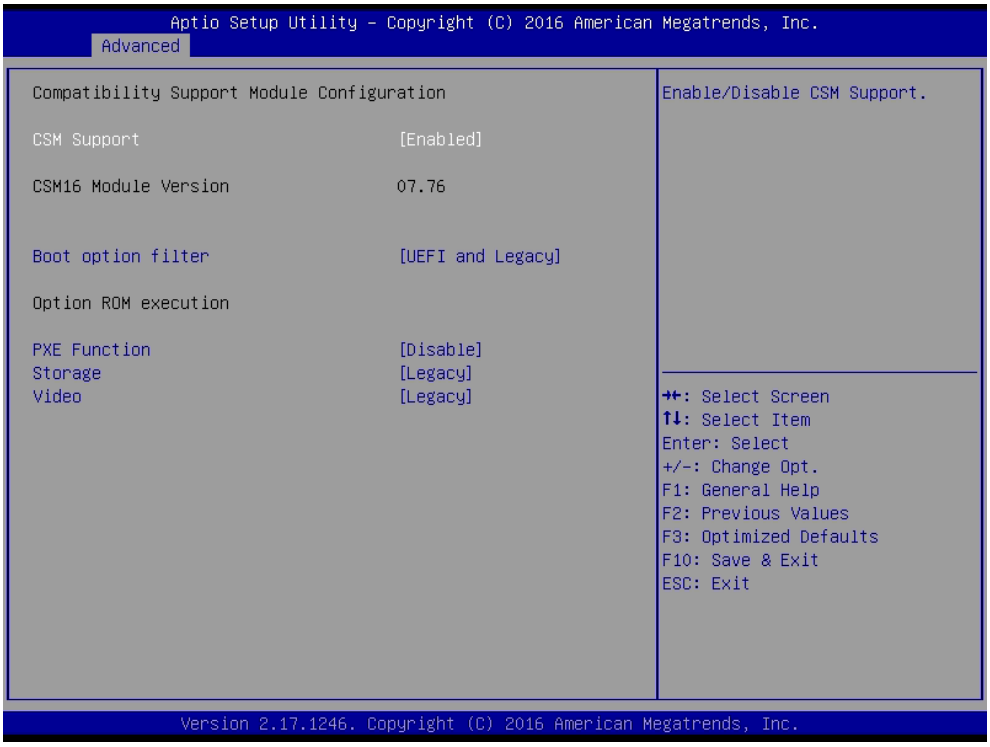
■ OS Selection

This allows to set All Other OS or Windows 7 (default).

4.3.9 CSM (Compatibility Support Module) Configuration

Following shows default settings.





■ CSM Support

Enables or disables UEFI CSM (Compatibility Support Module) to support a legacy PC boot process.

■ Boot option filter

Allows user to select which type of operating system to boot.
UEFI and Legacy: Allows booting from operating systems that support legacy option ROM or UEFI option ROM.
Legacy only: Allows booting from operating systems that only support legacy option ROM.
UEFI only: Allows booting from operating systems that only support UEFI option ROM.
This item is configurable only when CSM Support is set to Enabled.

■ PXE Function

This item will allow users to enable or disable PXE function. Default is disabled.

■ Storage

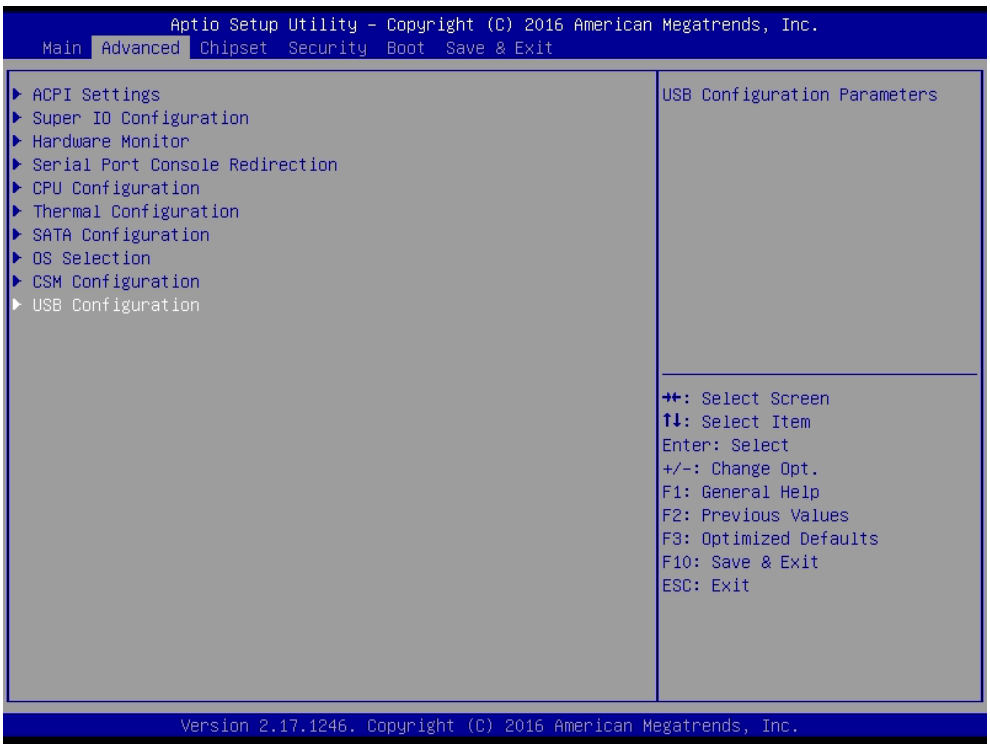
Allows user to select whether to enable the UEFI or legacy option ROM for the storage device controller.
Do not launch: Disables option ROM.
UEFI: Enables UEFI option ROM only.
Legacy: Enables legacy option ROM only.

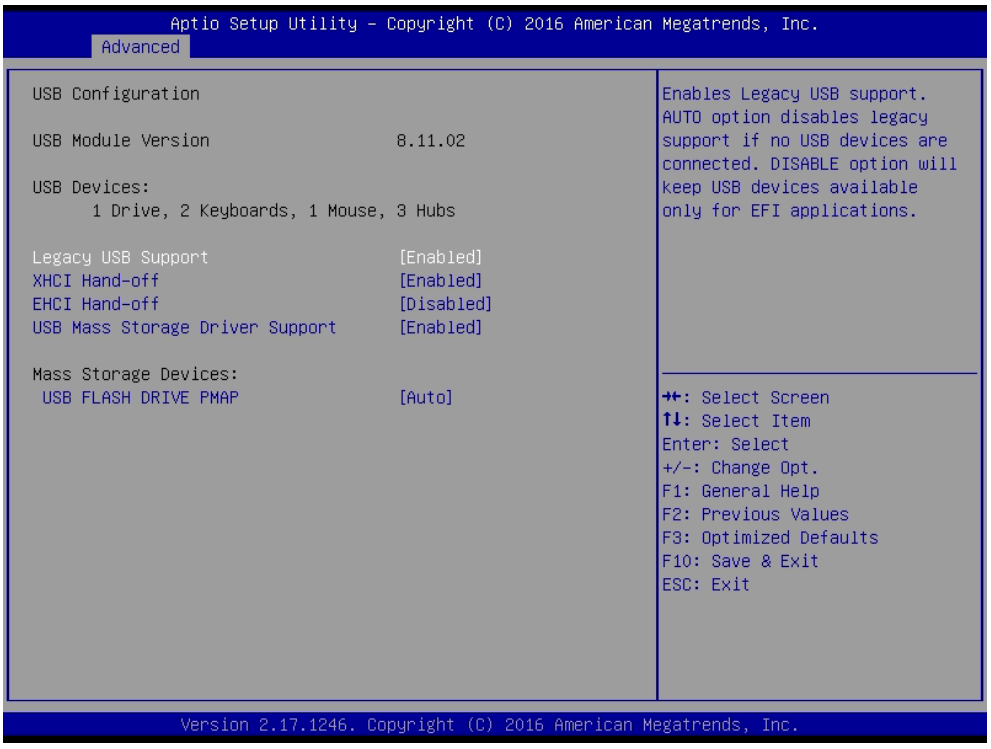
■ Video

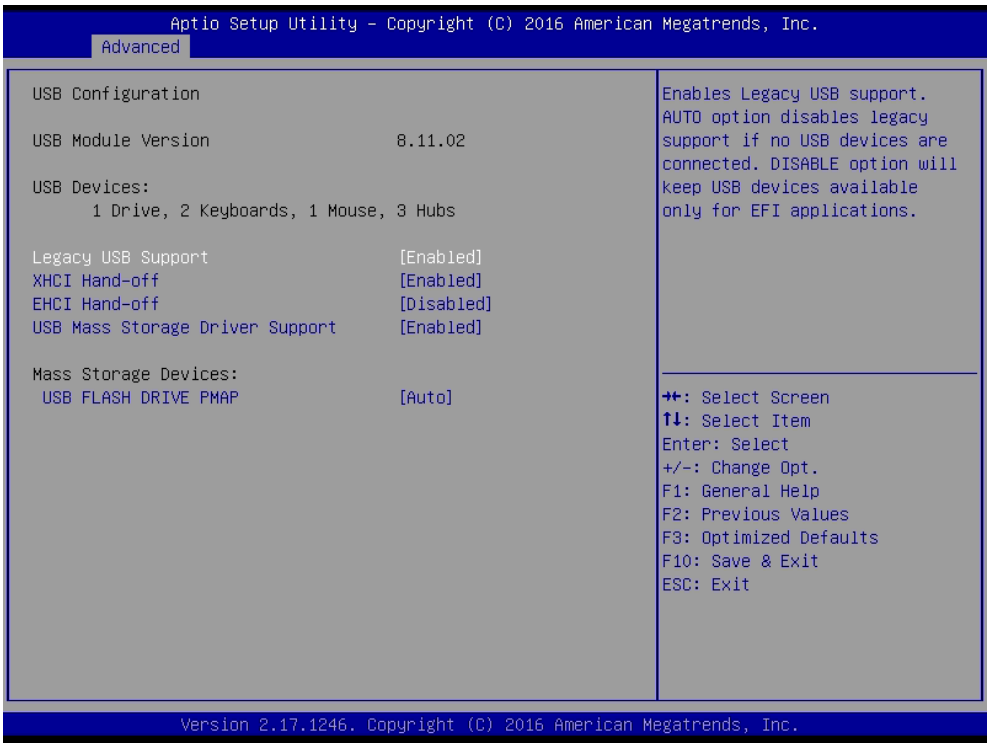
Allows user to select whether to enable the UEFI or legacy option ROM for the Video device controller.
Do not launch: Disables option ROM.
UEFI: Enables UEFI option ROM only.
Legacy: Enables legacy option ROM only.

4.3.10 USB Configuration

Following shows default settings.







■ Legacy USB Support

Allows USB keyboard/ mouse to be used in MS-DOS.

■ XHCI Hand-off

Determines whether to enable XHCI (USB3.0) Hand-off feature for an operating system without XHCI (USB3.0) Hand-off support.

■ EHCI Hand-off

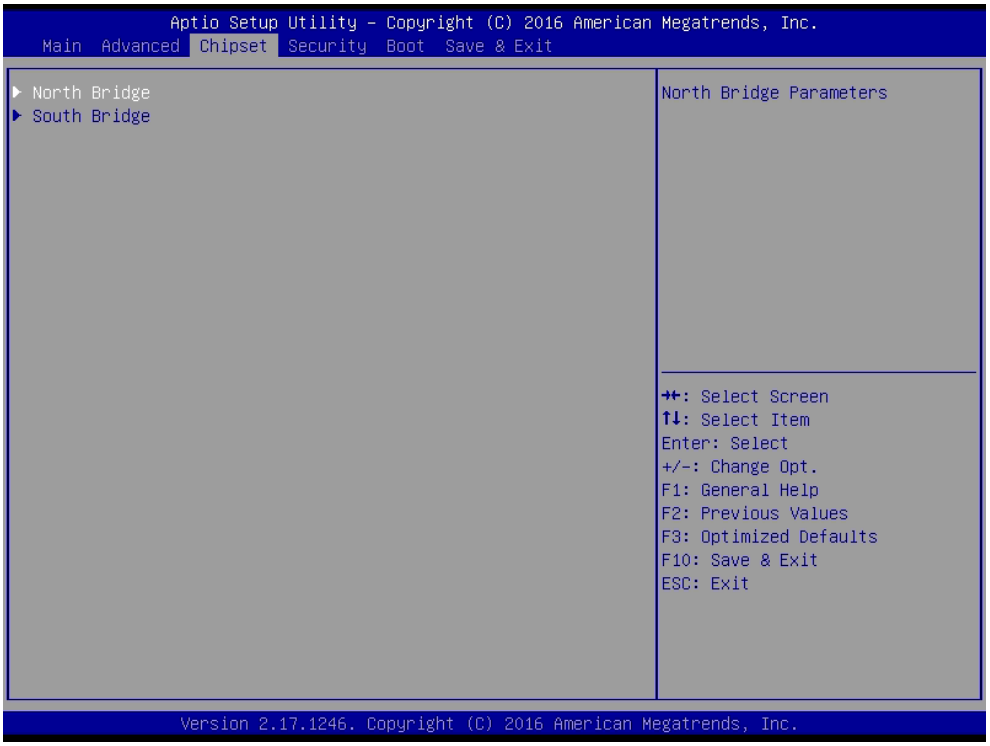
Determines whether to enable EHCI Hand-off feature for an operating system without EHCI Hand-off support.

■ USB Mass Storage Driver Support

Enables or disables support for USB storage devices.

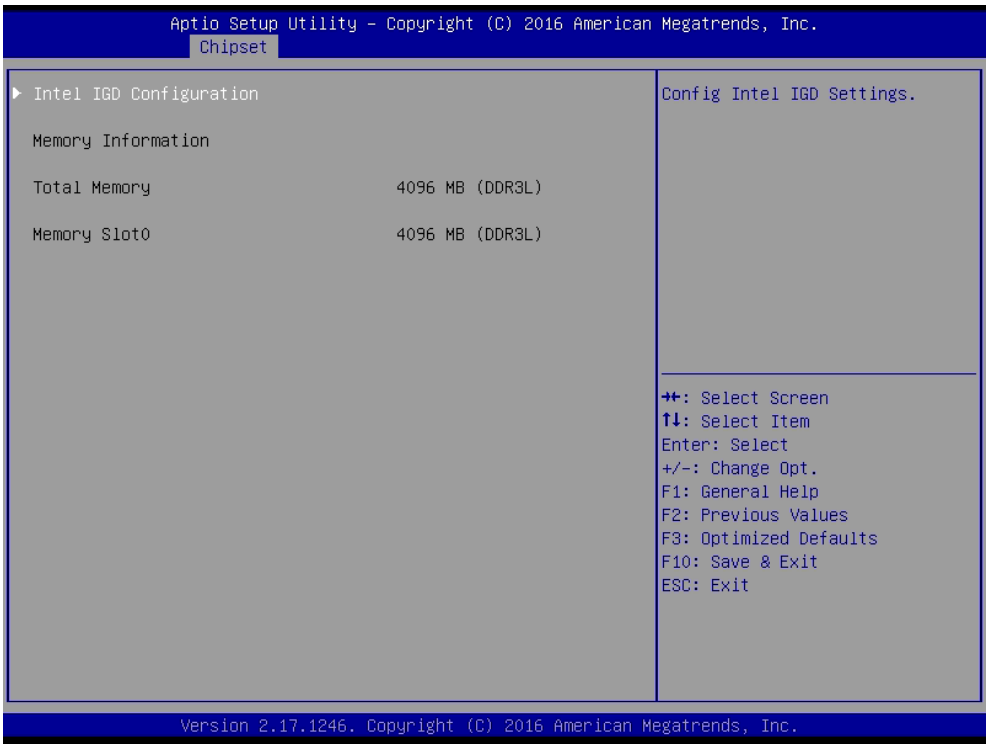
4.4 Chipset

The Advanced menu allows users to set configuration of the CPU and other system devices. You can select any of the items in the left frame of the screen to go to the sub menus.



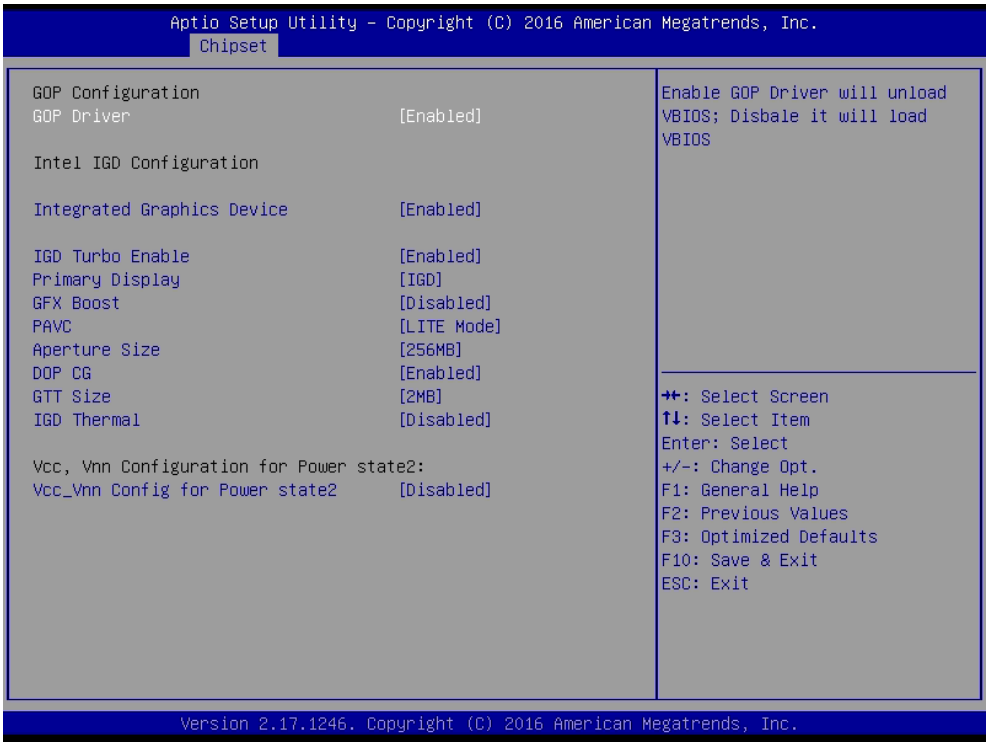
4.4.1 North Bridge

This section provides information on the installed memory size and memory/onboard graphics-related configuration options.



■ Intel IGD Configuration

This section provides onboard graphics-related configuration options. Following is default setting.



❑ GOP Driver

This item will allow users to enable or disable GOP Driver.

❑ Integrated Graphics Device

This item will allow users to enable or disable Integrated Graphics Device.

❑ IGD Turbo Enable

This item will allow users to enable or disable IGD Turbo.

❑ Primary Display

"Auto or IGFX or PEG or PCIE or SG" optimal to Primary Display.

❑ GFX Boost

This item will allow users to enable or disable GFX Boost.

❑ Aperture Size

Aperture size optimal between 128MB, 256MB, or 512MB.

❑ DOP CG

This item will allow users to enable or disable DOP CG.

❑ GTT Size

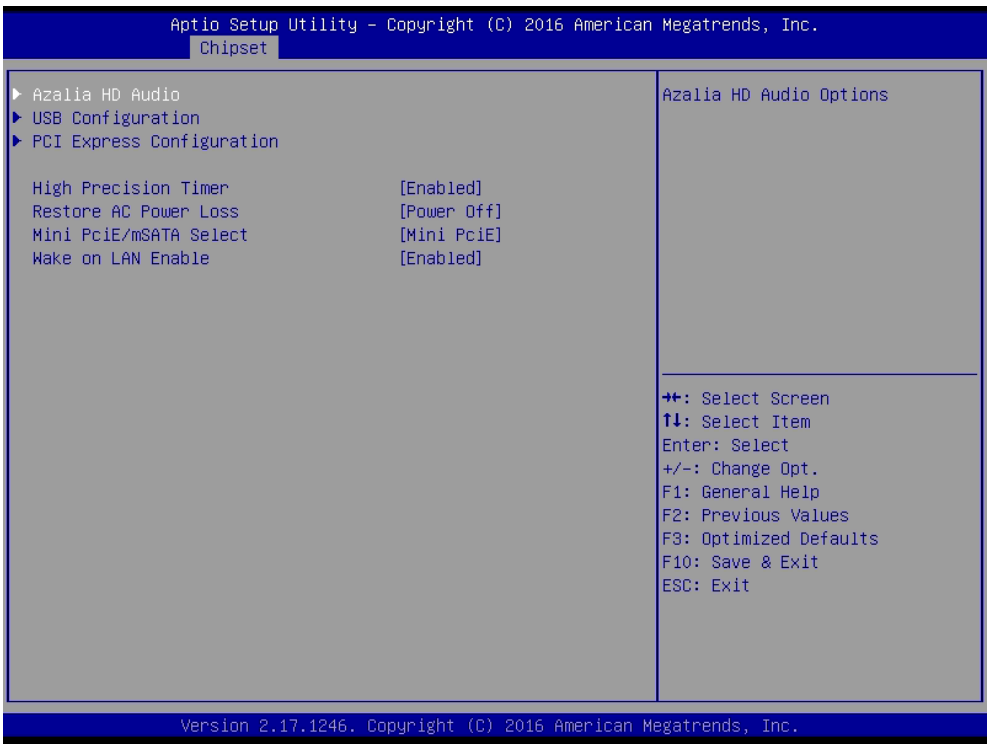
GTT size optimal between 1MB or 2MB.

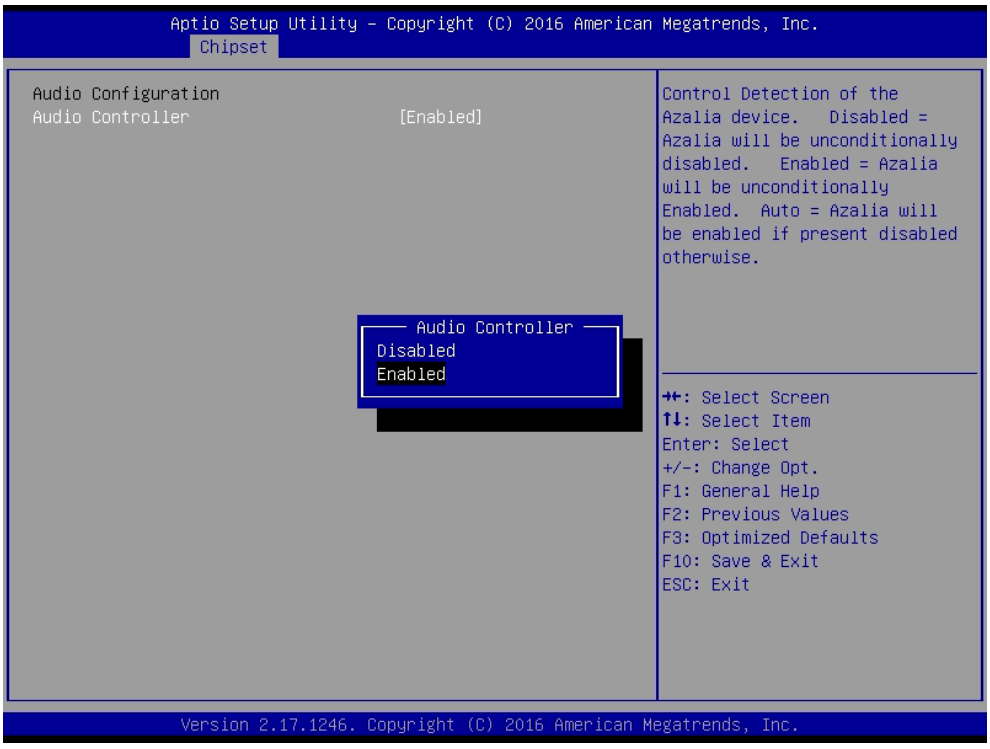
❑ IGD Thermal

This item will allow users to enable or disable IGD Thermal.

4.4.2 South Bridge

Following shows default settings.





■ Azalia HD Audio

Control detection of the Azaliadevice.

❑ Audio Controller

Enabled: Azalia will be unconditionally enabled. Default is Enabled.

Disabled: Azalia will be unconditionally disabled.

■ USB Configuration

❑ XHCI Mode

This setting disables/enables the USB XHCI controller. The eXtensible Host Controller Interface (XHCI) is a computer interface specification that defines a register-level description of a Host Controller for Universal Serial Bus (USB), which is capable of interfacing to USB 1.0, 2.0, and 3.0 compatible devices. The specification is also referred to as the USB 3.0 Host Controller specification.

❑ USB 2.0 (EHCI) Support

This setting disables/enables the USB EHCI controller. The Enhanced Host Controller Interface (EHCI) specification describes the register-level interface for a Host Controller for the Universal Serial Bus (USB) Revision 2.0.

❑ USB Port 0

This item will allow users to enable or disable USB Port 0.

❑ USB Port 1

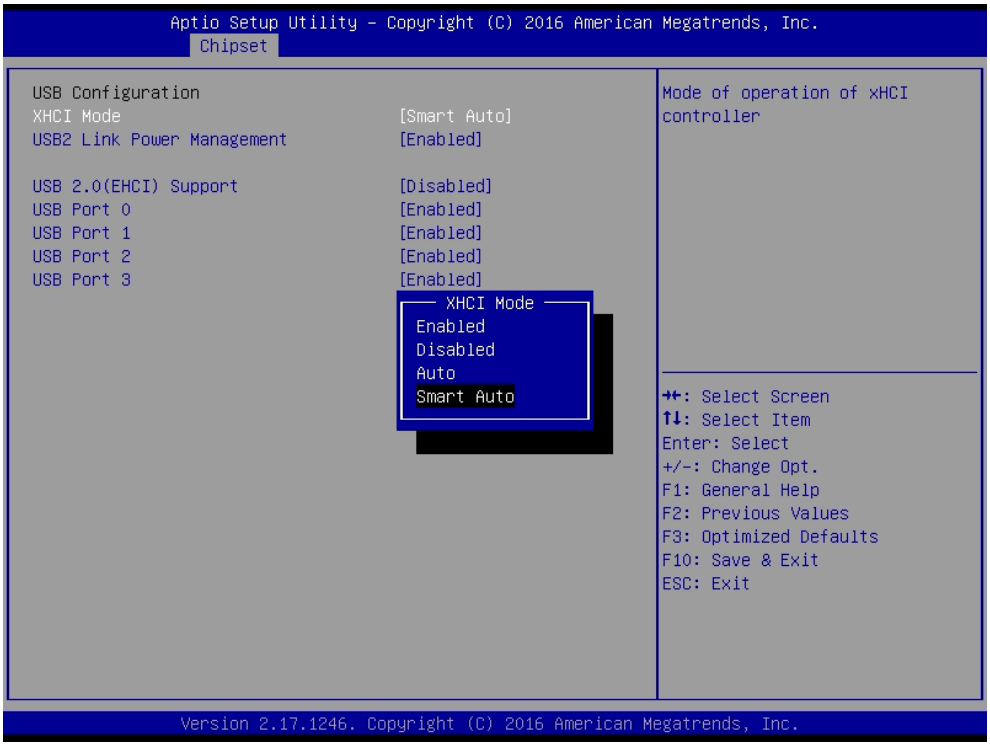
This item will allow users to enable or disable USB Port 1.

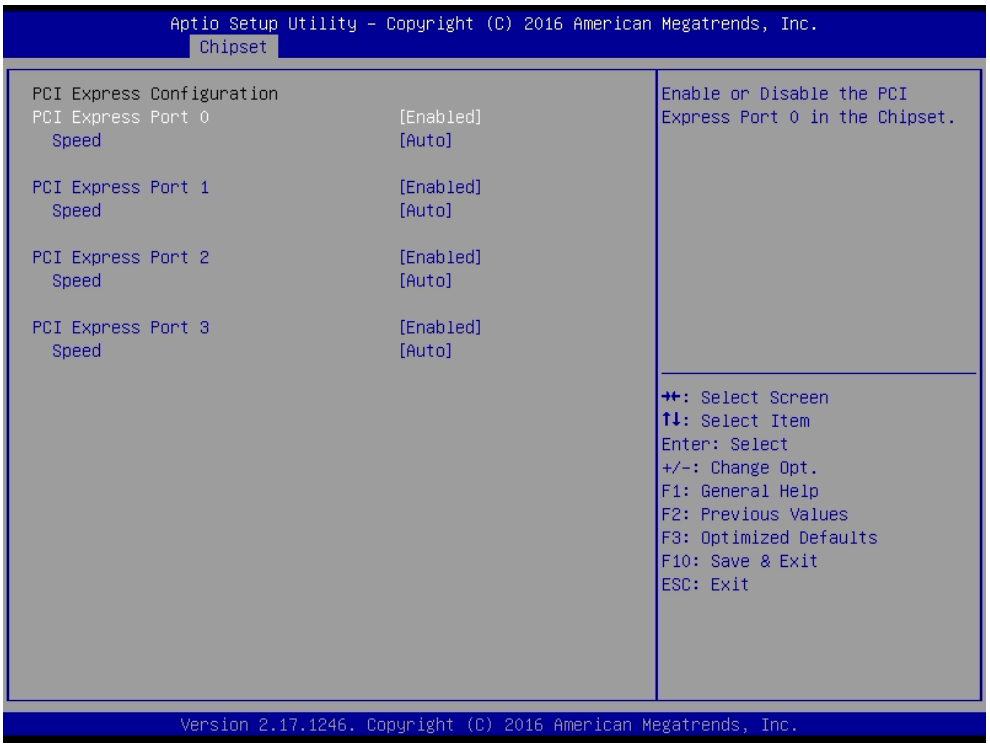
❑ USB Port 2

This item will allow users to enable or disable USB Port 2.

❑ USB Port 3

This item will allow users to enable or disable USB Port 3.





■ PCI Express Configuration

❑ PCI Express Port 0

This item will allow users to enable or disable PCI Express Port 0.

❑ Speed

Change the PCI Express interface speed. Select <AUTO> ,<Gen 2> or <Gen 1>

❑ PCI Express Port 1

This item will allow users to enable or disable PCI Express Port 1.

❑ Speed

Change the PCI Express interface speed. Select <AUTO> ,<Gen 2> or <Gen 1>

❑ PCI Express Port 2

This item will allow users to enable or disable PCI Express Port 2.

❑ Speed

Change the PCI Express interface speed. Select <AUTO> ,<Gen 2> or <Gen 1>

❑ PCI Express Port 3

This item will allow users to enable or disable PCI Express Port 3.

❑ Speed

Change the PCI Express interface speed. Select <AUTO> ,<Gen 2> or <Gen 1>

■ High Precision Timer

Enable (default) or disable High Precision Event Timer (HPET) in the operating system.

■ Restore AC Power Loss

This setting specifies whether your system will reboot after a power failure or interrupt occurs. Available settings are:
Power Off: Leave the computer in the power off state. This is the default setting.
Power On: Leave the computer in the power on state.
Last State: Restore the system to the previous status before power failure or interrupt occurred.

■ Mini PCIe/mSATA Select

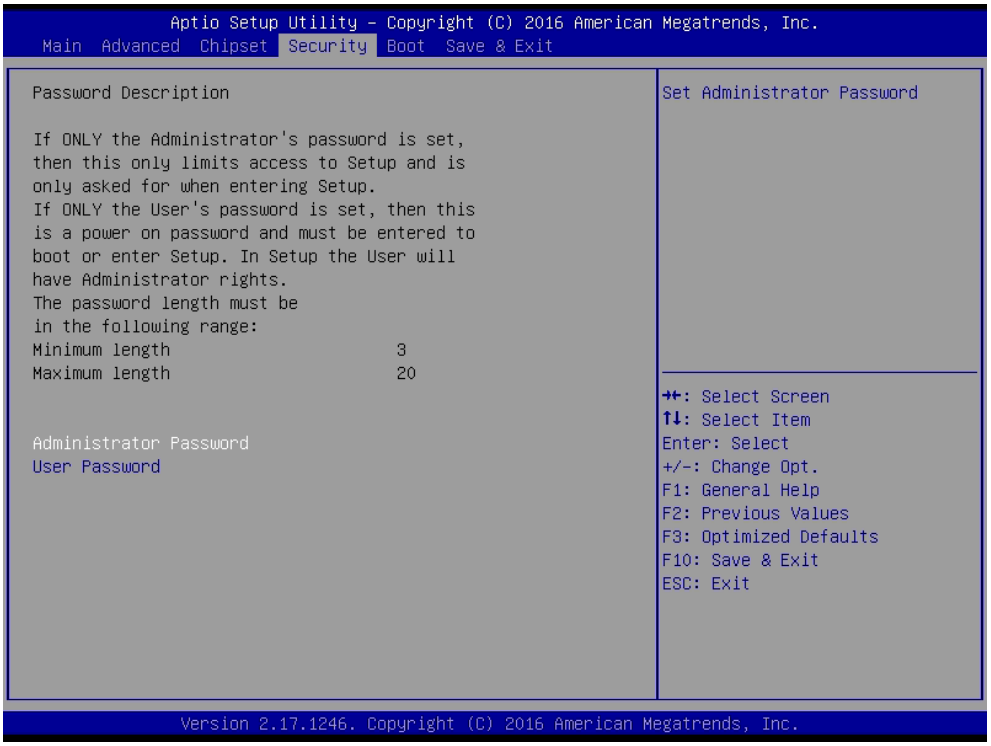
This allows to set shared Mini PCIe slot for use as either Mini PCIe (default) or mSATA interface.

■ Wake on LAN Enable

This enables or disables Wake on LAN feature. Default is Enabled.

4.5 Security

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



4.5.1 Administrator Password

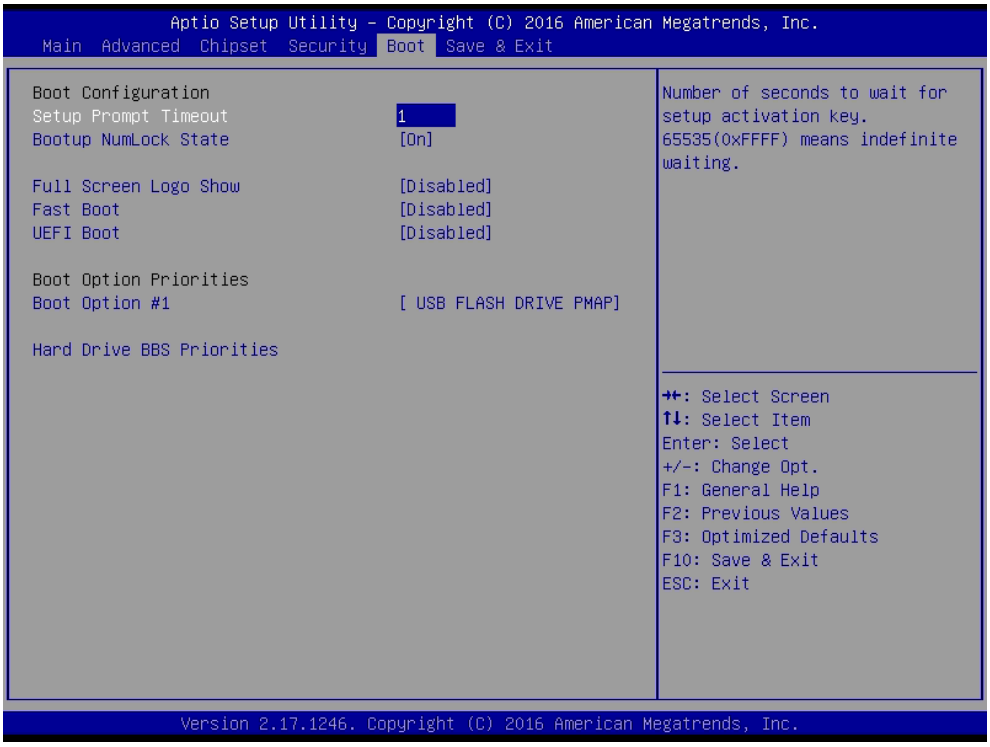
Administrator Password controls access to the BIOS Setup utility to edit the content.

4.5.2 User Password

User Password controls access to the system at boot and to the BIOS Setup utility to only view the content.

4.6 Boot

This section allows you to configure the boot settings. Following is the default settings.



4.6.1 Setup Prompt Timeout

Use this item to set number of seconds to wait for setup activation key.

4.6.2 Bootup NumLock State

Select the Power-on state for NumLock key.

4.6.3 Full Screen Logo Show

This item allows user to enable or disable full screen logo show.

4.6.4 Fast Boot

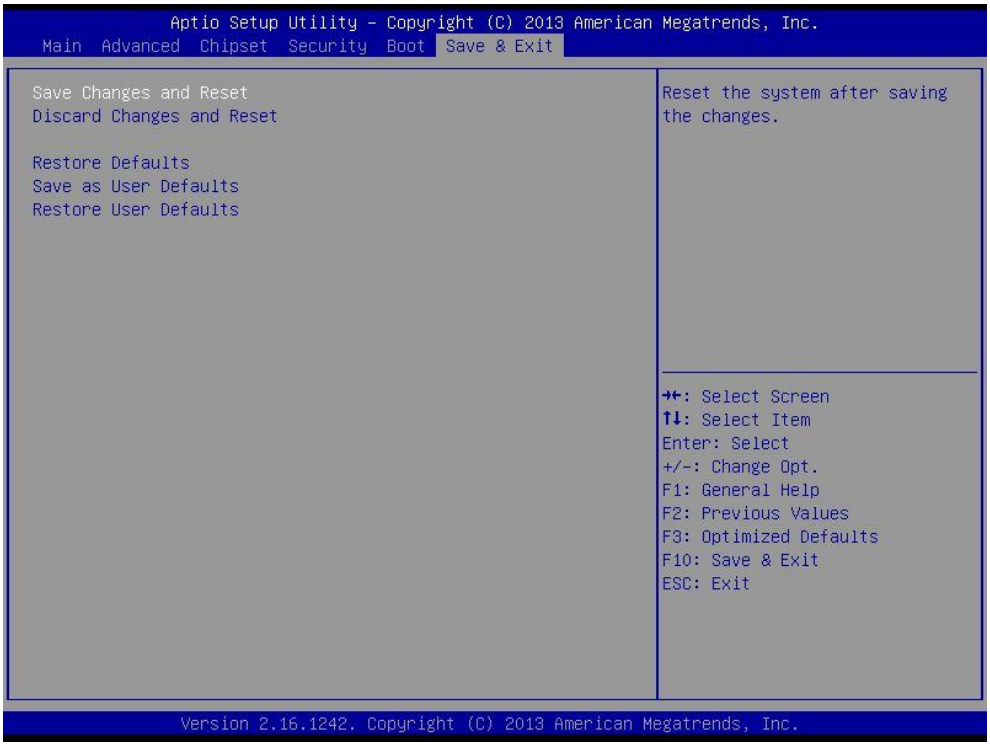
This item allows user to enable or disable Fast Boot option.

4.6.5 UEFI Boot

This allows to boot device with UEFI-based (not legacy) OS.

4.7 Save & Exit

This section allows you to configure the boot settings.



4.7.1 Save Changes and Reset

This item allows user to reset system setup after saving changes.

4.7.2 Discard Changes and Reset

This item allows user to reset system setup without saving any changes.

4.7.3 Restore Defaults

This item allows user to restore/ load default values for all the options.

4.7.4 Save as User Defaults

This item allows user to save the changes done so far as user defaults.

4.7.5 Restore User Defaults

This item allows user to restore the user defaults to all the options.

Chapter 5

Product Application

(For CMI-DIO100 Only)

This chapter descripts the DIO applications.

5.1 Digital I/O (DIO) application

This section describes DIO application of the product. The content and application development are better understood and implemented by well experienced professionals or developers.

5.1.1 Digital I/O Programming Guide

5.1.1.1 Pins for Digital I/O for Cincoze DA series product

Item	Standard
GPIO54 (Pin13)	DI
GPIO55 (Pin14)	
GPIO56 (Pin15)	
GPIO57 (Pin16)	
GPIO60 (Pin17)	DO
GPIO61 (Pin18)	
GPIO62 (Pin19)	
GPIO63 (Pin20)	

5.1.1.2 Programming Guide

To program the Super I/O chip F81866A configuration registers, the following configuration procedures must be followed in sequence:

(1) Enter the Extended Function Mode
(2) Configure the configuration registers
(3) Exit the Extended Function Mode

The configuration register is used to control the behavior of the corresponding devices. To configure the register, use the index port to select the index and then write data port to alter the parameters. The default index port and data port are 0x4E and 0x4F respectively. **Pull down the SOUT1 pin to change the default value to 0x2E/ 0x2F. To enable configuration, the entry key 0x87 must be written to the index port. To disable configuration, write exit entry key 0xAA to the index port.** Following is an example to enable configuration and to disable configuration by using debug.

-o 4e 87
-o 4e 87 (enable configuration)
-o 4e aa (disable configuration)

5.1.1.3 Relative Registers

To program the F81866A configuration registers, the following configuration procedures.

Logic Device Number Register (LDN) — Index 07h

Bit	Name	R/W	Reset	Default	Description
7-0	LDN	R/W	LRESET#	00h	00h: Select FDC device configuration registers. 03h: Select Parallel Port device configuration registers. 04h: Select Hardware Monitor device configuration registers. 05h: Select KBC device configuration registers. 06h: Select GPIO device configuration registers. 07h: Select WDT device configuration registers. 0Ah: Select PME, ACPI and ERP device configuration registers. 10h: Select UART1 device configuration registers. 11h: Select UART2 device configuration registers. 12h: Select UART3 device configuration registers. 13h: Select UART4 device configuration registers. 14h: Select UART5 device configuration registers. 15h: Select UART6 device configuration registers. Otherwise: Reserved.

7.7.9.1GPIO5 Output Enable Register — Index A0h

Bit	Name	R/W	Reset	Default	Description
7	GPIO57_OE	R/W	LRESET#	0	0: GPIO57 is in input mode. 1: GPIO57 is in output mode.
6	GPIO56_OE	R/W	LRESET#	0	0: GPIO56 is in input mode. 1: GPIO56 is in output mode.
5	GPIO55_OE	R/W	LRESET#	0	0: GPIO55 is in input mode. 1: GPIO55 is in output mode.
4	GPIO54_OE	R/W	LRESET#	0	0: GPIO54 is in input mode. 1: GPIO54 is in output mode.

7.7.9.2GPIO5 Output Data Register — Index A1h (This byte could be also written by base address + 5)

Bit	Name	R/W	Reset	Default	Description
7	GPIO57_DATA	R/W	LRESET#	1	0: GPIO57 outputs 0 when in output mode. 1: GPIO57 outputs 1 when in output mode.
6	GPIO56_DATA	R/W	LRESET#	1	0: GPIO56 outputs 0 when in output mode. 1: GPIO56 outputs 1 when in output mode.
5	GPIO55_DATA	R/W	LRESET#	1	0: GPIO55 outputs 0 when in output mode. 1: GPIO55 outputs 1 when in output mode.
4	GPIO54_DATA	R/W	LRESET#	1	0: GPIO54 outputs 0 when in output mode. 1: GPIO54 outputs 1 when in output mode.

7.7.10.1GPIO6 Output Enable Register — Index 90h

3	GPIO63_OE	R/W	LRESET#	0	0: GPIO63 is in input mode. 1: GPIO63 is in output mode.
2	GPIO62_OE	R/W	LRESET#	0	0: GPIO62 is in input mode. 1: GPIO62 is in output mode.
1	GPIO61_OE	R/W	LRESET#	0	0: GPIO61 is in input mode. 1: GPIO61 is in output mode.
0	GPIO60_OE	R/W	LRESET#	0	0: GPIO60 is in input mode. 1: GPIO60 is in output mode.

7.7.10.2GPIO6 Output Data Register — Index 91h (This byte could be also written by base address + 4)

3	GPIO63_VAL	R/W	LRESET#	1	0: GPIO63 outputs 0 when in output mode. 1: GPIO63 outputs 1 when in output mode.
2	GPIO62_VAL	R/W	LRESET#	1	0: GPIO62 outputs 0 when in output mode. 1: GPIO62 outputs 1 when in output mode.
1	GPIO61_VAL	R/W	LRESET#	1	0: GPIO61 outputs 0 when in output mode. 1: GPIO61 outputs 1 when in output mode.
0	GPIO60_VAL	R/W	LRESET#	1	0: GPIO60 outputs 0 when in output mode. 1: GPIO60 outputs 1 when in output mode.

5.1.1.4 Sample Code in C Language

5.1.1.4 .1 Control of GP54 to GP57

```
#define AddrPort 0x4E
#define DataPort 0x4F

<Enter the Extended Function Mode>
WriteByte(AddrPort, 0x87)
WriteByte(AddrPort, 0x87) // Must write twice to enter Extended mode

<Select Logic Device>
WriteByte(AddrPort, 0x07)
WriteByte(dataPort, 0x06)
//Select logic device 06h

<Output/Input Mode Selection> // Set GP54 to GP57 input Mode
WriteByte(AddrPort, 0xA0) // Select configuration register A0h
WriteByte(DataPort, (ReadByte(DataPort) | 0x0X))
// Set (bit 4~7) = 0 to select GP 54~57 as Input mode.

<Input Value>
WriteByte(AddrPort, 0xA1) // Select configuration register A1h
ReadByte(DataPort, Value) // Read bit 4~7 (0xFx)= GP54 ~57
as High.

<Leave the Extended Function Mode>
WriteByte(AddrPort, 0xAA)
```

5.1.1.4 .2 Control of GP60 to GP63

```
#define AddrPort 0x4E
#define DataPort 0x4F

<Enter the Extended Function Mode>
WriteByte(AddrPort, 0x87)
WriteByte(AddrPort, 0x87) // Must write twice to enter Extended mode

<Select Logic Device>
WriteByte(AddrPort, 0x07)
WriteByte(DataPort, 0x06)
// Select logic device 06h

<Output/Input Mode Selection> // Set GP60 to GP63 output Mode
WriteByte(AddrPort, 0x90) // Select configuration register 90h
WriteByte(DataPort, (ReadByte(DataPort) & 0xXF))
// Set (bit 0~3) = 1 to select GP 60 ~63 as Output mode.

<Output Value>
WriteByte(AddrPort, 0x91) // Select configuration register 91h
WriteByte(DataPort, Value) // Set bit 0~3=(0/1) to output GP 60~63
as Low or High

<Leave the Extended Function Mode>
WriteByte(AddrPort, 0xAA)
```

5.1.1.5 Change base address

<Enter the Extended Function Mode>
WriteByte(AddrPort, 0x87)
WriteByte(AddrPort, 0x87) // Must write twice to enter Extended mode

<Select Logic Device>
WriteByte(AddrPort, 0x07)
WriteByte(dataPort, 0x06)
// Select logic device 06h

WriteByte(AddrPort, 0x60) // Select configuration register 60h
WriteByte(DataPort, (ReadByte(DataPort) | 0x03))

WriteByte(AddrPort, 0x61) // Select configuration register 61h
WriteByte(DataPort, (ReadByte(DataPort) | 0x20))

<Leave the Extended Function Mode>
WriteByte(AddrPort, 0xAA)

GPIO Port base address 0x0320/h

5.1.1.6 DATA Bit Table (DIO)

7	6	5	4	3	2	1	0	bit
0	0	0	1	-	-	-	-	value
1				X				/h

= DI1

7	6	5	4	3	2	1	0	bit
-	-	-	-	0	0	0	1	value
X				1				/h

= DO1

7	6	5	4	3	2	1	0	bit
0	0	1	0	-	-	-	-	value
2				X				/h

= DI2

7	6	5	4	3	2	1	0	bit
-	-	-	-	0	0	1	0	value
X				2				/h

= DO2

7	6	5	4	3	2	1	0	bit
0	1	0	0	-	-	-	-	value
4				X				/h

= DI3

7	6	5	4	3	2	1	0	bit
-	-	-	-	0	1	0	0	value
X				4				/h

= DO3

7	6	5	4	3	2	1	0	bit
1	0	0	0	-	-	-	-	value
8				X				/h

= DI4

7	6	5	4	3	2	1	0	bit
-	-	-	-	1	0	0	0	value
X				8				/h

= DO4

5.1.1.7 DIO I/O Port Address

DI4	DI3	DI2	DI1	DO4	DO3	DO2	DO1	Pin Definition
7	6	5	4	3	2	1	0	Data Bits
DI				DO				DIO
0xA05				0xA03				I/O Port address

5.2 Digital I/O (DIO) Hardware Specification

- XCOM+ / 2XCOM+ : Isolated power in V+
- XCOM- / 2XCOM- : Isolated power in V-
- Isolated power in DC voltage : 9~30V

- 8x Digital Input (Source Type)

- Input Signal Voltage Level
  - Signal Logic 0 : XCOM+ = 9V, Signal Low - V- < 1V
    XCOM+ > 9V, V+ - Signal Low > 8V
  - Signal Logic 1 : > XCOM+ - 3V

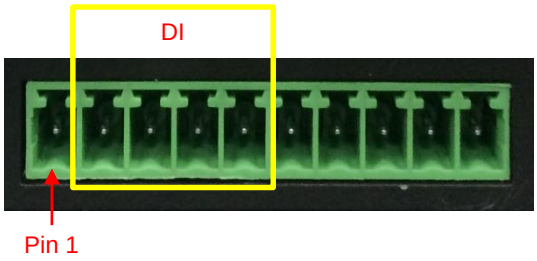
- Input Driving Sink Current :
  - Minimal : 1 mA
  - Normal : 5 mA

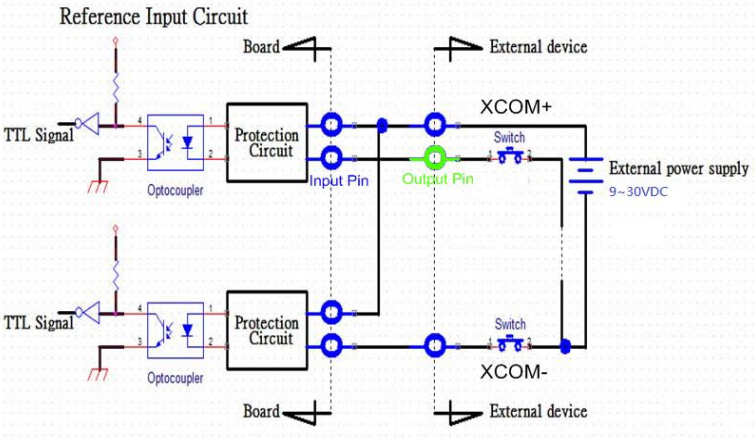
- 8x Digital Output (Open Drain)
  - DO Signal have to pull up resistor to XCOM+ for external device, the resistance will affect the pull up current
  - Signal High Level : Pull up resistor to XCOM+
  - Signal Low Level : = XCOM-
  - Sink Current: 1A (Max)

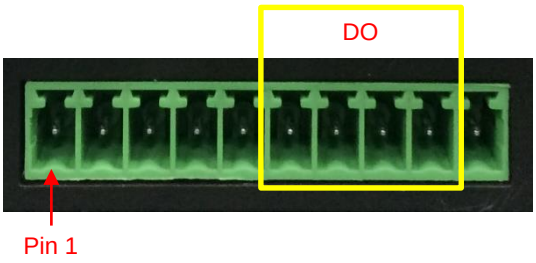
5.2.1 DIO Connector Definitions

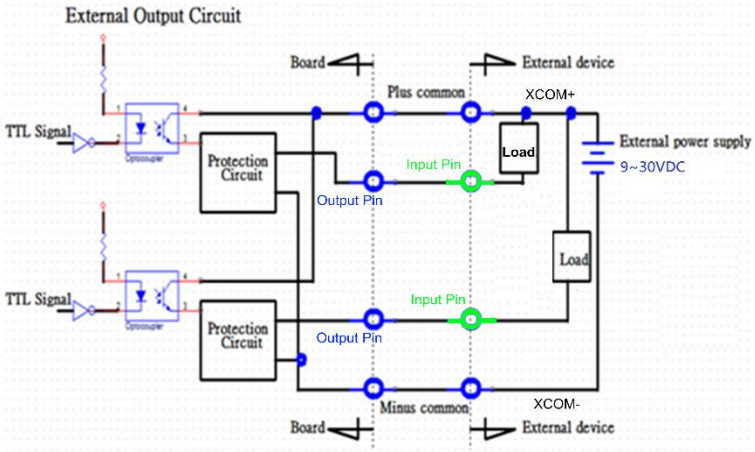
DIO1: Digital Input Connector
Connector Type: Terminal Block 1X10 10-pin, 3.5mm pitch

Pin	1	2	3	4	5	6	7	8	9	10
Definition	XCOM+	DI1	DI2	DI3	DI4	DO1	DO2	DO3	DO4	XCOM-









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