AXIOMTEK

MANO300 Series

Intel® Braswell SoC CPU
Mini ITX Motherboard

User's Manual

RoHS

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If you replace wrong batteries, it causes the danger of explosion. It is recommended by the manufacturer that you follow the manufacturer's instructions to only replace the same or equivalent type of battery, and dispose of used ones.

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ESD Precautions

Computer boards have integrated circuits sensitive to static electricity. To prevent chipsets from electrostatic discharge damage, please take care of the following jobs with precautions:

- Do not remove boards or integrated circuits from their anti-static packaging until you are ready to install them.
- Before holding the board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. It discharges static electricity from your body.
- Wear a wrist-grounding strap, available from most electronic component stores, when handling boards and components.

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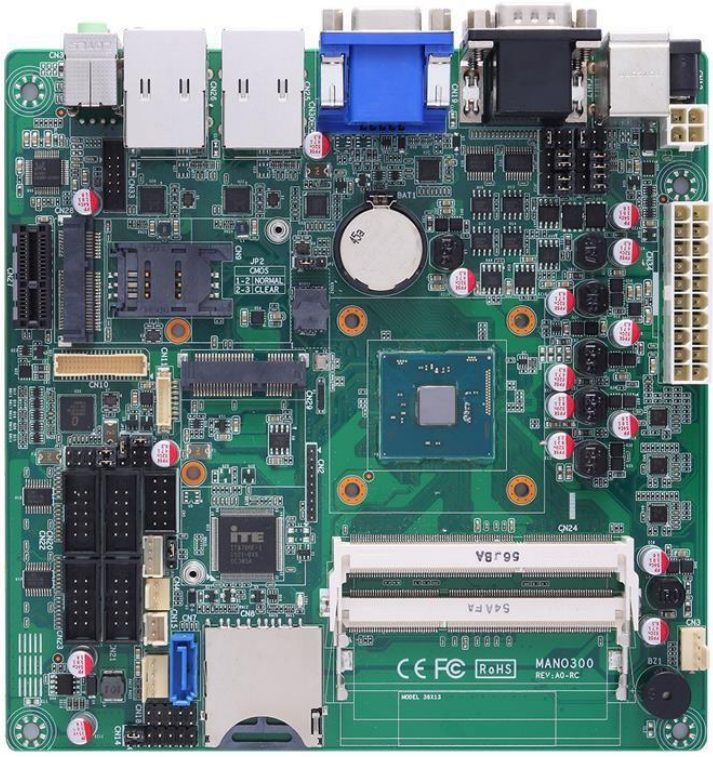
Chapter 1
Introduction



The MANO300 is a Mini ITX board based on Intel® Celeron® N3160 processor. It delivers outstanding system performance through high-bandwidth interfaces, multiple I/O functions for interactive applications and various embedded computing solutions. There are two 204-pin DDR3L SO-DIMM for DDR3L 1600/1333MHz memory with maximum capacity up to 8GB. This Mini ITX board features two Gigabit Ethernet ports, one SATA 3.0 port with maximum transfer rate up to 6Gb/s, four USB 3.0 and two USB 2.0 high speed compliant ports that can achieve the best stability and reliability for industrial applications.

1.1 Features

- Intel® Celeron® N3160 processor
- 2 DDR3L 1600/1333MHz memory with maximum capacity up to 8GB
- 1 PCI-Express x1
- 1 PCI-Express Mini Card
- 1 SATA-600
- 1 mSATA
- 4 USB 3.0 and 2 USB 2.0 ports
- Triple view display
- Display: VGA/HDMI/LVDS

1.2 Specifications

- **CPU**
  - Intel® Celeron® quad core N3160 (up to 2.08GHz).

- **BIOS**
  - AMI BIOS.

- **System Memory**
  - Two 204-pin SO-DIMM sockets. The upper socket must be installed.
  - Maximum up to 8GB DDR3L memory.
  - Support 1600/1333MHz memory.

Note

If only one memory module is used, please install in DIMM1 (the upper SO-DIMM socket).

- **Onboard Multi I/O**
  - Controller: ITE8786.
  - One PS/2 keyboard and mouse on the rear I/O.
  - Six serial ports:
    - COM1~COM2 support RS-232/422/485; COM3~COM6 support RS-232 only.
    - COM1~COM2 on the rear I/O; COM3~COM6 in box headers.

- **USB Interface**
  - Four USB 3.0 ports (on the rear I/O).
  - Two USB 2.0 ports (internal).

- **Ethernet**
  - Two Realtek GbE LAN ports.
  - Support 1000/100/10Mbps Gigabit/Fast Ethernet.

- **Serial ATA**
  - One SATA 3.0 port (6Gb/s).
  - One mSATA slot; only support mSATA.

- **Audio**
  - Realtek ALC662 5.1 channel HDA codec.
  - Support line-out/MIC-in.

- **Display**
  - One 15-pin D-Sub as VGA connector. Resolution max. up to 1920x1200.
  - One HDMI with resolution max. up to (3840x2160) @ 30Hz or 2560x1600 @ 60Hz.
  - One 24-bit dual channel LVDS and one 8-pin inverter connector. LVDS resolution is max. up to 1920x1200.

- **Expansion Interface**
  - One PCI-Express x1 slot.
  - One PCI-Express Mini Card; support WiFi USB signal.
  - One SIM card slot.

- **SSD**
  - One SD card slot.

- **Power Input**
  - One ATX power input connector.
  - One 12V only ATX power input connector.
  - One 12VDC jack power input connector.

Note

Please plug only one of the three power input interfaces when power on.

- **Operating Temperature**
  - 0~60°C.
- **Storage Temperature**
  - -20~60°C.
- **Form Factor**
  - Mini ITX (6.7” x 6.7”, 17.0cm x 17.0cm).

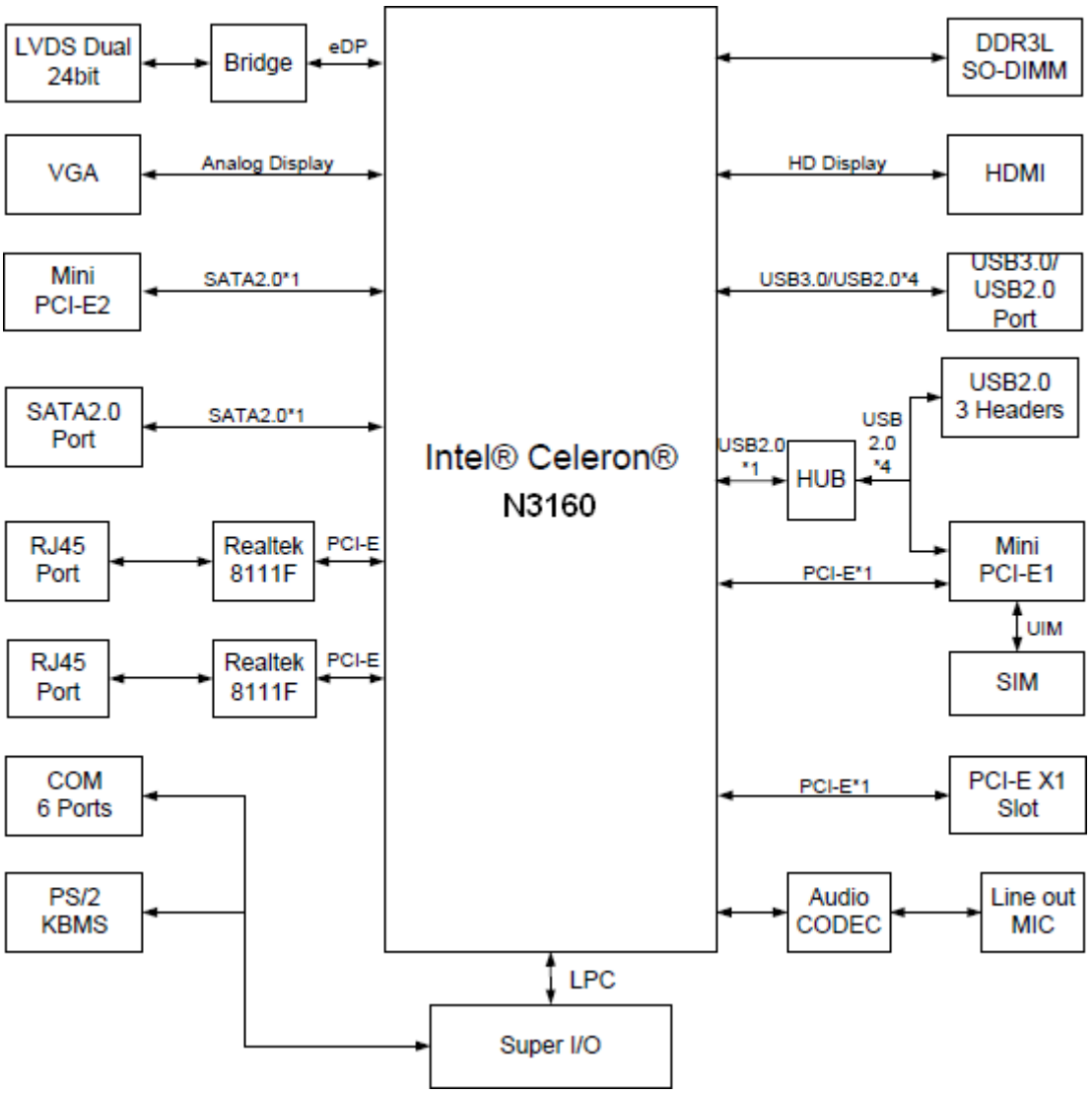
Note

All specifications and images are subject to change without notice.

1.3 Utilities Supported

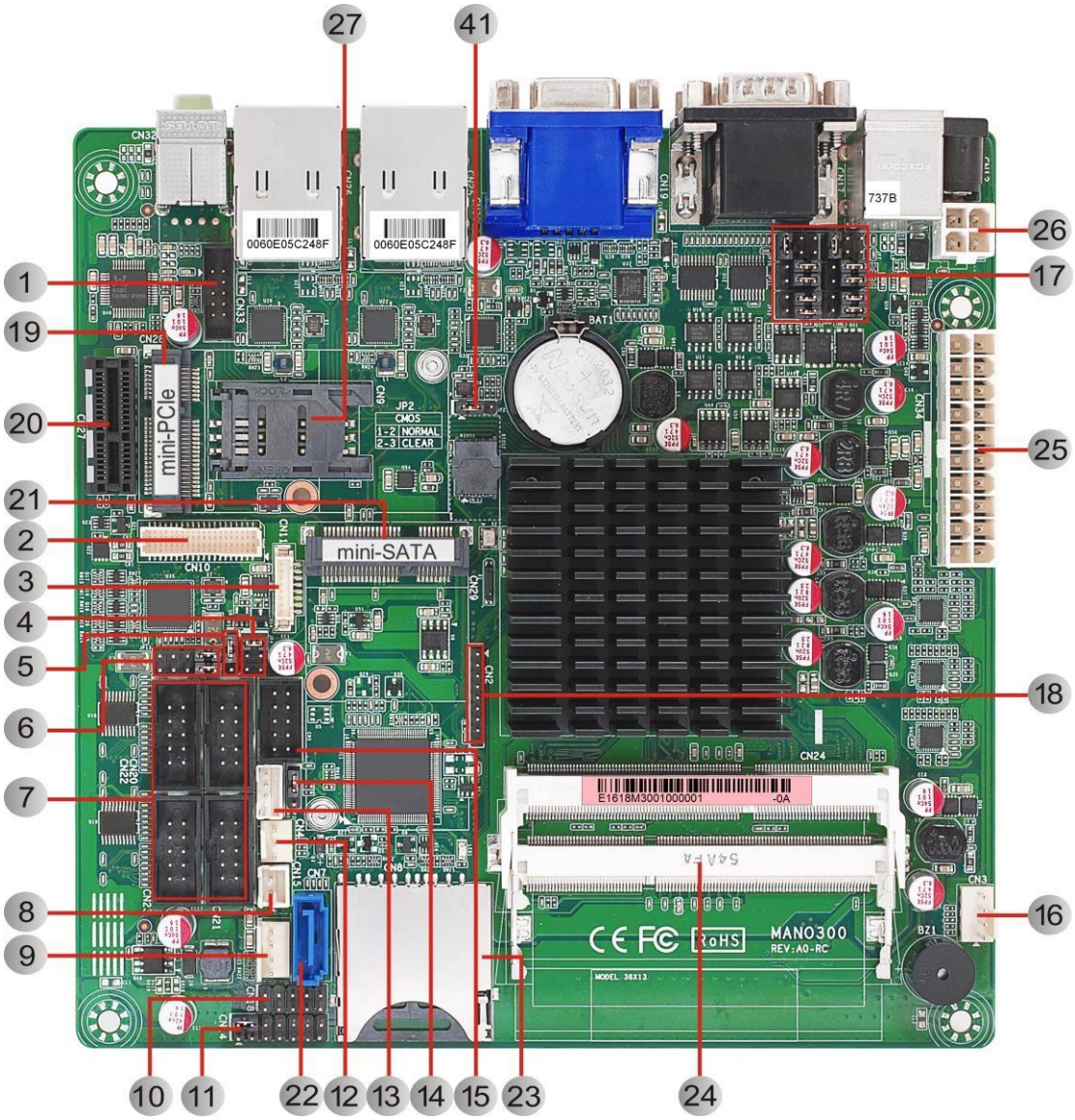
- Chipset driver
- Ethernet driver
- Graphics driver
- Audio driver

1.4 Block Diagram

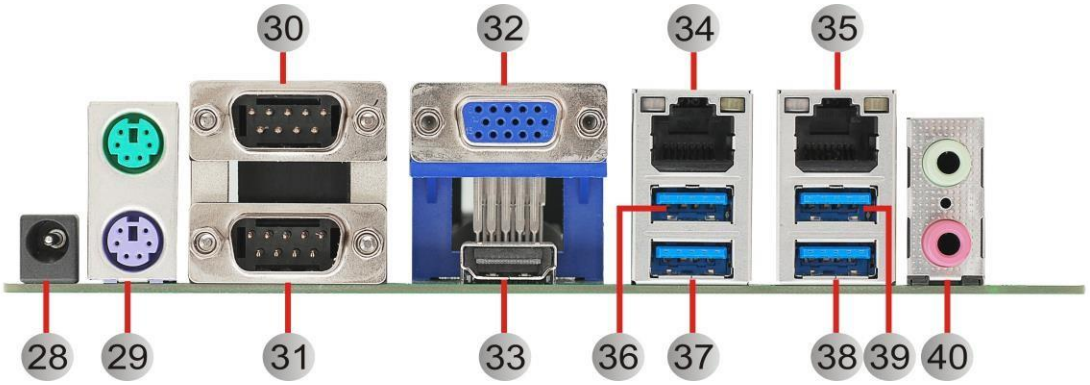


Chapter 2
Board and Pin Assignments

2.1 Board Layout



2.2 Rear I/O

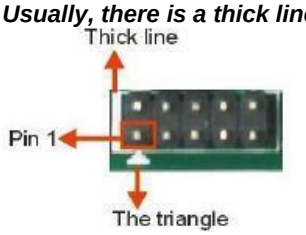


1	Front Audio Header (CN33)	22	SATA 3.0 Connector (CN7)
2	LVDS Signal Header (CN10)	23	SD Card Slot (CN8)
3	LVDS Backlight Control Header (CN11)	24	DDR3L SO-DIMM Sockets (CN24)
4	LVDS VDD Select Jumper (JP4)	25	ATX Power Input Connector (CN34)
5	LVDS Backlight PWM/CCFL Select Jumper (JP5)	26	ATX 12V Only Power Input Connector (CN13)
6	COM3 Data/Power Select Jumper (JP13)	27	SIM Card Slot (CN9)
7	COM3~COM6 Headers (CN20~CN23)	28	12VDC Jack Power Input Connector (CN12)
8	Power Status Header (CN15)	29	PS/2 Keyboard and Mouse Connector (CN17)
9	DC12V/5V Power Output Connector (CN16)	30	COM1 Connector (CN19)
10	GPIO Header (CN18)	31	COM2 Connector (CN19)
11	Front Panel Header (CN14)	32	VGA Connector (CN30)
12	System Fan Connector (CN4)	33	HDMI Connector (CN31)
13	Internal USB 2.0 Connector (CN6)	34	LAN1 Connector (CN25)
14	AT/ATX Power Mode Select Jumper (JP3)	35	LAN2 Connector (CN26)
15	Internal USB 2.0 Header (CN5)	36	USB 3.0 port 1 (CN25,CN26)
16	CPU Fan Connector (CN3)	37	USB 3.0 port 2 (CN25,CN26)
17	COM1/COM2 RS-232/422/485 Mode Select Jumpers (JP7~JP12)	38	USB 3.0 port 3 (CN25,CN26)
18	Debug Header (CN2)	39	USB 3.0 port 4 (CN25,CN26)
19	PCI-Express Mini Card Connector (CN28)	40	Audio Jack (CN32)
20	PCI-Express x1 Slot (CN27)	41	CMOS Clear Jumper (JP2)
21	mSATA Slot (CN29)		

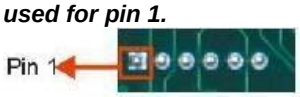
Note

To identify the first pin of a header or jumper, please refer to the following information:

- ***Usually, there is a thick line or a triangle near the header or jumper pin 1.***

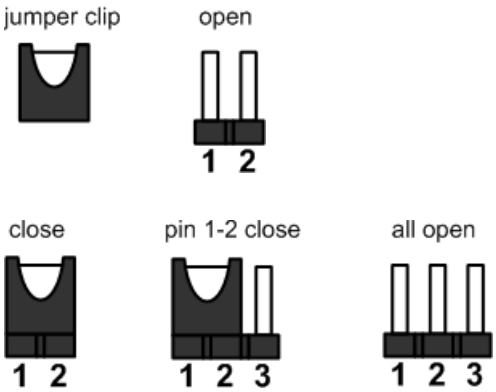


- ***Square pad, which you can find on the back of the motherboard, is usually used for pin 1.***



2.3 Jumper Settings

Jumper is a small component consisting of jumper clip and jumper pins. Install jumper clip on 2 jumper pins to close. And remove jumper clip from 2 jumper pins to open. The following illustration shows how to set up jumper.



Before applying power to MANO300 Series, please make sure all of the jumpers are in factory default position. Below you can find a summary table of all jumpers and onboard default settings.

Note

Once the default jumper setting needs to be changed, please do it under power-off condition.

Jumper	Description		Setting
JP2	Clear CMOS Default: Normal		1-2 Close
JP3	AT/ATX Power Mode Select Default: ATX Mode		1-2 Close
JP5	LVDS Backlight PWM/CCFL Select Default: PWM		1-2 Close
JP4	LVDS VDD Select Default: +3.3V		1-2 Close
JP7	COM1 RS-232/422/485 Mode Select Default: RS-232		1-2 Close
JP8			3-5, 4-6 Close
JP9			3-5, 4-6 Close
JP10	COM2 RS-232/422/485 Mode Select Default: RS-232		1-2 Close
JP11			3-5, 4-6 Close
JP12			3-5, 4-6 Close
JP13	COM3 Data/Power Select Default: RS-232 Data	COM3 Pin 1: DCD#	7-9 Close
		COM3 Pin 8: RI#	8-10 Close

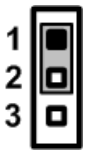
2.3.1 Clear CMOS Select (JP2)

This jumper allows you to clear the Real Time Clock (RTC) RAM in CMOS. You can clear the CMOS memory of date, time, and system setup parameters by erasing the CMOS RTC RAM data. The onboard button cell battery powers the RAM data in CMOS, which includes system setup information such as system passwords.

To erase the RTC RAM:

1. Turn OFF the computer and unplug the power cord.
2. Remove the onboard battery.
3. Move the jumper clip from pins 1-2 (default) to pins 2-3. Keep the clip on pins 2-3 for about 5~10 seconds, then move the clip back to pins 1-2.
4. Re-install the battery.
5. Plug the power cord and turn ON the computer.
6. Hold down the <Del> key during the boot process and enter BIOS setup to re-enter data.

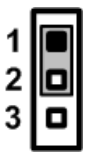
Function	Setting
Normal operation (Default)	1-2 close
Clear CMOS	2-3 close



2.3.2 AT/ATX Power Mode Select (JP3)

This 3x1-pin p=2.54mm jumper allows you to select AT orATX power mode.

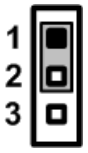
Function	Setting
ATX mode (Default)	1-2 close
AT mode	2-3 close



2.3.3 LVDS Backlight PWM/CCFL Select (JP5)

This 3x1-pin p=2.54mm jumper enables you to select PWM or voltage control mode for LVDS backlight control header (CN11). These two control modes are for adjusting the brightness of LVDS panel.

Function	Setting
Controlled by PWM (Default)	1-2 close
Controlled by DC Voltage	2-3 close



2.3.4 LVDS VDD Select (JP4)

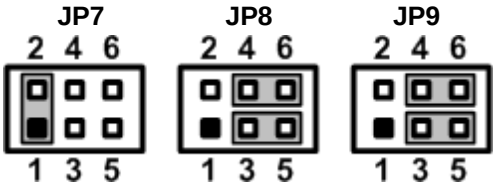
This motherboard supports voltage selection for flat panel displays. Use this 3x2-pin p=2.54mm jumper to set up VDD power of the LVDS connector. To prevent hardware damage, before connecting please make sure that the input voltage of LVDS panel is correct.

Function	Setting
+3.3V (Default)	1-2 close
+5V	3-4 close
+12V	5-6 close

2.3.5 COM1 RS-232/422/485 Mode Select (JP7, JP8, JP9)

Use these jumpers (3x2-pin p=2.54mm) to set COM1 port to operate as RS-232, RS-422 or RS-485 communication mode.

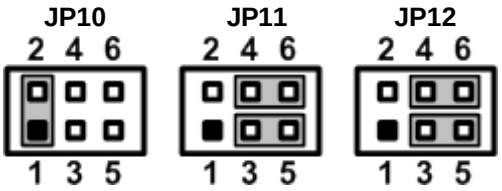
Function	Setting
RS-232 mode (Default)	JP7 1-2 close JP8 3-5, 4-6 close JP9 3-5, 4-6 close
RS-422 mode	JP7 3-4 close JP8 1-3, 2-4 close JP9 1-3, 2-4 close
RS-485 mode	JP7 5-6 close JP8 1-3, 2-4 close JP9 1-3, 2-4 close



2.3.6 COM2 RS-232/422/485 Mode Select (JP10, JP11, JP12)

Use these jumpers (3x2-pin p=2.54mm) to set COM2 port to operate as RS-232, RS-422 or RS-485 communication mode.

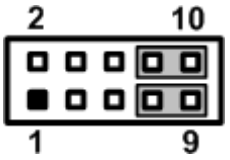
Function	Setting
RS-232 mode (Default)	JP10 1-2 close JP11 3-5, 4-6 close JP12 3-5, 4-6 close
RS-422 mode	JP10 3-4 close JP11 1-3, 2-4 close JP12 1-3, 2-4 close
RS-485 mode	JP10 5-6 close JP11 1-3, 2-4 close JP12 1-3, 2-4 close



2.3.7 COM3 Data/Power Select (JP13)

The COM3 port has +5V/+12V power capability on DCD and +5V/+12V on RI by setting this jumper (5x2-pin p=2.54mm).

Function	Setting
Power: Set COM3 pin 1 to +12V level	1-3 close
Power: Set COM3 pin 1 to +5V level	3-5 close
Data: Set COM3 pin 1 to DCD# (Default)	7-9 close
Power: Set COM3 pin 8 to +12V level	2-4 close
Power: Set COM3 pin 8 to +5V level	4-6 close
Data: Set COM3 pin 8 to RI# (Default)	9-10 close



2.4 Connectors

Signals go to other parts of the system through connectors. Loose or improper connection might cause problems, please make sure all connectors are properly and firmly connected. Here is a summary table showing connectors on the hardware.

Connector	Description
CN3	CPU Fan Connector
CN4	System Fan Connector
CN5	Internal USB 2.0 Header
CN6	Internal USB 2.0 Connector
CN7	SATA 3.0 Connector
CN8	SD Card Slot
CN9	SIM Card Slot
CN10	LVDS Signal Header
CN11	LVDS Backlight Control Header
CN12	12VDC Jack Power Input Connector
CN13	ATX 12V Only Power Input Connector
CN14	Front Panel Header
CN15	Power Status Header
CN16	DC12V/5V Power Output Connector
CN17	PS/2 Keyboard and Mouse Connector
CN18	GPIO Header
CN19	COM1~COM2 Connector
CN20~CN23	COM3~COM6 Headers
CN24	DDR3L SO-DIMM Sockets
CN25, CN26	LAN and USB 3.0 Connectors
CN27	PCI-Express x1 Slot
CN28	PCI-Express Mini Card Connector
CN29	mSATA Slot
CN30	VGA Connector
CN31	HDMI Connector
CN32	Audio Jack
CN33	Front Audio Header
CN34	ATX Power Input Connector

2.4.1 Fan Connectors (CN3 and CN4)

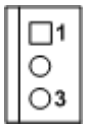
This motherboard has two fan connectors. You can find fan speed option(s) at BIOS Setup Utility. For further information, see BIOS Setup Utility: Advanced\HW Monitor\PC Health Status.

The CN3 (4x1-pin p=2.54mm) is for CPU fan interface.

Pin	Signal
1	GND
2	+12V
3	FAN Speed Detection
4	FAN Speed Control

The CN4 (3x1-pin p=2.54mm) is for system fan interface.

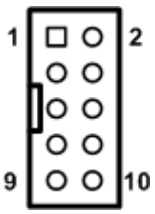
Pin	Signal
1	GND
2	+12V
3	FAN Speed Detection



2.4.2 Internal USB 2.0 Header (CN5)

This is a USB 2.0 header (5x2-pin p=2.54mm).

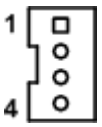
Pin	Signal	Pin	Signal
1	+5V	2	+5V
3	USB1-	4	USB2-
5	USB1+	6	USB2+
7	GND	8	GND
9	N/C	10	N/C



2.4.3 Internal USB 2.0 Connector (CN6)

This is an internal USB 2.0 connector (4x1-pin p=2.00mm).

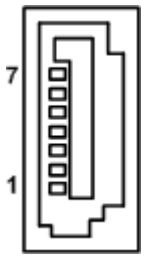
Pin	Signal
1	+5V
2	USB D-
3	USB D+
4	GND



2.4.4 SATA 3.0 Connector (CN7)

This Serial Advanced Technology Attachment (Serial ATA or SATA) connector is for SATA 3.0 interface allowing up to 6.0Gb/s data transfer rate. It is a computer bus interface for connecting to devices such as hard disk drive.

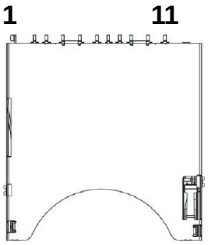
Pin	Signal
1	GND
2	SATA_TX+
3	SATA_TX-
4	GND
5	SATA_RX-
6	SATA_RX+
7	GND



2.4.5 SD Card Slot (CN8)

The CN8 is for inserting SD card.

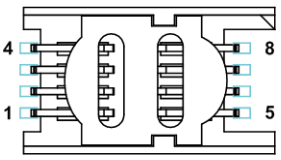
Pin	Signal	Pin	Signal
1	WP	7	GND
2	DATE 1	8	CD
3	DATE 0	9	CMD
4	GND	10	DATE 3
5	CLK	11	DATE 2
6	VCC		



2.4.6 SIM Card Slot (CN9)

The CN9 is for inserting SIM Card. It is mainly used in 3G wireless network application. In order to work properly, the SIM Card must be used together with 3G module which is inserted to CN28.

Pin	Signal
1	PWR
2	RST
3	CLK
4	NC
5	GND
6	VPP
7	I/O
8	NC



2.4.7 LVDS Signal Header (CN10)

This motherboard has a 20x2-pin p=1.00mm header for LVDS panel interface.

Pin	Signal	Pin	Signal
1	VDD[*]	2	VDD[*]
3	VDD[*]	4	VDD[*]
5	VDD[*]	6	VDD[*]
7	N/C	8	N/C
9	GND(Detect)[**]	10	GND
11	LVDS_B_DATA3-	12	LVDS_B_DATA0-
13	LVDS_B_DATA3+	14	LVDS_B_DATA0+
15	GND	16	GND
17	LVDS_B_CLK-	18	LVDS_B_DATA1-
19	LVDS_B_ CLK +	20	LVDS_B_DATA1+
21	GND	22	GND
23	LVDS_A_DATA0-	24	LVDS_B_DATA2-
25	LVDS_A_DATA0+	26	LVDS_B_DATA2+
27	GND	28	GND
29	LVDS_A_DATA1-	30	LVDS_A_DATA3-
31	LVDS_A_DATA1+	32	LVDS_A_DATA3+
33	LVDS_PRSNT#	34	GND
35	LVDS_A_DATA2-	36	LVDS_A_CLK-
37	LVDS_A_DATA2+	38	LVDS_A_ CLK +
39	GND(Detect)[**]	40	GND

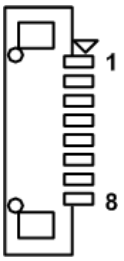
Note

[*]: Panel power VDD is +3.3V by default, +5V or 12V is selectable by jumper JP4, see section 2.3.4.
[**]: Grounding of this pin is required to ensure normal LVDS output.

2.4.8 LVDS Backlight Control Header (CN11)

This is an 8x1-pin p=1.25mm header for LVDS backlight control interface.

Pin	Signal
1	+12V
2	+12V
3	+5V
4	LVDS_BKL_EN
5	GND
6	GND
7	GND
8	LVDS_BKL_CTL[*]

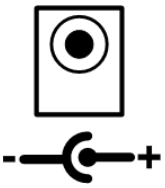


Note

[*]: This signal is selectable by jumper JP3, see section 2.3.2.

2.4.9 12VDC Jack Power Input Connector (CN12)

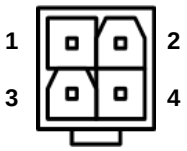
Firmly insert power adapter into this connector. Loose connection may cause system instability and make sure all components/devices are properly installed before connecting.



2.4.10 ATX 12V Only Power Input Connector (CN13)

This is a 4-pin connector for DC +12V power input.

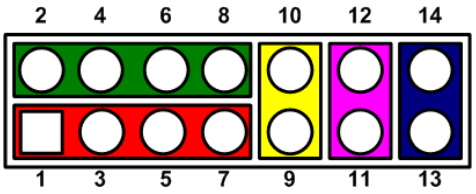
Pin	Signal
1	GND
2	GND
3	+ 12V IN
4	+ 12V IN



2.4.11 Front Panel Header (CN14)

This is front panel header (7x2-pin p=2.54mm).

Pin	Signal
1	Power LED+
2	SPK- [*]
3	GND
4	BUZZER
5	Power LED-
6	N/C
7	N/C
8	SPK+ [*]
9	PWR-
10	PWR+
11	RESET-
12	RESET+
13	HD LED-
14	HD LED+



Note

[*]: The buzzer on motherboard will be active when pin 2 and pin 4 is connecting, the external speaker on chassis will be active when pin 2 and pin 4 is open.

2.4.12 Power Status Header (CN15)

This is power button header (2x1-pin p=2.54mm), let customer know the power status of this board.

Pin	Signal
1	PWR+
2	PWR-

2.4.13 DC12V/5V Power Output Connector (CN16)

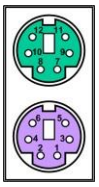
This is a 4x1-pin p=2.54mm connector for DC +12V and +5V power output.

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

2.4.14 PS/2 Keyboard and Mouse Connector (CN17)

The motherboard has two 6-pin mini-DIN PS/2 connectors; green for mouse and purple for keyboard.

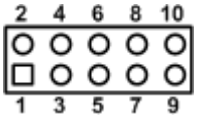
Pin	Signal	Pin	Signal
1	K/B Data	7	M/S Data
2	NC	8	NC
3	GND	9	GND
4	+5V	10	+5V
5	K/B CLK	11	M/S CLK
6	NC	12	NC



2.4.15 GPIO Header (CN18)

This header (5x2-pin p=2.54mm) is for digital I/O interface.

Pin	Signal	Pin	Signal
1	SIO_GPO74 (0xA06, Bit4, H)[*]	2	SIO_GPI70 (0xA06, Bit0)
3	SIO_GPO75 (0xA06, Bit5, H)[*]	4	SIO_GPI71 (0xA06, Bit1)
5	SIO_GPO76 (0xA06, Bit6, H)[*]	6	SIO_GPI72 (0xA06, Bit2)
7	SIO_GPO77 (0xA06, Bit7, H)[*]	8	SIO_GPI73 (0xA06, Bit3)
9	GND	10	GND



Note

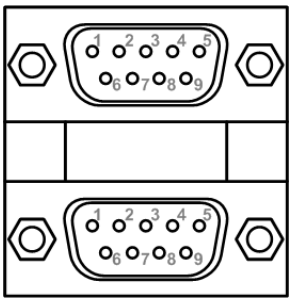
[*]: "H" or "L" means the default voltage is High or Low level, and GPIO output is 5V.

2.4.16 COM Connector (CN19)

This connector is for COM1 and COM2 serial port interfaces which are selectable for RS-232/422/485 mode. The default setting is RS232. If you need COM1 to support RS-422 or RS-485, please refer to section 2.3.5. If you need COM2 to support RS-422 or RS-485, please refer to section 2.3.6. The pin assignments of RS-232/422/485 are listed in table below.

Pin	RS-232	RS-422	RS-485
1	DCD#	TX-	485-
2	RXD	TX+	485+
3	TXD	RX+	N/C
4	DTR#	RX-	N/C
5	GND	GND	GND
6	DSR#	N/C	N/C
7	RTS#	N/C	N/C
8	CTS#	N/C	N/C
9	RI#	N/C	N/C

COM1

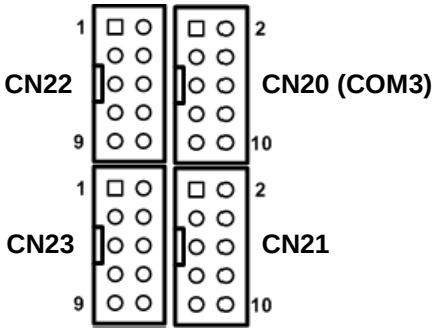


COM2

2.4.17 COM Headers (CN20~CN23)

The motherboard comes with 5x2-pin p=2.54mm headers for COM3~COM6 serial port interfaces. Only COM3 comes with power capability on DCD# and RI# pins by setting JP13 (see section 2.3.7).

Pin	Signal	Pin	Signal
1	DCD#	2	DSR#
3	RXD	4	RTS#
5	TXD	6	CTS#
7	DTR#	8	RI#
9	GND	10	N/C

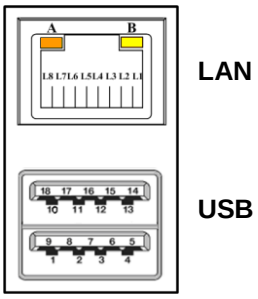


2.4.18 LAN and USB 3.0 Connectors (CN25 and CN26)

The motherboard comes with two high performance plug and play Ethernet interfaces (RJ-45) which are fully compliant with the IEEE 802.3 standard. Connection can be established by plugging one end of the Ethernet cable into this RJ-45 connector and the other end to a 1000/100/10-Base-T hub.

The Universal Serial Bus (compliant with USB 3.0) connectors on the rear I/O are for installing USB peripherals such as keyboard, mouse, scanner, etc.

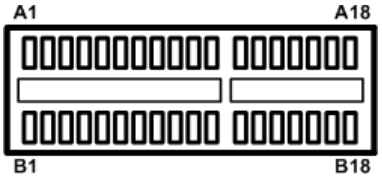
Pin	LAN Signal	Pin	USB Signal
L1	MDI0+	1/10	USB3_POWER
L2	MDI0-	2/11	USB D0-
L3	MDI1+	3/12	USB D0+
L4	MDI2+	4/7/13/16	GND
L5	MDI2-	5/14	USB3_SSRX0-
L6	MDI1-	6/15	USB3_SSRX0+
L7	MDI3+	8/17	USB3_SSTX0-
L8	MDI3-	9/18	USB3_SSTX0+
A	Speed LED 1000 Mbps: Orange 100/10 Mbps: Green/OFF		
B	Active LED (Yellow) Off: No link Blinking: Data activity detected		



2.4.19 PCI-Express x1 Slot (CN27)

This motherboard has one PCI-Express x1 slot.

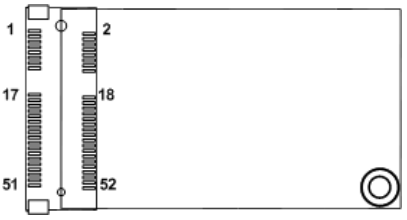
Pin	Signal	Pin	Signal
B1	+12V	A1	PRSNT1#
B2	+12V	A2	+12V
B3	RSVD	A3	+12V
B4	GND	A4	GND
B5	SMCLK	A5	NC
B6	SMDAT	A6	NC
B7	GND	A7	NC
B8	+3.3V	A8	NC
B9	NC	A9	+3.3V
B10	3.3Vaux	A10	+3.3V
B11	WAKE#	A11	PERST#
B12	NC	A12	GND
B13	GND	A13	REFCLK+
B14	HSOP0	A14	REFCLK-
B15	HSON0	A15	GND
B16	GND	A16	HSIP0
B17	NC	A17	HSIN0
B18	GND	A18	GND



2.4.20 PCI-Express Mini Card Connector (CN28)

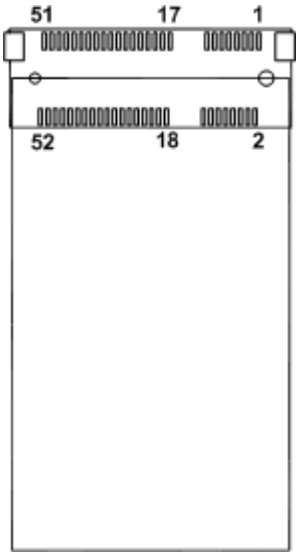
This is a PCI-Express Mini Card connector applying to PCI-Express or USB 2.0. It also complies with PCI-Express Mini Card Spec. V1.2.

Pin	Signal	Pin	Signal
1	WAKE#	2	+3.3VAUX
3	RSVD1	4	GND
5	RSVD2	6	+1.5V
7	CLKREQ#	8	UIM_PWR
9	GND	10	UIM_DAT
11	REFCLK-	12	UIM_CLK
13	REFCLK+	14	UIM_REST
15	GND	16	UIM_VPP
17	RSVD3	18	GND
19	RSVD4	20	W_DISABLE#
21	GND	22	PERST#
23	PERN0	24	+3.3VAUX
25	PERP0	26	GND
27	GND	28	+1.5V
29	GND	30	SMB_CLK
31	PETN0	32	SMB_DATA
33	PETP0	34	GND
35	GND	36	USB_D-
37	GND	38	USB_D+
39	+3.3VAUX	40	GND
41	+3.3VAUX	42	N/C
43	GND	44	N/C
45	RVD5	46	N/C
47	RVD6	48	+1.5V
49	RVD7	50	GND
51	RVD8	52	+3.3VAUX



2.4.21 mSATA Slot (CN29)

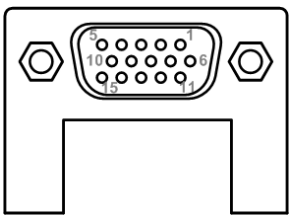
Pin	Signal	Pin	Signal
1	WAKE#	2	+3.3VAUX
3	RSVD1	4	GND
5	RSVD2	6	+1.5V
7	CLKREQ#	8	UIM_PWR
9	GND	10	UIM_DAT
11	REFCLK-	12	UIM_CLK
13	REFCLK+	14	UIM_REST
15	GND	16	UIM_VPP
17	RSVD3	18	GND
19	RSVD4	20	W_DISABLE#
21	GND	22	PERST#
23	PERN0	24	+3.3VAUX
25	PERP0	26	GND
27	GND	28	+1.5V
29	GND	30	SMB_CLK
31	PETN0	32	SMB_DATA
33	PETP0	34	GND
35	GND	36	USB_D-
37	GND	38	USB_D+
39	+3.3VAUX	40	GND
41	+3.3VAUX	42	N/C
43	GND	44	N/C
45	RVD5	46	N/C
47	RVD6	48	+1.5V
49	RVD7	50	GND
51	RVD8	52	+3.3VAUX



2.4.22 VGA Connector (CN30)

The CN30 is a high rise 15-pin D-Sub connector which is commonly used for VGA monitor. This VGA interface configuration can be configured via software utility.

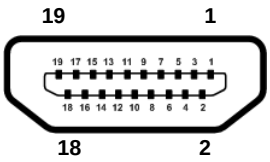
Pin	Signal	Pin	Signal
1	Red	2	Green
3	Blue	4	NC
5	GND	6	DETECT
7	GND	8	GND
9	VCC	10	GND
11	NC	12	DDC DATA
13	Horizontal Sync	14	Vertical Sync
15	DDC CLK		



2.4.23 HDMI Connector (CN31)

The HDMI (High-Definition Multimedia Interface) is a compact digital interface which is capable of transmitting high-definition video and high-resolution audio over a single cable.

Pin	Signal	Pin	Signal
1	HDMI OUT_DATA2+	2	GND
3	HDMI OUT_DATA2-	4	HDMI OUT_DATA1+
5	GND	6	HDMI OUT_DATA1-
7	HDMI OUT_DATA0+	8	GND
9	HDMI OUT_DATA0-	10	HDMI OUT_Clock+
11	GND	12	HDMI OUT_Clock-
13	N/C	14	RSVD
15	HDMI OUT_SCL	16	HDMI OUT_SDA
17	GND	18	+5V
19	HDMI_HTPLG		



2.4.24 Audio Jack (CN32)

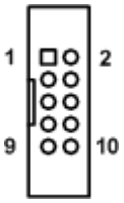
The motherboard provides HD audio jack on the rear I/O. Install audio driver, and then attach audio devices to CN32.

Pin Color	Signal
Green	Line-out
Pink	MIC-in

2.4.25 Front Audio Header (CN33)

This is front audio header (5x2-pin p=2.00mm) for convenient connection and control of audio devices.

Pin	Signal	Pin	Signal
1	MIC_IN	2	GND
3	LINE_IN_L	4	GND
5	LINE_IN_R	6	GND
7	AUD_OUT_L	8	GND
9	AUD_OUT_R	10	GND

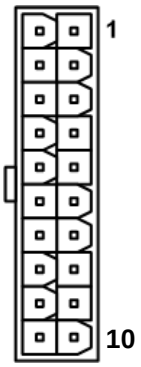


2.4.26 ATX Power Input Connector (CN34)

Steady and sufficient power can be supplied to all components on the board by connecting power connector. Please make sure all components and devices are properly installed before connecting the power connector.

External power supply plug fits into this connector in only one orientation. Properly press down power supply plug until it completely and firmly fits into this connector. Loose connection may cause system instability.

Pin	Signal	Pin	Signal
1	+3V	11	+3V
2	+3V	12	-12V
3	GND	13	GND
4	+5V	14	PS_ON
5	GND	15	GND
6	+5V	16	GND
7	GND	17	GND
8	Power OK	18	-5V
9	+5VSB	19	+5V
10	+12V	20	+5V



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Chapter 3
Hardware Description

3.1 Microprocessors

The MANO300 Series supports Intel® Celeron® N3160 processor, which enable your system to operate under Windows® 7, Windows® 8.1, Windows® 10 and Linux environments. The system performance depends on the microprocessor. Make sure all correct settings are arranged for your installed microprocessor to prevent the CPU from damages.

3.2 BIOS

The MANO300 Series uses AMI Plug and Play BIOS with a single SPI Flash.

3.3 System Memory

The MANO300 supports two 204-pin DDR3L SO-DIMM sockets for maximum memory capacity up to 8GB DDR3L SDRAMs. The memory module comes in sizes of 1GB, 2GB, 4GB and 8GB.

Note

If only one memory module is used, please install in DIMM1 (the upper SO-DIMM socket).

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Chapter 4
AMI BIOS Setup Utility

The AMI UEFI BIOS provides users with a built-in setup program to modify basic system configuration. All configured parameters are stored in a flash chip to save the setup information whenever the power is turned off. This chapter provides users with detailed description about how to set up basic system configuration through the AMI BIOS setup utility.

4.1 Starting

To enter the setup screens, follow the steps below:

1. Turn on the computer and press <Del> during the Power On Self Test (POST) to enter BIOS setup, otherwise, POST will continue with its test routines.
2. Once you enter the BIOS, the main BIOS setup menu displays. You can access the other setup screens from the main BIOS setup menu, such as the Advanced and Chipset menus.

Note

If your computer cannot boot after making and saving system changes with BIOS setup, you can restore BIOS optimal defaults by setting JP2 (see section 2.3.1).

It is strongly recommended that you should avoid changing the chipset's defaults. Both AMI and your system manufacturer have carefully set up these defaults that provide the best performance and reliability.

4.2 Navigation Keys

The BIOS setup/utility uses a key-based navigation system called hot keys. Most of the BIOS setup utility hot keys can be used at any time during the setup navigation process. These keys include <F1>, <F2>, <Enter>, <ESC>, <Arrow> keys, and so on.

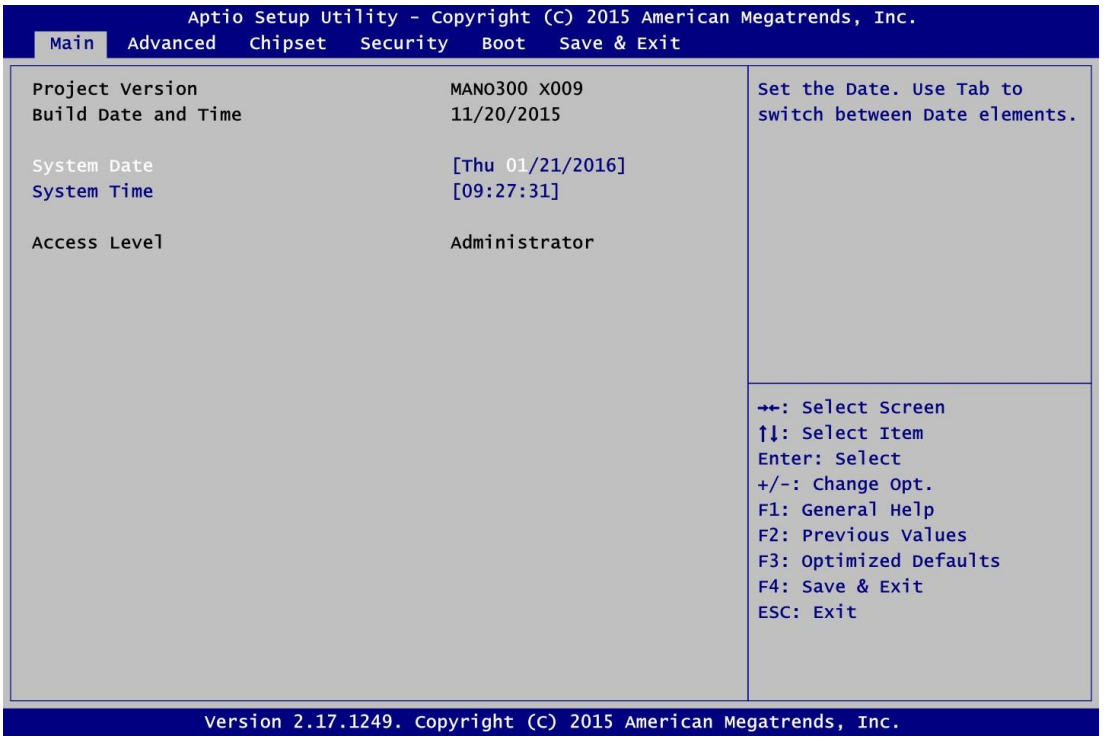
Note

Some of the navigation keys differ from one screen to another.

Hot Keys	Description
→← Left/Right	The Left and Right <Arrow> keys allow you to select a setup screen.
↑↓ Up/Down	The Up and Down <Arrow> keys allow you to select a setup screen or sub screen.
Enter	The <Enter> key allows you to display or change the setup option listed for a particular setup item. The <Enter> key can also allow you to display the setup sub screens.
+– Plus/Minus	The Plus and Minus <Arrow> keys allow you to change the field value of a particular setup item.
F1	The <F1> key allows you to display the General Help screen.
F2	The <F2> key allows you to Load Previous Values.
F3	The <F3> key allows you to Load Optimized Defaults.
F4	The <F4> key allows you to save any changes you have made and exit Setup. Press the <F4> key to save your changes.
Esc	The <Esc> key allows you to discard any changes you have made and exit the Setup. Press the <Esc> key to exit the setup without saving your changes.

4.3 Main Menu

When you first enter the setup utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab. System Time/Date can be set up as described below. The Main BIOS setup screen is shown below.



BIOS Information
Display the BIOS information.

System Date/Time
Use this option to change the system time and date. Highlight System Time or System Date using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in MM/DD/YY format. The time is entered in HH:MM:SS format.

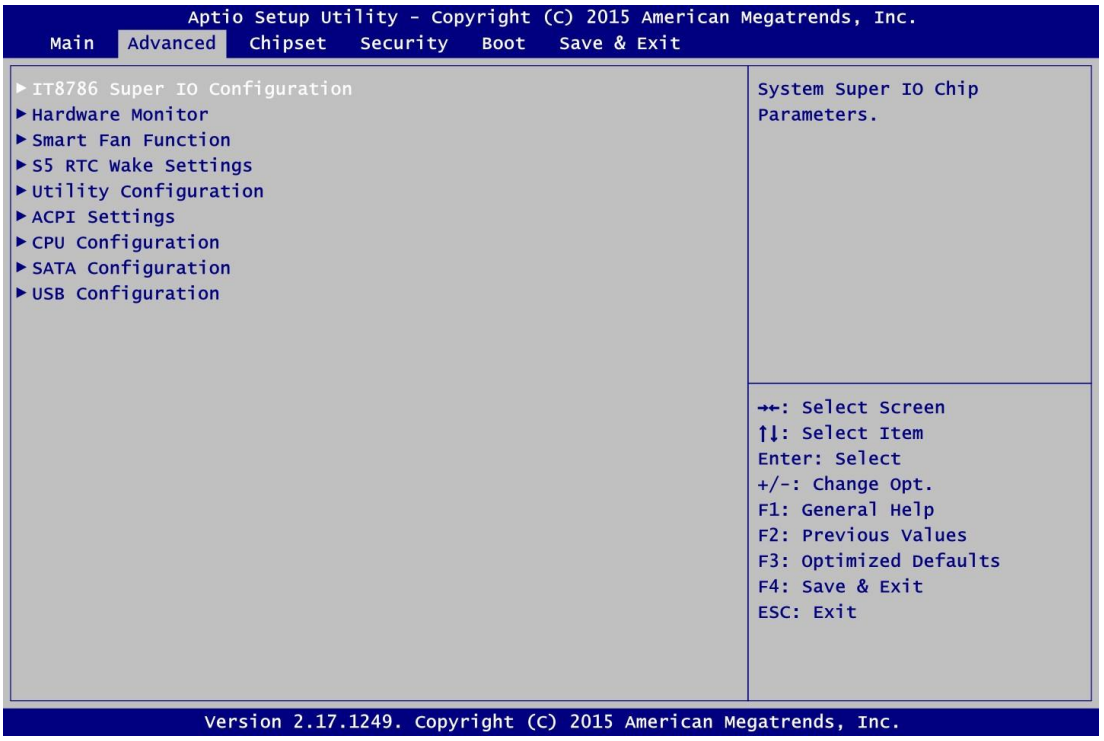
Access Level
Display the access level of current user.

4.4 Advanced Menu

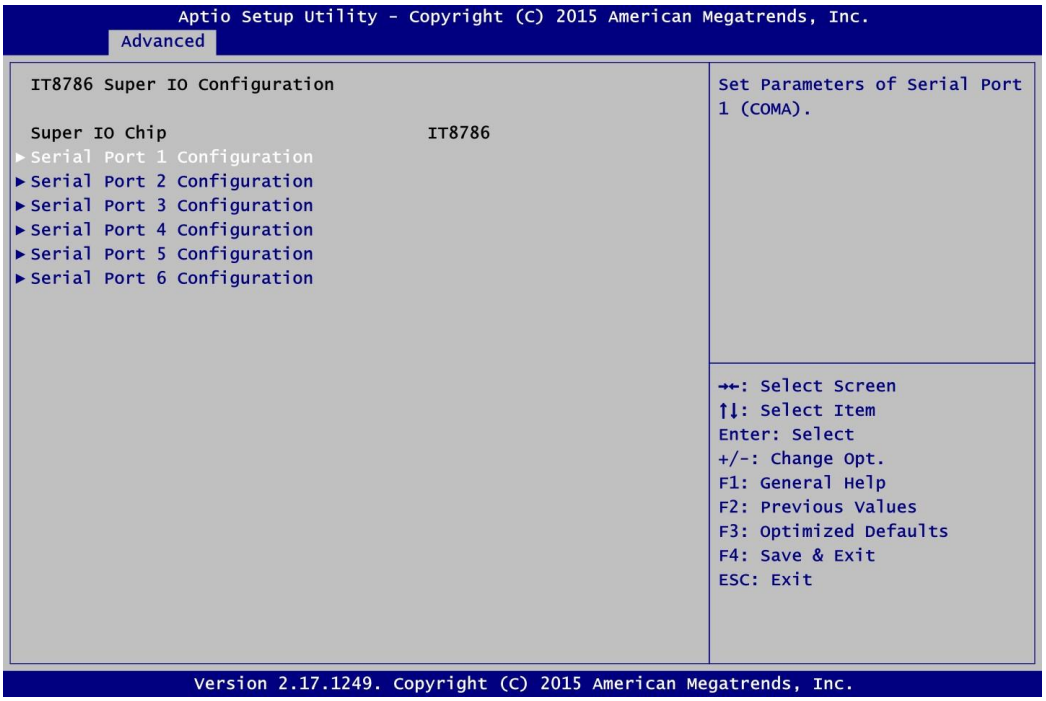
The Advanced menu also allows users to set configuration of the CPU and other system devices. You can select any of the items in the left frame of the screen to go to the sub menus:

- ▶ IT8786 Super IO Configuration
- ▶ Hardware Monitor
- ▶ Smart Fan Function
- ▶ S5 RTC Wake Settings
- ▶ Utility Configuration
- ▶ ACPI Settings
- ▶ CPU Configuration
- ▶ SATA Configuration
- ▶ USB Configuration

For items marked with "▶", please press <Enter> for more options.

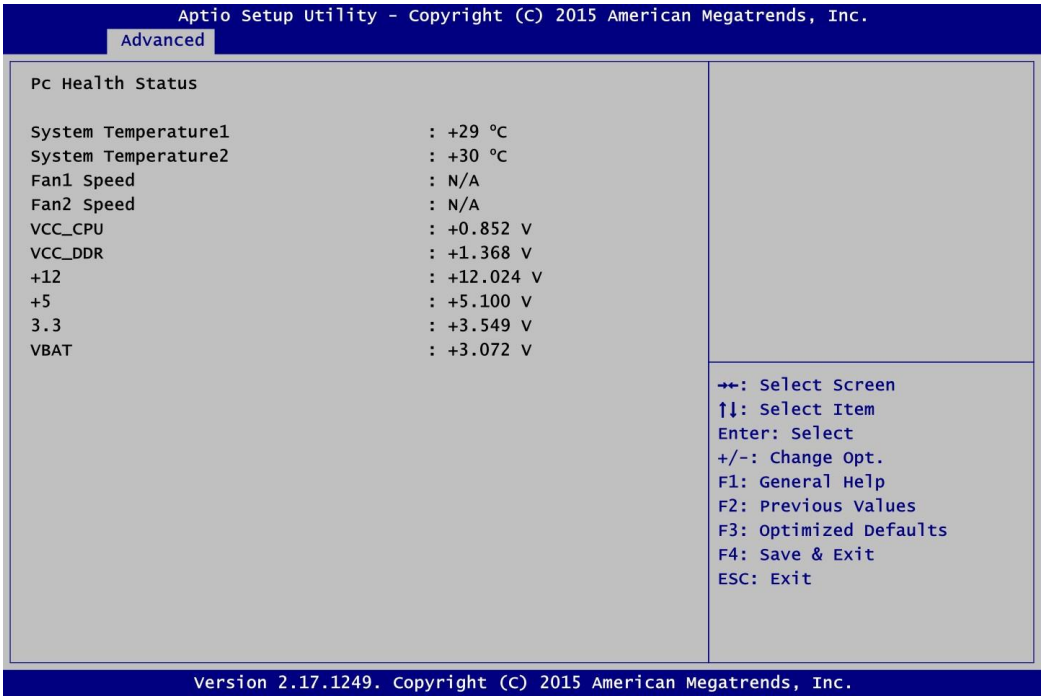


- **Super IO Configuration**
  You can use this screen to select options for the Super IO Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen. For items marked with "▶", please press <Enter> for more options.



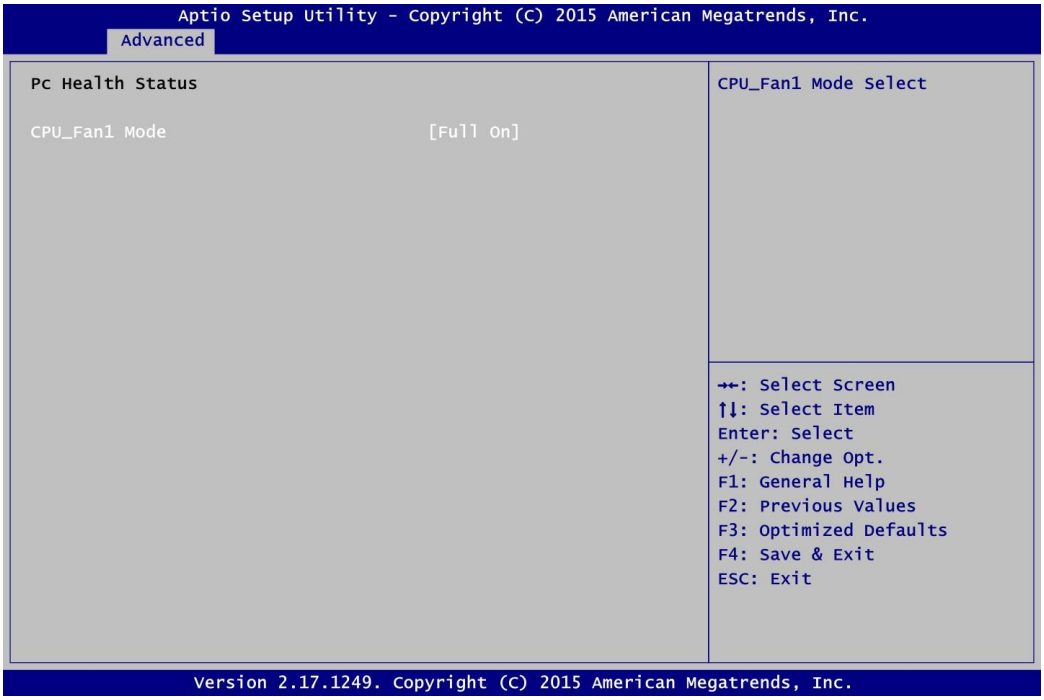
Serial Port 1~6 Configuration
Use these items to set parameters related to serial port 1~6.

- **Hardware Monitor**
  This screen monitors hardware health status.



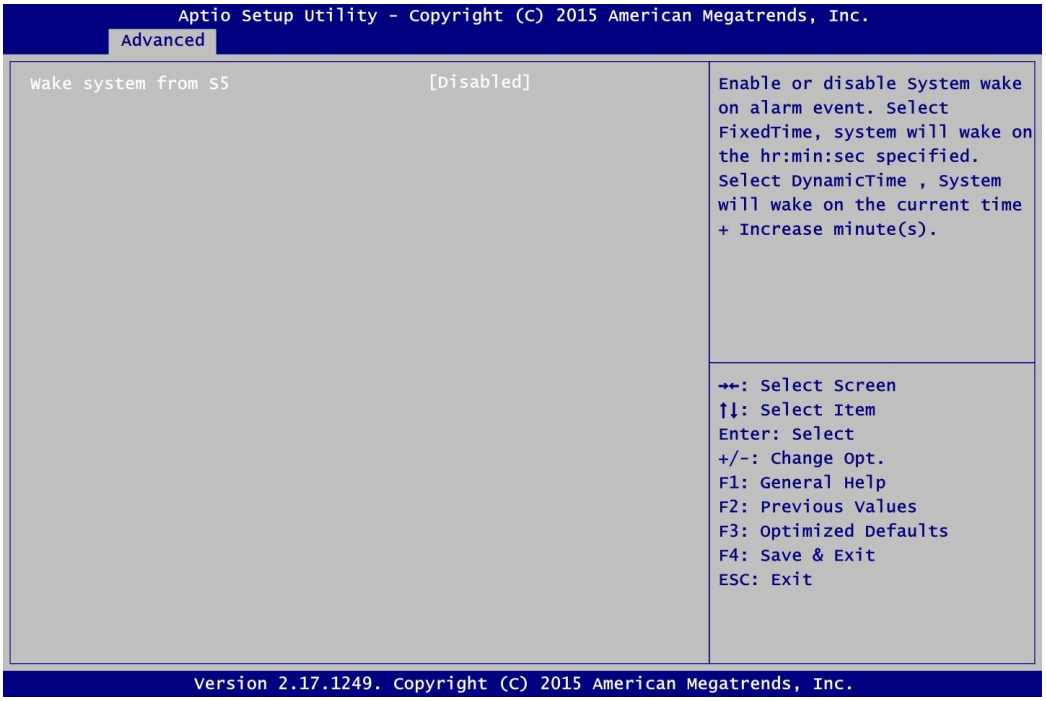
This screen displays the temperature of system and CPU, cooling fans speed in RPM and system voltages (VCC_CPU, VCC_DDR, +12V, +5V, +3.3V and VBAT).

- **Smart Fan Function**
  This screen allows you to select CPU fan mode.



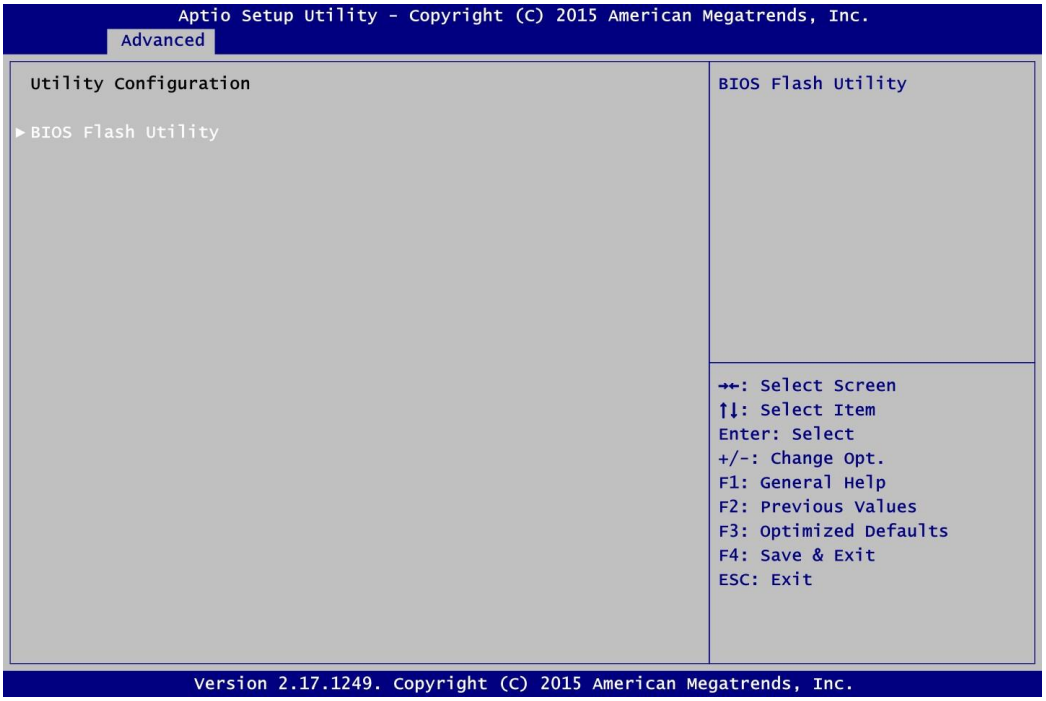
CPU_Fan1 Mode
This item allows you to select CPU fan mode, which can be set to Full on, Manual, Auto PWM or Auto RPM Mode.

- **S5 RTC Wake Settings**



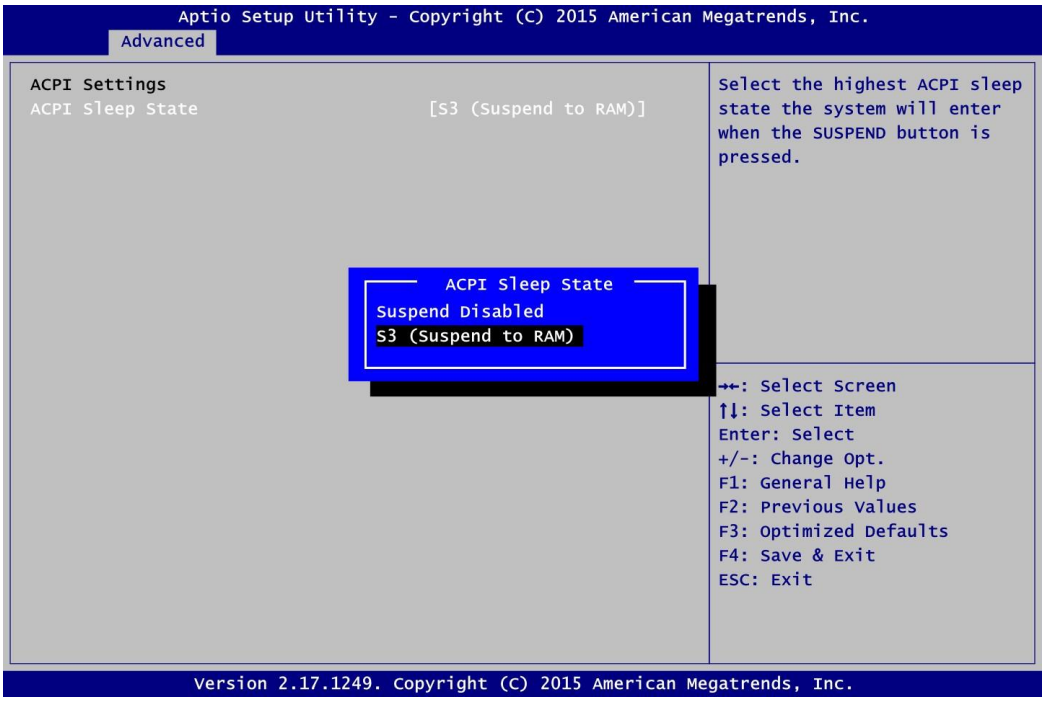
Wake system from S5
Enable or disable system wake on alarm event. It allows you to wake up the system in a certain time. Select Fixed Time to set the system to wake on the specified time. Use <↑> <↓> to switch among the items: Day, Hour, Minute and Second, and type the value in the selected item as you wish. For example, if you want the system to start up automatically at 16:20:15, the 18th day of each month, then you should enter 18, 16, 20, and 15 from top to bottom.

- **Utility Configuration**



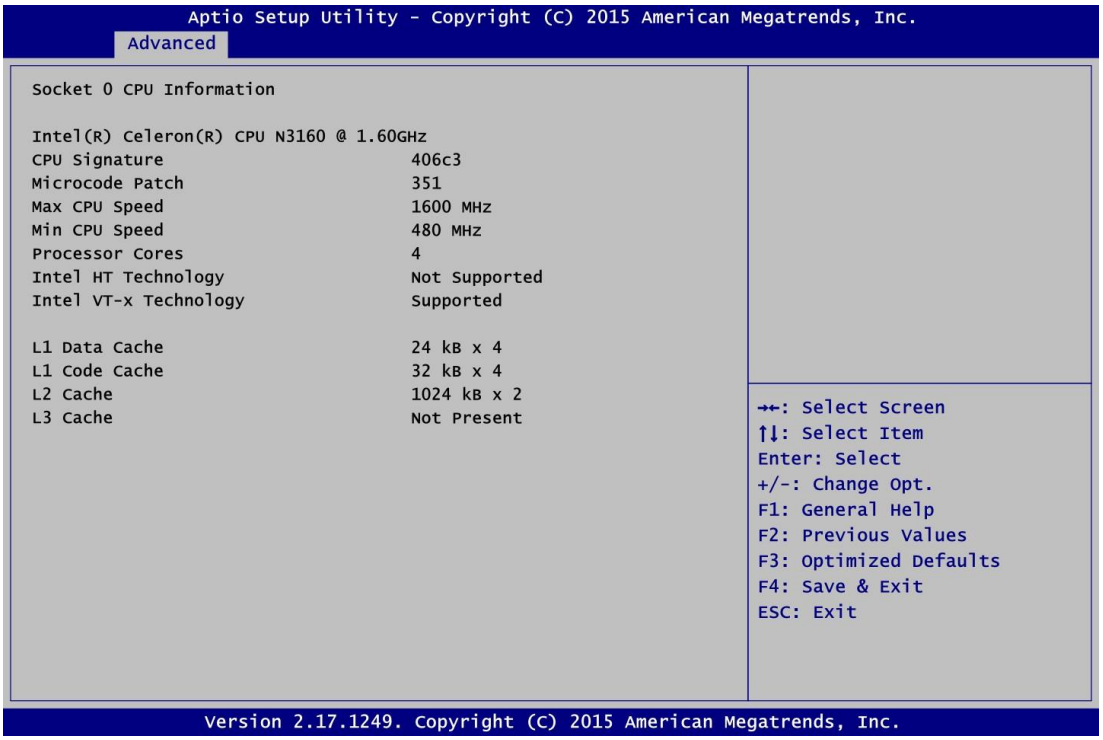
BIOS Flash Utility
BIOS flash utility configuration. For more detailed information, please refer to Appendix A.

- **ACPI Settings**
  You can use this screen to select options for the ACPI configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen.

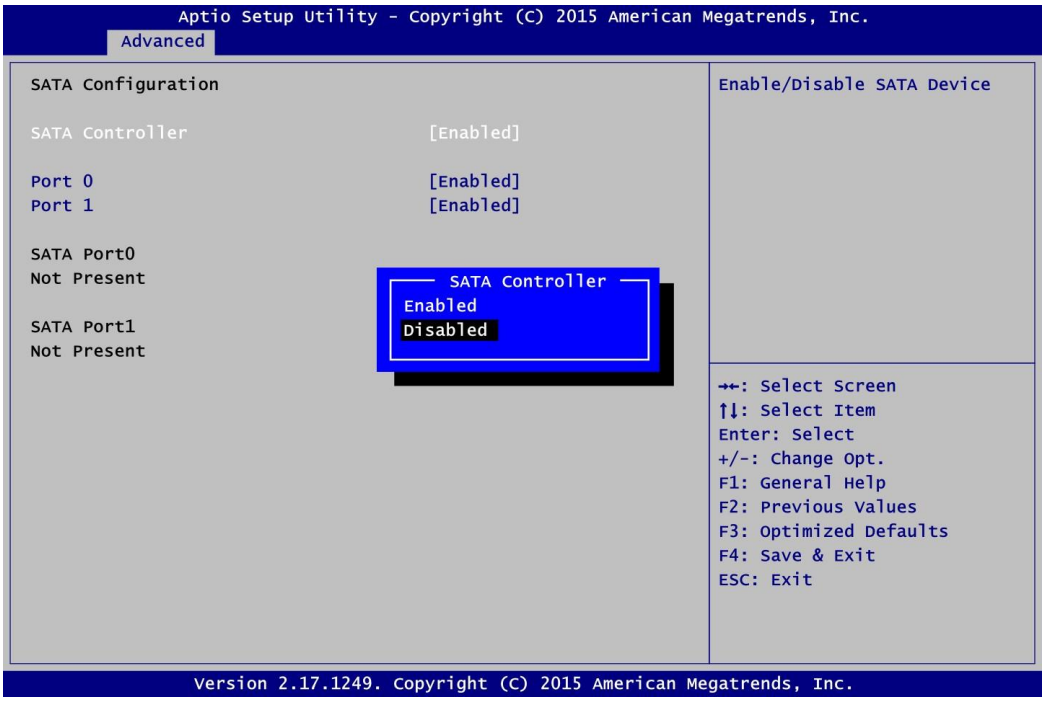


ACPI Sleep State
Select the ACPI (Advanced Configuration and Power Interface) sleep state. Configuration options are Suspend Disabled and S3 (Suspend to RAM). The default setting is S3 (Suspend to RAM); this option selects ACPI sleep state the system will enter when suspend button is pressed.

- **CPU Configuration**
  This screen shows the CPU information, and you can change the value of the selected option.



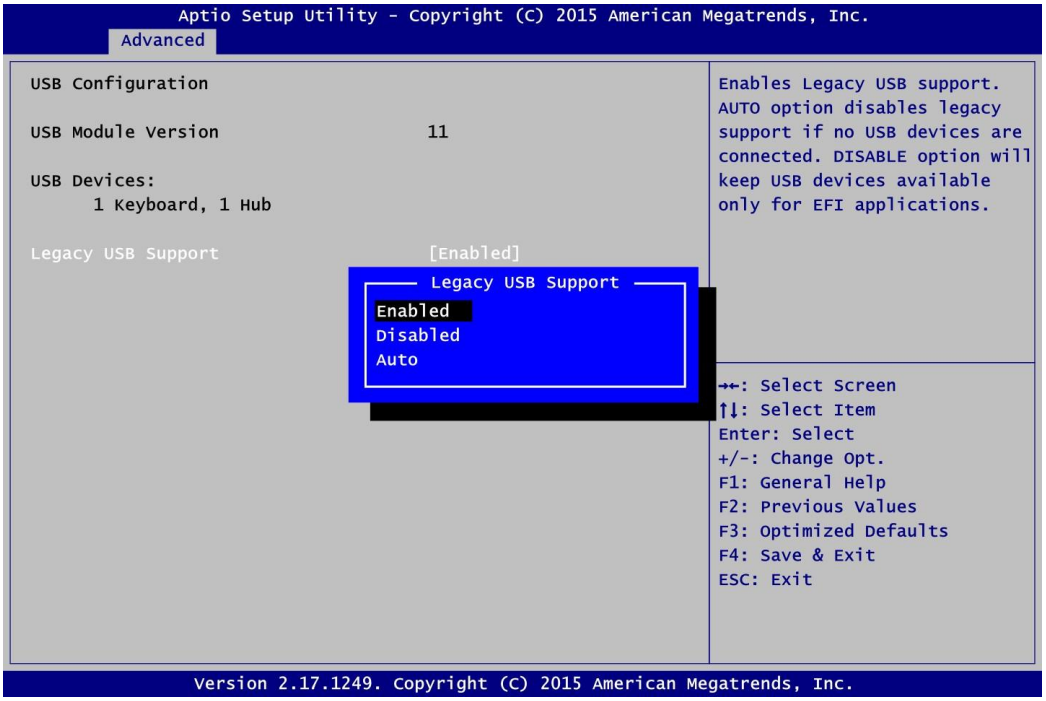
- **SATA Configuration**
  During system boot up, the BIOS automatically detects the presence of SATA devices. In the SATA Configuration menu, you can see the currently installed hardware in the SATA ports.



SATA Controller
Enable or disable the SATA controller feature.

Port 0~1
Enable or disable the onboard SATA port 0~1.

- **USB Configuration**



USB Devices
Display all detected USB devices.

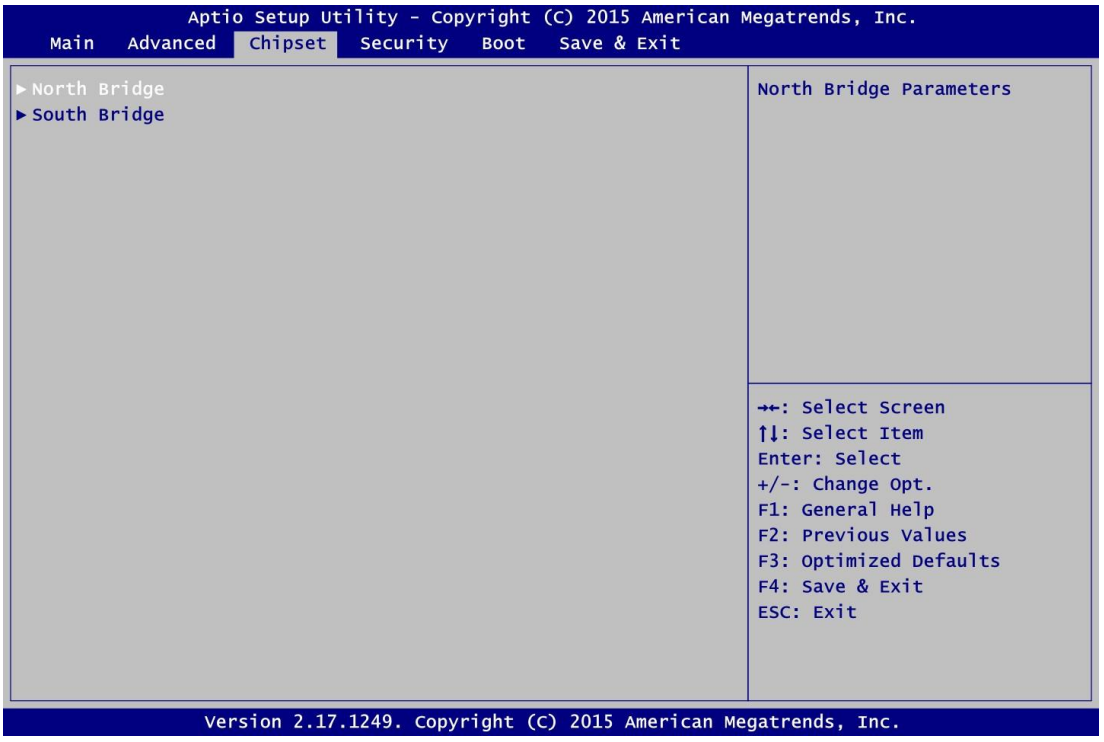
Legacy USB Support
Use this item to enable or disable legacy support for USB devices. The default setting is Enabled. Auto option disables legacy support if no USB devices are connected. Disable option will keep USB devices available only for EFI applications.

4.5 Chipset Menu

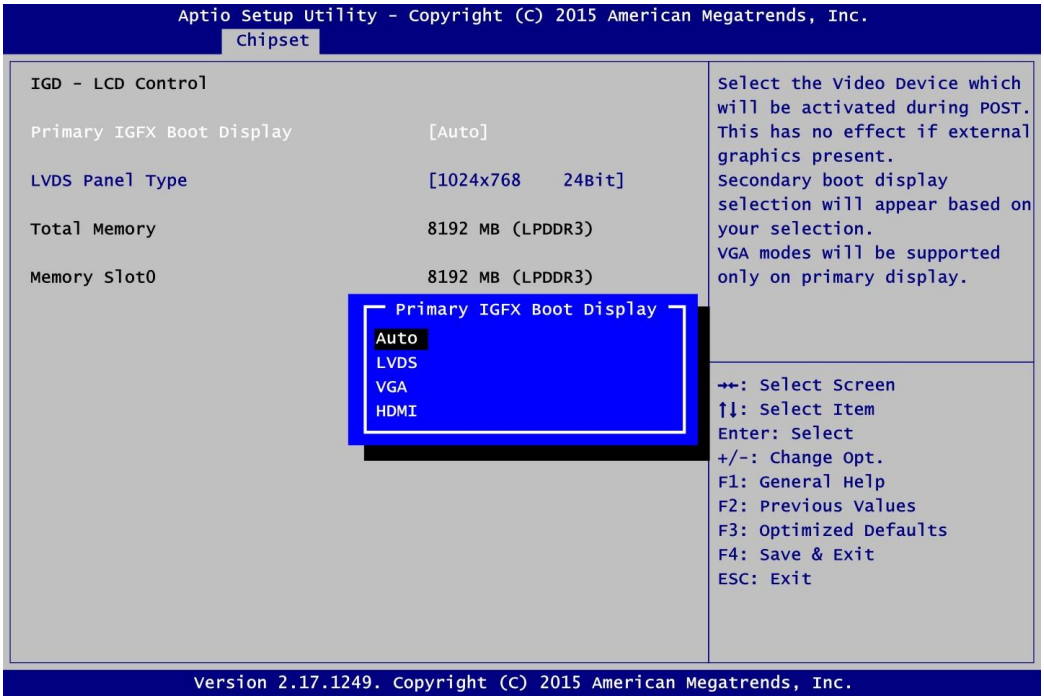
The Chipset menu allows users to change the advanced chipset settings. You can select any of the items in the left frame of the screen to go to the sub menus:

- ► North Bridge
- ► South Bridge

For items marked with "►", please press <Enter> for more options.



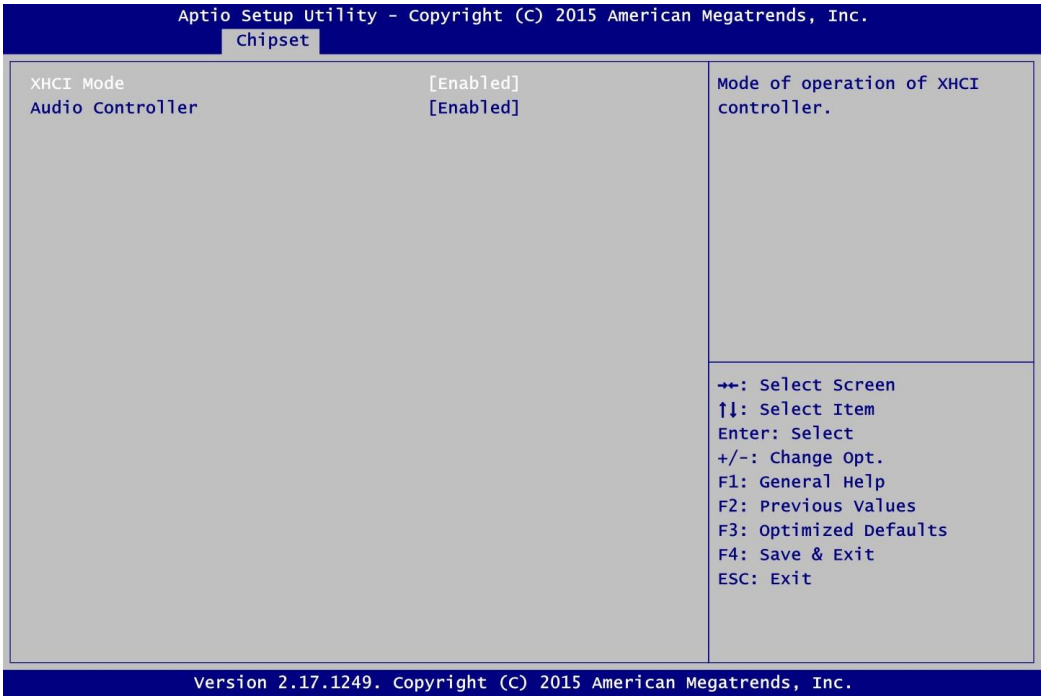
- **North Bridge**
  This screen allows users to configure parameters of North Bridge chipset.



Primary IGFX Boot Display
Select the video device which will be activated during POST (Power-On Self Test). The default is LVDS.

LVDS Panel Type
Select LVDS panel resolution.

- **South Bridge**
  This screen allows users to configure parameters of South Bridge chipset.

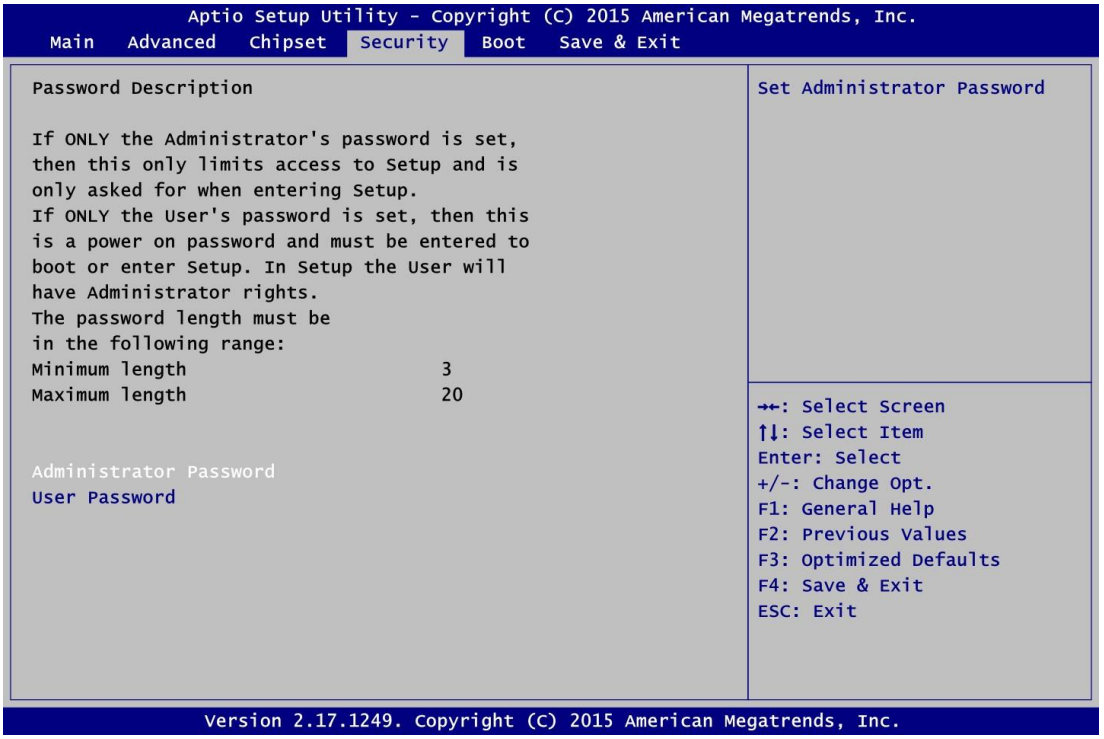


XHCI Mode
Select operation mode of XHCI controller.

Audio Controller
Control detection of the audio device.
- Disabled: Audio device will be unconditionally disabled.
- Enabled: Audio device will be unconditionally enabled.
- Auto: If device is present, audio controller will be enabled, otherwise will be disabled.

4.6 Security Menu

The Security menu allows users to change the security settings for the system.

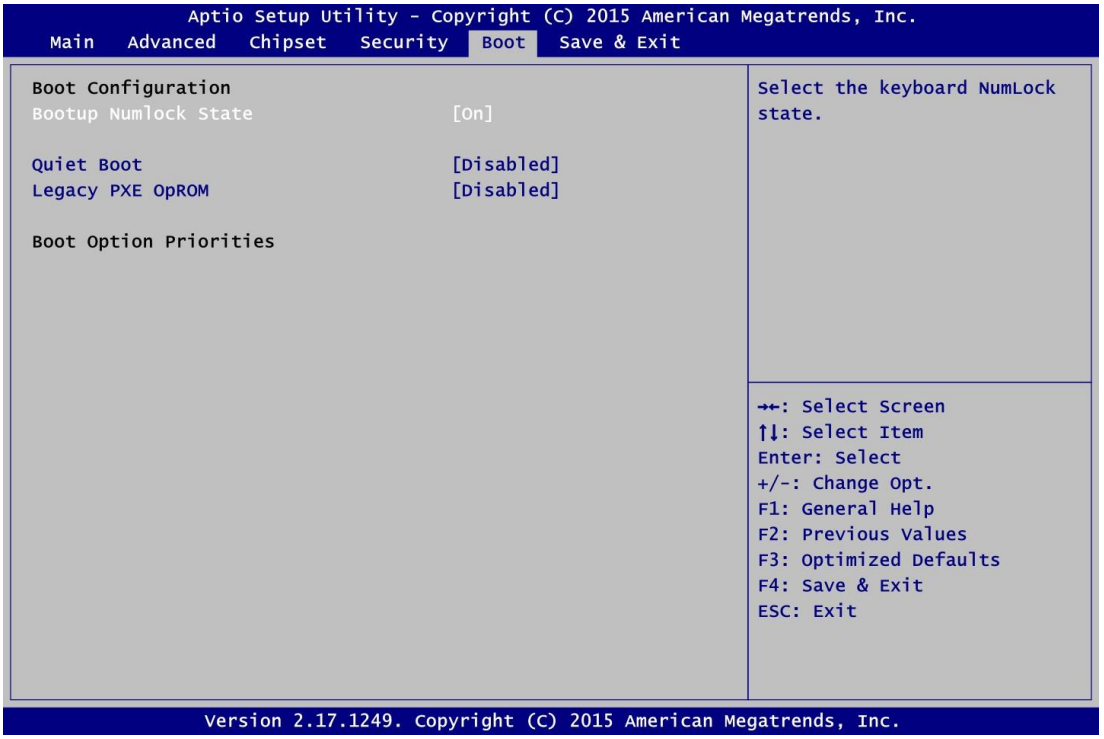


- **Administrator Password**
  This item indicates whether an administrator password has been set (installed or uninstalled).

- **User Password**
  This item indicates whether a user password has been set (installed or uninstalled).

4.7 Boot Menu

The Boot menu allows users to change boot options of the system.



- **Bootup NumLock State**
  Use this item to select the power-on state for the keyboard NumLock.

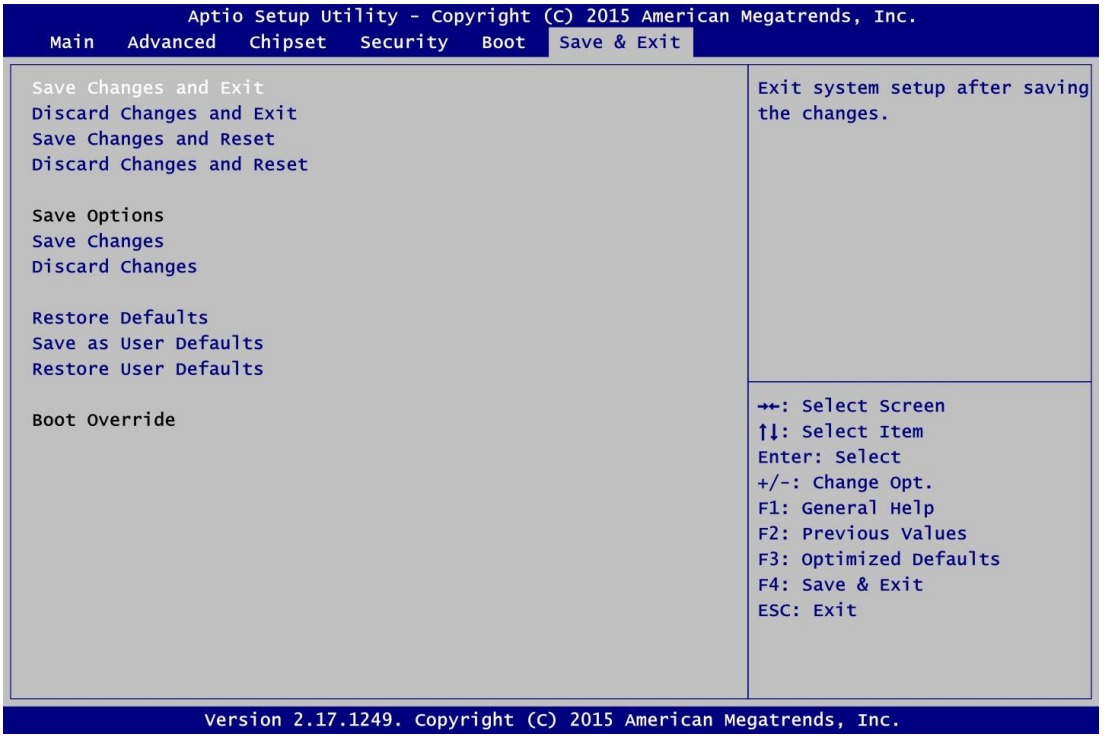
- **Quiet Boot**
  Select to display either POST output messages or a splash screen during boot-up.

- **Legacy PXE OpROM**
  Enable or disable the Preboot eXecution Environment (PXE) boot ROM function of the onboard LAN chip during system boots up.

- **Boot Option Priorities [Boot Option #1, …]**
  These are settings for boot priority. Specify the boot device priority sequence from the available devices.

4.8 Save & Exit Menu

The Save & Exit menu allows users to load your system configuration with optimal or fail-safe default values.



- **Save Changes and Exit**
  When you have completed the system configuration changes, select this option to leave Setup and return to Main Menu. Select Save Changes and Exit from the Save & Exit menu and press <Enter>. Select Yes to save changes and exit.

- **Discard Changes and Exit**
  Select this option to quit Setup without making any permanent changes to the system configuration and return to Main Menu. Select Discard Changes and Exit from the Save & Exit menu and press <Enter>. Select Yes to discard changes and exit.

- **Save Changes and Reset**
  When you have completed the system configuration changes, select this option to leave Setup and reboot the computer so the new system configuration parameters can take effect. Select Save Changes and Reset from the Save & Exit menu and press <Enter>. Select Yes to save changes and reset.

- **Discard Changes and Reset**
  Select this option to quit Setup without making any permanent changes to the system configuration and reboot the computer. Select Discard Changes and Reset from the Save & Exit menu and press <Enter>. Select Yes to discard changes and reset.

- **Save Changes**
  When you have completed the system configuration changes, select this option to save changes. Select Save Changes from the Save & Exit menu and press <Enter>. Select Yes to save changes.

- **Discard Changes**
  Select this option to quit Setup without making any permanent changes to the system configuration. Select Discard Changes from the Save & Exit menu and press <Enter>. Select Yes to discard changes.

- **Restore Defaults**
  It automatically sets all Setup options to a complete set of default settings when you select this option. Select Restore Defaults from the Save & Exit menu and press <Enter>.

- **Save as User Defaults**
  Select this option to save system configuration changes done so far as User Defaults. Select Save as User Defaults from the Save & Exit menu and press <Enter>.

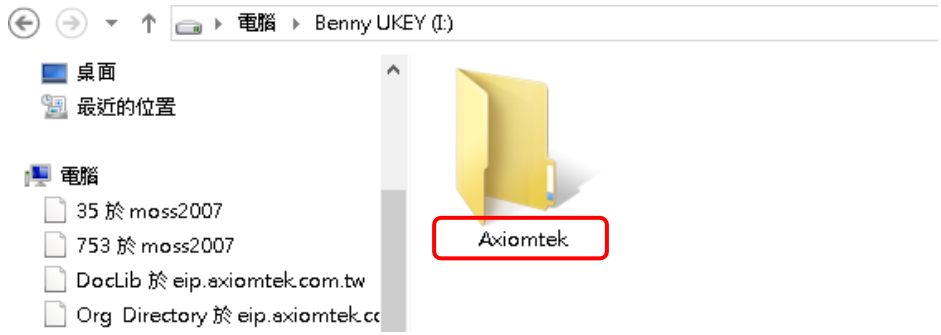
- **Restore User Defaults**
  It automatically sets all Setup options to a complete set of User Defaults when you select this option. Select Restore User Defaults from the Save & Exit menu and press <Enter>.

- **Boot Override**
  Select a drive to immediately boot that device regardless of the current boot order.

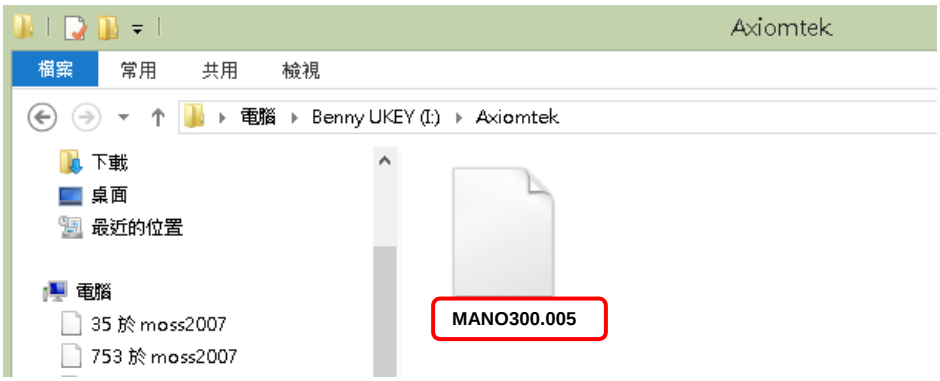
Appendix A
BIOS Flash Utility

The BIOS Flash utility is a new helpful function in BIOS setup program. With this function you can easily update system BIOS without having to enter operating system. In this appendix you may learn how to do it in just a few steps. Please read and follow the instructions below carefully.

1. In your USB flash drive, create a new folder and name it “Axiomtek”, see figure below.

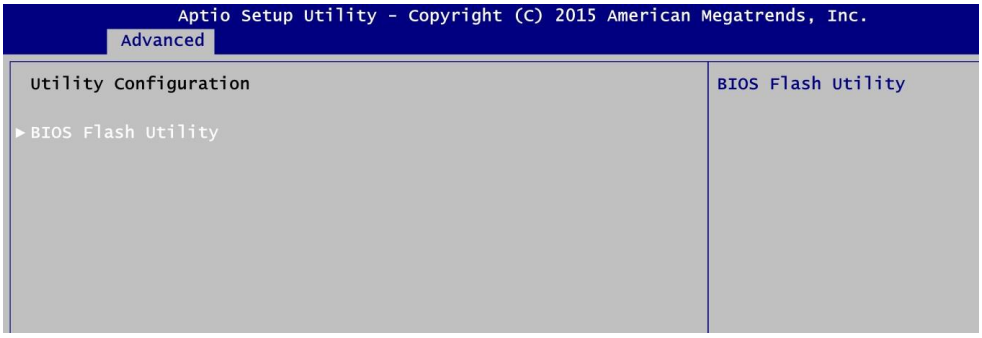


2. Copy BIOS ROM file (e.g. MANO300.005) to “Axiomtek” folder.

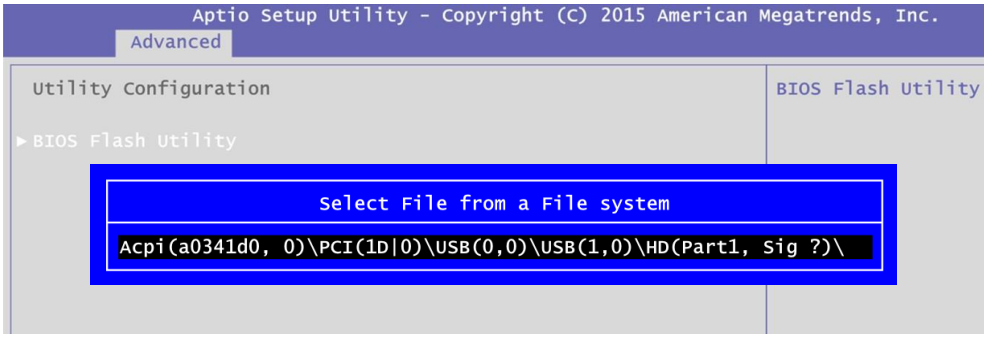


3. Insert the USB flash drive to your system.

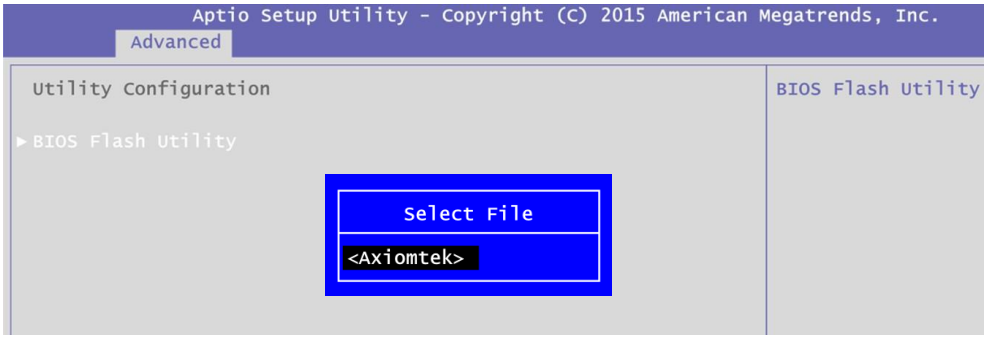
4. Enter BIOS setup menu and go to Advanced\Utility Configuration. Select BIOS Flash Utility and press <Enter>.



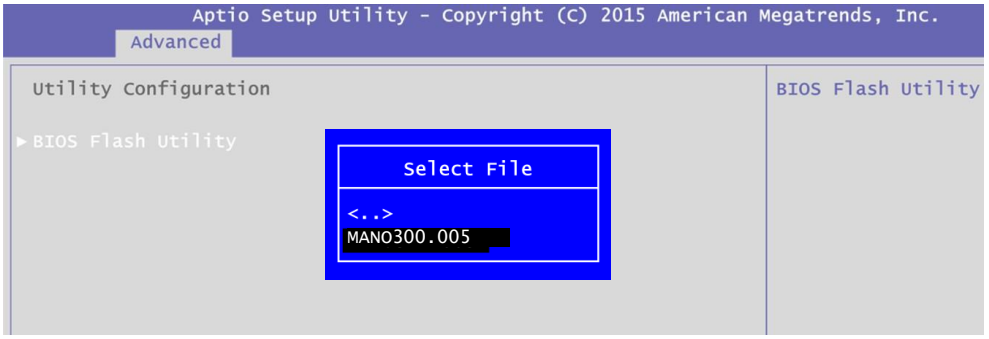
5. BIOS automatically detect all USB drive(s) attached to the system. In this example only one USB drive is attached to the system. That's why, you can see only one device is displayed in figure below.



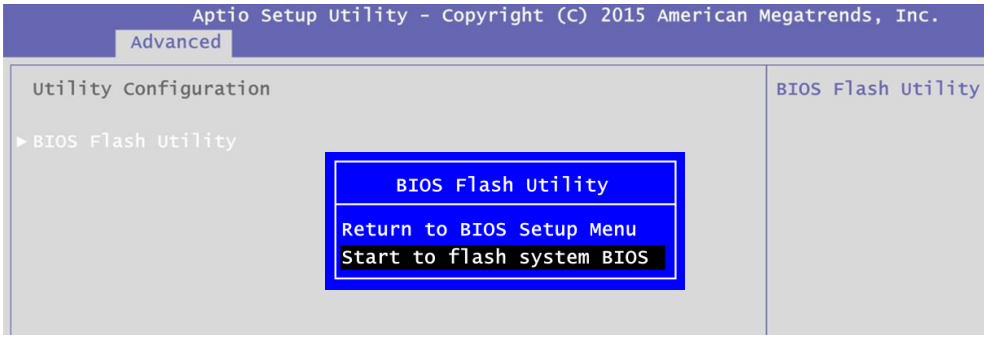
6. Select the USB drive containing BIOS ROM file you want to update using the <↑> or <↓> key. Then press <Enter> to get into "Axiomtek" folder.



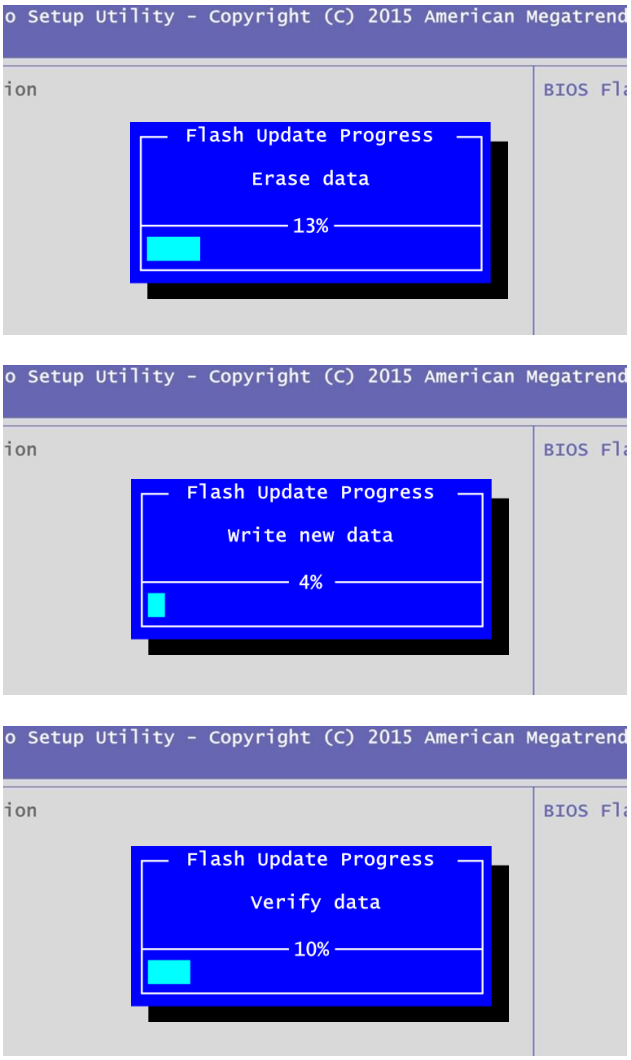
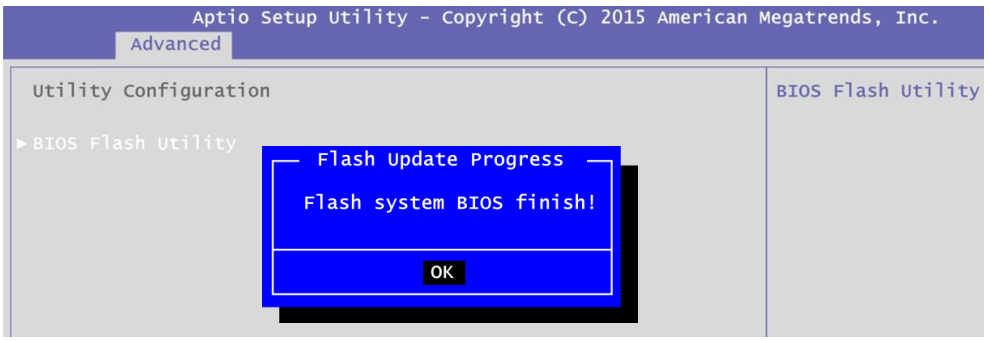
7. Now you can see the BIOS ROM file on the screen, press <Enter> to select.



8. Select Start to flash system BIOS option to begin updating procedure.



9. Please wait while BIOS completes the entire flash update process: erase data, write new data and verify data.



10. When you see the following figure, press <Enter> to finish the update process. After that the system will shut down and restart immediately.