

# 1 product introduction

10.1", 12", 15", 15.6", 17", 19", 21.5" the TFT LCD touch tablet PC, Intel Core i5- 7360U / i7-7560U / i5 - 8250U/ i7 – 8550U processor board veneer . 8 GB the DDR . 4 memory, support dual display, dual SSD storage, wide voltage 9-36V input, having a compact, fanless, high computing performance characteristics, the front panel Protection grade IP65, die-cast aluminum alloy body and full-plane 5-wire resistive touch screen , with waterproof and dustproof functions, suitable for harsh industrial environments.

## Application

- Factory automation
- System monitor
- Self-service terminal
- Wind power monitoring
- Environmental monitoring
- Coal Mine Monitoring
- Equipment
- Oil drilling
- Pharmaceutical equipment
- Car

## 1.1 Package Contents

Please make sure that the following items are included together before powering on. If any of the following items are missing or damaged, please contact your sales representative in time.

Quantity	description
1 set	PC
1 piece	2 .5 inch hard disk holder
1 piece	AC power adapter
1 set	Install buckle, remote switch terminal and screw
1 branch	Touch pen
1 branch	2x 8 pin Phoenix terminal

## Optional device

Material coding	description
	American standard power cord

European standard power cord
Japanese standard power cord
Wireless network card
VESA75 bracket

### One-key restore system

"One-Key Restore System " is a simple and easy-to-use application that can help you back up and restore the computer's system partition ( C partition) data; it runs without entering the Windows operating system. For specific technical implementation details, please contact your supplier for technical support.

### Remote switch button interface

The hardware switch interface, in the case that the operator is far away from the machine and it is inconvenient to switch the machine, it is left to the customer to place the power switch of the machine in a place that is convenient for operation.

### A configurable interface

Integrated on the motherboard 2 th 9 Pin of the RS232 serial port pin, . 1 th . 8 bit GPIO interfaces and pin . 1 th VGA Interface pin, which can be connected to the interface according to the actual needs of customers IO on the tailgate.

Integrated amplifier and two 1W 8 Ω speakers

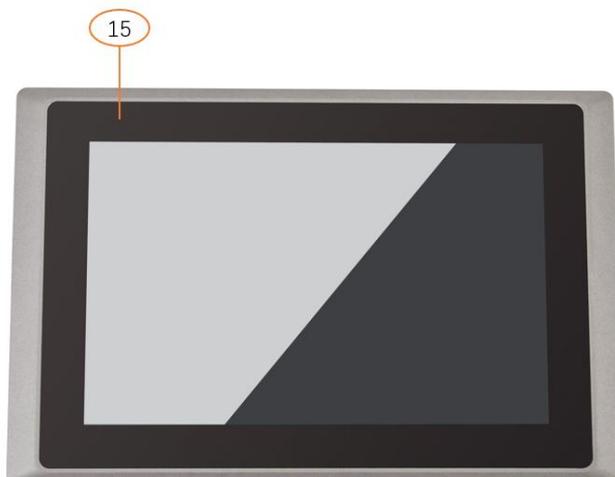
The onboard HD A audio controller and stereo amplifier output can be used to output voice and alarm signals.

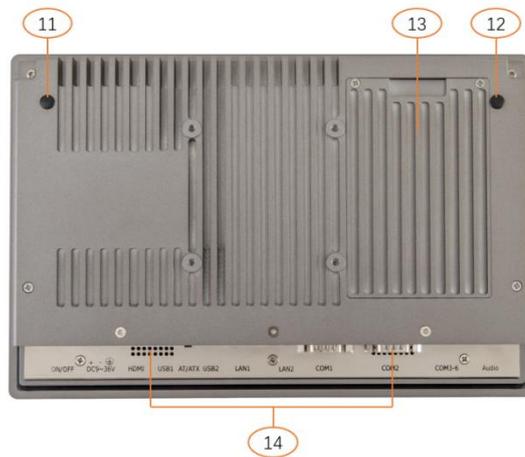
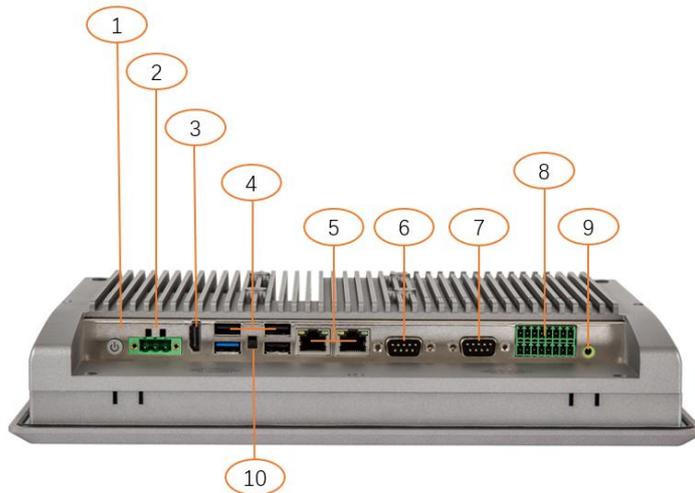
system	
processor	<u>Intel®Core i5- 7360U 2.3 GHz , up to 3.6 GHz</u> <u>Intel®Core i7 - 7560U 2.4 GHz , up to 3.8 GHz</u> <u>Intel®Core i5- 8250U 1.6 GHz , up to 3.4 GHz</u> <u>Intel®Core i7 - 8550U 1.8 GHz , up to 4 GHz</u>
System memory	Max 32G RAM DDR4
I/O interface	1 x 3 pin 5.0mm Phoenix terminal power connector 4xUSB3.0, built-in 1xUSB2.0 ( choose one from M .2 interface, default M .2) dongle interface 2 x 9 -wire COM1&COM2, RS-232/422/485 DB-9 2 x 3-wire COM3&COM4 RS-232/485 Phoenix terminal 2 x 3-wire COM5&COM6 RS-232 Phoenix terminal 1 x HDMI 1 x AT/ATX DIP switch 1 x Audio Line-out

	1 x 14bit GPIO ( optional ) 1 x Phoenix terminal remote switch interface 2 x 8 Ω 1W power amplifier output ( optional )
storage	1 x mSATA slot X. 1 the SATA interface supports ( 2 .5 " hard disk) 1 x M.2 ( support NVME protocol )
Expansion slot	1 x Mini-PCIE full card, onboard SIM card slot , support 3G/4G module 1 x Mini-PCIE half card, support WIFI Bluetooth
support system	Microsoft® WES7 32bit/Windows 7 32bit&64bit/ Windows 8.1 32bit&64bit/Windows 10 64bit
<b>power supply</b>	
power input	9 ~ 3 6 VDC
<b>Material</b>	
Front panel	Aluminum alloy
Back panel	Aluminum alloy
IP protection level	Front panel IP65
<b>Use environment</b>	
Operating temperature	- 20C to +60C SSD
storage temperature	- 30C to +70C
Storage humidity	10~90% no condensation
<b>Certification</b>	
Safety	CE, CCC
E MC	CE, FCC, CCC Class A

## 1.2 Interfaces

Provides a wealth of I/O interfaces. The functions of each interface are described as follows, including an I/O interface that can be flexibly configured .





Label	Features
1	Switch button
2	Power connector
3	HDMI interface
4	USB2.0/3.0 x4 interface
5	The Intel the I 211 Gigabit Ethernet Interface x2
6	COM1 interface,can be configured as R S232/422/485
7	COM2 interface,can be configured as R S232/422/485 Or configure as G PIOX14 ( Optional )
8	COM3456 COM3,COM4interface,can be configured as RS232/485,COM5 , COM6 interface, can be configured as RS232
9	Audio output interface
10	A T/ATX switch
11	WIFI, 3G,4G antenna interface
12	WIFI,3G ,4G antenna interface

13	SSD hard disk interface
14	Amplifier output speaker 1W 8 $\Omega$ ( Optional )
15	Power Indicator

## 2 installation method

### 2.1 install the hard disk

Machine built two hard disk interface, a 7 + 15 Pin interface for receiving 2.5 inch hard disk , another for receiving the mSATA . A hard drive bracket is designed on the fuselage to facilitate the disassembly and assembly of hard drives.



2.5 - inch hard disk mSATA



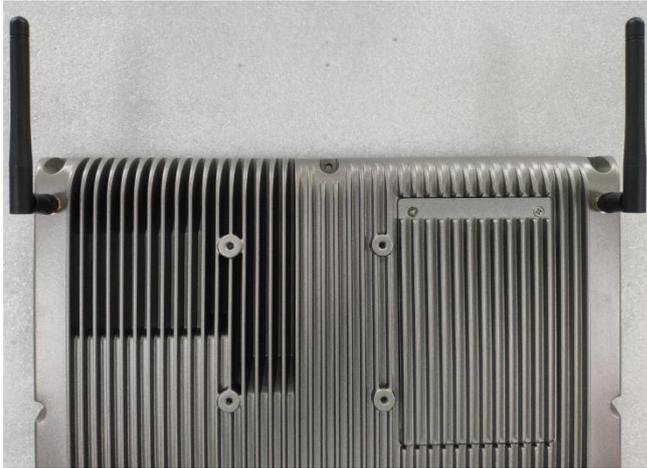
## 2.2 install the Wifi / 4G

So that opening the lid hard disk, using the included pan head Phillips screws M 2 \* . 4 , the corresponding fixed WiFi,. 4 G modules and S the IM card, connected to the first antenna.



Take Screw on antenna

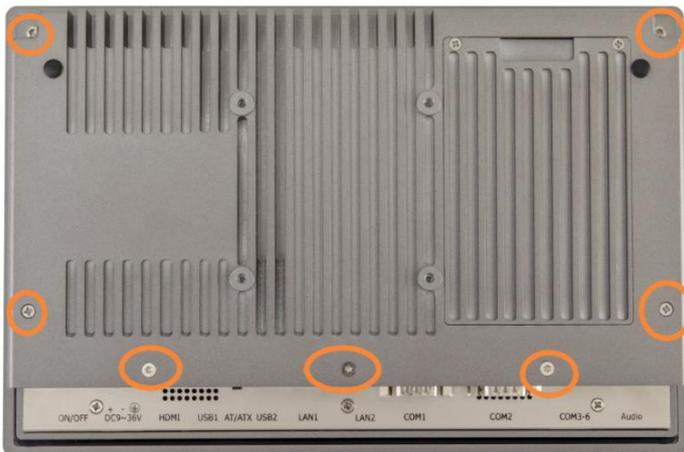




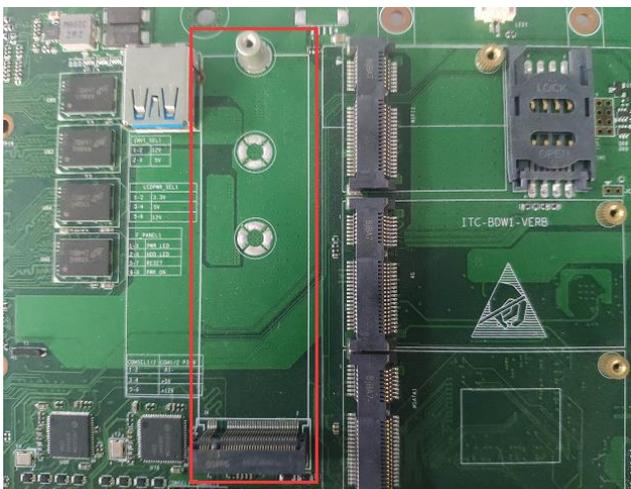
PS : mSATA hard disk, Wifi and antenna are optional components.

## 2.3 mounting M.2 hard

1. Remove 7 screws with Torx screwdriver



2. Install M.2 hard disk



# 3 I O interface

## 3.1 Serial

It can support up to 6 serial ports. The following is a list of working modes supported by each serial port:

Operating mode	Serial port					
	COM1	COM2	COM3	COM4	COM5	COM6
RS232	stand by	stand by	stand by	stand by	stand by	stand by
RS485	stand by	stand by	stand by	stand by	not support	not support
RS422	stand by	stand by	not support	not support	not support	not support

**note:**

COM3 and COM4 are 5- wire serial ports (TXD / RXD /GND /DCD ) ;

COM 5 and COM 6 are 3- wire serial ports (TXD / RXD /GND)

By default, COM1~ 6 are factory set to RS232 mode;

On the main board . 1 th COM interfaces and . 1 th 14 bit GPIO interfaces which may be attached according to the actual needs of customers IO on the tailgate, supra icon number . 7 COM2 position of the interface.

The pin definitions corresponding to different interface types are as follows:

COM1, COM2 pin signal definition

Mode	DB9 Pin Name								
	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
RS485	DATA+	DATA-							
RS422	TX+	TX-	RX+	RX-					
RS232	DCD#	RXD	TXD	DTR#	GND	DSR#	RTS#	CTS#	RI# Can be charged

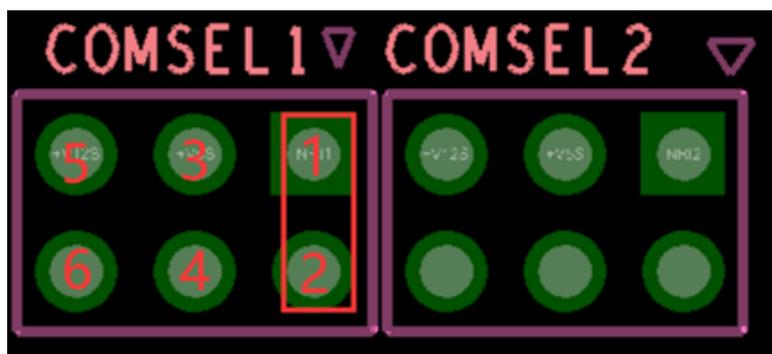


### COM3456 pin signal definition

PIN	signal	Remarks	PIN	COM4	Remarks
1	DCD3_485DN3	COM3	2	DCD4_485DN4	COM4
3	SOUT3		4	SOUT4	
5	SIN3_485DP3		6	SIN4_485DP4	
7	GND		8	GND	
9	SOUT5	COM5	10	SOUT6_CN	COM6
11	SIN5		12	SIN6_CN	
13	GND		14	GND	
15	FP_PWRBTN_N	Remote switch	16	GND	

Note 1: COM1/2 PIN9 function selection (using 2.00 mm jumper)

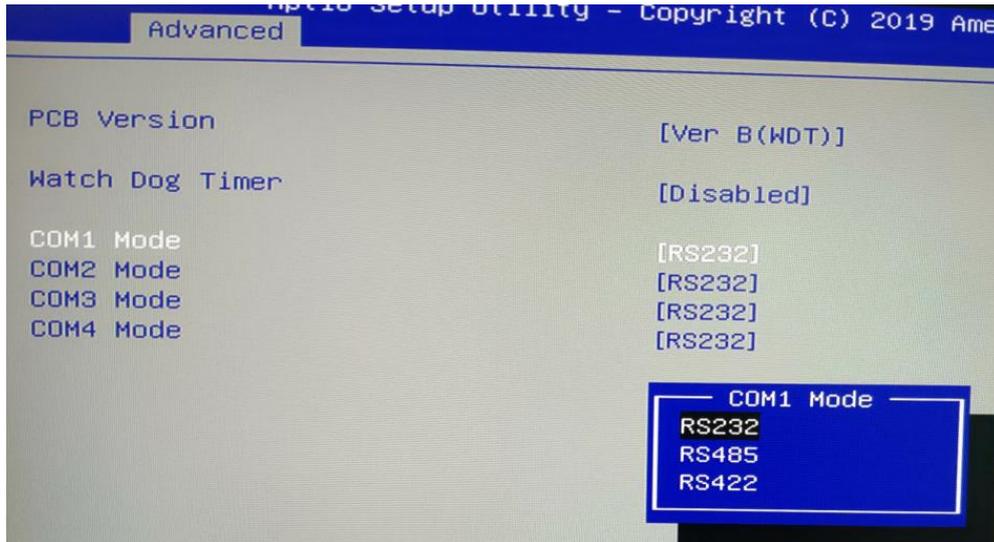
COMSEL1/2	COM1/2 PIN9
1-2	R I-
3-4	5 V
5-6	1 2V



Set the working mode of COM1,2,3,4

1: To the electric machine, power press Delete key to enter the BIOS setup interface, to navigate to the following path:

Advanced - SIO MISC Configuration - COM1 MODE select RS232/422/485 option;

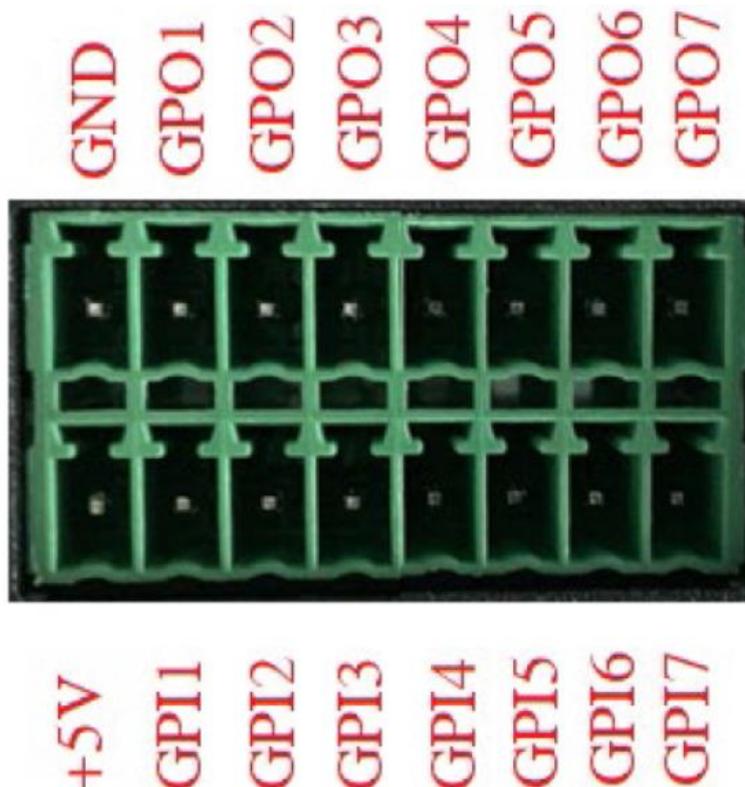


2: Set set the BIOS after the option, press the F 10 key, in the pop-up dialog box, select [YES] to save and exit.

### 3.2 GPIO

COM2 and GPIO1 of the main board share the same interface. When the G PIO model is selected.

The PIN pin of GPIO1 is defined as follows



## Address allocation, Base Address=0x500h

P IN foot	signal	IO address	Initial level	direction	Output drive capability
1	+ 5 V	-	-	-	-
3	GPI1	0xA06.bit0	+5V	enter	
5	GPI2	0xA06.bit1	+5V	enter	
7	GPI3	0xA06.bit2	+5V	enter	
9	GPI4	0xA06.bit3	+5V	enter	
1 1	GPI 5	0xA06.bit4	+5V	enter	
1 3	GPI 6	0xA06.bit5	+5V	enter	
1 5	GPI 7	0xA06.bit6	+5V	enter	
2	G ND	-	-	-	-
4	GPO1	0xA07.bit4	0V	Output	35mA
6	GPO2	0xA07.bit5	0V	Output	35mA
8	GPO3	0xA07.bit6	0V	Output	35mA
1 0	GPO4	0xA07.bit7	0V	Output	35mA
1 2	GPO 5	0xA04.bit6	0V	Output	35mA
1 4	GPO 6	0xA04.bit7	0V	Output	35mA
1 6	GPO 7	0xA03.bit0	0V	Output	35mA

## GPIO port access

Access to the output port:

Use the function `outportb()` to directly output a byte of data to the specified port. To make the corresponding GPO port output low level , write 0 to the corresponding port . For example, the following example is to make GPO1 output low level:

```
TEMP=inportb(0x50c); first read in the contents of the 0x50c port
TEMP=TEMP&0xfe; then set bit0 of port 0x50c to 0
outportb(0x50c, TEMP); write data to the port
```

To make the corresponding GPO port output high level , write 1 to the corresponding port . For example, the following example is to make GPO1 output high level:

```
TEMP=inportb(0x50c); first read in the contents of the 0x50c port
TEMP = TEMP | 0x01; then 0x50c port bit0 set 1
outportb(0x50c, TEMP); write data to the port
```

Access to input port:

Use the function `inportb()` to read a byte from the port , and then check the table above and take the corresponding bit .

### 3.3 Watch Dog

```

#define SIO_CONFIG_INDEX 0x2E
#define SIO_CONFIG_DATA 0x2F

void WatchDogTimer(UINT16 TimerValue) // 1 < TimerValue < 65535 , Unit =
Second
{
    // Enter Configuration Mode.
    IoWrite8(SIO_CONFIG_INDEX, 0x87);
    IoWrite8(SIO_CONFIG_INDEX, 0x01);
    IoWrite8(SIO_CONFIG_INDEX, 0x55);
    IoWrite8(SIO_CONFIG_INDEX, 0x55);

    //=====LDN07=====//
    IoWrite8(SIO_CONFIG_INDEX, 0x07);
    IoWrite8(SIO_CONFIG_DATA, 0x07);

    //=====WDT=====//
    IoWrite8(SIO_CONFIG_INDEX, 0x72);
    IoWrite8(SIO_CONFIG_DATA , 0x90); //Enable WDT

    IoWrite8(SIO_CONFIG_INDEX, 0x74);
    IoWrite8(SIO_CONFIG_DATA , (UINT8)((TimerValue & 0xFF00)>>8 )); //MSB

    IoWrite8(SIO_CONFIG_INDEX, 0x73);
    IoWrite8(SIO_CONFIG_DATA , (UINT8)(TimerValue & 0x00FF)); //LSB
}

void DisableWdt()
{
    // Enter Configuration Mode.
    IoWrite8(SIO_CONFIG_INDEX, 0x87);
    IoWrite8(SIO_CONFIG_INDEX, 0x01);
    IoWrite8(SIO_CONFIG_INDEX, 0x55);
    IoWrite8(SIO_CONFIG_INDEX, 0x55);

    //=====LDN07=====//
    IoWrite8(SIO_CONFIG_INDEX, 0x07);
    IoWrite8(SIO_CONFIG_DATA, 0x07);

    IoWrite8(SIO_CONFIG_INDEX, 0x72);
    IoWrite8(SIO_CONFIG_DATA , 0x00); //Disable WDT

    IoWrite8(SIO_CONFIG_INDEX, 0x74);
    IoWrite8(SIO_CONFIG_DATA , 0x00); //MSB
    IoWrite8(SIO_CONFIG_INDEX, 0x73);
    IoWrite8(SIO_CONFIG_DATA , 0x00); //LSB
}

```

# 4 BIOS features

## 4.1 Introduction to UEFI

UEFI ( Unified Extensible Firmware Interface : Standard Extensible Firmware Interface ) is a new generation of computer firmware used to replace the traditional BIOS . UEFI firmware is stored in the flash memory of the motherboard. The main functions include: initializing system hardware, setting the working status of each system component, adjusting the working parameters of each system component, diagnosing the function of each system component and reporting faults, and providing hardware to the upper software system Operate the control interface, boot the operating system, etc. UEFI provides users with a menu-style man-machine interface, which is convenient for users to configure various system parameter settings, control power management modes, and adjust the resource allocation of system equipment. Correctly setting the parameters of UEFI can make the system work stably and reliably, and at the same time can improve the overall performance of the system. Inappropriate or even wrong UEFI parameter settings will greatly reduce the performance of the system, make the system work unstable, or even fail to work normally.

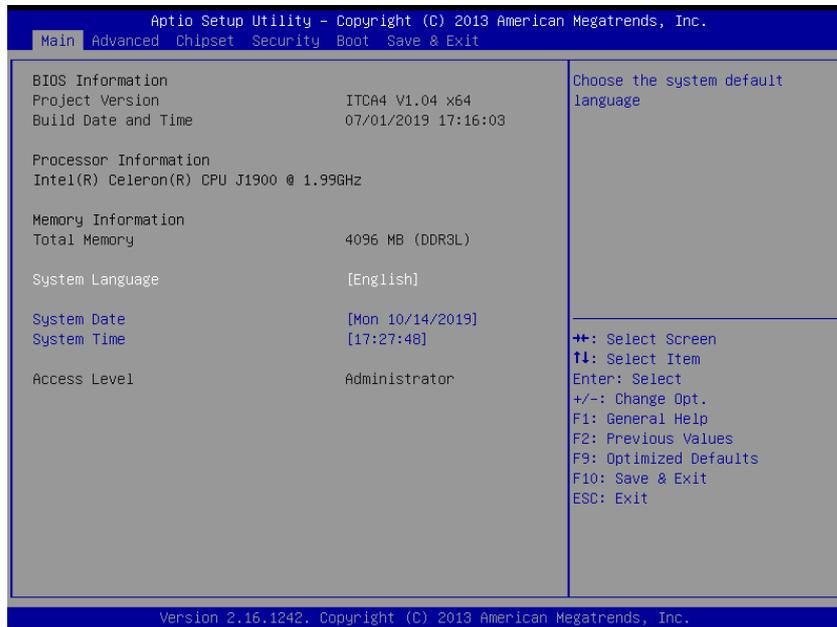
## 4.2 UEFI parameter settings

Whenever the system is powered on and turned on normally, you can see the message prompting to enter the UEFI setup program. At this time ( invalid at other times ) , press the key specified in the prompt message (usually the <Del> key or <F2> key) to enter the UEFI setup program. All setting values (except date and time) modified by UEFI setting program are saved in the flash memory of the system. Even if the power is cut off or the motherboard battery is unplugged, the content will not be lost; while the date and time are

Stored in the system's CMOS memory, the CMOS memory is powered by a battery, and its content will not be lost even if the external power supply is cut off, unless the operation of clearing the CMOS content is performed. note! The setting of UEFI directly affects the performance of the computer. Setting the wrong parameters will cause damage to the computer, or even failure to boot. Please use the built-in UEFI default values to restore the normal operation of the system. As our company continues to develop and update UEFI , its setting interface will be slightly different. The following screen is for your reference, and it may not be exactly the same as the UEFI setting program you are currently using .

## 4.3 UEFI Basic function settings

When the SETUP program is started, you can see the main screen as follows:



### 4.3.1 Main

- **System Date**

Select this option and use <+> / <-> to set the current date. It is expressed in the format of month/day/year. The reasonable range of each item is: Month/month (1-12), Date/day (01-31), Year/year (up to 2099), Week/week (Mon.~Sun.).

- **System Time**

Select this option and use <+> / <-> to set the current time. It is expressed in the format of hour/minute/second. The reasonable range of each item is: Hour/Hour (00-23), Minute/Minute (00-59), Second/Second (00-59).

PS: The RTC time of the 6, 7, and 8 generation Core Duo will be adjusted according to the OS.

## Advanced

Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.	
Main   <b>Advanced</b>   Chipset   Security   Boot   Save & Exit	
<ul style="list-style-type: none"> <li>▶ ACPI Settings</li> <li>▶ Lan PXE Config</li> <li>▶ SIO MISC Configuration</li> <li>▶ IT8706 Super ID Configuration</li> <li>▶ Wakeup Configuration</li> <li>▶ CPU Configuration</li> <li>▶ IDE Configuration</li> <li>▶ Network Stack Configuration</li> <li>▶ CSM Configuration</li> <li>▶ USB Configuration</li> </ul>	<p>System ACPI Parameters.</p> <hr/> <p>           ++: Select Screen            ↑↓: Select Item            Enter: Select            +/-: Change Opt.            F1: General Help            F2: Previous Values            F9: Optimized Defaults            F10: Save &amp; Exit            ESC: Exit         </p>
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## ACPI Settings

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Advanced	
<p>ACPI Settings</p> <p>Enable ACPI Auto Configuration [Disabled]</p> <p>Enable Hibernation [Enabled]</p> <p>ACPI Sleep State [S3 (Suspend to RAM)]</p> <p>Lock Legacy Resources [Disabled]</p>	<p>Enables or Disables BIOS ACPI Auto Configuration.</p> <hr/> <p>           ++: Select Screen            ↑↓: Select Item            Enter: Select            +/-: Change Opt.            F1: General Help            F2: Previous Values            F9: Optimized Defaults            F10: Save &amp; Exit            ESC: Exit         </p>
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## Lan PXE Configuration

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Advanced

PXE Boot	[Disabled]	Enable or Disable
----------	------------	-------------------

++: Select Screen  
 ↑↓: Select Item  
 Enter: Select  
 +/-: Change Opt.  
 F1: General Help  
 F2: Previous Values  
 F9: Optimized Defaults  
 F10: Save & Exit  
 ESC: Exit

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## SIO MISC Configuration

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Advanced

Watch Dog Timer	[Disabled]	Enable or Disable WDT
COM1 Mode	[RS232]	
COM2 Mode	[RS232]	
COM3 Mode	[RS232]	
COM4 Mode	[RS232]	
GP01 Output Value	[Low]	
GP02 Output Value	[Low]	
GP03 Output Value	[Low]	
GP04 Output Value	[Low]	
GP05 Output Value	[Low]	
GP06 Output Value	[Low]	
GP07 Output Value	[Low]	

++: Select Screen  
 ↑↓: Select Item  
 Enter: Select  
 +/-: Change Opt.  
 F1: General Help  
 F2: Previous Values  
 F9: Optimized Defaults  
 F10: Save & Exit  
 ESC: Exit

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### Watch Dog Timer

After setting to Enable, you can set the minutes (seconds)





## Network Stack Configuration

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Advanced

Network Stack	[Enabled]	Enable/Disable UEFI Network Stack
Ipv4 PXE Support	[Enabled]	
Ipv6 PXE Support	[Enabled]	
PXE boot wait time	0	

++: Select Screen  
↑↓: Select Item  
Enter: Select  
+/-: Change Opt.  
F1: General Help  
F2: Previous Values  
F9: Optimized Defaults  
F10: Save & Exit  
ESC: Exit

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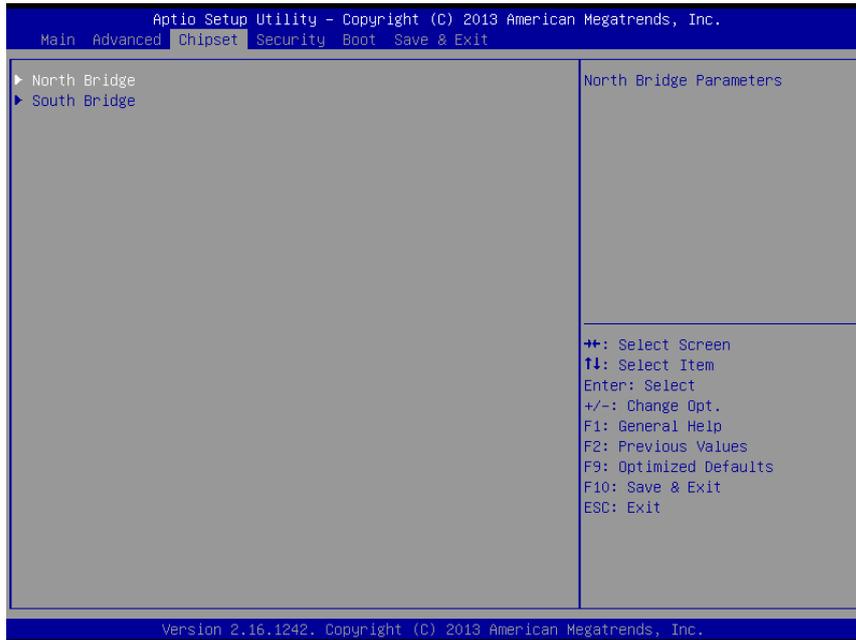
## CSM Configuration

Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.	
Advanced	
Compatibility Support Module Configuration	
CSM Support	[Enabled]
CSM16 Module Version	07.74
GateA20 Active	[Upon Request]
Option ROM Messages	[Force BIOS]
INT19 Trap Response	[Immediate]
Boot option filter	[UEFI and Legacy]
Option ROM execution	
Storage	[UEFI]
Video	[Legacy]
Other PCI devices	[Legacy]
Enable/Disable CSM Support.  ++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit	
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## USB Configuration

Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.	
Advanced	
USB Configuration	
USB Module Version	8.11.01
USB Devices:	1 Drive, 1 Keyboard, 2 Mice, 1 Point, 3 Hubs
Legacy USB Support	[Enabled]
XHCI Hand-off	[Enabled]
EHCI Hand-off	[Disabled]
USB Mass Storage Driver Support	[Enabled]
USB hardware delays and time-outs:	
USB transfer time-out	[20 sec]
Device reset time-out	[20 sec]
Device power-up delay	[Auto]
Mass Storage Devices:	
Generic Flash Disk 8.07	[Auto]
Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.  ++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit	
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## 4.3.2 Chipset



### North Bridge



## South Bridge

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Chipset

<ul style="list-style-type: none"> <li>▶ USB Configuration</li> <li>▶ PCI Express Configuration</li> </ul>	<p>USB Configuration Settings</p> <hr/> <p>           ⇄: Select Screen            ↑↓: Select Item            Enter: Select            +/-: Change Opt.            F1: General Help            F2: Previous Values            F9: Optimized Defaults            F10: Save &amp; Exit            ESC: Exit         </p>
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## USB Configuration

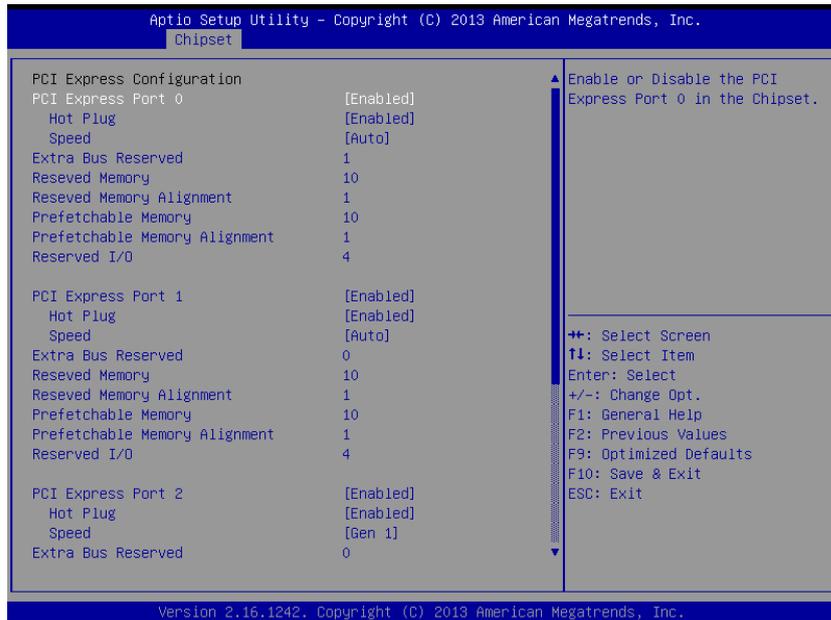
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Chipset

<p>           USB Configuration            USB OTG Support [Disabled]            USB VBUS [On]         </p> <p>           XHCI Mode [Auto]            USB2 Link Power Management [Enabled]         </p> <p>           USB 2.0(EHCI) Support [Disabled]            USB Per Port Control [Enabled]            USB Port 0 [Enabled]            USB Port 1 [Enabled]            USB Port 2 [Enabled]            USB Port 3 [Enabled]         </p>	<p>Enable/Disable USB OTG Support</p> <hr/> <p>           ⇄: Select Screen            ↑↓: Select Item            Enter: Select            +/-: Change Opt.            F1: General Help            F2: Previous Values            F9: Optimized Defaults            F10: Save &amp; Exit            ESC: Exit         </p>
---	---

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## PCI Express Configuration



## 4.3.3 BOOT



- **Save Changes and Reset**

This item is used to save changes and restart (F10).

- **Discard Changes and Reset**

This item is used to discard the changes and restart.