

SC500M-Embedded Panel PCs

English version user manual

8" 10.1" 10.4" 12" 15" 15.6" 17" 17.3" 19" 21.5" the TFT LCD touch tablet PC, Intel Core I . 5 - 6360U / i5- 7200U / i7-7500U / I . 5 - 8250U 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

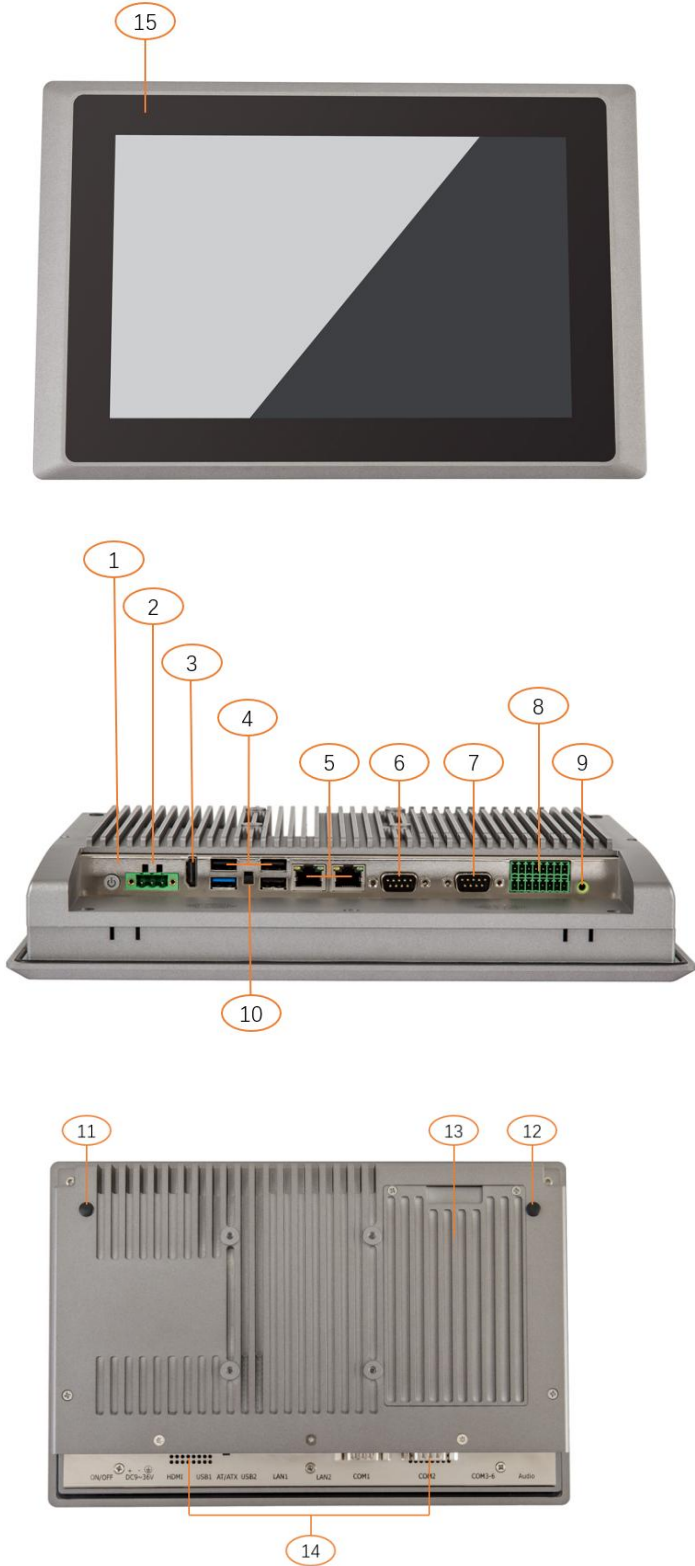
The onboard HD A audio controller and stereo amplifier output can be used to output voice and alarm signals.

system	
processor	<u>Intel®Core i5- 6360U 2 GHz , up to 3.1 GHz</u> <u>Intel®Core i7 - 7200U 2.5 GHz , up to 3.1 GHz</u>
System memory	Onboard DDR4 8G B

I/O interface	1 x 3 pin 5.0mm Phoenix terminal power connector 4 x USB3.0, 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
power supply	
power input	9 ~ 3 6 VDC
Material	
Front panel	Aluminum alloy
Back panel	Aluminum alloy
IP protection level	Front panel IP65
Use environment	
Operating temperature	- 2 0 deg.] C to . 6 0 deg.] C
storage temperature	- . 3 0 deg.] C to +7 0 deg.] C
Storage humidity	10~90% @ 3 0 ℃ , no condensation
Certification	
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 Ω (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

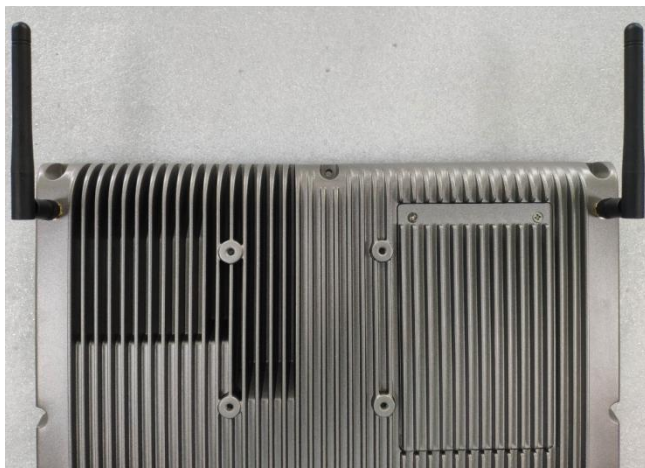
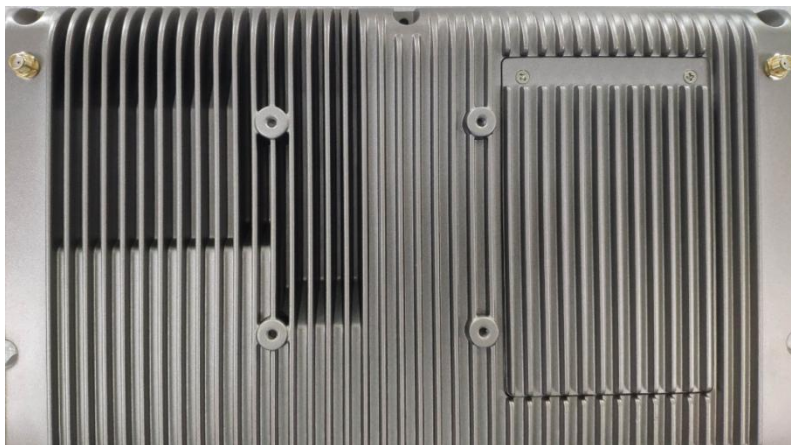


2.2 install the Wifi / 4G

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.



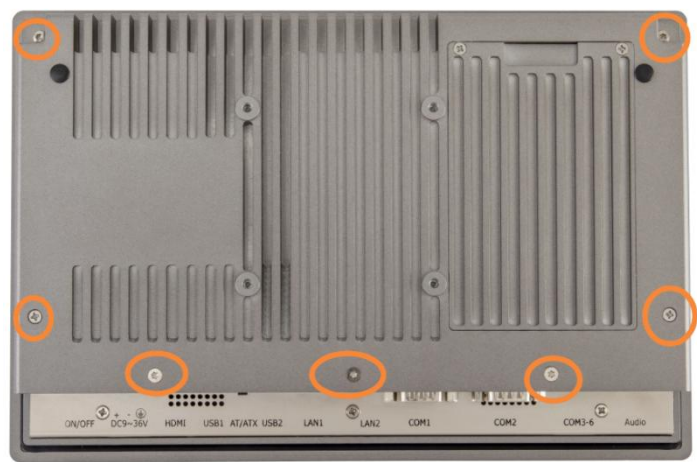
Take Screw on antenna



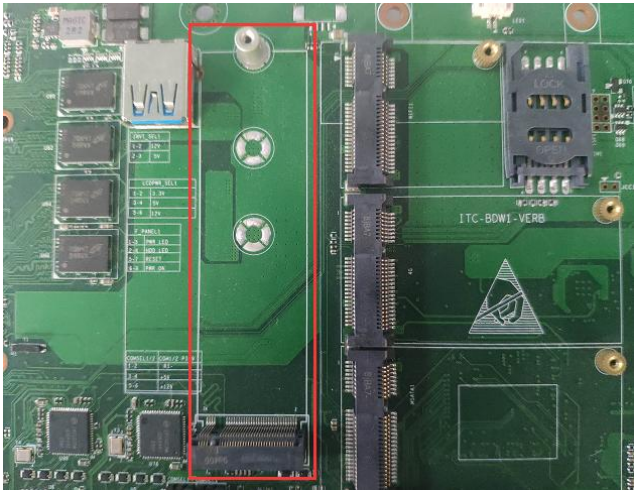
PS : mSATA hard disk, Wifi and antenna are optional components.

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:

Serial port Operating mode	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
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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:

C OM1, COM2 pin signal definition

	DB9 Pin Name								
Mode	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	C OM3	2	DCD4_485DN4	C OM4
3	SOUT3		4	SOUT4	

5	SIN3_485DP3		6	SIN4_485DP4	
7	GND		8	GND	
9	SOUT5		10	SOUT6_CN	
11	SIN5	C OM5	12	SIN6_CN	C OM6
13	GND		14	GND	
15	FP_PWRBTN_N	Remote switch	16	GND	

Note 1: COM1 / 2 PIN9 function selection (using 2 .00 mm jumper)

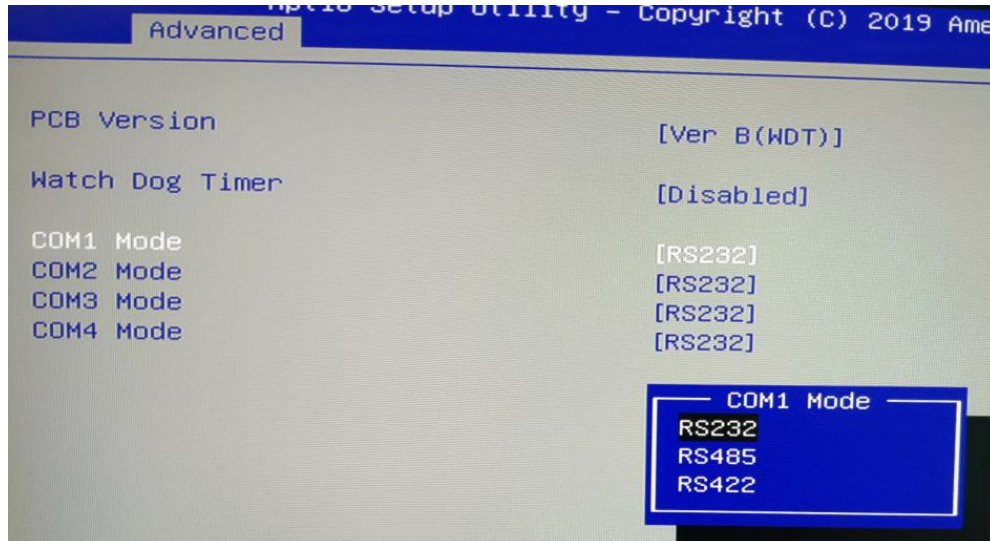
COMSEL1/2	C OM1/2 PIN9
1 -2	R I-
3 -4	5 V
5 -6	1 2V



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;

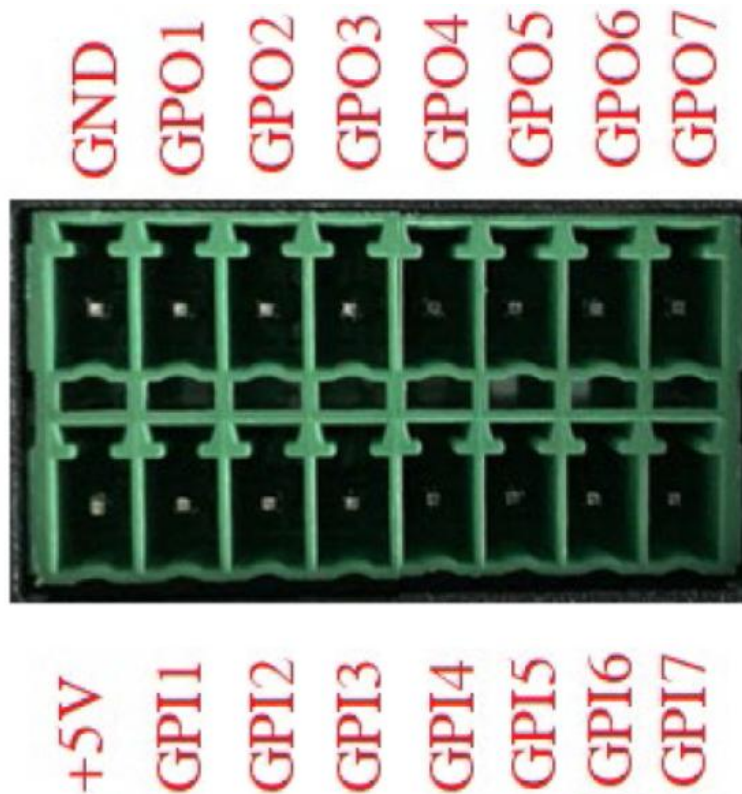


2: Set the BIOS after the option, press the F 10 key, in the pop-up dialog box, select [YES] to save and exit.

3.2 GPIO

C OM2 and G PIO1 of the main board share the same interface. When the G PIO model is selected.

The P IN pin of G PIO1 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 `outputb()` 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
outputb(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
outputb(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 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

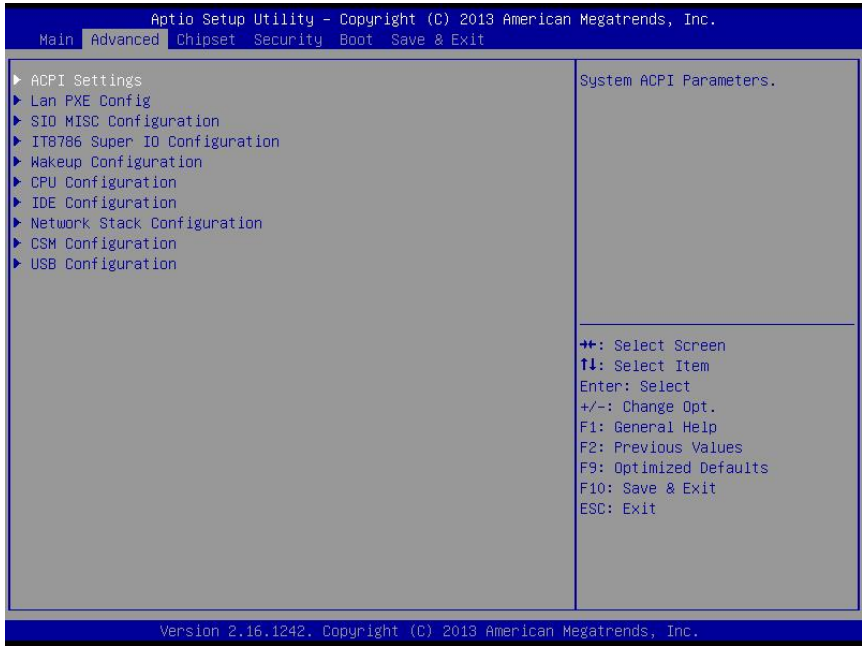
Select this option and use <+> / <-> to set the current date. It is expressed in the format of month/day/year. The reasonable range of each item is: Month/month (1-12), Date/day (01-31), Year/year (up to 2099), Week/week (Mon.~Sun.).

System Time

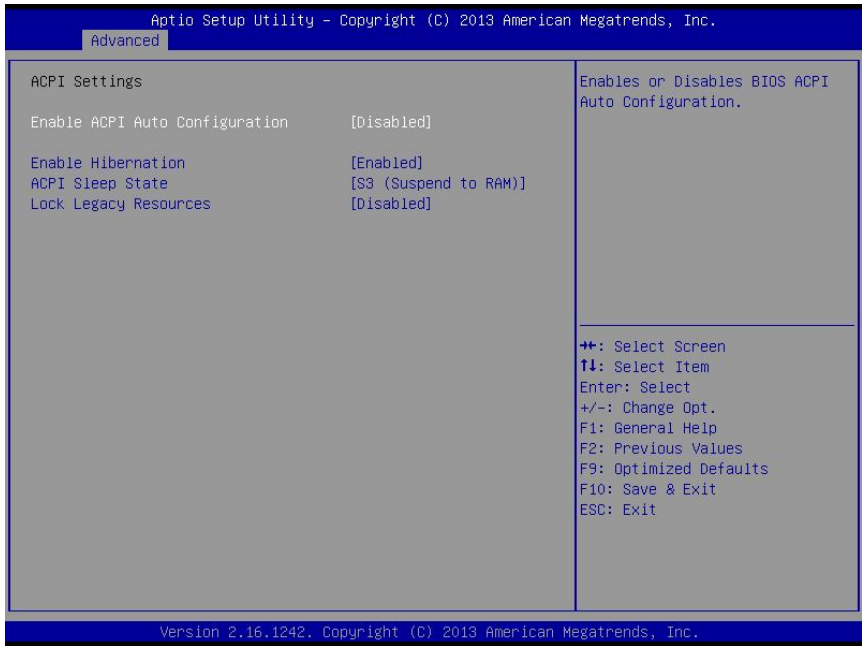
Select this option and use <+> / <-> to set the current time. It is expressed in the format of hour/minute/second. The reasonable range of each item is: Hour/Hour (00-23), Minute/Minute (00-59), Second/Second (00-59).

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

Advanced



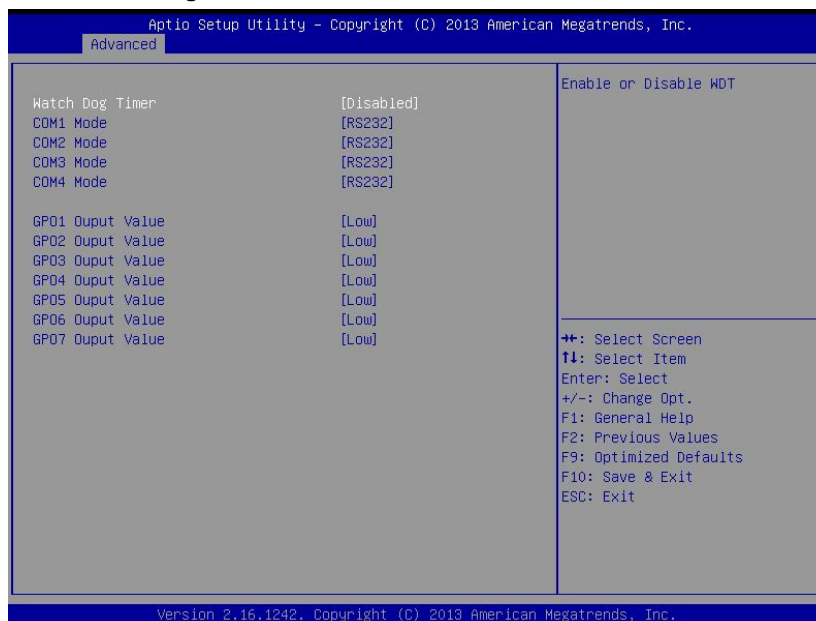
ACPI Settings



Lan PXE Configuration



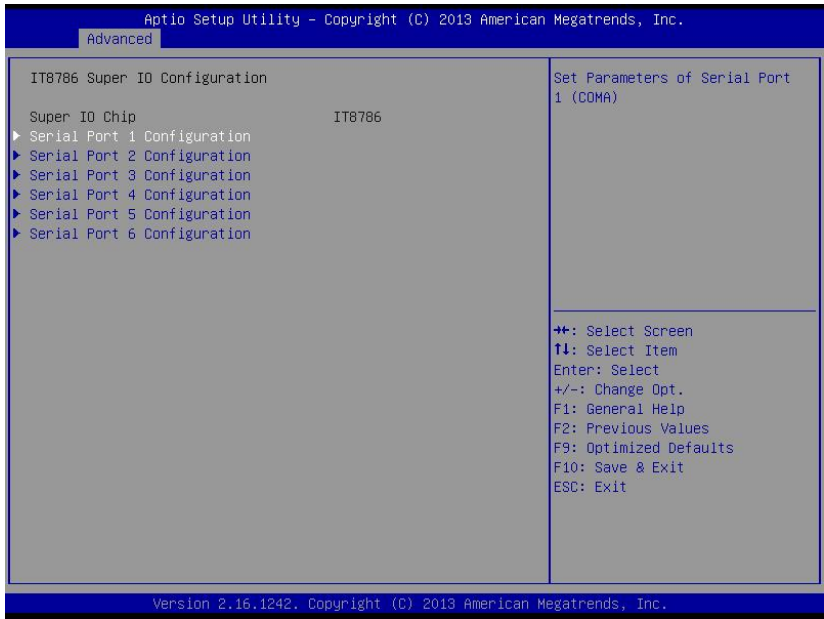
SIO MISC Configuration



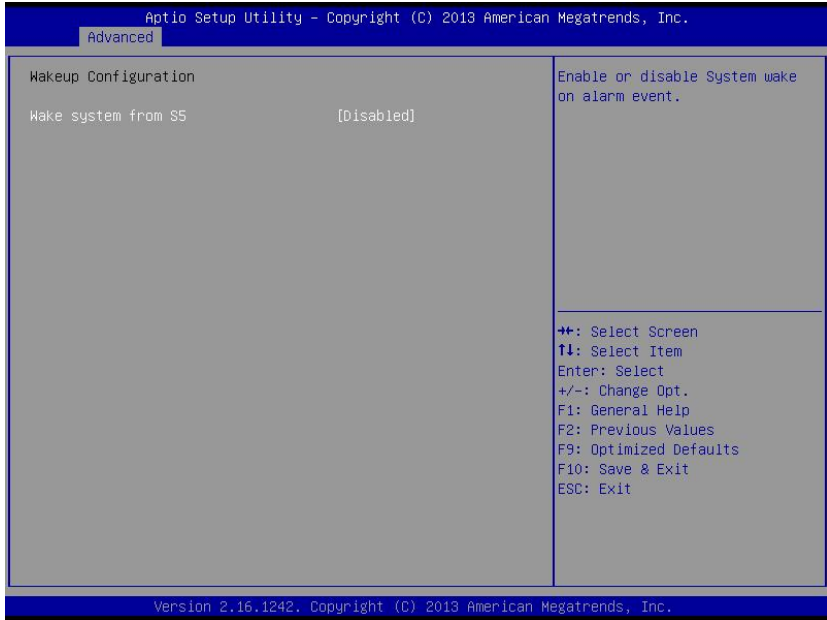
Watch Dog Timer

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

IT8786 Super IO Configuration



Wake up Configuration



CPU Configuration

Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.	
Advanced	
CPU Configuration	Socket specific CPU Information
▶ Socket 0 CPU Information ▶ CPU Thermal Configuration	
CPU Speed	2001 MHz
64-bit	Supported
Active Processor Cores	[All]
Limit CPUID Maximum	[Disabled]
Execute Disable Bit	[Enabled]
Hardware Prefetcher	[Enabled]
Adjacent Cache Line Prefetch	[Enabled]
Intel Virtualization Technology	[Enabled]
Power Technology	[Energy Efficient]
	++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.	

IDE Configuration

Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.	
Advanced	
IDE Configuration	Enable / Disable Serial ATA
Serial-ATA (SATA)	[Enabled]
SATA Test Mode	[Disabled]
SATA Speed Support	[Gen2]
SATA ODD Port	[No ODD]
SATA Mode	[AHCI Mode]
Serial-ATA Port 0	[Enabled]
SATA Port0 HotPlug	[Disabled]
Serial-ATA Port 1	[Enabled]
SATA Port1 HotPlug	[Disabled]
SATA Port0	
Kimtigo SSD 12 (128.0GB)	
SATA Port1	
Not Present	
	++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.	

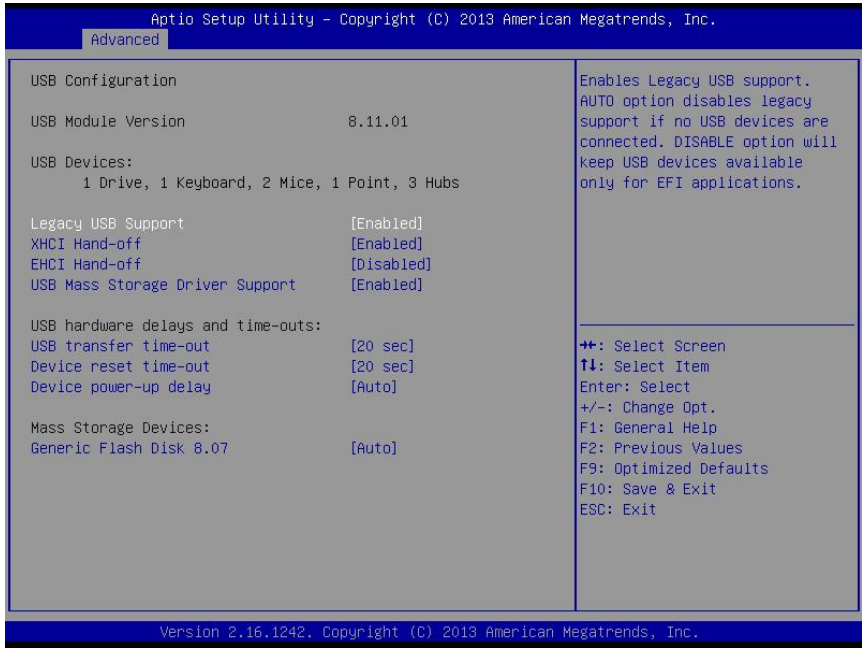
Network Stack Configuration

Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.		
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
Version 2.16.1242, Copyright (C) 2013 American Megatrends, Inc.		

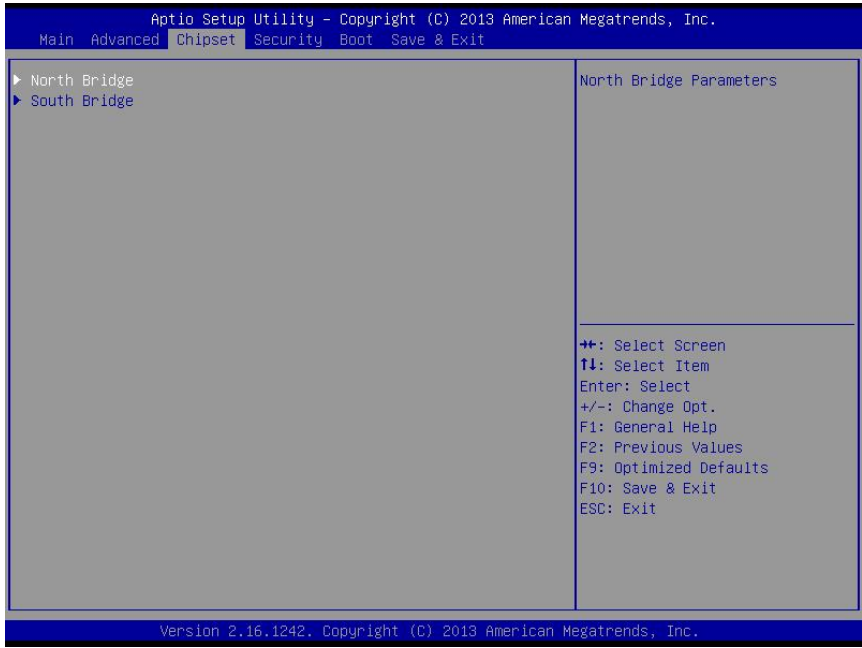
CSM Configuration

Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.		
Advanced		
Compatibility Support Module Configuration		Enable/Disable CSM Support.
CSM Support	[Enabled]	
CSM16 Module Version	07.74	++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
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]	
Version 2.16.1242, Copyright (C) 2013 American Megatrends, Inc.		

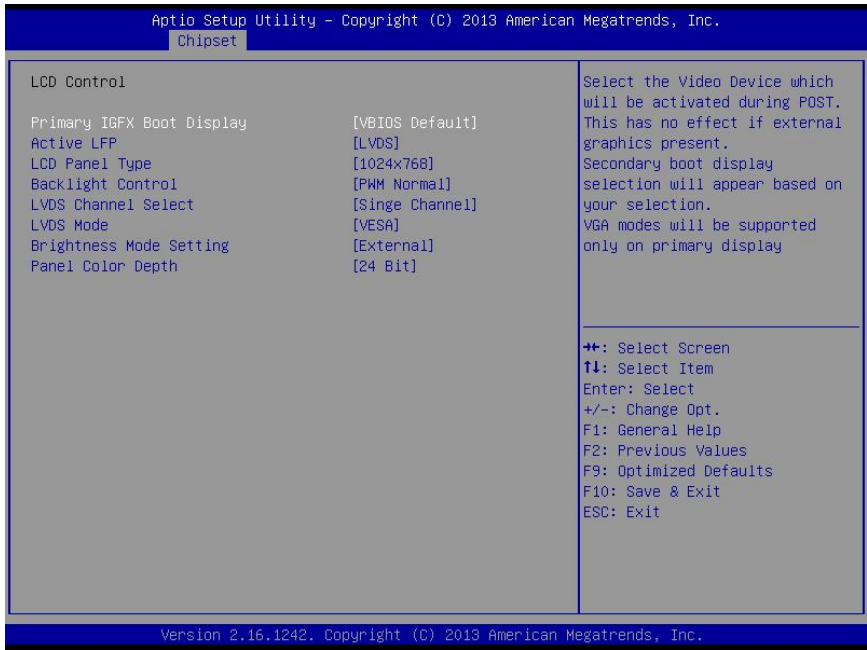
USB Configuration



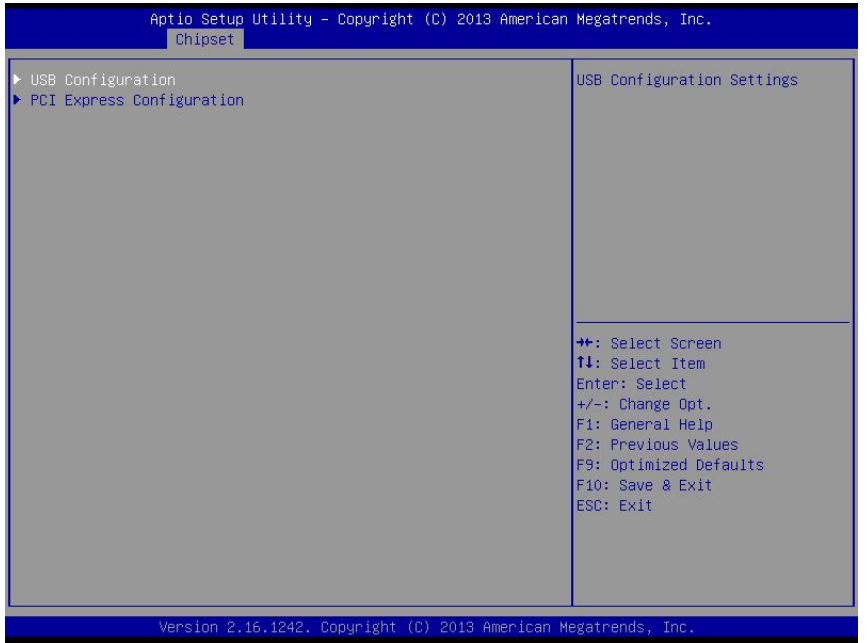
4.3.2 Chipset



North Bridge



South Bridge



USB Configuration

Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.		
Chipset		
USB Configuration		Enable/Disable USB OTG Support
USB OTG Support	[Disabled]	
USB VBUS	[On]	
XHCI Mode		
USB2 Link Power Management	[Auto]	
USB 2.0(EHCI) Support	[Enabled]	
USB Per Port Control	[Enabled]	
USB Port 0	[Enabled]	
USB Port 1	[Enabled]	
USB Port 2	[Enabled]	
USB Port 3	[Enabled]	
		++: Select Screen f1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit

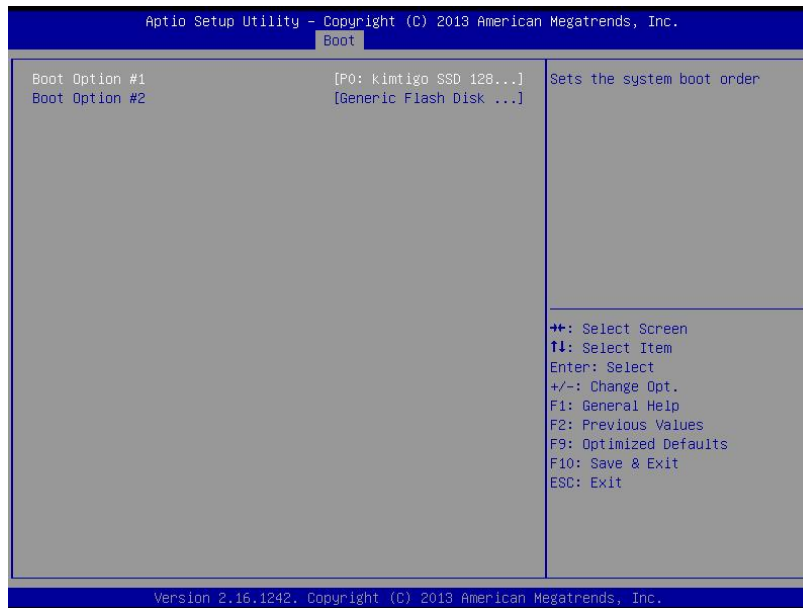
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PCI Express Configuration

Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.		
Chipset		
PCI Express Configuration		Enable or Disable the PCI Express Port 0 in the Chipset.
PCI Express Port 0		
Hot Plug	[Enabled]	
Speed	[Auto]	
Extra Bus Reserved	1	
Reserved Memory	10	
Reserved Memory Alignment	1	
Prefetchable Memory	10	
Prefetchable Memory Alignment	1	
Reserved I/O	4	
PCI Express Port 1		
Hot Plug	[Enabled]	
Speed	[Auto]	
Extra Bus Reserved	0	
Reserved Memory	10	
Reserved Memory Alignment	1	
Prefetchable Memory	10	
Prefetchable Memory Alignment	1	
Reserved I/O	4	
PCI Express Port 2		
Hot Plug	[Enabled]	
Speed	[Gen 1]	
Extra Bus Reserved	0	
		++: Select Screen f1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit

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4.3.3 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.