

# Embedded industrial computer User manual

## The model you choose:

- DIAVH-IPC003100
- DIAVH-IPC005100
- DIAVH-IPC003101
- DIAVH-IPC005101
- DIAVH-IPC003102
- DIAVH-IPC005102
- DIAVH-IPC003103
- DIAVH-IPC005103
- DIAVH-IPC003104
- DIAVH-IPC005104
- DIAVH-IPC003105
- DIAVH-IPC005105

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The warranty on the product lasts for 18 months, if the user has additional requirements ,the contract signed between the two sides shall prevail.

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# Safety Instructions

- Please read the user manual carefully before using the product, and carefully keep it for future reference.
- Before connecting power supply to the product, please confirm the voltage is compliant with the requirement of the device.
- To avoid electric shock or damage to the product, please unplug the power cord from the socket before cleaning the device by wet rag.
- Please do not use liquid or aerosol cleaner to clean up the device.
- To avoid short circuit or fire, please do not let any liquid get into or splash into the product.
- For a device which needs to use power cord, there must be an easy-to-reach power socket around the device.
- Please do not use the product in a damp environment.
- Before installation, please make sure the device is placed on a solid surface; accidental drop or tipping may cause malfunction or damage to the device.
- Before you connect or unplug any signal cable, make sure all power cords are unplugged in advance;
- To avoid unnecessary damage caused by frequent power-on/off, wait at least 30 seconds after turning off the computer before re-turning on the computer.
- If the product will not be used for a long time, please disconnect the power cord, to avoid damage to the product by transient voltage.
- If the product needs to be upgraded, installed or dismantled, please implement all the operation on an ESD workstation, for some precision devices are sensitive to ESD;
- Ensure excellent heat dissipation and ventilation of the system.  
Please do not open or dismantle the device by yourself. For the sake of safety, this device can only be opened by a professional maintenance person.

## **Packing List**

- A fanless industrial Computer
- 1\*AC 100V~240V to DC+12V/5A power adapter
- 1\*AC220V power cable
- 2\*Mounting Bracket & 6\*Screw
- 1\*Driver CD & manual
- 1\*Certification,1\*packing list

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# 1. Product Introduction

## 1.1 Brief introduction

DIAVH-IPC00X10X is a low-power-consumption, high-performance and fanless embedded industrial computer, with material of high-strength and elegant al-alloy and the high-density al-alloy radiator.

This product has low power consumption Intel Core I3-4030U / I5-4200U on board, 4GB DDR3L RAM, max to 8GB (optional), and it has rich I/O interfaces and fully-sealed fanless design, supporting Windows 7/ 8.1/10 Linux and so on.

This product can be used in the field of mechanical equipment, intelligent transportation, industrial automation control and other different embedded solutions.

## 1.2 Product specifications

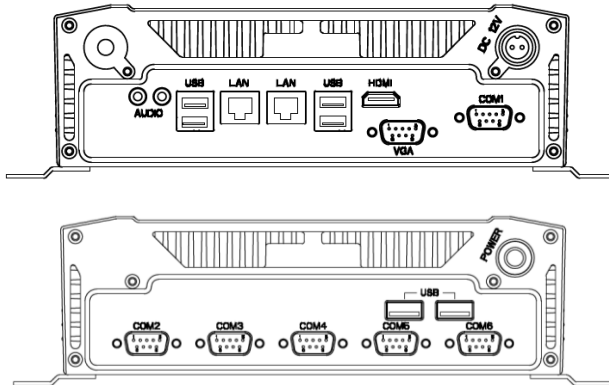
	Item	Definition
Main function	processor	DIAVH-IPC003100/01/02/03/04/05: Intel® Core I3-4030U DIAVH-IPC005100/01/02/03/04/05: Intel® Core I5-4200U
	memory	4GB DDR3L RAM
	display	Integrated Intel® HD 4400, 200-1000MHz
	storage	SSD 512GB
	ethernet	2*RTL8111E GbE
	audio	1*Line out
	expansion	Mini-PCIE bus expansion, support Wifi ,Bluetooth
	I/O	<ul style="list-style-type: none"><li>● 6*serial port COM1(RS232), COM2(RS232), COM3(RS232), COM4(RS232), COM5(RS232), COM6(RS422/RS485)</li><li>● 2*USB2.0, 4*USB3.0</li><li>● 2* Intel I211</li><li>● 1*VGA</li><li>● 1*HDMI</li><li>● 1*Line out</li></ul>

Item		Definition
perform ance	Dimension	<ul style="list-style-type: none"> <li>● DIAVH-IPC003100/01/02/03/04/05: 212.4mm (L) ×210mm (W) ×71.6 mm (H) ;</li> <li>● DIAVH-IPC005100/01/02/03/04/05: 212.4mm (L) ×210mm (W) ×71.6 mm (H) ;</li> </ul>
	structure	<ul style="list-style-type: none"> <li>● Material: high-strength Al-alloy heat dissipating plate</li> <li>● color: black</li> <li>● Heat dissipation: fanless design</li> </ul>
	weight	<ul style="list-style-type: none"> <li>● DIAVH-IPC003100/01/02/03/04/05 : NW : 2.75Kg; GW: 3.5Kg</li> <li>● DIAVH-IPC005100/01/02/03/04/05 : NW : 2.75Kg; GW: 3.5Kg</li> </ul>
	Temp	<ul style="list-style-type: none"> <li>● Operating temp:-10°C ~ 50°C</li> <li>● Storage temp:-20°C ~ 60°C</li> </ul>
	Humidity	90% @ 40°C (non-condensing)
	EMC	<ul style="list-style-type: none"> <li>● Limit of radio disturbance meets GB9254-1998 standard Class A</li> <li>● Immunity meets the limits of GB/T 17618-1998 standard</li> </ul>
	Reliability	<ul style="list-style-type: none"> <li>● MTBF≥5000h</li> <li>● MTTR≤0.5h</li> </ul>
	safety	Meets basic requirements of GB4943
	Mechanic environment compatibility	<ul style="list-style-type: none"> <li>● Anti-vibration: 5-19Hz/1.0mm amplitude; 19-200Hz/1.0g, acceleration</li> <li>● Anti-shock: 10g acceleration, 11ms duration</li> </ul>
	Power	<ul style="list-style-type: none"> <li>● 100~240VAC/50~60Hz (with adapter) ;</li> <li>● 9~24VDC or 9~36VDC optional (no adapter) ;</li> <li>● Power consumption: 16 W (standby) ;</li> <li>● Power consumption: 20.4 W(running MaxPower 100%) ;</li> </ul>



### 1.3 I/O

DIAVH-IPC003100/01/02/03/04/05 (DIAVH-IPC005100/01/02/03/04/05) :



Picture 1-1

## 2. Application planning

### 2.1 Transportation

Well-packaged products are suited for transportation by truck, ship, and plane. During transportation, products should not be put in open cabin or carriage. During transshipping, products should not be stored in open air without protection from the atmospheric conditions. Products should not be transported together with inflammable, explosive and corrosive substances and are not allowed to be exposed to rain, snow and liquid substances and mechanical force.

### 2.2 Storage Requirements

Products should be stored in package box when it is not used. And warehouse temperature should be  $-20^{\circ}\text{C} \sim 70^{\circ}\text{C}$ , and relative humidity should be 20% ~ 85%. In the warehouse, there should be no harmful gas, inflammable, explosive products, and corrosive chemical products, and strong mechanical vibration, shock and strong magnetic field interference. The package box should be at least 10cm above ground, and 50cm away from wall, thermal source, window and air inlet

#### **Caution!! !**

##### **Risk of destroying the device!**

**When shipping the PC in cold weather, please pay attention to the extreme temperature variation. Under this circumstance, please make sure no water drop (condensation) is formed on the surface or interior of the device. If condensation is formed on the device, please wait for over twelve hours before connecting the device.**

### 2.3 Unpack and check the delivered equipment

#### **Unpack the equipment**

Pay attention to the following things when you unpack the equipment.

- Please take the advice not to throw away the original packaging material and please retain to use it when the equipment should be transported again.
- Please put the document in a safe place. It will be used in the initial adjustment of equipment and it is a part of the equipment.

- 
- When you check the delivered equipment, please check whether it is obviously damaged during the transportation.
  - Please check whether the delivered parcel includes the whole equipment and the accessories you ordered separately. If there is any discrepancy or damaged during transportation, please contact our customer-service staff.

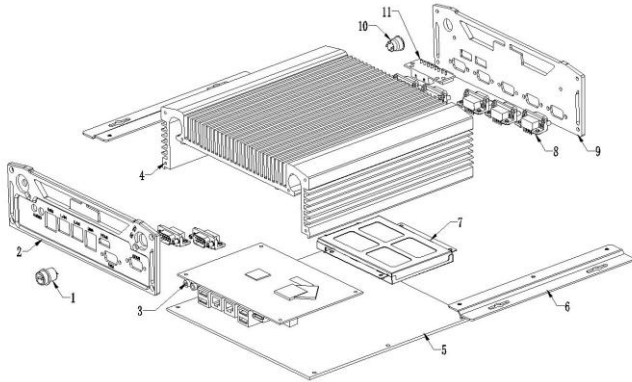
## 3. Installation instructions

### 3.1 Product outline



Picture 3-1

### 3.2 Product assembly

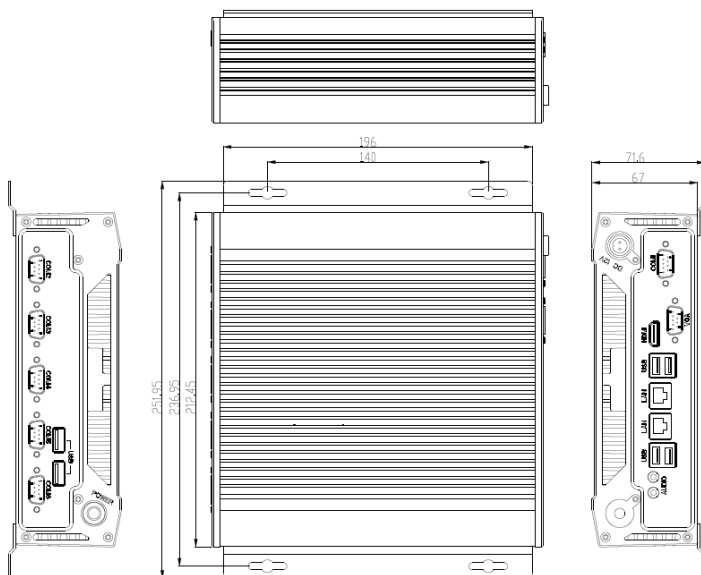


Picture 3-2

1. on-off	2. front panel	3. motherboard
4. radiator	5. baseboard	6. installation support
7. harddisk support	8. COM	9. backplate
10. DC in-put	11. USB	

### 3.3 Product Dimension

DIAVH-IPC003100/01/02/03/04/05 (DIAVH-IPC005100/01/02/03/04/05)




Picture 3-3

## 4. Interface Definition

### 4.1 USB port


There are 2 USB2.0 and 4 USB 3.0 on this product, following is the pin definition:

 USB1~2	USB2.0	Definition
	1	+5V
	2	USB Data-
	3	USB Data+
	4	GND

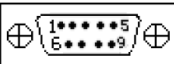
 USB3~6	USB3.0	Definition
	1	GND
	2	D+
	3	D-
	4	VBUS
	5	StdA_SSTX+
	6	StdA_SSTX-
	7	GND_DRAIN
	8	StdA_SSRX+
	9	StdA_SSRX-

## 4.2 Ethernet

There are 2 Ethernet 1000M on this product, following is the pin definition:


LAN1, LAN2				MX0+ (Pin#1) MX0- (Pin#2) MX1+ (Pin#3) MX2+ (Pin#4) MX2- (Pin#5) MX1- (Pin#6) MX3+ (Pin#7) MX3- (Pin#8)
ACTLED (Green light)	Netstat	LILED (green/orange)	netstat	
		green	1000Mbps	
Twinkle	With data transmission	orange	100Mbps	
Light off	No data transmission	Light off	10Mbps	

## 4.3 Standard DB9

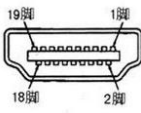
	Pin	Definition		
		RS-232	RS-485	RS-422
 COM1~4	1	DCD#	T/R+	T/R+
	2	RXD	T/R-	T/R-
	3	TXD	X	RXD+
	4	DTR#	X	RXD-
	5	GND	GND	GND
	6	DSR#	VCC (+5V spare input)	VCC (+5V spare input)
	7	RTS#	X	X
	8	CTS#	X	X
	9	RI#	X	X

## 4.4 Standard VGA

VGA Display, its interface is 15 core type D VGA display socket.

 <p>VGA</p>	pin	definition	pin	definition
	1	Red	2	Green
	3	Blue	4	N.C.
	5	GND	6	Detect
	7	GND	8	GND
	9	+5V	10	GND
	11	NC	12	DDCDATA
	13	HSYNC	14	VSYNC

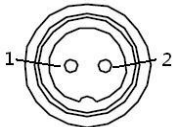
#### 4.5 Standard HDMI A Type

 <p>HDMI</p>	pin	definition	pin	definition
	1	DATA2+	2	DATA2 shield
	3	DATA2-	4	DATA1+
	5	DATA1 shield	6	DATA1-
	7	DATA0+	8	DATA0 shield
	9	DATA0-	10	DATA1_CK+
	11	DATA1_CK	12	DATA1_CK-
	13	CEC	14	Reserved
	15	SCL (DDC)	16	SDA (DDC data)
	17	DCC/CEC GND	18	+5V
19	Hot swap test	/		

#### 4.6 Power

This product support DC+12 V power in, together with power adapter, and

following is the power pin definition:

 <p>DC12V input</p>	pin	definition
	1	+12V
	2	GND



## 5. Appendix

### 5.1 Host BIOS settings

#### 5.1.1 Main

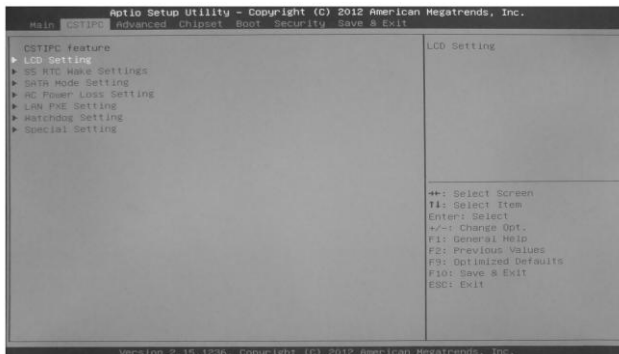
Press F2 to boot, go into BIOS → CMOS, setting date and time as shown in picture 5-1:



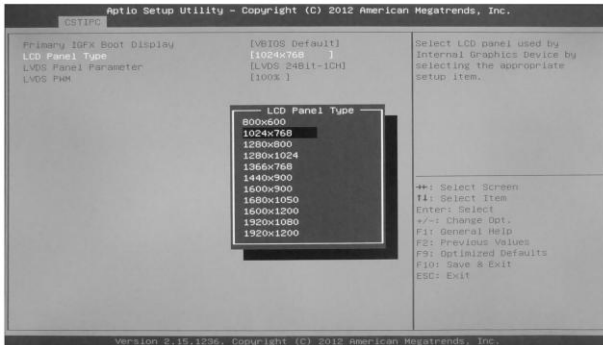
Picture 5-1

#### 5.1.2 CSTPIC

Enter page of picture5-2, choose "LCD setting" to page of picture5-3



Picture 5-2



Picture 5-3

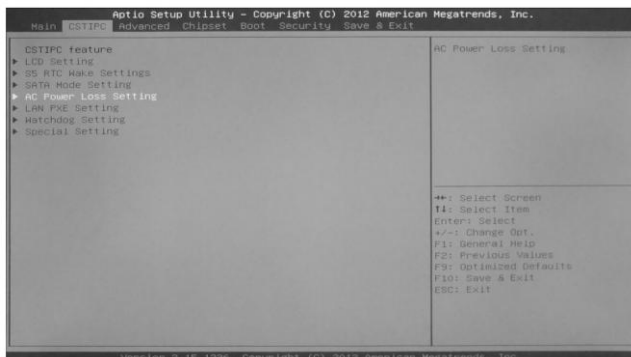
In “LCD Panel Type” options, you can change panel pc’s original resolution, if the resolution you choose is incompatible with screen’s real resolution, may lead to unnormal showing.

In page of picture 5-4, choose “AC power Loss Setting” to enter “Restore AC Power Loss” :

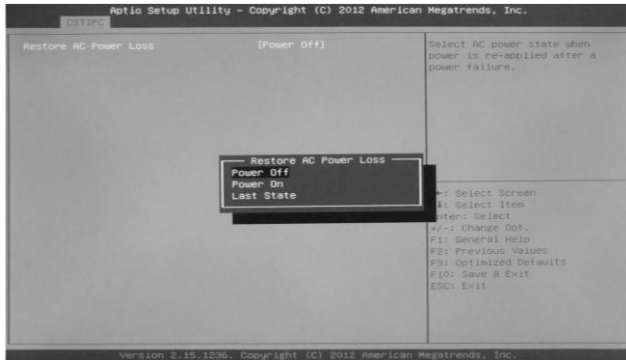
**【Power off】** Press switch to boot after power on,

**【Power on】** Auto boot after power on,

**【Last Status】** After power on, if illegal shutdown last time, the pc will return last status ,if normal shutdown, pc will be in power on status.as shown in picture 5-5:

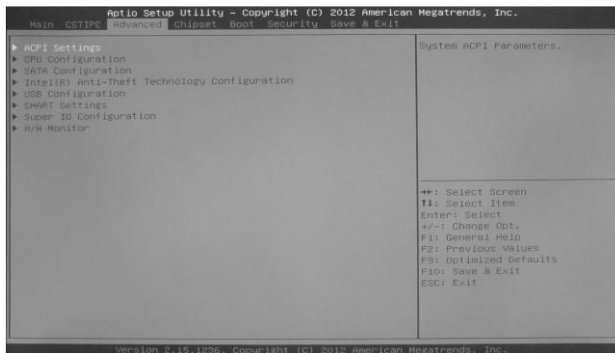


Picture 5-4



Picture 5-5

### 5.1.3 Advanced

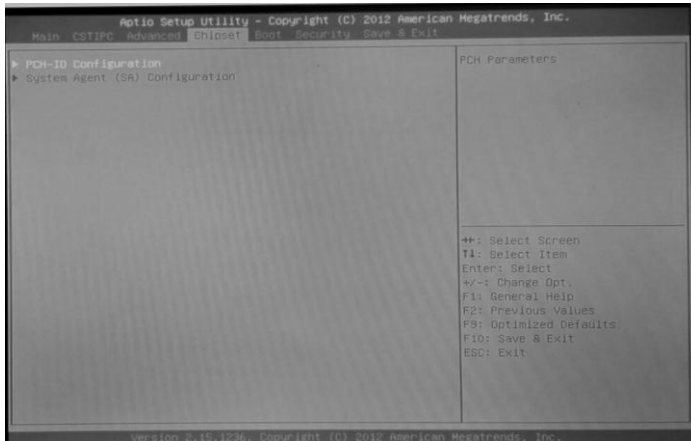


Picture 5-6

- ACPI Settings;
- CPU Configuration;
- SATA Configuration SATA;
- Intel (R) Anti-Theft Technology Configuration;
- USB Configuration;
- SMART Settings;
- Super IO Configuration;
- H/W Monitor;

## 5.1.4 Chipset

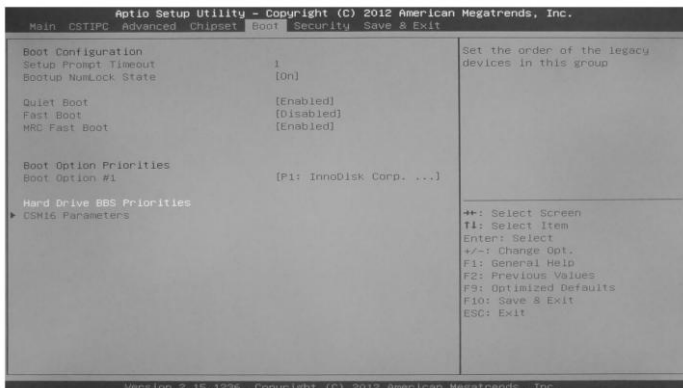
Here you can set I/O port, system memory, graphics memory, as shown in picture 5-7:



Picture 5-7

## 5.1.5 Boot

The menu can set Num Lock's status when booting, or set storage's boot program, firstly, choose first boot device in "Hard Drive BBS Priorities", then choose it in "Boot Option #1", press F4 to save and exit. choose "Hard Drive BBS Priorities" to enter, as shown in picture 5-8.



Picture 5-8

Enter “Hard Drive BBS Priorities”, choose first boot device in “Boot Option #1”,as shown in 5-9:



Picture 5-9

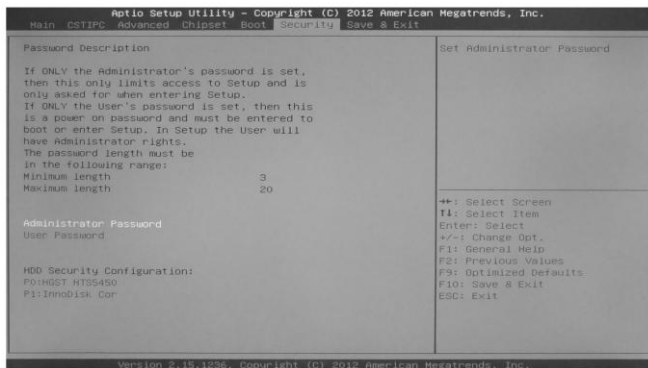
After last step, press “ESC” to return to last page, choose first boot device in “Boot Option #1”again,as shown in picture 5-10,press “F4” to save, press “enter” to exit.



Picture 5-10

### 5.1.6 Security

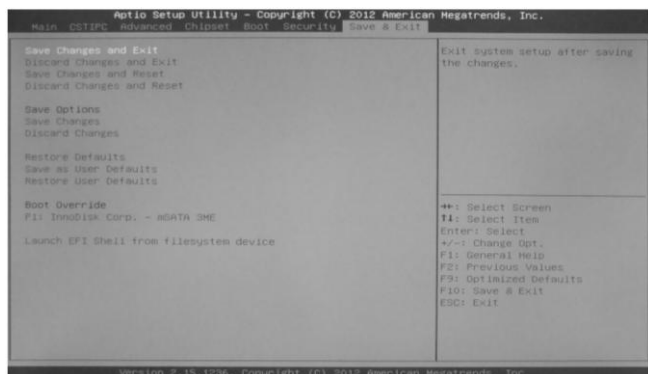
This menu is used to set password to enter BIOS Setup and boot.as shown in picture 5-11:



Picture 5-11

### 5.1.7 Save & Exit

Enter CMOS page, choose "Save & Exit", as shown in picture 5 -12 :



Picture 5-12

Press "F3" to recover factory reset, press "F4" to save.

---

## **5.2 Driver software installation**

### **5.2.1 Chipset driver installation**

- (1) Enter “Driver\Chipset\”, double click “Intel \_inf.exe”.
- (2) Follow notice, click “next step” and “continue”.
- (3) After installation, choose “Yes” and “finish” in “restart”, the driver software would auto load after restart.

### **5.2.2 On board graphics card driver installation**

- (1) Enter driver CD “Driver\Graphic\”, choose related OS files. double click “setup. exe” with left key.
- (2) Follow notice, click “next step” and “continue”.
- (3) After installation, choose “Yes” and “finish” in “restart”, the driver software would auto load after restart.

### **5.2.3 On board sound card driver installation**

- (1) Enter driver CD “ Driver\Audio\ ”.Choose related OS files, double click “setup. exe” with left key. Following notice, click “next step” and “continue”.
- (2) After installation, choose “Yes” and “finish” in restart options. the driver software would auto load after restart.

### **5.2.4 On board network card driver installation**

- (1) Enter driver CD “Driver\LAN\”, Choose related OS files, double click “setup. exe” with left key. Following notice, click “next step” and “continue”.
- (2) After installation, choose “Yes” and “finish” in restart options. the driver software would auto load after restart.

## 5.3 Trouble & Trouble shooting

Common Malfunction	Possible Reasons	Trouble shooting and solution
The device is not operating	No power supply	Please check the power supply and the power cable/connector
	Improper device operating environment	1. Check the environment conditions 2. Please wait for 12 hours before powering on the device shipped in cold day.
The external display is black	The display has not been turned on	Turn on the display
	Display output skip to other display channel	After enter OS(check light through "Num Lock") Use composite key "Ctrl+ALT+F1/F2/F3/F4" to switchover video output between VGA/DVI/LVDS/HDMI
	The display is under "power saving" mode	Press any key on the keyboard.
	The luminance control is set to "Black"	Increase the screen luminance by luminance control. Please refer to the instructions of the display for detailed information.
	Power cable or display cable is not connected	1. Please check whether the power cable & display cable is correctly connected with the display, the system unit or the ground port. 2. Contact technique support if the screen remains black after implementing the above measures.
Incorrect time or date on PC	Incorrect BIOS setting	Follow the power-on prompt and press the key to enter the BIOS setup, adjust the time and date in BIOS setup.
BIOS setting is correct while the time and date are not correct	Insufficient backup battery capacity	Replace the battery
USB device has no response	USB port is disabled in BIOS	Use other USB ports or enable that port.
	USB2.0 device is connected while USB 2.0 is disabled	Enable USB 2.0.
	USB port is not supported by the operating system	1. Enable USB Legacy Support for the mouse & keyboard (legacy USB is supported); 2. For other device, appropriate USB drivers are required.



Common Malfunction	Possible Reasons	Trouble shooting and solution
Boot device not found	In booting priority of the BIOS setting, the device is not the first priority or the device is not include in the booting device	Modify the booting priority of the device in the Boot menu of BIOS setting or include that device into the booting priority
No system disk can be found when powering on	The HDD power cable or data cable is not connected well	Check whether the power cable and the data cable of the hard disk(the hard disk shall be installed with operating system and is bootable) are well connected
	System files on the hard disk are damaged	Enter the system(usually WinPE system) with a bootable disk check whether the system in the hard disk is damaged. Reinstall the system if necessary.
Plug and play I/O card, no I/O card is detected, or I/O card can be used when used again	Poor contact of the slot	Poor contact is usually caused by frequent installation/ uninstallation of the PCI or ISA card, unstable fixing or improper dust-proof measures; please remove and install the card for a few times or use another slot.