

User ManualVer1.0

IPC615H

Industrial PC

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Manual conventions



WARNING:

Warnings appear where overlooked details may cause damage to the equipment or result in personal injury. Warnings should be taken seriously.



CAUTION:

Cautionary messages should be heeded to help reduce the chance of losing data or damaging the product.



NOTE:

These messages inform the reader of essential but non-critical information. These messages should be read carefully as any directions or instructions contained therein can help avoid making mistakes.

Declaration of Conformity

This restriction is subject to provide protection for system operation in business environment, which will produce, use and transmit radio frequency energy. Without notice of the instructions of the correct installation and use, it may cause harmful interference to radio communication. The interference prevention cannot be guaranteed even with proper installation according to the manual. If the device gets bad affect on the signal of radio / TV. User could insure by turn device on/off.

When this device produces some harmful interference, user can use the following measure to solve interference problem:

- Set the receiving antenna's direction or location.
- Increase the distance between this device and receiver.
- Plug in this device's power connector into different circuits of the power outlet with receiver

If you need technical support, please inform the dealer or experienced radio/TV technical personnel.



NOTE:

If user changes the setting unauthorized or repairs the device without any approval of the relevant authority, then user's rights of controlling this device will be canceled.

Technical Support and Service

Please visit the Nodka website <http://en.nodka.com> to get more details.

If you need additional assistance, please contact your system reseller or vendor.

Please have the following information ready before you call:

1. Product name and serial number
2. The product specification
3. Description of your software (operational system, vision, application software, etc.)
4. A complete description of the problem
5. The exact wording of any error messages

Ordering Information

Product code	Description
IPC615H	No CPU/ No Memory/ No Hard Disk/ 4*RS232/2* (RS232/485) / 2 Gigabit Ethernet ports/ 6*USB2.0 (Support 4*USB3.0)/ HDMI/ VGA/ Audio card/ AC220V input/ 4PCI/ 1PCIe 4X/ 1PCIe1X/ Parallel port/ 1.8m power line/ Two-year warranty

Optional equipment:

Name	Description
CPU	Support Intel Pentium/ Celeron/ 2nd and 3rd Generation Core i3/5/7 CPU
Memory	Support DDR3 1600/1333/1066 MHz, 1 * SO-DIMM Slot, Up to 16 GB Memory Size
Hard disk	Support 2.5"/3.5",MSATA
CD- ROM	Desktop Computer CD-ROM
Keyboard/Mouse	Optional

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Chapter 1

Overview

1.1 Introductions

The Nodka IPC615H is a 4U, 19" standard rack-mounted fanless industrial PC. IPC615H uses Intel® Core™ i3/ i5/ i7/ Celeron desktop processor and 1SODIMM memory slot which supports up to 8GB memory. There are 2 4 SATA2.0/3.0 and mSATA SSD slots. VGA and HDMI support synchronous or asynchronous double display. There are 2 Gigabit Ethernet port, 6USB 2.0/3.0, 4RS232 and 4RS232/485, also provides 4PCI and 3PCIe bus slots.

1.2 External Overview



Figure 1-1 Front overview of IPC615H



Figure 1-2 Rear overview of IPC615H

1.3 Specifications

SYSTEM	IPC645H	
Processor	CPU	Intel® Core™ 2nd / 3rd i7 / i5 / i3 / Pentium / Celeron, LGA1155
	Frequency	1.4GHz~3.3GHz
	L2 Cache	Up to 8MB
	Chipset	Intel B75 Express Chipset
	BIOS	AMI EFI 16Mbit
Memory	Architecture	DDR3-1066 / 1333 / 1600MHz (Only Ivy bridge can fit for 1600MHz)
	Capacity	up to 16GB
	DIMM	1 x 204-pin SODIMM
Display	Display controller	Intel®HD GT2 3000/4000 Series Display controller, 200MHz~1.2GHz
	Graphics engine	DirectX 11, OpenGL3.1, OpenCL1.1 support; Hardware encoding/decoding: MPEG2/MPEG4; Hardware encoding/decoding: H.264/VC1/MVC
	VGA	Up to 1920 x 1200
	HDMI	Support 1920 x 1200
	Dual display	Yes, VGA + HDMI
LAN	LAN1	Realtek RTL-8111F Gbe LAN controller
	LAN2	Realtek RTL-8111F Gbe LAN controller
Audio	Port	Realtek ACL662 Audio controller, Line-out, Mic-in.
I/O	COM	2 x RS-232 , optional RS-485, up to 6 RS-232(Option)
	LPT	1, support SPP/EPP/ECP mode (Option)
	PS2	1 x PS2 Keyboard + 1 x PS2 Mouse
	USB	4 x USB3.0/2.0/1.1, 2 x USB2.0/1.1
Other	Digital IO	N/A
	WatchDog	0~255 seconds programmable
Expansion Slot	PCIe	1 x PCIe x16 slot, 1 x PCIe x4 slot, 1 x PCIe x1 slot
	PCI	4 x 32bits PCI slot
Storage Medium	HDD	1 x 2.5" HDD Bay, 4 x SATA2.0 Port (Max. data transfer rate 3Gb/s)
	SSD	1 * full size mSATA SSD
OS	Microsoft Windows	Windows XP, Windows XP Embedded, Windows 7, Windows 7 Embedded, Windows 8
	Linux	Ubuntu
Power	Type	AT
	Input voltage	AC90 ~ 132V/AC180~264V
	Power Supply	-
Power Dissipation	No-load	-
	Full-load	-
Mechanism Parameters	Box structure	Full steel box structure
	Mounting	19-inch standard rack-mounted
	Dimensions	482.6mm x 177.8mm x 430mm (19" * 7" * 16.93")
	NW	9.62kg (21.21lb)

Environmental	Work Temperature	-20 ~ 60° C (-4 °F ~140 °F) (Wide temperature SSD)
	Temperature	0 ~ 45° C (32 °F ~113 °F) (General temperature HDD/SSD)
	Storage Temperature	-40 ~ 80°C (-40 ~ 176 °F)
	Relative humidity	5~95% (Non condensation)
	Shake	SSD applied: 1.5 Grms, IEC 60068-2-64, random, 5 ~ 500 Hz, 1 hr/axis
	Shock	SSD applied: 10 G, IEC 60068-2-64, Half-sine wave, 11ms duration
	EMC	CE/FCC Class A
	Safety Certification	CCC

1.4 Size and Weight

Item	IPC645H
Color	Gary
Dimension	482.6mm x 177.8mm x 403.4mm
Packing size	630mm x 550mm x 325mm
Net weight	16.1KG
Total weight	20.8KG
Rom weight	0.54KG
SSD weight	0.38KG
Keyboard /mouse	0.84KG

1.5 Assembly and Disassembly

IPC615H has a unique structure design which makes COM port settings easily and quickly as well as the replacement of the hard disk.

1.5.1 Hard disk replacement

Step 1. Gently remove four screws (located as shown in the figure below) to remove the chassis.



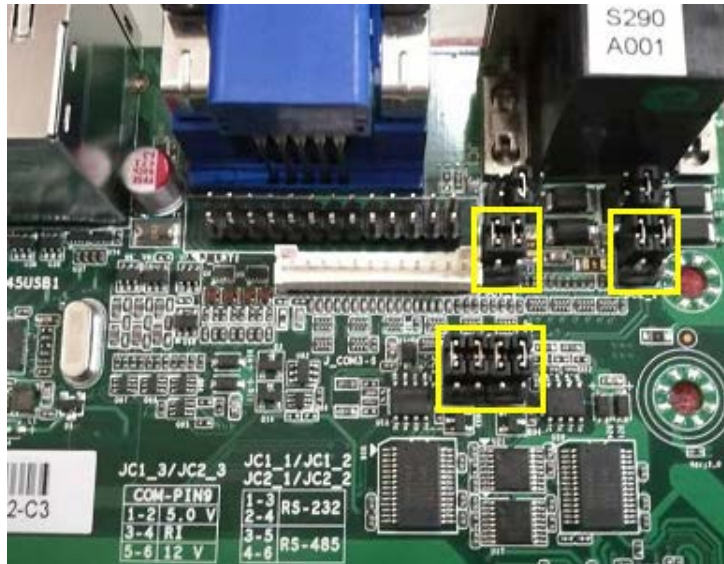
Step 2. Take off the chassis cover. You can find a screw as shown in the figure. Screw it, and then you can replace the hard disk.



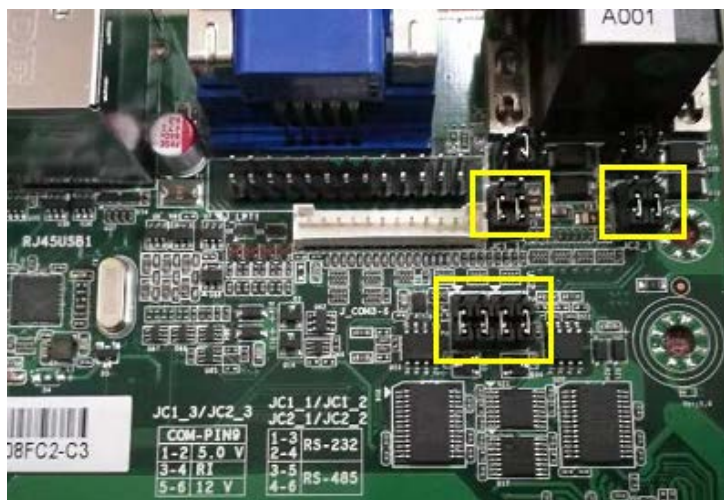
1.5.2 COM Jumper setting

RS485 is optional for COM1, COM2. The jumper setting is shown as figure below.

RS232 mode:



RS 485 mode:



Chapter 2

System installation

2.1 Connectors Definitions

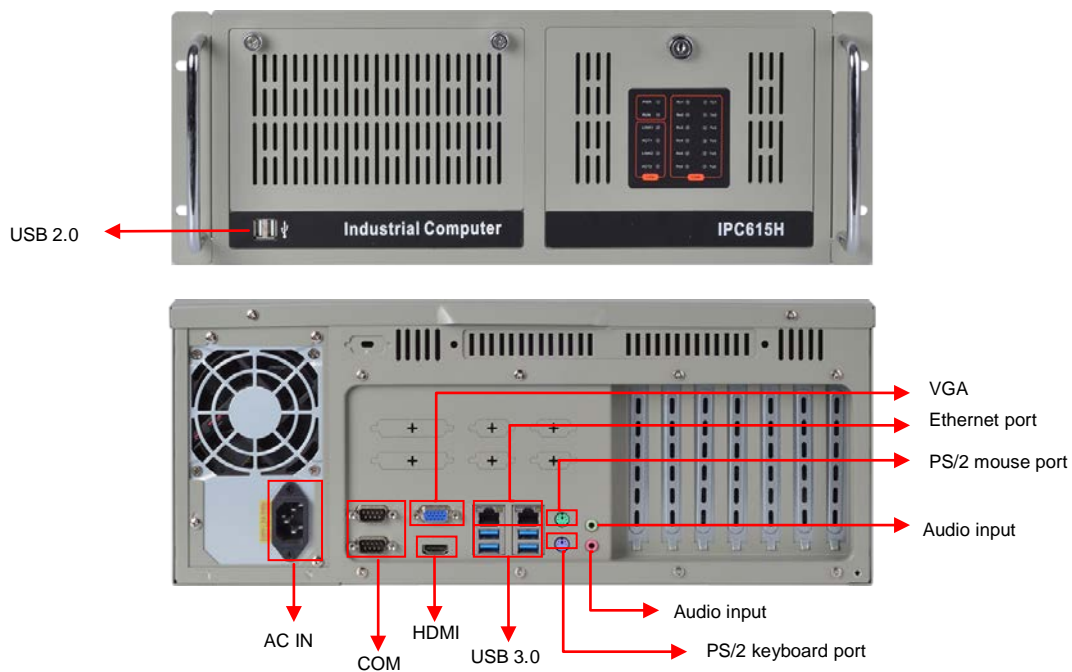



Figure 2-1 Connectors location

2.1.1 COM Ports:

COM1~6: Type DB9 connector, COM1 and COM2 can be use as RS-232 or RS-485 selected by jumper (see chapter?).

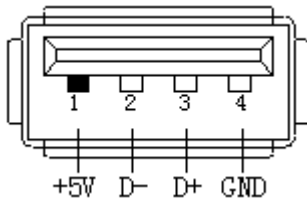
	PIN	SIGNAL	
		RS-232	RS-485 (COM1,COM2)
	1	DCD	DATA-
	2	RXD	DATA+
	3	TXD	
	4	DTR	
	5	GND	GND
	6	DSR	
	7	RTS	
	8	CTS	
	9	RI	

PIN9 on DB9 defaults RI, you can set to 5V or 12V by jumpers here is the definitions:

	SETTING	FUNCTION
	(1-2)	+5V
	(3-4)	+12V
	(5-6)	Ring (Default)

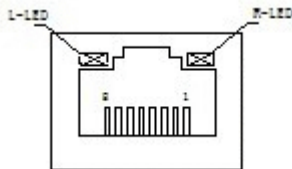
2.1.2 USB

We provide two standard single deck USB ports in front panel and 2 x 2 standard double-deck USB interface on I/O interfaces. You can use the 6 USB interfaces at the same time.

	PIN	SIGNAL
	1	+5V
	2	Date-
	3	Date+
	4	GND

2.1.3 Ethernet interfaces (LAN1, LAN2)

Two standard 10/100/1000Mbps RJ-45 Ethernet ports are provided.

	PIN	SIGNAL	PIN	SIGNAL
	1	TX0+	5	TX2+
	2	TX0-	6	TX2-
	3	TX1+	7	TX3+
	4	TX1-	8	TX3-

Two LEDs are used to indicate the status of the connection. LED on right of upper canister is about data transmission; LED on left of upper canister indicates link connections. Details are as follows:

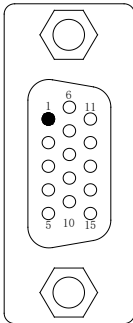
Network status	Left (LILED) double colors (Orange / Green)		Right (ACTLED) single color (Yellow)	
	1000M	N/A	Constant ON	FLASH
100M	Constant ON	N/A	FLASH	OFF
10M	OFF	OFF	FLASH	OFF
Active description	GREEN	ORANGE	Data Transferring	No Data Transferring
	Linking indicator		Active status indicator	

2.1.4 Audio interface (LINE_OUT)

We provide a standard Ø3.5 Phone Jack audio output interface (LINE_OUT). You can use it directly.

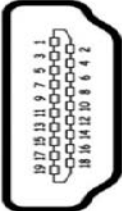
2.1.5 VGA port

We provide a standard DB15 monitor interface.

	PIN	SIGNAL	PIN	SIGNAL
	1	RED	9	5V
	2	GREEN	10	GND
	3	BLUE	11	NC
	4	NC	12	DDC_Data
	5	GND	13	HS
	6	GND	14	VS
	7	GND	15	DDC_Clock
	8	GND		

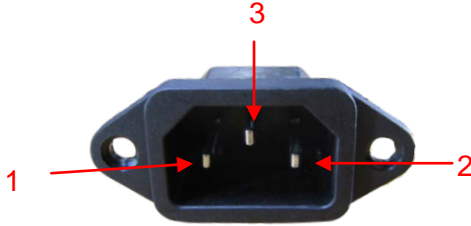
2.1.6 HDMI input connector

The HDMI input connector connects to the HDMI input cable that provides an HDMI input port. Pinouts for the connector are shown as below. It is possible to run two monitors through both VGA and HDMI simultaneously.

	PIN	SIGNAL	PIN	SIGNAL
	1	TMDS data 2+	11	TMDS clock shield
	2	TMDS data 2 shield	12	TMDS clock-
	3	TMDS data 2-	13	CEC
	4	TMDS data 1+	14	No connected
	5	TMDS data 1 shield	15	SCL
	6	TMDS data 1-	16	SDA
	7	TMDS data 0+	17	DDC/CEC ground
	8	TMDS data 0 shield	18	+5V power
	9	TMDS data 0-	19	Hot plug detect
10	TMDS clock+			

2.1.7 Power connector

IPC615H offers a 220v power inlet.

	PIN	SIGNAL
	1	Hot
	2	Neutral
	3	Ground

2.1.8 Switch button (PWR)

On the front panel, a power touch switch (PWR) is offered to power up. It is located inside the cover as you can see from Figure 2-2.

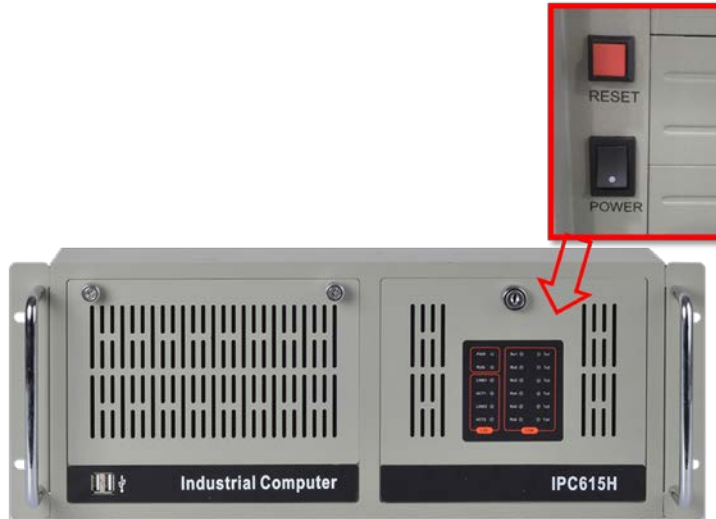


Figure 2-2 Location of PWR

2.1.9 PWR, hard drive status indicators

We provide a set of indicators to show the status of the power and the hard drive. Continuous green light indicates that the power is switched on. Flashing red light on hard drive indicator means that the hard drive is reading/writing data.

2.2 BIOS Setup

The BIOS is programmed onto the BIOS chip, the BIOS setup program allows changes to certain system settings. This chapter outlines the options that can be changed.



NOTE:

Some of the BIOS options may vary throughout the life cycle of the product and are subject to change without prior notice.

2.2.1 Starting setup

The AMI is activated when the computer is turned on. The setup program can be activated in one of two ways:

1. Press the **DEL** key as soon as the system is turned on.
2. Press the **DEL** key when the **Press Del to enter SETUP** tip appears on the screen.

If the message disappears before the **DEL** key is pressed, restarted the computer and try again. General Introduction

2.2.2 Using setup

Use the arrow keys to highlight items. Press **ENTER** to select, use the **PAGE UP** and **PAGE DOWN** keys to change entries. Press **F1** for help and press **ESC** to quit.

Navigation keys are shown as table below.

Table 2-1 Keys of BIOS navigation

Key	Function
Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item on the left side
Right arrow	Move to the item on the right side
ESC	Reset
+	Increase the numeric value or make changes

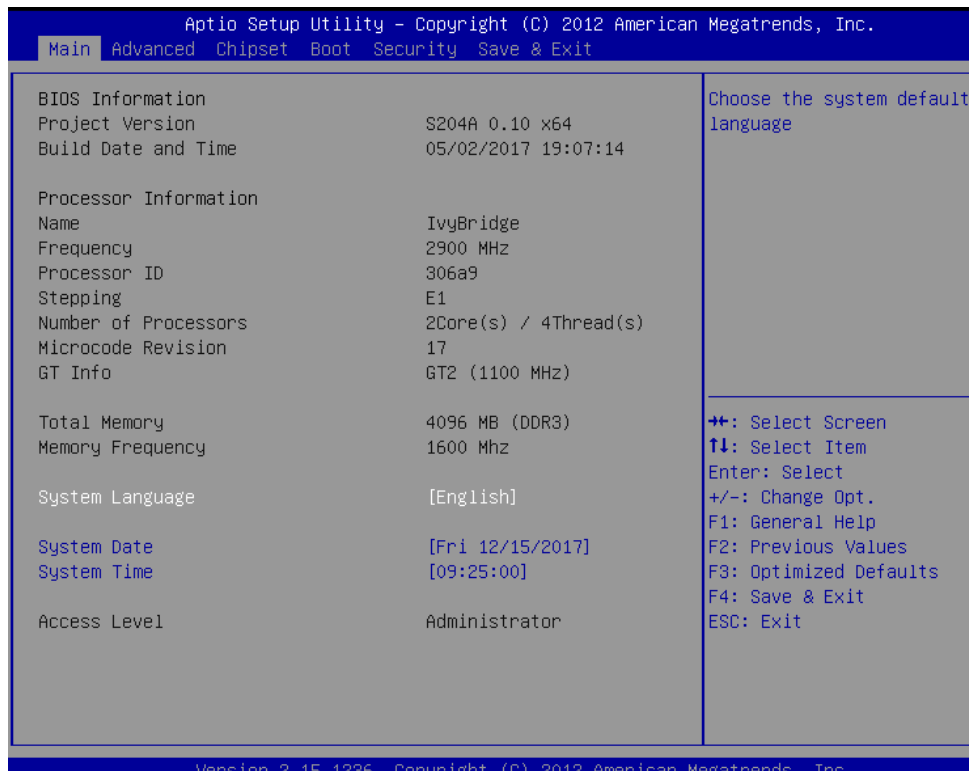
-	Decrease the numeric value make changes
F1	General help, only for the status page setup menu and option page setup menu
F2	Previous value
F3	Optimized defaults
F4	Save all the CMOS changes and reset

The menu bar which is anchored to the top of the BIOS screen has the following main items:

- Main – Changes the basic system configuration.
- Advanced – Changes the advanced system settings
- Chipset – Changes the chipset settings.
- Boot – Changes the system boot configuration.
- Security – Sets user and supervisor passwords.
- Exit – Selects exit options and loads default settings.

2.2.3 Main settings

The **Main** BIOS menu appears when the **BIOS Setup** program is entered. The **Main** menu gives an overview of the basic system information.



The **Main** menu has two user configurable fields.

System Time:

Set the system time, the time format is HH: MM: SS

System Date:

Set the system date, the date format is MM/DD/YY

Day: Note that the 'Day' automatically changes when you set the date.

2.2.4 Advanced setting—CPU configuration

Choose **CPU configuration** menu in **Advanced** menu to view detailed CPU specifications or enable the Intel Virtualization Technology.



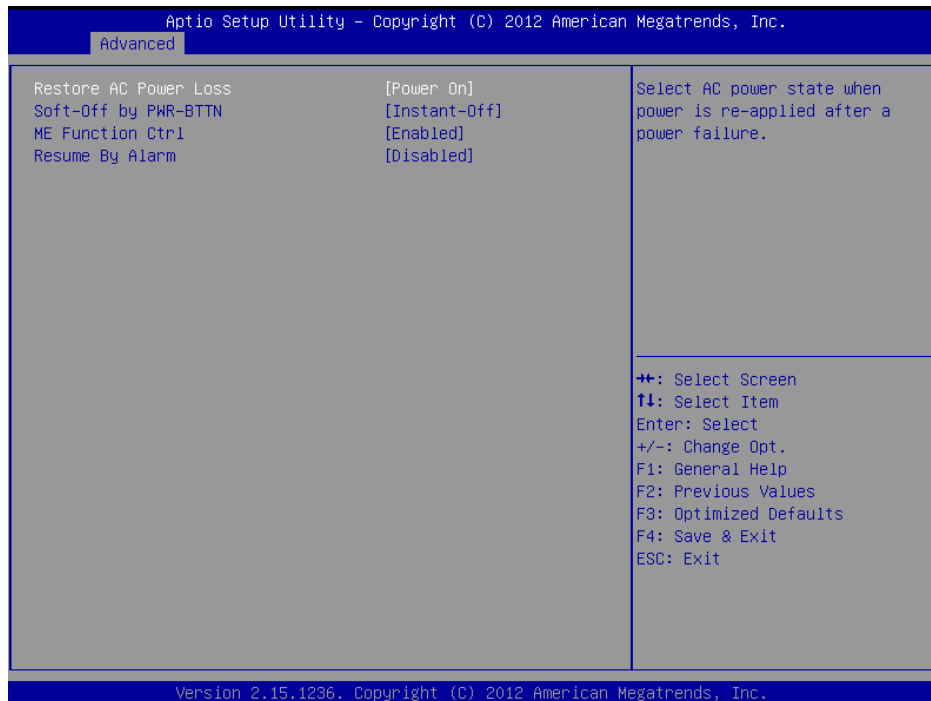
2.2.5 Advanced setting—Super IO configuration

Choose **Super IO configuration** menu in **Advanced** menu to set or change the configurations of COM1~COM6 and LPT.



2.2.6 Advanced setting—Restore AC power loss configuration

Choose **Restore AC power loss configuration** menu in **Advanced** menu to set the configuration. Power off is default.



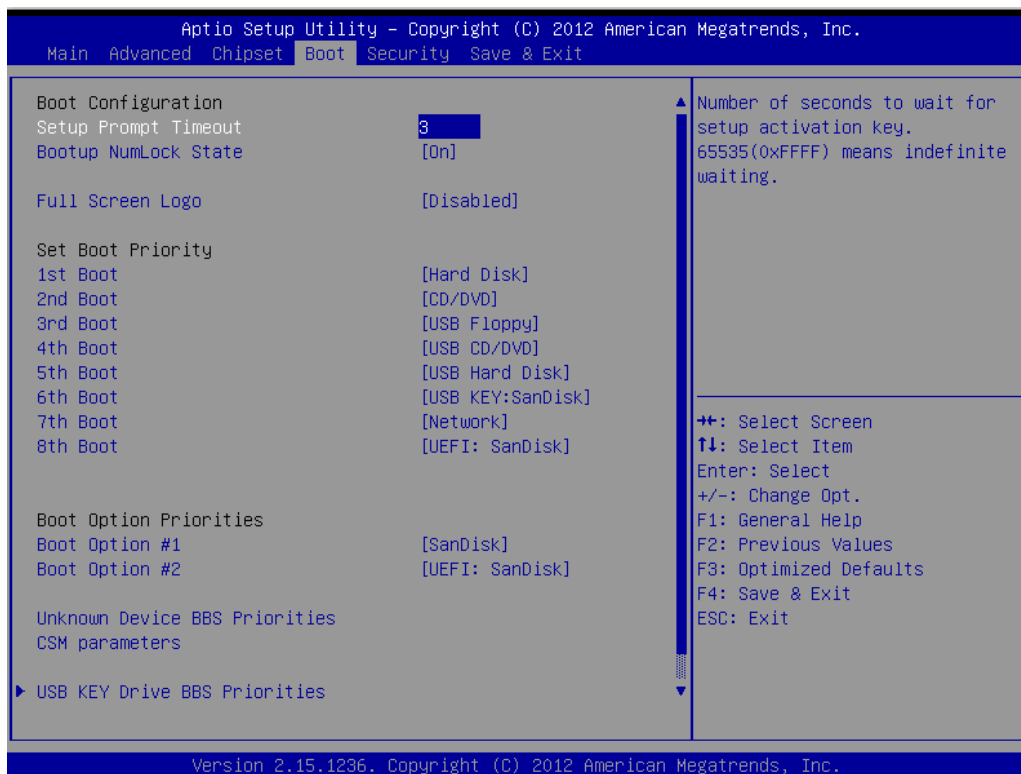
Power off: Power's off the computer after a power outing.

Power on: Power's on the computer automatically after a power outing.

Last state: Restores the last setting you had for your power on option instead of restoring factory default.

2.2.7 BOOT Configuration

Use down arrow key to select options of **Boot Options #1**. Use the right arrow key to select the **File** menu, use the down arrow key to select **Save Changes and Exit**, then press Enter to select **Yes**.



2.3 Driver installation

Before using the panel PC, users need to set up corresponding drivers to make sure all functions are normal. To install the drivers, please follow the steps below:

Step 1. Please download the drivers from <http://en.nodka.com/>. Select the correct driver corresponding with the model of your product.

The screenshot shows the NODKA website interface. The breadcrumb navigation path is highlighted in red: **Your Location: HOME > PRODUCT > Embedded Industrial PC > 4U/Wall IPC**. The product page for the **IPC615H** is displayed, featuring a product image and a list of specifications. At the bottom of the page, there are three tabs: **Specifications**, **Ordering Information**, and **Driver Download**. The **Driver Download** tab is selected and highlighted in red. Below the tabs, a table lists the available drivers:

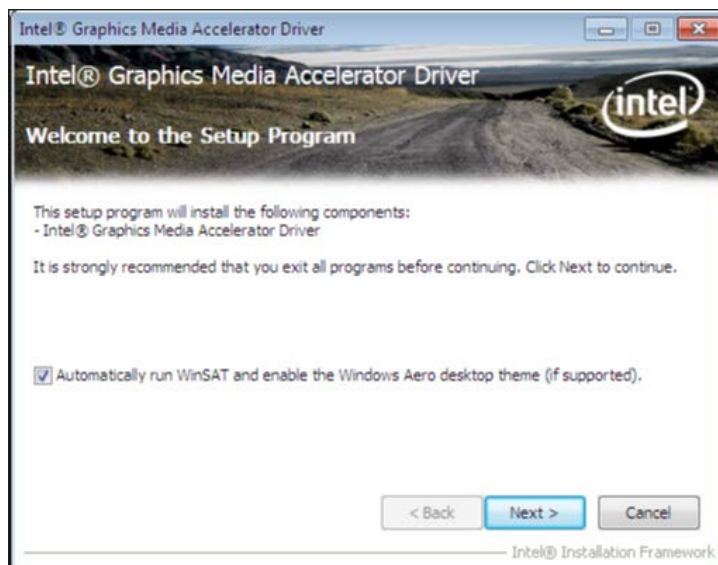
NAME	SIZE	article_qudong	TIME	DOWNLOAD
IPC615H,IPC615F(eBOX-3632),IPC615W(eBOX-3642),eBOX-3652 Chipset Driver	2.65MB	WinXP_win7_win8_32_64	2018-11-27 14:08:44	To the download

Step 2. Choose the corresponding driver and click **To the download page**. Then click **Download** button.

2.3.1 Graphics driver

To install graphics driver, please follow the steps below.

Steps 1. Double click the application of graphics driver. The default Unzip folder is **C:\Program Files\Graphics**. Click **Install** to install the driver. Then click **Next**.



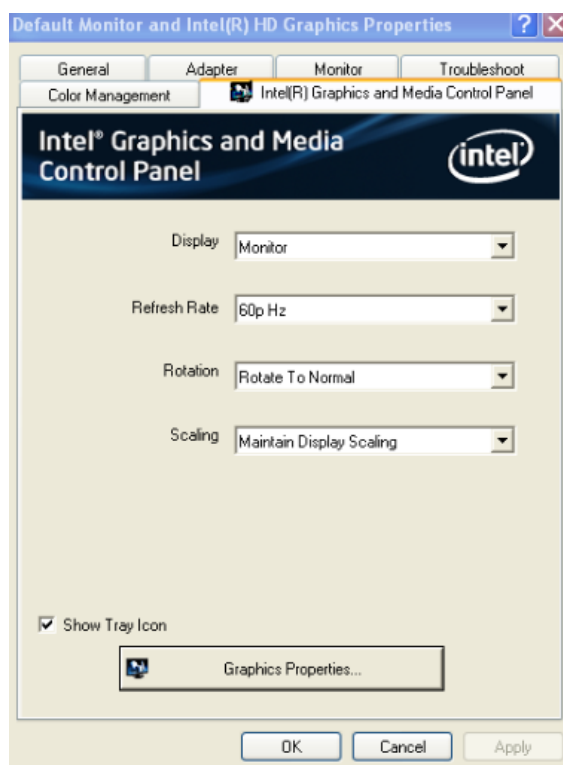
Step 2. Select **Yes, I want to restart this computer now**. Then click **Finish**.



Step 3. The default display is **VGA**. Normally, the resolution is automatically set according to the size of the display. For example, the recommended resolution for a 21.5" display is 1920*1080. When linking to HDMI, the resolution can also be set automatically.

Step 4. Display parameters can be manually adjusted. Setting as follows:

Desktop Key → Properties → Settings → Advanced → Display Config Tab → Secondary Mode → Changing resolution to 1024*768



Appendix A

A.1 Safety Precautions



CAUTION:

The precautions outlined in this chapter should be strictly followed. Failure to do so may cause permanent damage to the product.

A.1.1. General Safety Precautions

Please read the following safety precautions carefully. Make sure you always follow the precautions. Keep this User Manual for later reference.

1. Always follow the **Anti-static precautions (A.2)** when the product is opened.
2. **Make sure the power is turned off and the power cord is disconnected** when the product is being installed, moved or modified.
3. When the product is running, **electric shocks may occur if the chassis of PRODUCT is open.**
4. If amounts of dust, water, or fluids enter the product, please immediately **turn off the power supply and pull out the plug**, then contact the vendor.
5. **DO NOT APPLY A VOLTAGE WHICH EXCEEDS THE SPECIFIED VOLTAGE RANGE. OTHERWISE, THIS MAY RESULT IN FIRE OR ELECTRIC SHOCK.**
6. **DO NOT DROP OR INSERT ANY OBJECTS INTO THE VENTILATION OPENINGS OF THE PRODUCT.**
7. **DO NOT DROP THE PRODUCT AGAINST A HARD SURFACE.**
8. **DO NOT STRIKE OR EXERT EXCESSIVE FORCE ONTO THE LCD PANEL.**
9. **DO NOT TOUCH ANY OF THE LCD PANELS WITH A SHARP OBJECT.**

10. DO NOT STORE THE PRODUCT IN OUT OF THE TEMPERATURE RANGE WHAT WE SUGGESTED, NOT LESS THEN -30°C OR HIGHER THAN 80°C, OR MAY DAMAGE THE DEVICE.

A.1.2. Anti-static Precautions



WARNING:

During the installation of the product, failure to take ESD precautions may result in permanent damage to the device and cause severe injury to the user.

Electrostatic discharge (ESD) may cause severe damage to electronic components of product, especially during dry weather. Therefore, please strictly observe the anti-static precautions when opens the product to handle any electrical components inside.

1. **Wear an anti-static wristband** to prevent ESD from damaging any electrical components.
2. Before and during handling the electrical components, **please frequently touch grounded conducting materials to ground yourself.**
3. When configuring or working with an electrical component, **please put the component on an anti-static pad** in order to reduce the possibility of ESD damage.
4. **Only touch the edges of the electrical component**, when handling it.

A.1.3. Disposing of the Equipment



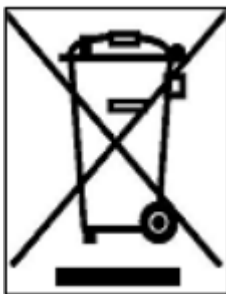
CAUTION:

If the battery is replaced with the wrong type, there might be a risk of a battery explosion. Only certified engineers can replace the on-board battery.



NOTE:

Disposal of used batteries must be in accordance with local environmental regulations.

Within the European Union:

EU-wide legislation, as implemented in each Member State, requires that waste electrical and electronic products carrying the mark (left) must be disposed of separately from normal household waste. This includes monitors and electrical accessories, such as signal cables or power cords. When you need to dispose of your

display products, please follow the guidance of your local authority, or ask the shop where you purchased the product. The mark on electrical and electronic products only applies to the current European Union Member States.

Please follow the national guidelines for electrical and electronic product disposal.

Outside the European Union:

If you want to dispose the used electrical and electronic products outside the European Union, please contact your local authority so as to comply with the correct disposal method.

A.2 Maintenance and Cleaning Precautions

When maintaining or cleaning the product, please follow the guidelines below.

A.2.1. Maintenance and Cleaning

Prior to cleaning any part or component of the product, please read the details below.

1. Except for the LCD panel, never spray or squirt liquids directly onto any other components. To clean the LCD panel, gently wipe it with a piece of soft dry cloth or a slightly moistened cloth.
2. The interior does not require cleaning. Keep fluids away from the interior.
3. Be careful not to damage the small, removable components inside.
4. Turn off before cleaning.
5. Never drop any objects or liquids through the openings.
6. Be cautious of any possible allergic reactions to solvents or chemicals used when cleaning.
7. Avoid eating, drinking and smoking nearby.

A.2.2. Cleaning Tools

Some components may only be cleaned using a product specifically designed for the purpose. In such case, the product will be explicitly mentioned in the cleaning tips.

Below is a list of items to use for cleaning.

1. **Cloth** – Although paper towels or tissues can be used, a soft, clean piece of cloth is recommended.
2. **Water or rubbing alcohol** – A cloth moistened with water or rubbing alcohol should be used.
3. **Using solvents** – The use of solvents is not recommended as they may damage the plastic parts.
4. **Vacuum cleaner** – Using a vacuum specifically designed for computers is one of the best methods of cleaning. Dust and dirt can restrict the airflow and cause circuitry to corrode.

5. **Cotton swabs** - Cotton swabs moistened with rubbing alcohol or water are excellent tools for wiping hard to reach areas.
6. **Foam swabs** - Whenever possible, it is best to use lint free swabs such as foam swabs for cleaning.

Appendix B

B.1 Hazardous Materials Disclosure Table for IPB Products Certified as RoHS Compliant Under 2002/95/EC without Mercury

The details provided in Appendix B are to ensure that the product is compliant with the Peoples Republic of China (China) RoHS standards. The table below acknowledges the presences of small quantities of certain materials in the product, and is applicable to China RoHS only.

A label will be placed on each product to indicate the estimated “Environmentally Friendly Use Period” (EFUP). This is an estimate of the number of years that these substances would “not leak out or undergo abrupt change.” This product may contain replaceable sub-assemblies/components which have a shorter EFUP such as batteries and lamps. These components will be separately marked.

Please refer to the table on the next page.

B-1 Poisonous or hazardous substances or element in products

Component	Toxic or Hazardous Substances and Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium(Cd)	Hexavalent Chromium (Cr(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
Housing	X	O	O	O	O	X
Printed Circuit Board	X	O	O	O	O	X
Metal Fasteners	X	O	O	O	O	O
Cable Assembly	X	O	O	O	O	X
Fan Assembly	X	O	O	O	O	X
Battery	O	O	O	O	O	O
<p>O: The quantity of poisonous or hazardous substances or elements found in each of the component's parts is below the SJ/T 11363-2006-stipulated requirement.</p> <p>X: The quantity of poisonous or hazardous substances or elements found in at least one of the component's parts is beyond the SJ/T 11363-2006-stipulated requirement.</p>						