QHYCCD

AstroBar1

User's Manual Rev.1.0

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AstroBar1 is a small-sized computer with excellent performance that can easily be installed on telescopes. Based on Win10, it can stably run various astronomical software. With four 12V power ports, you can use it to set up a work environment outdoor by connecting one of four ports to a 12V portable power bank. What's more, you can use other three power ports as 12V power supply to provide power to other devices. It also has 8 USB2.0 ports, enabling you to connect it with many peripherals you want.

Notice

1. The mainboard driver and display driver of this computer are all special versions, please do not use any software to upgrade its drivers. Otherwise, the computer may become unbootable and the operating system needs to be reinstalled.

2. There are several M3 threaded holes on the case of AstroBar1, but these threaded holes are not too deep as illustrated in the Dimensions section at the end of this manual. If you use screw that's too long, the screws may contact with the mainboard and the mainboard may be damaged due to short circuit. Please be totally aware of the screw-in depth limit of these threaded holes by reading the Dimension section.

3. AstroBar1 has two sets of through-holes with a diameter of 6 mm, they can be used to fix with lens clamp. But due to the size difference of various lens clamp and distance difference, it usually needs adapter plate to connect with other devices with these through-holes or aforementioned M3 threaded holes.

4. The price of AstroBar1 contains a legitimate copy of Win10 (home), and the royalty fees of OEM are already paid to Microsoft. The Windows product key is saved in the mainboard, and you do not need to input the Windows product key when you reinstall its operating system (Win10 home). But if your mainboard gets damaged, the product key may become invalid. If you have your own Windows product key, you

can buy AstroBar1 with nonactivated operating system, which is less expensive. Note that when you want to reinstall operating system for your AstroBar1, please be sure it is Win10 home edition and it will be automatically activated when you connect it to the internet. If you restore your AstroBar1 by using the method we introduced below, you do not need to worry about activation, and the operating system is still activated when you return your computer to its original state.

5. For the first time you open your AstroBar1 that contains a legitimate copy of Win10, you may find that your operating system may actually not be activated. In this case, you need to change the system time and connect it to the internet, and the operating system will be activated automatically.

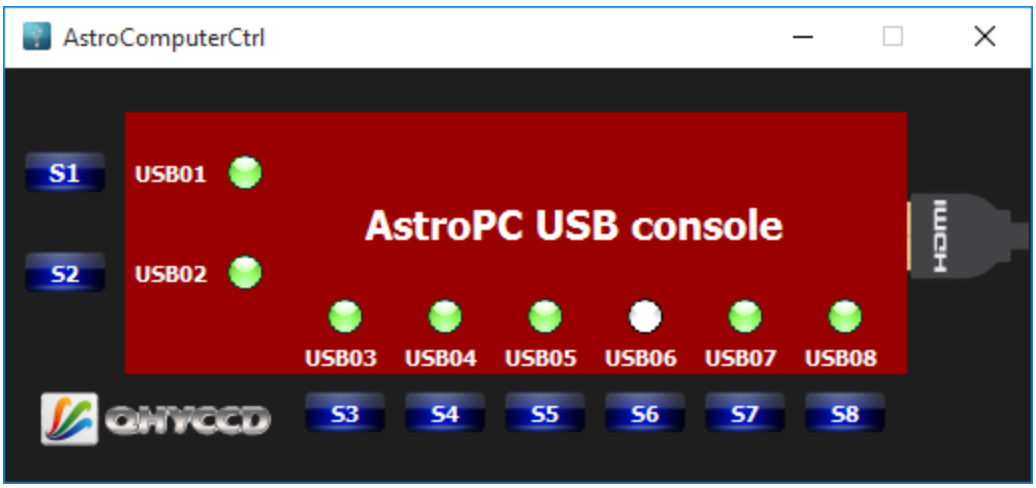
Controllable USB ports

AstroBar1 features eight USB2.0 ports as shown in the picture below.

S1-S6 are controllable, which means you can turn them on or off separately by using the built-in software, AstroComputerCtrl.

In the picture below, you can see that all USB ports are on.

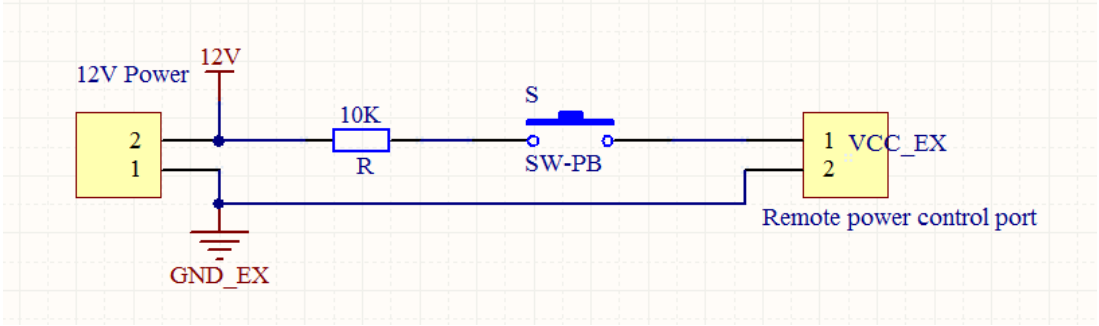
You can turn some USB port off by clicking its respective button, and the green indicator will turn to white. For example, we can turn USB06 off by clicking "S6" button.



Note that both S7 and S8 are constantly turned on by default, and clicking "S7" and "S8" buttons is invalid.

Remote power control port

With remote power control port, you can turn the AstroBar1 on or off, or restart it without pressing the power button, which is very useful when you are not close to your AstroBar1.



Drawing of remote power control port application circuit

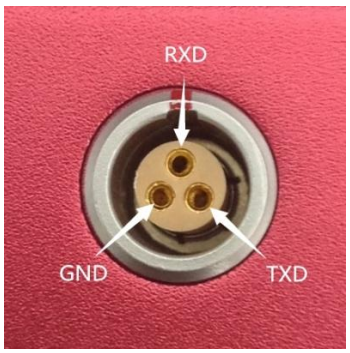
After setting up a simple circuit like the one shown above, you can press and hold the SW-PB button for about two seconds to turn on or off AstroBar1 in the distance.

The internal circuit of this port is isolated by a opto-reply (TL281).

Please refer to the spec of TL281 for the input signal level.

Serial ports

Many instruments such as equatorial telescope, focalizer and filter wheel used for astronomical observation use serial port, which is obsolete in modern computers and is replaced with USB ports. AstroBar1 has two serial ports, you can use them to connect your equatorial telescope and focalizer to AstroBar1.



Drawing of pin number arrangement

How to use it?

Well, it's quite simple. First you have to connect it to power supply with power cable included in the box, second you can connect your keyboard and mouse to USB port 7 and 8, then you can turn the computer on by pressing and holding the power button for about 3 seconds, which is next to the power port. Now, you can use it as portable computer. Since AstroBar1 is a computer, so it's recommended to install an anti-virus software before you use it.

Specification

Processor: Intel(R) Atom(TM) CPU Z3735F @1.33GHz

Memory: 2.0GB

Storage: 32GB

Size:

Height: 2.64 cm

Width: 4.4 cm

Length: 33 cm

Weight: 590g

Communications:

Wi-Fi

Bluetooth

Ethernet

Connections and Expansions:

Gigabit Ethernet port

Eight USB2.0 ports

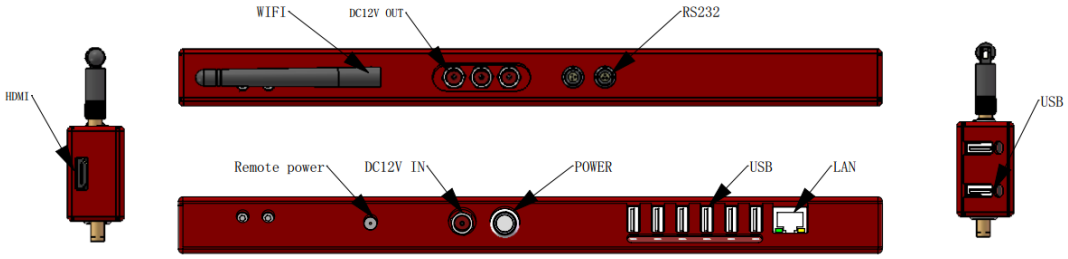
Four 12V power ports

HDMI port

Two Serial ports (3Pin Self-locking Aviation Plug Socket)

Wi-Fi antenna port

Remote power control port



Operating system: Win10 (32bit)

Built-in Apps:

AstroComputerCtrl

UpdateCheck

In the box:

HDMI Cable (2m) * 1

I2C self-locking power cable * 1

I2C self-locking power cable (header and part of the cable) * 1

Wi-Fi Antenna *1

RS232 cable (DB9+RS232) * 1

Remote power control cable (header and part of the cable) * 1

M6 screw * 8

FAQ

1. Except for a built-in hard disk, how can I expand the storage space?

There's a TF card socket in AstroBar1's case, you can expand the storage space by inserting a TF card after disassembling the case. You usually can decide if you need to add a TF card before we deliver it to you.

2. Does AstroBar1 support USB 3.0?

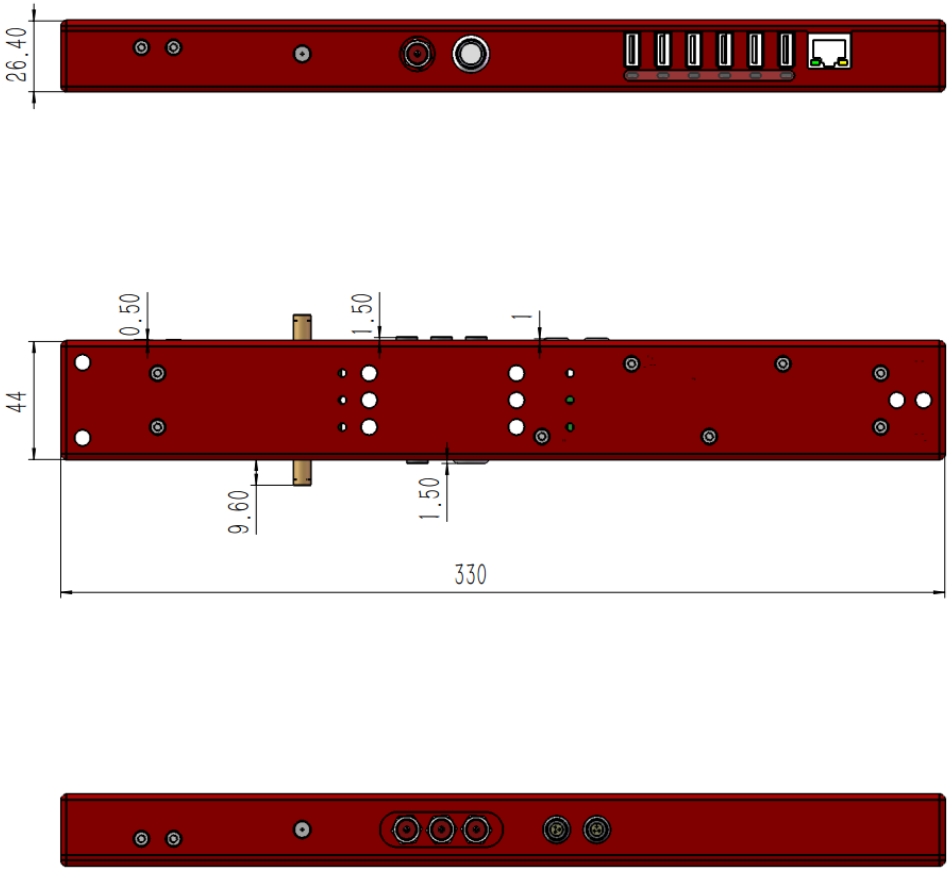
AstroBar1 currently only supports USB 2.0. But if your USB 3.0 camera is compatible with USB 2.0 connection, you can certainly use it on AstroBar1.

3. How is AstroBar1's performance?

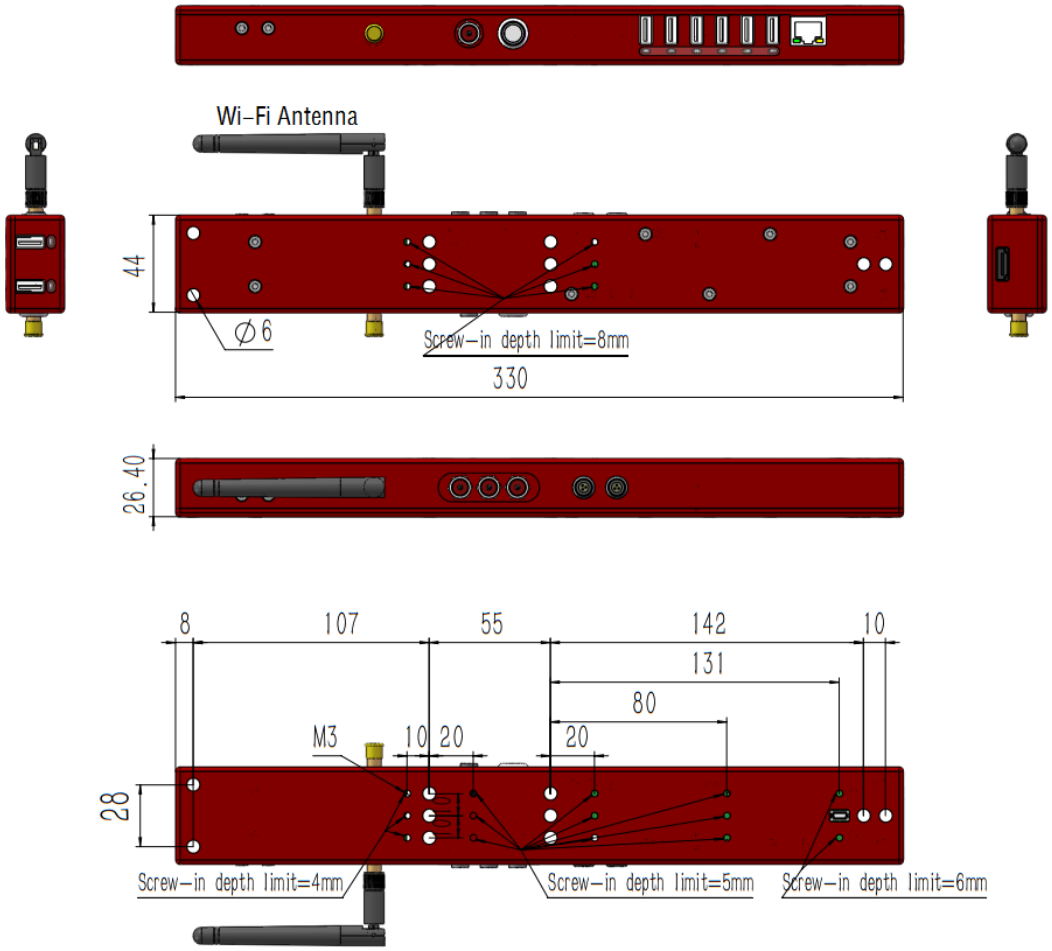
AstroBar1 basically can meet the requirements of DSO capture. When it is connected to QHY5L-II, the frame rate can almost reach 30 FPS. You can install many light-weight DSO capture software on it such as EZCAP, MAXIMDL, SGP. You can also install some electrical star map software such as Stellarium and control equatorial telescope through ASCOM interface. For large capture software like SKYX. It can also be installed and used. But AstroBar1 only has 2 GB memory, so it's not recommended to run large program or many programs at the time. The advantages of AstroBar1 are low power consumption and being able to

be powered by battery. So, you'd better not run programs that have high CPU usage such as image post processing programs.

Dimensions



Drawing of outline



Drawing of detailed dimensions

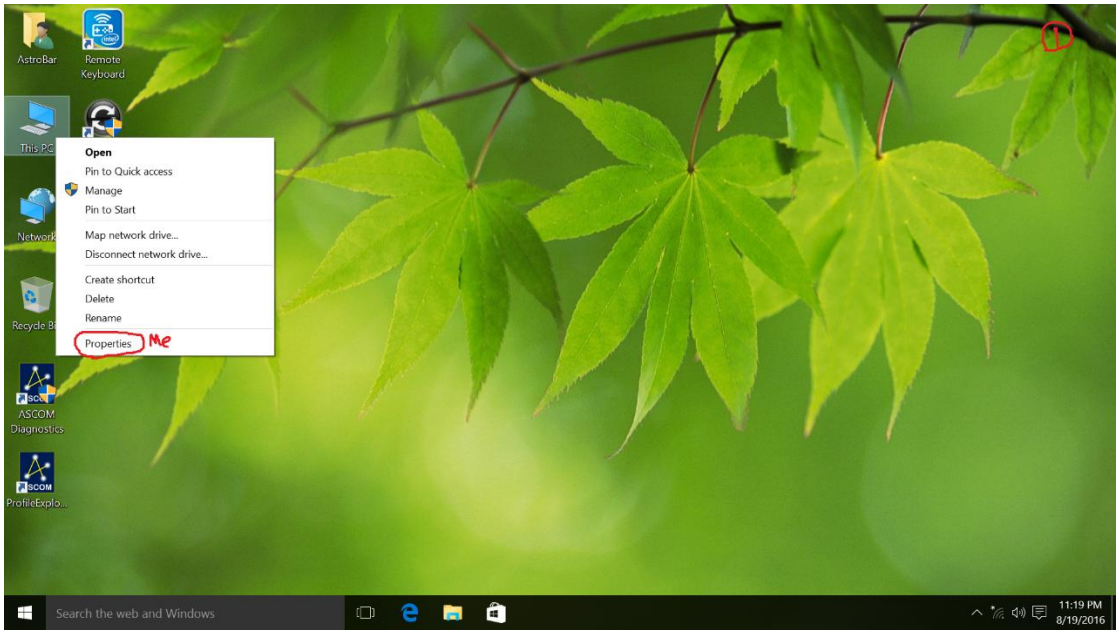
How to Active Windows in the AstroBar1

Astrobar1 includes the OEM license WIN10 Home Edition. The license code is stored inside the computer. It does not require you to input the license code. Please follow the following steps to active it.

Note: Please ensure the AstroBar1 can access the internet.

Step1:

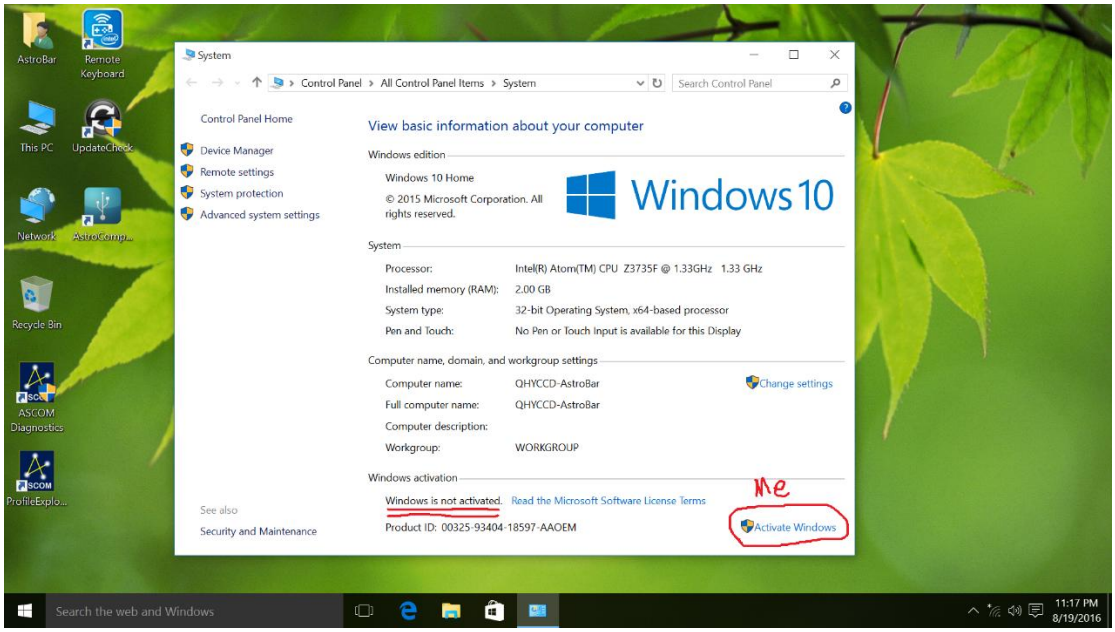
Right click the **[This Pc]**, select **[Properties]**



Step2:

If what it displays is "Windows is not activated", you need left click **[Activate Windows]**.

If what it displays is "Windows is activated", then the AstroBa1r had been activated. You do not need to do following steps.

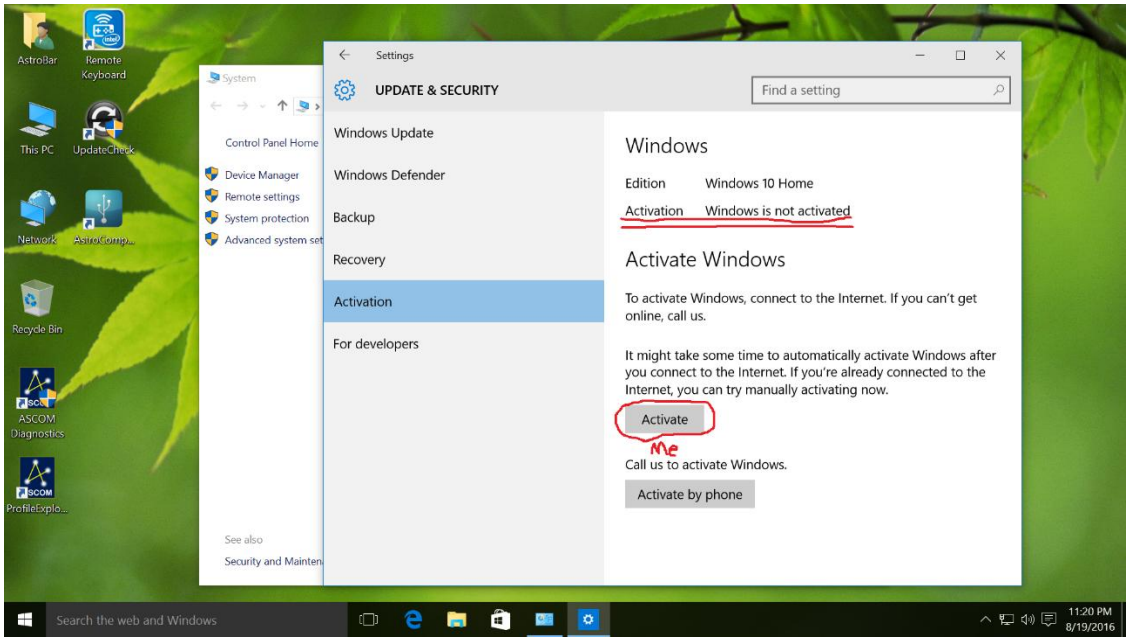


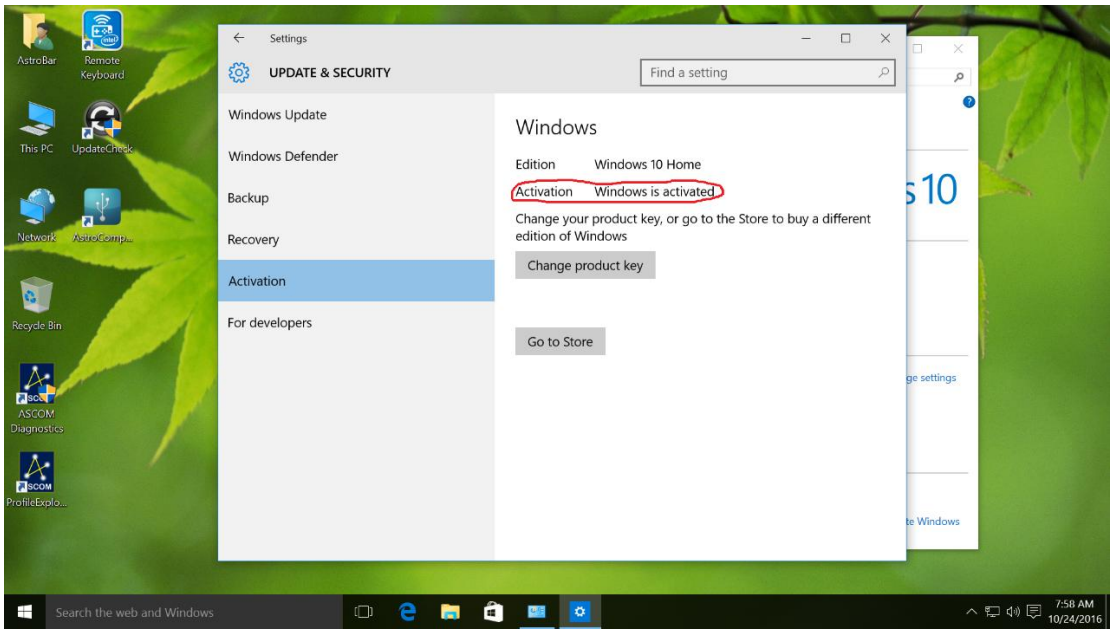
Step3:

In the window, we can see the **Activation** status is "Windows is not activated".

Now, please left click the **[Activate]** and wait a minute.

This window will be changed and the **Activation** status is changed to "Windows is activated" (Please see the second picture)


AstroBar
Remote Keyboard
This PC
UpdateCheck
Network
AstroComp...
Recycle Bin
ASCOM Diagnostics
ProfileExplo...
Settings
UPDATE & SECURITY
Find a setting
Windows Update
Windows Defender
Backup
Recovery
Activation
For developers
Windows
Edition Windows 10 Home
Activation Windows is not activated
Activate Windows
To activate Windows, connect to the Internet. If you can't get online, call us.
It might take some time to automatically activate Windows after you connect to the Internet. If you're already connected to the Internet, you can try manually activating now.
Activate
Me
Call us to activate Windows.
Activate by phone
Control Panel Home
Device Manager
Remote settings
System protection
Advanced system set
See also
Security and Mainten
Search the web and Windows
11:20 PM
8/19/2016


AstroBar
Remote Keyboard
This PC
UpdateCheck
Network
AstroComp...
Recycle Bin
ASCOM Diagnostics
ProfileExplo...
Settings
UPDATE & SECURITY
Find a setting
Windows Update
Windows Defender
Backup
Recovery
Activation
For developers
Windows
Edition Windows 10 Home
Activation Windows is activated
Change your product key, or go to the Store to buy a different edition of Windows
Change product key
Go to Store
Search the web and Windows
7:58 AM
10/24/2016

How to make a bootable USB flash drive and restore your computer?

It is highly recommended to back up the entire system drive by using the software we are going to introduce when you use AstroBar1 for the first time or after you've installed the essential softwares used for astronomical obsevation. In this way, even your Astrobar1 crashes and you are not able to boot it, you can still use that software to restore it.

We've tried to find a free English software that has the similar function but failed. So you need to follow the instructions listed below carefully because there are several Chinese characters in the interface. It's actually quite simple to follow the instructions. The first part is going to guide you to make a bootable USB flash drive, and you can do this on any computer. The Second part is going to back up the entire system drive of AstroBar1 with the bootable USB flash drive we prepared in the first part. The third part is going to show you how to restore your AstroBar1 with the bootable USB flash drive and the backup file we made in the second part.

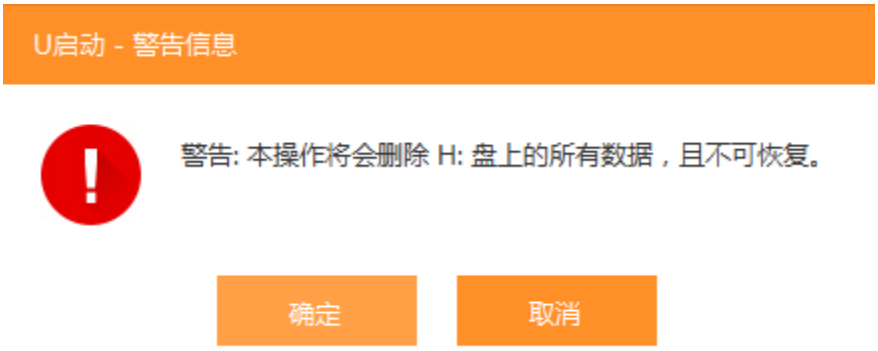
MAKE BOOTABLE USB FLASH DRIVE

Step 1: Visit [U 启动 offical website](). Download "装机版" version by clicking the button shown in the red rectangle in the screenshot below. Install and launch.

Step 2: Plug in the USB flash drive that's better to have more than 8GB storage space and wait to see that the USB flash drive is recognized by the software.

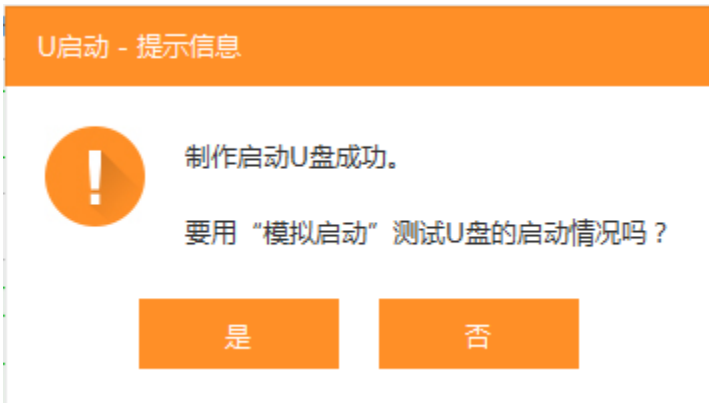
Use the default setting but make sure that the "支持 Windows 平板电脑启动" checkbox is checked as shown in the picture above.

Click "开始制作" button, which means start making. A small window will pop up and warn you that it will erase all the data on your USB flash drive and it's unrecoverable. So make sure that all your data on your USB flash drive are backed up before click the button "确定", which means yes, to start making the bootable USB flash drive.



Step 3: It would take a while to finish this process, please do not run any software related to USB flash drive. Wait until it is complete.

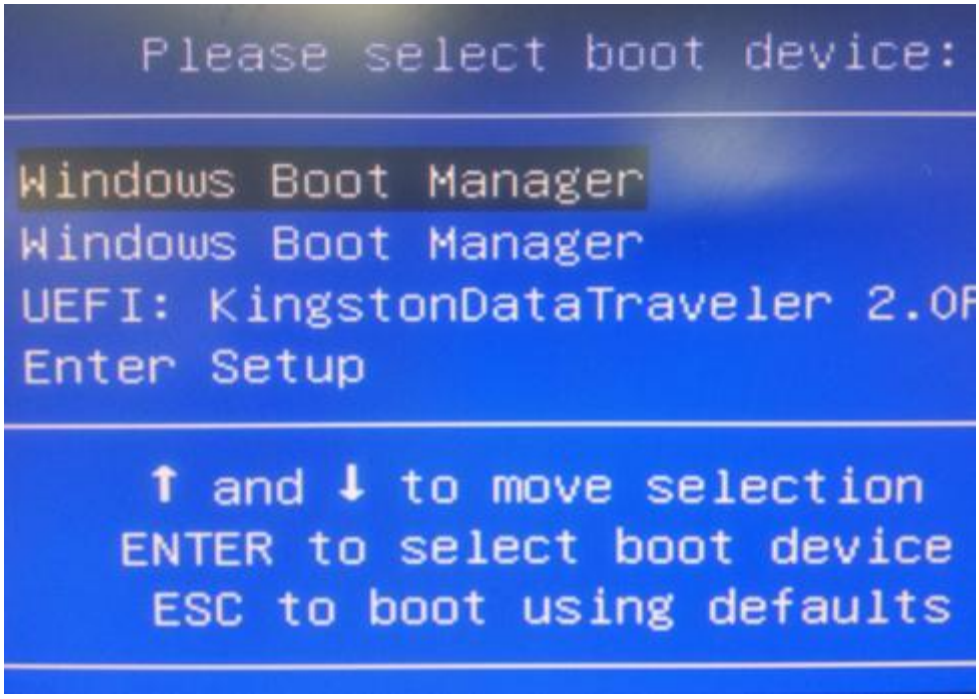
Step 4: After the making process is complete, another window will pop up saying the bootable USB flash drive is successfully made and asking would you like to run a "simulation program" to see if the bootable USB flash drive works well. You can just click the "否" button to skip this, which means "No". It's unnecessary to run that simulation program because it has never failed and that simulation program is full of Chinese characters.



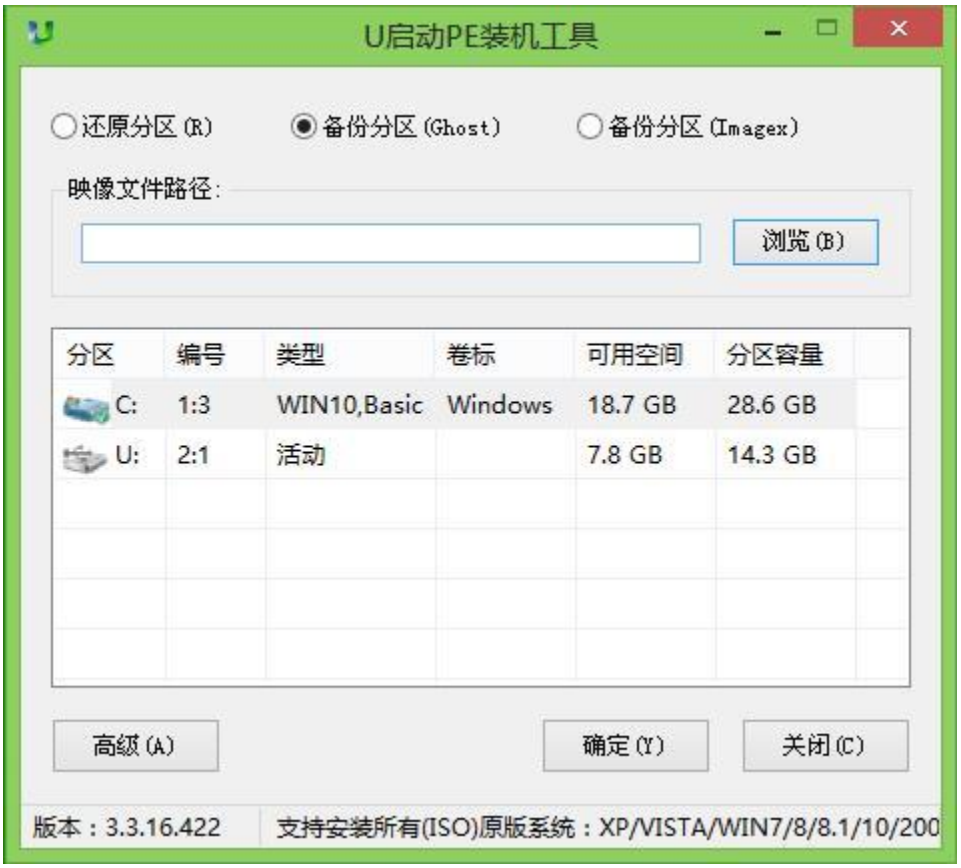
BACK UP SYSTEM DRIVE

Step 1: Plug in the USB flash drive we used in the first part to your AstroBar1 and start your AstroBar1.

Keep pressing F7 at the beginning of the booting until you see the picture shown below:



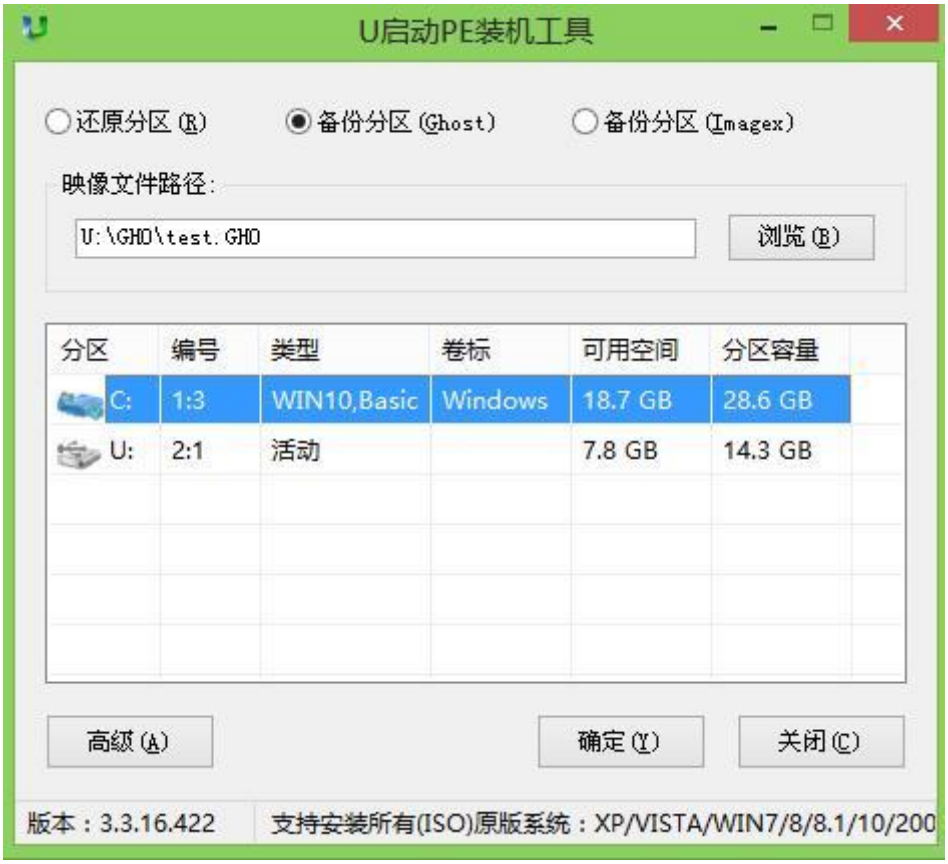
Step 2: Press the Down Arrow to select the "UEFI: King...." option and press Enter, Wait until you see the interface shown below:



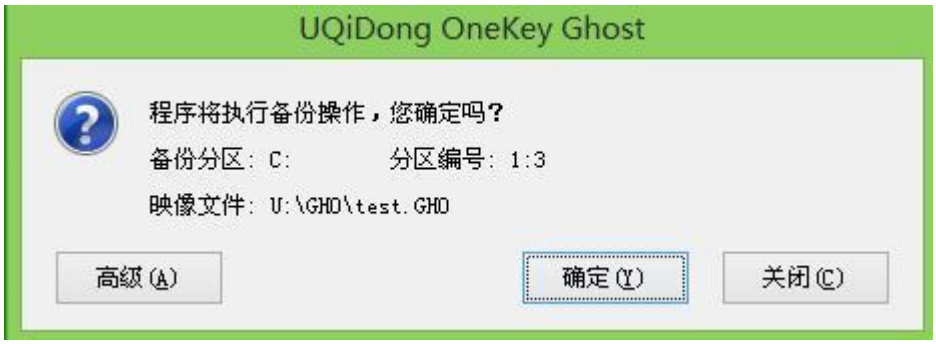
Step 3: Select"备份分区(Ghost)", click "浏览(B)" button, the following window will pop up.

Navigate to the GHO folder in your USB flash drive and input a name for the backup file you are going to make. Click "保存", which means save, to save.

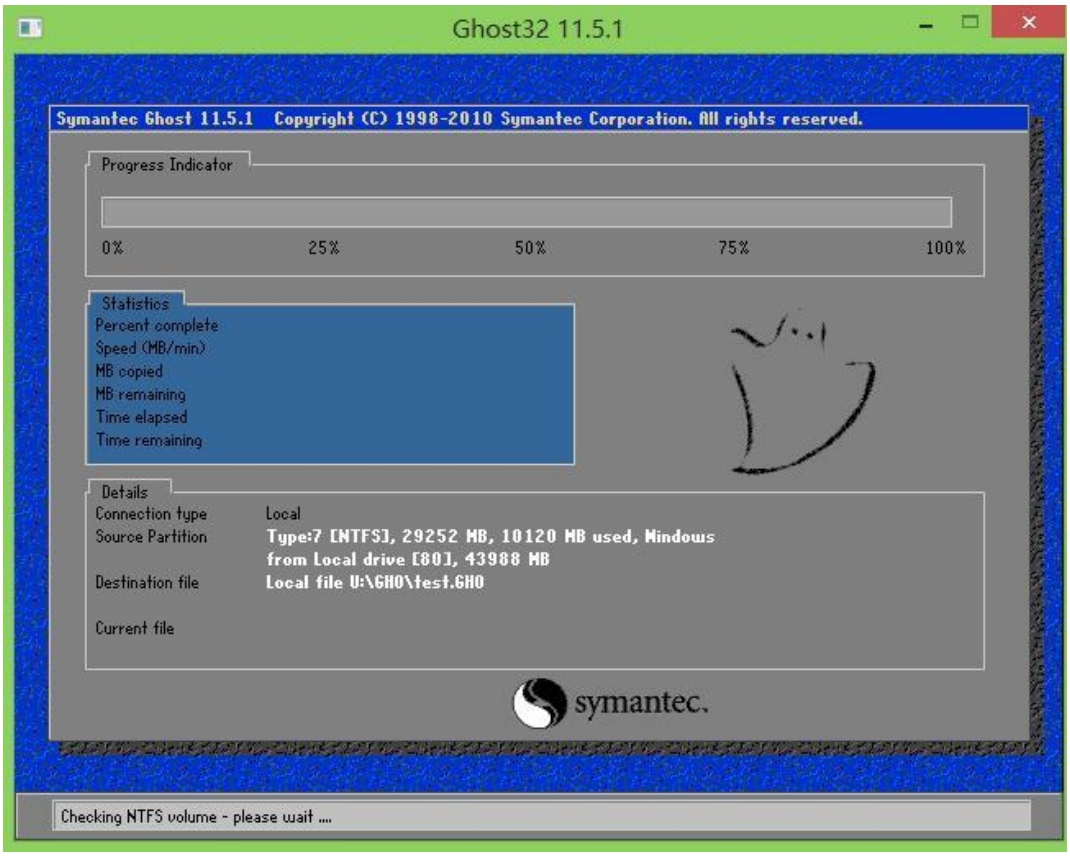
Step 4: Select C Drive and click "确定"



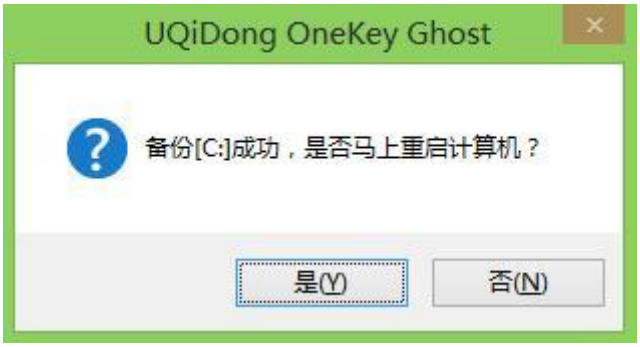
Step: A window will pop up saying "the program is going to perform backing up, are you sure?" Click "确定", which means yes.



Step6: Wait



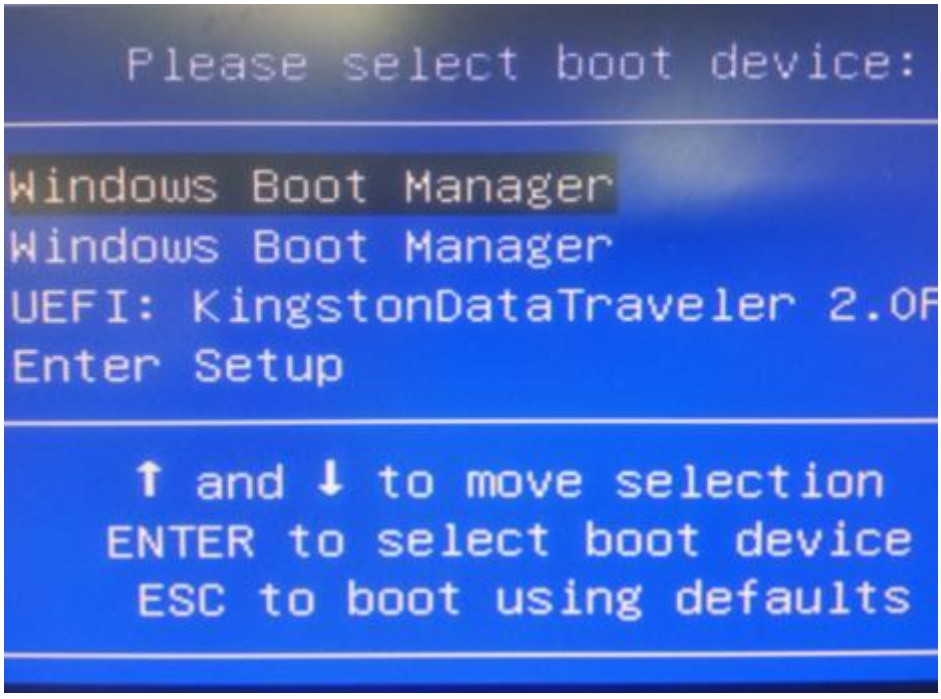
Step7: A small window will pop up telling you the backing up is finished, would you like to restart your computer right now? Click "是", which means yes. Till now, your system drive is successfully backed up and you can restore your AstroBar1 with your USB flash drive at any time in the future.



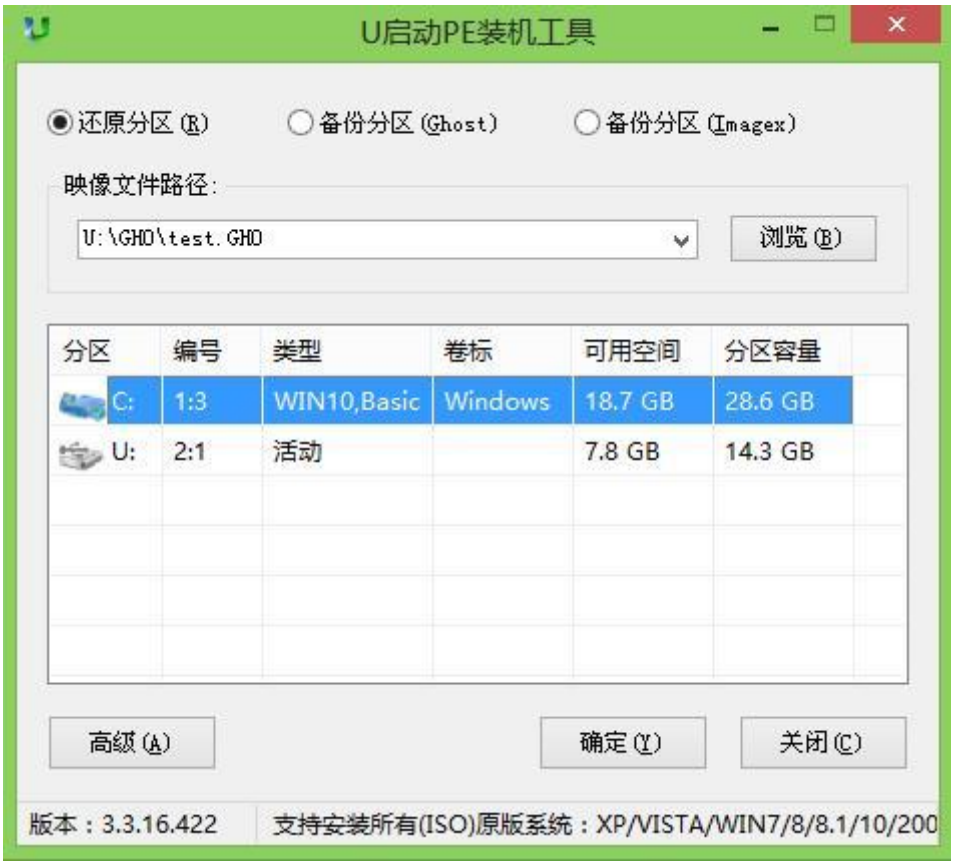
RESTORATION

When your system crashes and you are not able to boot your AstroBar1, you can restore your AstroBar1 with your USB flash drive you made.

Step 1: Plug in the USB drive, start your Astrobar1 and keep pressing F7 until you see the window shown below.



Step2: Press the Down Arrow to select the "UEFI: King...." option and press Enter, Wait until you see the interface shown below:



Step3: The software usually would automatically detect the path you saved your GHO file, you can just select C drive and click "确定" to start the restoration. After the restoration is complete, AstroBar1 will automatically restart and your AstroBar1 backs to the time when it was backed up.

Revision history

Date of change	Revision	Content of change
November 30th, 2016	1.0	First edition