

# TROUBLESHOOTING GUIDE FOR USB ALL SKY CAMERA



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The document helps troubleshooting ALL Sky camera that are not delivering images (loss of connection, software hangs because camera does not deliver images). Normally, our AllSky camera must be delivering images continuously for many days (>15). This document is based on customers feedback and previous troubleshooting actions.

**DISCLAIMER :** If a thunderstorm has occurred, that caused the camera to fail, and if a lightning has struck the surrounding area, this might have damaged the 20m USB cable or the internal environment board (rs232 link). In rare case, this can destroy/damage also the camera image sensor electronic. As per our term and sales, this kind of damages are not covered by the warranty and our company has all the means to assess the cause of the damages. This is up to the customer to take actions and care to insulate the camera from nearby lightnings and associated deleterious effects that can extend to a large range from ground impact.



It is strictly unadvised to coil/loop the USB or the power-RS232 cable because it is too long, like in the picture below. This can be convenient to reduce the footprint of the cable, but this can lead to disasters. When a lightning strike occurs, even, say, at up to 100m/200m from the camera, a huge magnetic field change is produced in a very short amount of time. The cable, put in coils, can turn into a voltage this magnetic field change that will be directly multiplied by the number of cable loops. This is called induction (please read this

[https://en.wikipedia.org/wiki/Electromagnetic\\_induction](https://en.wikipedia.org/wiki/Electromagnetic_induction) for more info).

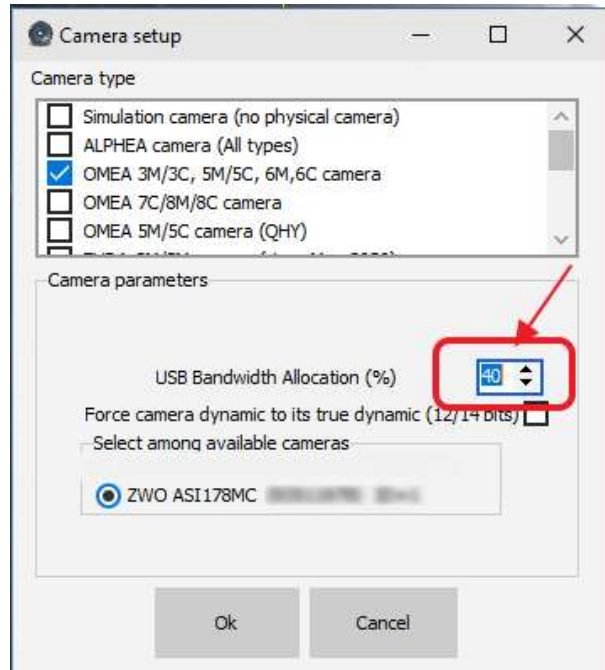
At the end of the cables, a voltage higher than 30 000 volts can be created and destroy all camera electronics or damage electronic boards, in a way that image data transfer from camera to the PC can be halted in a random fashion. It can be difficult to assess the root cause. Our cameras are tested in factory outdoors during several days and can output several thousands of images without a single glitch (or missing image).



Do not do this !

It is sometime a good advice to use services from an electrical company that can help to reduce the risk of lightning strikes damages by proper earthing/grounding schemes and surge protection. Sometime, fiber link between the camera and the PC can be used to remove of induction damage risks.

## Action #1: Lower USB bandwidth



This could help a lot. USB bandwidth can be tuned from 40 to 100% The form above is visible when using the menu “**Options/Camera Setup ...**” on skywatch software when setting camera. This is not advised to leave a bandwidth of 100% this can cause frame to be lost, and thus errors. The USB bandwidth can be lowered down to 40%. One should proceed with trials/tests to determine the best value. Data grabbing must take place for weeks with no errors.

## Action #2: PC low layer system drivers (camera and motherboard)

Be sure that you have the latest release USB driver for your motherboard.

Please go here : <https://sdi-tool.org/download/>

Download SDI lite

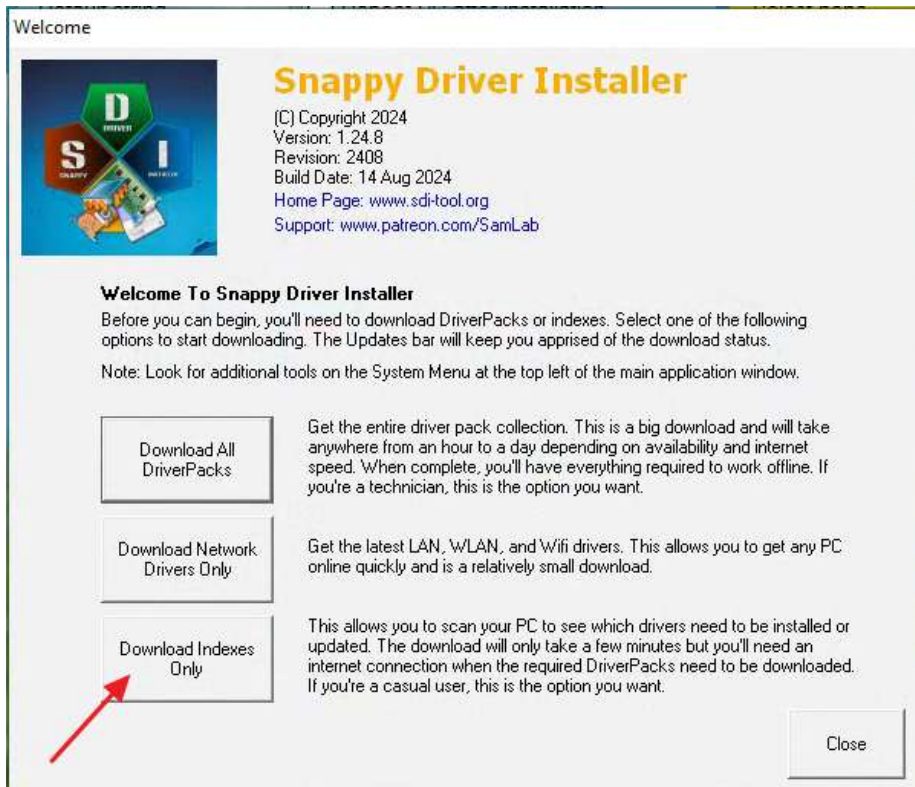
### SDI Lite

This version is ideal if your Internet is slow or you don't plan on using the tool to install/update drivers very often.  
You need to **download indexes** via the app in order to scan your hardware.

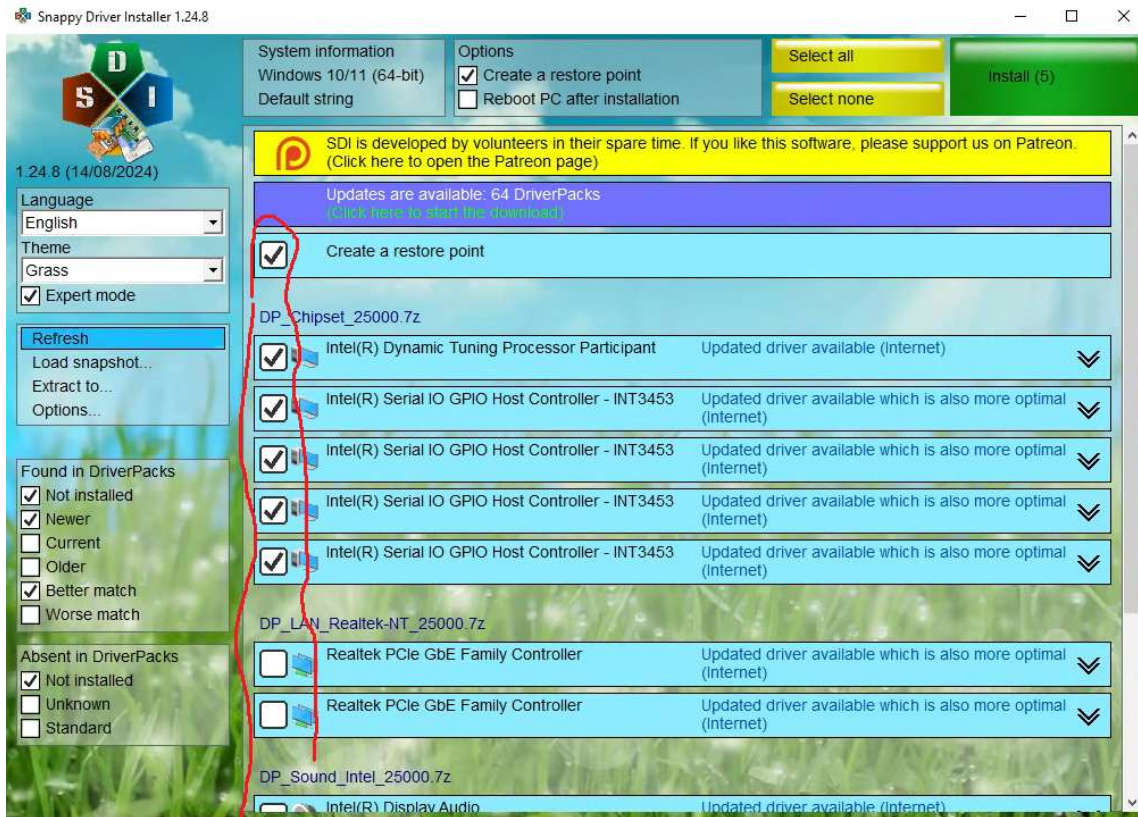
Source	Size	Version	
Direct	5.1 MB	1.24.8 (R2408)	<a href="#">DOWNLOAD</a>

[Mirrors](#) [Old versions](#)

Extract all and run SDI\_x64\_R2408.exe, and "Download Indexes Only"



Then select all drivers to be updated



Also install the latest camera drivers (in case). Overwrite the previous driver. Before doing this, please write down the driver version you are using (this can be found in the driver management of Windows 10/11, under camera/driver properties). For camera driver go here, and update to the latest version:

<https://dl.zwoastro.com/software?app=AsiCameraDriver&platform=windows86&region=Overseas>

The screenshot shows the ZWO software download page for Windows. On the left, there is a sidebar with 'Desktop App' (Windows, macOS, Linux) and 'Mobile App' (ASIAIR, ASIMount, AstroNet, ASIcan). The main content area is titled 'Windows' and contains instructions for installation. Below the instructions are two software entries: 'ASISudio' and 'Camera Driver'. The 'Camera Driver' entry has a 'Download' button highlighted with a red box and a red arrow pointing to it.

### **Action #2 : change PC USB port**

Sometime moving the camera cable to another USB 3 port, or to USB 2 port may help. This PC USB port can be damaged. Never use USB hubs in between, connect the camera cable directly to the PC. Check that the USB connection to the PC is not loosen. **Better result comes with USB connectors that are directly attached to the motherboard**; the front panel USB connectors are less reliable than the one soldered directly at the motherboard (backside).

### **Action #3 : PC type**

Avoid using a very old PC, like the one that can be found/purchased before 2015. Check that during operation the CPU is not rising to 100%, this can cause image to be lost.

### **Action #4 : Try another PC**

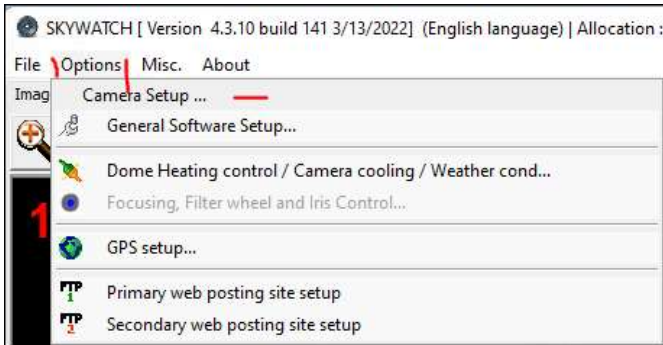
Try another PC (such as a laptop) and see what is happening. If the error is still occurring, likely the USB long cable or the camera can be damaged.

Warning: thunderstorm lightening, even a single one, that strikes several tens of meter away, can damage the camera by overvoltage induction (especially if the USB cable is set as a coil). Please take precaution to avoid the nearby presence of those, or by grounding properly the place.

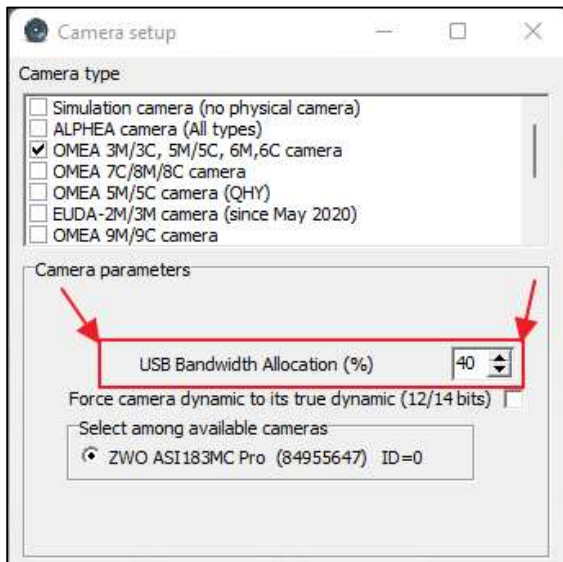
## Action #5 : Software tips

### Option A:

Try to reduce the USB bandwidth, with Skywatch software, go to “**Options/Camera setup...**”

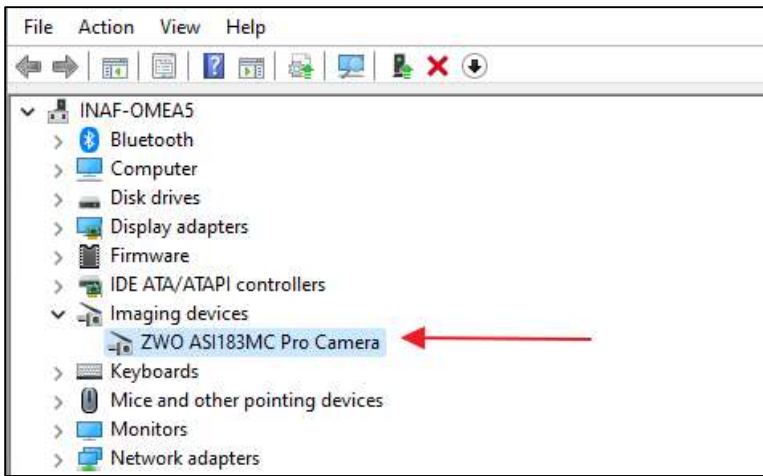


Reduce the “**USB bandwidth allocation**”, from 80% down to 40%

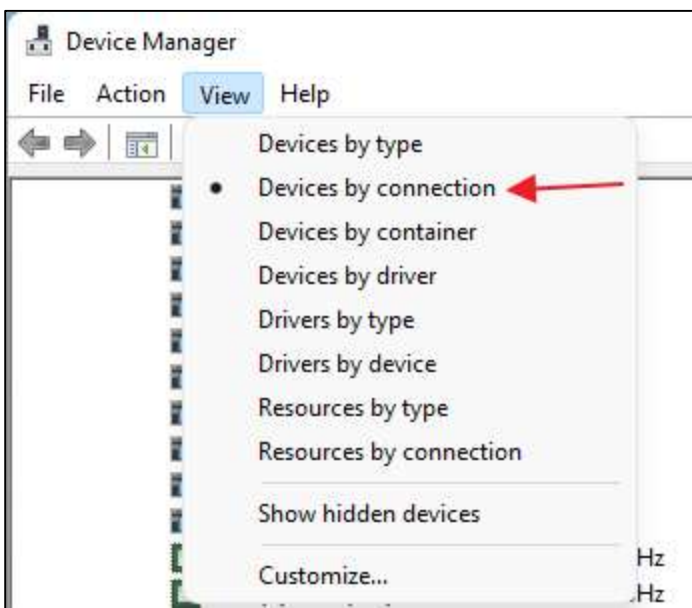


### Option B:

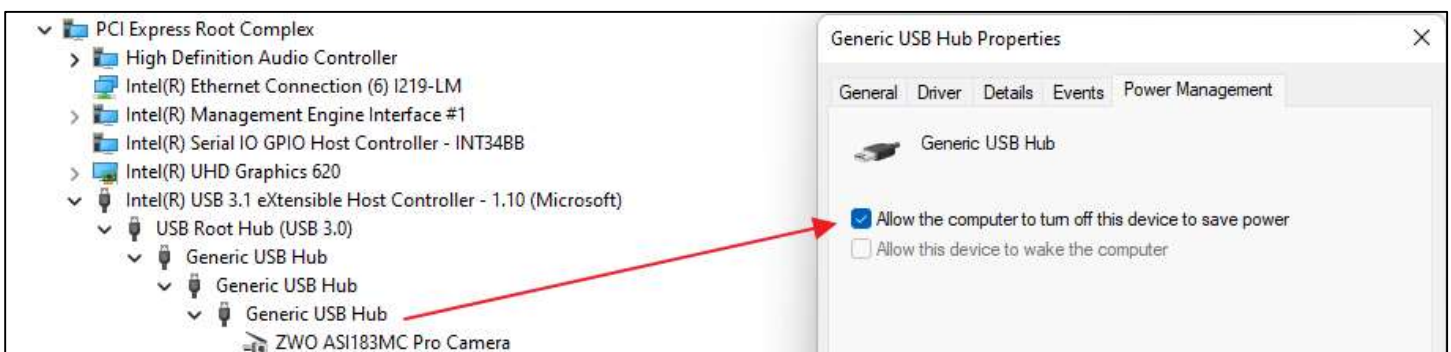
Go to the windows' device manager, be sure the camera is visible like below.



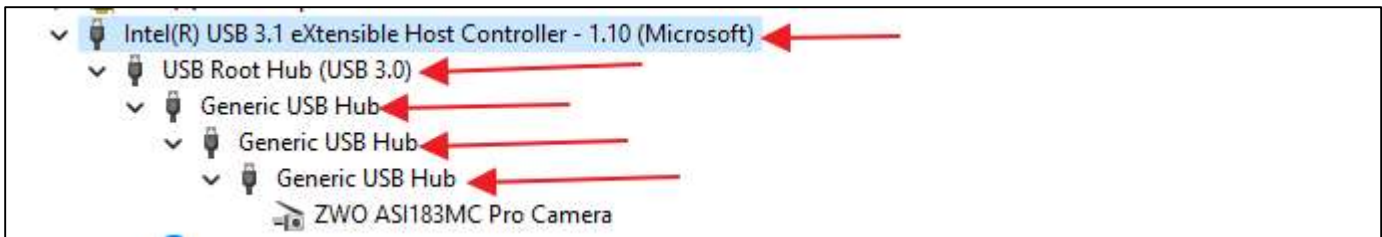
Go to **“View”**, then check **“Devices by connection”**



In the device properties, uncheck **“Allow the computer to turn off this device to save power”**



Do the same action for all the devices chained above the camera (here 5 of them), disable computer to be able to turn off the power.



**Action #6 : Try another software**

Go there, download this software

<https://www.sharpcap.co.uk/>

put camera in mode long exposure like 2s, in video mode. It should run forever. If this software hangs, or losses camera, the issue is not due to Alcor’s system AllSky Software, but to hardware issue.

Watch for dropped frames, it should be much less than the previewing frames number that must increase normally.



**Action #7: Monitor USB port**

Go there

[https://www.nirsoft.net/utis/usb\\_log\\_view.html](https://www.nirsoft.net/utis/usb_log_view.html)

Start this software, and check that the USB link does not drop. Run it for days.

Event Type	Event Time	Device Name	Description	Device Type	Drive Letter	Serial Number	Vendor ID	Product ID	Vendor Name
Plug	27/01/2020 02:10:40	Port_#0004.Hub_#0017	USB Serial Converter	Vendor Specific		FT2L6W06	0403	6015	Future Technology Devices Int...
Plug	27/01/2020 02:10:40	Port_#0005.Hub_#0001	Generic SuperSpeed USB Hub	Unknown			2109	0813	
Plug	27/01/2020 02:10:40	Port_#0003.Hub_#0006	Generic SuperSpeed USB Hub	Unknown			2109	0813	
Plug	27/01/2020 02:10:40	Port_#0004.Hub_#0006	Generic SuperSpeed USB Hub	Unknown			2109	0813	
Plug	27/01/2020 02:10:40	Port_#0004.Hub_#0007	Generic USB Hub	Unknown			2109	2813	
Plug	27/01/2020 02:10:40	Port_#0003.Hub_#0015	Generic USB Hub	Unknown			2109	2813	

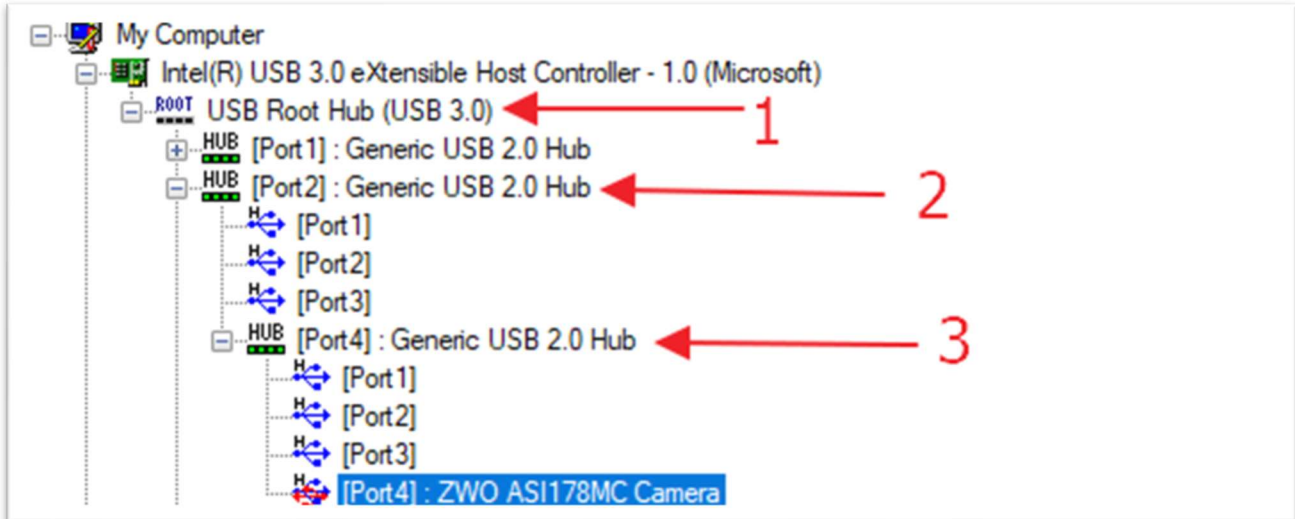
If the link drops (or goes back again afterward), this can be due to:

- Power supply has a voltage drop
- 20m USB cable between the camera and the PC has an issue
- PC motherboard USB drivers (less likely)

Check power voltage LED, that must remain lit.  
 USB cable can be replaced with another.  
 Try another PC and see if behaves the same way.

Event Type	Event Time	Device Name	Description	Device Type	Drive Letter	Serial Number
Unplug	1/28/2020 11:47:55 AM	Port_#0001.Hub_#0005	ZWO ASI294MC Pro Ca...	Vendor Specific		
Plug	1/28/2020 11:47:55 AM	Port_#0001.Hub_#0004	ZWO ASI294MC Pro Ca...	Vendor Specific		
Unplug	1/28/2020 11:48:03 AM	Port_#0001.Hub_#0004	ZWO ASI294MC Pro Ca...	Vendor Specific		
Plug	1/28/2020 11:48:04 AM	Port_#0001.Hub_#0004	ZWO ASI294MC Pro Ca...	Vendor Specific		
Unplug	1/28/2020 11:48:21 AM	Port_#0001.Hub_#0004	ZWO ASI294MC Pro Ca...	Vendor Specific		
Plug	1/28/2020 11:48:22 AM	Port_#0001.Hub_#0004	ZWO ASI294MC Pro Ca...	Vendor Specific		
Unplug	1/28/2020 11:48:28 AM	Port_#0001.Hub_#0004	ZWO ASI294MC Pro Ca...	Vendor Specific		
Plug	1/28/2020 11:48:29 AM	Port_#0001.Hub_#0004	ZWO ASI294MC Pro Ca...	Vendor Specific		
Unplug	1/28/2020 11:48:33 AM	Port_#0001.Hub_#0004	ZWO ASI294MC Pro Ca...	Vendor Specific		
Plug	1/28/2020 11:48:36 AM	Port_#0001.Hub_#0004	ZWO ASI294MC Pro Ca...	Vendor Specific		
Unplug	1/28/2020 11:48:39 AM	Port_#0001.Hub_#0004	ZWO ASI294MC Pro Ca...	Vendor Specific		
Plug	1/28/2020 11:48:40 AM	Port_#0001.Hub_#0004	ZWO ASI294MC Pro Ca...	Vendor Specific		
Unplug	1/28/2020 11:48:42 AM	Port_#0001.Hub_#0004	ZWO ASI294MC Pro Ca...	Vendor Specific		
Unplug	1/28/2020 11:48:48 AM	Port_#0004.Hub_#0003	Generic USB Hub	Unknown		
Plug	1/28/2020 11:48:50 AM	Port_#0004.Hub_#0003	Generic USB Hub	Unknown		

[https://www.uwe-sieber.de/usbtreview\\_e.html#download](https://www.uwe-sieber.de/usbtreview_e.html#download)



### Action #8 Camera USB cable

Check that the 20 m USB camera cable is not damaged by eye inspection. Check that the in between module has no visible damages.

Alcor-system can provide a spare 20m cable – or – a short 1 m cable for test. Those cables have a cost please contact us to get them.

### **Action #9 Camera connectors**

Check that the USB and power camera connectors are not damaged (Visual inspection of connector pins).

### **Action #10 Camera is powered properly**

Download this software

[https://www.dropbox.com/scl/fi/5m05mdz2gypx8ggigmpse/RH\\_T\\_tester.zip?rlkey=pjrzok2ro1oezyn1nbzihwfoh&dl=1](https://www.dropbox.com/scl/fi/5m05mdz2gypx8ggigmpse/RH_T_tester.zip?rlkey=pjrzok2ro1oezyn1nbzihwfoh&dl=1)

It will connect to the weather board that is inside the camera, using serial RS232 COM port.

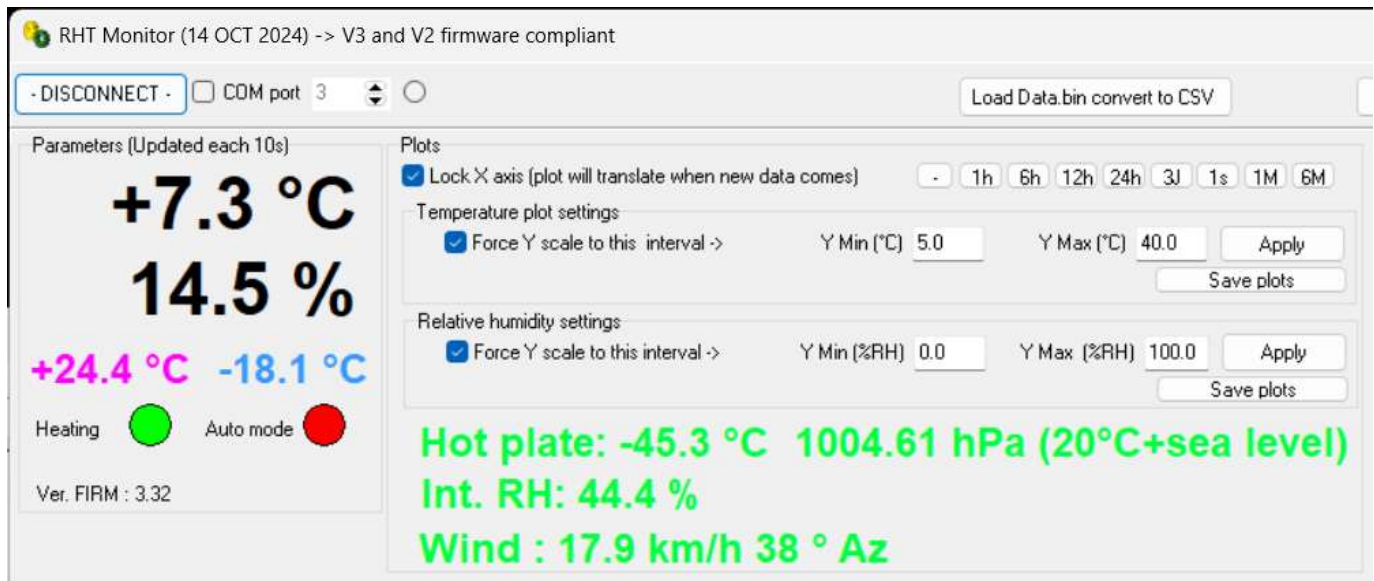
Be sure the USB to RS232 converter works properly and Window OS has a valid COM port available in the device manager, it should be created from the USB to RS232 attached to the camera power cable.



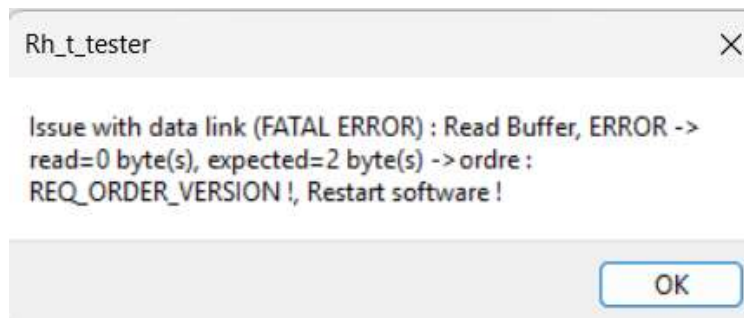
As an example, the COM 3 can be used.

This software is the same control has it has been implemented in the “*Skywatch*” software, but in a standalone fashion.

If one enters the COM port 3 and press connect, one should see this panel.



If this message is displayed

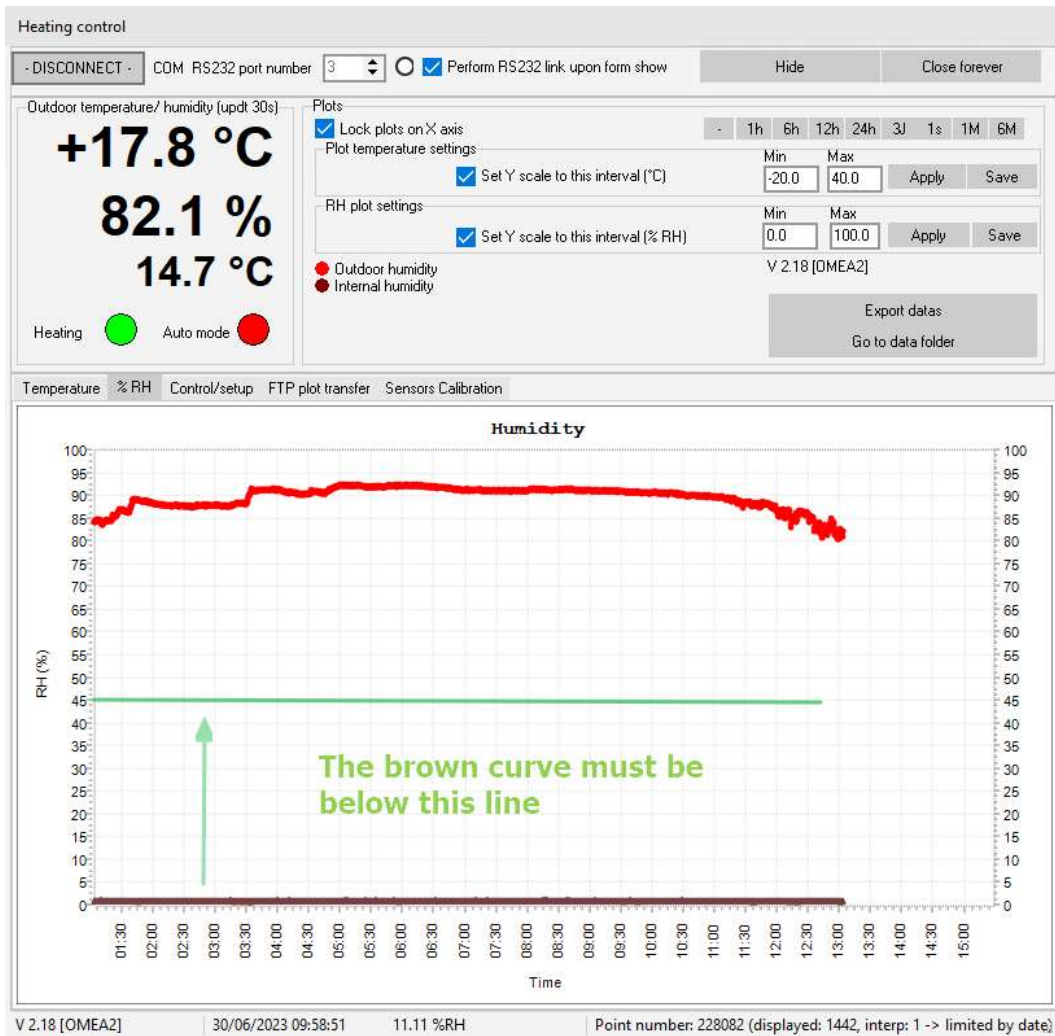


It means that

- COM port number is invalid. Try another one available.
- Camera power cable is either disconnected, damaged or 24V is not present (because the power unit is damaged).
- The internal camera weather board is damaged.

### **Action #11 Camera loss of waterproof**

Check that the inner camera humidity is still less than 45% (OMEA and EUDA camera only). If above a leak can occur, water can pour into the bottom connectors and jeopardize USB link.

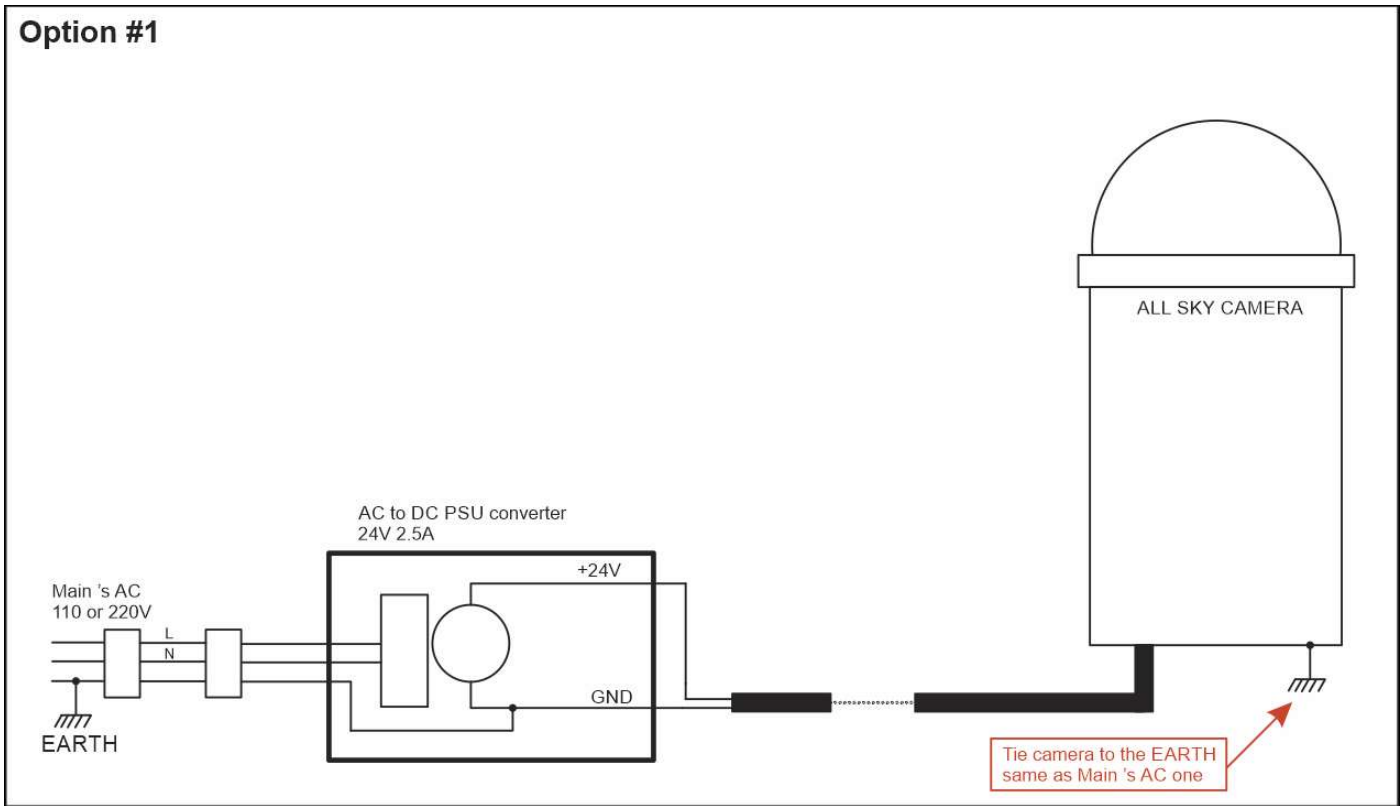


### **Action #12 Ground loop**

This issue may occur when camera dome heating turns on. In that case there is a grounding issue with the camera, the PC and the mains' AC power supply. To fix the issue there are two options: the camera earth connected (option #1) or the power supply floating option (option #2). Please proceed as below (select the best scheme for you) and this issue will be resolved. One has to keep in mind that there is a link from the camera to the PC via USB cable that has shield connected to its GND. Ground loop can occur, and finding the best grounding scheme can depend on the place, and the way your installations is earthed.

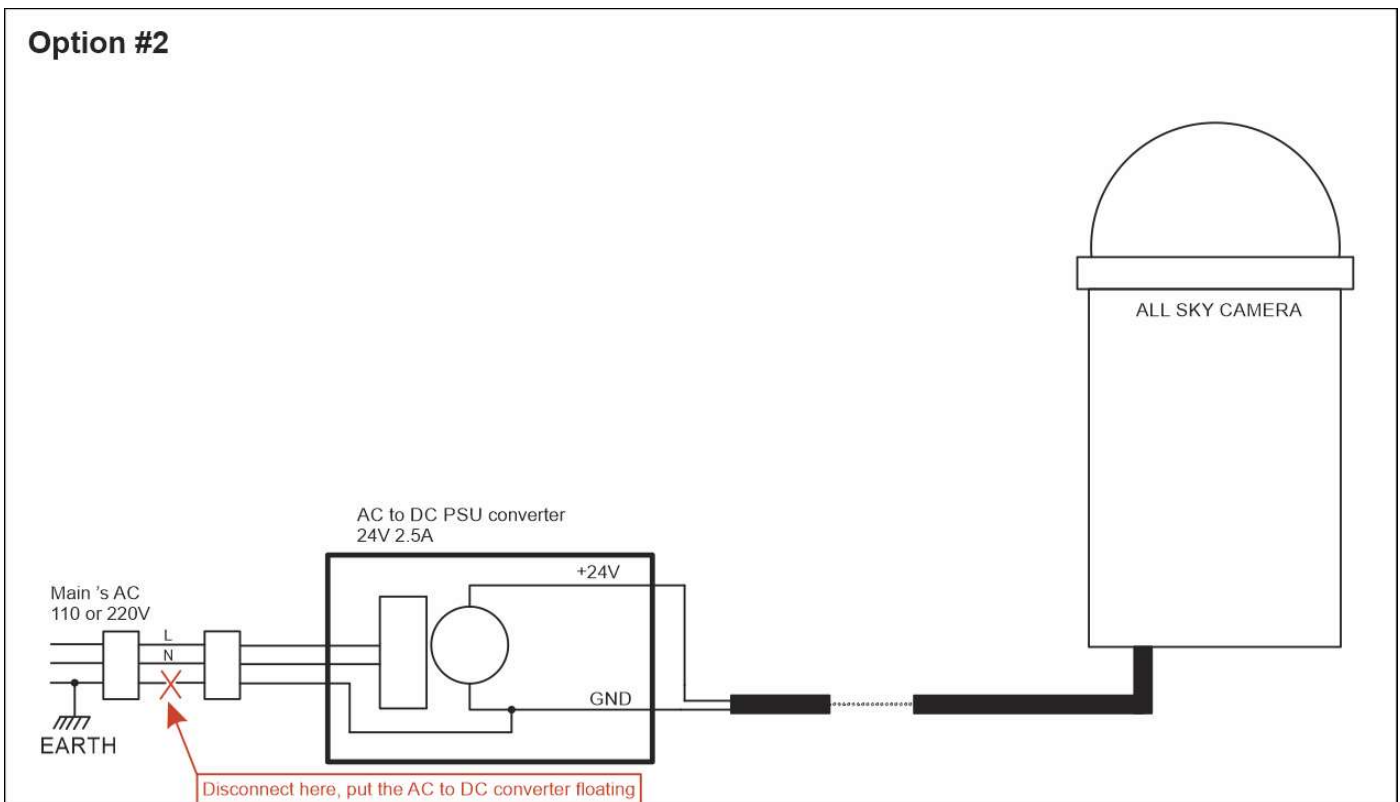
If camera is loss during power heating ignition, Option #2 simply solves the issue.

### Option #1



Note: for all camera sold after 01/01/2023, 24V power supply has no earth pin, in order to avoid this issue. A C8 power supply unit input is used with no earth.

### Option #2

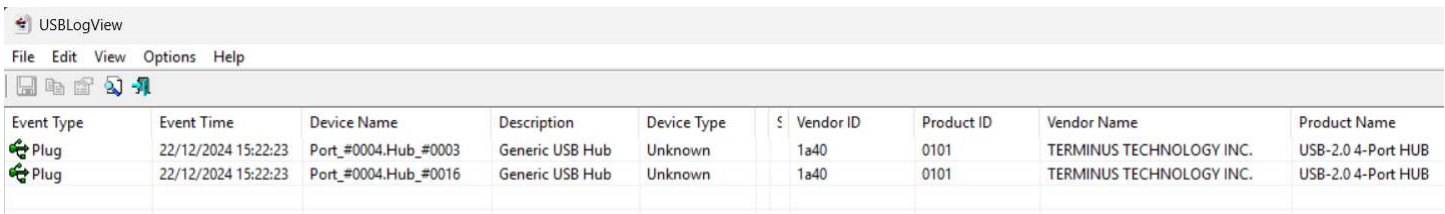


### **Action #13 Overheating camera**

This can happen when camera or cable is overheating (i.e above 70°C). Nevertheless, the camera alone has been tested over 70°C with no issue.

### **Action #14 Check the 20m (or less) USB Cable to be alive**

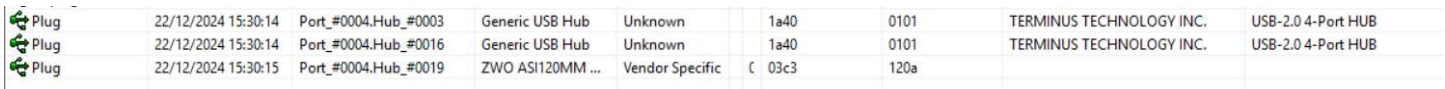
To check that the USB cable is working properly, disconnect the USB cable at PC level, start **USBLOGview** software, and connect the USB cable. At least, two new green line must appear as below :



Event Type	Event Time	Device Name	Description	Device Type	Vendor ID	Product ID	Vendor Name	Product Name
Plug	22/12/2024 15:22:23	Port_#0004.Hub_#0003	Generic USB Hub	Unknown	1a40	0101	TERMINUS TECHNOLOGY INC.	USB-2.0 4-Port HUB
Plug	22/12/2024 15:22:23	Port_#0004.Hub_#0016	Generic USB Hub	Unknown	1a40	0101	TERMINUS TECHNOLOGY INC.	USB-2.0 4-Port HUB

If only one, or no green line appear, it means that one USB cable repeater is dead. So, the cable must be replaced.

A third line should appear if the camera is powered with the camera model, as below



Plug	22/12/2024 15:30:14	Port_#0004.Hub_#0003	Generic USB Hub	Unknown	1a40	0101	TERMINUS TECHNOLOGY INC.	USB-2.0 4-Port HUB
Plug	22/12/2024 15:30:14	Port_#0004.Hub_#0016	Generic USB Hub	Unknown	1a40	0101	TERMINUS TECHNOLOGY INC.	USB-2.0 4-Port HUB
Plug	22/12/2024 15:30:15	Port_#0004.Hub_#0019	ZWO ASI120MM ...	Vendor Specific	03c3	120a		

### **Action #15 Remote assistance**

If all previous actions have been exhausted, ALCOR SYSTEM can supply remote assistance / diagnostic via tools like Anydesk (<https://anydesk.com/>) or Rustdesk (<https://rustdesk.com/>). Please install on your PC one of these tools, and provide by email all credentials. Please allow us to install some diagnostic software, so providing us the proper rights to do so. Please note : we do not and will not use Teamviewer.

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