

AZ Mount Pro Firmware Upgrade

The firmware of an AZ Mount Pro (AZMP) main board and Go2Nova[®] 8407 hand controller can be upgraded by a customer. Please check iOptron's website, www.iOptron.com, under **Support**, for the most up to date firmware.

To upgrade the firmware, you need some or all of the following software/hardware, depends on the upgrading you are performing:

- iOptron Upgrade Utility Program (Version 1.22 or higher)
- 8407 hand controller firmware for AZMP
- Main control board firmware for AZMP
- iOptron RS232 to RJ9 serial cable #8421 (included with an AZMP mount)
- USB to RS232 converter and driver. If your computer does not equip a RS232 port (9-pin D-shape connector) except the USB port, you need to buy a USB to RS232 converter, form a computer hardware store or on-line. **We recommend using a converter with a FTDI chipset.**

Please let the mount do a self-calibration once or manually set the mount zero position after firmware upgrade. Otherwise, the mount may not perform goto properly.

1. Prepare the hardware

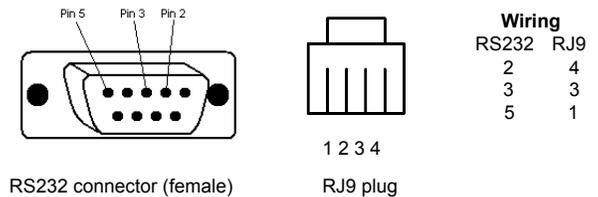
In order to perform the firmware upgrade, as well as to use planetarium software to control the mount, the communication between the PC and hand controller or mount has to be established.

RS232 to RJ9 serial cable

The firmware upgrade and computer controller is through a RJ9 Serial Port (RS232) on a Go2Nova[®] 8407 hand controller or the RS232 port on the mount. You need a cable to connect this port to the serial port of a computer. Here is a sample of a RS232 to RJ9 serial cable. **Please do not use other brand cable other than iOptron. They may look exactly same but wired differently.**

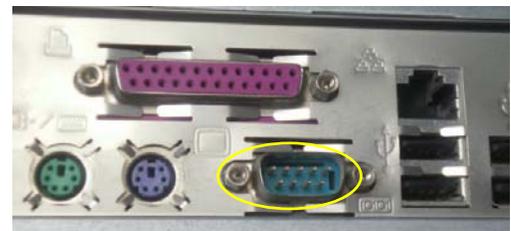


If you are making your own cable, here is the wiring instruction:



Serial (RS232) Port on a Computer

The first step is to find if your computer has a serial port (or RS232 port). The following photos show a native (built-in) serial port on a laptop (left) and a desk top (right). It is a 9-pin D-shaped (DB9) connector. The assigned port number usually is COM1. Minimum 5.0VDC output power at serial connector is needed to ensure reliable data transmission.



USB to RS232 converter

If your computer only has USB ports, like most late PC and laptops do, or the native RS232 port does not perform, you need a USB to COM (RS232) converter to convert one USB port to a RS232 port. Here are two examples of USB2COM

converters. Here are two examples of USB2COM converters. We recommend having a converter that uses high quality chipset, such as one from FTDI or Silicon Labs, to ensure a reliable operation.



2. Find the serial port (COM port) number from your computer:

If your computer has a serial port (9-pin D-shape male connector) on the back, the default assigned number is COM1.

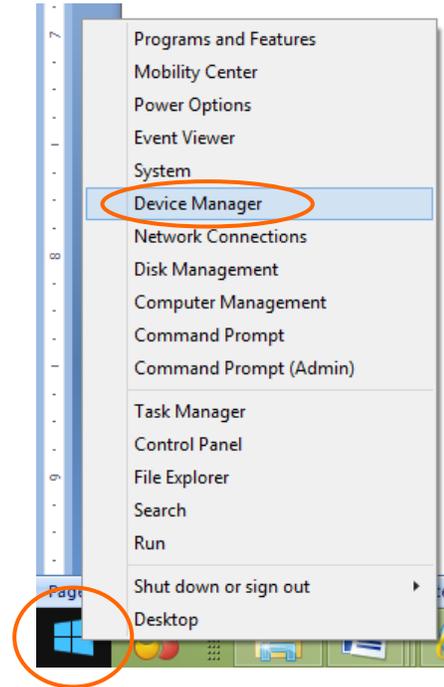
If you are using a USB to COM converter to convert one USB port to a COM port, you can find the computer assigned COM port number.

Set up your mount. Connect the hand controller to the HBX socket on the mount.

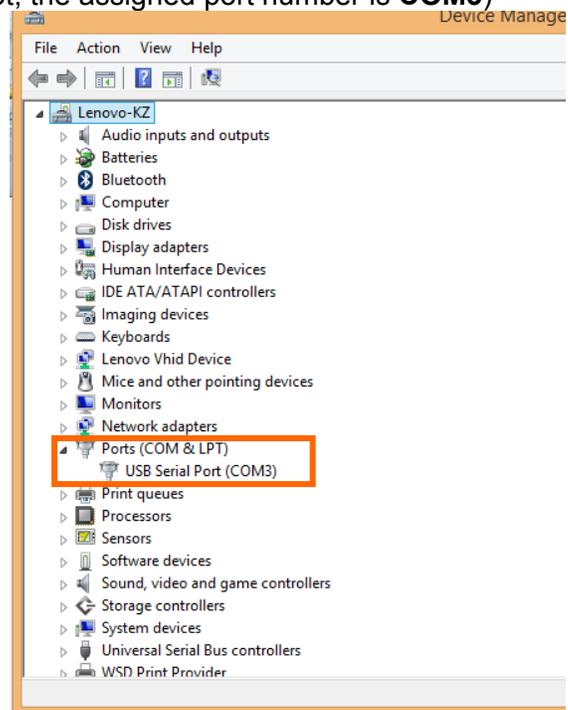
Plug the USB to RS232 converter into one of the available USB ports and connect the RS232-RJ9 serial cable onto the serial port of the converter.



After installing the USB2COM driver that comes with the device, use your mouse's right button to click on **Windows** sign located on the left bottom corner of your computer's screen (Windows 8 as an example). This will bring up a list of tasks as shown in the screen shot below. Move the mouse to **Device Manager** and click onto it.



Click on **Ports (COM & LPT)**, find out the COM number and write it down (in the following screen shot, the assigned port number is **COM3**)



3. Download software and firmware from iOptron website:

Go to iOptron website, www.iOptron.com, click on **Support** tab. Locate **AZ Mount Pro** under **Firmware/Software** catalog and click on it. You may also find the information in AZ Mount Pro product page.

Download and save Upgrade Utility program, AZMP Hand Controller firmware and AZMP main control board firmware.

Please ignore any prompt or error message displayed on the hand controller during firmware upgrading.

If the upgrade process was disrupted, wrong firmware was loaded, or the upgrade was failed, just start this process over again. Make sure a correct COM port is selected and the RJ9 cable is plug into the hand controller serial port.

4. Upgrade 8407 hand controller firmware:

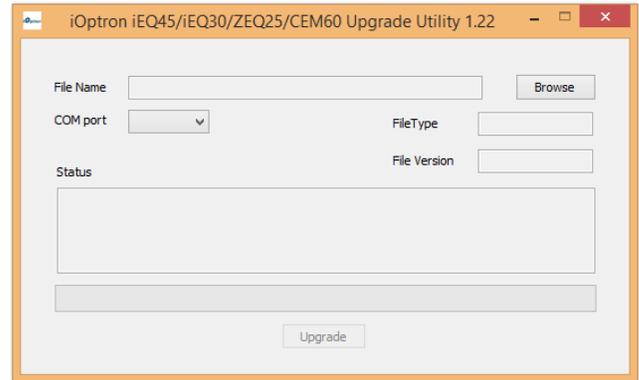
- (1) Connect the 8407 hand controller to the HBX port of the mount. Make sure the mount power is OFF;
- (2) Connect 4-pin RJ9 plug into the serial port of a 8407 hand controller and the 9-pin RS232 connector to your computer's RS232 port (or RS232 port of the USB2COM converter);



- (3) Hold **ENTER** button of the hand controller while switch the power button (I/O) to turn the mount power on;
- (4) Locate download software and click on **Upgrade Utility.exe**:



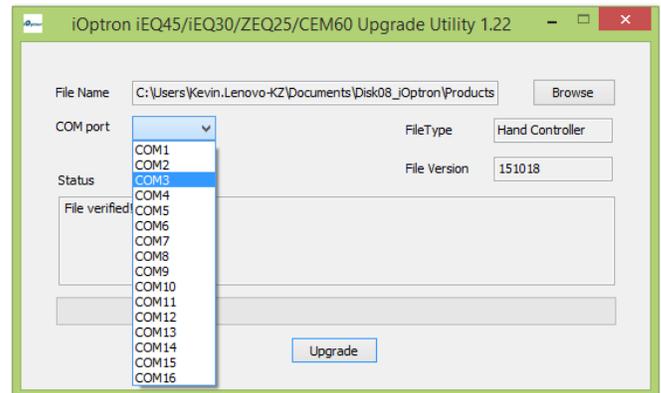
- (5) An iOptron Upgrade Utility window will display. Click on **Browse**:



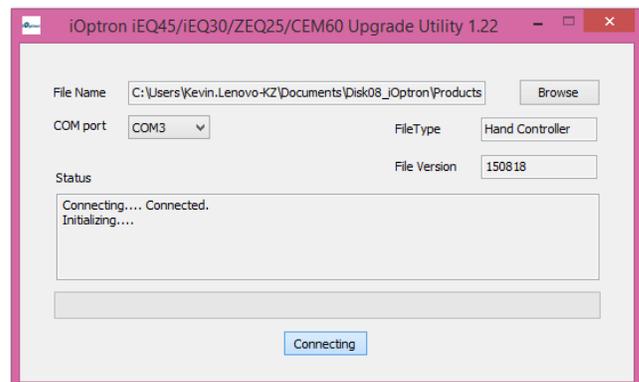
- (5) Select 8407 hand controller firmware, such as AZMP_8407_HandController_YYYYMMDD.bin and click **Open**.

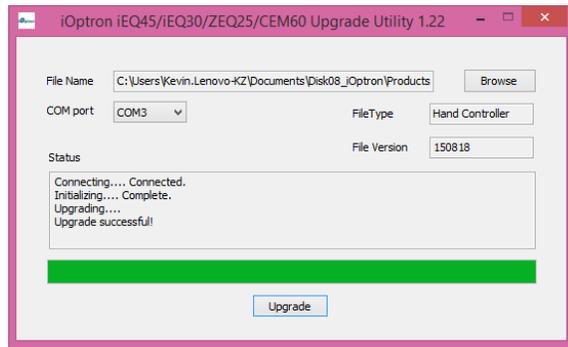
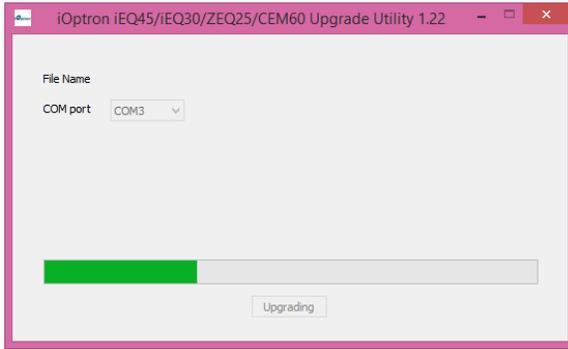
Name	Date modified
AZMP Firmware Upgrade.doc	2/29/2016 5:59 PM
AZMP_8407_HandController_20151018.bin	12/14/2015 10:47 ...
AZMP_20151016.bin	12/1/2015 10:32 AM
Upgrade Utility.exe	3/20/2014 10:54 PM

- (6) The **FileType** and **Version** will be verified and displayed. Click on pull down menu of the COM port and select the COM port number. Here is **COM3**.



- (7) Click on **Upgrade** button to start the process;





- (8) After the firmware upgraded successfully, power cycle the mount. If no other firmware upgrade is needed, exit the Upgrade Utility program by click on . **Ignore any error message displayed on the hand controller if you need to upgrade main control board firmware.** It will be gone after all firmware are upgraded.

5. Upgrade AZMP main control board firmware:

- (1) Connect 8407 hand controller to the HBX port of an AZMP mount. Make sure the mount power is OFF;
- (2) Connect 4-pin RJ9 plug into the RS232 port on the AZMP mount and the 9-pin RS232 connector to your computer's RS232 port (or RS232 port of the USB2COM converter);



- (3) Locate download software and click on **Upgrade Utility.exe**, if the program is not running;



- (4) Click on **Browse** in iOptron Upgrade Utility window. Select mount control board firmware, such as AZMP_20151016.bin, and click **Open**;
- (5) Click on pull down menu of the COM port and select the COM port number. Here is **COM3**. Click on **Upgrade** button;
- (6) Switch the mount power button (I/O) to turn the mount power on. The upgrading process will begin. After the firmware upgrade finished, "Upgrade successful!" will be displayed;
- (7) Power cycling the mount. Check your firmware version after all four firmware upgrade is finished by press **MENU→Firmware Information**;
- (8) Exit the **Upgrade Utility** program.

6. Common Errors During Firmware Upgrade:

- (1) Can not open COM port:
 - Wrong COM port is selected;
 - A mount is not connected;
 - A USB to RS232 converter driver is not installed or corrupted;
 - A USB to RS232 converter does not work properly.
- (2) Connection failed:
 - Mount power is not turned on;
 - COM port conflict or used by other program. Close other program and try it again;
 - Serial cable is not connected to the hand controller;
 - Broken RJ9 to RS232 cable;
 - A USB to RS232 converter does not work properly;
 - Hand controller not plugged in properly;
 - Malfunctioned control board;
- (3) Upgrade stopped in the middle or failed:
 - Cable not plugged in firmly;
 - Broken RJ9 or RS232 cable;
 - A USB to RS232 converter does not work properly.