

Download GTOCP4 and GTOCP5 Firmware Using the Web Browser Interface with Ethernet Connection

One of the advantages of the GTOCP4 and GTOCP5 (abbreviated CP4/5) over the previous GTOCP1, CP2 or CP3 control boxes is that updates to the firmware can be made by the customer via internet downloads. There are two methods of updating CP4/5 firmware.

- **USB/Serial Utility.** If your control box has a USB or serial connection, we recommend that you use this utility since it is quick and easy. This method requires the Java utility that can be used with Windows, Mac and Linux computers. Beginning with version VSU-06.jar of our utility, the download and installation process can be accomplished with just one click. You do not need to know your IP address or provide a username and password. Refer to the Software Updates tab of our website for more information.
- **Ethernet browser-based downloads.** Use this method if your only connection is with an Ethernet cable. The connection can either be as a part of a cabled network or directly connected peer-to-peer. We do not allow firmware downloads using WiFi currently since the data transfer is not as reliable. These instructions provide guidance for browser-based downloads.

Download the Package If you have not downloaded the zipped software package yet, please do so now. Follow the links from the Software Updates page of our website. You will need the username and password to access the protected download site. This information was provided in the cover letter sent with your mount. If you do not have it, you may contact the office during normal business hours. Better yet, if you are also connected to your mount with USB or serial, use the USB/Serial Utility for your download.

We recommend that you create a folder in a location where it will be easy to find and unzip the package contents into this folder. The contents **MUST** be unzipped prior to loading and cannot be run from the zip folder.

IMPORTANT! GTOCP4 ONLY! Park your Mount to a defined position. Do this **BEFORE** you start the upgrade. You will need to resume from that same defined position after the upgrade to reestablish your calibration. If you are using the keypad, first switch to auto-connect = NO, and then park the mount.

Note: After parking the mount, you can remove the CP4 if you wish to perform the software upgrade; it does not need to be connected to the mount. This may make establishing an Ethernet connection easier.

Determine Your IP Address

Many of you will have already determined your IPv4 cabled Ethernet IP address. If you know this address, you can skip the following and proceed directly to the “Download Using a Browser” section. For those who have not determined the Ethernet IP address, please use the following instructions.

First, power up the CP4/5, and connect the Ethernet (i.e. Cat6) cable to the CP4/5 on one end, and to your computer or a router or network switch (port) on the other end.

IMPORTANT: Allow several minutes for the connections to be fully established.

We suggest that you read all the options first to determine which one will be most appropriate for your situation. The first few options apply to ALL Operating systems – Windows, Mac, Linux etc. If you have APCC or even just the ASCOM driver installed, you may consider using them to determine your IP address.

- **Direct peer-to-peer connection where the Ethernet cable runs directly from the computer to the CP4/5.** THIS IS THE SIMPLEST AND MOST RELIABLE CONNECTION FOR SOFTWARE UPLOADS! Peer-to-peer connections will have an IP address starting with 169.254 (unless you have already made changes). The remaining two parts of the IP address are based on your CP4/5 serial number, and are found by using the following formula:
 1. Divide the numeric portion of the serial number by 256. Truncate the result so that only the whole number value remains. Do not round up! This is your first value. Serial numbers less than 256 will use "0." Numbers 256 to 511 will use "1." and so on.
 2. Multiply the first value from #1. above by 256, and subtract it from the serial number. The difference is your second value.
 3. EXAMPLE: Serial number = CP4-0635. Numeric portion = 635
 - a. $635/256 = 2.4804...$
 - b. Truncate to 2. This is the first value. (Remember "remainders" from grade school? $635/256 = 2$ with a remainder of 123)
 - c. $2*256 = 512.$
 - d. $635-512 = 123$ This is the second value (the remainder from above)
 - e. IP = 169.254.2.123
- **For connections into a local network.** If you have connected via WiFi in the past, make that connection now and then open the CP4/5's web page in whatever browser you use by entering the WiFi IP address in the browser's address bar. This can also be done from a Smart Phone (like iPhone) or a Tablet (like iPad).
 - The Main page of the CP4/5 Web page will show you the cabled Ethernet IP address that your router has assigned.

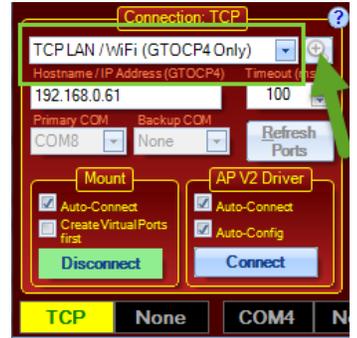
NOTE: In most cases, the cabled IP address will begin with the same values as the WiFi IP address if you connect to your wireless network. This will not be the case if you connect with the CP4/5 as a WiFi access point.
 - If you have the CP4/5 configured as a "Server", meaning you are configured for Peer-to-peer connection, but you are now connecting through your local network, you may need to click the button to open the Advanced Ethernet Settings window to reset the DHCP Mode to either "Client" or "Both." A power cycle of the CP4/5 will then be required for the change to take effect – power OFF – wait a few seconds – power ON.
- **Use the Find_Mounts.jar Java applet that is included in the zipped download package.** You must have Java installed on your computer to use this applet. <https://java.com/en/download/manual.jsp> Double click the Find_Mounts.jar file and then wait a minute or so. It will give you the IP address(es) for your CP4/5 and any other CP4/5s that are also on your network. You must have an Ethernet or WiFi connection.



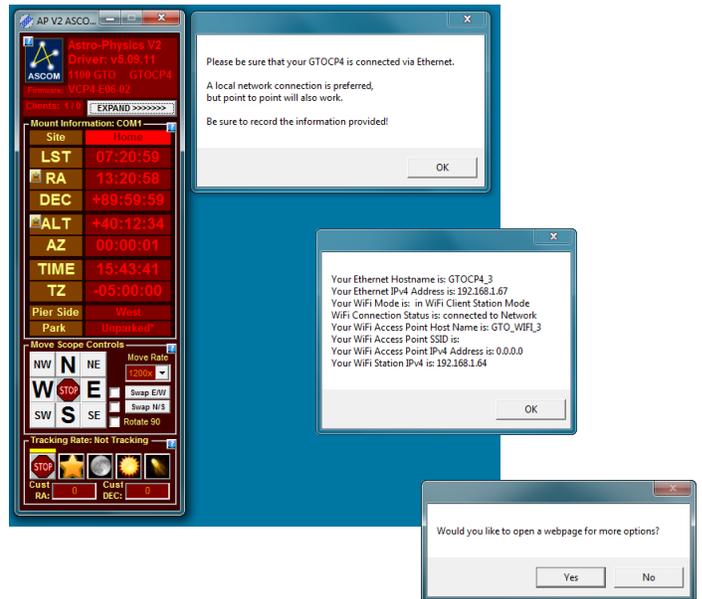
For APCC Users (v. 1.5.0.23 or later recommended)

1. In the Connection group box, select: TCP LAN/WiFi (CP4/5 Only) or UDP LAN/WiFi (CP4/5 Only) from the top dropdown list.
2. Click the small button to the right of your selection. This will open a list of available CP4/5s. Get the IP address from this list. Be sure to select the LAN IP address – not the WiFi IP address.

Type	Name	IP	Firmware	Mac Address	Access Point
LAN	GTOCP4_2	192.168.1.83	VCP4-P01-04	02:00:00:00:00:02	GTOCP4_Net_2
LAN	GTOCP4_3	192.168.1.67	VCP4-P01-04	02:00:00:00:00:03	GTOCP4_Net_3
WiFi	GTO_WIFI_3	192.168.1.64	VCP4-P01-04	02:00:00:00:00:03	GTOCP4_Net_3



- **ASCOM driver (no APCC) and serial connection (including USB).** Use the E-net_WiFi_Poll_2016-0711.exe program that is included in the zipped software package. Simply double click the program file and it will open the driver and find the mount. If you have Internet Explorer, it will even open the CP4/5's Web page for you.



- **Use Hostname.** Windows users can often find the mount in their browser using the Hostname. The factory default Hostname is GTOCP4_xx, where xx (or xxx, or xxxx) is the serial number of the CP4/5 without leading zeros. The hostname is user-configurable. (Use of hostname as the URL currently only works with Windows systems that have NetBIOS enabled.)

Download using a Browser

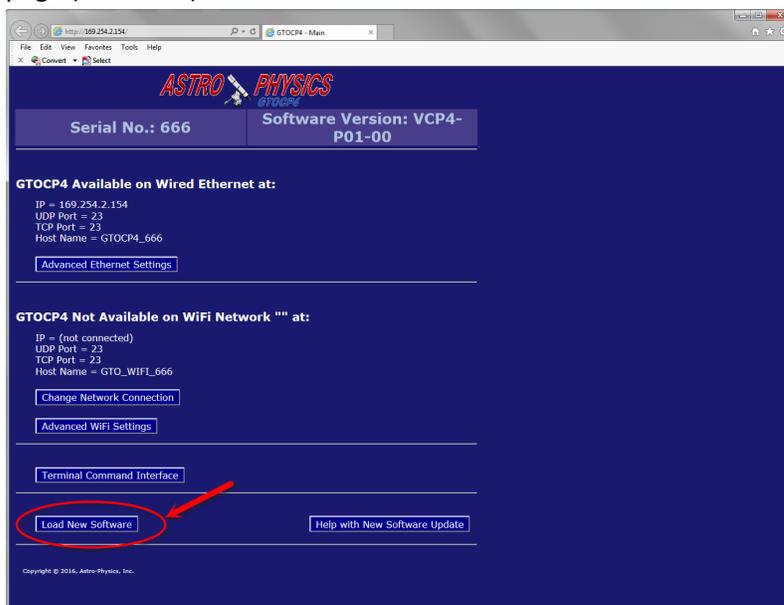
These procedures are for ALL USERS.

1. **Save the program files.** If you have not already done so, save the new program files that you downloaded from the Software Updates page of the Astro-Physics website to a directory on the computer that will be running the web browser.

2. **Connect the CP4/5 via Ethernet and power up.** Connect the Ethernet (i.e. Cat6) cable to the CP4/5 on one end, and to your computer or a router or network switch (port) on the other end.
IMPORTANT: Allow several minutes for the connections to be fully established.

3.  **IMPORTANT!! Disconnect ALL other cables and software from the CP4/5 for the remainder of this procedure.** Simultaneous activity can disrupt the download. Disconnect APCC if you have it, and any other programs. Be sure that your WiFi devices and programs are not connected to the CP4/5. The only cables that should remain connected are the:
 - **Power Cable, the CP4/5 will remain powered during this procedure.
 - **Ethernet Cable – The only Ethernet connection should be the CP4/5 Web page.
 - **Servo Y-Cable to the mount’s motors (optional – not required, but won’t hurt)

4. **Open the Web Browser interface for your control box.** There are several options:
 - a. **Open a browser window.** Once you know the cabled IP address, start up your browser: Chrome, Fire Fox, Safari, Microsoft Edge, Internet Explorer, etc.
 - b. **E-net_WiFi_Poll program.** If you used this program, it will open an instance of Internet Explorer for you already connected to the CP4/5. Use of Google Chrome may be a little more difficult because Chrome is optimized for the World Wide Web, and may skip any search for local hosts.
 - c. **Find Mounts Utility.** If you used the Find Mounts Utility to find the IP address, simply click the Browser button to open the web page. The IP address will display. You may skip the next step to enter IP address.
5. **Enter IP address.** On the URL line of your browser, enter the IP address of the CP4/5. (As mentioned above, Windows users may be able to simply enter their Hostname.) The CP4/5 will place the following page (or similar) in the browser window:



6. **Click on the “Load New Software” button.** A new web-page will display. Follow the directions on this page to download and install all upgrade files. Please note that there are typically multiple files to load and that **the .pt2 file must be loaded first.** Some older versions of the directions provide incorrect

information.

The following instructions are included in the version P02-13 upgrade (except for the first few units that were programmed at Astro-Physics) and will be visible when you upgrade beyond this point. We provide them here for your reference.

Instructions for Firmware Upload

1. Save the new program files that you downloaded from Astro-Physics to or from an e-mail attachment to a directory on this computer.
2. Remember the directory path. Files must be unzipped, and have appropriate permissions (not read-only, not hidden, not encrypted).
3. Make sure the GTOCP4/5 is connected via its Ethernet, not its Wi-Fi. Download over the unit Wi-Fi is not supported.
4. Deactivate any serial ports you have in use including the GTOCP4/5's USB port and close any open programs. Simultaneous activity can disrupt the download.
5. Use the 'Choose File' button (or 'Browse' on older versions of the Web page) to open directories on your computer and navigate to the path where the files were saved. Some files may be documentation; these do not get loaded. Loadable files have extensions of .pt1, .pt2, .pt3, .lic, .cmd, .wif on older units, and .net on newer units.
6. Choose first file. **If there is a file with an extension of .pt2, choose it first.** For example: VCPx- xxx-xxx.pt2.
Yes, you will load .pt 2 first. If you select a non-loadable file, the unit will reject it with a message 'Invalid File Extension' or 'File for different hardware, Ignored'. That's OK, move on to the next file by returning to step 5.
7. 'File OK' should display within a minute.
8. Click the 'Program' button. If loading .p2, the front panel LED will begin to blink rapidly. If the message 'Module Still Initializing' appears when attempting to load a .net file, refresh the browser, wait 1 minute, and repeat from step 5.
9. Wait up to a minute for 'Load Complete, Running New Program' to be displayed. Several other messages will appear before 'Load Complete, Running New Program' displays.
10. Repeat steps 5 through 9 for the .pt1 file, if there is one.
11. Repeat for any other file that is part of this download.
12. When you have loaded all the necessary files, click the 'Return to Main' button to go back to the main window.
13. If a file with an extension of .pt2 has been loaded, confirm that the version shown has incremented to the new version loaded.

14. If you have loaded any files with an extension of .lic, .wif, or .net, a power cycle is needed for them to take effect.
15. Re-activate serial port connections to the GTOCP4/5, if any, and resume normal operation.
16. **IMPORTANT FOR GTOCP4 ONLY!!** After installing the new firmware to the GTOCP4, you will need to do a full initialization of the mount to reestablish calibration. This **INCLUDES** resuming from the defined Park Position you selected when you started the upgrade.