Instructions for Uploading V4.19.3 to Your Keypad

Print this page and follow these instructions after you have downloaded keypad4193.exe from the Astro-Physics website.

Setup the system

1. **Connect the power cable to the GTO control box.** Since the motor cables are not needed for the download, you can use just the GTO control box. The mount does not need to be present. DO NOT connect the keypad at this time. DO NOT turn the power on yet.
2. **GTOCP1, GTOCP2, GTOCP3:** Connect the RS-232 cable to your personal computer and the GTO control box. This upload process will only work if you plug the cable into the **TOP** RS-232 connector (marked COM 1 on the GTOCP1 control boxes). It will not work if you use the bottom connector. Please note that COM1 on the GTOCP1 control box does not mean that you will necessarily be using COM1 on your computer. You must use a "**straight-through**" serial cable. Please read the infomation regarding serial cables below.

GTOCP4: You must use a "**straight-through**" serial cable plugged into the **TOP** RS-232 connector. This is the only port that will allow the pass-through of the data. USB, Ethernet and WiFi Keypad downloads are not supported at this time. Connect the RS-232 cable to your personal computer and the GTO control box. Please read the infomation regarding serial cables below.

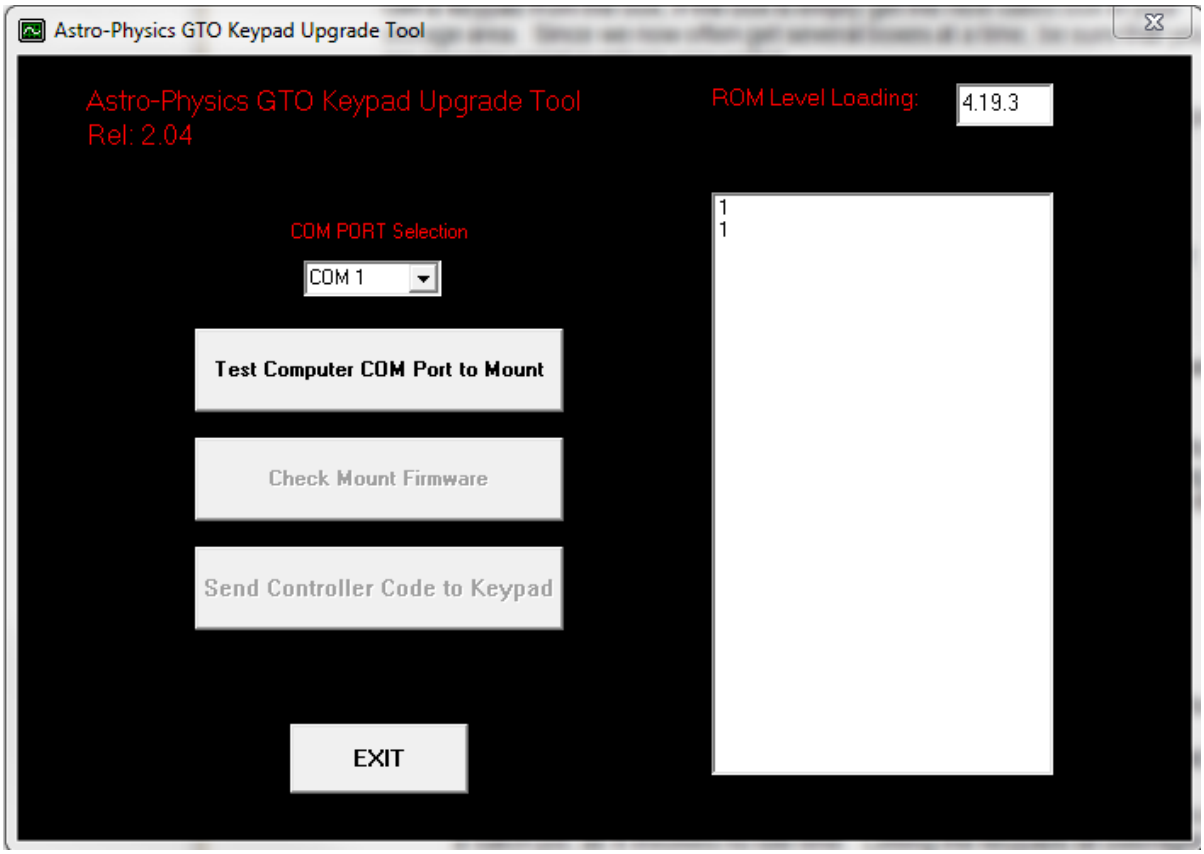
Serial Cables: As mentioned above, your serial cable must be "**straight-through**" (as opposed to a "null modem or crosswired"). We have 15' Straight-Through Serial Cables available for purchase, if you do not already have one. Mounts shipped in recent years included one of these cables. If you require a USB-to-serial adapter, we recommend that you use one with an FTDI chip or the Keyspan adapters. We do NOT recommend USB-to-serial adapters with Prolific chips.

Test Procedure

You must follow these procedures *EXACTLY*. If you do, the process is quite easy. Pay particular attention to what is connected and powered on at various stages.

1. **Upgrading from all versions** - your location data and other settings will be erased during this procedure. Please be sure to write all of the settings that you wish to remember on a sheet of paper.
2. **IMPORTANT:** Your keypad CANNOT be set to Auto-Connect YES for this upgrade. If your current version has the Auto-Connect feature, set it to NO or EXT. Menu path on the Keypad: 2=SETUP -> 3=Keypad Options -> 1=Auto-Connect:NO
3. SHUT OFF the power to the control box and UNPLUG the keypad. **Do NOT reconnect until instructed.**
4. Start your PC. The keypad upgrade tool will run under Windows 95 or later.
5. Assuming that you downloaded with the default file location settings, select Start | Programs | Astro-Physics | Keypad Loaderl v4.19.3. Select Keypad_ Loader_V4193.exe
6. The Keypad Update Tool window will display. The white window should display two digits, one above the other, corresponding to the COM port number in the selection box. It will probably be two "1" digits. The ROM Level Loading box will show the version number that you are about to load. If the box does

not display 4.19.3, then this is not the correct upgrade tool. Note: The screen shot below shows an earlier version number.



7. Double check to be sure your serial cable is connected to the upper RS-232 port and your power cable is connected. **Remember that the keypad cable is not connected at this point.** Turn on the power to your control box.
8. Set COM port selection. The number selected will display in the white box.
9. Click on Test Computer COM Port to Mount. Message should read "mount found". If not, check to be sure that your keypad is NOT plugged in. If it is, turn off the power to the control box, unplug the keypad and exit from the Keypad Upgrade Tool. After 30 seconds, turn the power back on and bring up the Keypad Upgrade Tool again. Repeat this step. If you have an error and the keypad is not plugged in, select another COM port. To select another computer COM port, it is best to exit the loader program completely, then restart it and select the next COM port before clicking on the Test Computer COM Port to Mount button. Repeat this if you need to select the next COM port and so on.

   When the "mount found" message appears, look at the entry in the white box. If it shows a series of zeros followed by a "#" sign (i.e. 00:00.0#), you have found the correct COM port. If #:GR# appears in the white box, then that COM port is connected to another device, perhaps a modem or digital camera, etc. If that is the case, try another COM port. Please click "ok" to move on to the next step.
10. Click the Check Mount Firmware button. The program will poll the GTO control chip to determine if the chip version number will support the upgrade procedure. Chips issued prior to version "C" (shipped prior to January 22, 2001) do not have the upgrade function. The white box will display the chip version number and "#" sign. Don't press the Send Controller Code to Mount button yet. Please read on.
11. If you have the proper chip, press "ok", then turn off the power to your GTO control box. Keep this Keypad Update window open in your web browser since you will use it later. DO NOT press any other buttons on the keypad just yet. Proceed to the Keypad Update section below.

12. If you get an error message, check all cables and connections. Then click the Check Mount Firmware button again TWO times (the first click will clear the buffer and you will see an error code, click it again). You will need to press "ok" at each of the prompts.

13. If the chip is an older version and fails this test, contact Astro-Physics to obtain a new chip. DO NOT attempt to continue this upgrade until you install the new chip. Otherwise, you will erase the old program with no means of installing the new one.

Keypad Update

Do not try this procedure unless you have successfully completed the test above. Otherwise, you will erase the current program from your keypad. The screen will be blank and you will not be able to use your keypad.

Please follow these steps in order. If the power is interrupted, restart from step 1.

BE SURE THAT ALL OTHER PROGRAMS ON YOUR COMPUTER ARE CLOSED. SET YOUR SCREEN SAVER TO "NONE". DO NOT ATTEMPT TO USE YOUR COMPUTER WHILE THIS UPGRADE IS UNDERWAY.

1. The power to the control box should be off. If not, turn if off.
2. Plug in the keypad and be sure that the power cable is connected to the GTO control box and locked in place. The motor cables do not need to be attached.
3. Place the keypad on a solid surface and press any three buttons (except stop) simultaneously and hold them down. We call this a **"three-finger salute.".** As you are holding these three keys, apply the power to the control box.
4. A new display will appear on the window of the keypad. At this point, release the three buttons. Then, press the West button to indicate YES for the next four windows. The last window requesting to Test Flash must be responded with NO by pressing the East button. This will erase the current program. These are the screen displays and the responses (note, the display says "FN=No", however you will press the "E" button):

    "Load defaults" - Choose Yes (West)

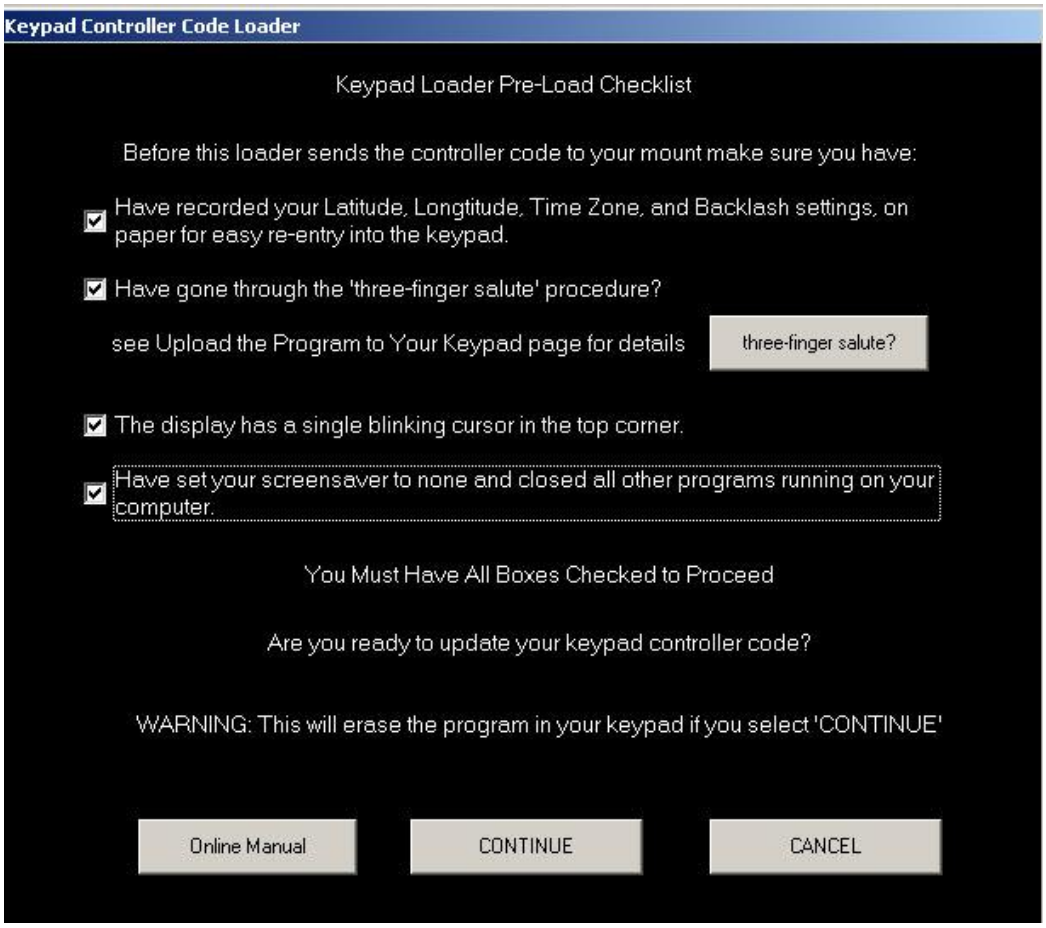
    "Are you sure" - Choose Yes (West)

    "Clear flash" - Choose Yes (West)

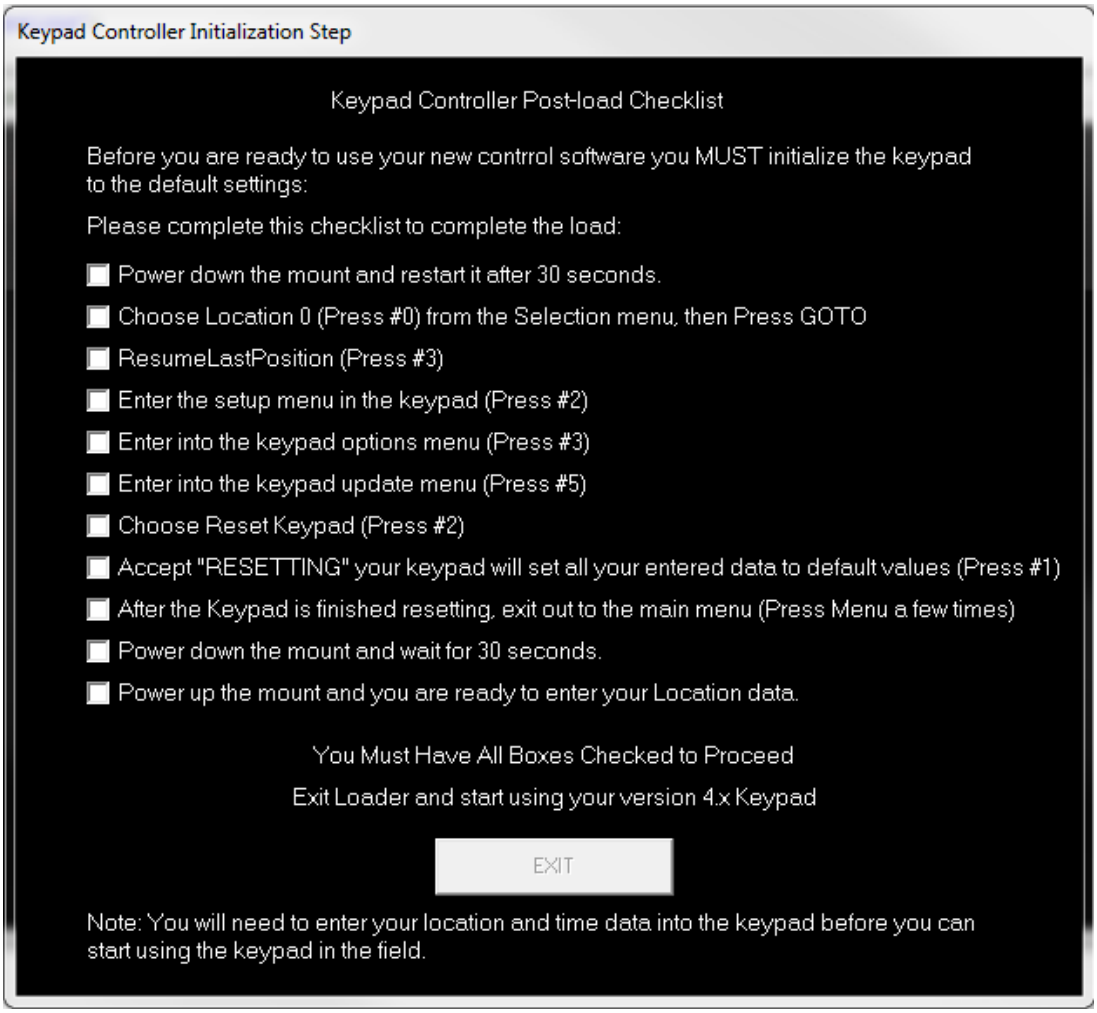
    "Are you sure" - Choose Yes (West)

    "Test flash" - Choose No (East)

5. Once you have completed the previous step, the keypad will be placed in a ready-to-receive mode. A blank window with the blinking cursor in the upper left corner of the screen will indicate this.
6. Look back to the Keypad Upgrade Tool window on your PC. Press the Send Controller Code to Keypad button. The Keypad Loader Pre-Load Checklist will appear. Review and check all boxes, then press Continue.



7. You will hear a series of beeps from the keypad as uploading begins, but will get no audible feedback during the rest of the upload. From this point on, the upload can take anywhere from 20 minutes to 35 minutes. Do not remove the power from the mount. Do not try to run any other application during this time. If you happen to check the task manager of your OS, it will state that the program is not responding, however it really is running properly, just slowly. Since the program must run through the control box into the keypad, it cannot run very fast. Make yourself a cup of tea (or your favorite beverage).
8. As the upload progresses, the white display box within the Upgrade Tool Utility will display a few lines of code, then go dormant for quite a few minutes. Don't worry, the upload is working properly. New code will display periodically, then pause again. If you have any difficulties with the download, please write down the first 10 lines that appear in the box so that we can help to diagnose the problem.
9. When the upload is complete, the screen on the Keypad will display the new version number. On your computer screen, the Keypad Controller Post-load Checklist will appear. Please follow each step of the process carefully. This part of the process will set all personal settings to the default settings. We provided checkboxes to help you keep your place. If you accidentally press the wrong button on the keypad, remove power to the control box and follow the steps on the post-load checklist again.



10. Your GTO keypad is now updated to the new EPROM code and is ready to use. Turn the power to the control box off, wait 30 seconds, then turn back on. If the location selection screen comes up first, enter 0 and press GOTO. Then, press ResumeLastPosition to get to the Main Menu.

    If the keypad is locked up on the Astro-Physics 4.19.3 screen, it is likely that Auto-Connect was set to YES prior to the upgrade. Please follow the instructions below to resolve this issue.
11. Please refer to the 4.1x Information Manual for further instructions.

What to do if the keypad is locked up on Astro-Physics 4.19.3 screen

These are known causes related to the keypad. If you are unable to resolve the lockup with the suggestions below, there may be other electrical or mechanical reasons. Please call Astro-Physics.

The power was not turned off for a long enough period of time. Be sure to turn the power to the control box off for at least 30 seconds.

The keypad was set to Auto-Connect YES. To resolve this problem:

- Establish a link to the mount with external software.
  - Set up the mount with the power cable. DO NOT PLUG IN THE KEYPAD.
  - Bring up an external computer program that will control the mount - TheSky, Starry Night, etc.
  - Link to the mount with the software program.
  - Confirm that you are linked, for instance, slew to an object.
  - After you are linked, plug in the keypad.
  - The keypad should go to the Main Menu.