

Table of Contents

PEC.....	1
Using a diagonal.....	1
"No Star" and "Green Box" color indications.....	2
GPUSB related.....	2
Stopping capture frames and guiding.....	2
Webcams.....	2
Drivers.....	2
Ascom vs ShoeString.....	3
Backlash Compensation.....	4
Calibration issues.....	4
Dec calibration.....	10
Hysteresis.....	10
Log file information.....	11
How to choose a Guidescope.....	11
Mounts etc.....	12
Troubleshooting.....	14
Setups & settings.....	15
subframes & binning.....	15

PEC

Q. Should I have Pec on or off when using PHD? Will it cause problems?

A. One line of thought is Turn your PEC off and the auto-guiding program will not be “fighting” the PEC corrections.

The second line of thought is that if you have PEC ON - then the auto-guiding program won't have to work as hard - making very minor corrections instead of possible “large” ones.

With that said, they all forgot one thing. Back many years ago before we had computers to do the guiding for us we had to do it manually. I had a system that had the PEC feature and it was promoted that PEC would help reduce the workload when guiding. You would make corrections on top of the PEC corrections that were being made without my assistance. In my opinion, I would leave it on. A level tripod, and a good polar/drift alignment will be the best thing you can do to start. PHD does a GREAT job either way, get your scope level and aligned, and you're good to go.

PEC stands for 'Periodic Error Correction'

Using a diagonal

Q. Will the PHD still guide with a diagonal reversing the view or are there settings that I can change in PHD?

A. PHD doesn't care.. Upside-down, mirror reversed, rotated and flipped - no problem.

"No Star" and "Green Box" color indications.

Q. I have two questions. During the calibration process a "No Star" message would appear in the status window, is this normal?

A. Once the green crosshair appeared on the screen, the odd time, the green box would change to orange, then return to green. Is this normal?

These mean that for some reason it has lost the star. But, it should handle a lost star gracefully and resume when it is picked up again. In general, ultra-faint is bad as is ultra big/bright.

GPUSB related

Q. Just received GPUSB adapter to connect computer to my mount using PHD. Do I also need the ASCOM driver? If so, which one?

A. With PHD Guiding, there is no need for an ASCOM driver for the GPUSB. PHD supports the GPUSB directly. From PHD Guiding, click on the Mount menu, and then select GPUSB.

Q. The red indicator light on the ShoeString GPUSB would flash on and off and at times. Is this normal?

A. Yes - those are when actual guide pulses are being sent to the mount.

Q. Have PHD hooked up to the Autoguide port but it doesn't seem to respond.. Whats wrong?

A. Check the Autoguide port settings in RA and DEC. Make sure they are set for 50% to 99%

Stopping capture frames and guiding

Q. The stop button requires 2 or 3 presses before PHD actually stops acquiring frames or guiding. Is this normal?

A. PHD will only abort between exposures. So, if you're in an exposure or it's in the middle of a download, just press the stop button and wait.

Webcams

Q. Can I use a webcam or Solar camera for guiding?

A. Yes, Windows users can use a webcam or Solar camera for guiding. However, you are limited to about 5th or 6th magnitude. If you wish, you can modify the webcam to make it more sensitive for dimmer stars. Mac users cannot presently use these cameras, however.

Drivers

Q. I have the SynScan hand controller? What ascom driver do I use to control my scope when using PHD?

A) You will want to use the Celestron ascom driver. Make sure your using the latest version... the current version is 4.2.15.

Ascom vs ShoeString

Q. What is ASCOM?

A. ASCOM is a piece of Windows software (really a protocol or language, but call it software) that acts as a Universal Translator. Software like PHD can send commands to ASCOM that are generic ASCOM commands. ASCOM drivers then translate these into things specific to each mount. So, PHD doesn't need to know how to "speake Meade" or "speak Takahashi", just to "speak ASCOM" and it can control any mount supported by ASCOM.

Now about this delay in ASCOM that folks talk about - ASCOM per se doesn't have any delay – really zero there. Here is the problem though:

The handboxes we have in our GOTO systems have small computers. These are often set to read for new commands every, say 250 ms. Now, let's say you send "start guide", you wait 50ms and then send "stop guide" commands get sent in a flash, but the little computer there only reads them every 250ms. Not ASCOM's fault that the onboard computer is slow to respond... Really, the computer is fast enough, but it only looks in its "inbox" every 250 ms or so

So, our 50ms pulse became 250ms. Oops. Now, we add one small twist - the "PulseGuide" command. Here, we send all the info at once "Guide E for 50 ms That comes in, then the onboard computer fires the motor for 50ms and stops it. As long as you don't send another guide command in a few msec (which, if you're taking 1s exposures or so you won't and silly to do anyway) you're all good. Some mounts support this command - others don't. The revised Meade ASCOM driver on the site forces this mode on all Meade scopes instead of just those with "GPS" in the name (which is how the old driver "knew" if the mount supported that command - it missed lots of mounts that did) So, ASCOM, done right, can do just as good a job. It'll never be better than the direct connection, but it can do just as well.

Q. I have both a parallel port (shoestring) interface and the rs232 ASCOM interface. Is one method of guiding better than the other?

A. If anything, the ST4 input has been considered the “gold standard”. It’s a direct link to the motors (often, not in every implementation) and when a direct link there is no computer between that may have a slow command cycle to muck things up. This is why the commands Meade put into their code that give a hardware implementation of the pulse-guide method made things a lot better - one command to do it vs. two and the slow cycle of how often they polled for new commands had mucked things up. Some mounts (like the Takahashi Temma) still suffer from this problem.

Another advantage of using the ST4 port is let’s say you are using the Nexreomote and it loses the telescope signal. Since you are hooked up to the ST4 guiding port you can continue to guide and finish the exposures and deal with the problem later.

Backlash Compensation

Q. Should the backlash compensation be on or off?

A. Turn OFF backlash. With the recent updates to PHD it’s not needed... If you’re having issues, it’s best to use “resist switching” in the DEC Algorithm in the brain settings. Give PHD some time to settle.

Calibration issues

Please note

- 1) The crosshairs are the lock position. They don’t move.
- 2) The box is where PHD thinks the star is
- 3) If it bleeps / flashes, etc. PHD has lost the lock on the star. It thinks it might be a hot pixel, the SNR is low, etc.
- 4) Better alignment is always better. Never intentionally misalign. If you have appreciable drift, PHD can mistake this for its attempts to move the mount during calibration. I’ve had RA calibrations “succeed” when really no signals were getting to the mount. PHD has no way of knowing if star drift from misalignment or its turning of the motors actually moved the star.
- 5) Exposure duration has nothing to do with calibration. The calibration step size (Advanced panel) does. The exposure duration controls how long the camera exposes and the step size controls how long a guide pulse is sent out on each calibration “step” (there are up to 60 steps).

Q. What happens during calibration? How does it work?

A. During calibration, PHD engages the mount's motors and watches how the star moves in response to the motors. This happens in "steps" and begins with RA. A guide pulse will be sent (the duration is controlled by the "Calibration step" parameter in the Advanced panel) and the star located. Another pulse is sent and the process is repeated until the star moves enough for PHD to have a good estimate of how far to expect the star to move for each millisecond of guide pulse. This criterion is 5% of the width of your guide camera's sensor. If, after 60 tries it can't move the star enough, it gives up. Once it has this estimate, it sends the same number of pulses to return the star to the original position (or near it, as backlash will keep it from getting exactly there).

If Dec guiding is turned on, it then starts the Dec calibration routine. It tries to clear out any backlash by engaging the Dec motor on one direction and waiting until the star starts to move by a few pixels. At that point, it does the Dec calibration just as it does the RA. In the end, it now knows how far the star moves and in what direction when the RA and Dec motors are engaged. With a bit of math, it can then figure out from a star's position how many milliseconds to engage each motor (and in which direction) to bring it back to the crosshairs.

Q. Calibration is failing. What can I do?

A. Here are a few things to look for:

- When you've clicked on a star, you get a green box around it. If it's not green but yellow/orange, you don't have a star (find another one). Once you hit the PHD / Guide button you should get green crosshairs to appear (these show the "lock" position).
- Once calibration has begun, the star should start to move. Does it?
 - If so, maybe it's just not moving enough. Increase the calibration step size (Advanced panel) to send longer pulses.
 - If not, you may not be getting any signals to the mount.
 - You've connected to the right mount / driver, right?
 - Once (in theory) connected to the mount, hit Ctrl-T. This will pop up a series of dialogs saying it will engage the motor in each direction. Once you hit OK, you get a 1 second pulse to that motor. Look and/or listen closely to your mount to determine if any change in position and/or motor noise happens when you hit OK. One person at least attached a long stick to the telescope so that the small guide motions could be magnified and he could see them. If you get some activity here - any activity - PHD is sending commands to the mount. If you don't, it's not. Start looking at your cables, your choice in the Mount menu or ASCOM dialog, etc.
- When just looping, do you see the star move much? If so, you're not aligned to the pole well and we've got a lot of drift from that misalignment. Fix this.
- If calibration has succeeded in the past, about how many steps did it take? If it's taken just a few, decrease the calibration step size to send shorter guide pulses during calibration. If it's taken 30-60, increase the step size (Advanced panel).
- Are you trying to guide near the pole? If so, see below for why this is problematic.
- Does RA calibrate just fine but not DEC?
 - PHD tries to clear out the backlash in DEC before calibrating, but it may not succeed if there is a lot of it. Have PHD running in the loop mode, you can see how long it takes to take up the DEC backlash using your mount's normal controller. Go N until you move, then switch to S and count how many seconds it takes. PHD tries to take up the DEC backlash before calibration but if there's a lot and/or the calibration step size is too short, it may not work. To get around this, you can manually take out the backlash prior to calibration. N is calibrated first. Figure out the arrow on your handbox that does the same motion as this. Before entering the calibration, hit this until the star starts to move. Then calibrate and you should get the DEC done just fine.

Q. After a fine calibration, the star just works its way “up” out of the cross hairs.

A. This can be caused by several things. In general, either PHD doesn't really know where the star is (or thinks it is lost) or its attempts to move the star aren't working.

1. The star being too dim or bright.
2. It can be caused by having too much play in the dec axis. Try adjusting the Calibration step first. If that doesn't seem to work try adjusting the backlash compensation. Backlash compensation should be used as a last resort.
3. Incorrect balance of the mount and/or optical tube. Installing a camera after you have balanced the system can throw it off and cause guide problems.
4. When you move to the other side of the meridian, you need to recalibrate PHD. Or, if you move from near the equator to near the pole (or vice versa), you'll need to recalibrate.
5. Your calibration may have been poor. If it is taking a long time to calibrate, increase the Calibration Step size. You may be having drift of the star entering into PHD's estimate of how much the motors move the star. In general, guiding is not a substitute for decent polar alignment. Guiding can only fix so much error and if you're drifting away quickly, that drift will look like the effect of the motors to PHD.
6. If you're using the Autoguide port.. Make sure to check the autoguide settings for **BOTH** RA and Dec. 50% to 99%.
7. Some have reported that PHD will not work well unless they are using usb 2.0. So, if you're using USB 1.1 this could be the problem. A solution may be to try a USB 2.0 PC card. This includes Mac too.
8. If you have a Meade LXxxx try using the modded driver.

Q. What is the best way to calibrate PHD?

A. The technique that I use is to just pick a star that is not too bright but also not too dim. Calibrate PHD. Then set the imaging program to focus mode (loop exposures) or take individual shots and let it cycle at 60, 90 or 120 seconds per exposure. Make adjustments to PHD until you get pinpoint stars. Spend a night adjusting the settings. If your goal is for long exposure shots, then try to get yourself out to 300 seconds with sharp stars. That way, you know that you've got at least 5-minute long exposures as an option. Odds are that if you can do 5-minutes with sharp stars, you can do a lot longer (at least if you've got flex under control).

Another way to do this is to use PHD's graphing feature. Let it run for a few minutes with the graph active, stop guiding, make your adjustments, and repeat.

Q. Do I have to recalibrate after each adjustment.

A. No. All calibration does is figure out how far the star moves and in what direction. The only parameter used during calibration is the step size and, within reason, that won't affect the accuracy of the calibration at all. Feel free to change any parameter without recalibrating.

Q. When near the pole PHD doesn't seem to guide or calibrate well.

A. When you guide near the pole there is less noticeable drift. and guiding becomes a lot easier. Calibration, particularly in Dec, becomes tougher. Think of it this way. If you were at the pole itself, you could turn your mount's motors off and image all night long without any error. Polaris takes 24 hours to move in a small circle. In terms of physical, linear motion across the sky per second it's darn near still. As you get closer to the equator you speed up and get to see your mount's real errors. Right near the pole any EQ mount can track. This is why, when measuring your mount's PE, you need to divide whatever PE you measured by the cosine of the star's Dec. At the celestial equator, this is 1 and the readings are accurate. As you move nearer the pole, your PE measurements are smaller than truth and you need to scale them up. By the time you're at Polaris with a Dec of 89.17, you need to scale your PE measurements by 68x to get them to really reflect what the mount was doing.

Or, if that doesn't sit right with you, ever try moving your EQ mount manually to try to get to an object near the pole? As you get near the pole, even moving the scope manually to get to the right spot requires lots of effort - huge motions of the scope make little motions of the stars. Since the calibration process wants to see the stars move as a result of engaging the motors at guide rates, this gets to be a problem near the pole.

When imaging near the pole, you can increase the Calibration step and/or to turn off Dec guiding. You can also move away from the pole a bit more and calibrate there and then move back (don't go too far). Remember, if you recalibrate on the one side of the meridian you must always recalibrate if you move to the other side of the meridian.

Q. PHD was guiding well. Now I have a bit of star trailing. I'm guiding in the same area as before. What should I do?

A. Check your Auto guide settings. Sometimes they may change to to default. If your using backlash settings. Take a look and see if they have changed.

Q. Does the guiding software in PHD "see" and use the image as downloaded from the guide camera or does it use whatever results as seen onscreen from settings of the Screen Gamma (Brightness) slider?

A. PHD guides off of the raw image. Full size, no gamma, no nothing.

Q. Also, regardless of the answer to the above, is there any way to increase the contrast of the onscreen image display? If not that would be a nice enhancement.

A. Gamma adjusts contrast and brightness at the same time and since this is just for you to spot a star... an idea here, BTW, is that the auto-stretch shows you what you should be able to guide on.

Let PHD settle first.

Some may have noticed that PHD seems to cause a drifting effect when they begin image capture with the first shot taken. This tends to confuse users of PHD and therefore they will start making adjustments when it's not necessary and that ends up throwing off the adjustments of PHD and users can no longer get PHD to guide correctly. WHAT HAPPENED!!

Well, here's an explanation of what is going on... IMHO. Let say you do a lineup and the mount tends to favor a North correction instead of a South correction. (Generally you will only have drift in one direction only, so PHD will correct in that direction over the other. When PHD made its final calibration movement, its last correction was a southward movement. Now... if your mount likes to correct to the North... Then PHD will start correcting to the North...But.... Since its last correction was to the South during calibration, it has to take up the play in the mount. This even includes those that are using a backlash setting. A better way to see this is to let PHD loop the images and move the dec buttons North and then South... You will notice when you change directions the star will hesitate and then start to move and gain momentum until it reaches max speed (speed up once all the slack is gone) so, give PHD some time to settle in the grove.

Stiction

The term "stiction" comes from "static friction." Static friction occurs when two objects in contact are at rest or moving very slowly relative to each other.

Stiction can occur in a telescope gear system. When a telescope drive system is stationary or moving slowly, the gears stick together. When the situation occurs, the gears can bend, or the mounting or bearings can flex, at right angles to the normal rotation. The resulting motion is usually backwards – when PHD or any other guiding program tries to move the mount North, it goes South instead! Once the stiction is corrected it moves back North again.

Stiction problems can make it hard to determine what the root cause is. Even high-end telescope mounts suffer from this problem, and the effects of stiction can produce different results even if you have two mounts that are the same model type. The problem has a terrible effect on guiding because it forces overcorrection, and it cannot be effectively solved in guiding programs.

If you experience bad guiding in declination and cannot resolve it through adjusting the calibration or aggressiveness with PHD, you may have a stiction problem. There are a few solutions that work best when using PHD. First, set the 'Dec guide mode' to North or South instead of using the Auto setting. Second, adjust their polar alignment slightly off to ensure that the drift is in a consistent direction. Make sure you don't have to large an offset because PHD will be constantly chasing the guide star. Last, make sure your drive system is adjusted properly by not having too much friction (gears are adjusted so they are not too loose or too tight). Take it into a dealer if you're not sure what to do. These suggestions work surprisingly well.

Dec calibration

Q. What is the best setting for Dec calibration, Auto, North or South?

A. Generally when it comes to guiding you only need to guide in one direction North or South. In the Auto mode, PHD tries to keep you on one side of the worm gear and figure out which way this drift is. If it is in error, you will get star trailing on some number of the frames.

Ideally, you will know or determine this drift yourself and keep PHD from having to reverse direction ever (Dec drift will only be in one direction). To do this, calibrate PHD with Dec correction off and let it guide and watch for drift. Once you know which way that star is drifting you can select either North or South then recalibrate PHD. The auto feature can come in handy when you happen to be guiding and the scope goes across the meridian. Since the star will reverse, having PHD in auto mode will automatically correct for the shift in the opposite direction. However, I recommend setting up so you don't come near the meridian when doing image capture and select North or South accordingly.

Hysteresis

Q. What is hysteresis

A. Basically, it means the system reacts slowly and the current motion is dependent on the previous motions. In PHD, it means that the current guide pulse is a weighted average of what it thinks it should do on this frame and what it did on the last frame.

Here's another way to look at it, and the explanation was provided by Henrik

Try to imagine, that you are controlling the water level in a water tank, when the level gets too low, you open the water-tap and close again when you reach a certain level. As the water flows out, you watch and wait for the level to sink again. The difference between the level that makes you open the water and the level that makes you stop the water again is the hysteresis. The bigger the hysteresis is, the more water you have to add each time. If the hysteresis is small you have to add water all the time.

Log file information

Q. Just what are the numbers in the log file? What units are they?

A. PHD deals in pixels (distance), seconds or milliseconds (time), and radians (angles). It never needs to know things like how long your focal length is because it only works in units that can be directly observed - how far the star moved in pixels in a given amount of time. Thus, we have:

Frame: Counter telling you what image it was, starting at 1 Time: Time since the start of the run, in seconds dx: Distance the star was from the lock position along the camera's X-axis, in pixels dy: Distance the star was from the lock position along the camera's Y-axis, in pixels Theta: Angle formed by creating a line from the lock position to the star position, in radians RA_Dist: Projection of the vector from lock to star position onto the RA axis (as determined in the calibration stage). Distance in pixels RA_Dur: Duration of the RA pulse sent (in msec) Dec_Dist: Projection of that vector along the Dec axis (as determined in the calibration stage) Dec_Dur: Duration of the Dec pulse sent (in msec).

Some of these numbers (dx and dy) show up during guiding as well.

Q. Is there any good way to look at all those numbers in the log file?

A. There are two. First, you can import the numbers into a spreadsheet. This is just ASCII text with the data in "CSV" (comma separated variables) format. So tell your spreadsheet that commas are delimiters.

Second, Windows users can use Marcelo's PHD Log Analyzer. This is available on the Yahoo Group.

How to choose a Guidescope

Actually, you don't want too much f/l with your guidescope, especially if you are autoguiding. Too much "mag" and you'll be chasing seeing, wind, and mount errors with your autoguider. Therefore, either the 80mm Short tube or WO66 would make for a nice guide scope. A long tube version would be excessive.

The old rule of thumb when doing film imaging was for your guidescope to have at least 1/2 the focal length of your imaging system...and when manually guiding, you wanted it equal or better than your imaging system. You also did not want guide errors that were more than the width of the guidestar in order to keep it from trailing

But that rule died as quickly as film did when CCD imaging became popular for the Amateur Astronomer.

Most imagers will purchase a guidescope that can double as another imaging scope. The ability to shoot at a variety of focal lengths and image scales gives a lot of versatility, meaning you can customize your sessions to both the conditions and/or the subject. Therefore, we often advocate the purchase of a high quality, short focal length apo for your guidescope, which also makes for a good imaging on those nights when you want to shoot big objects like M31 or the Milky Way or on those nights when the wind affects the longer focal length images a bit too much.

Mounts etc.

Q) If I start LesveDome first and then go to the Ascom Telescope Chooser in PHD and hit OK, I get “driver failed when checking pulse guiding” error. However everytime I clear the error message, and hit OK again, everything works.

A) The error you’ve got is one that’s not really intended for the user to see as it’s a bit of an arcane error situation. It may be safe to ignore, but it’s saying that the ASCOM driver has thrown an exception when it really shouldn’t. It’s coming from two programs trying to get at the same ASCOM interface at the same time. You may want to look at the ASCOM POTH (Plain Old Telescope Hub). This is meant to allow >1 program to get to the interface at the same time.

Q) I have an EQ6 mount with USB to ST4 adapter. How do I connect to PHD.

A) For PHD, you can connect directly to the mount using the GPUSB. PHD → GPUSB (USB to St4 adapter) → EQ6. If you wish to harness ASCOM’s pulseguide for the EQ6, you can use PHD and a freeware ASCOM driver called EQMOD; PHD → ASCOM (EQMOD) → RS232C → EQDIR (Shoestring) → EQ6

Q) I have an HEQ5-Pro mount, and would like to experiment with autoguiding. Can I use PHD, and simply control the mount by using the mount’s serial-handset cable? My old laptop does have a serial port. I know this cable will work to control the mount with TheSky or Starry Night, etc., but will it work for autoguiding as well?

A) your handset doesn’t support pulse guiding so no, you can’t do that.

Two options:

- GPUSB - EQMOD

Neither is very expensive but EQMOD can be close to free if you know how to solder. Look for EQMOD in the yahoo group by the same name. GPUSB, you can get that at shoestring astronomy.

Q) I have a CG-5 mount can PHD connect via the autoguide port or ASCOM.

A) Yes you can connect via ASCOM.. As far as the autoguide port, two ways to do that. You can connect using a GPUSB or use a guide camera that will connect directly to the auto guide port without the GPUSB such as the Orion Autoguider.

Q) I have an LX200-GPS, when I open PHD to guide the scope PHD connects to the DSI camera and to the AutoStar via the ASCOM driver but the telescope stops tracking. It only happens in PHD when I try to connect to the telescope via the ASCOM driver.

A) In PHD, select “Meade LX200 and Autostar” as your telescope. Open the ASCOM properties dialogue box and make sure that the only item selected in the list on the right is **Auto Unpark/Track**. This will prevent the LX200GPS from switching from astronomical to terrestrial target mode and the resulting stoppage in tracking.

Q) I’ve tried setting backlash to 0 and increase the guide pulse setting from 100ms to 300ms to no avail. I’ve also tried to install the revised Meade ASCOM driver but it seems to be designed for 4.1 not 5.0 (I downloaded the latest drivers in an effort to get everything working.

A) Dump 5.0 and reinstall 4.1.. then use the modded driver and increase the “calibration step” in PHD. Try a setting of 1000.

Q) When using a Meade Lx90 type scope with PHD, during the calibration routine does PHD use the pulse commands (assuming you have it checked in the driver settings) as mine calibrates perfectly very smooth but then when guiding has jerky movements, and I wondered why?

A) When using ASCOM, PHD **requires** the use of the PulseGuide ASCOM command. So, it says “Hey ASCOM-connected telescope, whatever you are – Pulse-Guide east for 120 ms”. It’s up to the ASCOM driver then (not written by me) to determine what to do with that. The current Meade ASCOM driver should send the “Mg” pulse-guide style commands when this happens. But, I’ve got no way of checking that. You can often log the ASCOM activity to see what’s going on there, but PHD will only send the ASCOM pulse-guide command. This is why, when you’ve got an older driver in place, it barfs out an error saying that the driver is missing the PulseGuide function.

For ST-4 style devices, PHD clocks out the start-stop. These don’t have the same timing limits that computer handboxes on your scope often have, so they guide this way just fine.

Q) I have an LX200 Classic and use the ASCOM drivers to guide through PHD. If I have pulse guiding checked in PHD then it cannot guide nor calibrate. Heck, even manual guiding arrows do not do anything. If I unclick the Use Newer Pulse Guide Commands checkbox then all is well.

A) There is no “pulse guide” checkbox in PHD. What you’re looking at must be the Meade ASCOM driver dialog. What this will mean is that when that ASCOM driver gets a PulseGuide command, it has two options:

- 1) Send Meade’s “Mg” command (the Meade Pulse-guide command that’s present in most hand controllers)
- 2) Send a “move at guide rate” then wait and then “stop” set of commands.

All of this is outside of PHD. It’s how the Meade ASCOM driver interprets the ASCOM “PulseGuide” command and what it then passes onto the scope. Remember – ASCOM is a translator. I give it universal / generic commands and the ASCOM driver turns that into a mount-specific command.

Q) I use a G11 mount and have had good success so far. My question involves using the PEC on the G11. If I train the mount with PEC and then disconnect the hand controller and insert the autoguider controller, the mount won’t recognize the autoguider. Is it possible to use the autoguiding commands from PHD to train the PEC? In other words, can I do a calibration then engage the PEC?

A) Go to your local electronic shop that sells Y splitters. This will allow you to use both, PHD and the hand controller at the same time.

Troubleshooting

Q) After installing I wanted to start PHD Guiding and nothing happens. What's wrong

Option 1) If your computer has two USB connectors on one side of the case, and one on the other side and you plug both cameras into the same side, it won't work. Try this. Plug one camera into each side instead of both on the same side. If this doesn't work, use option 2 instead.

Option 2) is to See the message thread on the Stark Labs yahoo group <http://tinyurl.com/2bcrt> – upshot, is check to see if setpoint.exe is running and if so, kill it.

Q) When I connect the telescope-AP900goto , I get this “WARNING MESSAGE”(ASCOM driver missing the IsPulseGuiding property. Running without motion checks.) After closing the warning message PHD has been running ok.

A) The warning comes up because the ASCOM driver is actually quite old. Back in ASCOM 3, you could send PulseGuide commands and not have to support the check of “hey, am I currently in a pulse guide?” In ASCOM 4 this was made mandatory, so PHD throws up that warning. It then assumes all is good and 99.99999% of the time, all will be just fine so the warning can be ignored.

Q) Last night my entire system crashed with the dreaded Blue Screen appearing. I rebooted and every thing was fine, however I did turn off the enable server, just in case that was causing some kind of conflict.

A) BSODs BTW, can only really be caused by something operating at a low-level, like a system / kernel level driver. PHD itself operates in the user space and so can't directly cause a BSOD. PHD can call a camera driver that can cause a BSOD, however.

Q) Phd works fine with my ToUcam. I've got an Orion Starshoot DSCI which is much more sensitive than my toucam. When I connect my Orion Starshoot deep space color imager for guiding with Phd and choosing orion starshoot DCSI as camera, I get a message “problem connecting to camera” so the camera isn't detected. I'm using PHD 1.10.0 with ascom 4.1 (upgrading to Ascom 5 gives the same error message). What's wrong ?

A) PHD only sees the “original” Starshoot camera (Starshoot I), not the Starshoot II or III.. If you are are using the Starshoot I then try reinstalling the driver.

Setups & settings

Celestron Advanced GT 8

RA Agges is '105' **Near the Pole** The rest of the sky the setting is '100'

RA Hysteresis is '10'

Dec guide mode is 'Auto'

Dec Algorithm is 'Resist Switching'

Calibration Step (MS) is '750'

Min. Motion (pixels) is '.15'

Search region (pixels) 'your choice'

Time lapse (MS) is '0' I am currently using the Qguide. Also known as the POG or Orion autoguider.

Camera Gain (%) '100'

LE Port is 'NA' LE read Delay is 'NA'

Backlash setting is set for 0 Positive and Negative Dec. **In other words, turn it off**

Currently the Scope is guided using the Qguide. I connect directly to the auto guide port. If you decide to run with the Auto guide port.... set RA to 60% and DEC to 99% rate, then go from there. Use the Dec Algorithm 'Resist Switching'..... this can make a big difference for you.

subframes & binning

Question I have a QGuide, Will there be a bin mode feature in PHD for cameras supporting this or is there a way to access the cameras features via the drivers for setting bin or subframes?

Answer I've implemented subframes on the cameras that really need them – USB1, parallel, etc. kinds of cams. The QGuide is so fast to download that I don't really see the point.

Also - binning is going to hurt your guiding accuracy by cutting the spatial resolution in half. Why bin?