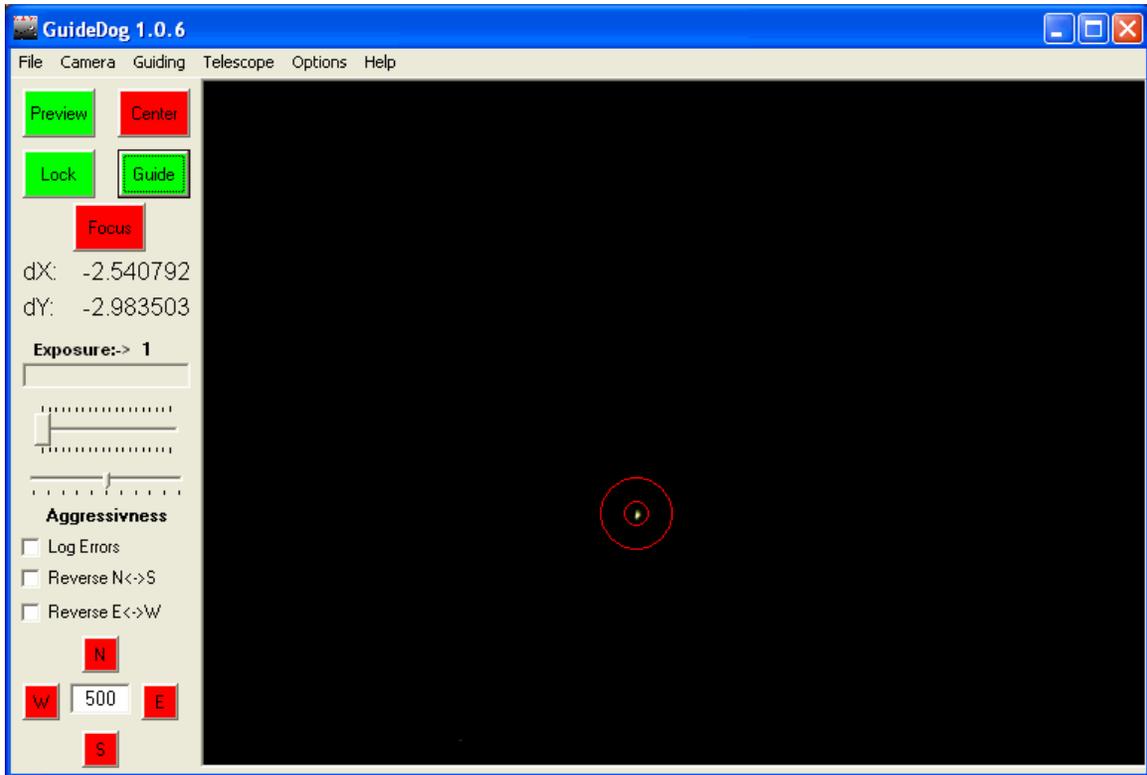


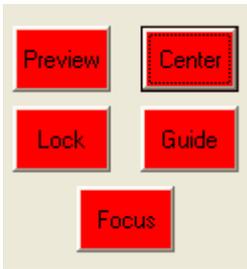
GuideDog Reference Guide

Version 1.0.6

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Below is a picture of the main window for GuideDog. A description of each control, menu, and it's intended functionality follows.

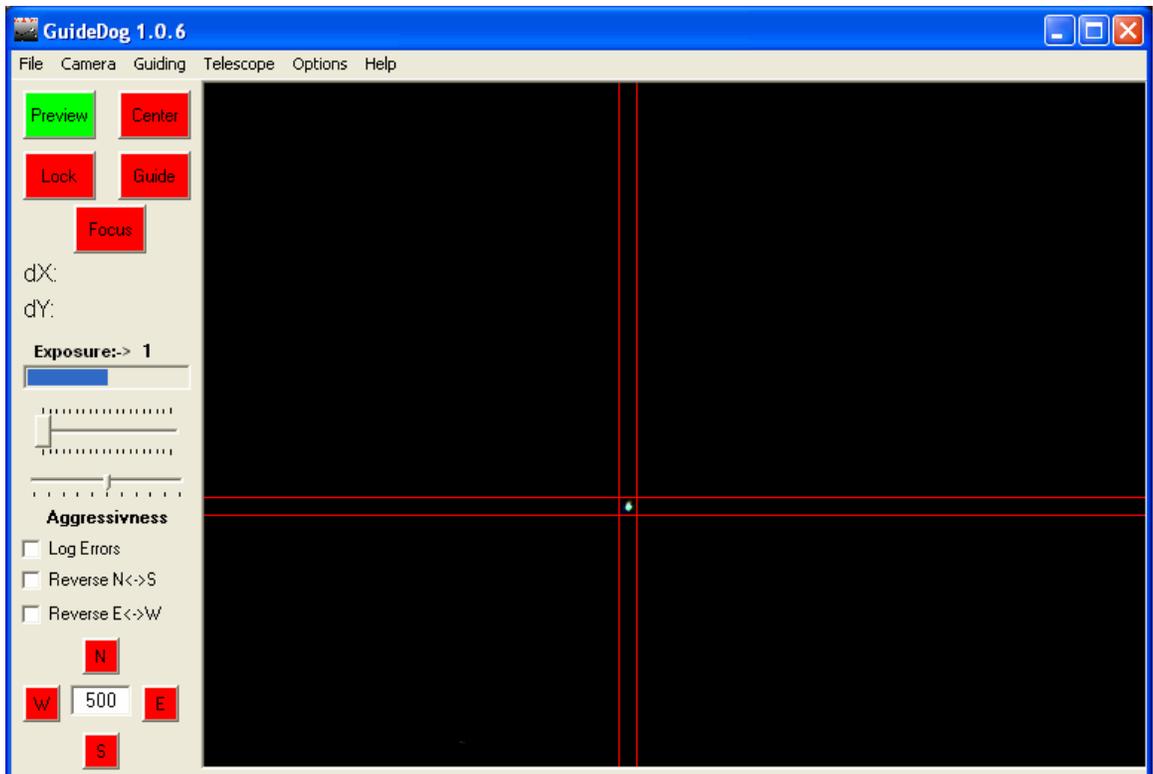




Preview Button:

The Preview button controls whether images are captured from the camera, and displayed in the main window. Normally the button is red. After selecting the camera and options from the Camera menu, press the Preview button to begin capturing images. The button will turn Green, and the captured images will be displayed on the main window. Press the button while it is Green, and it will turn Red and stop displaying captured images.

Once you are previewing from the camera, you can display a double crosshair on the screen to aid in camera orientation. On the preview window, right-click the mouse and a double crosshair will be placed where you clicked on the next frame from the camera. To remove the crosshair, right-click again anywhere on the preview window. The image below shows the cross hair after right-clicking on a star.

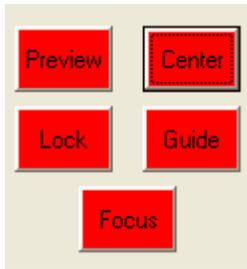


Lock Button:

The lock button is used to select a guide star, establish the star's initial location, and provide status as to the current lock state. Once the camera is capturing and displaying on the main window, press the Lock button to select a guide star for guiding. The button will turn Yellow. Using the mouse, left-click on the star you wish to guide on. On the next frame from the camera, a Red reticule will be displayed around the selected star, and the Lock button will turn Green to indicate that lock has been established. The location of the star on the first frame after selecting lock will be the target coordinates that the software will guide to. If lock is lost, as when a cloud covers the guide star, an audible alarm will sound after each frame until either lock is automatically reestablished, or guiding is cancelled. Pressing the Lock button while it is Green, will switch the button to Yellow, and allow you select another star. Pressing the Lock button while it is Yellow will cancel the lock and turn the button Red.

Center Button:

Pressing the Center button will set the target coordinates to the center of the captured frame. When the button is pressed, it will turn Green, set the target coordinates, and if guiding is enabled, will start moving the star to the center of the captured frame. To undo the actions of the Center button, you must select the Lock button to remove the lock, which will also turn the Center button back to red.



Guide Button:

Pressing the Guide button, once a star has been selected and locked, will cause the button to turn Green, and guiding corrections to be sent to the scope/mount. Pressing the Guide button while it is Green, will prevent guiding corrections from being sent, and will turn the button Red.

Focus Button:

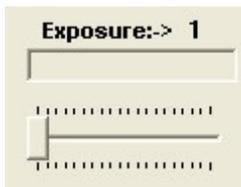
Pressing the Focus button will connect to the camera and start displaying images at 5fps or faster depending on the camera settings. This can be used to focus on a bright star or orient the camera easier than at the slower 1fps in preview mode. The preview will not be a long exposure capture even for SC modified cameras. However, if used on an SC modified camera, with a switch for long/short exposures, the default shutter speed will be overridden if the switch is in the long exposure position.

The focus button is normally RED. Pressing the button will cancel Guide, Lock, Center, and Preview modes and enter focus mode. Pressing the Focus button while it is GREEN will cancel focus mode and the button will turn RED again.

dX:
dY:

Error Labels:

The error labels show the current distance in arcseconds from the target coordinates of the guide star. When a star has been locked, the labels are updated after each captured frame. The labels show the error distance in RA (dX – Delta X) and Declination (dy – Delta Y) in arcseconds from the intended target.



Exposure Control:

The slider sets the duration of the exposure. For long-exposure modified cameras, the exposure is also the integration time for the image. For non-modified cameras, the exposure determines how often a frame is captured. The exposure progress is displayed as well as the total exposure time. The exposure can be set from 1 (default) to 20 seconds. An exposure setting of 3 seconds will generally allow you to guide on a star of mag 8-10 with an SC modified camera.



Aggressiveness Control:

This slider allows you to control the aggressiveness of the guiding corrections to the mount. Adjusting the slider will alter the correction time from 50-150% of the calculated value before the correction is sent to the mount. If guiding corrections continue to under/overshoot the needed value, adjustments can be made with this control to tweak the correction durations.

Log Errors

Log Errors

Checking this box will start logging guiding errors to a log file. Unchecking the box will stop logging. The error values, along with a date and timestamp are written in a format that can easily be imported into Excel or another program to chart your mount's periodic error. The format of the logfile consists of a date, timestamp, RA error and the Dec error in arcseconds.

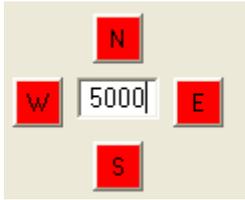
```
5/31/2004 , 11:23:51 AM , -0.634, -0.945
5/31/2004 , 11:23:52 AM , -0.369, -0.967
5/31/2004 , 11:23:53 AM , -1.036, -1.171
5/31/2004 , 11:23:55 AM , -1.029, -1.332
```

Reverse N<->S

Reverse E<->W

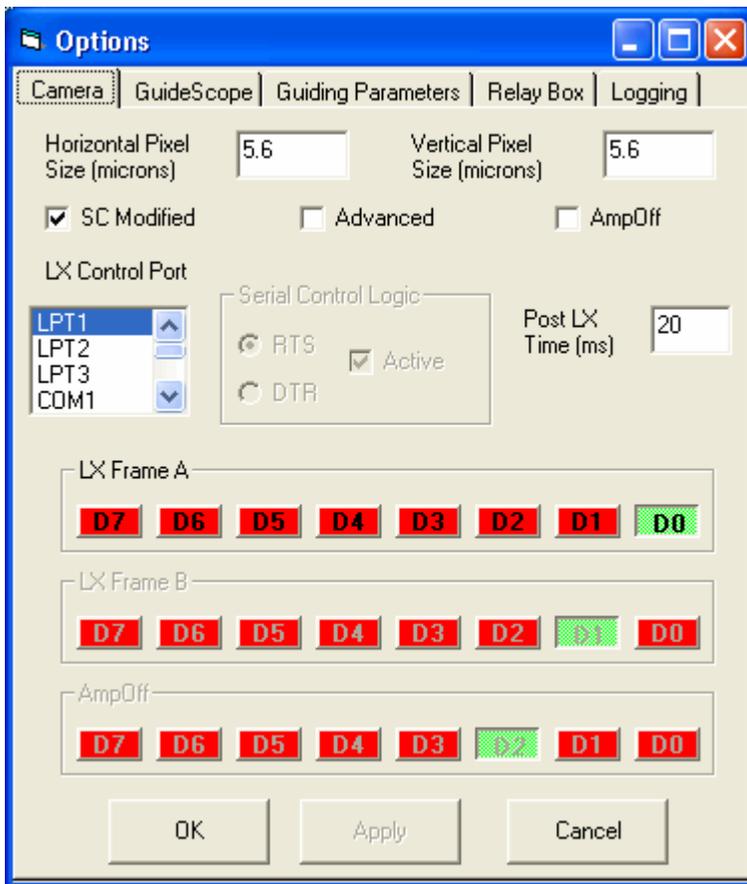
Reverse N/S – E/W:

GuideDog expects that moving the scope/mount North will move the star image UP, South is DOWN, West is LEFT, and East is RIGHT. Depending on your scope, diagonal, and camera orientation this may not be the case. In addition to rotating the camera, checking the Reverse N/S or Reverse E/W will cause the guiding direction to be reversed to that which is expected.



Nudge Buttons:

The buttons on the Nudge control allow the scope to be moved in the indicated direction. The scope is moved at the guide rate for the duration specified by the number in the middle. The number is the duration of the nudge, at the guide rate, in milliseconds (default ½ second). This allows you to move a star which is too close to the edge of the frame to obtain an accurate lock. Holding the nudge buttons will not continue to move the scope. The nudge buttons are normally RED. When the scope is being moved, either through a nudge, or through normal guiding, the appropriate button will turn GREEN during the move. This will give you some visual feedback on the direction and duration of guiding corrections that are being made.



Camera Options:

Horizontal Pixel Size
Vertical Pixel Size

These options specify the size of the pixels of the camera which is used to calculate the image scale of the star image on the CCD. The default value of 5.6 is correct for the Philips line of cameras including the Vesta and Toucam Pro models. Accurate values are necessary so that the error displays in arcseconds are correct.

SC Modified

Checking this box will indicate that the camera is long-exposure modified, and allow for long-exposures. After checking this option, select the correct port to be used for camera control.

Advanced Mod

If you have done the advanced SC mod, checking this option will allow for full frame captures from the camera.

AmpOff

If you have done the AmpOff modification, checking this box will ensure that the amp is left on during exposures for brighter images. Due to the short exposures needed for guiding, turning the amp off is not necessary.

LX Control Port / Serial Control Logic

Select the port for LX Control. If Com1-Com16 is selected, you will also have the option to select the correct control logic for long exposure control (RTS/DTR). The Active checkbox indicates that the RTS/DTR line is ACTIVE (Enabled) to control the camera. Unchecking this box indicates that the RTS/DTR line is INACTIVE (Disabled) to control the camera.

Camera using the resistor/diode level conversion for serial control should have the Active checkbox checked. For cameras modified with the transistor level conversion the Active checkbox should be unchecked.

Post LX Time

The Post LX Time value is the amount of time after capturing a frame that the software should wait before grabbing the long exposure frame. The default value of 20ms should work for most cameras. If you do not consistently capture 100% of the LX frames, try changing this value to a smaller or larger value.

LX Frame A

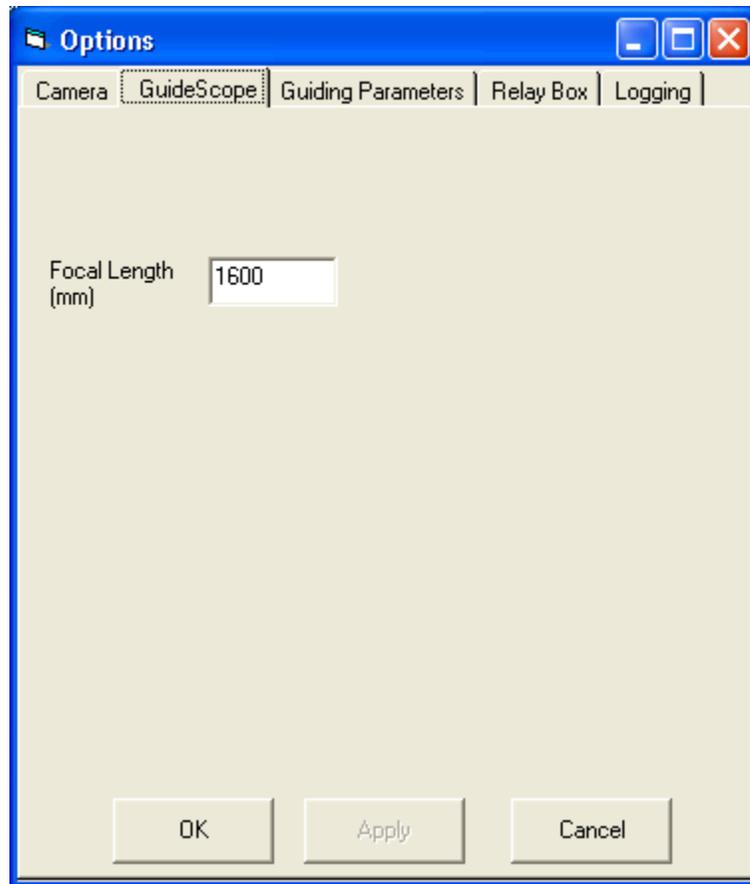
If you select SC Modified, and a parallel port, this allows you to select which LPT pin controls the long exposure. The default of D0 should be correct for most cameras.

LX Frame B

For Advanced mod cameras, this allows the selection of the LPT pin for the second frame. The default of D1 should be correct for most cameras.

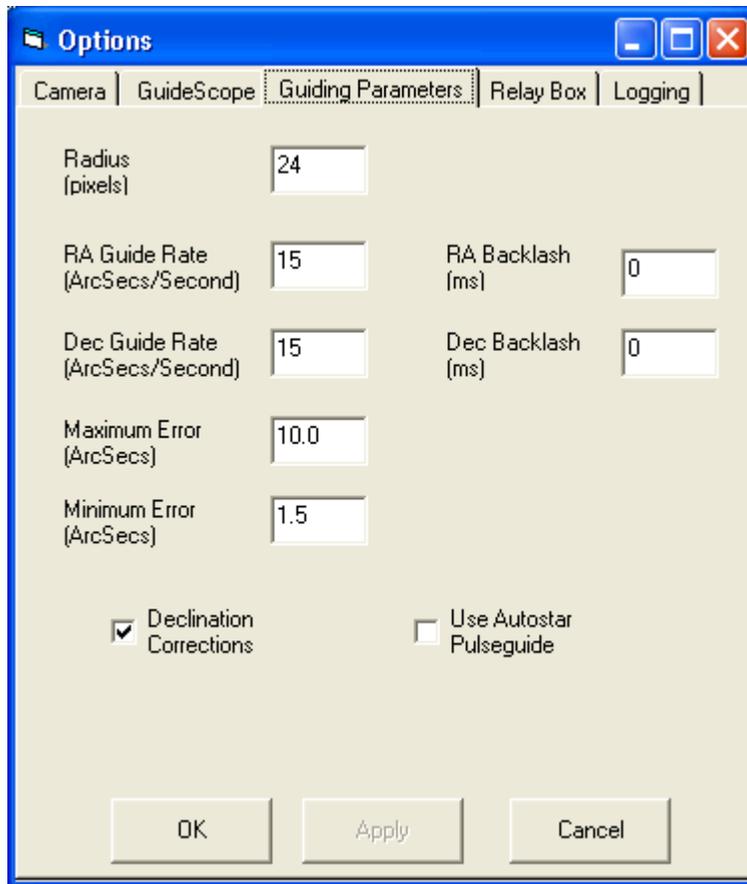
AmpOff

For cameras with Amp Off capability, this allows for the selection of the LPT pin which controls the amp. The default of D2 should be correct for most cameras.



GuideScope Options:

Enter the focal length in mm of the guidescope. Be sure to take into account any barlow lens or reducer. This parameter is used to calculate the FOV and image scale for the camera which is needed to correctly report the errors in arcseconds.



Guiding Parameters:

Radius:

This controls the size of the reticle that is drawn on the main window, and also the size of the area searched for a star image when locking and guiding.

RA/Dec Guide Rate:

This is the guide rate of the mount to be guided in arcseconds per second. Enter the value for your mount. For mounts listed as 2x sidereal, enter a value of 15. The value entered does not actually change the rate of the mount. The value is just used to calculate the time needed for corrections. You can adjust these numbers up or down to tune to your particular drive. Smaller values will result in larger corrections, while larger values will result in smaller corrections.

RA/Dec Backlash

Entering a value greater than zero will add an additional amount of time to the guiding corrections when the scope is guiding in the opposite direction of the previous command. This allows time to take up any slack in the RA/Dec gearbox. The value entered in milliseconds, is added to the calculated correction if the current direction is not the same direction as the last correction.

Minimum/Maximum Error:

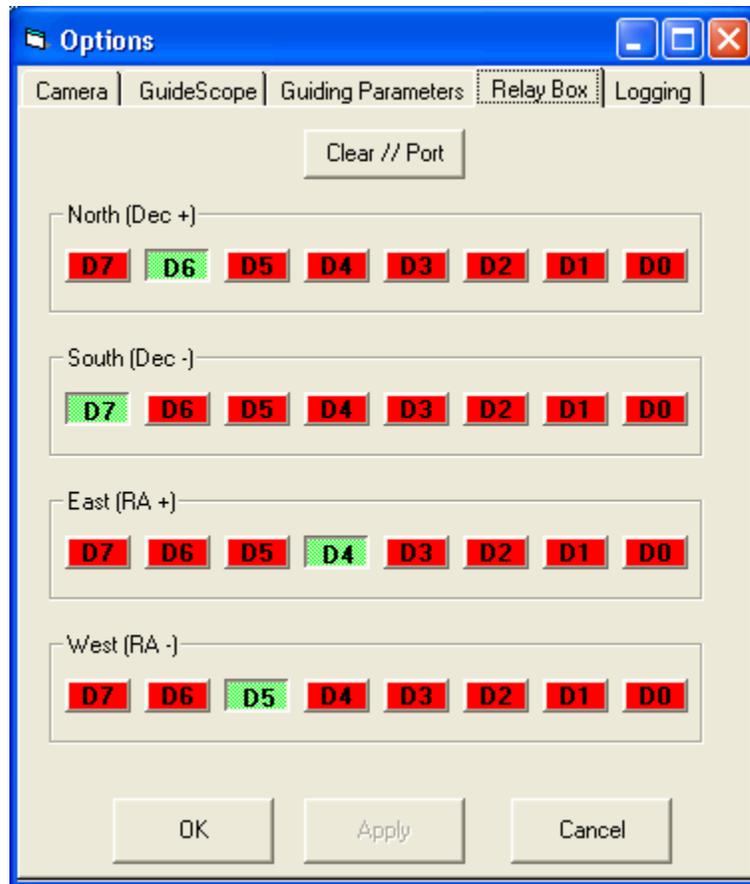
The Minimum and Maximum errors are set to prevent guiding for small errors or very large errors. You may want to change the minimum correction if the local seeing won't support guiding at a lower error. You may need to adjust the Maximum Error if the corrections cannot be achieved during a single frame exposure time.

Declination Corrections:

Check this box to have GuideDog guide in Dec as well as RA.

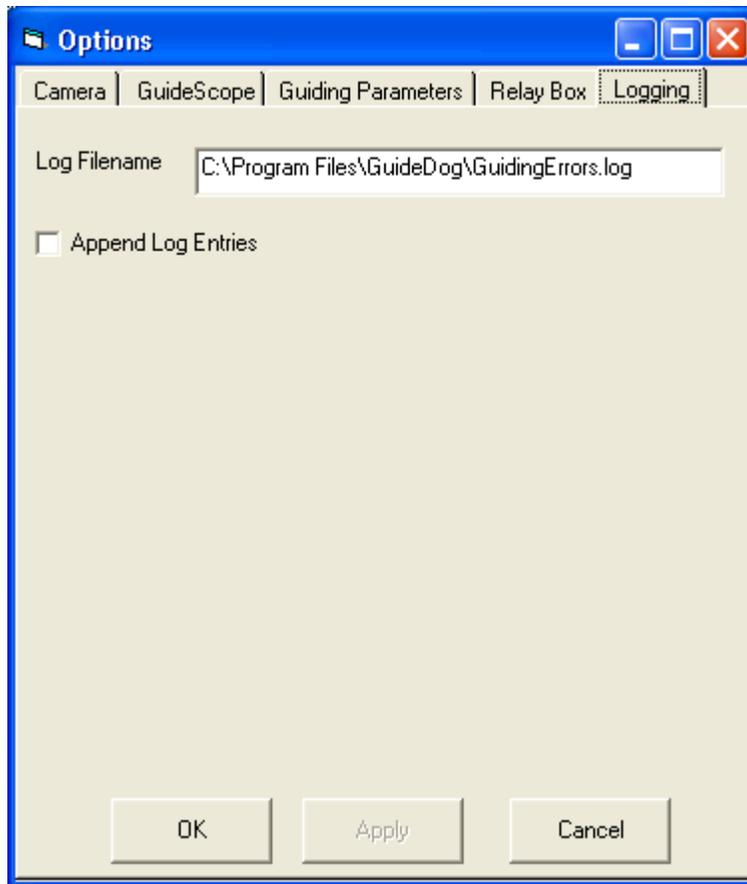
Use Autostar Pulseguide:

Newer Autostar firmware supports new commands for guiding. These commands were added when Meade introduced the LPI imaging suite. Checking this box, while ASCOM guiding is selected, will use the Autostar style commands rather than the standard ASCOM PulseGuide() methods.



Relay Box

The Relay Box options allow you to select the parallel port pins which control your relay box interface. The Clear // Port button will set all of the relay box outputs on the parallel port to 0. This will insure that the scope will not move when the cable is plugged into the CCD guide port.



Logging Options:

Log Filename:

Enter the filename including the path for logging guiding errors. GuideDog will create the file if needed, but will not create any directories, so be sure that the path exists.

Append Log Entries:

Selecting this option will ensure that the log file is not overwritten. New entries will be appended to the end of the existing file.

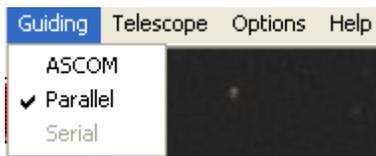
File Menu:

Pressing the File Menu will bring up a sub menu to exit the program.



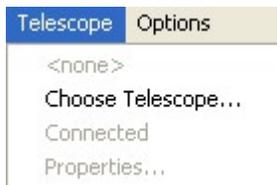
Camera Menu:

Select the appropriate driver for your camera by clicking with the mouse and a check mark will appear next to it. Once connected, you can access the camera's Source and Format windows to adjust frame rate, gain, brightness, etc.



Guiding Menu

The Guiding menu allows you to select between ASCOM and Parallel (Relay Box) guiding. The current option will have a checkmark next to it. The Serial option is not implemented, but may support the PISCO interface in the future.



Telescope Menu:

The telescope menu provides access to the ASCOM chooser and telescope properties. The currently selected telescope will be at the top, or <none> if this is the first time you have run GuideDog. Press the Choose Telescope... and select your scope from the ASCOM chooser. Once the scope is selected you can connect to the scope by clicking the Connected menu. A check mark indicates that the scope is connected and can be guided. Selecting the Properties... menu will bring up the ASCOM scope properties for changing COM ports, etc.

If you are using the same telescope as your last session, it should already be displayed and configured. Just press the Connected menu to connect to it. You can press the Connected menu again to deselect, which will allow you to control the scope from another ASCOM compatible program.

Options Menu:

Pressing the Options menu will bring up the options panels previously discussed.

Help Menu:

About... Brings up an information pane with the current GuideDog Version.