USING the COLLINS INTENSIFIED ASTROVID CAMERA
August 13, 2002 SFR

CAMERA SETUP INSTRUCTIONS FOR DEEP SKY USE:
(Subject to revision on C-14/Paramount)

On 16” LX200:
1. Install f/6.3 focal reducer on telescope.
2. Install 2” diagonal on focal reducer.
4. Place camera and intensifier in diagonal, orient, and tighten the eyepiece set screw.
5. Attach power and video cable to camera.
6. Plug in power to camera.
7. Attach double female BNC video cable from camera shutter control box to the Collins frame averager.
8. Connect video out cable from frame averager to VCR.
9. Plug in Collins frame averager to AC outlet.
10. Set frame averager to 0 or 1 for focusing purposes.
11. Set camera shutter to #8.
12. Toggle SW1 (switch 1) to bottom position*.
   [*Switch has 3 positions-top, middle and bottom. The first two act alike and are used for Solar and Lunar observing without the intensifier: The top position is toward shutter selector switch while the bottom is toward the gain knob or camera. While the bottom position has a high S/N ratio (very grainy), this is removed by using the frame averager. SW2 does not control any camera function].
13. Rotate gain knob to highest setting.
14. Turn on the intensifier (by screwing in the end cap on the side barrel) Don’t forget to turn it off when your imaging run is complete.
15. Focus telescope.

WARNINGS
1. The 16” setup involves using a diagonal. If the telescope is near the meridian, this setup is stable but if you slew more than 3 hours east of the meridian EXPECT the camera to loosen the diagonal. This will cause the camera assembly to suddenly break the friction lock of the diagonal, causing it to rotate freely. ALWAYS tighten the set screw and provide for a safety to keep the camera assembly from falling out of the diagonal!
2. Avoid bright stars or other light sources and never image objects brighter than 2nd magnitude. TURN OFF the intensifier before removing it from the telescope. Cover the intensifier with its protective caps when finished.

Helpful hints when using the telescope with the intensified camera:

1. When focusing the telescope with the intensified camera attached, the focus is obtained by turning the focus knob counterclockwise from most previous settings (i.e., using an eyepiece, solar viewing settings or lunar imaging settings).
2. Set the frame averager to zero or 1 when focusing to achieve real time results. This is also a useful setting to be on when searching for an object that is outside the field of view.
3. Star clusters provide the best images. Planetary and diffuse nebulae require individual evaluation to determine worthiness. Galaxies provide the worst images.
Focusing the intensifier

This should not happen but if the intensifier needs to be (re)focused, install the camera and turn it on as you would in the instructions on the previous page.

1. Turn on the intensifier.
2. Center the telescope on a star cluster.
   [Note: If the intensifier \textbf{AND} the telescope are out of focus you \textit{may} need to remove the camera and extension tube to examine the phosphor screen for out of focus star images. When you find a star, focus the telescope to produce a pinpoint image on the phosphor screen and center it in the screen using the telescope controls. Install the extension tube-eyepiece-video C-mount assembly on the intensifier and install the camera. Focus the telescope until the out of focus star is a sharp donut. Now you can focus the intensifier.]
3. Rotate the diamond hatched metal ring counterclockwise to free the locking rings.
4. Turn the locking rings CCW to allow for helical travel of the focusing ring.
5. Rotate the hatched (focusing) ring and the camera CW or CCW while examining the star on a monitor. It may be helpful to have someone assist you in determining best focus. Set the frame average to 0 or 1 for real time results. You may want to toggle SW1 to the middle position during this.
6. Once the intensifier is focused, turn the locking rings clockwise to hold the focus position. You may need to disconnect and reconnect the camera cables to relieve any twisting of the cables. TURN OFF the intensifier before unplugging the video cables to avoid exposing the intensifier to a bright light source.