Application Note
STV Version 1.06H Firmware
February 5, 2003

This Application Note describes the changes made to the STV firmware since the Original Version 1.04 release. As always, use the STV Remote program to update the firmware in your STV. After updating your firmware and rebooting your STV you should do the following:

1. Reset the Parameter RAM (PRAM) to the default by holding the **Setup** and **Parameter** keys while powering-up the STV. The STV will beep once when the PRAM is initialized. It's always a good idea to initialize the PRAM when changing the firmware.

2. Erase all the images by using the ERASE ALL command in the File Ops menu. If there are any images you want to keep, you need to download them BEFORE you update the firmware to version 1.06H.

3. Finally, should you have any problems with this firmware update you can always reload the Version 1.04 firmware, reinitialize the PRAM and erase all the images.

General Routines/Bug Fixes
- Fixed a bug in the Temperature Display where a 2-degree per 25-degrees error was introduced. The STV now matches the ST-237.
- Fixed a bug in the Tracking routines where the Star Selection rectangle could sometimes disappear.
- Removed a small integral gain term from the tracking loop that could have caused the system to oscillate back and forth, especially in Dec, and may be the cause of users wanting to reduce the Aggressiveness to very low settings.
- Fixed a bug where if you tried to Track before you had a valid Calibration you would be warned but then the STV would somewhat loose its brain and you had to cycle power to the STV.
- Fixed a bug introduced in Version 1.05 (never released) that caused a big offset in Image Mode with 2X gain.
- Fixed a bug in the dark subtract routine that could leave pixels to the left and right of hot pixels corrupted.
- Added the ability to reuse dark frames in the Image mode by selecting "Reuse" for the "Dark Sub." Item. Darks will be reused if they have the same Zoom, Exposure and CCD Temperature (within ± 1.5 degrees).
- Added support for the CFW-5 Color Filter Wheel with the Addition of the "Filter Wheel" item in the Setup menu. Requires STV Remote version 2.0 to recognize the filter names in the header.
- Fixed a bug that would sometimes cause the Filter Wheel to not initialize on Power-Up.

Flash Routines
- When showing the image catalog the image's exposure time is shown on the second line of the alphanumeric Vacuum Fluorescent Display (VFD).

Tracking Routines

- Added a Track Box Size selection to the Manual Track mode with a new Small Track box option. For short exposures this increases the track rate.
- Sped up the tracking performance.
- Added the time (since STV boot) to the Track Log report dumped out the Serial Port while tracking.
- Added an Exposures to Average ("Exp. To Avg.") item to the Manual Track mode that lets the STV average 1 to 10 looks before making a correction.
- Added a "Relays" item to the Manual Calibrate and Manual Track modes that allow enabling and disabling each individual relay. Unfortunately due to Flash ROM space considerations the interface is a little clunky. The item looks like:

<u>**Relays   1101**</u>

where the 1101 indicates Relays 1, 2 and 4 are enabled and Relay 3 is disabled. You must use the Calibrate -> Show Results mode to see which Relay(s) to disable where the arrows show the motion caused by the individual relays. In the Auto Calibrate and Auto Track modes all relays are enabled.

- Added a "Max. Corr. (s)" item to the Track Menu that allows you to set the maximum relay correction the STV will make per tracking cycle.