

**Application Note**  
**ST-7 Series Relay Fix**  
May 3, 2005

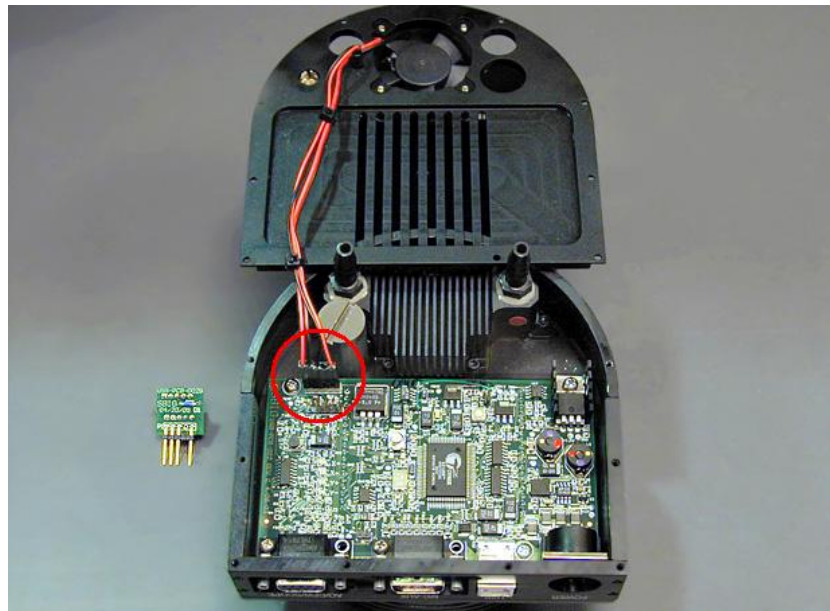
This Application Note covers a manufacturing defect and a retrofit fix for **USB** based **ST-7/8/9/10/2000** cameras manufactured in **February, March** and the first half of **April 2005**. The manufacturing defect causes these cameras to intermittently activate the **Autoguiding port** which could cause the telescope to slew slowing. This typically corresponds to the **-Y Relay** and/or the telescope's **-DEC** direction.

This defect is fixed by the field installation of an adapter board (SBIG PN USB-PCB-002B). If you fell uncomfortable making this simple modification you can return your camera to SBIG and we will repair it free of charge. The cameras potentially affected by this manufacturing defect have serial numbers in the range shown in the table below.

Model	S/N Range		Model	S/N Range
ST-7/8/10	0502XXXX thru 0504XXXX		ST-2000 (Mono ro Color)	20502XXX thru 20504XXX
ST-9	90502XXX thru 90504XXX			

***Follow these instructions to field upgrade your affected camera:***

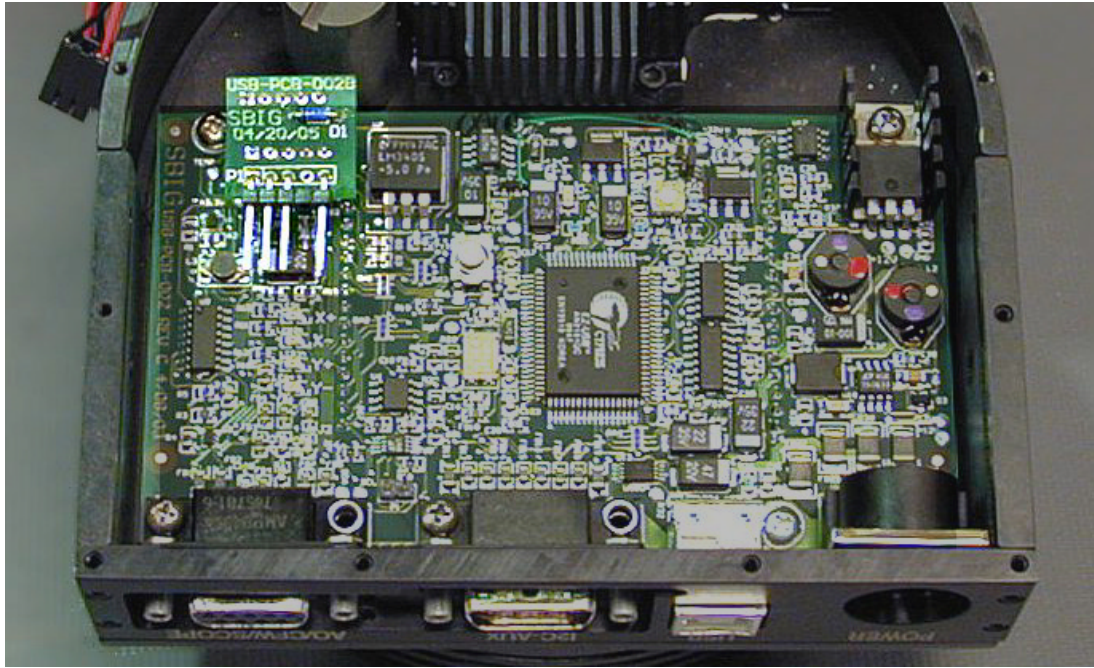
1. Unplug the camera from the power supply and place the camera face down on the table.
2. Using a 5/64 inch hex tool, remove the ten socket-head cap-screws that hold the back plate of the camera onto the body (the back plate contains the fan and LED).
3. Gently lift the back plate up and place it to the side of the camera as it is connected to the Digital Board inside the camera as shown in the figure below:



4. There are two connectors (one from the Fan and one from the LED) that connect the back plate to a header on the camera's Digital Board highlighted in the red circle in the figure above. It

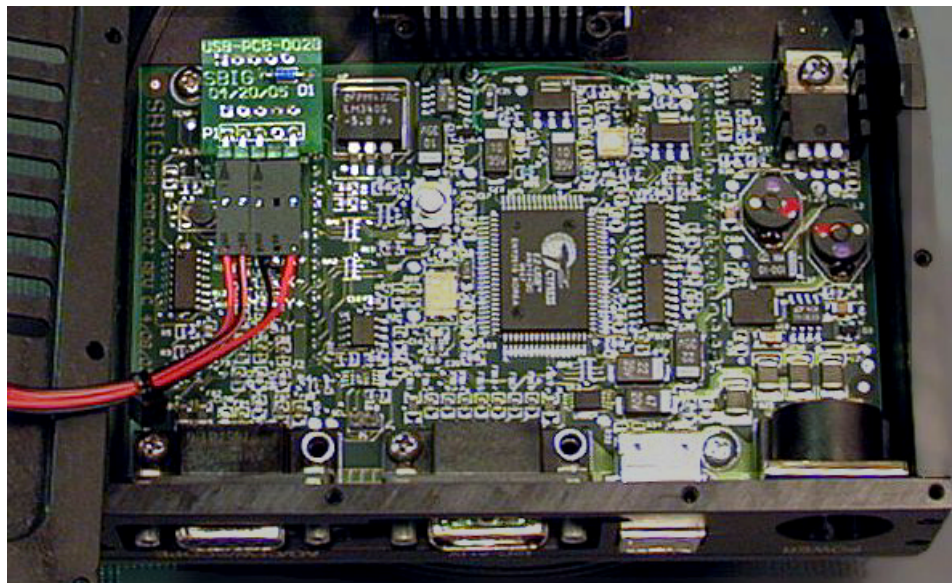
looks like a single connector as they both plug into the same header on the Digital Board but if you look closely you'll see it's actually a 2-pin and a 3-pin connector on a 5-pin header. Unplug these two connectors by pulling up on the black plastic housing. Don't pull on the wires but on the connector body.

5. Install the Relay Fix Adapter Board into the camera by sliding it down over the header where you just pulled the Fan and LED connector and the additional header in front of it. The board sits onto the Fan/LED header and the unused JP1 header as shown in the figure below:



Make sure the board is properly aligned (left and right) on the two headers from the Digital Board by looking from the side to make sure you didn't miss by one pin.

6. Plug the two connectors from the Fan/LED into P1 on the adapter board as shown in the figure below. The 2-pin (narrow) connector is on the left, and the 3-pin (wide) connector is on the right with the small triangular pin-1 designation from both connectors towards the left.



7. With the back plate still unscrewed from the camera and placed aside so as to not short to anything in the camera, plug in the power to the camera and attach it to your PC so the camera boots up while watching the LED and Fan. In the boot process the LED should blink several times and then come on solid and then the Fan should come on. This tells you that you have installed the board and connectors correctly. If not power-down the camera and go through it again, paying careful attention to the placement of the adapter board and connectors.
8. Finally, power down the camera and then reattach the back plate with the ten socket-head screws. The short screws go in the flat sides of the camera so as to not protrude into the ventilation slots on the side of the camera.