

# Modifying PCI SS Boards for 3.3 V Power

— Engineering Design Team, Inc. April, 2007

Some years ago, the PCI Bus 3.3 V power supply was optional on host computers, and some did not include it. Therefore, most EDT PCI SS boards were configured to switch over to the PCI Bus 5 V power supply when 3.3 V power wasn't available.

The current PCI Bus specification, however, requires both 3.3 V and 5 V power, so the ability to switch between power supplies is no longer necessary. This power supply-switching circuit has interacted with at least one host — the Dell 2950 — to cause the system to fail to power on. If you have experienced this problem, neither the PCI SS main board nor the host computer have been harmed. However, the board will have to be modified to disable this switching circuit.

This document:

- lists the part numbers of affected boards,
- details a procedure to modify them so that they operate correctly in a host that exhibits this problem, and
- explains the cause of the problem.

If you have a PCI SS main board having one of the following part numbers and revision numbers, and you are experiencing problems with it, use the procedure described herein to modify it to operate solely on the 3.3 V power supply.

## ***Which Boards Are Affected?***

This procedure applies to PCI SS boards having the following part numbers, revisions 2x through 5x, inclusive:

019-01645-xx  
019-01741-xx  
019-01767-xx  
019-01999-xx  
019-02133-xx  
019-02347-xx

Board part numbers are printed on a sticker located on the back of the board.

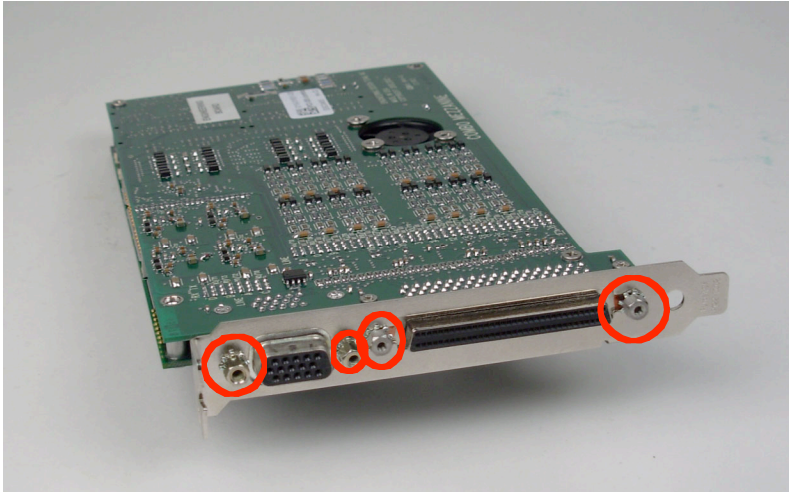
Along with these instructions, you also need a new sticker identifying your board as having received this modification. If you have not received these new stickers along with these instructions, either make your own sticker having the part number specified in Table 1, or contact EDT at (503) 690-1234 or [tech@edt.com](mailto:tech@edt.com).

NOTE Do not remove the old sticker, as it also shows the board serial number.

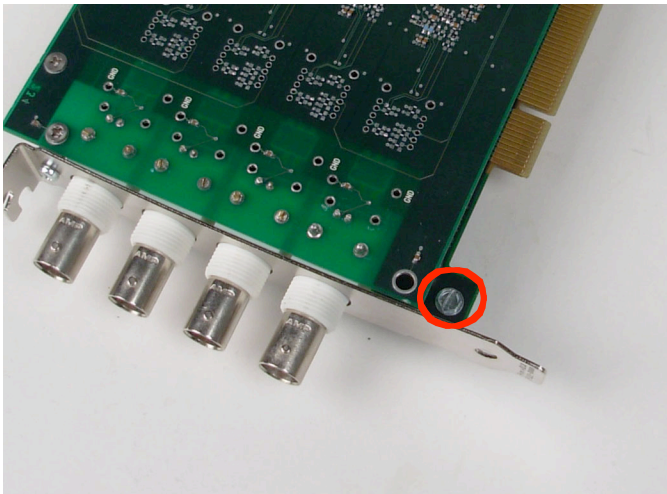
## ***How Can I Fix the Problem?***

To modify a PCI SS board to operate on a 3.3 V power supply:

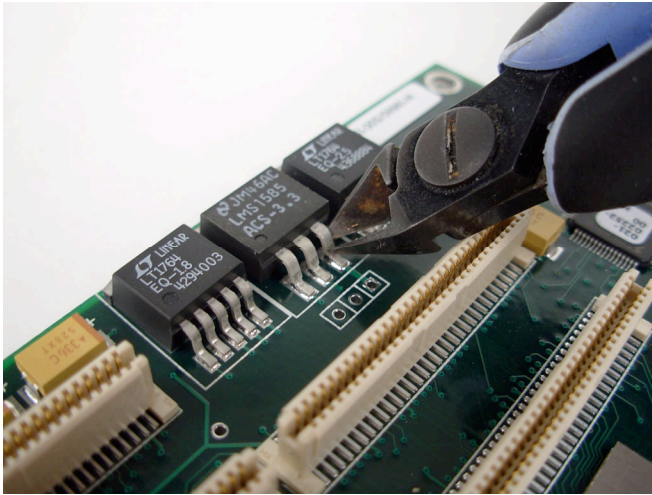
1. Remove the PCI SS board assembly from the host computer.
2. Detach the mezzanine board from the main board:
  - a. Unscrew the screws at the four corners of the board assembly.
  - b. For Combo boards, unscrew the hexagonal standoffs on either side of the connectors, securing the mezzanine board to the back panel.



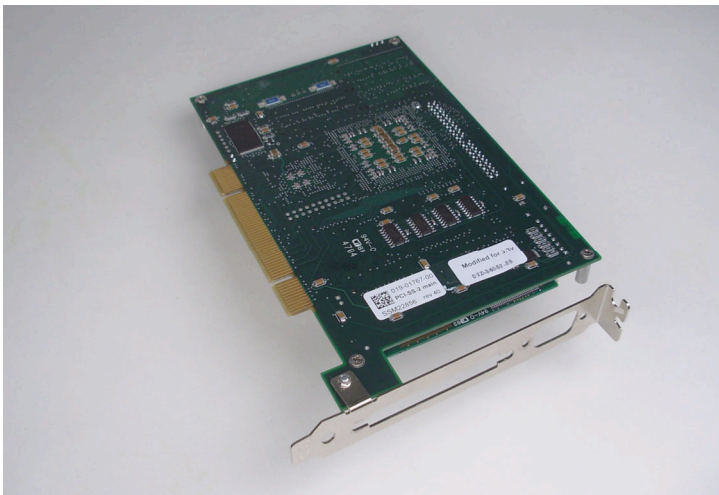
For other boards, unscrew the screw securing the back panel to the main board:



3. Holding the main board parallel to the floor with the PCI Bus connector pointing rightward, locate the middle voltage regulator of three at the edge of the board farthest from you.
4. With wire cutters, carefully cut its rightmost pin.



5. Bend the clipped pin to ensure that the now-separate parts cannot contact each other.
6. Turn the board over and place the new sticker that came with these instructions beside the existing part number sticker, so that you can easily tell that the main board has been altered.



7. Replace the mezzanine board by reversing the operations in step 2.
8. Replace the board assembly in the host.

If you need additional boards of the same model, in order to avoid having to perform this modification again, please order your new boards using the new part numbers or descriptors listed in Table 1.

**Table 1. Part Number Conversion****main board**

*old part number*  
019-01645-xx

*new part number*  
019-02762-xx

**board set**

*old part number*  
019-02022-xx  
*old descriptor*  
PCISS-COMBO2/RS422/1000E/256K

*new part number*  
019-02761-xx  
*new descriptor*  
PCISS-COMBO2/RS422/1000E/256K/3V

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**main board**

*old part number*  
019-01767-xx

*new part number*  
019-02769-xx

**board set**

*old part number*  
019-01828-xx  
*old descriptor*  
PCISS-COMBO2/LVDS/75E1/2000E/256K

*new part number*  
019-02770-xx  
*new descriptor*  
PCISS-COMBO2/LVDS/75E1/2000E/256K/3V

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**main board**

*old part number*  
019-01767-xx

*new part number*  
019-02769-xx

**board set**

*old part number*  
019-02132-xx  
*old descriptor*  
PCISS-HRC/F4/2000E/sb

*new part number*  
019-02771-xx  
*new descriptor*  
PCISS-HRC/F4/2000E/sb/3V

**What Is the Cause?**

When you turn on a Dell 2950 computer, the 5 V power supply turns on first. The computer then checks the as-yet-unpowered 3.3 V power supply to determine if the voltage is greater than 0 V. The computer manufacturer includes this check as protection against some possible harm to the hardware.

The power supply-switching circuit on PCI SS boards sends a trickle of current into the 3.3 V bus. If two or more PCI SS main boards are installed in a Dell 2950, this current induces a voltage sufficient to trip the protection mechanism described above. When the host detects the voltage in the 3.3 V bus, it first turns on the 3.3 V power supply, and then turns off both power supplies within a very brief period — typically, less than a second later. Neither the host nor the board has been harmed, only powered off. You may be able to run only a single PCI SS in the host, or you can fix the problem using the procedure given in the previous section.

If you modify your PCI SS board as described above, it will no longer run in an old host that does not include a 3.3 V power supply.