

Silicon Graphics Fuel - ATX power supply adapter

Kuba Tyszko

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Disclaimer: I take no responsibility for any damages to your equipment, and will not take any warranty claims that were caused by the following:

- Bad ATX PSU choice including bad voltage regulation, (the 3v3 sense line stays connected at the plug level not at the socket level - this may or may not result in variations in 3v3 voltage supplied by the PSU).
- Wrong installation
- Potential incompatibilities with *your* Fuel - it is possible that certain L1 or PROM versions detect PSU signals in a certain way that the adapter may not be able to substitute. The adapters are tested on a L1 version Firmware Image B: Rev. 1.24.11, Built 10/29/2003

The adapter was designed and tested on two different motherboards and two ATX PSUs to ensure maximum compatibility, but there is no guarantee that it will work with your exact fuel and ATX PSU choice.

If the reason youre using my adapter is because your Fuels PSU broke - there is a chance that when the PSU gave up it might have broken your motherboard or other components - please keep that in mind.

If you have any questions, concerns or need guidance on the installation - please contact me.

Prerequisites:

- SGI Fuel, with working motherboard (obviously)
- ATX Power Supply, I recommend one with the following characteristics:
 - 24 PIN ATX connector (20+4 are ok as well)
 - 4,6,8 PIN ATX Power connector (the more the better), please DO NOT use GPU connector, make sure youre using the ATX POWER one - if you use the GPU connector you WILL permanently damage your Fuel.
 - 5v rail 30 A current minimum

- 3v3 rail 30 A current minimum
- total power recommended 450-500 W minimum, (more watts DOES NOT mean better, you will notice that modern high power PSUs often have very low rating of 5v and 3v3 rails with most power going to the 12V rails for GPU)
- Adapter pair, 2 pieces : the 12v converter (small, L-shaped) and the main board (rectangular)
- RS232 null-modem cable (and likely RS232-USB converter) for L1 connection - not mandatory but highly recommended for preliminary verification. L1 port is on the motherboard, to the right of PCI slots, below blue air-duct.
- You need to know how to use L1 prompt over serial terminal and ideally also serial console
- Please be sure to thoroughly read the following two threads:
 - <http://forums.nekochan.net/viewtopic.php?f=3&t=16730132>
 - <http://forums.nekochan.net/viewtopic.php?f=3&t=16725574&start=45>

Overview of the adapter:

- Built-in PSU FAN signal generator, (in the prototype version the FAN signal is fixed and pre-set).
- Thanks to the FAN signal generator, the Fuel DOES NOT require disabling Environmental monitoring
- Exposed traces with added solder and exposed wires are by design - to ensure enough current capacity of the board and provide thermal relief.

Installation:

- Remove your current PSU from the Fuel and install the ATX one, DO NOT PLUG ANY cables yet including power, if it has a power switch - keep it in the OFF position
- Remove ALL PCI cards from the Fuel and unplug all hard drives, cd-rom, tape drives etc.
- Swing the HDD cage outwards (you may need to undo a screw to do that)
- Remove the blue air duct
- Plug the main ATX cable into the adapter, you will likely need to work with the thick cable bundle so that it bends at all the right places

- Plug the adapter into motherboard
 - ** DO NOT plug the 12v board yet.
- Plug the RS232 cable into the motherboard (just below the scsi socket) and set up serial terminal on your other PC to 38400 8N1
- Plug the power cable into the PSU (and if available turn on the switch on the PSU), DO NOT TURN THE FUEL ON yet.
- Observe the L1 output on the terminal, you should end up with an L1 prompt. ** If you do not see the prompt - abort and contact me immediately, DO NOT PROCEED with further steps.
- In the L1 prompt, issue the command env and look at the voltages, you should see voltages for 5V aux and 3.3V aux - the levels should be close to the expected values. Also, look at the FAN speeds - in some adapter versions you might also see a reading for the PSU FAN (FAN 5), about 1800-1900 RPM).
 - ** If the voltages are too far from 5v and 3.3v - abort and contact me immediately, DO NOT PROCEED with further steps.
- ** Now you have verified that standby voltages are correct - thats a good sign. ** If other (non-standby voltages) show up - don't worry about it, I often see the 12V rails measuring around 3V during standby.
- Turn the PSU OFF (via the switch), unplug the power cable and wait 5-10 seconds.
- Now plug the 12V ATX POWER cable into the 12V adapter and install the adapter. (DO NOT plug the cable after installing the board - it will flex too much and you risk damaging the adapter or even ripping the socket out of the motherboard). Removing should also be done by puling the board out first and then removing the cable.
 - ** In latched versions of the adapter you will need to use a flat screwdriver to press the latch to remove the adapters.
- Plug the power cable and turn on the PSU, repeat steps 8 and 9. Note any differences. There shouldnt be any.
- Now is the time to turn the Fuel ON. (DO NOT PLUG ANY OTHER CABLES (such as hard drives) YET), in L1 issue a command power up and immediately follow it with env, you should now see all the voltages and fan speeds show up. note their values and look for potential warnings
 - ** If any of the voltages is not showing up or too far from the expected value - power off the fuel, abort and contact me immediately, DO NOT PROCEED with further steps.

** DO NOT leave the Fuel on in an opened state for too long, it was not designed to run without air duct and the case removed. (A few minutes is fine)

- Issue env a few more times and observe the outputs, then issue power down - the fuel will switch off.
- If everything above went well, you can now plug the HDD and other cables, install the air duct, fix the hdd cage and close the fuel. Now youre ready to turn it on and observe the console. I recommend guiding the L1 serial cable outside somehow, perhaps through one of PCI openings or floppy cavity on the front.

** Now you can contact me at kuba@lbl.pl or over nekochan forum and let me know than it went well.

** When everything works, don't forget to write on the main nekochan forum thread with your feedback - this is highly appreciated!

Enjoy, Kuba

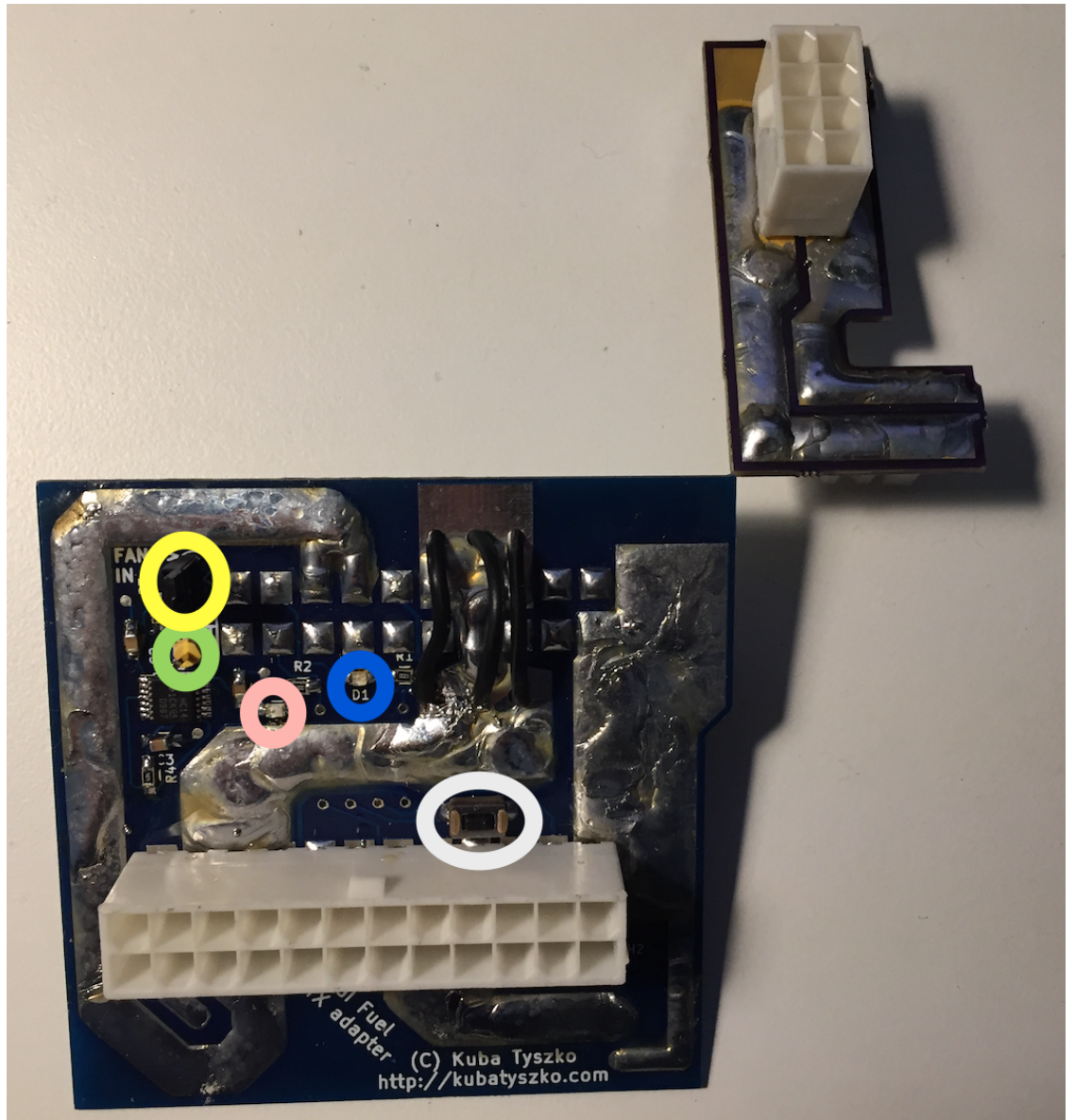


Figure 1: Adapter