

Shutdown Controller

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The idea for this was born because I was unsatisfied with the very limited capabilities of the ITPS power sequencer I had previously used, and the fact that typical commercial SDC's are \$40-100, and some are very large. Above is a pic of the first proper prototype, on a PCB. The relay is wired on pigtailed because I did the layout for a different (cheaper) relay but don't have any yet. Also shown is the general block diagram of the system. The only recent change is that the SDC is now powered off its own 5v regulator, wired to a constant 12v supply so it is always running. I originally had it killing its own power when it was not needed, but it caused a LOT of problems so I gave up on that idea. Besides, the whole circuit draws barely a dozen milliamps, which is not going to drain the car battery noticeably. The Features are as follows, currently:

- * When the ACC line (12v line switched by ignition) has been high for 4 full seconds, the board switches the relay, providing 12v output.

- * 1 second later (allows time for a DC-DC to power up) the board applies a 1/2 second pulse to a transistor which shorts the power button pins on the motherboard header. (essentially pushes the power button)

- * When the ACC line is lost for 10 seconds, the board "pushes" the power button again.

- * The 12v line is switched off (ie - powering down a DC-DC) as soon as the computer finishes shutting down, or after 2 minutes, whichever comes first (the 2 minute limit is a protection in the event the computer freezes during shutdown)

- * If the "delay" button is pressed when the computer is running, the 10 second delay before shutdown is changed to 30 minutes, so the computer can be left running when the car is shut off if desired. (An LED is lit when this feature is enabled, so it's obvious)

- * The board senses whether the computer is running by the power LED pins on the motherboard header, so it won't accidentally turn the computer ON when it is trying to shut it OFF, or vice versa. This is useful when, for whatever reason, you power the computer down in software, and is a feature that the ITPS lacked. One thing to note is that I currently have the power switch line being normally low, with a 5v pulse to turn the computer on. This requires that an NPN transistor (such as 2N3904 or 2N2222) be connected to the motherboard power switch header pins (emitter to ground pin, collector to the other, base through a 1k resistor to the board output) I initially had it so the board itself handled the pull-down without requiring an external transistor, but I've had better luck with this arrangement. I may go back to the old way in a future rev, if I can make it reliable. Information: I have chosen to release all the information of this board free. However, I am releasing it under the GPL (see note at bottom)... In short, you are entirely free to use the information to build one, and you can freely modify the source code or schematic as you see fit; however, you may not use any of it for commercial purposes. Also, as an aside, I welcome ANY changes anyone makes to it; please let me know! email me at evandude AT gmail.com if you change anything, or even if you wish to see a change made but don't know how to do it yourself. This device is very much a work in progress, so any input is welcome. With all that said, on to the good stuff.

Compiling the Source:

I have recently discovered BoostC, which is a much cheaper, and also much more full featured compiler than CC5x (I mean, come on, it has an IDE, that's just handy)

So, if you want to try altering and compiling the source, go to sourceboost.com and get the BoostC compiler & SourceBoost IDE package. It's free.

Starting with source june 2005, I am just RARing the whole project folder for the program, which you can easily open in SourceBoost. Source Code: 6-8-05 Schematic: (cadsoft eagle version 4.14 format) 7-24-05

PCB layout: (cadsoft eagle 4.14 format) 7-24-05 Copyright (C) 2005 Evan Dudzik This program is free software; you can redistribute it and/or

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