

## WATT POWER SOLUTIONS

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## WPPS-APS (AUTO POWER SEQUENCER)



The Auto Power Sequencer was designed to work with most of our Mini-ITX/ATX DC-DC converters. The main purpose of this board is to provide power sequencing and strict 12v regulation functions for automotive systems.

Input voltage	5V – 20V
Regulated current limit	7A at 17V input
Unregulated maximum current	20A (via link on pcb)
Line regulation	0.015%
Load regulation	0.1%
Drop out voltage	1.1V at 3A
Operating temperature	-20 deg C to +125 deg C
Storage temperature	-40 deg C to +125 deg C

As a typical car voltage is between 13.4V and 14.5V DC, a regulated 12V supply is necessary to operate an ITX/ATX DC-DC converter. The device can withstand the wide battery voltage tolerances of between 7V and up to 20V. The APS is designed to operate directly from battery source of an automobile to provide a clean regulated 12V DC.

The APS is protected from reverse polarity protection, in case the power leads are accidentally reverse connected. A Polyfuse will protect against currents in excess of 8A. To protect against potential battery start up voltages is high as 18-20V DC an over-voltage protection is activated to prevent this voltage from reaching the ITX/ATX power supply.

The APS controls the timing and sends a signal to the power switch mosfet controlling the motherboard ON/OFF switch based on the status of the ignition key. This circuit provides the switching to the main power line. When used alone, it can switch currents in excess of 20A.

The PS-ON circuit triggers the motherboard ON/OFF switch for soft start/stop sequences. The PSON is activated 5 seconds after the ignition circuit is switched ON and 10 seconds after it is switched OFF. The APS will not operate if the ignition is OFF. When the ignition is switched on, the sequencer waits for 3-4 seconds then turns on the 12V rail, allowing the battery to reach a stable output voltage. After 1 second the micro chip controller sends the ON signal to the motherboard via the two wires which connect to the motherboard ON/OFF pins. The motherboard will then turn ON and the system should start booting.

With the ignition OFF the sequencer waits for about 5 seconds and begins to turn the motherboard OFF, by sending a signal to the motherboard ON/OFF switch. Your computer will turn off gracefully with the shutdown procedure. Power will be available for a further 45 seconds. In the event of a shutdown process being left hanging, the power will be shutdown hard, turning off the computer to prevent battery drain.