

DSATX

220-Watt Microprocessor Controlled 12-Volt Automotive ATX Power Supply with Integrated Shutdown/Startup Controller

General Description

+5VSB @ 1.5 Amps
+5 @ 12 Amps
+3.3 @ 10 Amps
+12 @ 12 Amps
-12 @ 0.1 Amps

Shutdown controller with similar function to the uSDC20D.

Figure 1
Product Photo:

Operation

Quick Overview:

The DSATX has three main inputs, 12 Volts In (VIN), Accessory (ACC), and Ground (GND). These signals supply power to the DSATX and tell it when to turn on/off. The Motherboard Power Switch signal (MB Power SW).

Features

- Microprocessor Control
- Voltage Sensing of Battery to prevent over discharge
- Temperature Sensing (Environmental Protection)
- Adjustable Low Voltage Threshold
- Adjustable Power Down Timer Control
- Serial Port Diagnostics
- Serial Port Control
- State indicator feedback LED (Flashes at different rates)
- 20-Amp Fuse Protection
- Reverse Voltage Protection
- Load Dump Protection (Over Voltage)
- Startup/Shutdown Motherboard On/Off Pulse
- Startup on Engine Running
- Computer "On Sensing" to prevent unknown states
- User Optional Switch for Instant Off

Applications

- Automotive Personal Computer Power Control
- Automotive MP3 Player Power Control
- OEM Application (Inquire about Custom Firmware)
 - Solar Powered Systems
 - Telematics/GPS Systems
 - Battery Controlled Systems

Operation Continued

The Serial Port spits out this style of information every 200ms:
9600 baud, 8,N,1 No flow control.

```
+030.3:12.56:12.00:05.19:03.34:10.49:0560:YNY:3:0558  
  A   :   B   :   C   :   D   :   E   :   F   :   G   :   H   :I: K
```

A: Temperature in Degrees C

B: Input voltage at VIN

C: 12 Volt Rail Output

D: 5 Volt Rail Output

E: 3.3 Volt Rail Output

F: Low Voltage Threshold (P2 Adjusts this)

G: Number of Seconds for main Shutdown Timer (P1 Adjusts this)

H: Y/N Good/Bad(Vin Voltage Good, Acc Pin High, Temp Good)

I: State of SDC:

(0: off, 1:Pulse, 2: Running, 3: Cnt Down, 4: Shut Down)

K: Count value for Shutdown Counter (seconds)

The Serial Port Accepts These Commands:

P: Enter Program Mode

S: Stop the printing of the serial diags (Stop)

G: Continue the printing of the serial diags (Go)

Z: Set the shutdown counter to 2 seconds (basically cause a shutdown)

@: Force a power button press, shutdown or startup.

Program Mode overview:

The DSATX is serial port programmable! You can tell it to use the P1 P2 pots or hard code the values into it. **You must always type the right number of characters** though. IE, if you want 60 seconds, you can't type 60. You must type 0060, etc. You **don't hit return** when your done typing in the values. It will automatically take it. If you mess up, make sure you do it again and get it right.

In the below example, we program the device. Tell it to use the Pots (P1 P2) for the Timer1 Timer and the low voltage threshold (P2 selects a value between 10 and 12 volts). Maxtimer1 is the maximum seconds you can set with the P1 Pot. Basically, if you set the pot half way and had Maxtimer1 set to 1200, it would shutdown in 600 seconds. If you set the Maxtimer1 to 0060 you would have between 0 and 60 seconds to select with the P1 Pot.

13 volt turn on is an option where ACC has to be high and the engine has to be running before the computer will turn on.

```
P                               < Type the letter P  
PROGRAM MODE  
Use POTs? y/n  
y                               < Type the letter y  
MAXTIMER1:  
1200                           < Type 1200 (Must type 4 characters)  
VTURNON 13 volts? y/n  
n                               < type the letter n  
PROGRAM DONE
```

In the below example, we program the device. Tell it to Hard code the values for the Timer1 Timer and the low voltage threshold. If you set Lowvolts to 1050, the unit wouldn't shutdown until it hit 10.50 volts on the VIN input. If you set Timer1 to 0600, then after 600 seconds of ACC going away, the computer would turn off.

13 volt turn on is an option where ACC has to be high and the engine has to be running before the computer will turn on, this time we didn't choose it.

```
P                                < Type the letter P
PROGRAM MODE
Use POTs? y/n
n                                < Type the letter n
LOWVOLTS:
1050                             < Type 1050 (Must type 4 characters)
TIMER1:
0600                             < Type 0600 (Must type 4 characters)
VTURNON 13 volts? y/n
n                                < Type the letter n
PROGRAM DONE
```

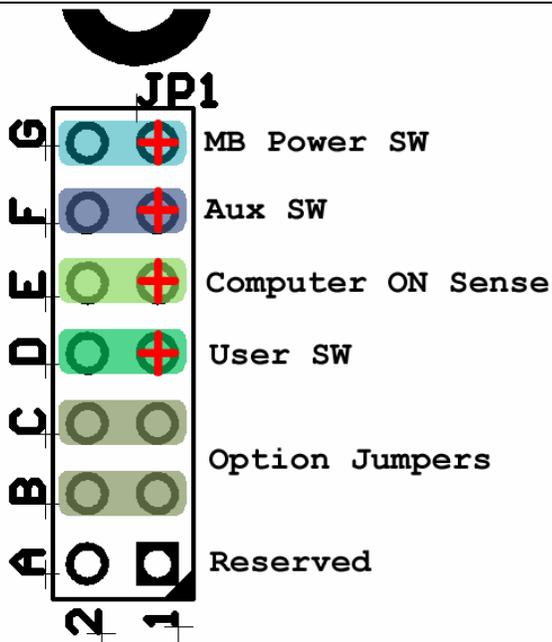


Figure 3
Jumper Block Diagram

Note: the Red + terminal indicates the active signal. The other signal in each pair is ground. Be careful when connecting signals that could be damaged from being plugged in backwards.

Jumper Block Details

MB Power SW: This output signal goes to the motherboard to turn on/off the computer. When asserted, this signal shorts to ground. To detect which pin on the motherboard to connect to, use a voltmeter set to **Ohms** and probe both pins on the motherboard while the motherboard is off. Connect the black probe (-) to a mounting hole or (Ground.) The + pin on the motherboard is the pin with the higher number or more resistance to ground. **YOU MIGHT HAVE IT BACKWARDS** if you don't get a switch press out of this connection.

Aux SW: This optional output signal turns on an auxiliary supply or other device. When asserted, this signal shorts to ground.

Computer On Sense: N/A

User SW: N/A ~~This optional input signal is for connecting an external momentary push-on switch. This signal is connected to ground when the switch is pushed and disconnected when released.~~

Option Jumpers: These two settings allow up to 4 different configurations of the uSDC. See the below diagram for different user mode options.

Configuration

Figure 4
User Jumpers

0: Default User Mode. Start up pulse is sent when ACC goes high.

1: Dumb Power Supply Mode

2: N/A

3: N/A

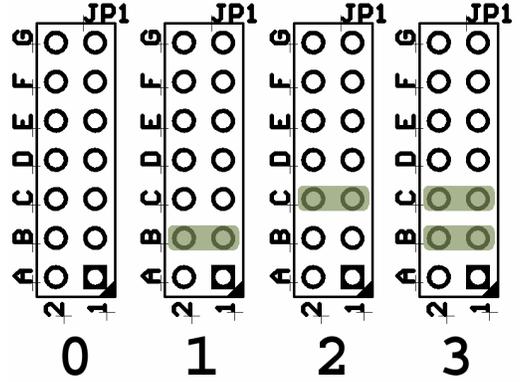


Figure 5

Test Point Equations:

Note:

Mechanical

Figure 4

Figure 5

Mechanical Specification (Table 1)

Board Dimensions	4.15"L X 3.5"W X 1"H	The circuit board is 0.062" thick.
Mounting Holes		
Power Terminals		
Jumper Block (JP1)	2x7, 0.1"Spacing	Used for connecting signals to the computer and user settings
Operating Temperature	-40C to 85C	The temperature at which the DSATX will operate and provide protection for the devices connected to it.
Allowable Temperature	-10C to 50C	The DSATX will detect if the ambient is too hot or too cold to function without damage. Will prevent power-up and initiate immediate power-down if out of the operating range

Notes:

Use caution when connecting metal mounting hardware to the DSATX. Do not short out connections around mounting holes.