DuraWatt DS12VD
140-Watt DC-DC 12 Volt Power Supply
Short Form User Manual

Version 1.0

Table of Contents

1. Getting Started

1.1. Introduction

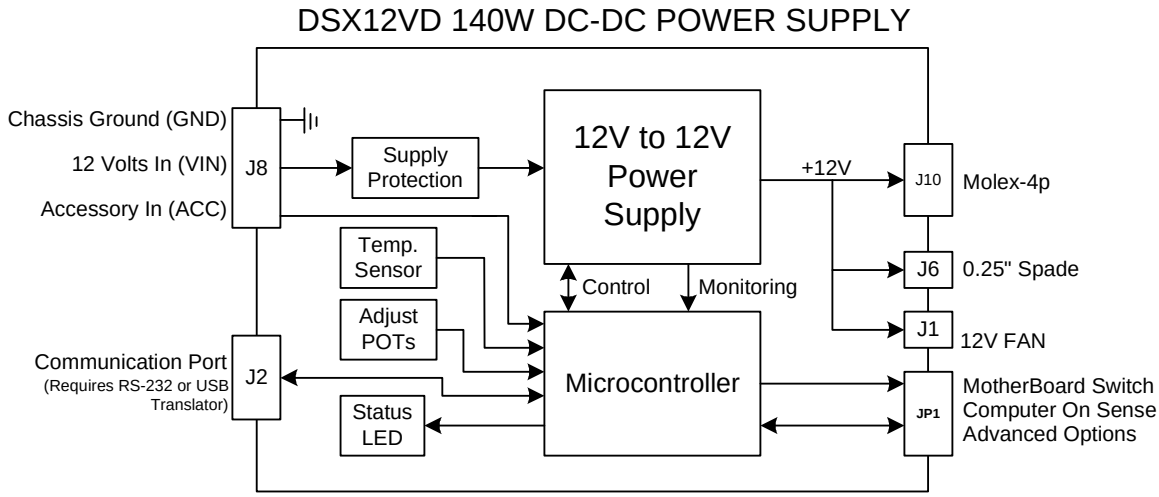
Thank you for purchasing a DSX12VD Automotive 12 Volt Power Supply. Please take some time to read through this manual before attempting to use this product.

The DSX12VD is the optimal solution for providing a stable and clean 12-volt power source to a variety of electronic devices in an automobile. A stable 12-volts is achieved by the buck-boost topology which allows the input to be above or below the output. The DSX12VD provides a stable 12-volts even if the input has dips, spikes, or noise. This makes it optimal for powering 12-volt computers intended for indoor use. These computers typically use an AC-DC converter that puts out a stable 12-volts (i.e. + - 10%). Automotive 12-volt power systems do put out 12 volts, however the drain from motors, heaters, headlights, etc. cause the voltage to vary outside the +- 5% or +-10% required by sensitive computing equipment. A voltage range of 8-16 volts is not uncommon in a 12-volt automotive system which is effectively 12-volts +-50%. Subjecting electronic devices to voltage ranges this far outside their specification can at best cause erratic behavior, and at worst cause failure or fire.

The DSX12VD has advanced microprocessor control enabling features such as Startup/Shutdown Sequencing, Low Voltage Battery Protection, and Temperature Protection. Features also include Serial Port Control, Diagnostics, and Upgradeability. Desktop computer motherboards are typically not designed to work in automotive environments, the design and engineering that went into the DSX12VD makes every attempt to compensate for this. Having purchased a DSX12VD, you will rest assured that you've invested in a flexible product that can grow and expand with your automotive computing system.

1.2. Product Photo

1.3. Block Diagram



1.4. Included Contents and Optional Accessories

Included:

1 : DSX12VD 140 Watt 12V Power Supply
1 : 12" 4-pin ATX 12V Power Cable (CPU Power Cable)
2 : 0.1" Shunt Jumpers
1 : 24" 2-pin to 2-pin Mother Board Power Switch Cable
3 : Insolated Terminal Ring Crimp/Solder Connectors 12-10AWG

Optional:

- Acroname Serial Port Adapter *PN:S13-SERIAL-INT-CONN*
- Acroname USB Serial Adapter *PN:S19-USB-SERIAL-INT-CONN*

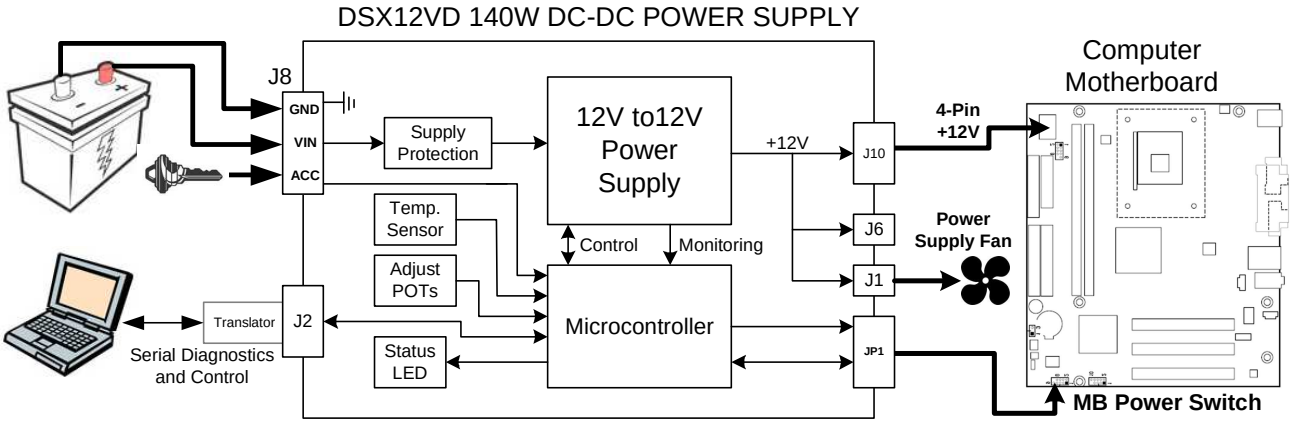
1.5. Recommended Additional Supplies

- 12 AWG Hookup Wire for Vin and Gnd Inputs (Minimum Recommended Gauge)
- 12-24 AWG Hookup Wire for Acc Input (Very little current flows through this wire)
- Mounting Screws (4-40 or 6-32)
- Mounting Standoffs (Optional)
- Power Supply Cooling Fan (or assure adequate airflow over the DSX12VD)
- Custom Enclosure

1.6. Recommended Tools

- Soldering Iron and or Crimp Tool (Secure Input Power Connections)
- Philips Jewelers Screwdrivers (for P1 P2 Adjustment Pots)
- Philips Head Screwdriver (for Mounting Screws and J8 Terminal Screws)

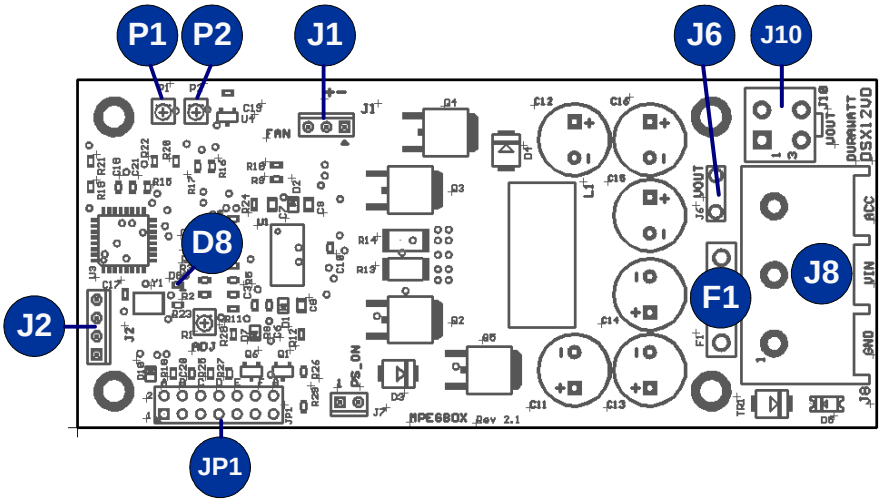
1.7. Connection Overview Diagram



1.8. Precautions and Warnings

Operating a personal computer in a motor vehicle can be dangerous. Improper use or negligence can result in damage and or loss of life to self and others. Safety precautions must be considered when operating a personal computer in a motor vehicle. Displays must not be distracting to the driver and should not display motion video or otherwise distracting content. Check with the local government in your area for laws and guidelines regarding the use of potentially distracting electronic devices in motor vehicles. Mpegbox.com and the people responsible for its content shall not be held responsible for loss or damage as a result of the content, procedures, or the use of the product/s outlined in this manual. A personal computer used in a motor vehicle should only be operated as a personal computer when then vehicle is not moving. Use this product at your own risk. Various safety features are built into this product and any attempt to override them will void any warranties and may cause increased risk of damage to persons or property.

1.9. Detailed Connection Diagram



Power Input

J8	Gnd:	Ground Input, connect to the chassis or the (–) battery terminal
	Vin:	+12 Volts Input, connect directly to the (+) battery terminal
	Acc:	Accessory Input, Connect to a switched +12 volt supply wire (ignition or fuse box)
F1	Input Fuse:	15-Amp mini-automotive fuse (yellow)

Power Output

J6	Vout:	0.25” Faston Spade 12-volt output connection
J10	Vout:	4-pin 12-volt output connection (Molex: 39-31-0040)
J1	FAN:	Connects to a 12 Volt 3-pin fan to cool the DSX12VD

Control

JP1	Pins G1, G2:	Connects to Motherboard Power Switch Header (G2=Signal +, G1 Signal -)
	Pins F1, F2:	Aux Connection (for Amp Enable or Slave Power Supply (F1= Open Collector)
	Pins E1, E2:	On_Sense (connect to any 5 volt line to detect when computer is on/off)
	Pins D1, D2:	User Switch (will zero countdown timer when shorted)
	Pins C1, C2:	*User1 (RESERVED)*
	Pins B1, B2:	*User0 (RESERVED*)
	Pins A1, A2:	*A1=+5V, A2=nReset (RESERVED)*
P1*	Countdown Adj:	In Basic Mode, clockwise rotation adds time to the Countdown Timer (0-20m)
P2*	Low Voltage Adj:	In Basic Mode, clockwise rotation raises the low voltage threshold (10V-12V)
D8	LED indicator:	Indicates Operation, Timer States, and Faults
J2	Serial Port:	Enables Advanced Modes, field upgrades, and diagnostics

*Note: Do Not Over-Turn P1 and P2, only 270 degrees is available

2. Specifications

2.1. Electrical

Electrical Specifications:	
Input Voltage (Operating)	6-24 Volts Non-Regulated
Input Voltage (Full Load)	8-16 Volts Non-Regulated
Input Current	15A (15A mini-blade fuse)
Output Power	140 Watts Max
No Load Operating Current	< 70mA
Sleep Current (All Rails Off)	< 4mA
Efficiency	> 95%

Individual Supply Outputs	Max Output Current
12.0 Volts +/- 2%	12 Amps Nominal, 15 Amps Peak

Electraical I/O Specifications	
ACC Input Threshold	Low = < 4V, High = >7V (30V Max)
ACC Input Impedance	100k Ohms
MB Power Switch Output Drive	Open Collector, 50mA Max
On_Sense Pull Up	~10k Ohms to 5 volts.
On_Sense Detect Voltage	Low = < 0.7V, High = >2V (5V Max)
AUX Output Drive	Open Collector, 50mA Max
User Switch Pull-Up Drive	10k Ohms to 5V
Serial Port Rx/Tx	Low = < 0.7V, High = >2V (5V Max)

Supervisor Specifications (Basic Mode)	
P1 - Countdown Timer Range	0-20 minutes (10 minutes default)
P2 - Low Voltage Cutout Range	10-12 volts (11 volts default)
Operating Temperature Range	-40 to +90 degrees Celsius
Controlled Temperature Range	-10 to +55 degrees Celsius
MB Turn On Delay	1 second
MB Power Switch Duration	1 second
Max Shutdown Timer Range	90 seconds

2.2. Mechanical

Mechanical Specification	
Board Dimmensions	4.38"L x 1.9"W x 1.0"H
Mounting hole corridnates (in)	(0.2, 0.2) (0.2, 3.475) (1.7, 3.475) (1.7, 0.2)
Mounting hole size (in)	0.125
Board Thickness (in)	0.062

3. Troubleshooting

Please visit the www.mpegbox.com support forums for troubleshooting tips.

4. Mpegbox.com Limited Warranty

The DSX12VD Power Supply carries a Limited Warranty for the Period of 1 year from the date of purchase. Mpegbox.com warrants its products to be free from defects in workmanship and materials for a period of one (1) year from the date of purchase, Mpegbox.com will repair or replace the unit at our option, without charge for parts or labor. After the period of one year, the customer will be responsible for all charges for parts and labor. This limited warranty is extended only to the original purchaser. It does not cover any equipment connected to the DSX12VD or other consumable parts; transportation costs, or any damage incurred in transit. This warranty will become void if the serial number identification has be wholly or partially removed or altered. Repair ore replacement under the terms and conditions of this warranty does not extent the term of this warranty. Any modification of the temperature control system parameters or modifications to the mechanical or electrical structure of this product will void this limited warranty.

A Return Material Authorization (RMA) must be obtained prior to returning the product by emailing support@mpegbox.com. The RMA number must be marked on the outside of the shipping container and copy of a sales receipt or invoice must be included. Please include a brief description of the symptoms, your name, address, email and any other relevant instructions. Returns must be shipped prepaid in a static safe with adequate padding before returning to Mpegbox.com