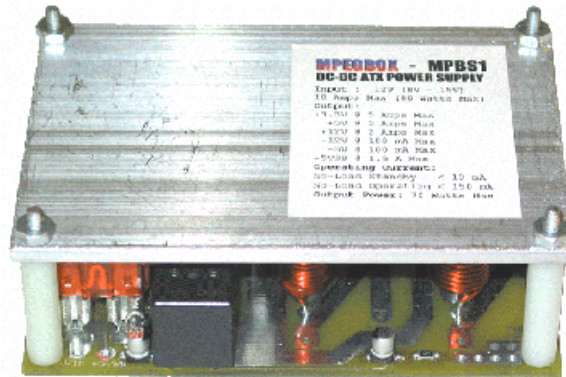


## Features

- Small and Compact Form Factor
- High Efficiency
- Low Input Voltage:< 8 Volts
- Compatible with Low Power ATX Motherboards
- Soft Power On (PS\_ON)
- Power Good (PS\_OK)
- 6 Power Supply Outputs
- 70 Watts Max Output Power
- Input Fuse Protection
- Reverse Voltage Protection
- Over Current Protection
- Large Heat Dissipation Area
- Low Standby Current: < 6 mA
- Easy Mounting
- Power LED
- Compatible with Selected Pentium, Celeron, and VIA Processors



\*Connectors Not Shown in Photo

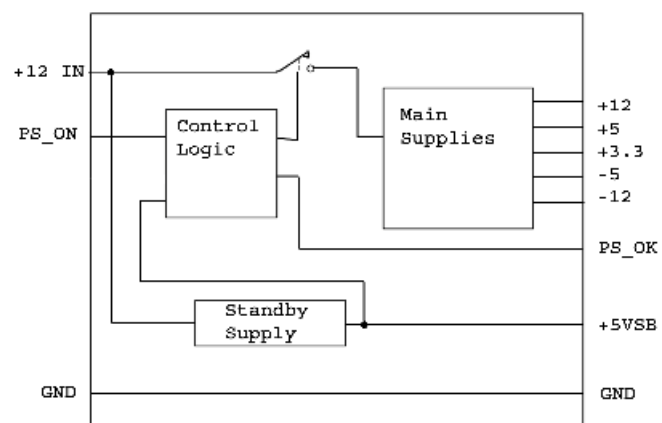
## Applications

- Automotive MP3 Computer
- Automotive GPS Navigation
- Embedded Automotive Systems
- Embedded Marine Systems
- 12v Battery-Based Computer Systems
- Solar Computer Systems

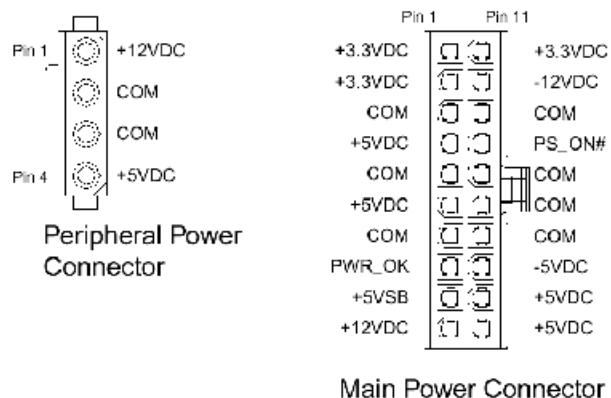
## Discription

The MPBS1 12-Volt DC-DC Power Supply is a small form-factor power conversion device. With an unregulated 12-volt input range, it provides output voltages of +12, +5, +3.3, -5, -12, and +5Vstandby. The aluminum open frame design allows the unit to be very compact and versatile. Featuring high power density, the unit can deliver up to 70 Watts of output power. The MPBS1 DC-DC Power supply is compatible with many low power commercially available MicroATX, FlexATX, and Micro-ITX Motherboards. Incorporating signals such as PS\_ON and PS\_OK, the behavior of the MPBS1 compared to a line powered AC-DC ATX power supply is identical.

## Functional Diagram



## Connector Overview



# Application Information

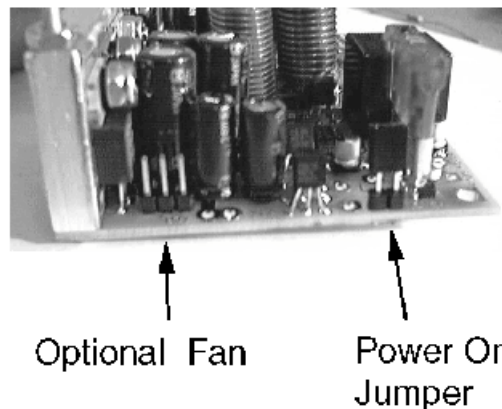
This supply conforms to the original ATX specification for motherboards that use soft-off and require a standby voltage for operation. When plugged into an ATX motherboard the MPBS1 behaves just like a standard ATX 1.0 power supply. In standby mode it only draws several mA of current. It has been specially designed for low power automotive applications. It is not suitable for desktop processor applications requiring high power. Please see the processor recommendation section for more information.

## Operation

For testing purposes, a power on jumper is provided. Connecting this jumper shorts PS\_ON to ground thus turning on the +3.3, +12,+5, -5, and -12 voltage outputs.

\*\*\*Note: Do not use the jumper if the supply is connected to a motherboard.

A fan can easily be connected or attached to the unit and powered by the three-pin jumper provided. The center conductor is +12V.



## Mechanical

Dimensions:

1.25"	(31.8mm)	High
3.8"	(96.5mm)	Wide
2.5"	(63.5mm)	Deep

The MPBS1 is assembled with an open-frame aluminum chassis. The heatsink is made of machined aluminum stock and is 1/8 inch thick on the top and 1/4 inch thick on the back.

1.5 inch (38.1mm) 4-40 screws hold the supply together and allow for mounting to thin metal, plastic, or other material.

When mounting the MPBS1 be sure to take into account that the bottom of the supply has exposed traces. To accommodate the small size of this power conversion unit, an open frame design was chosen instead of a fully enclosed metal chassis. Extreme care needs to be exercised when integrating this unit into your system. No conductive material should come in contact with the bottom of the supply.

Two connectors are provided with the MPBS1. One is the standard 20-pin ATX motherboard connector. The other connector is a 4-pin Molex peripheral connector that supplies +12 and +5 to devices like the hard drives and CD-ROMs. A Y-connector can be used to connect a second peripheral device. Care needs to be taken not to exceed the rated power of the power supply. The cable assemblies provided with the MPBS1 provide a minimum of 6 inches of cable length.

## Thermal

Heat generating ICs in this supply are mounted to an aluminum heatsink. Thermal compound and insulating spacers are used to maximize heat transfer and proper electrical insulation. The high current ICs in this design exhibit an operating junction temperature range of -40C to +125C

As a general rule, the supply should be cooled properly such that it is not too hot to touch. The optional CPU fan connector can be used to attach a fan directly to the MPBS1 or in the proximity such to provide air flow over the heatsink.

Recommended Processors	Original Intel Pentium	Intel Celeron	VIA C3
CPU Models (MHz)	100, 133, 166, 200, 233,	Celeron 400, 433, 466,	500*, 800*, 833*
*Low Power	200MMX*, 233MMX	500, 566*, 600, 633, 700	

Most non-Pentium 4 based systems get the power for the CPU from the 5-volt supply voltage. Because of this the MPBS1 is limited in the range of CPUs it will support. The MPBS1 will supply 25 Watts typical and 30 Watts peak to the system. As a general rule, the processor should draw no more than 20 peak Watts. The MPBS1 is not compatible with Pentium 4 systems due to the high power requirements of the main processor.

# Electrical Specification

	Min	Typ	Max	Units	Discription
<b>DC Input:</b>					
+Vin	8	12	15	V	Nominal Input Voltage
	5	6	7	mA	Quiescent Standby Current (main supplies off)
	60	70	80	mA	Quiescent Operating No-Load Current
	0.05	-	10	A	Operating Input Current Range
			80	W	Input Power
<b>DC Outputs:</b>					
+12	11.4	12	12.6	V	Nominal Output Voltage
	0	2	3	A	Operating Current Range
			100	mV	Pk-Pk Ripple
+5	4.75	5	5.25	V	Nominal Output Voltage
	0	5	6	A	Operating Current Range
			50	mV	Pk-Pk Ripple
+3.3	3.14	3.3	3.47	V	Nominal Output Voltage
	0	5	6	A	Operating Current Range
			50	mV	Pk-Pk Ripple
-5	-4.75	-5	-5.25	V	Nominal Output Voltage
	0	-50	-100	mA	Operating Current Range
			10	mV	Pk-Pk Ripple
-12	-11.4	-12	-12.6	V	Nominal Output Voltage
	0	-50	-100	mA	Operating Current Range
			10	mV	Pk-Pk Ripple
+5Vsb	4.75	5	5.25	V	Nominal Output Voltage
	0	1	1.5	A	Operating Current Range
			10	mV	Pk-Pk Ripple
PS_ON	3.5	-	-	V	High Input Voltage
	-	-	1.4	A	Low Input Voltage
	-	0.5	1	mA	Low Level Sink Current
PS_OK	4.75	5	5.25	V	High Output Voltage
	-	0	0.1	V	Low Output Voltage
	-	-	10	mA	Output Current

# Typical Applications

These are some examples of applications for the MPBS1 Power Supply.



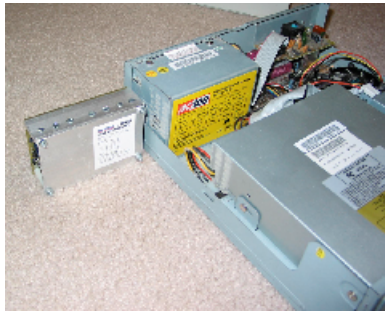
Automotive/Plexiglas Application  
MP3, GPS, Portable Computing



Solar Power Application  
With 12-volt Battery Banks



Marine Application



Book PC Power Supply Application  
(ATX compliant)



Mirco-ITX Application  
(VIA EPIA C3 800 MHz)



Size comparison (BookPC, MPBS1,  
Micro-ITX)

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