Automotive
Energy & Power Analysis
Field Service
Environmental
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DEWE-201 power mode

Technical reference manual

ISO9001

... the precision signal conditioning company

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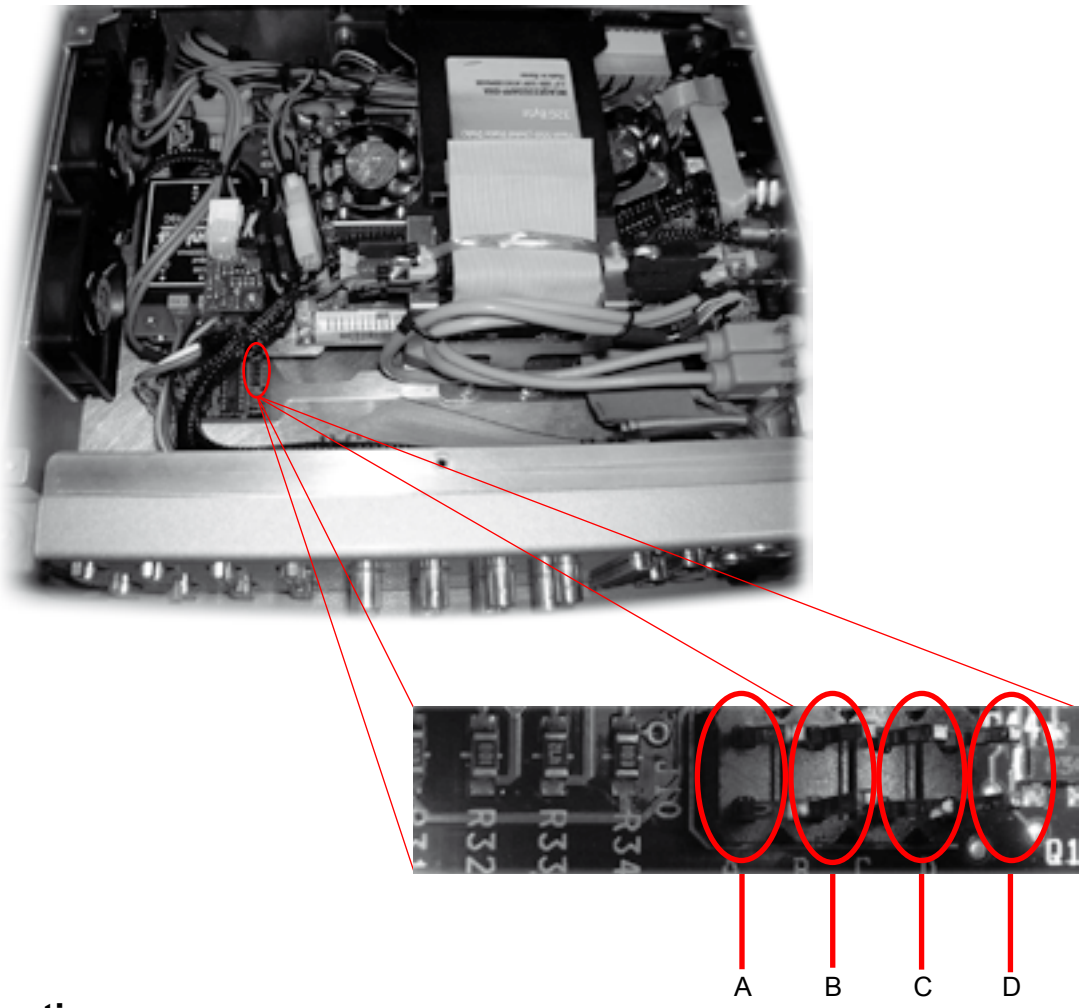
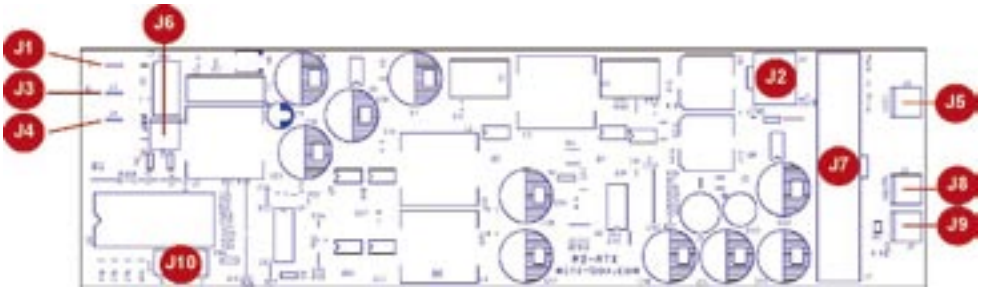


Specifications

160 W DC power supply	M2-ATX	
Input:		
Input range:	8 to 24 V_{DC} (clamping will occur 25 to 27 V)	
Input frequency:	DC	
Max. input current:	15 A	
Output:		
Output power:	160 W	
Output voltages:	+3.3 V (max. 8 A)	
	+5 V (max. 8 A)	
	+5 Vsb (max. 1.5 A)	
	+12 V (max. 8 A)	-12 V (max. 0.15 A)
Fuse:	15 A (mini blade)	
MTBF:	192.000 hrs @ 50 C, 96.000 hrs @ 65 C	
Efficiency:	>94 %, all rails combined, 50 % load	
Environmental:		
Operating Temp.	-40 to +85 °C	
Storage Temp.	-55 to +125 °C	

Power supply connectors



Power input connectors

J1 Battery + (un-switched battery, positive)
J3 Ignition (switched battery, positive. Can be tested by connecting it to Battery +)
J4 Batter - (negative)

Controls and settings

J6 Controls amplifier via remot ON/OFF. Left pin is RMT, right is GND
J8 To motherboard ON/OFF switch
J9 To external ON/OFF switch (optional, J8 is in parallel with J9)
J10 User jumper settings

Power output connectors

J2 Optional P4-12 V power
J7 ATX power connector
J5 To LED (optional)

Jumper settings

A	B	C	D	**Mode OFFDELAY/HARDOFF**
				0 = (traditional PSU mode)
■				1 = 5 secs / 45 secs
	■			2 = 5 secs / 2 hours (suggested)
■	■			3 = 5 secs / never
		■		4 = 30 secs / 2 hours
■		■		5 = 30 secs / never
	■	■		6 = 30 mins / never (taxi mode)
■	■	■		7 = 3 hours / never (taxi mode)

Mode 0 is regular ATX power supply mode, no power sequencing provided, can be used for non vehicle applications.

Avoid using HARDOFF = never. It can severely discharge your battery! suggested modes are: 1, 2 and 4.

NOTE: If "HARDOFF" is set to "never", the power supply will automatically shut down when battery voltage is below 11.2 V for more than 1 minute to prevent "deep discharge" situations

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Power changes in a vehicle

The 5 V standby problem:

One of the most diffcult tasks of operating a PC in a vehicle is power consuption while the computer is off. Even if your computer is off, it will still consume about 100 mA on the 5 V rail. All power supplies provide 5 VSB (5 V standby) so that the motherboard can issue at least a PSON signal. When the computer is in the powered mode, it will consum even more power, because the RAM needs to be powered at all times. No matter how big your battery is, it will drain your battery in a matter of days.

The power supply is addressing these issues by cutting off the 5 VSB rail after a pre-defined amount of time (see jumper chart, HARDOFF). When 5 VSB is always active (HARDOFF = never), the power supply constantly monitors the battery levels. When the battery level drops below 11 V for more than one minute, the power supply will shut down and reactivate only when the input voltage is >11 V.

Mode of operation

The power supply performs several timing routines and takes actions as follows:

NOTE: When all config jumpers are removed, the powe supply will be in the "dumb PSU mode", no ignition timing, no HARDOFF. The power supply will send gratuitous "ON" pulse to the Motherboard when power is applied for the first time. Do not connect J8/J9 to the Motherboard ON/OFF switch if you don't want your PC to be started automatically.

1.) Ignition = OFF: Nothing happens, the power supply is waiting for igintion signals.

2.) Ignition = ON: The power supply waits for 2 - 3 seconds then turns on the 5 VSB rail. After another second the power supply sends an "ON" signal to the motherboard via the wires connected to the motherboards "ON/OFF" pins. The motherboard will turn "ON" and your system should start booting.

3.) Ignition = ON during driving: Your computer will remain "ON".

4.) Ignition = OFF: The power supply waits for "OFFDELAY" in seconds (see jumper chart on page 4) and then it turns the motherboard "OFF" by sending a signal to the motherboards "ON/OFF" switch. Your computer should turn off gracefully (shutdown procedure). During this time, power will still be available for your PC to perform shutdown.

5.) 5 VSB will still be provided for another "HARDOFF" seconds (see jumper chart page 4). In the event where the shutdown process is longer than "OFFDELAY", power will be shut down hard, turning off all power rails. If "HARDOFF" is set to "never", the PSU will always provide 5 VSB, therefore the PC can also be used in the "SLEEP" mode. During the "HARDOFF" procedure, the battery levels will be constantly monitored to prevent deep discharge situations.

6.) The power supply will go to step 1, if ignition is tuned ON again.

Notes