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Package Contents

- 1 - DCX6.250 Automotive ATX/ITX & AT intelligent DC-DC 250W Power Supply
- 1 - 20 pin ATX power cable with 2 HDD power and 1 FDD power connectors.
- 1 - 8 pin Drive power cable.
- 1 - 2 pin power switch cable.
- 1 - 10 pin DC input main power and IGN pigtail cable.
- 1 - Quick User guide (the one you are reading)

General Information

DCX6.250 is designed to power almost any PC motherboard or single board computer. Motherboards must be ATX 2.01 and ACPI compliant or AT. Compatible with 12 or 24 volt battery system. The computer power-up and power-down sequence is determined by the state of ignition(ON/OFF switch input) or front panel momentary push button switch.

Operating Modes

ATX Ignition Switch Mode: System on/off is controlled by ON/OFF input pin (J1 – pin 4).

Connect ON/OFF input(J1-4) to Ignition switch ACC point or connect J1-4 to fused battery through a SPST switch to control the Power-up and Power-down sequence of the system. Make sure JU2-9 jumper is **not** loaded. Connect 2 pin cable (green and white) to J7 of DCX6 and the other end to power switch pin on the mother board. Make sure to connect green wire to +ve side of the power switch pins.

ATX Push Button mode: System on/off is controlled by system front panel soft ON/OFF push button switch. Connect ON/OFF input (J1-4) to ignition switch ACC point or connect J1-4 to battery along with +Batt leads (J1 – pins 6,7,8). Install Jumper on JU2 position 9. In this mode 2 pin Green and white wire power switch cable is Not used.

AT Mode: System on/off controlled by ON/OFF input pin (J1 – pin 4). Install jumper on J6 shorting pin 1 to 2, (PS-ON to GND). In this mode system handshakes are partially disabled.

DC-DC Jumper Settings Refer to the JU1 description.

JU1- position 1,2 & 3: Delays system Shut-Down after ignition or ON/OFF input was turned off. The delay duration is configured by installing jumpers on JU1-position 1,2,3.

JU1-4 & 5: System start-up and shut-down voltages are controlled by these jumpers. The system will not power up if the battery voltage is below the Start-up voltage. Also, the system will shut down the system if the battery voltage is below the Shut-down voltage if the system was on.

JU1-6: Stand-by power control jumper.
Jumper not installed: The stand-by power is supplied only during system operation. The OS must be configured for power down or hibernate modes only. In this mode the power drain from the battery is less than 3mA, when the system is off.
Jumper installed: The stand-by power is on all the time. This jumper is required if the system is to be operated in Stand-by mode. In this mode, the system power drain is determined by the mother board power up circuit, DRAM, external USB devices, Plug-in cards etc. The power drain can be anywhere from 50 mA to 500mA depending on the system. However, If the battery voltage goes below the shut-down voltage then the stand-by power is removed to protect the battery from deep discharge.

- JU2-7 & 8:** Remote 1 ON delay is determined by these two jumper positions. The RMT1 out put can be used to turn on Audio amplifier, Head units, LCD monitors etc. The delay is introduced to provide proper power up sequence to prevent thump caused by the audio system. Remote 1 is powered down before the Shut-down delay in 3 settings and in one setting it is powered down after the shut down delay. Refer to the JU2- Jumper table.
- JU2-9:** Ignition mode and Push button mode of operation is determined by this jumper.
Jumper not loaded: ATX , Ignition mode. Refer to system operation modes above.
Jumper Loaded: ATX, Push-Button mode. Refer to system operation modes above
- JU2-10:** 12V and 24V operation
Jumper not loaded: 12V System operation.
Jumper loaded: 24V System operation.

General wiring guidelines

Use a dedicated #12 AWG or thicker wire for the power leads to the battery.

Use #18 AWG wire for on/off input to the DC-DC

Note: Do not share power cable with other equipment. This may introduce noise and/or IR Loss.

Testing the PC with DC-DC Power supply installed for proper operation

Power-up the computer by Turning the Ignition switch on (starting the vehicle) or toggling the switch on. The Green Status LED should light up constantly and the computer should power up normally.

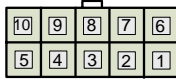
1. Open any application and test for normal operation then close the application.
2. Turn off the computer by turning the ignition switch off. Within 5-10 Sec. the PC should start to go into Standby, Hibernate or shut down mode and the Green status light should go back to the idle/standby blink rate.
4. Wait about 10 seconds and Turn on the Ignition switch again. The computer should power up normally.
5. Open an application for Standby mode testing. Use the application as you would normally.
6. While the application still on the desk top, Turn off the computer by turning the ignition switch off. The computer should go into Standby mode as configured in the operating system.
7. Repeat steps 4 to 6 for all applications that are used in your computer.

Note: All applications software must be checked for proper Standby or Hibernate mode operation. If any application has problem going into Standby mode then the operating system must be configured for Shutdown or Hibernate mode

DC-DC power supply Connectors

J1 - Input Power, On/Off input, Remote1, Remote2 and +12V out connector

J1 - Input Power Connector



Connector type used: Molex: 39-30-1100
Mating connector type: Molex: 39-01-2100

Pin#	Function	Description	Pin#	Function	Description
1	GND	Power Ground (Input - BLK)	6	+BATT	Battery (Input - YEL)
2	GND	Power Ground (Input - BLK)	7	+BATT	Battery (Input - YEL)
3	GND	Power Ground (Input - BLK)	8	+BATT	Battery (Input - YEL)
4	ON/OFF	On/Off or ACC (Input - RED)	9	RMT-1	Remote 1 On/Off (Output - BLU/WHIT)
5	12V out	12V Regulated (output - ORN)	10	RMT-2	Remote 2 On/Off (Output - BLU)

RMT-1 - This output can be used to turn ON/OFF the remote devices such as Audio amplifier, Camera, etc. Remote turn ON delay and OFF state is set by JU2-7,8.

RMT-2 - This output can be used to turn ON/OFF the remote devices such as Monitors, Radio devices, External DVD, Camera, etc. Remote turn ON and OFF is controlled by the system power.

J3 – External / Remote LED connector

Pin#	Function	Description
1	LED+	To External LED Anode - output
2	LED-	To LED Cathode - output
3	OB LED-	On Board LED Cathode - input



Connector type used: Molex: 22-23-5034
Mating connector type: Molex: 22-01-3037

Factory Default Setting: Pin 1 and Pin 2 are shorted with shorting jumper for on board LED

To connect External LED: Remove shorting jumper and Connect Anode of external LED to pin 1 and cathode to pin 2

J6 – PS-ON* signal and Stand-by Power connector

Pin#	Function	Description
1	GND	Ground - (BLK)
2	PS-ON*	Power supply ON* (Input - BLU)
3	5V STBY	+5V Stand-by power (output - PUR)



Connector type used: Molex: 22-23-5034
Mating connector type: Molex: 22-01-3037

Factory default is ATX mode operation. For AT mode operation: Short Pin 1 to 2 with a shorting jumper.
Note: J6 Connector is loaded only on DC-DC's with Stand-By power circuit loading

J7 – Power-Switch connector

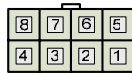
Pin#	Function	Description
1	PWR-SW+	Power-Switch + (Output - GRN)
2	PWR-SW-	Power-Switch - (Output - WHT)



Connector type used: Molex: 22-23-5024
Mating connector type: Molex: 22-01-3027

Connect to Motherboard or SBC power switch pins. OBSERVE pin polarity for proper operation

J8 – Drive Power connector



Connector type used: Molex: 39-29-3086
Mating connector type: Molex: 39-01-2080

Pin#	Function	Description	Pin#	Function	Description
1	+12V	+12V Output (Output - YEL)	5	+12V	+12V Output (Output - YEL)
2	GND	Power Ground (Return - BLK)	6	GND	Power Ground (Return - BLK)
3	GND	Power Ground (Return - BLK)	7	GND	Power Ground (Return - BLK)
4	+5V	+5V Output (Output - RED)	8	+5V	+5V Output (Output - RED)

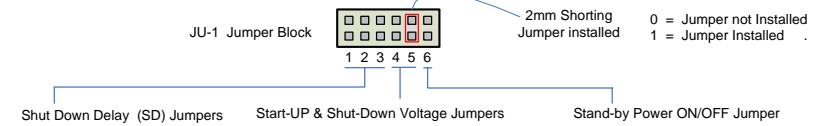
J9 – BTX/ATX Power connector



Connector type used: Molex: 39-28-1243
Mating connector type: Molex: 39-01-2240

Pin#	Function	Description	Pin#	Function	Description
1	+3.3V	+3.3V (Output - ORN)	13	+3.3V	+3.3V (Output - ORN)
2	+3.3V	+3.3V (Output - ORN)	14	-12V	-12V (Output - BLU)
3	GND	Power Ground (Return - BLK)	15	GND	Power Ground (Return - BLK)
4	+5V	+5V (Output - RED)	16	PS-ON*	Power supply -ON (Input - GRN)
5	GND	Power Ground (Return - BLK)	17	GND	Power Ground (Return - BLK)
6	+5V	+5V (Output - RED)	18	GND	Power Ground (Return - BLK)
7	GND	Power Ground (Return - BLK)	19	GND	Power Ground (Return - BLK)
8	PWR-GD	Power-Good (Output - GRY)	20	nc	No connection
9	+5V STBY	+5V Stand-by (Output - PUR)	21	+5V	+5V (Output - RED)
10	+12V	+12V (Output - YEL)	22	+5V	+5V (Output - RED)
11	+12V	+12V (Output - YEL)	23	+5V	+5V (Output - RED)
12	+3.3VS	+3.3VS (Input - ORN)	24	GND	Power Ground (Return - BLK)

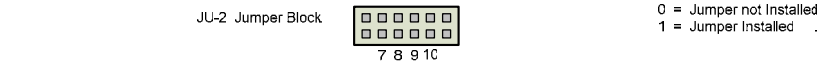
JU1 – Shut-Down Delay, Shut-down / Start-up voltage & Stand-by Power Jumpers



Shut Down Delay (SD) Jumpers		Start-UP & Shut-Down Voltage Jumpers			Stand-by Power ON/OFF Jumper	
Psn #	SD Delay Time	Psn #	Start-UP Voltage	Shut-Down Voltage	Psn #	Stand-by Power state
0	0 - (10 Sec)	0	10.5V	7.0V	0	Stand-by Pwr OFF
1	0 - 5 Min	1	11.0V	9.0V	1	Stand-by Pwr ON
0	10 - 10 Min	0	12.5V	10.5V		
1	10 - 15 Min	1	13.5V	12.0V		
0	1 - 30 Min	0	20.0V	15.0V		
1	1 - 45 Min	1	22.0V	18.0V		
0	1 - 1 Hr	0	24.0V	21.0V		
1	1 - 2 Hrs	1	25.0V	22.0V		

If Stand-by Jumper is installed, then, Stand-by voltage is maintained after Power down. Required for Stand-by mode operation only. Stand-by power is removed if the battery voltage goes below Shut-Down voltage.

JU2 – Remote ON Delay, Push-Button Mode and 24V mode Jumpers

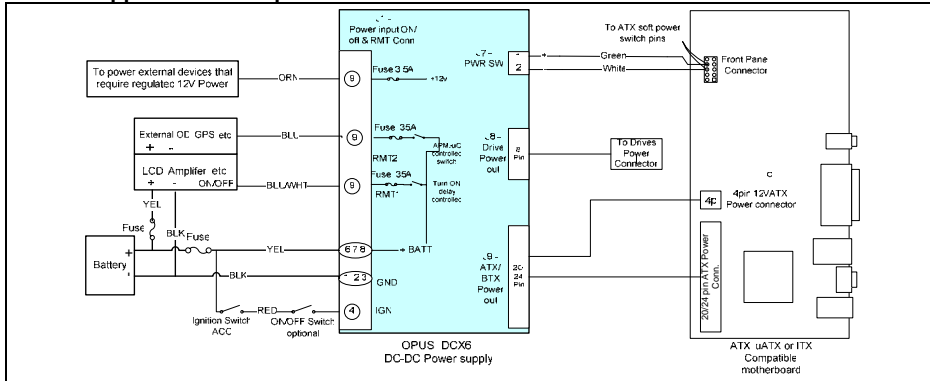


ON Delay		OFF State	IGN/ Push Button mode operation	12V / 24V mode operation
Psn #	Time		Psn #	
0	0 - 1sec	Before SD Delay	0	IGN mode operation
1	1 - 1Sec	After SD Delay	1	Push Btn Mode operation
0	1 - 10Sec	Before SD Delay	0	12V operation
1	1 - 20Sec	Before SD Delay	1	24V operation

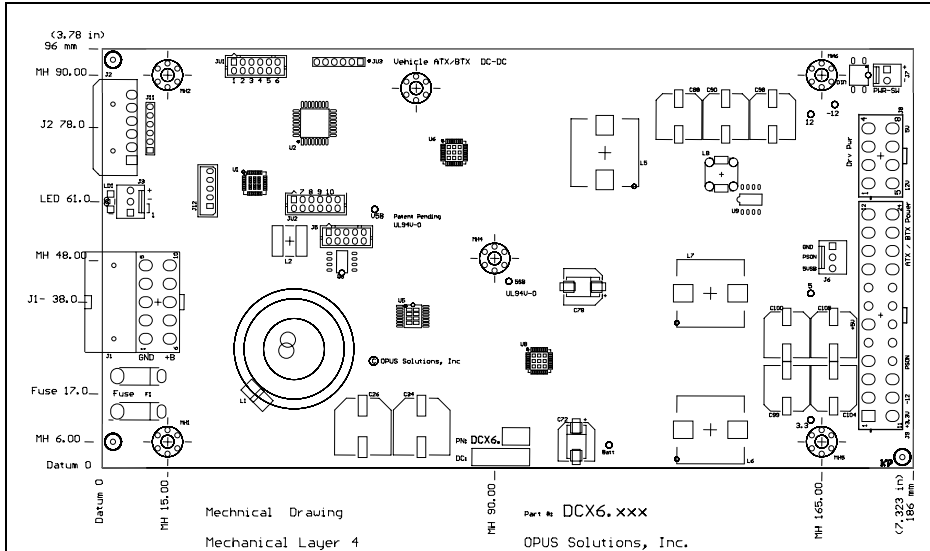
Recommended Installation Steps

- Step 1. Configure DC-DC JU1 jumpers. STBY-ON and Start-up and shut down voltages. Install OPUS DC-DC in the system.
 - Step 2. Configure ATX/ ITX motherboard BIOS: Turn off AC power loss auto restart, ACPI: S3, Push btn: Instant off.
 - Step 3. Configure operating system: Power-down, hibernate or Stand-by mode.
 - Step 4. Test the PC for proper operation. If all passes then, configure the DC-DC shut down delay jumpers if required.
- Suggestion: Configure and test system with a standard AC- DC ATX power supply first. Then switch over to OPUS DC-DC power supply.

DC-DC Application Example



DCX6 DC-DC PCB Dimensions



Trouble shooting guide

Computer does not turn on?

Check to make sure that battery and ON-OFF pins are connected to DC-DC Power Supply connector.

Computer does not turn off when the ignition is turned off!

Check the Green LED state

Interpreting the Green Status LED light flashing

0.1 sec ON and 5 Sec OFF Approx.: DC-DC power supply is in Idle or stand-by state.

On constantly The PC is powered and the PC should be operating.

Error Flashes Reason

- 1 Flash (every 10 Sec.) Battery voltage is below normal operating range. Voltage set by JU1 – 4, 5
- 2 Flashes The computer power up sequence failed. Reasons:
 - Check the wiring of the two wire power-switch cable from power supply connector J9 to power switch pins on the ATX motherboard. If connected properly check the polarity of the power switch pins, may be reversed.
 - Check ATX mother board bios settings.
 - Locked up motherboard or software crash.
 - Faulty DC-DC power supply.
- 3 Flashes Power supply output voltages are out of normal voltage range. Reasons:
 - Power supply output is over loaded or shorted.
 - Faulty DC-DC power supply.
- 4 Flashes Power down, stand-by or hibernate sequence failed. Reasons:
 - Check the wiring of the two wire power-switch cable from power supply connector J9 to power switch pins on the ATX motherboard. If connected properly check the polarity of the power switch pins, may be reversed.
 - Check ATX motherboard bios settings.
 - Check if ACPI function is enabled in the power management BIOS setup. Make sure ACPI drivers are installed in the operating system.
 - Check if application is compatible with ACPI mode of operation.
 - Locked up motherboard or software crash
 - Faulty DC-DC power supply
- 5 Flashes System Operating temperature is out of range.
 - System is cooled or heated if optional Heating and cooling module is installed.
- 6 flashes TBD