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Package Contents

- 1 – DCA9.180 Automotive intelligent Dual output 12V to 20V adjustable DC-DC 180W Power Supply
- 1 – 8 pin power output pigtail cable
- 1 - 2 pin power switch cable.
- 1 - 6 pin DC input main power and IGN pigtail cable.
- 1 - Quick User guide (the one you are reading)

General Information

DCA9.180 is designed to power Low power consumption single board computer system and Peripherals such as LCD monitors, etc that requires two different voltages. Both output voltages are adjustable to fit the appropriate voltages of the devices that you are powering. For, example one output voltage can be set to 19V to power the mother board or small form factor computer, and the other output can be set to 12V to fit the power requirements of an LCD monitor.

It has the ability to hand shake with SBC's that are equipped with ACPI Handshake signals. DCA9 is compatible with 12 or 24 Volt battery system. The power supply ON and OFF sequence is determined by the state of ignition / ON/OFF input.

Firmware versions

There are 2 types of firmware are available.
 FW-DCX-m48-00 is optimized to power a single board computers with ATX handshake signals.
 FW-DCA-m48-00 is optimized to power peripherals such as LCD displays, Radios, Modems, printers etc.
 Contact us if the standard firmware is not suitable or optimum for your application.

Operating Modes

- Mode 1: System ON/OFF controlled by ON/OFF input pin (J1 – pin 3).
 ATX mode, with ON/OFF input connected to Ignition switch ACC point or to an ON/OFF switch to battery (JU2 – position 9 jumper must be removed if it was installed and remove the shorting jumper on J6 between pins 2 and 3 if it was installed)
- Mode 2: System ON/OFF controlled by Front panel soft ON/OFF push button switch.
 ATX mode, with ON/OFF input(J1-pin 3) connected to battery along with +Batt leads (J1 – pins 4, 5) and JU2 – position 9 jumper must be installed. J7, the 2 pin power switch cable Not used in this mode
- Mode 3: System ON/OFF controlled by ON/OFF input pin (J1 – pin 3).
 AT mode, (Short pins 2 and 3 of J6 with a shorting jumper). In this mode Systems handshaking is disabled.

Note: Modes are determined with-in 3 sec of initial power connection to the DC-DC.

General wiring guidelines

Use a dedicated #12 AWG or thicker wire to connect the unit to the battery.
 Use #18 AWG wire for on/off input.
 Note: Do not share power cable with other equipment.

Testing the DC-DC Power supply installation for proper operation in an ACPI implementation

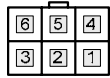
- Power-up the computer by Turning the Ignition switch on (starting the vehicle) or toggling the switch on. The Green Status LED should light up constantly and the computer should power up normally.
 (Note: After connecting the power connector to the power supply, wait for DC-DC to blink twice before turning on the IGN/ ON-OFF switch input. This procedure is required only the very first time the power is applied to the DC-DC.)
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 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. Turn off the computer by turning the ignition switch off. The computer should go into Standby, Hibernate or Shut down 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 mode operation. If any application has problem going into Standby mode then the operating system must be configured for Shutdown

DC-DC power supply Connectors

J1 - Input Power, On/Off and Remote connector



Connector type used: Molex: 39-30-1060
Mating connector type: Molex: 39-01-2060

Pin#	Function	Description	Pin#	Function	Description
1	GND	Power Ground (Input - BLK)	4	+BATT	Battery (Input - YEL)
2	GND	Power Ground (Input - BLK)	5	+BATT	Battery (Input - YEL)
3	ON/OFF	On/Off or ACC (Input - RED)	6	RMT	Remote On/Off (Output - BLU)

RMT - This output can be used to turn ON/OFF the remote devices such as Audio amplifier, External DVD, Camera, monitor, etc. Remote turn ON delay is set by JU2 - 7 & 8 jumper positions.

J11 - 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: JST: B/S 3B-PH-K-S
Mating connector type: JST: PHR-3

Factory Default Setting: Pin 2 and Pin 3 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

J7 - Power-Switch connector

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



Connector type used: JST: B/S 2B-PH-K-S
Mating connector type: JST: PHR-2

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

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

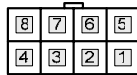
Pin#	Function	Description
1	5V STBY	+5V Stand-by power (output - PUR)
2	PS-ON*	Power supply ON* (input - BLK)
3	GND	Ground - (BLK)



Connector type used: JST: B/S 3B-PH-K-S
Mating connector type: JST: PHR-3

Factory default is ATX mode operation. For AT mode operation: Short Pin 2 to pin 3 with a 2mm shorting jumper.

J8 - Output Power connector



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

Pin#	Function	Description	Pin#	Function	Description
1	V1	+12V to 20V set by JU4 (YEL)	5	+12V	+12V to 20V set by JU4 (YEL)
2	GND	Power Ground (BLK)	6	GND	Power Ground (BLK)
3	GND	Power Ground (BLK or BRN)	7	GND	Power Ground (BLK or BRN)
4	V2	+12V to 20V set by JU5 (ORN)	8	+5V	+12V to 20V set by JU5 (ORN)

JU1 - Shut down delay, Start-up & Shut-Dn Voltages, and Stby-On Jumpers

2mm Shorting Jumper installed 0 = Jumper not Installed 1 = Jumper Installed

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
1	2	3	4	5		10	6
0	0	0	0	0	10.5V	0	0
1	0	0	1	0	11.0V	0	1
0	1	0	0	1	(12.5V)	0	
1	1	0	1	1	13.5V	0	
0	0	1	0	1	15 Min		
1	0	1	0	0	20.0V	1	
0	1	1	1	0	22.0V	1	
1	0	1	0	1	(24.0V)	1	
1	1	1	1	1	25.0V	1	

If Stand-by Jumper is installed, 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 delays, Push-Button Mode and 24V mode Jumpers

0 = Jumper not Installed 1 = Jumper Installed

Remote 1 ON Delay Jumpers			IGN/ Push Button mode operation		12V / 24V mode operation	
Psn #	ON Delay Time	OFF State	Psn #	IGN/ Push Button mode operation	Psn #	12V / 24V mode operation
7	8		9	10		
0	0	1sec Before SD Delay	0	0	0	0
1	0	1Sec After SD Delay	1	1	1	1
0	1	10Sec Before SD Delay				
1	1	20Sec Before SD Delay				

JU4, JU5 - Output Voltage Setting Jumpers

JU Psn	Vx output		
5V	2V	1V	Voltage
0	0	0	20V
0	0	1	19V
0	1	0	18V
0	1	1	17V
1	0	0	15V
1	0	1	14V
1	1	0	13V
1	1	1	12V

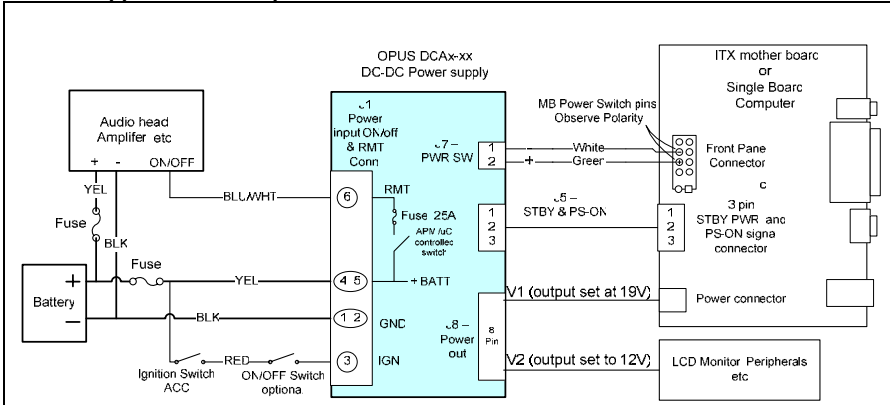
0 = Jumper not Installed 1 = Jumper Installed

2mm Shorting Jumpers installed (factory default for 12V output)

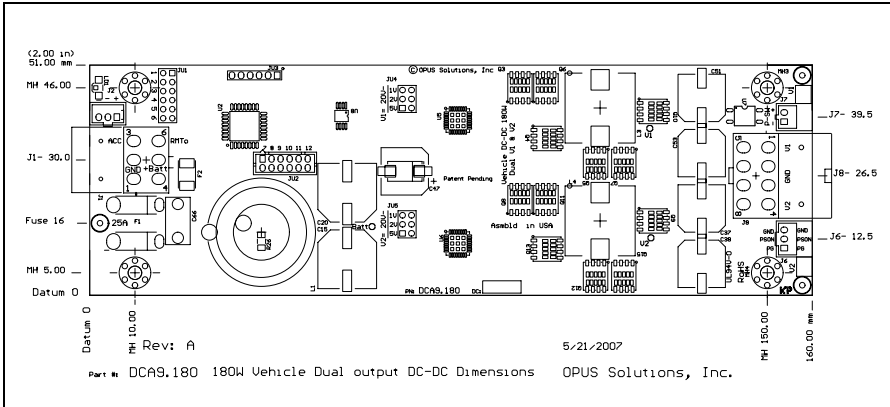
Recommended Installation Steps

- 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 power supply first. Then switch over to OPUS DC-DC power supply.

DC-DC Application Example in and ACPI environment



DCX5 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