

Introduction

DCA9 is an intelligent Vehicle Dual output DC-DC power supply (PATENT PENDING) designed to power small form factor low power computer boards and peripherals that require 12V to 20V inputs. One output can be used to power single input voltage mother boards and the second output can be used to power peripherals such as LCD monitors, etc. It is designed to survive in an automotive environment.



The DCA9 DC-DC power supply has a micro-controller that controls and monitors various functions of the power supply operation. It monitors vehicle battery voltage to protect against deep discharge. The ignition lead is monitored to start the PC when the ignition is turned on and to implement safe shutdown procedure. It controls and monitors motherboard signals to provide smooth power-up and power-down sequences.

The power supply can be configured to shut down the PC after a predetermined delay of up to 60 min. The power supply outputs are monitored to assure proper PC operation. Wake on interrupt feature in DC-DC together with Wake on LAN function on motherboards/SBC can be used to access the vehicle/mobile PC over wireless network without turning on the ignition switch for up to 20 min. at a time. This feature is useful for updating, uploading and down loading data/files of the car PC remotely. A green LED indicator in the power supply continually indicates the status and health. It is also used for troubleshooting.

Remote/trigger output of the DC-DC can be used to turn on/off slave devices such as head units, Audio Amplifiers, LCD monitors, DVD players, Two way radio units, etc. Delayed turn on is implemented to prevent thump-from Audio systems.

There are features that are built-in for trouble free and safe PC operation. The input power is protected against transients, load dumps and double battery conditions. The PC does not reboot during engine start or cranking.

Features

- Wide input voltage range
- Load dump protected
- Transient protection.
- High efficiency (extended battery life)
- Ignition or on/off switch input
- Remote out - to turn on head units, LCD monitors, etc
- Extended operating temperature range
- Delayed shut down timer
- User configurable Start-up / Shut down voltages
- Simple ON-OFF or ATX, ACPI power management mode.

Applications

- Powering Single board computer and an LCD monitor in an automotive application
- Powering Single board computer and Radio systems. etc.

Application Example

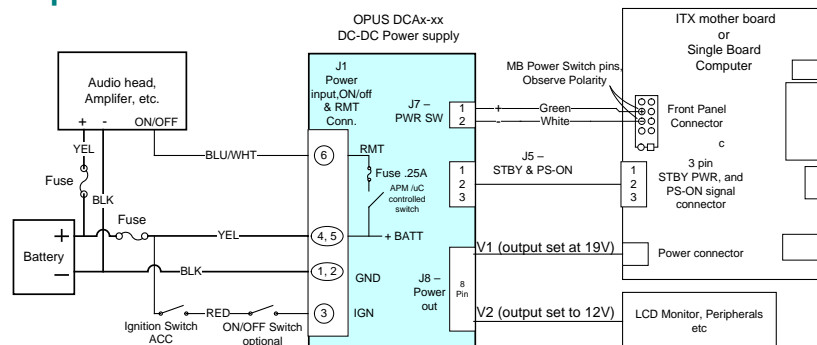


Fig. 1 OPUS DCA9 DC-DC Power Supply Application Drawing

Technical Specifications -Preliminary

Input:

Normal operating input voltage range: 7.5V to 30V DC
 Peak input voltage range: 6V to 33V DC (<= 10Sec at 50% duty cycle repetition)
 Idle state power consumption: < 3mA (Both outputs are at off state)
 Input Power Mating connector: Plug: Molex: 39-01-2060; 2 x 6 Mini Foot Jr.
 Input Protection: LC Pi filter
 Transient voltage clamp limit: 33 to 36V max. (Maximum energy of 450mJ)
 Input fuse: 20A mini blade (Automotive mini blade fuse)
 Input Power mating connector: Plug: Molex: P/N: 39-01-4030
 Crimps: Molex: P/N: 30490-2012

Output:

DCA9	180W	Ripple	Line + Load Regulation
Output voltage range on both outputs	12V to 20V (user settable)	100mv p-p max	1%
Output power limit:	90W on each output.		

Output current at:

+12V:	7.5A max. , 10A Pk
+13V;	6.9A max. , 9.2A Pk
+14V;	6.4A max. , 8.6A Pk
+15V:	6.0A max. , 8.0A Pk
+17V:	5.3A max. , 7.0A Pk
+18V:	5.0A max. , 6.6A Pk
+19V:	4.7A max. , 6.3A Pk
+20V:	4.5A max., 6.0APk.



DCA9.180 in DCA.UC16 Enclosure

Power supplies overall efficiency: 93% for 12V system and 87% for 24V system (at 30% to 95% load)
Note: Power supply output is derated to 160W for 24V system use
 Transient Response: 5uS to steady-state output voltage (with in 0.3% of Vout) for 10- 90% load change
 Output Stability: 0.1% of Vout after 10 minute warm-up
 Output Power mating connector: Plug: Molex: 39-01-2080; 2 x 4 Mini Foot Jr.
 Power switch mating connector: Plug: Molex: 22-01-3027; 2 pin polarized locking conn.

General

Shut Down Delay Time: 10 sec. (Default), 5min, 10 min, 15min, 20m, 30 min, 45min, 60min (set by Jumper)
 Start-up (power-up) Voltage: 10.5V, 11V, 12.5V or 13.5V ± 0.25V (x2 for 24V system) (Jumper selectable)
 Low battery shutdown voltage: 7.0V, 9.0V, 10.5V or 12V ± 0.25V (x2 for 24V system)
 Low battery detection duration: 10 Sec.
 Wake on interrupt operation time: 20 minutes (while Ignition is Off)
 Ignition or ON/OFF input current: <5 mA
 Remote/trigger output source current: 0.30A max. (Switched Battery)
 MTBF: 500,000 hrs min.
 Cooling: Forced air or thermal coupling to heat sink for loads above 150 W.
 Operating Temperature Range: -25°C to 70°C
 External Dimensions:
 DC-DC PCB Module dimensions: 160mm (D) x 51mm (w) x 16mm (H)
 6.3" x 2.0" x 0.63"
 Weight: 120 Grams, 0.25 lb

**Note: Specifications Subject to change without notice*

Ordering Information

Part Number	Description
DCA9.180	180W, Dual 12 to 20V output, intelligent Vehicle DC-DC power supply w/ cable kit
DCA9.180.UC	180W DC-DC with enclosure & Cable Kit

OPUS Solutions, Inc. - Tel: 1-949-387-1010 x223 sales@opussolutions.com - www.opussolutions.com