

User Guide

Chevrolet Volt

Accessory Power Control Module



**General Motors Part Numbers 24262765
and 24261518**

INTRODUCTION

The Accessory Power Control Module, sometimes referred to as the 14v Power Module or less accurately, the Trunk Inverter, is a 2000Watt air-cooled DC-DC converter designed to convert the nominal 350vdc available from the vehicles main battery module down to 12vdc for use in powering the vehicle entertainment systems, interior and exterior light functions, and the many modules within the vehicle requiring 12v power.

It was manufactured by TDK-Lambda in Japan.

In doing so, it acts much like earlier model vehicles alternator, and of course maintains charge on the vehicles normal lead chemistry 12v battery.

The Accessory Power Module is CAN controlled over the vehicles main Controller Area Network by the Engine Control Unit or ECU.

The APM is designed with an integral air cooled finned heat sink. Combined with the small form factor package, this makes it easy to mount in any vehicle. Four mounting holes are provided. The unit is NOT weatherproof – ergo it's position in the Volt trunk.

The Volt features ductwork and a fan to provide cooling air across the heat sink. A 12v fan mounted on the heat sink fins should provide adequate cooling.

SPECIFICATIONS:

- Input Voltage: 260-420 vdc
- Output Voltage: 11-15.5 vdc
- Output Current: 135 Amperes
- Output Power: 2000 watts
- Dimensions: 13" X 9" X 3.5"
- CAN data rate: 500 kbps

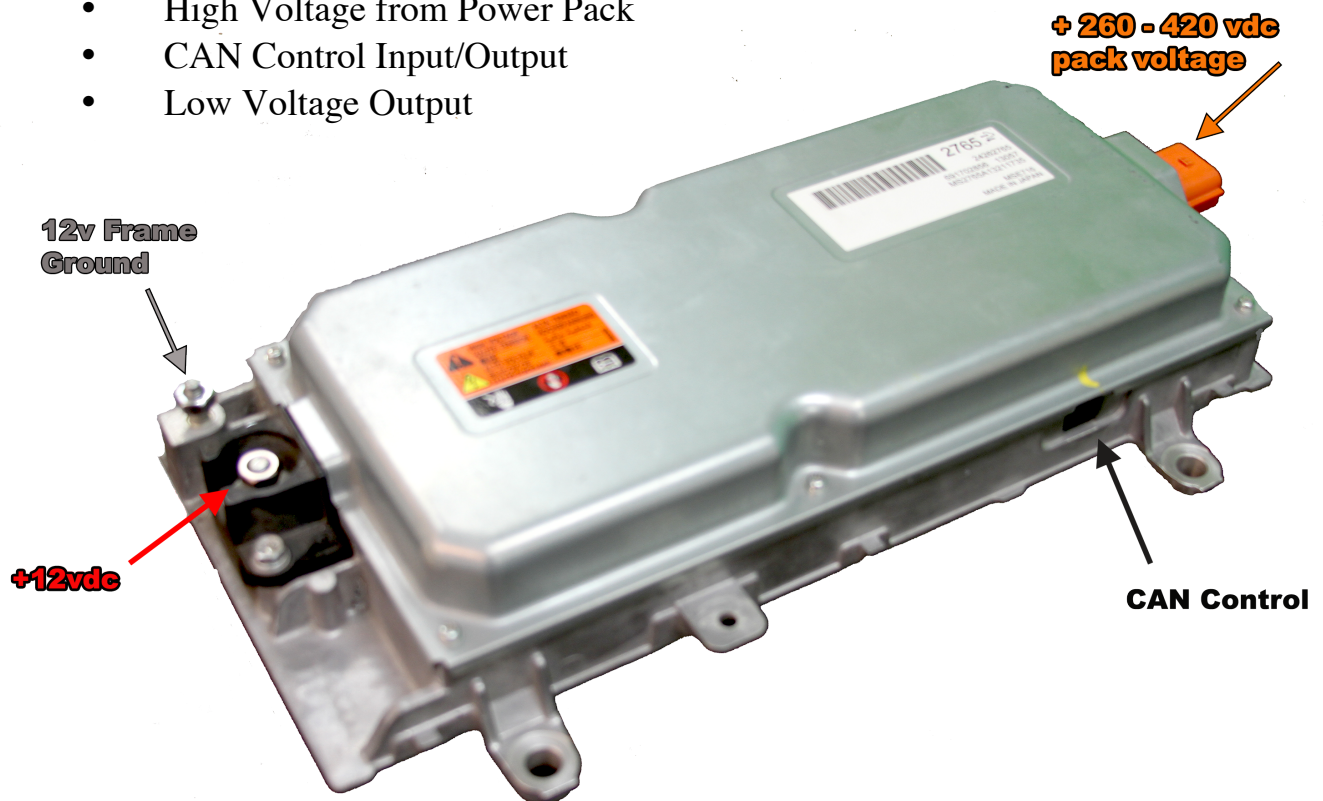
INSTALLATION

The Accessory Power Module should be installed in the vehicle and firmly fixed in position using the four mounting tabs provided on the unit.

Provision should be made for cooling air over the fins of the heat sink on the reverse side of the unit.

The Accessory Power Module features three basic connections:

- High Voltage from Power Pack
- CAN Control Input/Output
- Low Voltage Output

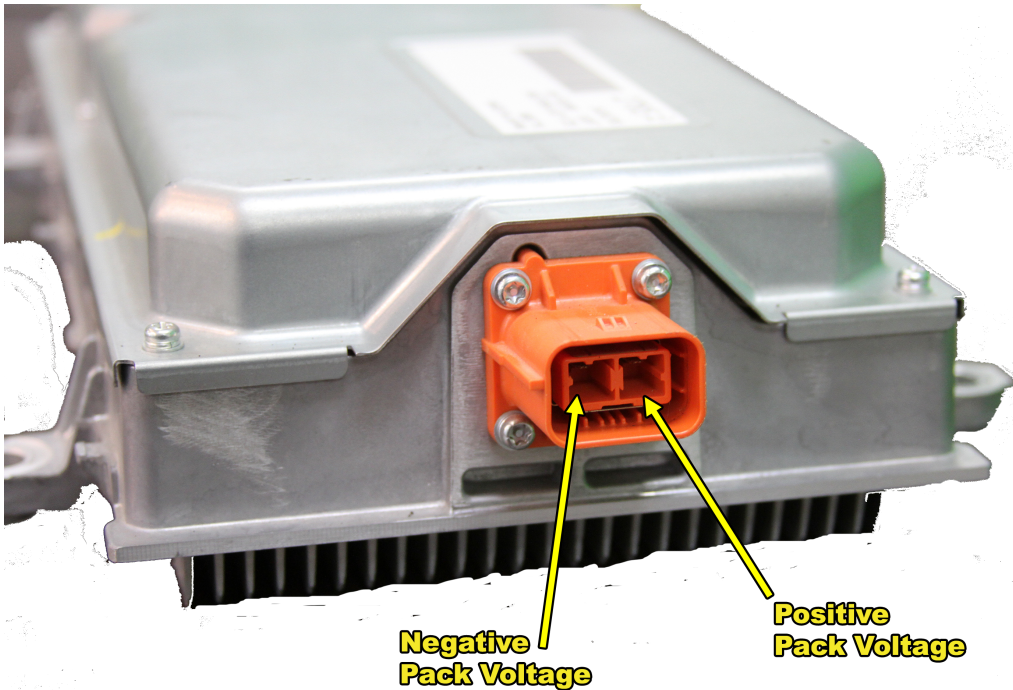


HIGH VOLTAGE CONNECTIONS

There are two variations of APM models used on the Volt. One model has an orange Delphi connector on one end of the unit. The other variation has two orange wires coming directly out the enclosure.

In either case, it is important to note that regardless of wire color or striping you may encounter, the positive pack voltage terminal will be on the right hand side as you face the APM.

The negative terminal will then be on the left hand side. It is imperative to observe polarity on all connections to the APM.

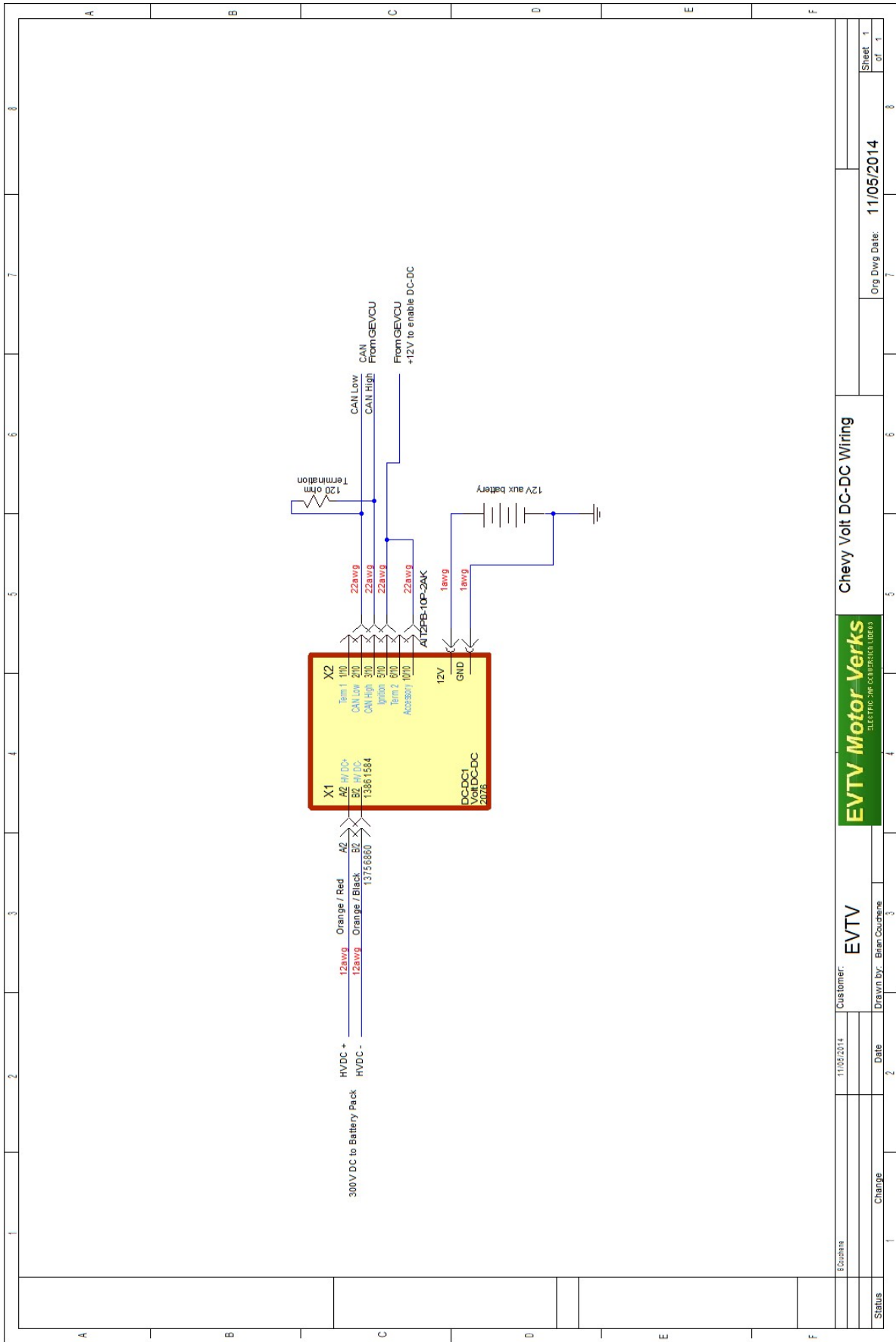


CAN CONTROL I/O CONNECTOR

Control electronics is through the CAN I/O connector. This is a 10 pin connector mounted on the side of the APM. On some versions, this appears on the end next to the low voltage connections.

The drawing below depicts the CAN I/O connector pinout.

The APM comes with a CAN Control Module designed specifically to control this APM. The wire harness of this module features a connector to fit this 10 pin connector. Insert the mating connector until a discernable “click” is felt.



Customer: 11/05/2014		Chevy Volt DC-DC Wiring		Org Dwg Date: 11/05/2014		Sheet 1 of 1	
Status	Change	Date	2	Drawn by: Brian Courtois	3		

LOW VOLTAGE CONNECTIONS

Two terminal studs with nuts are provided on one end of the APM.

The unguarded stud is used for frame ground. Install a short cable capable of 135 amperes between this terminal and a good frame ground on the vehicle.

The guarded terminal is the low voltage (typically 14 volts) output. Again use a cable of sufficient cross section to carry 135 amperes continuously to this terminal. This will normally connect to your fuse box and 12v battery.

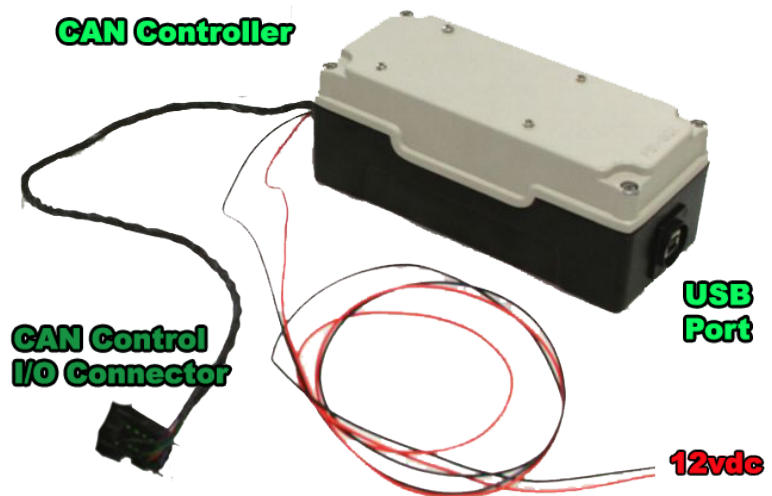
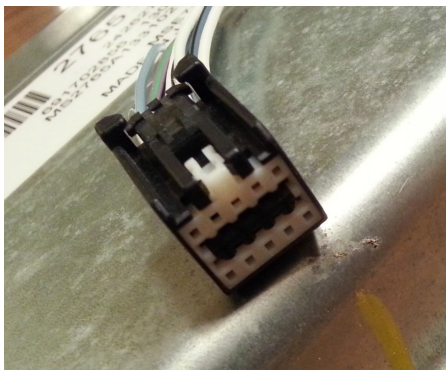
Note that the APM MUST be connected to a 12v battery to begin operation.

CAN CONTROL MODULE

The CAN control module provided with the APM features it's own connections. A wiring harness on the CAN control module features a single red wire, a single black wire, and a harness terminated in a 10 pin connector.

The 10-pin connector is inserted into the CAN I/O port.

The red and black wires must be connected to a 12v source. Red to positive 12v and black to return. This voltage provides power to the CAN control module. But it is also passed on to the APM as the IGNITION and ACCESSORY signals necessary to wake up the APM and begin operation.



The CAN CONTROL MODULE also features a Mini-B USB port. This allows you to connect a laptop computer to configure the APM for whatever output voltage is desired. To use this, you must have an ASCII terminal program running on the laptop, and serial communications settings for a data rate of 115,200 bps, 8 data bits, no parity and 1 stop bit (8N1).

Once connected, you should see something like the following on your ASCII terminal screen:

```
Startup successful. EVTV Motor Werks - Lear Charger Version 1.17

===== LEAR Charger CAN Controller Version 1.17 =====
***** List of Available Commands *****

? or h - Print this menu
a - set desired AC input current limit ie a9.5
c - sets CAN port ie c0 or c1
d - toggles DISPLAY FRAMES off/on to print recieved and sent CAN data traffic

e - set current level to terminate charge ie e4.2
i - set interval in ms between CAN frames i550
k - set data rate in kbps ie k500
v - set target charging voltage CV ie v325.9
x - set 12volt Aux output voltage ie x13.37
z - Zero amphotours and kilowatt hours
*****
=====

Using CAN1 - initialization completed.

VOLTAPM: SetAuxVDC:13.5v Actual:0.0vdc DC Amps:0.00A AuxTemp1:0C AuxTemp2:0C Time: 00:00:00.612

VOLTAPM: SetAuxVDC:13.5v Actual:0.0vdc DC Amps:0.00A AuxTemp1:0C AuxTemp2:0C Time: 00:00:01.163

VOLTAPM: SetAuxVDC:13.5v Actual:0.0vdc DC Amps:0.00A AuxTemp1:0C AuxTemp2:0C Time: 00:00:01.714
```

This program is designed to control both the Accessory Power Control Module and the Lear Onboard Charger from the Volt.

For the APM, there is really only one configuration setting of interest : **AuxDC**.

To set this value, enter the character **x** and a value, then RETURN. For example, to set our output to 13.2v, enter **x13.2** or **X13.2** and press ENTER or RETURN. The **SetAuxVDC** and **Actual** values displayed should immediately update to the newly entered value.

DC Amps will display the output current delivered by the APM. This is not configurable, but rather the resulting current into variable loads while the APM attempts to maintain the Auxilliary DC voltage.

AuxTemp1 and **AuxTemp2** display internal APM temperatures in degrees Centigrade.

This function allows you to monitor voltage, current, and temperature for installation and test purposes and to configure the output voltage.

But once accomplished, the laptop may be disconnected. It is not needed for normal operation. The configured voltage will be saved to EEPROM and used in all future operations until changed again.

To operate the Accessory Power Control Module, simply apply 12vdc from the battery to the input to the CAN Controller Module. This could be from your ignition switch for example.

ALTERNATE VERSION

