

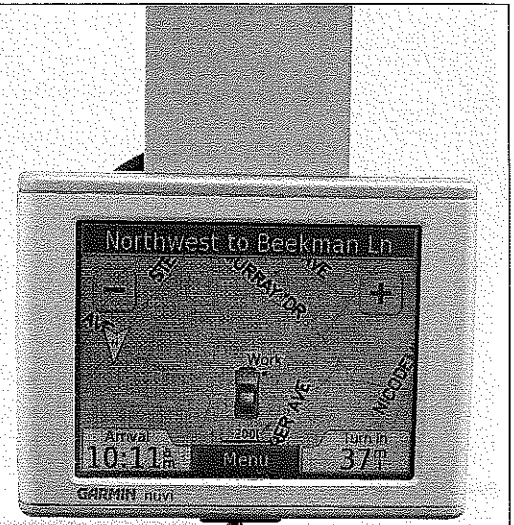
6 VOLT CONVERTERS

Special Adapter for 12 Volt Accessories

By Chris Wantuck

Do you enjoy driving your classic or antique automobile on tours or going to local meets? When driving do you wish that you could include your favorite 12 volt powered accessory? Did you think that because your collectible auto runs on 6 volts that you can't use it? Think again! This article looks at two products that are special converters used for powering 12 volt accessories using the existing 6 volt electrical system on your car.

There are many accessories that are now available that we have become fond of and tend to use in our modern daily drivers. Radios and the latest version of Global Positioning Systems (GPS) are two that come to mind. Radios can range from the simple AM/FM models to ones with features like a CD player (or accept MP3 players) to the high end models that include satellite radio. Some of the CCA or AACA tours take us places that are well out of range of standard FM reception and this is where satellite radio has an advantage. Another possibility is your favorite piano concerto has been loaded onto an IPOD which eliminates the need for any radio reception. The capacity of these small digital players can probably provide more music time than there are hours on the tour. The latest GPS units now come with large color graphics and some with synthesized voice which can guide a driver to their destination with friendly prompts well ahead of time and with surprising accuracy and reliability. If even it augmented the navigator's written instructions, it would serve its purpose by keeping the group on the prescribed route. While all these sound like nice ideas, they have one thing in common: They need power to operate them and at 12 volts, not 6 volts as usually found on our pre-war cars.



Garmin model 350 GPS unit held on to the windshield by a suction cup. This model includes voice directions and was surprisingly reliable in the hilly terrain in the Seattle-Tacoma, Washington area.

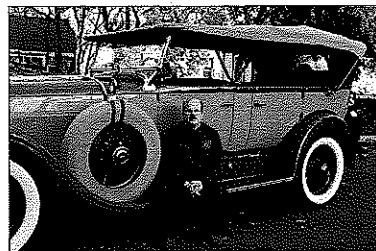
There are several options to power our "special accessories". A dedicated 12 Volt battery source such as a sealed gel cell could be used for powering a GPS for one or two days. The gel cell could be charged at night to be fresh for the next day, but this is a tedious task and would not be practical for even a small size radio. If your intention is to regularly power a 12 volt accessory, then the most practical method is to use a 6 to 12 volt converter. The two units examined were the PowerStream Technologies DU-700 and the Meyers Electronics MES612-NG8A.

The simple explanation of how it works is 6 volt converters use solid state transistor like components to "chop-up" the 6 volt level into an alternating or fluctuating level. The current is passed through a transformer to step-up or increase the voltage before the converter rectifies the fluctuating signal (turns it back to direct current) which results in a level a little more than the desired 12 volts output. The final part of the converter process filters and regulates those earlier fluctuations so they won't interfere with the 12 volt accessory. Two points must be made clear: 1) converters draw extra power just to perform their function and 2) the converter must have the ability to dissipate this extra power in the form of heat. Each of these two products performs this with slightly differing results and is a point of comparison for this article. Table 1 lists the current draw for each of the two converters under various loads.

TABLE 1

12 Volt Accessory current draw	PowerStream DU-700	Meyers MES612-NG8A
0.0 Amps	0.6 Amps ¹	0.08 Amps
1.85 Amps	4.0 Amps ¹	3.4 Amps
2.3 Amps	8.0 Amps ¹	7.2 Amps

1—Powerstream unit includes an internal cooling fan which is on all the time.



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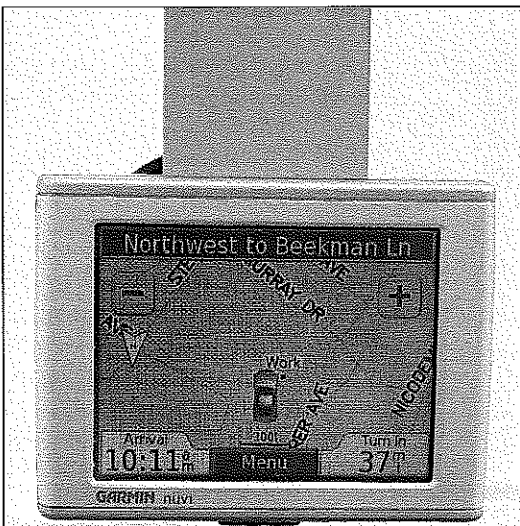
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Correct installation is an important part when using these converters. The polarity of your collector car must be known when ordering and installing these converters. There are only two possibilities: Either the vehicle has a positive ground or negative ground 6 volt system. The Powerstream DU-700 is intended for positive ground vehicles, but with extra care during installation it can be used for negative ground autos as well. Powerstream also offers a unit that is more capable than the DU-700, is compatible with both positive or negative grounds, but also has a higher price. The Meyers Electronics units are for specific applications. The model MES612-NG8A (tested here) is the negative ground version and the MES612-PG6A is the model intended for positive grounded vehicles. The Meyers MES612-PG6A can provide a 12 volt output of 6 amps of current whereas the MES612-NG8A provides up to 8 amps at the 12 volt level. Even with a 6 amp rating, this is more than adequate for a small radio, a GPS, and even charging a cell phone.

An installation consideration is the use of the remote Power-On feature. Both the Powerstream and the Meyers units offer this feature and it is suggested it be included when installing your unit. Remember that these units draw some power even when the 12 volt accessory is not turned on, so to eliminate the battery from going dead, these products can be powered on by using either the ignition switch or a separate switch that maybe concealed under the dashboard. This allows the unit to be located in an out-of-the-way place (like under the seat), but still have ready access to control it on or off. The electrical connections are especially important. The wiring from the unit to the 6 volt source should be direct high amperage leads. 12 or 10 gauge wire is recommended and can include a separate in-line fuse for added protection. The wiring from the unit to the 12 volt accessory may use lighter 14 gauge wire and may even use quick disconnect connectors such as the Molex brand with .093 contacts. This is where you could include the remote Power-On feature by selecting a connector with enough contacts (circuits). Most certainly every wiring harness is likely to be different, depending on the location of the converter, routing of the harness and location of your 12 volt accessory(s).



Powerstream DU-700 Converter Features

- The DU-700 is 8 inches long X 7.6 inches wide X 2.6 inches high. Note that the electrical connections for this model are mounted on both ends of the unit.
- Screw terminals for electrical leads.
- Built in fuses and cooling fan.
- Must mount on insulated mount for negative ground vehicles and ensure isolated contact for your 12 volt accessory.
- 180 Watt capacity (250 Watts with model PSTC-0624012).
- Remote Power-On feature.
- \$140 retail directly from Powerstream.

Left: The Powerstream DU-700 6 to 12 volt converter.

Below: The Meyers MES612-NG8A 6 to 12 volt converter.

Meyers MES612-NG8A or MES612-PG6A

- The MES612 converters are 7 inches long X 4.6 inches wide and 2 inches high. The electrical connections and fuse for this model are mounted on one end of the unit. This is where the use of
- Molex connectors may prove beneficial.
- Built in fuse.
- Specific models for either positive or negative ground vehicles.
- Remote Power-On feature.
- Keep alive low power voltage lead (for clock in the radio).
- 100 Watt capacity.
- \$149.95 retail directly from Meyers Electronics.



Summary.

1. A 6 to 12 volt converter should not be used when the engine is not running. Converters can easily run down a 6 volt battery which would require getting a jump start. If you're going to use the converter and accessory without the engine running, do it briefly.
2. Converters draw more than twice the amount of current at 6 volts as the accessory is rated at 12 volts. You must use suitable sized wire from the battery connection to the converter and should include an in-line fuse and keep spare fuses in your tool kit.
3. Use good quality connections and size the wire accordingly. 10 or 12 gauge wire should be used from the converter to the connection point (ammeter or battery).
4. Converters will dissipate heat in performing their 6 to 12 volt conversion. Locate the converter away from a heat source (such as the firewall or next to the exhaust system) and preferably where it can get some air movement.
5. Converters will draw current even with the accessory turned off so a means of turning the converter off must be considered. Both the Meyers and Powerstream units have a remote Power-On feature built in that will turn on the converter either with a manual switch or when wired to the ignition switch.
6. Think about how and where your converter will be installed and wired. The use of Molex brand multi-pin connectors with the heavier duty .093 contacts may prove beneficial in your harness's design. Remember to use the male plug with female contact pins on the

source (voltage) side so if disconnected would minimize being exposed to electrical shorts. A blank female plug could be used for times when disconnected for added protection.

7. The Meyers models have a provision where it can power a 12 volt low current feature such as the clock on a radio. This small amount of current maybe considered negligible, but should be considered when installing your unit and considered during vehicle long term storage.

**IF YOU ARE NOT FAMILIAR WITH
ELECTRICAL WIRING, SEEK ASSISTANCE
FROM A PROFESSIONAL.**

References:

Power Stream, 140 South Mountainway Drive, Orem, UT 84058 Phone: 801-764-9060/9062, Fax: 801-764-9061 Website: <http://www.powerstream.com/> E-mail: friends1@powerstream.com

Meyers Electronics Services, 562 Washington Street. River Falls, WI 54022 Website: <http://www.6to12volt.com> E-mail: cmeyer@pressenter.com

Articles, "Electrical Connections, The Importance of Soldering", Metropolitan Skyline Volume XVIII Issue 3, Fall 2006, pages 18-20 and CCCA Bulletin Number 2, February 2008, pages 8-9

Right: The line-up of Classic Cars at the Automatic Switch Show on May 4, 2008, showing from right to left—the Gluck's 1940 Cadillac Convertible Sedan, Art Lloyd's 1928 Franklin Sport Sedan, a Pierce-Arrow. Bob Rooke's 1934 Packard Convertible Victoria, Dietrich and hidden behind Bob's car, Jeff Guss' 1941 Packard LeBaron Sport Brougham.

