



# USER GUIDE

## FOR 100 WATT VEHICLE POWER ADAPTORS

### ADAPTORS FOR CAMCORDER AND PORTABLE COMPUTER MAINS CHARGERS

(suitable for any power supply employing switched mode conversion techniques).

<b>SM 2911</b> 12V INPUT, WITH 3 PIN IEC OUTPUT LEAD.	RS STOCK No. 243-1686.
<b>SM 2919</b> 12V INPUT, WITH 2 PIN IEC OUTPUT LEAD.	RS STOCK No. 243-1692.
<b>SM 2913</b> 24V INPUT, WITH 3 PIN IEC OUTPUT LEAD.	RS STOCK No. 243-1709.
<b>SM 2914</b> 24V INPUT, WITH 2 PIN IEC OUTPUT LEAD.	RS STOCK No. 243-1715.

### HIGH VOLTAGES EXIST IN THESE ADAPTORS, TREAT WITH CARE.

See Product Safety Leaflet 2911R998

**GENERAL:** Modern battery chargers for notebook computer and camcorders achieve their small size and light weight by employing a conversion technique known as 'switched mode'. To use this technique, the ac mains is first rectified to produce high voltage dc, which is then converted to low voltage by high frequency modulation. It is therefore only necessary to supply such devices with high voltage dc to run them. This voltage may be fed directly into the charger's mains input socket as dc passes unchanged through rectification.

These small adaptors generate an appropriate mains level dc output from either a 12 or 24 volt vehicle battery, depending on model. They are rated for use up to an equipment power of 100 watts. They have a 0.69 metre input lead, fitted with a plug for direct connection to the vehicles cigar lighter socket, and have a 1.43 metre long output lead for connection to the equipment charger's mains input socket. Chargers usually use one of two types of mains input connector, either 3 pin IEC (kettle type) on older units, or 2 pin IEC (cassette type) on newer models. Make sure that you have ordered the correct adaptor for your needs. Note that some of the latest notebook computers have an integral charger, with a mains socket on the rear of the computer.

Some computer charger units are sensitive to which way round (polarity) the high voltage dc is connected to them. If your charger does not work then the 2 pin IEC connector should simply be flipped as it fits both ways round. For chargers having 3 pin IEC output leads, two wires must be swapped inside the adaptor. Push-on terminals are provided to facilitate reversal. See section on 'polarity reversal'.

These adaptors are fitted with an audible warning indicating that the vehicle battery is becoming discharged, prompting vehicle start to boost the battery. Should the battery voltage fall below a critical level, the adaptor will latch off. Unplug and re-connect the adaptor input to re-enable the output once the car has been started.

**CAUTION:** The output is only suitable for equipment employing switched mode power conversion, and not having a 50Hz mains transformer. These adaptors are only suitable for use with vehicles having the negative of the battery connected to chassis.

**COMPATIBILITY CHECK:** Measure the resistance between the live and neutral pins of the charger's mains connector (no mains connected). If the resistance is greater than 10K ohms (no mains transformer primary) then the equipment does not have a mains transformer and should be compatible.

**CONNECTION:** The adaptor just plugs into the vehicle's cigar lighter socket, using the cable mounted plug, and the flying output lead plugs into the charger mains socket. Do not extend the input wires. Unplug the adaptor when not in use. It will still draw some current if you don't, slowly discharging the battery.

**BATTERY DRAIN:** 12V input adaptors draw about 1 amp from the battery for every 10 watts of actual load applied. 24V input adaptors draw half as much. A DIRECT WIRING KIT, SM2790 (RS 597-504) is available if you are in doubt about your cigar lighter socket rating.

Typical vehicle battery load by a portable computer is less than the equivalent of one headlamp bulb. Intermittently used computers will not significantly drain the battery, but anything used continuously could discharge the battery enough to cause car starting problems unless some precautions are taken. If you have any doubts, start your car periodically for 15 minutes to boost the battery.

**POLARITY REVERSAL:** In a small number of cases, some chargers will only work with the mains level output connections a particular way round. Should your charger employ the 2 pin IEC cassette connector, simply rotate it through 180 degrees, and mark it so that you always insert it the same way up. Should your system employ the 3 pin IEC (kettle type) connector then the connections must be reversed inside the adaptor:

**WARNING:** These instructions must be followed exactly to avoid a potentially fatal electric shock:

Unplug the Power Adaptor both from the vehicle battery (cigar lighter connection) and the notebook charger. Wait 30 minutes for internal capacitors to discharge.

Double check that the adaptor has been unplugged from the battery input. Remove the lid of the Adaptor (4 screws) and locate the Brown and Blue wires going to the output cable. These wires may be pulled off with a steady pull. Push the connections back on again, reversing the order of connection such that the Brown wire connects to terminal marked 'J' and the Blue wire connects to terminal marked 'E'. If in doubt, get a qualified electrician to do the job. Replace the lid and screws before connecting to the vehicle battery.

#### **INTERNAL FUSE REPLACEMENT INSTRUCTIONS.**

**WARNING:** These instructions must be followed exactly to avoid a potentially fatal electric shock:

Unplug the Power Adaptor both from the vehicle battery (cigar lighter connection) and the notebook charger. Wait 30 minutes for internal capacitors to discharge.

Remove the lid of the Adaptor (4 screws) and locate on the circuit board the standard UK mains type fuse (13A for 12 volt units, 7A for 24 volt units). Replace it with a new one after levering the old one out with a suitable tool. You **MUST** replace the lid and retaining screws before connecting to the vehicle battery.

#### **HELPFUL HINTS:**

Remember to run your vehicle occasionally, especially if you are using a powerful appliance. Save any active data to disk before starting the engine as the battery supply to the cigar socket may be interrupted.

Keep the unit uncovered, it will run 'bath water' hot to the touch if used at high powers and needs ventilation.

Don't extend the input lead, except by using the Direct Wiring Kit Model SM2790 (RS 597-504).

Don't leave the adaptor plugged in when not in use. It will still slowly discharge the vehicle battery.

#### **SPECIFICATION:**

	<b>SM2911 and SM2919</b>	<b>SM2913 and SM2914</b>
DC Input Supply Range, continuous:	11V - 14.5V	21.6V - 30V
DC Input Supply Range, 10 seconds:	10V - 18V	20V - 38V
Input Current per 10W loading:	1 A	0.5A
Input Current, No Load (typical):	0.2A	0.15A
Battery Low Audible Warning (typical):	10.5V (9.6V latch off).	20.7V (19V latch off).
DC Output Voltage:	Suitable for chargers rated at 230VAC input. 330VDC nominal, equivalent to rectified mains, 250VDC to 368VDC depending on load and input voltage.	
Output Power:	100 Watts continuous maximum.	
Output Power, Short term:	120 Watts for 1 minute from cold.	
Protection:	Internal input fuse and latching overload protection. Unplug input to reset.	
Size and Weight:	Length 111mm by Width 60mm by Height 30mm. Weight 400 grams.	
Ambient Temp Range:	-10 to +30C operating, -20 to +50C storage.	
Manufacturer:	Made in the United Kingdom by Switched Mode Ltd., Reading, Berks.	

**CAUTION:** These adaptors are supplied on the basis of the user determining the suitability for the purpose for which they are to be used. Stand alone use only, do not connect to house mains. Power off when not in use to avoid battery drain. Do not reverse input polarity. Do not expose to moisture. Allow adequate ventilation to assist unit cooling. Removal of the input cigar plug will void the warranty.

**WARNING:** Output potentially lethal, treat with same care as house mains. Adaptor will not operate RCD breakers. Lethal voltages inside. Refer to User Guide before changing input fuse. Not for life dependent use.

**NOTE:** The adaptor is designed to run at up to a case temperature of 60C under heavy load conditions.