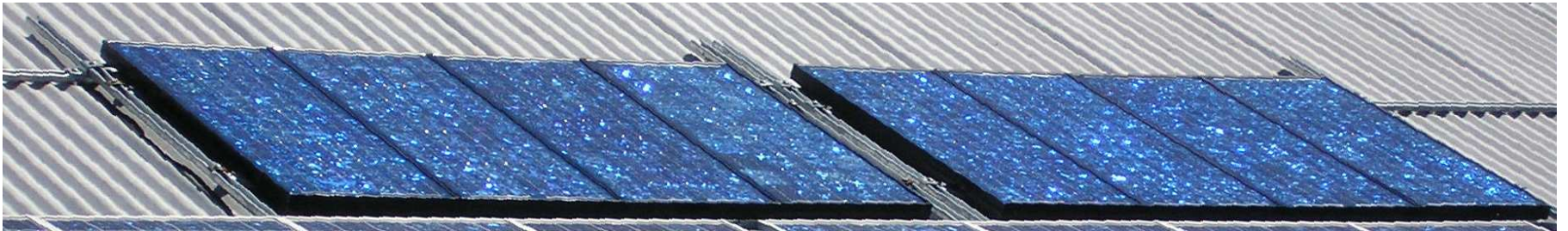


# Low cost independent remote power supply using a UPS



# Panels 8 x 60 Watt polycrystalline – second hand

- 60 Watt Solarex polycrystalline
- two parallel strings of 4 panels in series
- panels configured as 16.8 volts (12 volt)
- 48 volts DC, 10 amps ie 480 Watts
- mounted as 2 groups of 4 panels
- String and bypass diodes for protection



# 48 Volt battery bank

- UPS internal batteries dead and removed
- Replacement batteries - 8 x Lead acid deep cycle 130 Amp.hour, 6 Volt.
- Configured in series as 130 Amp.hour, 48 Volt or 6.240 kWatt.hour
- Usable energy approx. 33 % of 6.240 kWatt.hour or 2.080 kWatt.hour (about 20 x 100 W globes for 1 hour)
- Care is required before attaching batteries to a UPS – capacitors store charge.



# Voltage regulator – Plasmatronics PL20

- The PL20 is a complete battery system controller capable of handling battery, PV, Wind, microhydro or other inputs.
- It is completely programmable, has data logging and can be connected to a PC through an RS232.
- This little box is expensive but a very nice piece of gear and worth the dollars.
- Designed and manufactured in Melbourne.
- See <http://www.plasmatronics.com.au/>



# The UPS box

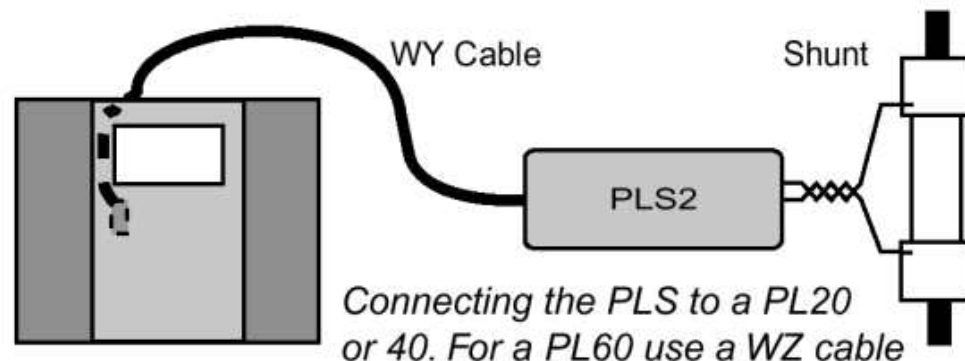


# Features of the UPS

- Battery charger and inbuilt logic controls the gas point charge setting coming on for short times periodically and a float charge setting for normal charge.
- Adjustable gas point and float charge voltages, adjustment for typical mains voltage in the area and a number of other functions.
- Automatic low battery shut down.
- An RS232 connector for logging shut down signal.
- Alarms for low battery etc.
- Two UPS standard power point plugs.
- Two filtered non-UPS standard power point plugs.
- A number of fuses to protect the UPS, battery and attached equipment.
- Sine wave inverter 1500 Watt continuous rating, 2500 Watt peak transient

# Shunt adaptor - Plasmatronics PLS2

- The PLS2 shunt adaptor is designed for use with PL series solar charge controllers.
- It allows the controller to measure charge or load currents which do not go through the controller.
- This allows inverter or generator currents to be included in the controller's display. (price approx. \$230).
- The PLS2 shunt adaptor measures the current in a current shunt and converts that measurement into a digital form. This data is then sent to the PL controller.
- See <http://www.plasmatronics.com.au/>

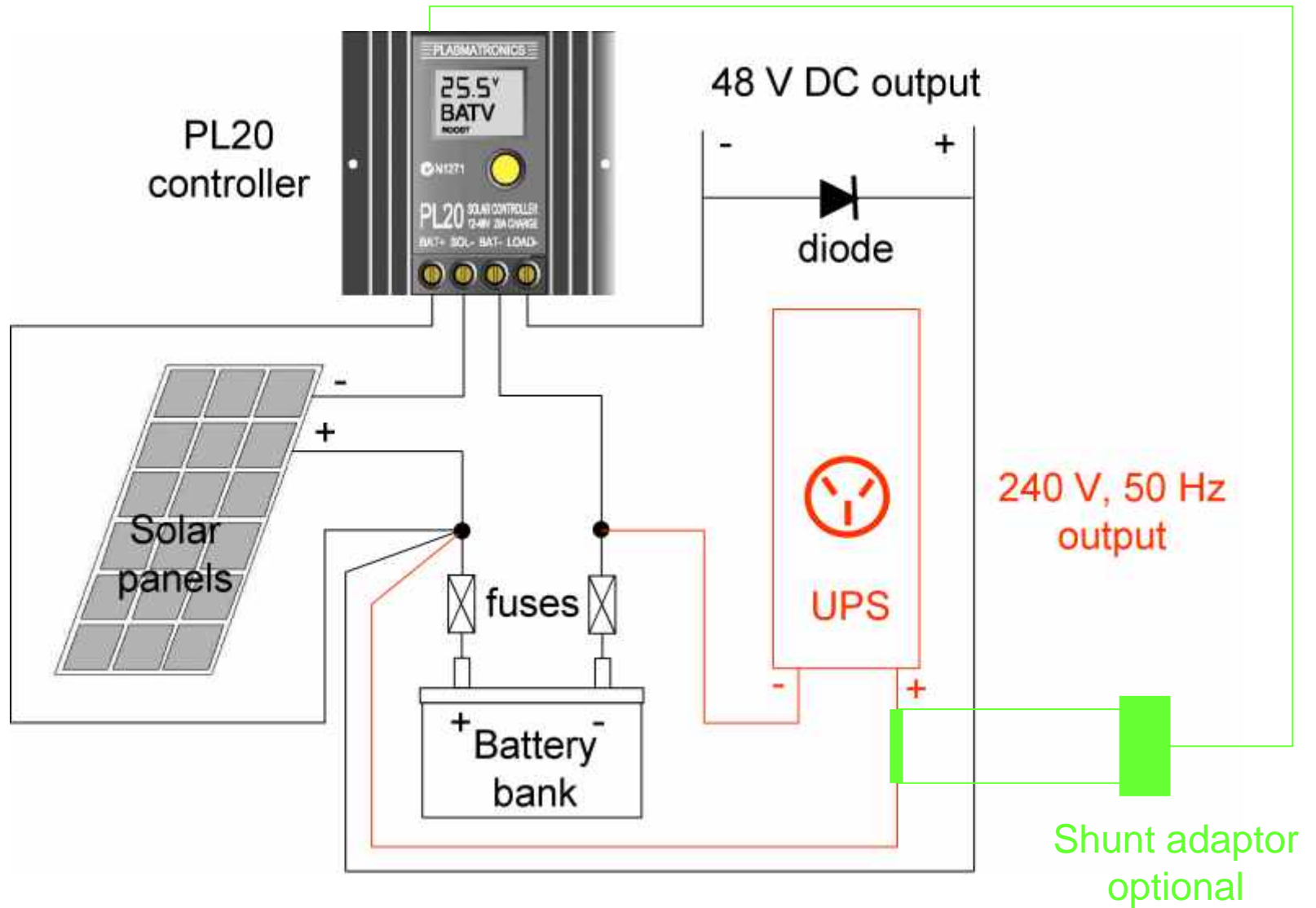


# The control board





# The circuit



# Sourcing components of UPS independent power supply

- **Panels** - 8 x 60 Watt Solarex polycrystalline panels. Second hand.
- **Bypass and string diodes** - From old computer power supplies.
- **Panel mounting system** - Unistrut, but could use anything sensible, Steel bed frames are good.
- **Inverter** Holec UPS - From the rubbish heap at service shop.
- **48 Volt battery bank** - second hand from a service engineer for commercial UPS systems
- **Voltage regulator** - Plasmatronics PL20Wiring
- **Terminal block** - From the bring out your rubbish
- **Battery box, timber and paint** - From bring out your rubbish

# System component prices

Panels: second hand (and very good price at that)	8 x \$200 =	\$1,600
Panel mounting system: (Unistrut) could make it yourself with old bed frame angle iron etc		\$ 300
Inverter: Holec UPS. From the rubbish heap.		\$ 0
Batteries: second hand 8 x \$20 (probably a very good price – I had reliable information that they were in good shape)		\$ 320
Voltage regulator: Plasmatronics PL20		\$ 330
Wiring and terminal block: From the rubbish heap.		\$ 0
<u>Battery box, paint: From the rubbish heap.</u>		<u>\$ 0</u>
Total		\$2,520