PVI SOLAR
Solar Powered Lighting and Signage Systems

PowerLine™ Power Management System
General Specifications Sheet

PVI Solar's PowerLine™ Power Management Systems is a microprocessor-based control system developed specifically for Illuminating solar signs and lighting. The system hardware and software are custom engineered for lighting applications ranging from small directional signs to large billboards and roadway lighting.

Each lighting application is built from standard electronics hardware and software configurable modules that can be added as needed to handle the solar power requirements specifically needed for a project. The entire system is DC current based to optimize the energy conversion from solar panels to battery storage to LED light output, maximizing energy harvesting and usage. No energy is wasted using conventional DC-AC solar inverter technologies that are typically done for solar panel building installations.

The key to PVI Solar's PowerLine™ Power Management Systems is our customizable microprocessor controller which serves as the master control for the system. The master controller is fully programable for any solar sign or lighting application. The controller has on/off set point control for fixed time operation and/or seasonal dusk/dawn activation. For special projects requiring system solar powering during daytime conditions, the controller can also be programmed for 24/7 operation.

For medium and larger size solar power projects, additional solar charger, electronics and switching cards can be added and slave controlled by PVI's master controller. The ease of hardware customization and software configurability enables PVI to provide an optimized control system strategy for each solar sign and lighting application.

For sign and lighting project locations that have utility grid power available, an Integrated Solar Grid Assist(ISG™) module can be added to use the grid as a back-up. ISG™ technology is designed to use solar energy as its primary source of power. Energy from the grid is only added to the ISG™ system during periods of low solar energy. All solar energy collected is stored by the ISG™ system using batteries and none is sent back to the grid (no net metering).

PowerLine™ System Features

- Modular master/slave control architecture.
- Microprocessor-based master controller, customizable.
- LED driver configurable for constant voltage or constant current control.
- Logic can differentiate between daylight and environmental ambient light.
- Charge controller utilizes maximum power point tracking (MPPT).
- On/off set point control for fixed time operation, seasonal dusk/dawn activation or 24/7 operation.
- Look-ahead battery-load correlation routines for maximum off-grid survival operation.
- Fully programmable algorithmic load optimization utilizing Pulse-Width-Modulation (PWM).
- Temperature compensated battery charging at automated full/slow/trickle charge rates.
- Dual-balanced independent PV panel inputs. Motion sensor configurable.
- Multisource power inputs including both AC and DC supply.
- Battery 20% depth of battery discharge and over/under charging voltage cutoff.
- 24/7 operation -Real-time clock.
- Start-up self-test and status indication.
- Terminal connector wire termination.

PowerLine™ System Specifications

Electronics operating voltage range:	12–24 VDC
Battery charger voltage:	12 VDC
PV open circuit voltage:	(small systems) 25 Voc (med systems) 28 Voc (large systems) 57 Voc
PV peak power output:	(small systems) 5 - 65 Wp (med systems) 65 -300 Wp (large systems) 300 + Wp
Dimensions:	(small systems) 4" wide x 8" high x 3" deep (med system) 9" wide x 12" high x 6" deep (large system) 14" wide x 14" high x 6" deep
Operating temperature:	-40 to +40 deg C (-40 to 105 deg F)
Solar electrical standards:	NEC2011 / NFPA70
Warranty:	5 year limited