



## PS200

Smart 12 V Power Supply with Charging Regulator and 7 Ah Rechargeable Battery



## Optimized Power Performance

Manages voltage and amperage to protect battery

### Overview

The PS200 is a 12-Vdc battery with a charge controller. The controller manages amperage and voltage for safe, optimized battery charging from a solar-panel or AC power source. It also measures various input, output, and status parameters to allow close monitoring of the battery during charging and use. The

PS200 includes a 12-Vdc lead-acid battery, while the CH200 is for use with a user-supplied battery.

*Note: If you do not need or desire the 6182 7 Ah Sealed Rechargeable Battery that is shipped with the PS200, consider ordering the [22238](#) instead.*

### Benefits and Features

- › Protects against high-amperage and high-voltage damage to power supply
- › Ability to monitor both load and battery current
- › Battery reversal protection
- › Real-time measurements of charge input voltage, battery voltage, on-board temperature, battery current, and load current
- › Two-step constant voltage charging and temperature compensation optimize battery charging and increase the battery's life
- › Allows simultaneous connection of two charging sources (e.g., solar panel, ac wall charger)

### Detailed Description

The PS200 power supply consists of a rechargeable, 7 A h, valve-regulated lead-acid (VRLA) battery and a charging regulator. This microcontroller-based smart charger has two-step constant voltage charging and temperature compensation that optimize battery charging and increase the battery's life.

Two input terminals enable simultaneous connection of two charging sources. The PS200 also incorporates a maximum power point tracking algorithm for solar inputs that maximize available solar charging resources. RS-232 and SDI-12 terminals allow the PS200 to convey charging parameters to a data logger.

The PS200 has several safety features intended to protect the charging source, battery, charger, and load devices. Both the SOLAR – G and CHARGE – CHARGE input terminals incorporate hardware current limits and polarity-reversal protection.

A fail-safe, self-resettable thermal fuse protects the CHARGE – CHARGE inputs in the event of a catastrophic AC/AC or AC/DC charging source failure. Another self-resettable thermal fuse protects the 12 V output terminals of the charger in the event of an output load fault.

The PS200 also has battery-reversal protection, and includes ESD and surge protection on all of its inputs and outputs.

## Specifications

Operational Temperature -40° to +60°C (VRLA battery manufacturers state that “heat kills batteries” and recommend operating batteries at ≤ 50°C.)

Dimensions 19 x 7.6 x 10.6 cm (7.5 x 3 x 4.2 in.)

### CHARGE - CHARGE Terminals (AC or DC Source)

AC 18 to 24 VRMS (with 1.2 ARMS maximum)

DC 16 to 40 Vdc (with 1.1 Adc maximum)

### SOLAR Terminals (Solar Panel or Other DC Source)

*-NOTE- Battery voltages below 8.7 V may result in less than 3.0 A current limit because of fold-back current limit.*

Input Voltage Range 15 to 40 Vdc

Maximum Charging Current 4.0 Adc typical (3.2 to 4.9 Adc depending upon individual charger)

### Quiescent Current

No Charge Source Present 300 µA maximum

No Battery Connected 2 mA maximum

### Battery Charging

*-NOTE- Two-step temperature-compensated constant-voltage charging for valve-regulated lead-acid batteries; cycle and float charging voltage parameters are programmable with the default values listed.*

CYCLE Charging  $V_{batt}(T) = 14.70\text{ V} - (24\text{ mV}) \times (T - 25^\circ\text{C})$

FLOAT Charging  $V_{batt}(T) = 13.65\text{ V} - (18\text{ mV}) \times (T - 25^\circ\text{C})$

Accuracy ±1% (on charging voltage over -40° to +60°C)

### Power Out (+12 Terminals)

Voltage Unregulated 12 V from battery

4 A Self-Resettable Thermal Fuse Hold Current Limit  
 > 4 A (< 20°C)  
 > 2.7 A (60°C)  
 > 3.1 A (50°C)  
 > 4.0 A (20°C)

### Measurements

*-NOTE- At -40° to +60°C*

Average Battery Voltage ±(1% of reading + 15 mV)

Average Battery/Load Current Regulator Input Voltage ±(2% of reading + 2 mA)

Impulse type changes in current may have an average current error of ±(10% of reading + 2 mA).

Solar ±(1% of reading - 0.25 V) / -(1% of reading + 1 V)

1.0 V negative offset is worst-case due to reversal protection diode on input; typical diode drop is 0.35 V.

Continuous ±(1% of reading - 0.5 V) / -(1% of reading + 2 V)

2.0 V negative offset is worst-case due to two series diodes in AC full-bridge. Typical diode drops are 0.35 each for 0.7 V total.

Charger Temperature ± 2°C

For comprehensive details, visit: [www.campbellsci.com/ps200](http://www.campbellsci.com/ps200)



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