



## PS200 and CH200

Smart Power Supply and Charge Controller

# Optimized Power Performance

Manages voltage and amperage to protect battery



## Overview

The PS200 and CH200 are charge controllers that manage amperage and voltage for safe, optimized battery charging from a solar-panel or ac power source. They also measure various input, output, and status parameters to allow close monitoring of the battery during

charging and use. The PS200 includes a 12 Vdc valve-regulated lead-acid (VRLA) battery, while the CH200 is for use with a separate larger battery such as our BP12, BP24, or a user-supplied battery.

## Benefits and Features

- › Protects against high-amperage and high-voltage damage to power supply
- › Ability to monitor both load and battery current
- › Real-time measurements of charge input voltage, battery voltage, on-board temperature, battery current, and load current
- › Battery reversal protection
- › 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)

## Technical Description

The PS200 and CH200 are micro-controller-based smart chargers with 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. They also incorporate a maximum power point tracking algorithm for solar inputs that maximize available solar charging resources. RS-232 and SDI-12 terminals allow the PS200 and CH200 to convey charging parameters to a datalogger.

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 and CH200 also have battery-reversal protection, and include ESD and surge protection on all of its inputs and outputs.

## Ordering Information

### Power Supplies

<b>CH200</b>	12 V Charging Regulator
<b>PS200</b>	12 V Power Supply with Charging Regulator and 7 Ah Sealed Rechargeable Battery

### 12 Vdc Battery Packs for CH200

<b>BP12</b>	12 Ah Sealed Rechargeable Battery with Mounts
<b>BP24</b>	24 Ah Sealed Rechargeable Battery with Mounts

### Wall Chargers

<b>29796</b>	Wall Charger 24 Vdc 1.67 A Output, 100 to 240 Vac, 1A Input, 5 ft Cable. Must choose a power plug option (see below).
<b>22110</b>	Wall Charger 24 Vdc 1.67 A Output, 100 to 240 Vac, 1A Input for prewired enclosure. Must choose a power plug option (see below).

### Power Plug Options (choose one)

<b>-US</b>	US/Canada Plug
<b>-IP</b>	7 International Plugs

More info: 435.227.9120

[www.campbellsci.com/ps200](http://www.campbellsci.com/ps200)



## Ordering Information Continued

### Unregulated Solar Panels

Regulated solar panels such as the SP10R are not recommended. Must choose a cable termination option and a mounting option.

- SP10** 10 W Solar Panel with 15 ft cable
- SP20** 20 W Solar Panel with 15 ft cable
- SP50-L** 50 W Solar Panel with user-specified cable length (used with the CH200 only). Enter length, in feet, after the -L. A 20 ft length is typical; maximum length is 50 ft.

### Cable Termination Options (choose one)

- PT** Cable terminates in stripped and tinned leads for direct connection to the CH200 or PS200.
- PW** Cable terminates in a connector that attaches to a prewired enclosure.
- C** Cable terminates in a connector that attaches to an ET station or the CS110 Electric Field Meter (only available for the SP10).

### Mounting Option (choose one)

- SM** Standard Mounting Kit
- EM** Extended Mounting Kit

### Cables (interface and external battery)

- 20769** SDI-12 Interface Cable with a 2 ft length. Connects the power supply's SDI-12 terminal to the datalogger's terminals, allowing the datalogger to receive the power supply's charging, load, battery voltage and current information.
- 25356** RS-232 Pigtail Interface Cable with a 2 ft length. Connects the power supply's RS-232 terminal to the datalogger's terminals, allowing the datalogger to receive the power supply's charging, load, battery voltage and current information.
- 20770** 9-pin RS-232 Interface Cable with 6 ft length. Connects a PS200 or CH200 to a computer for changing its settings or downloading a new operating system.
- 6186** Battery Cable for connecting an external 12 Vdc flooded battery such as a deep-cycle marine or RV battery.

### Adapters

Only one adapter can be used at a time.

- A100** Null Modem Adapter for powering peripherals and external devices at non-datalogger sites such as repeater stations.
- A105** 12 V Terminal Expansion Adapter that increases the number of 12 V and ground terminals available on the PS200 or CH200.

## Specifications

- › Operational Temperature<sup>a</sup>: -40° to +60°C
- › EU Declaration of Conformity:  
[https://s.campbellsci.com/documents/us/compliance/eudoc\\_ch200-ps200.pdf](https://s.campbellsci.com/documents/us/compliance/eudoc_ch200-ps200.pdf)
- › Dimensions:

	Height	Length	Width
PS200	10.6 cm (4.2 in)	19 cm (7.5 in)	7.6 cm (3 in)
CH200	10 cm (3.9 in)	7.5 cm (3 in)	3.7 cm (1.5 in)

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

- › AC: 18 to 24 V RMS with 1.2 A RMS maximum
- › DC: 16 to 40 Vdc with 1.1 A dc maximum

### SOLAR Terminals (Solar Panel or Other DC Source)<sup>b</sup>

- › Input Voltage Range: 15 to 40 Vdc
- › Maximum Charging Current: 3.6 Adc typical; 2.8 Adc to 4.3 Adc depending on individual charger

### Quiescent Current

- › No Charge Source Present: 300 µA maximum
- › No Battery Connected: 2 mA maximum

### Battery Charging<sup>c</sup>

- › CYCLE Charging:  $V_{batt}(T) = 14.70 V - (24 mV) \times (T - 25^\circ C)$
- › FLOAT Charging:  $V_{batt}(T) = 13.65 V - (18 mV) \times (T - 25^\circ C)$
- › Accuracy: ±1% accuracy 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 Limits

<20°C	20°C	50°C	60°C
> 4 A	4.0 A	3.1 A	2.7 A

### Measurements

- › Average Battery Voltage (-40° to +60°C): ±(1% of reading + 15 mV)
- › Average Battery/Load Current Regulator Input Voltage (-40° to +60°C)<sup>d</sup>: ±(2% of reading + 2 mA)
- › Solar (-40° to +60°C)<sup>e</sup>: ±(1% of reading - 0.25 V) / -(1% of reading + 1 V)
- › Continuous (-40° to +60°C)<sup>f</sup>: ±(1% of reading - 0.5 V) / -(1% of reading + 2 V)
- › Charger Temperature: ± 2°C

<sup>a</sup>VRLA battery manufacturers state that "heat kills batteries" and recommend operating batteries ≤50°C.

<sup>b</sup>Battery voltages below 8.7 V may result in <3.0 A current limit because of fold-back current limit.

<sup>c</sup>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.

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

<sup>e</sup>1.0 V negative offset is worst-case due to reversal protection diode on input. Typical diode drop is 0.35 V.

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

