

CH200 and PS200

Smart Charging Regulator and Power Supply

The PS200 and CH200 are micro-controller-based smart chargers with two-step constant voltage charging and temperature compensation that optimize battery charging and increases the battery's life. Two input terminals allow simultaneous connection of two charging sources.

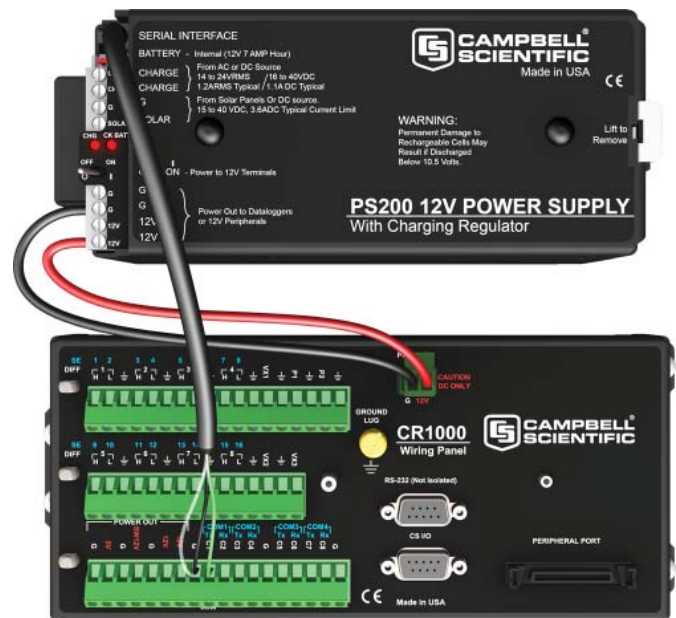
The PS200 is a 12-Vdc, 7-Ahr rechargeable power supply that consists of a sealed rechargeable battery and a charging regulator. The CH200 is a stand-alone charging regulator that is typically used with our BP12 12-Ahr or BP24 24-Ahr battery packs.

Features/Benefits

- Ability to monitor both load and battery current.
- Simultaneous connection of two charging sources allowed via the **CHG - CHG** AC input source terminal and DC only **SOLAR** and **G** input source terminal
- 18 to 24 V RMS input range on the **CHG - CHG** inputs with a user programmable (1.1 ADC maximum) current limit.
- 15 to 40 Vdc input voltage range on **SOLAR** input with 3.6 A typical maximum charging current for up to 70 Watt solar panel.
- Real-time measurements of charge input voltage, battery voltage, on-board temperature, battery current, and load current.
- SDI-12 and RS-232 interfaces that enable:
 - SDI-12 or RS-232 communication with logger
 - RS-232 communication with a computer for changing settings such as the SDI-12 address or downloading a new operating system (requires Device Configuration Utility).
 - Incorporation of the battery temperature that is measured by the datalogger.
- Flashing charge and check battery LED status indicators.
- Battery reversal protection.
- $\leq 300 \mu\text{A}$ quiescent current without charging source.
- 12 V output current limited by 4 A thermal fuse:
 - 4 A @ 20°C.
 - 3.1 A @ 50°C.



At right is a top view of a CH200 showing its LEDs and terminals.



A CR1000 is connected to the PS200's SDI-12 terminal allowing the CR1000 to receive the PS200's charging, load, battery voltage, and current information.

Charging Sources

Several wall chargers and solar panels are available for recharging the sealed rechargeable battery (see Ordering Information on page 2). Solar panels charge batteries by converting sunlight into direct current. Wall chargers use power from external ac power lines to recharge the batteries.

Adapters

Campbell Scientific offers two adapters that fasten onto our PS200 or CH200. The A100 is for powering peripherals and external devices at nondatalogger sites such as repeater stations. The A105 adapter increases the number of 12 V and ground terminals available on the PS200 or CH200. The A100 and A105 cannot be used at the same time.

Interface Cables

The 20770 RS-232 cable attaches the PS200 or CH200 to a PC—allowing the default settings to be changed. Either the 20769 cable or the 25356 cable can be used to connect the PS200 or CH200 to a datalogger. The 20769 cable supports SDI-12 communications, and the 25356 cable supports RS-232 communications.

Ordering Information

Power Supplies

CH200	12 V Charging Regulator
PS200	12 V Power Supply with Charging Regulator and 7Ahr Sealed Rechargeable Battery

12 Vdc Battery Packs for CH200

BP12	12 Ahr Sealed Rechargeable Battery with Mounts
BP24	24 Ahr Sealed Rechargeable Battery with Mounts

Cables (interface and external battery)

20769	Datalogger SDI-12 Interface Cable, 2 ft
25356	Datalogger RS-232 Pigtail Interface Cable, 2 ft
20770	Computer 9-pin RS-232 Interface Cable, 6 ft
6186	External Battery Cable

Adapters

A100	Null Modem Adapter
A105	12 V Terminal Expansion Adapter

Wall Chargers

9591	Wall Charger 18 Vac 1.2 A Output, 110 Vac Input, 6 ft Cable
22110	Wall Charger 18 Vac 1.2 A Output, 110 Vac Input, 6 ft Cable for prewired enclosure.
14014	Wall Charger 18 Vdc Output 90 to 264 Vac 47 to 63 Hz Input. Must choose a power cable option (see below).
22111	Wall Charger 18 Vdc Output 90 to 264 Vac 47 to 63 Hz Input for prewired enclosure. Must choose a power cable option (see below).

Power Cable Options for 14014 or 22111 (choose one)

-NC	No Power Cable
-USC	US Cable
-EUC	Continental European Cable
-UKC	United Kingdom/Ireland Cable
-AUC	Australia/New Zealand Cable
-CNC	China Cable

Solar Panels

SP10	10 W Solar Panel with 20-ft cable
SP10-PW	10 W Solar Panel with 20-ft cable for prewired enclosure
SP20	20 W Solar Panel with 15-ft cable
SP20-PW	20 W Solar Panel with 15-ft cable for prewired enclosure

Specifications

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 - \pm Terminals¹ (Solar Panel or Other DC Source)

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

Operational Temperature²: -40° to +60°C

Quiescent Current

No Charge Source Present:	300 μ A maximum
No Battery Connected:	2 mA maximum

Dimensions

PS200:	4.2 x 7.5 x 3 in. (10.6 x 19 x 7.6 cm)
CH200:	3.9 x 3 x 1.5 in. (10 x 7.5 x 3.7 cm)

Battery Charging³

CYCLE Charging:	$V_{\text{batt}}(T) = 14.70 \text{ V} - (24 \text{ mV}) \times (T - 25^\circ\text{C})$
FLOAT Charging:	$V_{\text{batt}}(T) = 13.65 \text{ V} - (18 \text{ mV}) \times (T - 25^\circ\text{C})$
Accuracy:	$\pm 1\%$ 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:	> 4 A
20°C:	4.0 A
50°C:	3.1 A
60°C:	2.7 A

Measurements

Average Battery Voltage: $\pm(1\%$ of reading +15 mV)
over -40° to +60°C range

Average Battery/Load Current

Regulator Input Voltage⁴: $\pm(2\%$ of reading +2 mA)
over -40° to +60°C range

Solar⁵: $\pm(1\%$ of reading - 0.25 V) /
-(1% of reading +1 V)
over -40° to +60°C range

Continuous⁶: $\pm(1\%$ of reading - 0.5 V) /
-(1% of reading +2 V)
over -40° to +60°C range

Charger Temperature: $\pm 2^\circ\text{C}$

¹Battery voltages below 8.7 V may result in <3.0 A current limit because of fold-back current limit.

²VRLA battery manufacturers state that "heat kills batteries" and recommend operating batteries $\leq 50^\circ\text{C}$.

³Two-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.

⁴Impulse type changes in current may have an average current error of $\pm(10\%$ of reading + 2 mA).

⁵1.0 V negative offset is worst-case due to reversal protection diode on input. Typical diode drop is 0.35 V.

⁶2.0 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.

