

# INSTRUCTION MANUAL



## PS100 and CH100 Power Supply and Charging Regulators, A100 Null Modem Adapter, and A105 Additional 12 V Terminals Adapter

Revision: 4/09



Copyright © 2000-2009  
Campbell Scientific, Inc.

# **Warranty and Assistance**

---

The **PS100 AND CH100 POWER SUPPLY AND CHARGING REGULATORS, A100 NULL MODEM ADAPTER, AND A105 ADDITIONAL 12 V TERMINALS ADAPTER** are warranted by CAMPBELL SCIENTIFIC, INC. to be free from defects in materials and workmanship under normal use and service for twelve (12) months from date of shipment unless specified otherwise. Batteries have no warranty. CAMPBELL SCIENTIFIC, INC.'s obligation under this warranty is limited to repairing or replacing (at CAMPBELL SCIENTIFIC, INC.'s option) defective products. The customer shall assume all costs of removing, reinstalling, and shipping defective products to CAMPBELL SCIENTIFIC, INC. CAMPBELL SCIENTIFIC, INC. will return such products by surface carrier prepaid. This warranty shall not apply to any CAMPBELL SCIENTIFIC, INC. products which have been subjected to modification, misuse, neglect, accidents of nature, or shipping damage. This warranty is in lieu of all other warranties, expressed or implied, including warranties of merchantability or fitness for a particular purpose. CAMPBELL SCIENTIFIC, INC. is not liable for special, indirect, incidental, or consequential damages.

Products may not be returned without prior authorization. The following contact information is for US and International customers residing in countries served by Campbell Scientific, Inc. directly. Affiliate companies handle repairs for customers within their territories. Please visit [www.campbellsci.com](http://www.campbellsci.com) to determine which Campbell Scientific company serves your country.

To obtain a Returned Materials Authorization (RMA), contact CAMPBELL SCIENTIFIC, INC., phone (435) 753-2342. After an applications engineer determines the nature of the problem, an RMA number will be issued. Please write this number clearly on the outside of the shipping container. CAMPBELL SCIENTIFIC's shipping address is:

**CAMPBELL SCIENTIFIC, INC.**

RMA# \_\_\_\_\_  
815 West 1800 North  
Logan, Utah 84321-1784

For all returns, the customer must fill out a "Declaration of Hazardous Material and Decontamination" form and comply with the requirements specified in it. The form is available from our website at [www.campbellsci.com/repair](http://www.campbellsci.com/repair). A completed form must be either emailed to [shanna@campbellsci.com](mailto:shanna@campbellsci.com) or faxed to 435-750-9579. Campbell Scientific will not process any returns until we receive this form. If the form is not received within three days of product receipt or is incomplete, the product will be returned to the customer at the customer's expense. Campbell Scientific reserves the right to refuse service on products that were exposed to contaminants that may cause health or safety concerns for our employees.

CAMPBELL SCIENTIFIC, INC. does not accept collect calls.

# PS100 Table of Contents

---

*PDF viewers note: These page numbers refer to the printed version of this document. Use the Adobe Acrobat® bookmarks tab for links to specific sections.*

<b>1. General Description</b> .....	1
<b>2. Specifications</b> .....	1
<b>3. Wiring</b> .....	2
<b>4. A100 Null Modem Adapter</b> .....	4
<b>5. A105 12V Terminal Expansion Adapter</b> .....	5

## **Figures**

1. Wiring to Charger .....	3
2. Simplified Charging Circuit Schematic .....	4
3. Null Modem Connections .....	5
4. A105 Adapter .....	5



# ***PS100 and CH100 Power Supply and Charging Regulators, A100 Null Modem Adapter, and A105 Additional 12 V Terminals Adapter***

---

## **1. General Description**

The PS100 is a 12-volt power supply that includes a charging regulator and a 7 amp hour battery. The CH100 is a charging regulator that is used with a Campbell Scientific battery pack such as the BP12 or BP24 or with a user-supplied battery. Charging power is typically supplied by an AC transformer or an unregulated solar panel.

The PS100 and CH100 each have one adapter connector that will allow connecting one of the following adapters.

The A100 Null Modem Adapter has two 9-pin connectors that provide a null modem for use in a site, without a datalogger. The A100 connects and powers two Campbell Scientific peripherals that would normally be connected to a datalogger. These peripherals are typically modems linking different communications technologies; e.g., telephone to radio.

The A105 Additional 12 V Terminals Adapter may be used to provide additional 12 V and ground terminals where the power supply is used to power several devices.

---

### **NOTE**

To prevent people from getting burned, an ABS plastic cover [CSI #18688] sits on the heatsink of a PS100 or CH100. The cover is fastened to the heatsink via a #4-40 x .250 Pan Phillips screw [#395]. The cover must be removed to attach an A100 or A105 adapter. Some early models of the PS100 and CH100 did not include the cover and do not have a place to attach it.

---

## **2. Specifications**

<b>Input Voltage (CHG terminals)</b>	15 to 28 VDC or 18 VAC RMS
<b>Battery Connections</b>	
Charging Output Voltage:	Temperature compensated float charge for 12 V Battery
Temperature Compensation Range:	-40 to +60°C
Charging Current Limit:	1.2 Amps typical

**Power Out (+12 terminals)**

Voltage: Unregulated 12 V from Battery  
Current Limited w / 3 A Thermal Fuse: > 3 A @ < 20°C  
3 A @ 20°C  
2.1A @ 50°C  
1.8 A @ 60°C

**Battery Packs**

Operating Temperature Range: -40 to +60°C  
Capacity:  
PS100 7 Amp hours  
BP12 12 Amp hours  
BP24 24 Amp hours

**WARNING**

---

**These batteries are designed to be float charged. Permanent damage occurs and battery life is shortened if the battery is allowed to discharge below 10.5 volts.**

---

**AC Transformer: CSI Model No. 9591**

Input Voltage: 120 VAC  
Output Voltage: 18 VAC RMS  
Output Current (max): 1.2 Amps RMS  
Protection (automatic reset): 85°C thermal reset breaker  
UL Approval: UL-1950

**AC Transformer: CSI Model No. 14014**

Input Voltage: 90 - 264 VAC; 47 - 63 Hz  
Output Voltage: 18 VDC  
Output Current (max): 1.3 Amps  
UL Approved, File No.: E137895

**PS100**

Physical Specifications: 10.5 cm tall, 19 cm long,  
7 cm wide

### 3. Wiring

An internal or external battery is connected to the charger by means of the INT (Internal) or EXT (External) connectors, as shown in Figure 1. An “external battery” cable is available for the charger. This cable connects another battery with the charger to provide power if the main battery is removed. The red lead connects to the positive battery terminal and the black lead connects to the negative terminal.

**WARNING**

---

**Reversal of polarity of external battery will damage the PS100 or CH100.**

---

It is possible to leave two batteries connected. The battery connections are diode isolated (Figure 2); however, if one of the batteries fail, it could draw all the charging current and the other battery will be discharged.

**CAUTION**

A battery **must** be attached for the charger to function correctly as a power supply.

The leads from the transformer or solar panel are connected to the CHG terminals. Polarity does not matter; either lead can be connected to either terminal.

The wires that connect power to the datalogger and/or peripherals are connected to the +12 and ground (⊖) terminals.

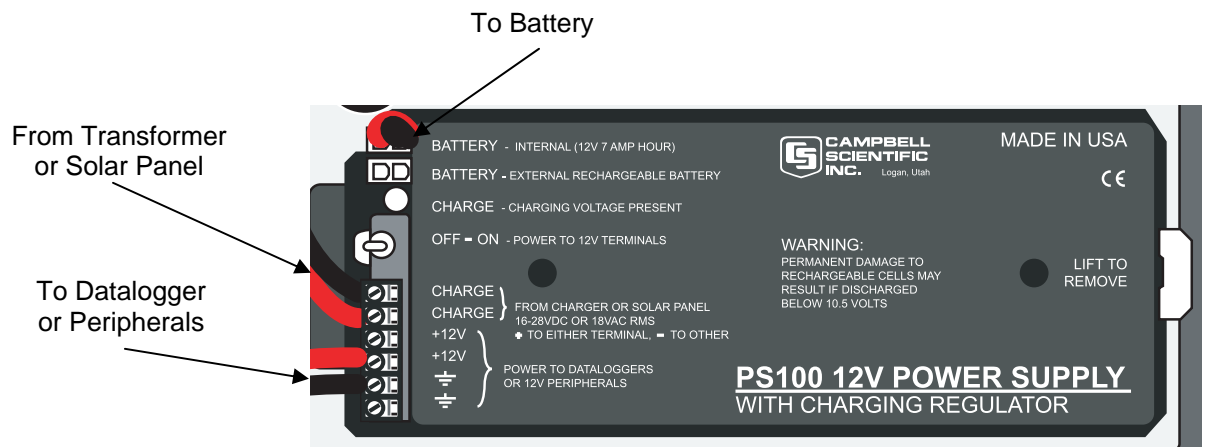


FIGURE 1. Wiring to Charger

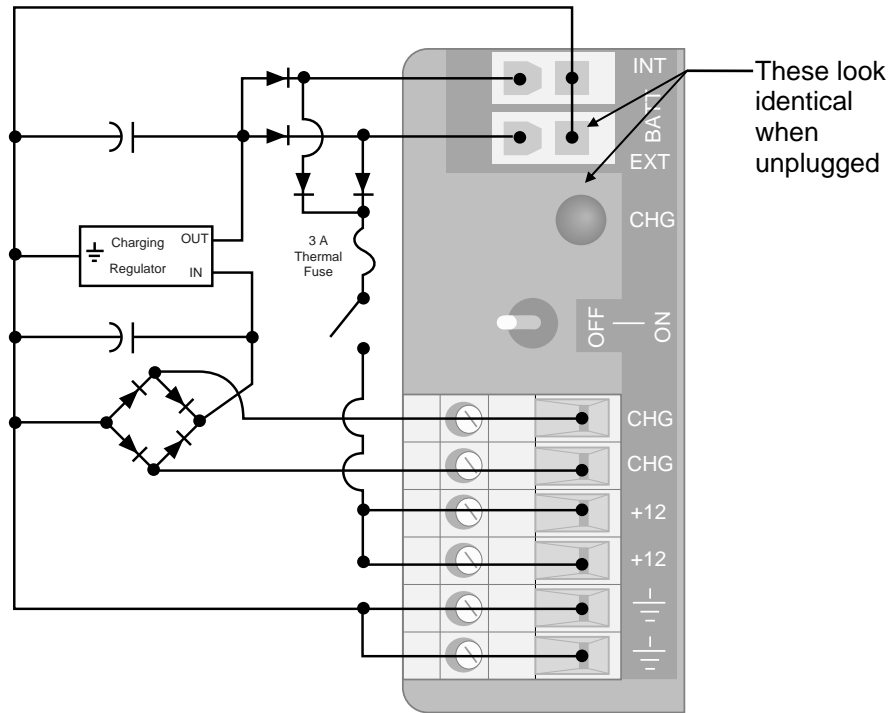


FIGURE 2. Simplified Charging Circuit Schematic

## 4. A100 Null Modem Adapter

The A100 has two 9-pin CS I/O ports with a null modem between them. The ports are used to connect two 9-pin devices that would normally be connected to the CS I/O port on a Campbell datalogger. The charger supplies 12 volts and 5 volts to the appropriate pins on the connector for powering the connected devices.

**CAUTION**

---

This cannot be used as a null modem between two RS-232 devices.

---



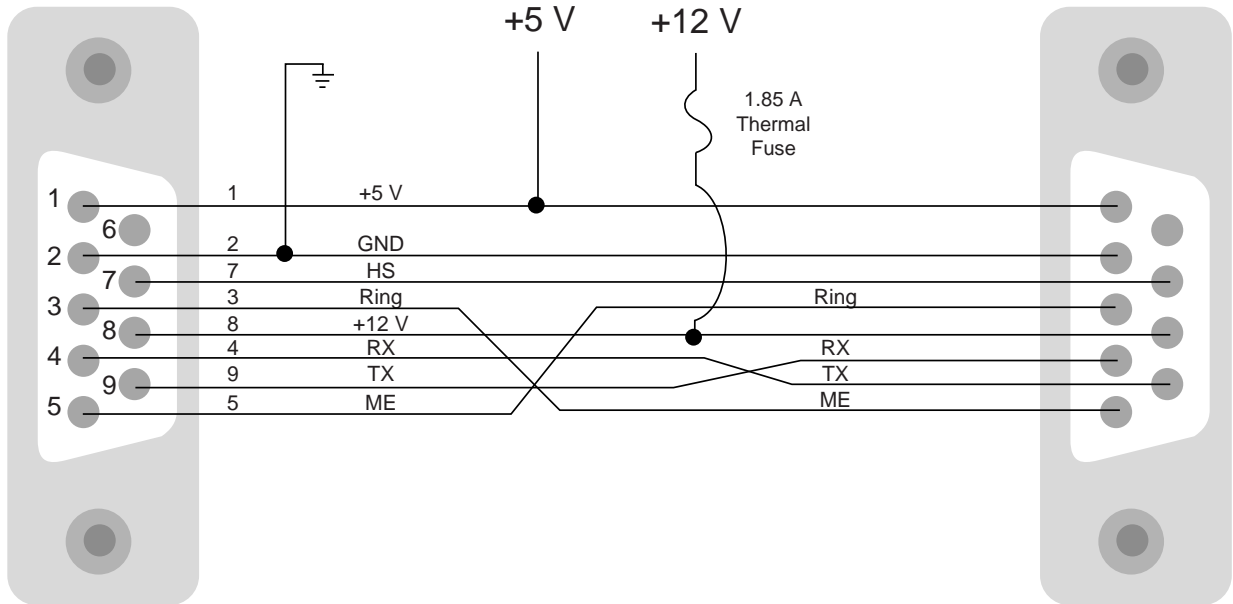


FIGURE 3. Null Modem Connections

## 5. A105 12V Terminal Expansion Adapter

The A105 adapter adds four 12-V terminals and four ground terminals to a CH100 or PS100 (see Figure 4). The extra terminals make it easier to wire multiple continuously powered 12-Vdc devices to the power supply.



FIGURE 4. A105 Adapter





## **Campbell Scientific Companies**

---

### **Campbell Scientific, Inc. (CSI)**

815 West 1800 North  
Logan, Utah 84321  
UNITED STATES

[www.campbellsci.com](http://www.campbellsci.com) • [info@campbellsci.com](mailto:info@campbellsci.com)

### **Campbell Scientific Africa Pty. Ltd. (CSAf)**

PO Box 2450  
Somerset West 7129  
SOUTH AFRICA

[www.csafrica.co.za](http://www.csafrica.co.za) • [cleroux@csafrica.co.za](mailto:cleroux@csafrica.co.za)

### **Campbell Scientific Australia Pty. Ltd. (CSA)**

PO Box 444  
Thuringowa Central  
QLD 4812 AUSTRALIA

[www.campbellsci.com.au](http://www.campbellsci.com.au) • [info@campbellsci.com.au](mailto:info@campbellsci.com.au)

### **Campbell Scientific do Brazil Ltda. (CSB)**

Rua Luisa Crapsi Orsi, 15 Butantã  
CEP: 005543-000 São Paulo SP BRAZIL

[www.campbellsci.com.br](http://www.campbellsci.com.br) • [suporte@campbellsci.com.br](mailto:suporte@campbellsci.com.br)

### **Campbell Scientific Canada Corp. (CSC)**

11564 - 149th Street NW  
Edmonton, Alberta T5M 1W7  
CANADA

[www.campbellsci.ca](http://www.campbellsci.ca) • [dataloggers@campbellsci.ca](mailto:dataloggers@campbellsci.ca)

### **Campbell Scientific Centro Caribe S.A. (CSCC)**

300 N Cementerio, Edificio Breller  
Santo Domingo, Heredia 40305  
COSTA RICA

[www.campbellsci.cc](http://www.campbellsci.cc) • [info@campbellsci.cc](mailto:info@campbellsci.cc)

### **Campbell Scientific Ltd. (CSL)**

Campbell Park  
80 Hathern Road  
Shepshed, Loughborough LE12 9GX  
UNITED KINGDOM

[www.campbellsci.co.uk](http://www.campbellsci.co.uk) • [sales@campbellsci.co.uk](mailto:sales@campbellsci.co.uk)

### **Campbell Scientific Ltd. (France)**

Miniparc du Verger - Bat. H  
1, rue de Terre Neuve - Les Ulis  
91967 COURTABOEUF CEDEX  
FRANCE

[www.campbellsci.fr](http://www.campbellsci.fr) • [info@campbellsci.fr](mailto:info@campbellsci.fr)

### **Campbell Scientific Spain, S. L.**

Psg. Font 14, local 8  
08013 Barcelona  
SPAIN

[www.campbellsci.es](http://www.campbellsci.es) • [info@campbellsci.es](mailto:info@campbellsci.es)

*Please visit [www.campbellsci.com](http://www.campbellsci.com) to obtain contact information for your local US or International representative.*