INSTRUCTION MANUAL

DCDC18R Boost Regulator

Revision: 5/10

Warranty and Assistance

The **DCDC18R BOOST REGULATOR** is 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 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. A completed form must be either emailed to repair@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.

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Figures

DCDC18R Boost Regulator

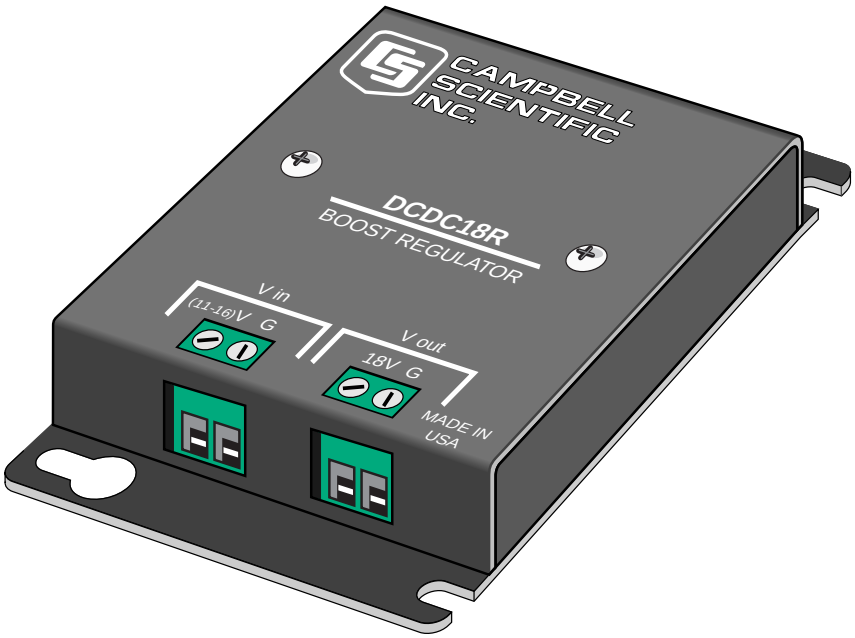

FIGURE 1. DCDC18R

1. General Description

The DCDC18R Boost regulator is intended to accept an 11 to 16 VDC input and boost it to 18 VDC. Its main use is to boost automobile supply voltages to the 17 VDC minimum required to charge the batteries in the CR3000, CR5000, or CR23X LA bases. It can be conveniently bolted onto the side of the LA base next to the charger input.

2. Specifications

Input Voltage:	11 to 16 VDC
Output Voltage:	18 V ± 5%
Quiescent Current	4 mA
Maximum Output Current:	1 Amp
Maximum Input Current	2.25 Amps*
Power Conversion Efficiency	80 to 90%
Temperature Range:	-40 to +60°C

Note

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

* The slow start boost regulator typically starts to work at a supply voltage of about 10 volts. Supply voltages below 10 volts pass directly to V out (through 2 Schottky diodes dropping the voltage by ~ 0.6 volts). With the DCDC18R operating at the maximum output current (18 V * 1 A = 18 W) the input power required is up to 18 W / 0.8 efficiency = 22.5 watts; that is the maximum current specification of 2.25 Amps at 10 volts.

3. Installation

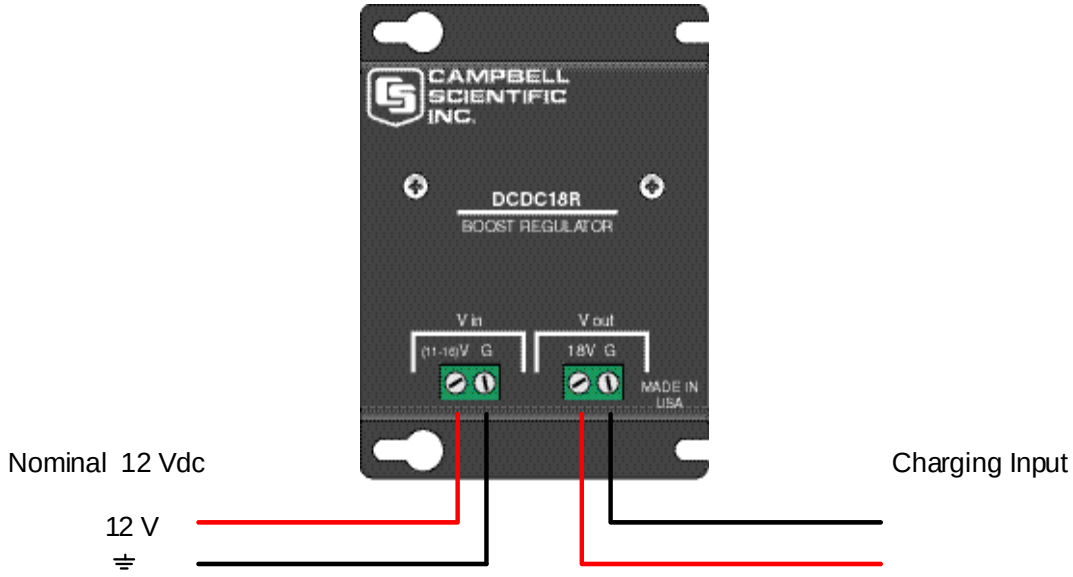

FIGURE 2. Wiring for DCDC18R

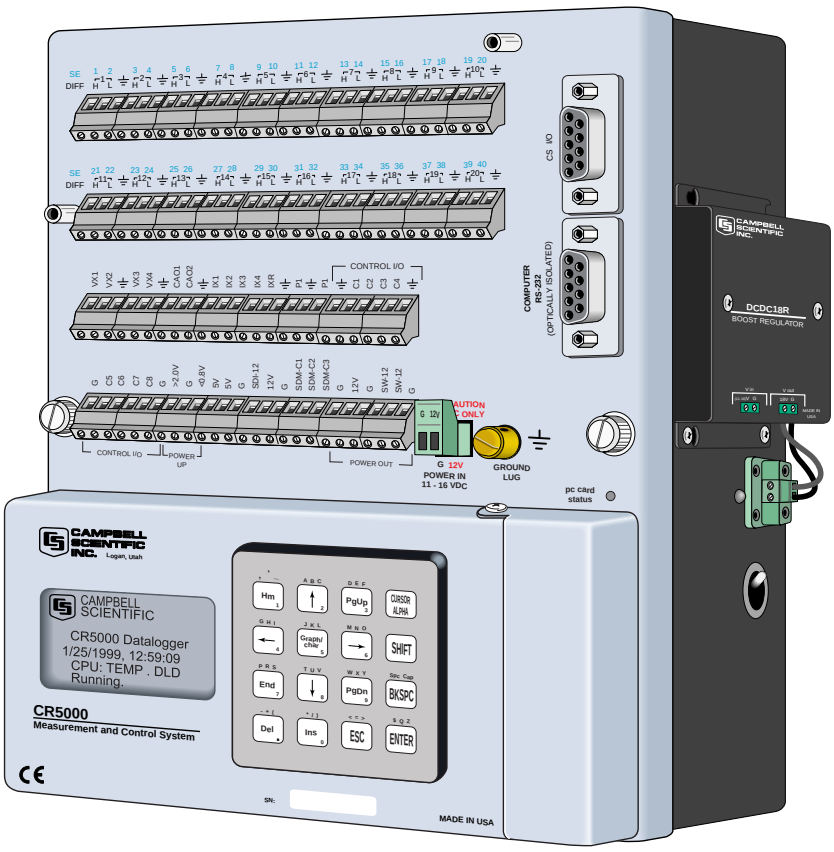

FIGURE 3. DCDC18R on CR5000

The DCDC18R is installed near the datalogger, either on the side of the datalogger (Figure 3) or to the back panel of the enclosure. The voltage input is connected to 12 volts and ground from the supply source. The leads from "V out" go to the charging input. The G lead from "V out" connects to either charge input terminal and the 18 V lead connects to the other. The polarity of the inputs does not matter.

4. Grounding

Caution

The datalogger must be grounded for its transient protection to work. CONNECTIONS TO THE CHARGING INPUT DO NOT PROPERLY GROUND THE DATALOGGER. The Ground connection should be made at the grounding lug on the wiring panel.

A full-wave bridge rectifier is included on the CR3000, CR5000, and CR23X LA bases and the PS100. This creates a diode drop (0.7 V) between the datalogger ground and the return side of the charging input (Figure 4). If the datalogger ground (ground lug) and the return side of the charging input (G terminal of the DCDC18R) are tied together through a wire, then the return current to the DCDC18R will flow through this wire rather than through the diode in the bridge rectifier. This is a valid connection and does not cause

measurement problems because the CR3000, CR5000, and CR23X have star ground connection at the ground lug. However, unwanted ground loops that induce single-ended measurement offsets will be generated if the ⏚ terminals and the return side of the charging input are tied together because the return current to the DCDC18R will flow through the ⏚ terminals.

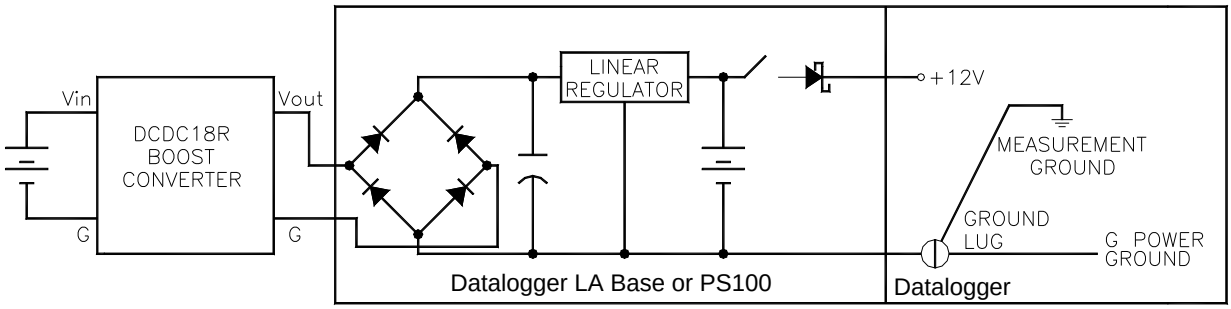

FIGURE 4. Schematic of Charging and Grounding Circuitry

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