

# INSTRUCTION MANUAL



## CD100 Mountable Display with Keypad

Revision: 1/17



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# Guarantee

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This equipment is guaranteed against defects in materials and workmanship. We will repair or replace products which prove to be defective during the guarantee period as detailed on your invoice, provided they are returned to us prepaid. The guarantee will not apply to:

- Equipment which has been modified or altered in any way without the written permission of Campbell Scientific
- Batteries
- Any product which has been subjected to misuse, neglect, acts of God or damage in transit.

Campbell Scientific will return guaranteed equipment by surface carrier prepaid. Campbell Scientific will not reimburse the claimant for costs incurred in removing and/or reinstalling equipment. This guarantee and the Company's obligation thereunder is in lieu of all other guarantees, expressed or implied, including those of suitability and fitness for a particular purpose. Campbell Scientific is not liable for consequential damage.

Please inform us before returning equipment and obtain a Repair Reference Number whether the repair is under guarantee or not. Please state the faults as clearly as possible, and if the product is out of the guarantee period it should be accompanied by a purchase order. Quotations for repairs can be given on request. It is the policy of Campbell Scientific to protect the health of its employees and provide a safe working environment, in support of this policy a "Declaration of Hazardous Material and Decontamination" form will be issued for completion.

When returning equipment, the Repair Reference Number must be clearly marked on the outside of the package. Complete the "Declaration of Hazardous Material and Decontamination" form and ensure a completed copy is returned with your goods. Please note your Repair may not be processed if you do not include a copy of this form and Campbell Scientific Ltd reserves the right to return goods at the customers' expense.

Note that goods sent air freight are subject to Customs clearance fees which Campbell Scientific will charge to customers. In many cases, these charges are greater than the cost of the repair.



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# PLEASE READ FIRST

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## About this manual

Please note that this manual was originally produced by Campbell Scientific Inc. primarily for the North American market. Some spellings, weights and measures may reflect this origin.

Some useful conversion factors:

<b>Area:</b> 1 in <sup>2</sup> (square inch) = 645 mm <sup>2</sup>	<b>Mass:</b> 1 oz. (ounce) = 28.35 g 1 lb (pound weight) = 0.454 kg
<b>Length:</b> 1 in. (inch) = 25.4 mm 1 ft (foot) = 304.8 mm 1 yard = 0.914 m 1 mile = 1.609 km	<b>Pressure:</b> 1 psi (lb/in <sup>2</sup> ) = 68.95 mb
	<b>Volume:</b> 1 UK pint = 568.3 ml 1 UK gallon = 4.546 litres 1 US gallon = 3.785 litres

In addition, while most of the information in the manual is correct for all countries, certain information is specific to the North American market and so may not be applicable to European users.

Differences include the U.S standard external power supply details where some information (for example the AC transformer input voltage) will not be applicable for British/European use. *Please note, however, that when a power supply adapter is ordered it will be suitable for use in your country.*

Reference to some radio transmitters, digital cell phones and aerials may also not be applicable according to your locality.

Some brackets, shields and enclosure options, including wiring, are not sold as standard items in the European market; in some cases alternatives are offered. Details of the alternatives will be covered in separate manuals.

Part numbers prefixed with a “#” symbol are special order parts for use with non-EU variants or for special installations. Please quote the full part number with the # when ordering.

## Recycling information



At the end of this product's life it should not be put in commercial or domestic refuse but sent for recycling. Any batteries contained within the product or used during the products life should be removed from the product and also be sent to an appropriate recycling facility.

Campbell Scientific Ltd can advise on the recycling of the equipment and in some cases arrange collection and the correct disposal of it, although charges may apply for some items or territories.

For further advice or support, please contact Campbell Scientific Ltd, or your local agent.



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# Precautions

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DANGER — MANY HAZARDS ARE ASSOCIATED WITH INSTALLING, USING, MAINTAINING, AND WORKING ON OR AROUND **TRIPODS, TOWERS, AND ANY ATTACHMENTS TO TRIPODS AND TOWERS SUCH AS SENSORS, CROSSARMS, ENCLOSURES, ANTENNAS, ETC.** FAILURE TO PROPERLY AND COMPLETELY ASSEMBLE, INSTALL, OPERATE, USE, AND MAINTAIN TRIPODS, TOWERS, AND ATTACHMENTS, AND FAILURE TO HEED WARNINGS, INCREASES THE RISK OF DEATH, ACCIDENT, SERIOUS INJURY, PROPERTY DAMAGE, AND PRODUCT FAILURE. TAKE ALL REASONABLE PRECAUTIONS TO AVOID THESE HAZARDS. CHECK WITH YOUR ORGANIZATION'S SAFETY COORDINATOR (OR POLICY) FOR PROCEDURES AND REQUIRED PROTECTIVE EQUIPMENT PRIOR TO PERFORMING ANY WORK.

Use tripods, towers, and attachments to tripods and towers only for purposes for which they are designed. Do not exceed design limits. Be familiar and comply with all instructions provided in product manuals. Manuals are available at [www.campbellsci.eu](http://www.campbellsci.eu) or by telephoning +44(0) 1509 828 888 (UK). You are responsible for conformance with governing codes and regulations, including safety regulations, and the integrity and location of structures or land to which towers, tripods, and any attachments are attached. Installation sites should be evaluated and approved by a qualified engineer. If questions or concerns arise regarding installation, use, or maintenance of tripods, towers, attachments, or electrical connections, consult with a licensed and qualified engineer or electrician.

## General

- Prior to performing site or installation work, obtain required approvals and permits. Comply with all governing structure-height regulations, such as those of the FAA in the USA.
- Use only qualified personnel for installation, use, and maintenance of tripods and towers, and any attachments to tripods and towers. The use of licensed and qualified contractors is highly recommended.
- Read all applicable instructions carefully and understand procedures thoroughly before beginning work.
- Wear a **hardhat** and **eye protection**, and take **other appropriate safety precautions** while working on or around tripods and towers.
- **Do not climb** tripods or towers at any time, and prohibit climbing by other persons. Take reasonable precautions to secure tripod and tower sites from trespassers.
- Use only manufacturer recommended parts, materials, and tools.

## Utility and Electrical

- **You can be killed** or sustain serious bodily injury if the tripod, tower, or attachments you are installing, constructing, using, or maintaining, or a tool, stake, or anchor, come in **contact with overhead or underground utility lines.**
- Maintain a distance of at least one-and-one-half times structure height, or 20 feet, or the distance required by applicable law, **whichever is greater**, between overhead utility lines and the structure (tripod, tower, attachments, or tools).
- Prior to performing site or installation work, inform all utility companies and have all underground utilities marked.
- Comply with all electrical codes. Electrical equipment and related grounding devices should be installed by a licensed and qualified electrician.

## Elevated Work and Weather

- Exercise extreme caution when performing elevated work.
- Use appropriate equipment and safety practices.
- During installation and maintenance, keep tower and tripod sites clear of un-trained or non-essential personnel. Take precautions to prevent elevated tools and objects from dropping.
- Do not perform any work in inclement weather, including wind, rain, snow, lightning, etc.

## Maintenance

- Periodically (at least yearly) check for wear and damage, including corrosion, stress cracks, frayed cables, loose cable clamps, cable tightness, etc. and take necessary corrective actions.
- Periodically (at least yearly) check electrical ground connections.

WHILE EVERY ATTEMPT IS MADE TO EMBODY THE HIGHEST DEGREE OF SAFETY IN ALL CAMPBELL SCIENTIFIC PRODUCTS, THE CUSTOMER ASSUMES ALL RISK FROM ANY INJURY RESULTING FROM IMPROPER INSTALLATION, USE, OR MAINTENANCE OF TRIPODS, TOWERS, OR ATTACHMENTS TO TRIPODS AND TOWERS SUCH AS SENSORS, CROSSARMS, ENCLOSURES, ANTENNAS, ETC.



# Table of Contents

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

<b>1. Introduction .....</b>	<b>1</b>
<b>2. Cautionary Statements .....</b>	<b>1</b>
<b>3. Quickstart .....</b>	<b>2</b>
<b>4. Overview .....</b>	<b>2</b>
<b>5. Specifications.....</b>	<b>3</b>
<b>6. Installation.....</b>	<b>3</b>
<b>7. Operation .....</b>	<b>7</b>
<b>8. Maintenance .....</b>	<b>8</b>

## **Figures**

3-1. Connecting the CD100 to the CR1000 datalogger .....	2
6-1. Template measurements for serial numbers less than 1311 .....	4
6-2. Template measurements for serial numbers 1311 and higher .....	5
6-3. Profile of installed CD100 .....	6
7-1. Display menu overview .....	8

## **Tables**

7-1. Keyboard Display Key Functions .....	7
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# ***CD100 Mountable Display with Keypad***

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## **1. Introduction**

The CD100 is an easy-to-read panel-mountable datalogger data display. It includes a large-format keypad for input. The CD100 is compatible with several Campbell Scientific dataloggers. Refer to Section 5, *Specifications (p. 3)*, for a complete list. When properly installed, the CD100 is weather and dust resistant. As a purchased service, Campbell Scientific offers the option of installing the CD100 into an enclosure.

## **2. Cautionary Statements**

- The CD100 is not compatible with the CR850 datalogger, nor should it be used in tandem with the CR1000KD keyboard and display on any datalogger.
- Weather resistance of the CD100 is dependent on proper installation into the bulkhead of a weather tight enclosure. See Section 6, *Installation (p. 3)*, for details of proper installation.
- The CD100 is easily damaged if disassembled. If disassembly is required, refer to Section 8, *Maintenance (p. 8)*.

### 3. Quickstart

1. If the CD100 is to be mounted into an enclosure bulkhead, refer to Section 6, *Installation* (p. 3), for instructions.
2. Using an SC12 cable as shown in FIGURE 3-1, connect the 9-pin CS I/O port of a CR1000 or other compatible datalogger to the 9-pin CS I/O port on the back of the CD100.



FIGURE 3-1. Connecting the CD100 to the CR1000 datalogger

3. Power the datalogger; the display should power up and be ready for use. Keyboard commands are summarized in Section 7, *Operation* (p. 7), and in the datalogger manual.

### 4. Overview

The CD100 is a panel-mountable display with keypad. It facilitates user input and the display of data over a wide temperature range. The vacuum fluorescent element gives the CD100 high contrast, so it is easy to read in daylight conditions.

The CD100 is compatible with the dataloggers listed in Section 5, *Specifications* (p. 3). It will not operate properly with the CR850 datalogger or in tandem with the CR1000KD on any datalogger.

When properly installed, the polyvinyl face and rear gasket make the CD100 weather resistant and prevent ingress of water and dust. The back of the CD100 is not weather resistant. If used outdoors, or in a condensing environment, the CD100 should be bulkhead mounted as recommended in Section 6, *Installation* (p. 3).

## 5. Specifications

### Features:

- Operable with gloved hand
- 16 key alpha numeric keypad
- 8 line x 21 character display (64 x 128 pixel)

**Compatibility:** CR800 (not CR850)  
CR1000  
CR3000

**Interface:** CS I/O, SDC address 2

### Temperature

**Operating:** –45° to 85°C

**Storage:** –50° to 85°C

**Transit:** 1 hour at –60°C

### Power Requirement

**Source:** 12 Vdc from datalogger CS I/O port

#### Current Draw

**Inactive:** 0.02 mA

**Active:** 140 mA

### Rating

#### Water and dust ingress

##### Installed as

**recommended:** IP66

**Uninstalled:** None (vulnerable to water and dust)

**Weight:** 0.36 kg (0.80 lb)

**Dimensions:** 17.5 x 13.7 x 3.6 cm (6.9 x 5.4 x 1.4 in)

**Compliance:** View the EU Declaration of Conformity at [www.campbellsci.eu/cd100](http://www.campbellsci.eu/cd100)

## 6. Installation

### NOTE

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As a purchased service, Campbell Scientific offers the option of installing the CD100 into an enclosure.

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Install only on a flat, non-porous surface. The supplied gasket must create a weather-tight seal when installed or permanent damage to the display and other enclosure contents may occur.

1. Use the template shipped with the CD100 or create a template using the measurements shown in FIGURE 6-1, *Template measurements for serial numbers less than 1311*.
2. Make the required cuts in the bulkhead.
3. Remove cutting debris from bulkhead.

4. Mount the CD100 as shown in FIGURE 6-3, *Profile of installed CD100*.
5. Before tightening screws, adjust the gasket to align it just inside the edges of the display. Uniformly tighten the screws, but do not over-tighten.

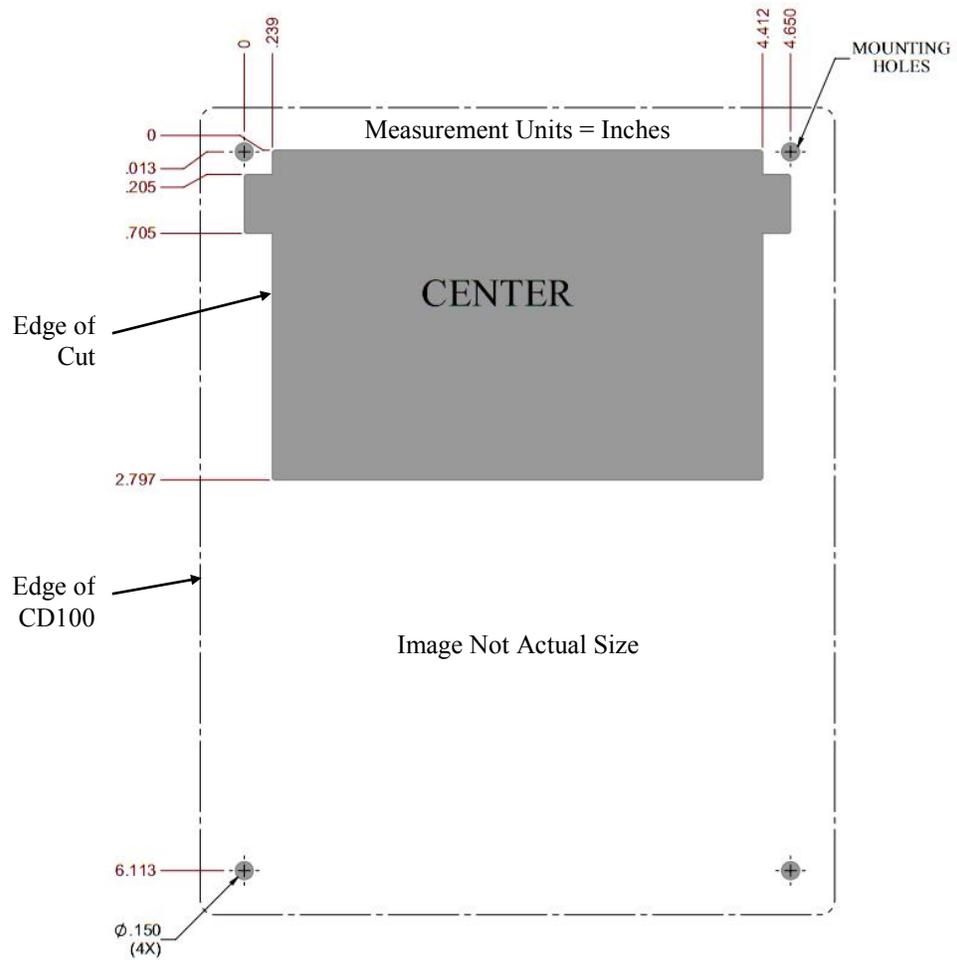


FIGURE 6-1. Template measurements for serial numbers less than 1311

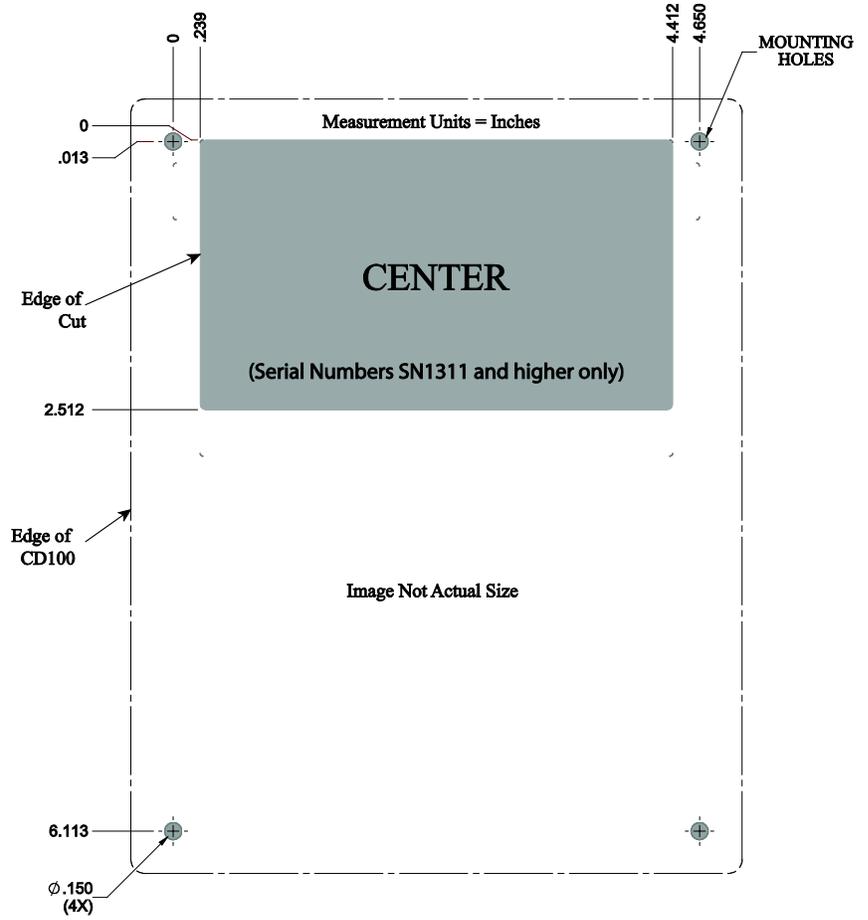


FIGURE 6-2. Template measurements for serial numbers 1311 and higher

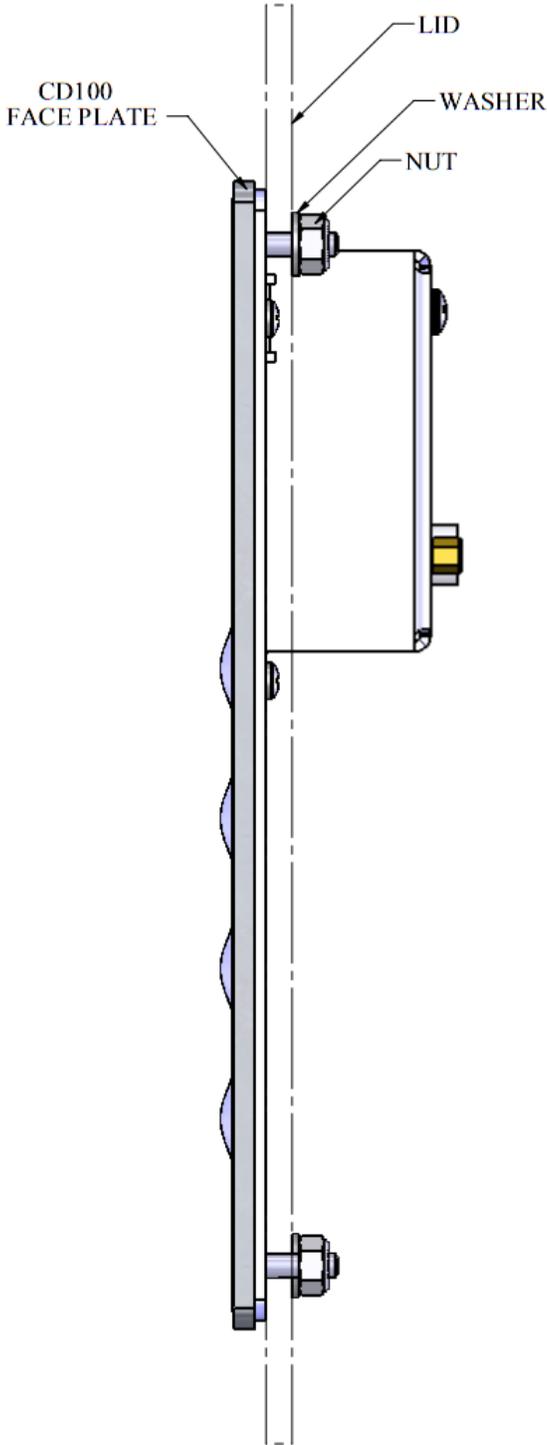


FIGURE 6-3. Profile of installed CD100

## 7. Operation

An overview of keyboard functions is presented in TABLE 7-1, *Keyboard Display Key Functions*, and FIGURE 7-1, *Display Menu Overview*. Detailed descriptions are available in the datalogger manual.

<b>TABLE 7-1. Keyboard Display Key Functions</b>	
<b>Key</b>	<b>Special Function</b>
[2] and [8]	To navigate up and down through the menu list one line at a time
[Enter]	Selects the line or toggles the option of the line the cursor is on
[Esc]	Back up one level in the menu
[Home]	Move cursor to top of the list
[End]	Move cursor to bottom of the list
[Pg Up]	Move cursor up one screen
[Pg Dn]	Move cursor down one screen
[BkSpc]	Delete character to the left
[Shift]	Change alpha character selected
[Num Lock]	Change to numeric entry
[Del]	Delete
[Ins]	Insert/change graph setup
[Graph]	Graph

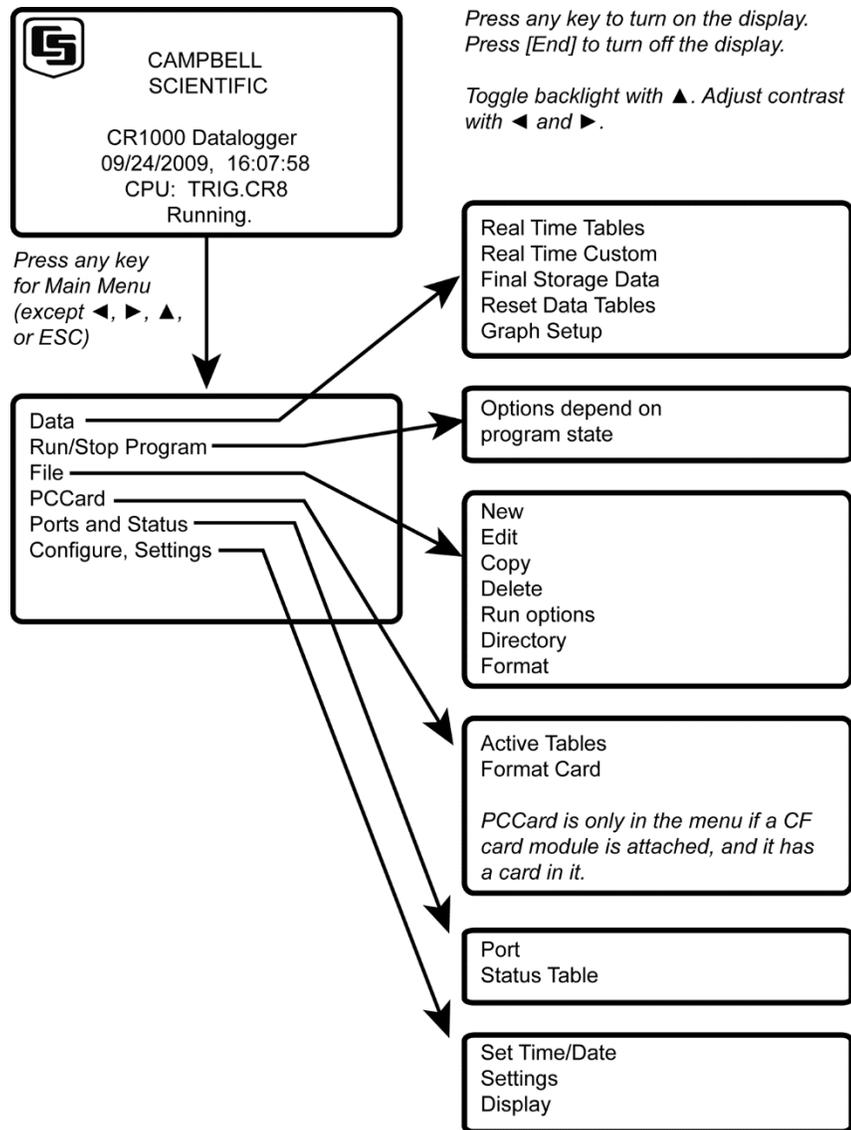


FIGURE 7-1. Display menu overview

## 8. Maintenance

Active desiccant must be maintained in the datalogger enclosure to avoid water damage to the display electronics, the datalogger, and other contents. No other maintenance is required.

Depending on the environment and weather tightness of the installation, dust may accumulate between the surface window and the underlying display elements. If this occurs, return the display to Campbell Scientific for cleaning.

Do not disassemble the CD100. The printed circuit ribbon connecting the keypad to the display can be easily torn when not removed properly. If the display must be disassembled, take care to grasp the header and not the printed circuit itself. Sheer or torsional stresses must not be put on the printed circuit. The warranty does not cover damages caused by disassembly.



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