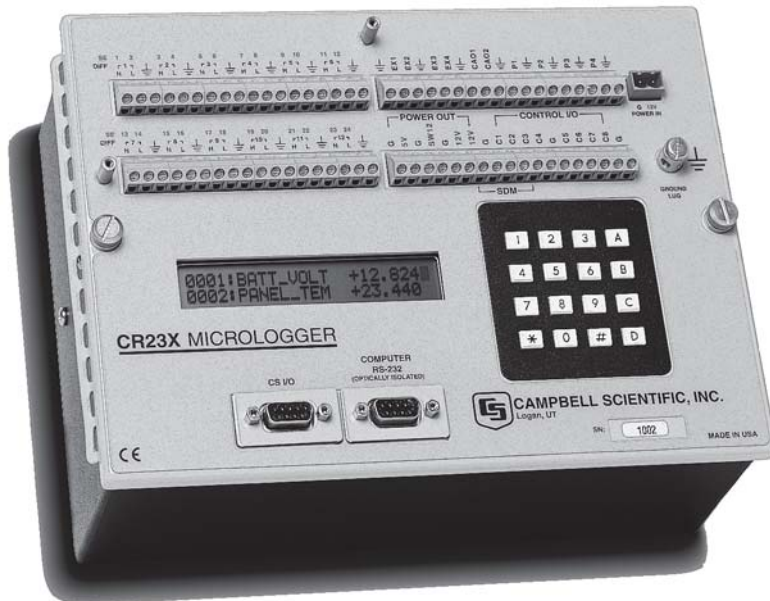# CAMPBELL SCIENTIFIC®

WHEN MEASUREMENTS MATTER

CR23X Micrologger

Rugged, self-contained data logging for engineering and environmental measurements

Description

The CR23X Micrologger is a low-power, rugged data-logger for scientists and engineers. It has an integrated keyboard, display and power supply, making it ideal for short-term portable use or long-term research applications.

Sensor Compatibility

The CR23X has switched outputs to power bridge-type sensors such as PRTs, strain gauges, pressure transducers and thermistors. Linearisation for standard PRTs and thermocouples is built in. Other functions include a frequency sweep function for vibrating

wire transducers and communication with RS232 sensors.

Display

The alphanumeric display allows you to edit the program without a PC, view current readings, and review stored data. It also provides user help and shows labels for current readings.

Expansion

Add-on peripherals allow the measurement, control and data storage abilities of the CR23X to be upgraded as the application requires.

Key Features

24 single-ended or 12 differential analogue inputs, with true 15-bit (plus sign) resolution

8 digital I/O ports for control, alarms and event-driven sampling

2-line alphanumeric display

1Mb memory (4Mb optional)

Full battery backup

Low quiescent power consumption

Typical Applications

Environmental monitoring and control

Civil engineering

Automotive testing

Process monitoring and troubleshooting

Agricultural research

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System Configuration

The CR23X System Unit must be used with one of the three base options:

- **23XB-1** Low-Profile Base (no battery; for use with external power supply)
- **23XB-2** Alkaline Battery Base
- **23XB-3** Rechargeable Lead-Acid Battery Base (requires AC adaptor or solar panel)

The following items may also be required:

- Weatherproof enclosure
- Modem or other peripherals for remote communication
- PC software for program development, sensor monitoring, data retrieval and data analysis
- Additional peripherals for measurement, control or data storage

Please call for assistance in choosing components for your CR23X system.

Programming

The CR23X is programmed either directly from its own keyboard, or with a pre-written program downloaded from a PC or Campbell Scientific Storage Module.

Program editing is supported by the PC208W Datalogger Support Software (version 2.3 or higher), and communication is supported by PC208W or PC200W.

The instruction set is sophisticated and comprehensive. It provides not only the basic measurement instructions but also on-line processing of measurement results, conditional output, subroutines, averages, maxima, minima, standard deviation and histograms (full details available on request).

The exceptional built-in computing power of the CR23X allows full on-line implementation of equations using a range of mathematical, trigonometric and scientific functions.

For further information on the CR23X please ask for our detailed brochure.

Specification Summary

Valid for a temperature range of -25°C to +50°C, unless otherwise specified. For full specifications, please refer to the CR23X brochure.

Analogue Inputs
Analogue inputs allow the CR23X to measure voltage levels as follows:

12 differential or 24 single-ended

15-bit resolution plus sign for differential inputs

Software selectable voltage ranges are ±5000mV, ±1000mV, ±200mV, ±50mV and ±10mV

±5V common mode range

Software selectable 50Hz and 60Hz noise rejection on all input ranges

Transient protection provided by rugged gas discharge tubes

Scan rates up to 100Hz standard; 1.5kHz Burst Mode

Accuracy ±0.025% FSR (0 to +40°C); ±0.05% FSR (-25°C to +50°C)

The analogue inputs support bridge measurements (such as strain gauges and thermistors), thermocouples and period averaging.

Pulse Counters
These inputs measure the output of pulse-type sensors. The signal may be switch closures, low-level AC pulses, or high frequency logic-level pulses.

Four 8-bit channels or two 16-bit channels

16kHz max. low-level AC

500kHz max. high frequency (square wave)

Continuous Analogue Outputs
These provide two channels of programmable continuous output voltages over the range ±5V @ 15mA max.

Digital I/O Ports
There are eight user-programmable digital input/output ports, four of which can be configured as pulse counters or interrupt inputs (0 and 5V levels).

Switched Excitation Outputs
These four outputs provide precision excitation voltages for resistive bridge measurements. Output range is ±5V @ ±50mA max.

Memory
Consists of battery-backed SRAM (128K) and non-volatile Flash EEPROM.

Stores approximately 1 million data points with standard 2M Flash memory, approximately 2 million data points with optional 4M Flash memory.

Serial Ports
An optically isolated RS232 serial port means that an external SC32A/SC929 interface is not required for connection to a PC. A Campbell Scientific 9-pin port supports Campbell Scientific communication peripherals.

Power and Ground Connections
These allow the connection of sensors or non-Campbell Scientific peripherals:

Programmable switched +12V supply (500mA max.)

Continuous 12V supply (1A max.)

Continuous regulated +5V supply (200mA max.)

Rugged connection for grounding transients

Power Supply
Minimal power requirements allow system operation from internal or external 12V DC supplies.

Power supply options include internal 7Ah sealed rechargeable or 10Ah alkaline battery packs, or the CR23X can be connected to an external 11 – 16V power supply.

Power supply recharging options include solar panel or AC supply.

Physical
Standard operating temperature range: -25°C to +50°C

Extended range: -40°C to +80°C (battery bases excluded)

Size: 244 x 178 x 97mm (depth with low-profile base reduced to 58mm)

Weight: Alkaline base 3.5kg

Rechargeable base 4.6kg

No-battery base 1.6kg

Guarantee
Three years

Campbell Scientific products are available from: