CAMPBELL SCIENTIFIC®
WHEN MEASUREMENTS MATTER

CR6 Series
Measurement and Control Datalogger

One Datalogger, Countless Applications

Featuring advanced vibrating-wire technology

Overview

The CR6-series measurement and control datalogger is a powerful core component for your data-acquisition system. We combined the best features of all our dataloggers and added faster communications, low power requirements, built in USB, compact size, and improved analog input accuracy and resolution. The CR6 series also introduces our new universal (U) terminal—an ingenious way for allowing virtually any sensor (analog, digital, or smart) to be connected to any U terminal. This is also our first multipurpose datalogger capable of doing static vibrating-wire measurements.

Benefits and Features

› Powerfully versatile, multi-tool of data acquisition
› U terminals configurable to what you want them to be: analog or digital, input, or output
› Static vibrating wire measurements using our patented spectral analysis
› Surge and over-voltage protection on all terminals
› Flexible power input from solar panel, dc power supply, 12 V battery, USB
› Onboard communication via Ethernet 10/100

› Wiring made easy through removable terminal block
› MicroSD card drive for extended memory requirements
› Serial sensors support with RS-232 and RS-485 native
› CPI for hosting Campbell high speed sensors and distributed modules (CDM)
› Programmable with CRBasic or SCWin program generator, completely PakBus compatible
› Shared operating system (OS) with the popular CRBasic CR1000 and CR3000 dataloggers

Specifications

› **CPU:** 32 bit with hardware FPU, running at 100 MHz
› **Internal Memory:** 4 MB SRAM for data storage, 6 MB flash for OS, 1 MB serial flash (CPU) for program files
› **MicroSD Drive** for extended data storage up to 16 GB
› **Clock Accuracy:** ±3 min per year, optional GPS correction to 10 μs
› **USB micro B** for direct connection to PC (limited power source during configuration), 2.0 full speed, 12 Mbps
› **10/100 Ethernet RJ45** for LAN connection
› **CS I/O port** for connection to Campbell Scientific modems and displays

› **CPI port** for terminal expansion using Campbell Distributed modules (CDM)
› **Battery terminal pair** for regulated 12 V power input or rechargeable 12 V VRLA for UPS mode
› **Charge terminal pair** for 16 to 32 V from dc power converter or 12 or 24 V solar panel
› **Two switched 12 V terminals** for powering sensors or communication devices, 1100 mA @ 20°C
› **Continuous 12 V terminal**

More info: **435.227.9100**
www.campbellsci.com/cr6

Specifications Continued

> **Twelve Universal (U) Terminals:** U terminals are software configurable for analog or digital functions
> ○ Analog functions consist of:
> - Analog inputs: 12 single-ended or 6 differential with ±5000 mV, ±1000 mV, ±200 mV ranges 24 bit ADC
> - Analog outputs: ±2.5 V or ±2.5 mA ranges for bridge measurements 12 bit DAC
> - Static frequency-analyzed vibrating wire: terminal pair both excites to 12 V p-p and 100 Hz to 6.5 kHz and reads vibrating-wire transducers using our patented spectral-analysis technology (VSPEC™)
> - Thermistor: completion resistor internal 5 kΩ
> - Period average: up to 200 kHz, amplitude dependent
> - Low level ac: 1 Hz to 20 kHz, amplitude dependent
> ○ Digital I/O functions consist of 5 V or 3.3 V logic levels for:
> - General status/control
> - Voltage source: 5 V, 3.3 V, 20 mA @ 3.5 V
> - Timer I/O
> - Switched closure (150 Hz) or high frequency counter (1 MHz)
> - Pulse width modulation
> - Interrupts
> - SDI-12 and SDM
> - Serial asynchronous communication Tx/Rx pairs

> **Four control (C) Terminals:** C terminals are software configurable for digital functions
> ○ Digital I/O functions consist of 5 or 3.3 V logic levels for:
> - General status/control
> - Voltage source 5 V, 3.3 V: 11 mA @ 3.5 V
> - Timer I/O
> - Switched closure (150 Hz) or high frequency counter (1 MHz)
> - Pulse width modulation
> - Interrupts
> - SDI-12 and SDM
> - RS-232/RS-485: half or full duplex, Tx/Rx pairs

> **Best Analog Accuracy:** ±(0.04% of reading + 2 µV), 0° to 40℃

> **Best Effective Resolution:** 50 nV (±200 mV range, differential measurement, input reversal, 5 Hz f_{N1})

> **Weight:** 0.42 kg (0.92 lb)

> **Dimensions:** 20.3 x 10.2 x 6.1 cm (8.0 x 4.0 x 2.4 in)

Programmable Terminals

Twelve U terminals and four C terminals are programmable for the following functions.

Analog Input Function	C1	C2	C3	C4	U1	U2	U3	U4	U5	U6	U7	U8	U9	U10	U11	U12	Max
Single Ended					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	12
Differential					H	L	H	L	H	L	H	L	H	L	H	L	6
Period Average					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	12
Vibrating Wire					✓		✓		✓		✓		✓		✓		6
Thermistor					✓		✓		✓		✓		✓		✓		6

Analog Output Function	C1	C2	C3	C4	U1	U2	U3	U4	U5	U6	U7	U8	U9	U10	U11	U12	Max
Switched-Voltage Excitation					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	12
Switched-Current Excitation					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	12

Digital I/O Function	C1	C2	C3	C4	U1	U2	U3	U4	U5	U6	U7	U8	U9	U10	U11	U12	Max
RS-232	Tx	Rx	Tx	Rx													2
RS-485 (Half Duplex)	Tx-	Tx+	Rx-	Rx+													2
RS-485 (Full Duplex)	Tx	Rx	Tx	Rx													1
RS-232 TTL	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx	8
SDI-12	✓		✓		✓		✓		✓		✓		✓		✓		8
SDM	DATA	CLK	ENABLE		DATA	CLK	ENABLE		DATA	CLK	ENABLE		DATA	CLK	ENABLE		1
General I/O Pair	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	16
5 V or 3.3 V Source	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	16
Pulse-Width Modulation	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	16
Timer I/O	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	16
Interrupt	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	16

Pulse Counting Function	C1	C2	C3	C4	U1	U2	U3	U4	U5	U6	U7	U8	U9	U10	U11	U12	Max
Switch Closure	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	16
High Frequency	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	16
Low Level AC					✓		✓		✓		✓		✓		✓		6

Terminal Pair Use Examples

1. If U1 is programmed for analog input or output, its associated pair, U2, may only be used as an analog input or output.

2. If U6 is programmed as a low level ac pulse connection, its associated pair, U5, may only be used for digital I/O or pulse counting.