CAMPBELL SCIENTIFIC
WHEN MEASUREMENTS MATTER

CR300

Measurement and Control Datalogger

Capable, Compact Datalogger

Low-cost, high functionality

Overview

The CR300 is a multi-purpose, compact, low-cost measurement and control datalogger. This entry level datalogger, with its rich instruction set, can measure most hydrological, meteorological, environmental and industrial sensors. It will concentrate data, making it available over varied networks and deliver it using your preferred protocol. The CR300 also performs automated on-site or remote decision making for control and M2M communications. The CR300 is ideal for small applications requiring long-term, remote monitoring and control.

Benefits and Features

- Charge on-site battery (solar or ac-dc power converter) with in-built power regulator
- Operate on a very modest power budget
- Measure multiple analog voltage or current sensors
- Measure multiple pulse output or serial/digital sensors
- Connect via a wide variety of modems for remote telemetry
- Communicate using PakBus, Modbus, DNP3 and other standard protocols
- Send encrypted/secure email messages and alarms
- Campbell quality surge and ESD protection
- Simplified setup with PC connection using USB port

General Specifications

- **CPU:** ARM Cortex M4, running at 144 MHz
- **Internal Memory:** 10 MB flash for data storage, 5 MB flash for CPU drive / programs, 2 MB flash for operating system
- **Clock Accuracy:** ±1 min per month
- **USB micro B** for direct connection to PC (limited power source during configuration), 2.0 full speed, 12 Mbps
- **RS-232** for connecting RS-232 modems or serial sensors
- **Battery Terminal Pair (-BAT+)** for regulated 12 V power input or rechargeable 12 V VRLA for UPS mode
- **Charge Terminal Pair (-CHG+)** for 16 to 32 V from dc power converter or 12 or 24 V solar panel (10 W)
- **One Switched 12 V Terminal (SW12V)** for powering sensors or communication devices, 500 mA @ 20°C
- **Two Sensor Excitation or Continuous 0 to 5 V Terminal (VX1, VX2)** for resistive bridge measurements or sensor power

General Specifications Continued

- **Six Multipurpose Analog Input Terminals (SE1 - SE6)**
  - Analog functions (SE1 - SE6)
    - Analog inputs: 6 single-ended or 3 differential inputs with -100 to +2500 mV and ±34 mV ranges 24 bit ADC
    - 4 to 20 mA or 0 to 20 mA inputs (SE1, SE2 only)
  - Digital I/O functions (SE1 - SE4) consist of 3.3 V logic levels for:
    - High frequency counter (35 kHz)
    - Pulse width modulation
    - Interrupts and timer input
    - Period average (200 kHz, amplitude dependent)
- **Two Pulse Counting Terminals (P_SW, P_LL)**
  - P_SW
    - Switch closure (150 Hz)
    - High frequency counter (35 kHz)
  - P_LL
    - Low level ac (20 kHz)
    - High frequency counter (20 kHz)
- **Two Control Terminals (C1, C2):** C terminals are software configurable for digital functions
  - Digital I/O functions consist of 5 V output or 3.3 V logic levels for:
    - SDI-12
    - High frequency counter (3 kHz)
    - Switch closure (150 Hz)
    - General status/control
    - Voltage source 5 V, 3.3 V: 10 mA @ 3.5 V
    - Interrupts
    - Serial asynchronous communication Tx/Rx pair
- **Best Analog Accuracy:** ±(0.04% of reading ±3 µV), 0° to 40°C
- **Best Effective Resolution:** 23 nV (±34 mV range, differential measurement, input reversal, 50/60 Hz f_{N1})
- **Operating Temperature Range:** -40° to +70°C
- **Weight:** 242 g (8.5 oz)
- **Dimensions:** 14.0 x 7.6 x 5.1 cm (5.5 x 3.0 x 2.0 in)

Terminal Functions

Each terminal may only take on one function.

Analog Input Function	C1	C2	P_SW	P_LL	VX1	VX2	SE1	SE2	SE3	SE4	SE5	SE6	RS-232	SW12	Max
Single Ended							✓	✓	✓	✓	✓	✓			6
Differential							H	L	H	L	H	L			3
4 to 20 or 0 to 20 mA							✓	✓							2
Analog Output Function	**C1**	**C2**	**P_SW**	**P_LL**	**VX1**	**VX2**	**SE1**	**SE2**	**SE3**	**SE4**	**SE5**	**SE6**	**RS-232**	**SW12**	**Max**
Switched-Voltage Excitation					✓	✓									2
5 V Source	✓	✓			✓	✓									4
12 V Source														✓	1
Digital I/O Function	**C1**	**C2**	**P_SW**	**P_LL**	**VX1**	**VX2**	**SE1**	**SE2**	**SE3**	**SE4**	**SE5**	**SE6**	**RS-232**	**SW12**	**Max**
RS-232													✓		1
RS-232 TTL	Tx	Rx													1
SDI-12	✓	✓													2
Pulse-Width Modulation							✓	✓	✓	✓					6
Timer Input							✓	✓	✓	✓					6
Period Average							✓	✓	✓	✓					4
Interrupt	✓	✓					✓	✓	✓	✓					6
General I/O	✓	✓	✓				✓	✓	✓	✓					7
Pulse Counting Function	**C1**	**C2**	**P_SW**	**P_LL**	**VX1**	**VX2**	**SE1**	**SE2**	**SE3**	**SE4**	**SE5**	**SE6**	**RS-232**	**SW12**	**Max**
Switch Closure	✓	✓	✓												3
High Frequency	✓	✓	✓	✓			✓	✓	✓	✓					8
Low Level AC				✓											1