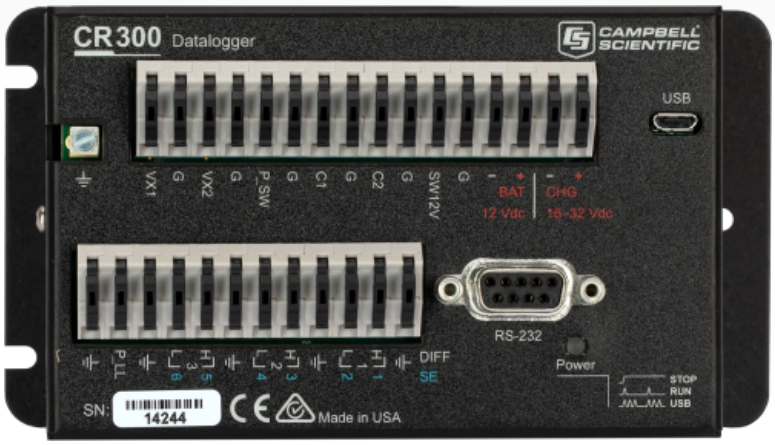
CAMPBELL SCIENTIFIC
WHEN MEASUREMENTS MATTER

CR300

Measurement and Control Datalogger



Compact Data Logger

Ideal for small applications

Overview

The CR300 is a multi-purpose, compact measurement and control data logger. This small, low-cost, high-value data logger offers fast communications, low power requirements, built-in USB, and excellent analog input accuracy and resolution. The CR300 can measure most hydrological, meteorological, environmental, and industrial sensors. It concentrates data, makes it available over varied networks, and delivers it using your preferred protocol. It 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.

The CR300 series includes Wi-Fi, cellular, or the following radio options for different regions:

- CR300-RF407: US and Canada
- CR300-RF412: Australia and New Zealand
- CR300-RF422: Europe
- CR300-RF427: Brazil

Note: Campbell Scientific does not recommend the CR300 for use as a PakBus router in networks with more than 50 devices. Large arrays or string variables may also reach memory limits. For such applications, a CR1000X Measurement and Control Datalogger is recommended.

Benefits and Features

- Connects directly to a computer's USB port
- Differentiates even slight changes in data values with higher resolutions measurements (24 bit Adc)
- Provides simple serial sensor integration and measurement with SDI-12 and/or RS-232
- Supports full PakBus networking
- Includes embedded web page for direct connection via web browser

Detailed Description

The CR300 is a low-powered data logger designed to measure sensors, analyze data, and store data and programs. A battery-backed clock assures accurate timekeeping. The on-board, BASIC-like programming language—common to all Campbell Scientific data loggers—supports data processing and analysis

routines.

The CR300 wiring panel includes a switchable 12 V terminal, and analog grounds dispersed among six analog terminals.

Specifications

-NOTE-	*Additional specifications are listed in the CR300-Series Specifications Sheet.*
Operating Temperature Range	❱ *Non-condensing environment* ❱ -40° to +70°C (standard)
Maximum Scan Rate	10 Hz
Case Material	Powder-coated aluminum
Analog Inputs	6 single-ended or 3 differential (individually configured)
Pulse Counters	8 (P_SW, P_LL, C1, C2, and SE1 to SE4)
Voltage Excitation Terminals	2 (VX1, VX2)
Communications Ports	❱ USB Micro B ❱ RS-232
Switched 12 Volt	1 terminal
Digital I/O	7 terminals (C1, C2, P_SW, and SE1 to SE4) configurable for digital input and output. Includes status high/low, pulse width modulation, external interrupt, and communication functions. Exception: The SE4 terminal doesn't do external interrupt.
Input Limits	-100 to +2500 mV
Analog Voltage Accuracy	❱ Accuracy specifications do not include sensor or measurement noise. ❱ ±(0.1% of measurement + offset) at -40° to +70°C ❱ ±(0.04% of measurement + offset) at 0° to 40°C
ADC	24-bit
Power Requirements	16 to 32 Vdc for charger input (CHG) (Current limited to 0.9 A maximum for power converter or solar panel input.)
Real-Time Clock Accuracy	±1 min. per month
Internet Protocols	Ethernet, PPP, RNDIS, ICMP/Ping, Auto-IP(APIPA), IPv4, IPv6, UDP, TCP, TLS (v1.2), DNS, DHCP, SLAAC, NTP, Telnet, HTTP(S), FTP(S), SMTP/TLS, POP3/TLS
Communication Protocols	PakBus, Modbus, DNP3, SDI-12, TCP, UDP, and others
CPU Drive/Programs	80 MB serial flash
Data Storage	30 MB serial flash
Idle Current Drain, Average	1.5 mA (@ 12 Vdc)
Active Current Drain, Average	❱ 23 mA (@ 12 Vdc with processor always on) ❱ 5 mA (@ 12 Vdc for 1 Hz scan with 1 analog measurement)
Dimensions	13.97 x 7.62 x 4.56 cm (5.5 x 3.0 x 1.8 in.) Additional clearance required for cables and leads.
Weight	242 to 250 g (0.53 to 0.55 lb) depending on communication option selected

CR300-RF407 Option

Radio Type	Frequency Hopping Spread Spectrum (FHSS)
Output Power	5 to 250 mW (user-selectable)
Frequency	902 to 928 MHz (US, Canada)
RF Data Rate	200 kbps
Receive Sensitivity	-101 dBm
Antenna Connector	RPSMA (External antenna required; see www.campbellsci.com/order/rf407 for Campbell Scientific antennas.)
Idle Current Drain, Average	12 mA (@ 12 Vdc)
Active Current Drain, Average	< 80 mA (@ 12 Vdc)

CR300-RF412 Option

Radio Type	Frequency Hopping Spread Spectrum (FHSS)
Output Power	5 to 250 mW (user-selectable)
Frequency	915 to 928 MHz (Australia, New Zealand)
RF Data Rate	200 kbps
Receive Sensitivity	-101 dBm
Antenna Connector	RPSMA (External antenna required; see www.campbellsci.com/order/rf412 for Campbell Scientific antennas.)

Idle Current Drain, Average	12 mA (@ 12 Vdc)
Active Current Drain, Average	< 80 mA (@ 12 Vdc)

CR300-RF422 Option

Radio Type	868 MHz SRD 860 with Listen Before Talk (LBT) and Automatic Frequency Agility (AFA)
Output Power	2 to 25 mW (user-selectable)
Frequency	863 to 870 MHz (European Union)
RF Data Rate	10 kbps
Receive Sensitivity	-106 dBm
Antenna Connector	RPSMA (External antenna required; see www.campbellsci.com/order/rf422 for Campbell Scientific antennas.)
Idle Current Drain, Average	9.5 mA
Active Current Drain, Average	20 mA

CR300-RF427 Option

Radio Type	Frequency Hopping Spread Spectrum (FHSS)
Output Power	5 to 250 mW (user-selectable)
Frequency	902 to 907.5 MHz/915 to 928 MHz (Brazil)
RF Data Rate	200 kbps
Receive Sensitivity	–101 dBm
Antenna Connector	RPSMA (External antenna required.)
Idle Current Drain, Average	12 mA (@ 12 Vdc)
Active Current Drain, Average	< 80 mA (@ 12 Vdc)

CR300-WIFI Option

Operational Modes	Client or Access Point
Operating Frequency	2.4 GHz, 20 MHz bandwidth
Antenna Connector	Reverse Polarity SMA (RPSMA)
Antenna	pn 16005 unity gain (0 dBd), 1/2 wave whip, omnidirectional with articulating knuckle joint for vertical or horizontal orientation
Transmit Power	7 to 18 dBm (5 to 63 mW)

CR300-CELL200 Option

-NOTE-	*The CR300-CELL200 option is not compatible with a Verizon cellular network.*
Cell Technologies	❱ 2G (GSM/GPRS/EDGE) ❱ 3G (UMTS/HSPA+)
2G Frequency Bands	850, 900, 1800, and 1900 MHz
3G Frequency Bands	800, 850, 900, 1900, and 2100 MHz
Antenna Connector	SMA (External antenna required; see www.campbellsci.com/order/cr300 for Campbell Scientific antennas.)
SIM Interface	3FF (6 position/contacts) Supports SIMs that require 1.8 or 3 V.
Radio Output Power	❱ 24 dBm on UMTS ❱ 27 dBm on EDGE ❱ 33 dBm on GSM
Radio Sensitivity Range	-99.5 to 110.5 dBm (10 M)

CR300-CELL205 Option

-NOTE-	*The CR300-CELL205 option is not compatible with a Verizon cellular network.*
Certifications	IC (Industry Canada) 10224A-201611EC21A
Cell Technologies	❱ 4G (LTE CAT-1) ❱ 3G (UMTS/HSPA+)
3G Frequency Bands	850, 1700/2100 (AWS), and 1900
4G Frequency Bands	700, 850, 1700/2100 (AWS-1), 1900
Antenna Connector	SMA (External antenna required; see www.campbellsci.com/order/cr300 for Campbell Scientific antennas.)
SIM Interface	3FF (6 position/contacts) Supports SIMs that require 1.8 or 3 V.
Radio Output Power	❱ 27 dBm on EDGE ❱ 23 dBm on LTE ❱ 33 dBm on GSM ❱ 24 dBm on UMTS
Radio Sensitivity Range	-99.5 to 110.5 dBm (10 M)

CR300-CELL210 Option

-NOTE-	*The CR300-CELL210 option is only compatible with a Verizon cellular network.*
Cell Technologies	4G (LTE CAT-1)
4G Frequency Bands	700, 850, 1700, 1900, 2100
Antenna Connector	SMA (External antenna required; see www.campbellsci.com/order/cr300 for Campbell Scientific antennas.)

Power Consumption - Low Power Mode	5 mA
Power Consumption - Idle	35 mA
Power Consumption - Active	70 mA
SIM Interface	3FF (6 position/contacts) Supports SIMs that require 1.8 or 3 V.
Radio Output Power	23 dBm on LTE
Radio Sensitivity Range	-99.5 to 110.5 dBm (10 M)

CR300-CELL215 Option

-NOTE-	*The CR300-CELL215 option is intended for use in EMEA countries.*
Cell Technologies	4G (LTE CAT-1) 2G (GSM/GPRS/EDGE) 3G (UMTS/HSPA+)
2G Frequency Bands	900 and 1800 MHz
3G Frequency Bands	850, 900, and 2100 MHz
4G Frequency Bands	800, 850, 900, 1800, 2100, and 2600 MHz
Antenna Connector	SMA (External antenna required; see www.campbellsci.com/order/cr300 for Campbell Scientific antennas.)
SIM Interface	3FF (6 position/contacts) Supports SIMs that require 1.8 or 3 V.
Radio Output Power	27 dBm on EDGE 33 dBm on GSM 23 dBm on LTE 24 dBm on UMTS
Radio Sensitivity Range	-99.5 to 110.5 dBm (10 M)

CR300-CELL220 Option

-NOTE-	*The CR300-CELL220 option is intended for use in Australia.*
Cell Technologies	4G (LTE CAT-1) 3G (UMTS/HSPA+)
3G Frequency Bands	850 and 2100 MHz
4G Frequency Bands	700, 850, 1800, 2100, and 2600 MHz
Antenna Connector	SMA (External antenna required; see www.campbellsci.com/order/cr300 for Campbell Scientific antennas.)
SIM Interface	3FF (6 position/contacts) Supports SIMs that require 1.8 or 3 V.
Radio Output Power	24 dBm on UMTS 23 dBm on LTE
Radio Sensitivity Range	-99.5 to 110.5 dBm (10 M)

CR300-CELL225 Option

-NOTE-	*The CR300-CELL225 option is intended for use in Japan.*
Cell Technologies	4G (LTE CAT-1)
4G Frequency Bands	800 (lower), 800 (upper), 850+, 900, 1800, and 2100 MHz
Antenna Connector	SMA (External antenna required; see www.campbellsci.com/order/cr300 for Campbell Scientific antennas.)
SIM Interface	3FF (6 position/contacts) Supports SIMs that require 1.8 or 3 V.
Radio Output Power	23 dBm on LTE
Radio Sensitivity Range	-99.5 to 110.5 dBm (10 M)