



## Cellular Connectivity

Cellular data services available

### Overview

The RV50 is an industrial 4G LTE cellular gateway that provides serial and Ethernet connectivity to numerous cellular networks. (The RV50 automatically falls back to 3G or 2G when 4G coverage is not available.) The RV50 is capable of LTE, CDMA/EV-DO, and GSM/GPRS/EDGE/WCDMA networking and is carrier-approved worldwide for Verizon, AT&T, T-Mobile USA, Rogers, Bell, Telus, and other cellular data carriers. The

networking and carrier used by the RV50 are determined by the active SIM card(s) inserted into the device.

**Note:** The RV50 does not ship with a SIM card unless the cellular modem was provisioned with/for [Cellular Data Services](#); the SIM card is provided by the carrier when signing up for service.

### Benefits and Features

- ▶ Easily provides Internet connectivity to Campbell Scientific data loggers and peripherals anywhere there is cellular network coverage
- ▶ Very low power consumption when compared to other industrial cellular gateways
- ▶ Compatible with most Campbell Scientific data loggers
- ▶ 4G LTE networking with automatic fallback to 3G and 2G
- ▶ Works with many cellular network carriers
- ▶ Ready to use out of the box—no need to work with a cellular carrier for modem provisioning and data plans when coupled with Campbell Scientific Data Services

### Detailed Description

The RV50 is an industrial 4G LTE cellular gateway. It requires at least one mini-SIM (2FF) card supplied by your cellular carrier and a suitable 12 or 24 Vdc nominal power source. The RV50 has an RS-232 serial port that can be used for serial server, serial client, and PPP host services. This port is commonly connected to a data logger RS-232 serial port. Additionally, it has an Ethernet port, as well as a host of Ethernet and IP services related to routing, port forwarding, VPN, and more. The RV50 has three antenna connectors to be used for primary and

diversity antennas and GPS, although the unit can operate with only the primary cellular antenna connected.

### Internet Connectivity

The RV50 provides Internet connectivity to any Campbell Scientific data loggers located within range of a compatible cellular network. Armed with Internet connectivity, a data logger can remotely connect to Campbell Scientific software on a PC, mobile device, and the cloud. The RV50 can also

enable many data loggers to communicate using other Internet protocols, such as Modbus, DNP3, email, and web (HTTP).

## Device Intelligence

The RV50 is powered by the Sierra Wireless ALEOS embedded operating system. This allows the RV50 to provide highly reliable connectivity and remote device management independent of the device it is connected to. The numerous embedded services include IP serial server and client, local PPP host, dynamic DNS client, routing, VPN, and more.

## Establishing Cellular Service

Campbell Scientific offers low-cost, cellular data service plans for the RV50. Our data service plans include Verizon in the United States and AT&T in North America (US, Mexico, Canada), as well as international access to over 600 carriers in 185 countries. The Konect Router Service is included to assure a secure connection with Campbell Scientific data logger support software.

## Configuring the RV50

The RV50 is configured using ACEManager, a web-based configuration tool hosted by the gateway. ACEManager can be accessed using Internet Explorer or Firefox remotely over the cellular WAN or locally over Ethernet. A number of templates

will be provided for download to make most configurations very simple after connection to ACEManager.

## Data Logger Connection

Data loggers can be connected in a variety of ways to suit the needs of the application. Common methods include the use of serial or Ethernet peripherals. The 28899 Ethernet cable is shipped with the RV50 for connecting Ethernet devices.

## Powering the RV50

Compared to many other industrial cellular gateways, the RV50 has a very low power consumption. The average current consumption at 12 Vdc is about 65 to 95 mA when idle, depending on its configuration. Additionally, the RV50 can be turned on and off easily using a data logger C, U, or SW12V port. When using the SW12V terminal, the modem can typically be powered with a BP12 battery, a CH150 charger/regulator, and a SP10 solar panel.

## Antennas

Campbell Scientific offers two antennas for the RV50. Our higher gain omnidirectional (pn 32262) and Yagi (pn 31128) antennas require a cable to connect them to the RV50. The COAXSMA-L cable connects the antennas directly to the RV50 cellular antenna connector. The COAXNTN-L cable and a surge protector (pn 31317) are used when the RV50 is susceptible to lightning or electrostatic buildup or for long cable runs. Two external antennas are required for reliable 4G LTE communications.

## Specifications

Transmission Distance or Area	Dependent upon antenna used and LTE, CDMA/EV-DO, GSM/GRPRS/EDGE, and WCDMA coverage.
Network Technology	4G (with automatic fallback to 3G and 2G)
RF Connectors	3 female SMA jacks (for primary cellular and optional diversity cellular and GPS)
Operating Temperature Range	-30° to +70°C
Host Interface	› RS-232 Serial DTE DB9 Female › USB 2.0 Micro-B › 10/100/1000 Ethernet RJ45
Service Requirements	Network coverage at the data logger site and cellular data service plan.
Dimensions	11.9 x 9.4 x 3.4 cm (4.69 x 3.7 x 1.34 in.)

Weight 320 g (11.3 oz)

<b>Cellular WAN - North American Model (-NA)</b>	
Carrier Approval	Verizon, AT&T, Sprint, T-Mobile USA, Rogers, Bell, Telus
LTE	1900(B2), AWS(B4), 850(B5), 700(B13), 700(B17), 1900(B25)
WCDMA	2100(B1), 1900(B2), AWS(B4), 850(B5), 900(B8)
EV-DO/CDMA	800(BC0), 1900(BC1), 1700(BC10)
GSM/GPRS/EDGE	Quad-band
Industry Approvals	FCC, IC, PTCRB
Radio Type	Software-defined (with automatic network operator switching)
Interfaces	Dual SIM interfaces

## Cellular WAN - International Model (-INT)

LTE	2100(B1), 1800(B3), 2600(B7), 900(B8), 800(B20)
WCDMA	2100(B1), 1900(B2), 850(B5), 900(B8)
GSM/GPRS/EDGE	Quad-band
Industry Approvals	CE, RCM, GCF, R&TTE
Radio Type	Software-defined (with automatic network operator switching)

Interfaces Dual SIM Interfaces (2FF)

## Power

Operating Voltage	7 to 36 Vdc
Typical Enable/Ignition Sense Low	1 mA (@ 12 Vdc)
Typical Idle	65 to 95 mA (@ 12 Vdc, depending on configuration)
Typical Active	250 to 300 mA (@ 12 Vdc, depending on configuration)

For comprehensive details, visit: [www.campbellsci.com/rv50](http://www.campbellsci.com/rv50) 



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