Campbell SCIENTIFIC

CELL225

4G LTE CAT-1 Cellular Module for Japan

Simple to Use, Easy to Maintain

Low-power option for use in Japan

Overview

By using Campbell Scientific's external line of cellular modules, system integrators, OEMs, and large end users can avoid costly, time-consuming maintenance visits to remote devices around the world.

The CELL200 series of external cellular modules are 4G LTE cellular devices that provide serial or CS I/O connectivity to a number of cellular networks, including Verizon, AT&T, T-Mobile USA, Rogers, Bell, Telstra, and Telus. The networking and carrier used by the CELL200 series is determined by the model used and the SIM card inserted into the device.

The CELL225 has very low power consumption when compared to other cellular modems: 14 mA at idle, 39 mA when active, and 300 µA when in low power mode.

When coupled with Campbell Scientific data services, these devices are ready for you to use out of the box. There is no need for you to work with cellular carriers for provisioning and experience the accompanying hassle.

The CELL225 is part of the CELL200 series of modems that includes:

- CELL205 for use with AT&T
- CELL210 for use with Verizon
- CELL215 for use in EMEA countries
- CELL220 for use in Australia and New Zealand
- CELL225 for use in Japan

Note: The CELL225 does not ship with a SIM card unless the cellular modem was provisioned with/for Campbell Scientific cellular data services; the SIM card is provided by the carrier when signing up for service. For more information, visit the Cellular Data Services page.

Benefits and Features

- Includes everything needed for use with a Campbell Scientific data logger or smart sensor
- Low power consumption for solar-powered sites
- Easy integration, setup, and installation
- No moving parts and low maintenance
- Compatible with modern Campbell Scientific data loggers
- Compatible with Edlog-era data loggers in serial server mode
- 4G LTE networking
- Ready for out-of-the-box use with Campbell Scientific data services
- Konect routing service included to assure a secure connection with Campbell Scientific data logger support software

Detailed Description

The CELL225 is an industrial 4G LTE cellular module. It requires at least one micro-SIM 3FF card (for six position/contacts interface) supplied by your cellular carrier and a suitable 12 or 24 Vdc nominal power source. The CELL225 has an RS-232 serial port and a CS I/O port that can be used for serial server, serial client, and PPP host services. These ports are commonly connected to a data logger RS-232 serial or CS I/O port. The CELL225 has two antenna connectors to be used for primary and diversity antennas, although the unit can operate with only the primary cellular antenna connected.

Internet Connectivity

The CELL225 provides Internet connectivity to any Campbell Scientific data logger 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 CELL225 can also enable many data loggers to communicate using other Internet protocols, such as Modbus, DNP3, email, and web (HTTP).

Device Intelligence

The CELL225 provides 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.

Establishing Cellular Service

Campbell Scientific offers low-cost cellular data service plans for the CELL225. 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 routing service is included to assure a secure connection with Campbell Scientific data logger support software.

Configuring the CELL225

The CELL225 is configured using a web-based configuration tool hosted by the cellular module. It can be accessed using Internet Explorer or Firefox remotely over the cellular WAN (when in serial server mode) or via USB.
The CELL225 can also be configured directly from the data logger when used in PPP mode (default mode) using the Device Configuration Utility or CRBasic instructions.

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 CS I/O cables.

Powering the CELL225

Compared to many other industrial cellular modules, the CELL225 has extremely low power consumption. The average current consumption at 12 Vdc is approximately 14 mA when idle, depending on its configuration. Additionally, the CELL225 can be turned on and off easily using a data logger SW12V port or the IPNetPower() instruction (PPP mode for the CR1000X, CR300, and CR6 only). When using the SW12V terminal, the modem can typically be powered with a BP12 battery, a CH150 charging regulator, and an SP10 solar panel.

Antennas

Campbell Scientific offers three antennas for the CELL225. Our 4G/3G/2G 0 dBd cellular dipole whip antenna (pn 32256) connects directly to the CELL225 (no cable required) and can transmit short distances. Our higher gain omnidirectional (pn 18285) and Yagi (pn 31128) antennas require a cable to connect them to the CELL225. The COAXSMA cable connects the antennas directly to the CELL225 cellular antenna connector. The COAXNTN-L cable and a surge protector (pn 31317) are used when the CELL225 is susceptible to lightning or electrostatic buildup or for long cable runs.

Sample Programs

- View this sample program for how to use some of the terminal commands with CELL2XX modules.
- To use the SetSettings functionality with the CR300, CR310, CR6, and CR1000X dataloggers, view this sample program.

Specifications

Certifications	IC (Industry Canada) 10224A-201611EC21A
Host Interface	❱ RS-232 serial port, DB9 female ❱ CS I/O communications port, DB9 male ❱ USB version 2.0 with micro-B connector
RF Connectors	2 SMA antenna connectors (primary and diversity)
Operating Temperature Range	-40° to +80°C

SIM Interface	3FF (6 position/contacts) Supports SIMs that require 1.8 or 3 Vdc.
Dimensions	13.46 x 8.1 x 2.86 cm (5.3 x 3.19 x 1.13 in.)
Weight	215.5 g (7.6 oz)

Cellular WAN

Network Technology	4G LTE CAT-1
Carrier Approval	JATE/TELEC/DOCOMO
LTE	2100(B1), 1800(B3), 900(B8), 800 Lower (B18), 800 Upper (B19), 850+(B26)

Data Speeds

LTE	❱ Max 5 Mbps (upload) ❱ Max 10 Mbps (download)
RS-232 or CS I/O	9600 bps to 460.8 kps

Power Consumption

Low Power Mode	300 µA
Idle	14 mA
Active	39 mA

Radio Output and Sensitivity

Output Power	23 dBm on LTE
Sensitivity Range	-99.5 to 110.5 dBm (10 M)

For comprehensive details, visit: www.campbellsci.com/cell225

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