CAMPBELL SCIENTIFIC®
WHEN MEASUREMENTS MATTER

Ready-to-go kits

Easy communication over GSM/GPRS and 3G HSDPA networks

Overview

The CS-3G kits include a COM111 modem that allows data to be collected from a remote datalogger across 2G and 3G mobile phone networks. Also included are all of the necessary cables, interfaces, mounting brackets and an antenna to provide an easy to use solution out of the box. All that is needed to get the system up and running is a SIM obtained from service provider who provides good coverage at the intended site of operation[1].

When configured in GPRS/3G data mode, the logger can be accessed remotely via a TCP/IP connection, e.g. from the internet. These modems are comparatively low power and are often left on all the time allowing fast access to the measurements and the fast transmission of alarms etc. On 3G networks, with good signal strength, data transfer speeds can approach that of wired serial connections.

When used in GPRS/3G mode with the datalogger, alarms can be sent by email and data can be sent out from the datalogger by email, ftp or https methods[2].

The modems can also be configured to support older GSM dial-up on 2G networks (sometimes called Circuit Switched Data mode), which gives similar functionality to a normal dial-up landline modem connection[3].

GSM dial-up connections are charged for on a "time connected" basis so are not left on all the time. Obtaining a contract with a GSM dial-up service is also becoming more difficult to obtain as many operators no longer support it, especially for access from a landline network, therefore GPRS or 3G data services are now more commonly used.

[1]When the kit is to be used in association with Campbell Scientific's Konect data collection service a SIM is available as an option as part of the subscription package.
[2]Not possible with the CR200X or older retired dataloggers.
[3]Not supported on all networks. Contact Campbell Scientific for more information.

Benefits and Features

› Ready-to-go kits for easy communication over mobile phone networks.

› Quad-band GSM, GPRS, Edge (E-GPRS) and 3G HSDPA transceiver works on networks around the world. The modem supports 900/2100 3G frequencies common in Europe and Asia.

› Can be used to collect data at speeds comparable with direct serial connections (in 3G mode).

› Can provide GPRS/3G connections with any Campbell datalogger including the CR200(X) and older loggers as the modem has built-in IP stack.

› Can also be used to send alarms and data via SMS text messaging on 2G networks.

› Has relatively low power consumption, so can often be left on all the time if needed.

Connections to the datalogger can either be made from a server, normally running Campbell Scientific's Loggernet package, or the datalogger can be programmed to call back to a server. Data can also be exchanged between dataloggers over the connection.

More advanced dataloggers, such as the CR300, CR6, CR800, CR1000 and CR3000, when running in GPRS/3G mode can, in addition to normal communications, serve many of the functions normally possible over a wired IP connection which includes sending alarms, data via ftp, http or email, serving web pages and internet clock synchronisation.

The datalogger can also be programmed to send SMS text messages for alarms or to send small amounts of data. More advanced dataloggers can be programmed to respond to text messages, e.g. to trigger changes in logging speed or communications methods.

The COM111 modem has a low power use so in many circumstances can be left powered on. For very low power applications, it can be switched off at certain times of the day using the power switch built into some dataloggers or using an optional PSW12 solid state switch.

Two different kits are available from Campbell Scientific differing mainly in the interface provided. Details are provided below. These can be reconfigured with settings which will allow GSM dial-up use. The modems and the datalogger are reconfigured with a configuration cable using a PC software tool called the Mobile Data Assistant which can be downloaded for no charge from our website.

Note: The COM111 replaces the COM110A. It has enhanced functionality.

Kits available:

All kits include a modem, mounting bracket, logger connection cables and antenna and cabling (see below). All of the kits can be configured for either GPRS/3G or GSM dial-up operation using the Mobile Data Assistant package.

CS-3G RS232 kit: includes a special null-modem cable for connection to the "D-connector" RS232 port of the datalogger. This kit also includes a modem programming cable (part 010286).

CS-3G SDC kit: includes the SC105 SDC interface which supports baud rates up to the maximum supported by the datalogger and can also be used in parallel with other devices on the CS I/O port. As this connects to the CS I/O port it leaves the RS232 free for other uses. This kit includes a modem programming cable.

Note: If using a datalogger with high speed ethernet ports, e.g. the CR6, where large volumes data transfer is needed, please consider our alternative RV50 a 3G/4G modem.

Optional extras:

009545	PSW12 Power Switch can be used to switch 12V power to the COM111 module, controlled by a datalogger control port.
009636	CPI/RS232 RJ45 to DB9 Female Cable (300 mm), allows the use of the CPI port on the CR6 as a serial port.
010806	SC110 RS232 to logger control port cables, to allow the modem to use one of the control port serial ports.
009575	2G/3G/4G 8 dBi Colinear Antenna for wall/ pole mount.
010122	TRI BAND YAGI which covers 3G/GSM/ 1800 MHz, nominal 13 dB gain.

These packages do not include airtime contracts and SIM cards. For our Konect data service an optional SIM can be supplied as part of the service. Otherwise the end user needs to source the best contract suited to their needs making sure that the network chosen will support the required method of communications now and for the forseeable future. Note that GSM dial-up access, is not supported on all networks.

For the GPRS/3G use it is recommended you read a copy of the manual before purchase of an airtime contract, as this discusses different options for GPRS/3G access which may require finding a specialist airtime supplier.
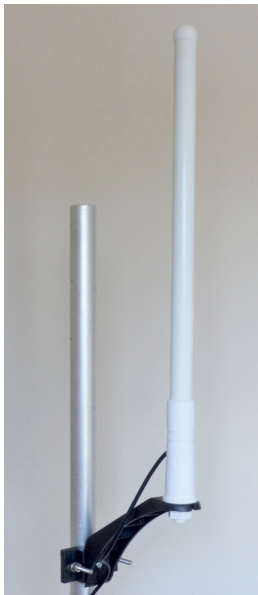
Antenna

The standard CS-3G kits include the antenna, part number 009528, that is a 3 dBi, omnidirectional antenna that works on all 2G and 3G bands.

This can be mounted on vertical poles from 30-54 mm in diameter, or it can be wall mounted. It is fitted with 3 m of cable allowing the antenna to be mounted as high as possible to achieve best signal reception.

For installations on remote sites with poor reception we can also supply a higher gain 8 dBi colinear antenna or a directional YAGI antennae of 13 dBd nominal gain as shown below. The YAGI can only be used on fixed installations where the bearing to the nearest cell station is known. As they need aligning, setup is more complicated. Please contact Campbell Scientific for ordering details.
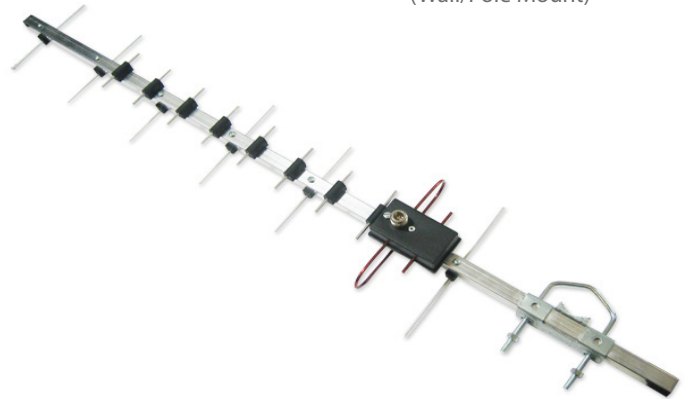
Campbell Scientific can supply specialist antenna for installations requiring a more compact or discrete antenna.

2G/3G/4G 3 dBi Antenna (Wall/Pole Mount)

2G/3G/4G 8 dBi Colinear Antenna for wall/pole mount

Optional: TRI BAND YAGI which covers 3G/GSM/1800 MHz, nominal 13 dB gain.

Mobile Data Assistant

The Mobile Data Assistant (MDA) is a free utility designed to allow customers to configure Campbell Scientific (Europe) packages that include a COM111 modem. The MDA provides setup and diagnostic information and uses a wizard style interface to accept the user's requirements and gather settings. Where applicable it also gives the option to program any corresponding datalogger settings to also be used by Konect subscribers to program their COM111 modems for GSM and GRPS/3G Call-back.

The mobile data assistant package runs on most Windows PC platforms (XP SP3 and above).

Specifications

› Input Power Supply Requirements:
  5-32V DC at an average maximum current of 400 mA (peak 2.5 amps @ 5.5V)

› System Power Consumption:
  Typical: (modem only) 5 mA in `standby' mode (GSM)
       <400 mA on-line, transmitting (typically 100-200 mA)
       ~ 20-30 mA when online in GPRS/3G mode.

› Frequencies supported:
  Quad bands GSM/GPRS/EDGE 850/900/1800/1900 MHz
  900/2100 HSDPA (3.5G) for Europe and Asia

› Modem serial port speed: Can be set at 9600 baud for older dataloggers. It is normally set to 115 kbaud for GPRS/3G use.

› Data throughput rate (from the modem): typically a maximum of 700 bytes per second in GSM mode. Rates can be up to 7 kB per second in 3G mode, but this is signal strength and network dependent. The transfer rates are protocol dependent. Higher speeds will be achieved with native TCP/IP protocols such as ftp and http.

› Physical: (module only)
  Operating Temperature: -30°C to +65°C

› Humidity: Up to 90%, non-condensing

› Size: 63 x 60 x 22 mm (modem only)