COMET CLOUD SERVICE
MODEM MANUAL FOR
CCS MODEM 2
AND
CCS MODEM-LTE

Met One Instruments, Inc

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CCS MODEM Manual

About This Manual

This document is organized with the most important information grouped together for easy reference by the user. All owners and operators should read and understand the sections on installation, setup, and field calibrations. Other sections that provide in-depth information on subjects such as theory, diagnostics, accessories, and alternate settings provide valuable information which should be consulted as needed. Electronic versions of this manual are also available.

Technical Support

Should you require support, please consult your printed documentation or our website www.metone.com to resolve your problem. If you are still experiencing difficulty, you may contact a Technical Service representative during normal business hours;

Monday – Friday 7:00 a.m. to 4:00 p.m. Pacific Time.

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1 INTRODUCTION

1.1 About the Comet Cloud Service (CCS) Modem

The Met One Instruments, Inc. Comet Cloud Service (CCS) modem provides real time remote connectivity to a range of Met One particulate and weather sensors. The CCS package includes the cellular modem hardware, a personalized webpage dashboard, and 1 year of free cellular and cloud website data hosting services.

The CCS web dashboard gives current measurement values graphically and in tabular form; the private link can be shared with other authorized users allowing easy data sharing across an organization. Data is stored in the cloud for 2+ years, and can be downloaded to a computer or other device at any time.

The CCS modem uses Met One's standard communication protocol to identify and setup any connected compatible device. Dual quick-connect connectors are included and allow up to 2 sensors devices, such as an NPM Sensor particulate monitor and an AIO 2 weather sensor, to share one common modem and website. Alternatively a single device with a datalogger such as the Automet 580 or E-BAM particulate monitor can be connected.

1.2 Comet Cloud Service Modem Specifications

Parameter	Specification
Power:	Input: 12 VDC
Power Consumption:	110 mA Average Draw
Operating Temperature:	-25° to +60°C / -13° to +140° F
Ambient Humidity Range:	0 to 100% RH, non-condensing.
Mounting:	Pole mounting bracket with hose clamps.
Unit Weight:	0.95 kg / 2.1 lb.
Unit Dimensions:	36.7 X 11.5 cm / 14.5 X 4.5 in (H X DIA.)
Rating:	IP64
GPS:	Internal GPS module included
I/O Interface:	MOI 7500 Protocol, via RS-485 or RS-232
Network Compatibility:	LTE-M (U.S. Domestic) GSM (Internationally w/ over 550 networks)
Data Collection on Modem:	Every 1 Second
Data Update Rate To Cloud:	Standard: USA: 15 Minute – Optional: USA 5 Minute
	Standard: Global: 60 Minute – Optional: Global 15 Minute
Data Storage on Cloud:	2 Years (oldest data overwritten after that)
Data Plan:	1 year of Service included with purchase of CCS Modem
	Renewals available from Met One Instruments, Inc. Service Department.

Specifications may be subject to change without notice.

2 Setup and Startup

The Comet Cloud Service (CCS) modem is designed for rapid deployment and easy setup by a single person. This section describes the basic assembly, setup, and start-up of the instrument.

2.1 Unpacking the CCS Modem

When unpacking a new CCS Modem, verify that the contents are undamaged. Any damages incurred to the equipment during shipping are the responsibility of the carrier. If any damage to the shipment is noticed before unpacking, **a claim must be filed with the commercial carrier immediately**. You should follow any special unpacking instructions provided by the carrier as you then carefully remove all items from the containers and inspect each component. It is recommended to document and photograph all damaged packages and items before, during, and after unpacking them. Contact Met One Instruments to arrange for any replacement items needed.

2.2 Components

Each CCS Modem includes:

| CCS Modem | Mounting clamps | DC power cable | Comet Software CD |

Accessories purchased separately may include:

9438-4 AC Power supply   Sensor-to-modem cables

2.3   Installing the CCS Modem

The CCS will need to be mounted to a vertical pole or post as shown in the image above. Using the supplied metal clamps, tighten the mounting bracket to the mounting pole.

NOTE: The CCS Modem includes an internal GPS that adds station location data to the Cloud website and downloaded station data. For best GPS operation, the CCS Modem should be installed outdoors with an unobstructed view of the sky.

Mount sensor(s) to be connected with CCS Modem in accordance with each product's installation documentation.

2.4   Connect Sensors to the CCS Modem

The CCS Modem can collect and report measurement data from up to 2 of the following compatible Met One Instruments, Inc. weather and air quality sensors:

- AIO 2 Sonic Weather Sensor   Wind Speed/Direction, Temperature, Humidity, Pressure
- MSO-485 Weather Sensor   Wind Speed/Direction, Temperature, Humidity, Pressure
- 597 Weather Sensor   Temperature, Humidity, Pressure
- ES-642 Dust Monitor   PM2.5, or PM10, or TSP Particulate Mass
- NPM SENSOR SERIAL   PM2.5, or PM10, or TSP Particulate Mass

Alternatively the CCS Modem can collect and report measurement data from 1 of the following compatible Met One Instruments, Inc. datalogging devices and monitors:

- E-BAM PLUS   PM10 or TSP Particulate Mass
- Automet 580   Datalogger and any connected sensors
- Multi-Met 136   Translator and any connected sensors
- E-Sampler   PM2.5, or PM10, or TSP Particulate Mass
- BAM-1022   PM2.5, or PM10, or TSP Particulate Mass
- E-BAM*   PM2.5, or PM10, or TSP Particulate Mass
- BC 1060   PORTABLE BLACK CARBON MONITOR - 2 CHANNEL

*E-BAM must be of newer 2019+ design. Ask Met One Sales/Service department to confirm if you wish to connect an existing monitor to the CCS MODEM.

Connect the appropriate sensor cable(s) to each sensor, and to the CCS Modem's communication ports.

CCS Bottom Connector Plate

2.5 Powering on the Device

Connect the included DC power cable to a 12VDC power source, or optional 9438-4 AC power supply to an AC outlet. Next connect the DC cable connector to the power connector on the underside of the CCS Modem.

Once the CCS Modem and connected sensors are powered on, they will automatically begin to sample and report data to the Cloud at the proper interval (15 minutes in the USA standard, 5 minute optional, 60 minutes Global version, 15 minute rate optional). Please allow several data intervals worth of time for the first data points to appear.

3   Downloading and Viewing the Data

Currently, Met One offers two options for downloading and viewing the data from a CCS MODEM 2 system; a web interface and a windows application. This section will cover both options.

3.1   Comet Software

The CCS Modem is supplied with a CD containing a free copy of the Comet™ program. Comet is a simple, Windows-based, communications terminal program developed by Met One Instruments. Comet allows the user to connect to the cloud and download the data from each CCS cloud service webpage.

The Comet CD also contains a very comprehensive pdf user's manual for the program. Insert the CD and install the program onto the computer that you will be using, reviewing the manual for more operational details.

3.1.1   Cloud Service Webpage

The CCS Modem includes a cloud service for storing and viewing its data. Once the CCS modem collects the required number of data samples, it connects to the internet and secure Cloud site and uploads the data to that site. Each CCS system comes with a webpage link for remote, real time viewing of the systems latest data.
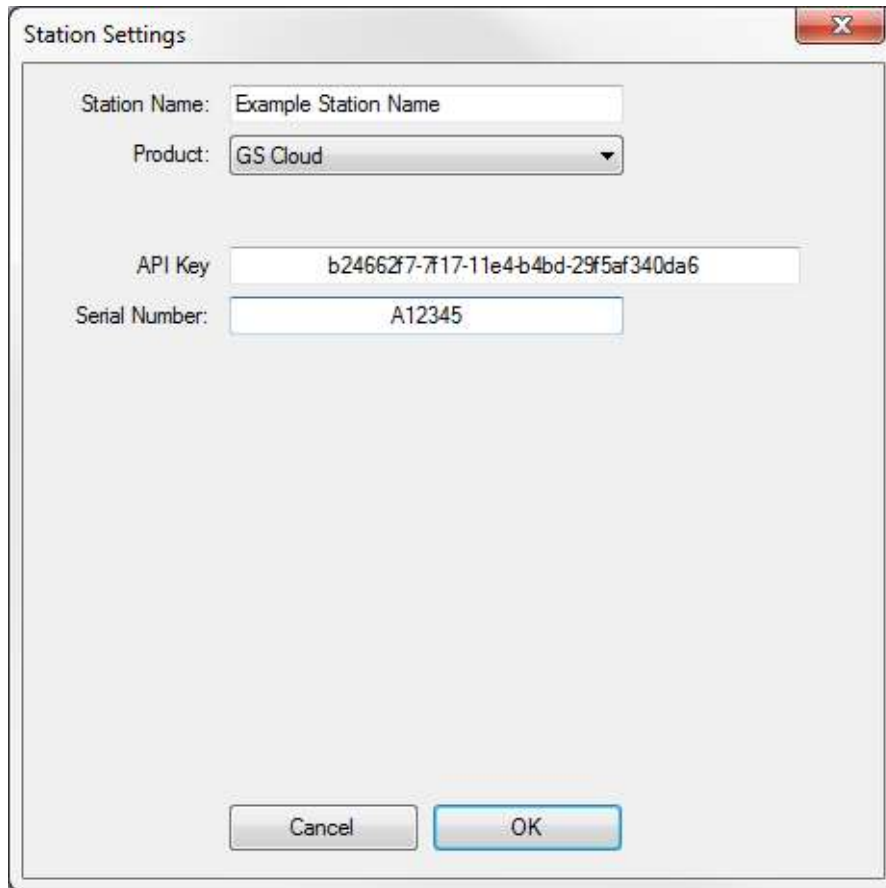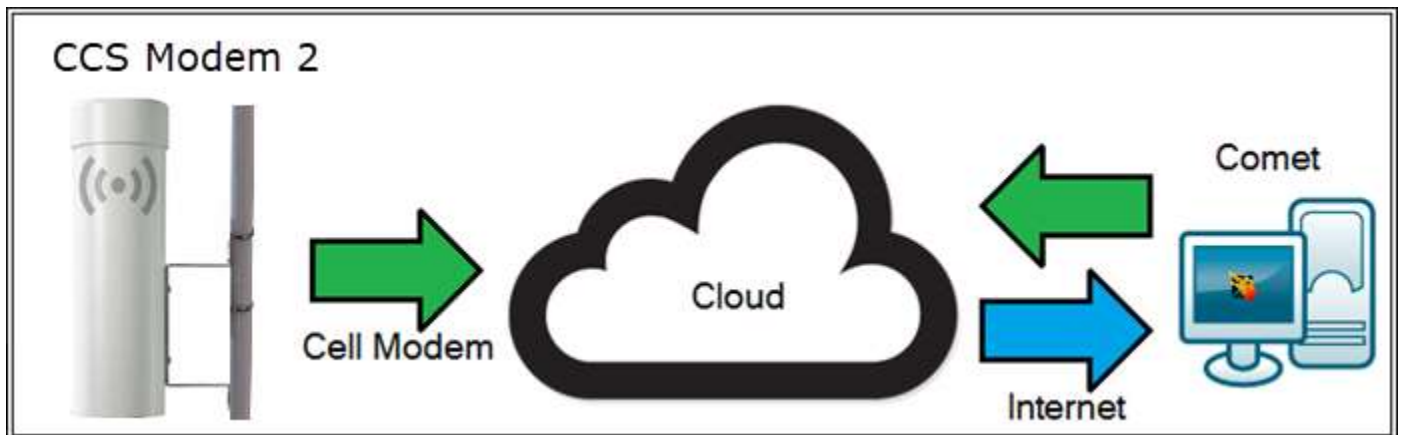
3.1.2 Comet Installation

Insert the Comet CD into your PC and the install program should run automatically as shown in the image below. If an AutoPlay pop-up window appears, select "Run AutoRun.exe". Select Install Comet to begin the installation process. Follow the on screen instructions until Comet is successfully installed.
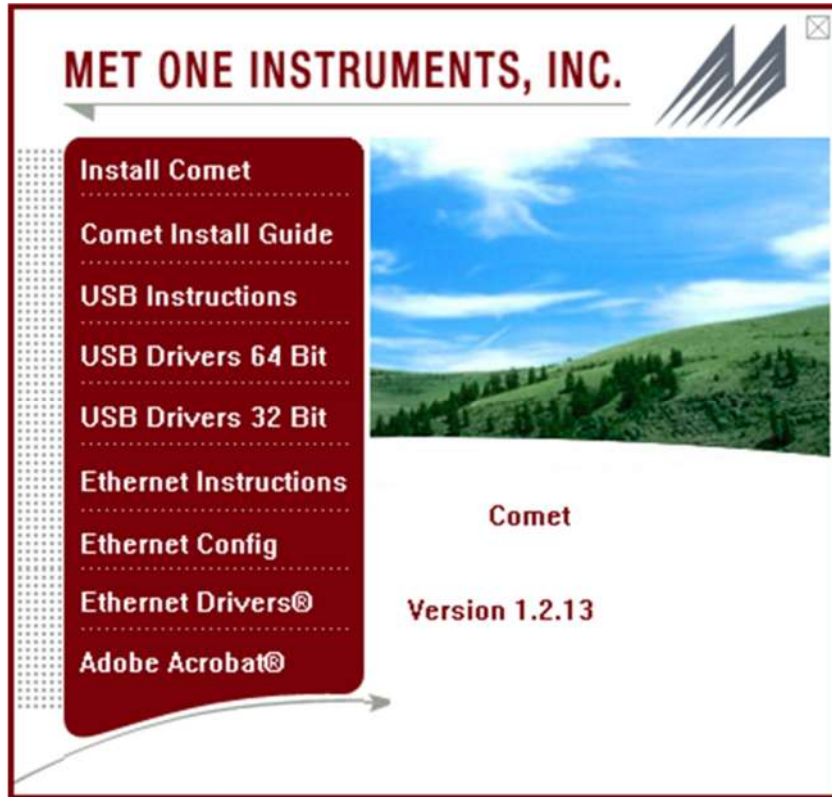
3.1.3 Setting up a Station

When prompted, press the create button to create a new station for your CCS Cloud site. If Comet does not prompt you, go to Station -> New to create a new station. As shown in the image below, give your station a name and choose the GS Cloud plugin from the drop down menu. Users will then need to enter their API key and device serial number in order to authorize the access to the device's data. Press OK to save your station.
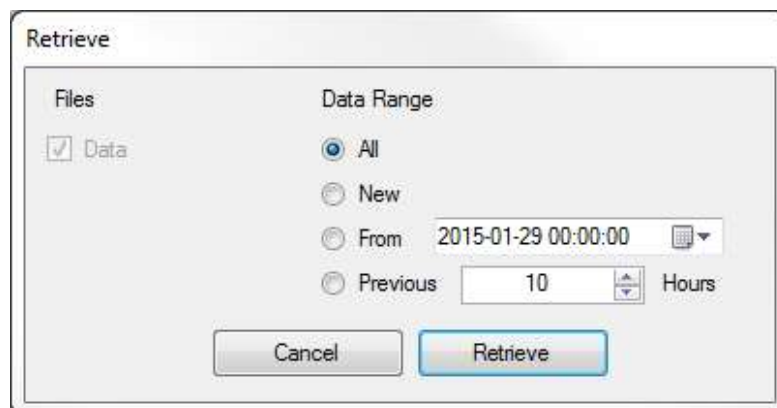

Note: Customers will receive an API on the provided configuration sheet; a digital copy can be obtained from the Met One Instruments Service department.

Press the Retrieve Current button to open the Retrieve Menu screen. When prompted, enter a data range and press Retrieve to download your station's data from the cloud.
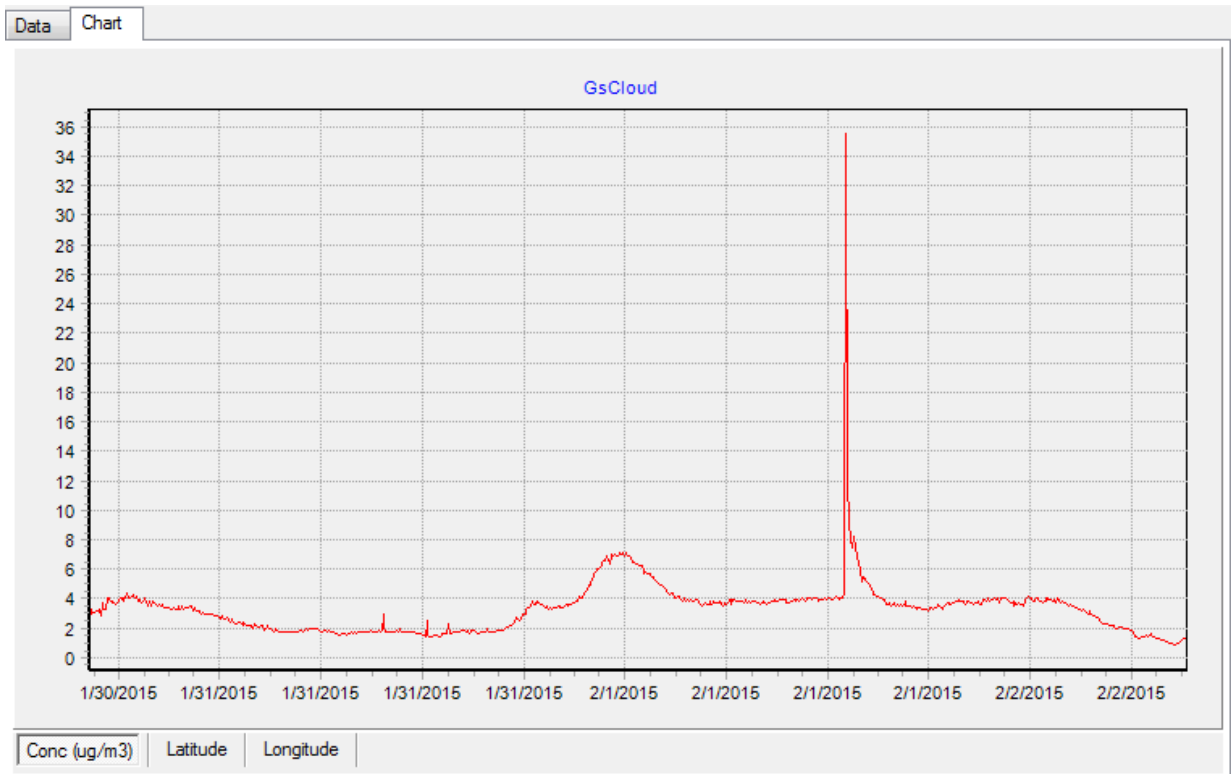
Comet will then connect to the cloud site and download the device's data. Users can then use the data tab and chart tab to visually look at the data. When Comet downloads the data, a CSV file is created in the users My Documents folder.

3.2 Web Interface

A second method for downloading and viewing the data is through the web portal. Each customer will be sent a private link to a custom dashboard in which users can view, chart, and download/export their data.

3.2.1 How the Cloud Works

The CCS uses a cloud service for storing and viewing data from the connected sensors. After the CCS collects the data from the connected sensors, it connects to the internet and designated secure Cloud site via its internal cell modem. Once connected It will push the data to the cloud site. Users may then go to their dashboard and graphically view their data.
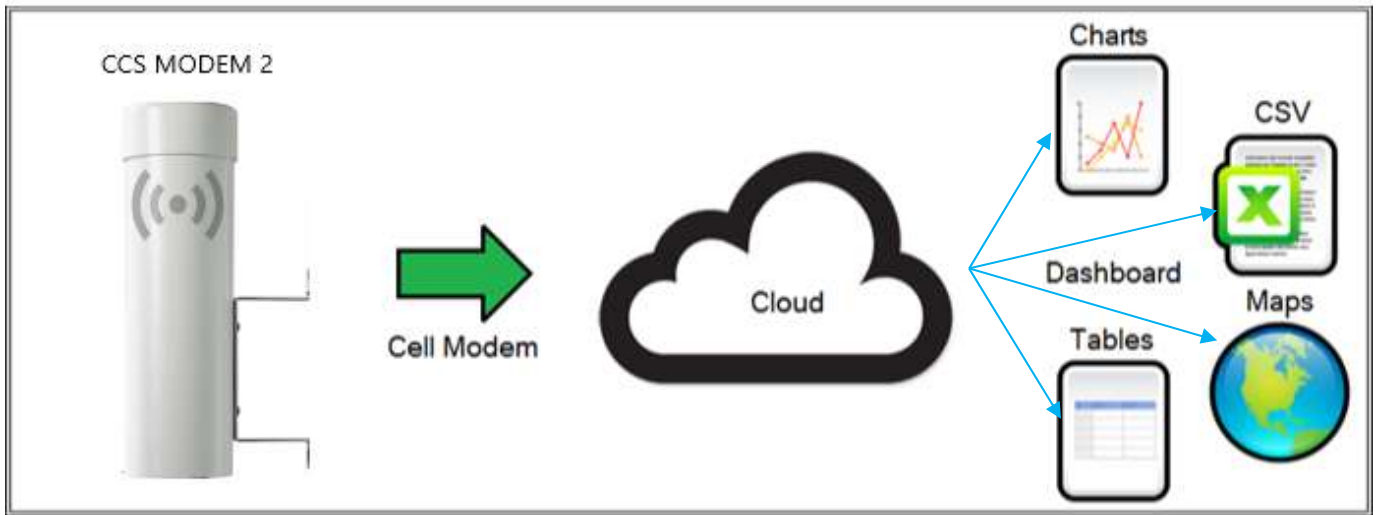
Below is an example dashboard setup:
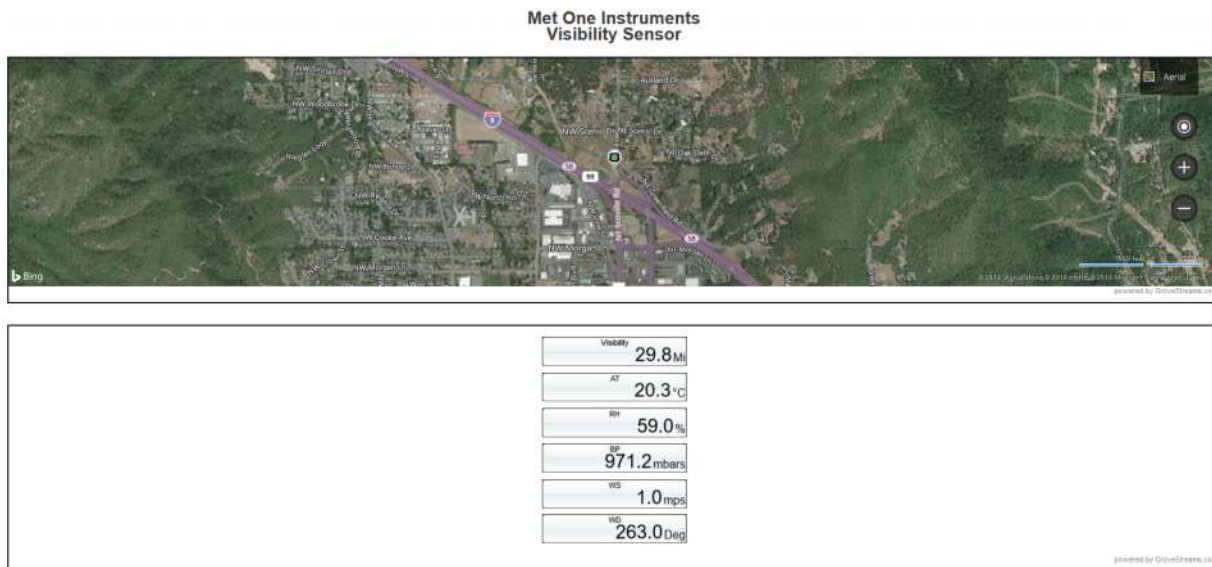
Note: Customers are sent a unique web link with their system.

3.2.2 Data Retention

The cloud site stores data for a minimum of 2 years, after which the oldest records may be over-written. Met One recommends users use the Comet utility program to download data and store the data to a local computer or network. Comet automatically creates a comma separated CSV data file for the current date when a user downloads the data. The CSV file can be found in the My Documents folder.

4   Data Plans and Renewal

The CCS MODEM includes one year of cellular data and website hosting at no extra charge. The cloud service can be renewed by contacting the Met One Service department at service@metone.com or 541-471-7111.

The following data plans are available:
680781	CCS Data Plan, 15 Min USA
680782	CCS Data Plan, 5 Min USA
680783	CCS Data Plan, 60 Min Global
680784	CCS Data Plan, 15 Min Global

5   Troubleshooting

The CCS is designed for minimal field maintenance. Should a CCS data modem require maintenance, refer to the Technical Service section on page 2 of this manual for technical support contact information.

5.1 Suggest Periodic Maintenance Intervals

There is no periodic maintenance required for the CCS data modem.