

# CTM-200 MANUAL



Model	Chameleon CTM-200
Revision	Revision E

3066 Beta Avenue Burnaby, B.C. V5G 4K4  
Phone: 604.294.4465  
Fax: 604.294.4471  
[support@cypress.bc.ca](mailto:support@cypress.bc.ca)

## Revision Control

Description	Revision	Date
Customer Release	A	28-July-2011
Added SNMP Support section	B	16-Sept-2011
Added accelerometer commands and a new PLACCEL report message, added orientation command and updated cmd sendreport, updated cmd pwr woe, added cmd gopad, updated all PAD commands, updated Message Type 30, added all new commands	B	27-Oct-2011
Updated How to Operate a CTM-200 section, updated command reference section, added new report messages	C	09-Jan-2012
Updated How to Connect to a CTM-200 sections, updated obdcond command, updated gopad command	D	16-Jan-2012
Various changes to formatting and content Added section on time synchronization. Added note to cmd pwr mode regarding operation with SMS. Removed command reference and message definition (moved to separate documents), small formatting changes	E	25-Jan-2012

# Table of Contents

Revision Control .....	2
Table of Contents .....	3
1 Notice.....	4
1.1 Safety & hazards .....	4
1.2 Regulatory restrictions.....	4
1.3 Electromagnetic Interference (EMI) – United States FCC Information.....	5
1.4 Electromagnetic Interference (EMI) – Canada Information.....	5
1.5 Trademarks.....	5
2 Command Line Interface or Web Interface.....	5
3 Connecting to Wireless Networks .....	7
3.1 HSPA/LTE devices.....	7
3.2 CDMA/EV-DO devices .....	7
3.3 Wi-Fi Networks .....	9
4 Installing the CTM-200.....	10
4.1 Mounting Orientation .....	10
4.2 Mounting.....	10
4.3 Connecting the Power Cable .....	11
4.4 Connecting the Ethernet Cable.....	12
4.5 Mounting and Attaching the Cell Antenna.....	13
4.6 Mounting and Attaching a Wi-Fi Antenna.....	13
4.7 Mounting and Attaching the GPS Antenna .....	13
4.8 Serial Data Cable Connection .....	14
4.9 Connecting to the I/O Port .....	14
4.9.1 Output Connection .....	15
4.9.2 Input Connection.....	15
5 Operating the CTM-200 .....	16
5.1 Automatic Power Control.....	16
5.2 Power Consumption .....	17
5.3 Device Reset .....	18
5.4 LED Indicators .....	18
5.5 Making a Wireless Network Connection.....	19
5.6 GPS Operation .....	19

6	Connecting to a CTM-200 Locally .....	20
6.1	Serial .....	20
7	Connecting to a CTM-200 Remotely.....	20
8	Technical Support .....	22

## 1 Notice

Due to the nature of wireless communication the reception or transmission of data can never be guaranteed. Data may be delayed, corrupted or never received. Data transfer problems are rare with well-constructed and configured wireless networks used in conjunction with devices such as the CTM-200 wireless data device. Cypress Solutions Inc. accepts no responsibility for damages of any kind including but not limited to personal injury, death, or loss of property due to the delay or loss of data resulting from the use of the CTM-200 wireless data device.

### 1.1 Safety & hazards

Wireless transmitters can cause interference with some critical operation equipment. For this reason it is required that the RF portion of the CTM-200 wireless data device be turned off when in the vicinity of blasting operations, medical equipment, life support equipment, or any other equipment that is susceptible to radio interference. The CTM-200 wireless data device must be turned off when on-board or in the vicinity of any aircraft. The FAA prohibits the use of wireless transmitter equipment at any time during aircraft flight.

### 1.2 Regulatory restrictions

**CAUTION:** Any modifications to the CTM-200 wireless data device not expressly authorized by Cypress Solutions Inc. may cause its regulatory approval status to become invalidated, thereby voiding your authority to use the product.

The CTM-200 wireless data device contains a wireless device approved under FCC CFR 47 part 2.1091 and Industry Canada RSS-102 rules for operation as a mobile or fixed device with its specified antenna of gain  $\leq 6\text{dBi}$  and from which a separation distance of at least 20cm (8") must be maintained from all persons at all times and during all modes of operation. The antenna used must not be co-located or operated in conjunction with any other antenna or transmitter. These rules are in place to prevent any possible hazard due to personal exposure to electromagnetic radiation.

CTM-200 devices are designed to operate with approved wireless cards installed. These cards will have their own FCC and Industry Canada approval ID numbers. Contact Cypress Solutions for a complete updated list of supported Wireless cards/modules.

### 1.3 Electromagnetic Interference (EMI) – United States FCC Information

This equipment has been tested and found to comply with limits for a class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a commercial installation. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communication. However, there is no guarantee that harmful interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- reorient or relocate the receiving antenna
- increase the separation between the equipment and receiver
- connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- consult the dealer or an experienced radio/TV technician for help

### 1.4 Electromagnetic Interference (EMI) – Canada Information

This digital apparatus does not exceed the class A limits for radio noise emissions from digital apparatus as set out in the interference causing equipment standard entitled “Digital Apparatus”, ICES-003 of the Department of Communications.

Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe A prescrites dans la norme sur le matériel brouilleur: “Appareils Numériques”, NMB-003 édictée par le Ministre des Communications.

### 1.5 Trademarks

All brand or product names, trademarks, logos, etc. used in this manual are owned by their respective companies.

## 2 Command Line Interface or Web Interface

The CTM-200 supports two methods of device configuration

- Command Line Interface (CLI)
- Web Interface (Graphical User Interface or GUI driven)

Command line interface is accessed via CTM-200 serial port(s) or ethernet ports (console/telnet/SSH).  
Web Interface is accessed via CTM-200 ethernet ports.

Command line interface offers quick command entry but requires knowledge of the command structure. Multiple commands can be entered via batch files or scripting. Web GUI offers an easier more user friendly interface but can be slower.

Commands entered via CLI will typically return OK after successful command entry. Upon completion of command entry, save the configuration (cmd save) and power cycle the CTM-200 (cmd pwr mode 2) or physically disconnect and reconnect the power or use the pin-hole reset, press and hold for two seconds.

If unfamiliar with the CTM-200 command structure, start with the Web interface. With the Web interface most configurations can be done to meet the requirements of the application. Once configured; the configuration can be captured to a file using the command (cmd showconfig) . Configurations can be “cloned” to multiple devices using the output of showconfig with minor changes. To enter commands via the Web interface, “Save Changes to Page” on each page that is being edited followed by a “Save Configuration” after making the final change. Always Power cycle the CTM-200 after making changes.

Note: There can be slight variations between commands available via CLI and Web Interface. Contact Cypress Solutions for more details.

The CTM-200 has two non-switched ethernet ports.

One port is closest to the USB connector labelled **LAN1** or **LAN**.

Another port is closest to the DB-9 serial port labelled **LAN0** or **WAN**.

Note: On some early models of the CTM-200 the Ethernet ports are labeled **LAN** and **WAN**.

**LAN1** is accessible via the local IP address of **192.168.2.1** (default)

**LAN0** is accessible via the local IP address of **192.168.1.1** (default)

Note: in the case where Ethernet ports are configured in such a way as to render the ports unusable, they can be reset to the default configuration by locating the pin-hole reset button next to the USB interface and pressing and holding the button between **3** and **10** seconds.

Access to the CTM-200 interface can be via CLI can be via telnet, ssh, serial console or web interface

Default user name: **admin**

Default password: **Chameleon**

Telnet and ssh interface is Command Line Interface (CLI), refer to the [CTM-200 command reference](#).

Web interface uses multiple tabbed web pages for configuration.

The CTM-200 supports either one or two serial ports depending on model. The primary serial interface is via the DB-9 interface next to the ethernet ports.

Terminal emulation should be set with the following parameters (default configuration on CTM-200):

- Data rate: 115,200 baud
- Data bits: 8
- Parity: None
- Stop bits: 1
- Flow control: None

No user name or password is required for access on the serial console. Serial port settings can be changed via Web(GUI) or CLI

Web GUI:

Config   Serial Ports	Sets baud rate, Data bits, Parity, Stop Bits, Flow Control.
Config   Main	configures the serial port functionality, ie, console, PAD, etc...

CLI:

cmd port	Sets baud rate, Data bits, Parity, Stop Bits, Flow Control.
cmd mode	configures the serial port functionality, ie, console, PAD, etc...

## 3 Connecting to Wireless Networks

### 3.1 HSPA/LTE devices

For HSPA/LTE devices, the following information is required:

- An activated SIM card needs to be installed in the CTM-200 or data card
- Web: Config | Main page defines the type of Cellular card supported and apn
- CLI: cmd device cell <device> must match the type of device in the CTM-200 and cmd apn <apn> must match the <apn> for the chosen network

**Contact Cypress Solutions if the USB key or module you are trying to install is not shown in the drop down list on the Web interface or is not shown when “cmd device cell show” is entered**

### 3.2 CDMA/EV-DO devices

For CDMA/EV-DO devices, the following information is typically required:

- Phone number (10-digit MDN)
- Lock code (6-digit CSL)
- User name (number@... format)
- Password
- Dial number (usually #777)

**For some data devices network activation of the device must be done in a laptop prior to installing in the CTM-200. Some devices support Over The Air Service Provisioning (OTASP)**

For devices that support **OTASP (Over-The-Air Service Provisioning)** navigate to NETWORK | OTASP on the Web GUI , click Initiate to start the OTASP processing or enter “cmd otasp” via CLI , one or more of the following messages will be displayed on the OTASP page’s status window:

- SPL Unlocked
- Authentication key has been updated
- Shared secrets data has been exchanged
- New NAM parameters have been downloaded
- New MDM has been downloaded
- IMSI has been downloaded
- PRL has been downloaded

During updating, if any of the above data is unsuccessful, the "OTASP Timeout" message and the "OTASP Disconnected" message will be displayed. To retry the OTASP process, click Initiate to re-start. When the OTASP process is complete and the provisioning parameters have been committed the "OTASP Disconnected" message will be displayed.

On the Network | CDMA-Activate page, enter the Lock code (CSL), the Phone number (MDN), and the Mobile Identification Number (MIN).

**CSL, MDN and MIN** are all required to successfully activate the data device.

The MIN entry is provided to add support for the Wireless Number Portability (WNP).

If you were provided with a MIN from your service provider then enter the 10-digit number in the MIN field and enter the Lock code (CSL).

If you were not provided with a MIN then copy the 10-digit number for the MDN in the MIN field and enter the Lock code (CSL).

Click “Activate Card” and cycle the power on the CTM-200.

#### Command Line Interface

At # prompt, type the following commands:

```
cmd spc pppppp where pppppp is the 6 digit lock code
cmd dir nnnnnnnnnn where nnnnnnnnnn is the 10 digit MDN phone number
cmd pwr mode 2 power cycle the CTM-200
```

The MIN entry is provided to add support for Wireless Number Portability (WNP) and also needs to be set on the CTM-200 by entering the following commands:

If no MIN is provided use the MDN number provided.

cmd spc pppppp where pppppp is the 6 digit lock code

cmd dir + nnnnnnnnnn where nnnnnnnnnn is the 10 digit MIN number

cmd pwrmode 2 power cycle the CTM-200

### 3.3 Wi-Fi Networks

Support for Wi-Fi networks is available as an option for certain CTM-200 configurations. Wi-Fi support is based on a IEEE 802.11 b/g/n module. Wi-Fi can be configured to operate with the cellular radio module or as a standalone. Access Point and Client configurations are supported with standard features such as SSID, Channel, WEP/WPA/WPA2/PSK/PSK2 Encryption, key and radius server support.

If Wi-Fi is configured as an Access Point the Wireless connection is bridged with lan0/WAN or 192.168.1.1.

Web GUI:

Config | Main

Sets the type of Wireless Support:

- Cellular + Wi-Fi Client
- Cellular + Wi-Fi Access Point
- Wi-Fi Client
- Set the type of Wireless hardware ( usually AR9271)

Network | WiFi

Configure the client and access point settings

Network | WLAN

Configure CTM-200 when set configured as a WLAN client to either use DHCP or static IP

CLI:

cmd device wifi <device>

sets the wireless hardware (typically cmd device wifi AR9271)

cmd wlan enable

sets the mode of operation for Wi-Fi (cell + client, cell + AP, client)

cmd wifi ap

sets the access point settings, channel, encryption, hwmode, key, ssid

cmd wifi client

sets the client settings, channel, encryption, hwmode, key, ssid

cmd wifi country

sets the country code

cmd wifi radiusport

configures the port number for a Radius server

cmd wifi radiusrv

configures the IP address for a Radius server

cmd wifi mac

query the wireless MAC address

cmd wifi watchdog

enables the wireless watchdog to monitor/reset Wi-Fi connection

cmd wlan dns

configures DNS server when configured as a client

cmd wlan gw

configures default gateway IP address when configured as a client

<code>cmd wlan ip</code>	configures a static IP address when configured as a client
<code>cmd wlan netmask</code>	sets the netmask when configured as a client
<code>cmd wlan proto</code>	sets the protocol to be static or DHCP when configured as a client

## 4 Installing the CTM-200

### 4.1 Mounting Orientation

The CTM-200 has an on board accelerometer that can be used to monitor device acceleration/deceleration in 3 axis, X, Y,Z. The CTM-200 must be mounted in one of 24 orientations for the accelerometer information to be useful.

Web GUI:

Config | Acceleration    select one of 24 orientations.

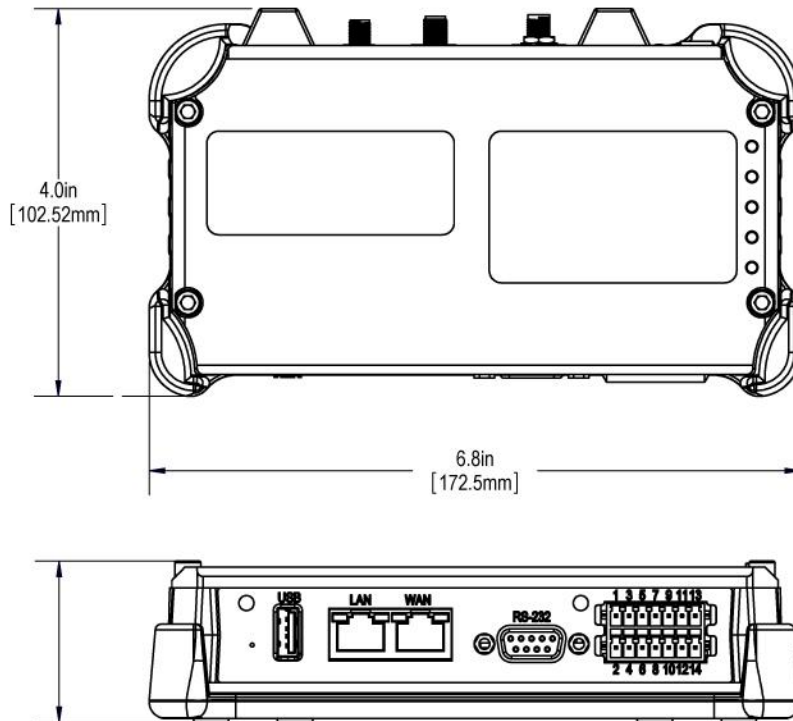
CLI:

`cmd orientation`        defines the mounting orientation

See: [http://www.cypress.bc.ca/pdf/CTM-200\\_mounting\\_orientation\\_RevA.pdf](http://www.cypress.bc.ca/pdf/CTM-200_mounting_orientation_RevA.pdf)

### 4.2 Mounting

The CTM-200 includes a flexible mounting bracket that has eight 5mm mounting holes suitable for #10 screws. These may be used to screw or bolt the device to a suitable surface – take care not to over-tighten these screws and damage the bracket. Once this has been installed in the required location, clip the CTM-200 into the 4 tabs of the bracket. The bracket can be used as drill guide template. There are a total of 8 mounting holes (2, 4 hole patterns, 2" x 5.5" and 1.75" x 3.75").



The CTM-200 should be mounted in an area where it is free from dust and liquids.

The thickness of the CTM-200 can vary based on the configuration of the device.  
1.65" (42 mm) or 1.94" (50 mm)

### 4.3 Connecting the Power Cable

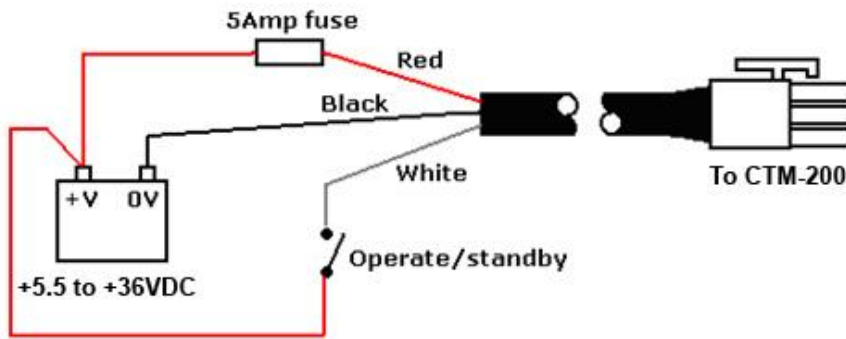
The power cable has three wires:

Red +V supply (+5.5 to +36VDC)

Black 0V return

White Standby (+V for operation, Off for standby)

A 5 Amp "slow-blow" fuse is recommended in the +V supply line.



The operate/standby switch may, for example, be the accessory position on a vehicle ignition switch. In order to minimize the acquisition time of the GPS module in the CTM-200 at power on, it is recommended to keep the +V supply connected – this will provide the “keep-alive” power required by the GPS module to maintain its internal almanac.

The CTM-200 can be configured to monitor the status of the operate/standby/ignition line.

Web GUI:      Config | Power

CLI:

- `cmd pwr accel`            wake on an acceleration condition
- `cmd pwr geofence`        wake on an onboard GeoFence violation.
- `cmd pwr rtc`                wake on real time clock conditions.
- `cmd pwr sdwn`             configure the CTM-200 to shutdown after a period of time after the engine has been shut off.
- `cmd pwr speedth`         wake up when a GPS monitored speed is met.
- `cmd pwr temp`             wake up based on a temperature (as monitored by the internal temperature sensor)
- `cmd pwr vcct`             controls the voltage at which the CTM-200 will enter lpm (low power mode). Useful for battery powered applications to prevented unwanted battery drain.
- `cmd pwr woe`             wake the CTM-200 from lpm based on an event (input, etc)

## 4.4 Connecting the Ethernet Cable

Plug one end of a standard Ethernet patch cable into the CTM-200’s Ethernet port(s), and the other end into the LAN device, PC or Ethernet peripheral. The Ethernet port is compatible with 10Base-T or 100Base-T connection types. The Ethernet ports on the CTM-200 are non-switched, each having their own unique IP address.

There are two Ethernet ports on the CTM-200.

LAN1/LAN and LAN0/WAN

LAN1 **192.168.2.1**

LAN0 **192.168.1.1**

Web GUI: Network | LAN

CLI:

- `cmd landhcp` configures DHCP settings, starting IP address, number of users
- `cmd lanip` sets the IP address of the Ethernet port
- `cmd lannetmask` sets the netmask
- `cmd lanproto` use DHCP or static IP address.

## 4.5 Mounting and Attaching the Cell Antenna

The antenna used with the CTM-200 must be a type suitable for operation on the network for which the CTM-200 is activated. For CDMA/EV-DO/GPRS/HSPA/LTE networks this is typically a dual band 800 Mhz and 1900 Mhz antenna. For LTE this can be 700Mhz/1700Mhz/2100Mhz/2.5 Ghz.

For optimum performance the antenna should be mounted in a vertical orientation as high up as possible and with clear line of sight in all directions. For regulatory purposes it must be mounted in such a position as to maintain a separation distance from any person of at least 20cm (8").

The CTM-200 antenna connector is a standard SMA female type that requires the antenna cable to use a male SMA connector. The CTM-200 can be provided with alternate antenna connector types – contact Cypress Solutions for details.

## 4.6 Mounting and Attaching a Wi-Fi Antenna

The CTM-200 supports optional Wi-Fi capability. The antenna for Wi-Fi must be a 2.4 Ghz antenna with a reverse polarity (RP-SMA) connection.

## 4.7 Mounting and Attaching the GPS Antenna

The GPS antenna used with the CTM-200 (with GPS) must be an active type with gain of at least 26dB and compatible with a 3.3 volt dc supply provided directly by the CTM-200 over the coax cable. The antenna installation should typically be on an upper horizontal surface of a vehicle with a clear 360 degree view of the sky.

The GPS antenna connector is a standard MCX type or SMA female depending on whether the CTM-200 device is PC-CARD based or Express card/module/USB based. The CTM-200 can be provided with alternate antenna connector types – contact Cypress Solutions for details.

## 4.8 Serial Data Cable Connection

The serial data port is a standard DB9 female connector configured as Data Communication Equipment (DCE) and is wired as per the table below.

DB9 Pin	Signal	Name	Direction
1	DCD	Data Carrier Detect	CTM-200 to PC
2	RxD	Received Data (by DTE)	CTM-200 to PC
3	TxD	Transmitted Data (by DTE)	PC to CTM-200
4	DTR	Data Terminal Ready	PC to CTM-200
5	GND	Signal Ground	
6	DSR	Data Set Ready	CTM-200 to PC
7	RTS	Request To Send	PC to CTM-200
8	CTS	Clear To Send	CTM-200 to PC
9	RI	Ring Indicator	CTM-200 to PC

Serial data ports on most computer equipment are configured as Data Terminal Equipment (DTE) with a DB9 male connector. A standard serial data cable will allow for direct connection of the CTM-200 to most computer and terminal equipment. In some cases it may be necessary to insert a “null modem” or “gender changer” in the serial data line in order to correctly connect between the devices.

## 4.9 Connecting to the I/O Port

The I/O port provides for the control of 4 external devices and for monitoring 6 external sensors. Connections are made via the 14 position connector.

1	3	5	7	9	11	13
2	4	6	8	10	12	14

1. Output 1
2. Output 2
3. Output 3
4. Output 4
5. Power (Common Ground)
6. Power (Power supply output – fused)
7. Differential input 1 positive
8. Differential input 2 positive

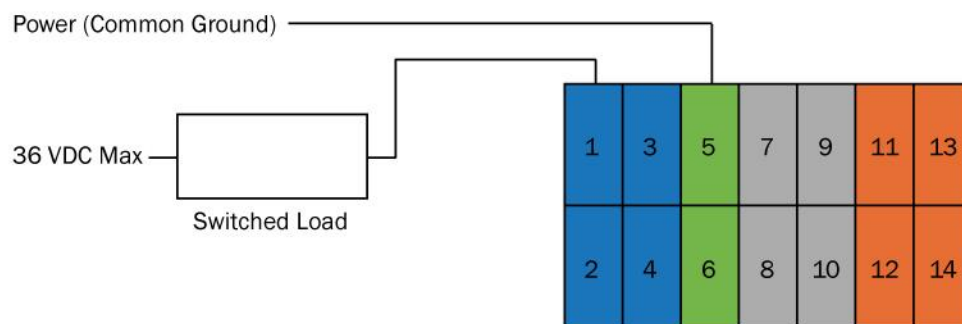
9. Differential input 1 negative
10. Differential input 2 negative
11. Single ended input 3
12. Single ended input 4
13. Single ended input 5
14. Single ended input 6

### 4.9.1 Output Connection

The 4 outputs are configured as “open drain” which means that they can be directly connected to energize external relays, lamps or other DC devices.

Maximum supply voltage is 36 volts, with a maximum load current of 500mA.

Recommended wire gauge for use with the connector is 16AWG. Note that the OUT GND connection is referenced to the CTM-200’s supply ground.

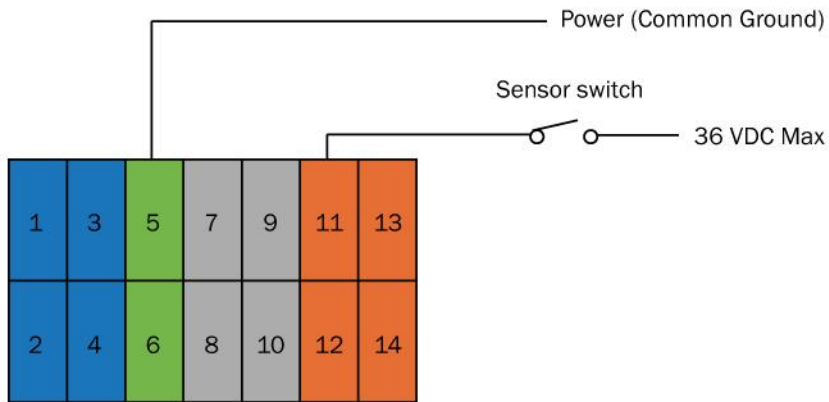


### 4.9.2 Input Connection

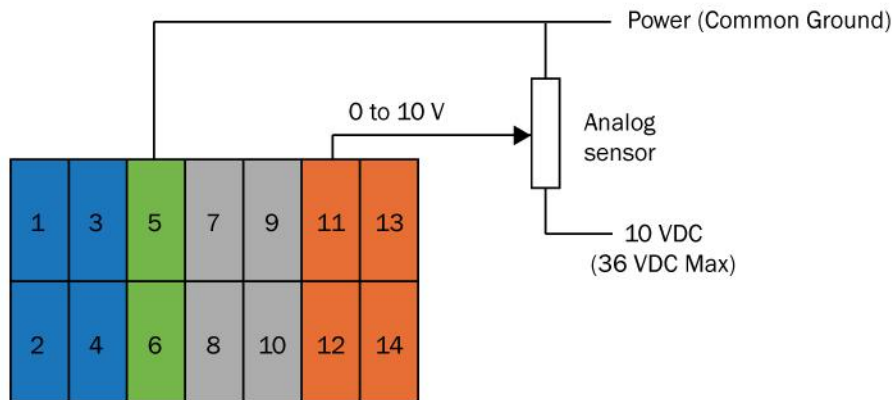
The 6 inputs may be configured in the CTM-200 for monitoring a digital DC voltage state or an analog DC voltage.

For digital state monitoring the minimum input voltage is 0 volts while the maximum is 36 volts.

The threshold detection voltage is 2.5 volts with 1 volt of hysteresis. Note that the IN GND connection is referenced to the CTM-200’s supply ground.



For analog voltage monitoring the measurement range is 0 to +10 volts with 10mV resolution. The input can withstand up to 36 volts. Note that the IN GND connection is referenced to the CTM-200's supply ground.



## 5 Operating the CTM-200

### 5.1 Automatic Power Control

The supply voltage must be a minimum of 9VDC for the CTM-200 to operate. With the power applied it will power-up in its operating mode.

Note: In some vehicle operation, when starting the engine the vehicle supply voltage will dip below 9VDC momentarily. The gateway can handle power dips below 9VDC down to 6VDC. If continual operation is required, `cmd pwr vcct` needs to be configured appropriately.

The Chameleon CTM-200 gateway has two power modes:

Mode	Description	Mode change event
<b>Operation</b>	In this mode the device is fully powered up and ready to receive or make network connections	The device will go back into shutdown mode when the ignition/standby signal is deactivated or upon expiry of the power ON timer as configured.
<b>Shutdown</b>	Only the CTM-200's power management circuits are operating.	The device will go back into operation mode when the ignition/standby signal is activated, wake event occurs (e.g. input, temperature, acceleration), or upon expiry of the power OFF timer as configured.

The CTM-200 can be configured to remain on for a defined period after the standby/ignition signal has been turned off. This enables the gateway to continue sending position reports or be used for data operations even after the vehicle ignition has been switched off – e.g. for short duration driver breaks.

When in its power shutdown mode the gateway may be configured to resume full operation by either the standby/ignition signal becoming active, an input event occurring, the power OFF timer expiring, or other wake up events (see `pwr woe` for complete list of wake up events).

## 5.2 Power Consumption

The power consumption of the CTM-200 gateway will depend on its supply voltage, its current operating function and its RF environment.

The following table is provided to assist application integrators in defining the power requirements for their specific application.

Power Consumption	Weak RF signal(12V)	Strong RF signal(12V)	Weak RF signal(24V)	Strong RF signal(24V)
<b>Shutdown Mode</b>	1.5mA typical	1.5mA typical	2.0mA typical	2.0mA typical
<b>Downloading (Receive data)</b>	450mA max	350mA max	220mA max	195mA max
<b>Uploading (Transmit data)</b>	500mA max	390mA max	260mA max	210mA max

## 5.3 Device Reset

The CTM-200 gateway may be manually reset via the front panel using a <1mm diameter (0.04") wire tool (a standard paper clip). This can be used to cause the gateway to reset its operation, to reset the LAN IP settings, or to reset the gateway's configuration.

Power reset: Press and hold for 1 to 3 seconds

LAN IP reset: Press and hold for 3 to 10 seconds

- The PWR LED will turn off at the 3-second mark and start flashing slowly once the button is released. It keeps flashing until the LAN IP reset is complete.
- LAN IP addresses will be reset as follows:
  - LAN0 or WAN Ethernet port: 192.168.1.1
  - LAN1 or LAN Ethernet port: 192.168.2.1

Full configuration reset: Press and hold for 10 or more seconds

- The PWR LED will turn off at the 3-second mark and start flashing rapidly at the 10-second mark. It keeps flashing until the configuration reset is complete.

## 5.4 LED Indicators

There are five LED indicators on the CTM-200 top. These are used to show the status and operation of the device.

For wireless data devices that provide network diagnostic information:

LED	Description	Solid	Blinking	Off
<b>PWR</b>	Power status of the device	Full operating mode and able to connect	Device is in shutdown mode	Device has no power
<b>RF</b>	Status of the device on the wireless network	Receiving a signal greater than or equal to -95dBm	Receiving a signal less than -95dBm	Device is not detecting a valid RF signal
<b>IP/DATA</b>	Data is being transmitted or received	Solid on if CTM-200 has an IP address on the wireless network	Flashing intermittently if data packets are sent/received via the wireless network	No data being transmitted, not connected to the wireless network
<b>GPS</b>	Status of the GPS module or external GPS device	GPS module or external GPS device has obtained a valid position fix	GPS module or external GPS device does not have a valid position fix	
<b>MODE</b>	Indicates the type of wireless data connection	Off if no cell registration or 2G only or not available due to RF module limitations	Blinking slowly if 4G is detected (LTE)	No cell registration or 2G only or not available due to RF module limitations

## 5.5 Making a Wireless Network Connection

The CTM-200 will attempt to connect to the wireless network whenever power is applied, when configured with `cmd autoconnect 1` (default).

If no wireless network connection is available the IP address will be given as 0.0.0.0. This can be queried using `cmd ipadr`.

For wireless data devices that provide network diagnostic information, wireless signal strength information can be queried using `cmd rssi`. These values for both Primary and Secondary RSSI are given in dBm with typical range of -60dBm (very good) to -105dBm (weak).

With the wireless network connection active you may now open Windows® applications that will make use of this connection – this includes email, web browsers, and VPN connections.

## 5.6 GPS Operation

The GPS module in the CTM-200 will continuously track the unit's position whenever power is applied and the GPS antenna has a clear view of the sky. The time taken for the module to achieve a valid positional fix is determined by the previous state of the unit:

For a “cold” start (after all power is removed from the gateway) the acquisition time typically will be less than 38 seconds.

For a “warm” start (standby power is maintained to the CTM-200) the acquisition time will typically be less than 3 seconds.

For reacquisition (after the GPS module has temporarily lost signal) the time to acquire a valid position fix is typically less than 2 seconds.

The GPS information can be sent by the device as a message in any of the configured reports.

The GPS receiver uses the WGS-84 datum.

The CTM-200 supports GPS data from an external GPS device connected to the gateway via USB or serial port, or from a wireless module via A-GPS (Sierra Wireless devices only). When the CTM-200 has been configured to use an external GPS or an A-GPS device, the GPS LED will reflect the current status of the selected GPS device.

## 6 Connecting to a CTM-200 Locally

The CTM-200 has two non-switched ethernet ports.  
One port closest to the USB connector labelled LAN1 or LAN.  
Another port closest to the DB-9 serial port labelled LAN0 or WAN.

LAN1 is accessible via the local IP address of 192.168.2.1  
LAN0 is accessible via the local IP address of 192.168.1.1

Both can be accessed via telnet, ssh or web interface  
Default user name: **admin**  
Default password: **Chameleon**

Telnet and ssh interface is Command Line Interface (CLI), refer to the [CTM-200 command reference](#).

Web interface uses multiple tabbed web pages for configuration.

### 6.1 Serial

The CTM-200 supports either one or two serial ports depending on model. The primary serial interface is via the DB-9 interface next to the ethernet ports.

Terminal emulation should be set with the following parameters (default configuration on CTM-200):

- Data rate: 115,200 baud
- Data bits: 8
- Parity: None
- Stop bits: 1
- Flow control: None

No user name or password is required for access on the serial console. Serial port settings can be changed via the [cmd port command](#).

## 7 Connecting to a CTM-200 Remotely

Please note:

- It is highly recommended to test all device configuration and operation before deploying devices to remote locations.

- Not all wireless networks offer "public" IP addresses that are remotely accessible, some are firewall protected to allow access from either the same IP pool only or restricted IP addresses. Contact your wireless network provider or administrator to determine what options are available.
- Some networks will force device IP addresses to change at regular intervals. Without proper configuration, this could cause a remote device to become inaccessible if the device IP address is not known. The CTM-200 can be configured to send a message when its IP address changes using this command: **cmd iocond**
- Embedded wireless radio modules must be activated before deploying to remote locations
- Incorrectly configuring the device could cause the device to become inaccessible, take care when issuing commands via a remote session.

There are 4 ways to configure a CTM-200 remotely:

- **Telnet** and **SSH** (secure shell) (access to command line interface (CLI))
- **Device Embedded Web Page** (access to web page/browser based configuration)
- **SMS** (allows commands to be sent to the CTM-200 via SMS; this command only applies to devices that support SMS, contact Cypress Solutions for more details)
- **ULCP** (allows configuration of digital outputs only using ULCP binary format)

For telnet or SSH to work with a remote device [cmd rmttelnet 1](#) or [cmd rmtssh 1](#) must be set. For access to the Device embedded web page, cmd [rmtweb 1](#) must be set.

### Telnet, SSH and Device Embedded Web Page Configuration

Follow the directions in [How To Connect to a CTM-200 – Locally](#) and substitute 192.168.1.1 or 192.168.2.1 with the known IP address of the remote device.

### SMS configuration

No configuration of the CTM-200 is required for it to accept SMS commands

Message format:

\$1<ctm command> if the command provides feedback.

\$0<ctm command> if the command does not provide feedback.

Examples:

2. Return firmware version to SMS sender  
\$1cmd ver

Returns: 5555551212:r2.0.4.2679-999

3. Issue command to power cycle only  
\$0cmd pwr mode 2

Note: commands that output more than 166 characters will not generate feedback.

**ULCP configuration**

ULCP configuration is performed by sending properly formatted binary messages to port **6100** of the remotely connected device.

See [ULCP Remote Configuration Messages](#) for message format.

## 8 Technical Support

For information about your CDMA network account, please contact your Network Operator: have the ESN and telephone number of the CTM-200 device available to provide on the call.

**Cypress Solutions Service  
Support Group**

1.877.985.2878 or 604.294.4465

9.00am to 5.00pm PST

[www.cypress.bc.ca](http://www.cypress.bc.ca)

[support@cypress.bc.ca](mailto:support@cypress.bc.ca)