



CTM-ONE MANUAL

Model	CTM-ONE (M) (PLUS)
Revision	Revision 1.1

Revision Control

Description	Initials	Rev	Date
Initial Release	mm	1.0	26-FEB-2019
Updated LED Indicators table	cc	1.1	22-JUN-2022
Factory Reset Procedure	kl	1.2	13-SEP-2022

Table of Contents

1. Notice	4
2. Product Overview	6
3. Physical Interfaces.....	7
3.1 Ethernet.....	7
3.2 General Purpose Input and Outputs (GPIO)/Serial	7
3.3 Auxilliary and iButton™	7
3.4 USB OTG (On-The-Go) port	7
3.5 CAN Bus port.....	7
3.6 Locking 3 Wire power connector with ignition sense.....	8
3.7 Multiple RF connectors (SMA/RP-SMA)	8
4. SIM Card Installation	9
5. Installing the CTM-ONE	10
5.1 Mounting	10
5.2 In Vehicle Installation.....	11
5.3 CAN2.0B Bus	12
5.4 Power (Not required if OBDII/J1939 connected)	13
5.5 OPTIONAL - Connect External Antennas.....	14
5.5.1 Cellular	15
5.5.2 GNSS.....	15
5.5.3 Wi-Fi/Bluetooth	16
5.6 Connecting the Ethernet Cables	16
5.7 GPIO/Serial/RS485 Data Cable Connection	16
5.8 General Purpose I/O (GPIO)	17
5.8.1 GPIO Output Connection	18
5.8.2 GPIO Input Connection	19
5.9 Auxiliary Port.....	20

6.	Accessing the CTM-ONE	21
6.1	Wi-Fi Access.....	21
6.2	LAN0 Access	21
6.3	RS232 Serial Access.....	21
6.4	Login.....	21
6.5	Web Interface	22
6.5.1	Dashboard.....	22
6.5.2	System Database.....	22
6.5.3	Installer	23
6.5.4	Firmware.....	23
6.5.5	Change Password	24
6.5.6	Configuration	24
7.	Factory Reset Procedure	26
7.1	Device with installed battery.....	26
7.2	Device with no battery installed.....	26
8.	Additional Features	27
8.1	Automatic Power Control	27
8.2	Power Consumption	29
8.3	LED Indicators	30
9.	General Troubleshooting Operation	31

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-ONE 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-ONE wireless data device.

1.1 Operation in hazardous/restricted environments

Wireless transmitters can cause interference with some critical operation equipment. For this reason, it is required that the RF portion of the CTM-ONE 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-ONE 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-ONE 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-ONE wireless data device contains a wireless module 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 20 cm (8") must be maintained from all persons at all times and during all modes of operation. If external antennas are used the antennas 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-ONE devices are designed to operate with the approved wireless module installed. The module has its own FCC and Industry Canada approval ID number.

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/transmitting antenna(s)
- 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 B 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 B 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. Product Overview



3. Physical Interfaces

3.1 Ethernet

- One Ethernet port (bridged/non-bridged)
- Ethernet services can be disabled
- Ethernet ports can use DHCP or static IP addresses (DHCP can be configured to a single IP address)
- Gateway support when an Ethernet port is used to connect to the Internet through another router
- Static NAT support

3.2 General Purpose Input and Outputs (GPIO)/Serial

- 14 position interfaces
- Inputs x 4 (2 differential)
- Outputs x 4
- Console, Command Line Interface access
- PAD host interface (1 available), Virtual Serial Line replacement
- MODBUS host interface, MODBUS interface
- Various auxiliary device support (contact Cypress Solutions for more details)

3.3 Auxilliary and iButton™

- 10 position interfaces
- Auxiliary equipment interface
- iButton™ interface access control hardware interface

3.4 USB OTG (On-The-Go) port

- USB device port

3.5 CAN Bus port

- 8 position interfaces including power
- Automotive CAN support (J1939, OBD2/ISO15765-4)

- Silent mode support
- 2 CAN Interfaces:
- 1: HS-CAN (J1962 pin 6,14)
- 2: HS-CAN/MSCAN (J1962 pin 3,11)
- SWCAN (J1962 pin 1)

3.6 Locking 3 Wire power connector with ignition sense

- 4 pin interfaces
- 7-32 VDC with transient (spike) protection
- .1 to 3 mA @ 12 Volts low power mode (feature dependent)

3.7 Multiple RF connectors (SMA/RP-SMA)

- Threaded SMA style for all RF connections
- Use of external antennas is optional. The CTM-ONE has internal antennas for Cellular/Wi-Fi/GNSS. External antennas can be enabled via software selectable switch



4. SIM Card Installation

The CTM-ONE supports two 2FF style SIM cards. One or two SIMS can be installed.

For single SIM card installation, we recommend using the **UPPER** slot of the dual-SIM holder. The **UPPER** slot is the slot furthest away from the printed circuit board. The **UPPER** slot is referred to as **SIM1 slot**. The **LOWER** slot is referred to as **SIM2 slot**.

In most cases the device will ship with a pre-configured, installed SIM(s). In this case, SIM card installation is not required.

SIM card access is via the removal of the battery/back cover by removing the 4 top cover #4-40 socket head cap screws using a 3/32" Allen key driver (supplied).

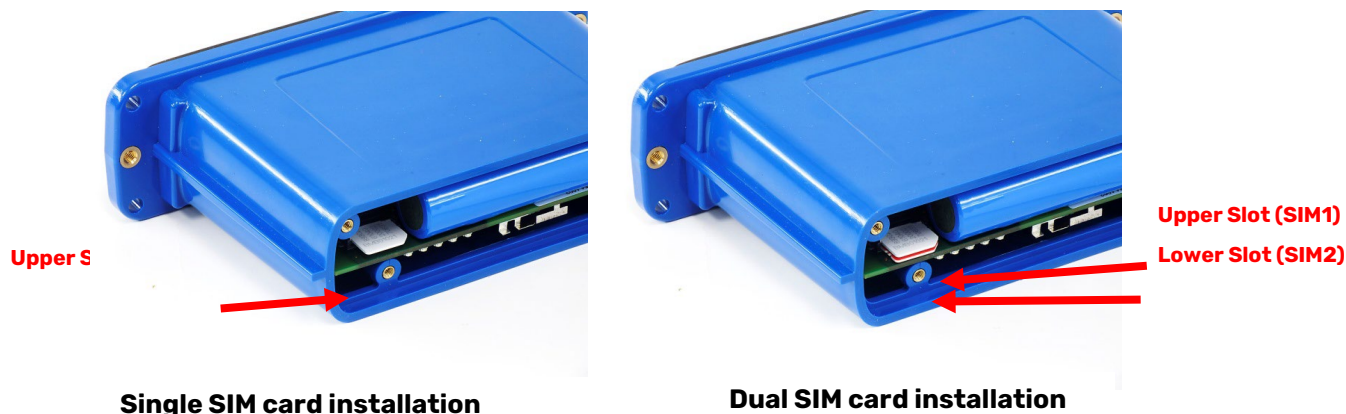
SIM slots are located next to the battery. Be careful not to dislodge the battery during SIM removal/installation.

Ensure that the gasket is in place when the Battery cover is reinstalled and tighten screws in a x-cross pattern until snug for optimal weather tight seal.

Do not overtighten, recommended torque value: **4-5 in-lb**

Note: for some applications/configurations the internal battery may not be installed.





5. Installing the CTM-ONE

Select an installation location that will provide optimal cable routing for external connections to vehicle diagnostic port or power, external sensors, etc. Consider mounting locations that will take advantage of the internal antennas. In some cases, external antennas may need to be used to provide adequate Cellular/Wi-Fi/GNSS operation. Optimal in vehicle mounting locations includes areas that have clear visibility of the sky such as under dash/under window locations. Be careful not to mount the CTM-ONE in areas where materials would shield radio signals.

The CTM-ONE has accessory covers that can be installed to provide ingress protection for mounting in areas of excessive moisture and dust. These covers also can also provide a degree of tamper protection if mounted correctly with sealed cable glands and fasteners properly torqued. Accessory covers can be secured with #8-32 screws.

Do not overtighten, recommended torque value: **8-10 in-lb**

5.1 Mounting

The CTM-ONE includes a flexible mounting bracket that has four 5mm mounting holes suitable for #10 screws. Take care not to over-tighten these screws and damage the bracket. Once this has been installed in the required location, clip the CTM-ONE into the 4 tabs of the bracket. The bracket can be used as drill guide template. There are a total of 4 mounting holes (1.75 (44.5 mm) x 3.75 (95.25 mm) center to center distance).



Optional cable covers



Side Access

Cable cover for applications that require side entrance

Drilled/Glands

Cable cover for applications that may require weather sealing capabilities (hole drilling required)

Clamp

Cable cover for applications that require weather sealing capabilities

5.2 In Vehicle Installation

The CTM-ONE can draw power from the vehicle CAN Bus (OBDII/J1939). Connect the 8 Pin terminal to the CAN Bus port on the CTM-ONE and connect the other end to the vehicle diagnostic port.

5.3 CAN2.0B Bus

Molex Micro-Fit 3.0™ connector #:

Molex Part Number	Description
43025-0800	Receptacle housing
43030	Crimp Terminals 20-24 AWG

The CAN interface is used primarily to interface to Vehicle sub-systems that support CAN communications. This includes all small and light duty vehicles manufactured in 2008 and later (ISO15765-4) and heavy-duty vehicles that support J1939.

An accessory OBDII or J1939 Cable is required to interface to a vehicle Engine Control Unit (ECU). The CTM-ONE can be powered from the CAN port, so no other cabling is required if the vehicle supports either OBDII or J1939 communications.

The CTM-ONE supports both Medium and High-speed CAN interfaces as well as Single Wire CAN.



1. CAN Signal Ground
2. CAN 1 LOW
3. CAN 2 LOW
4. SW CAN
5. Common Ground (GND)
6. CAN 1 HIGH
7. CAN 2 HIGH
8. Power



OBDII

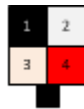
J1939

5.4 Power (Not required if OBDII/J1939 connected)

Molex Micro-Fit 3.0™ connector #:

Molex Part Number	Description
43025-0400	Receptacle housing
43030	Crimp Terminals 20-24 AWG

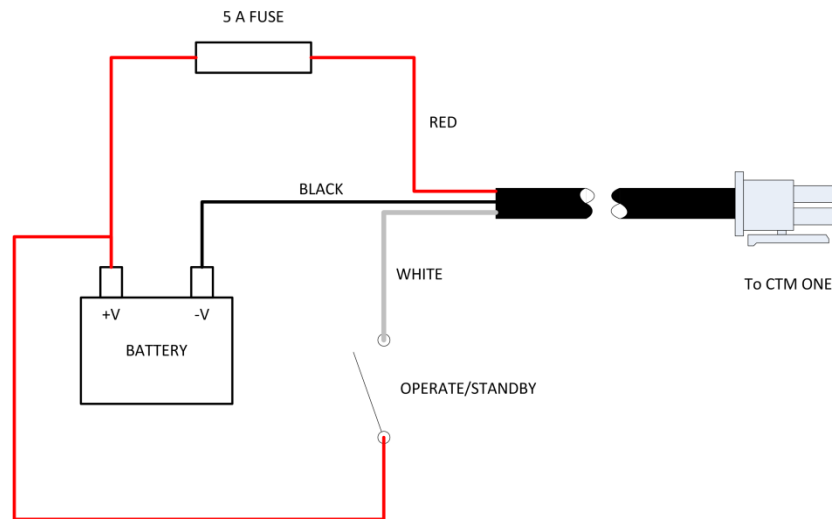
When a compatible vehicle interface is not available or not preferred the CTM can be connected with a DC power cable for direct connection to a DC power supply or with an optional AC Wall Plug adaptor that allows quick and easy connection to standard 120V AC Power.



1. Common Ground (GND)
2. Ignition (IGN)
3. Shipping Pin
4. Power (PWR)

Red	+7V to +32V DC
Black	0V return (GND)
White	Standby / Ignition (+V for operation, Off for standby)

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



When the operate/standby line is used, the CTM-ONE can take advantage of the state of this line using its “ignition sense” features. When the ignition line is wired the CTM-ONE does not completely shut down, a small amount of power is used (1.2mW-40 mW) to monitor the status of various inputs so the device can “wake on events” that occur when the device is in low power mode.

Advantages of connecting power using the vehicle operate/standby or ignition line:

- Ignition ON/OFF events can be reported and logged.
- Shutdown based on a timer can be activated, for example, turn CTM-ONE off 10 mins after ignition has

Before any external cables are connected (GPS, Cellular RF, Wi-Fi RF, WPAN RF, serial, Ethernet, GPIO, CAN), verify that the power cable is wired correctly on the battery side. In certain cases, reversely connected battery input may cause damage which is not covered under warranty.

5.5 OPTIONAL - Connect External Antennas

The CTM-ONE has internal antennas but has the option to operate with external antennas in cases where external antennas are required. Antennas vary a great deal and should be selected based on the application the device is going to be used. All antenna connectors utilize SMA jacks with the exception of Wi-Fi/Bluetooth which require reverse polarity SMA (RP-SMA)

For optimum performance antennas 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 decision to use external antennas should be made based on performance evaluation of how the product performs when placed in the desired location within the vehicle or fixed site.

5.5.1 Cellular

The cellular connection supports MIMO (multi-in multi-out) for LTE Category 1 and 4 models. For best performance ensure both primary and secondary cellular antenna connections are made to an antenna that supports diversity or to two separate antennas.

Technology	Frequency Range (MHz)
LTE	CTM-ONE B2,4,12,13,17 CTM-ONE M GLOBAL B1,2,3,4,5,8,12,13,18,19,20,25,26,28 CTM-ONE PLUS B2,4,12,13,14,66,71
WCDMA	CTM-ONE/PLUS II, IV, V
EGPRS	CTM-ONE M 850/900/1800/1900 MHz

5.5.2 GNSS

The GNSS antenna should be an active type of antenna with a gain of at least 26dB and compatible with a 3.3 volt DC supply provided directly by the CTM-ONE via the coax cable. The antenna installation should typically be on an upper horizontal surface of a vehicle or building with a clear 360-degree view of the sky.

Connect a suitable GPS antenna to the port labeled "GPS". For best performance select a GPS antenna that supports GPS/Glonass/Beidou/Compass/Galileo/QZSS (GNSS) constellations.

Technology	Frequency Range (MHz)
GPS/GLONASS/Galileo	L1 Band 1559-1610

5.5.3 Wi-Fi/Bluetooth

Local Wireless via Wi-Fi (802.11bgn) and Bluetooth (802.15.1) requires an external Wi-Fi antenna connected via a reverse polarity SMA connector

Technology	Frequency Range (MHz)
Wi-Fi	2400
Bluetooth	2400

5.6 Connecting the Ethernet Cables

Plug one end of a standard Ethernet patch cable into the CTM-ONE's Ethernet port, 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 port support auto MDI/MDIX, meaning no Ethernet crossover cable will be needed regardless of whether the CTM-ONE is connected to a router or to a computer.

Ethernet Port	Default IP
LAN0	192.168.1.1

5.7 GPIO/Serial/RS485 Data Cable Connection

A 14-position terminal is used for GPIO and Serial connections.

Molex Micro-Fit 3.0™ connector #:

Molex Part Number	Description
43025-1400	Receptacle housing
43030	Crimp Terminals 20-24 AWG



1. Single Ended input 1
2. Single Ended input 2
3. Single Ended input 3
4. Single Ended input 4
5. Power (Power supply output – fused)
6. RS485 - Negative
7. RS232-RxD
8. Output 1
9. Output 2
10. Output 3
11. Output 4
12. Common Ground (GND)
13. RS485 - Positive
14. RS232 - TxD

The serial data port uses 3 (including common Ground) of the 14 pins configured as Data Communication Equipment (DCE). RS485 uses two pins.

Serial data ports on most computer equipment are configured as Data Terminal Equipment (DTE). 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.

5.8 General Purpose I/O (GPIO)

The GPIO connector is Micro-Fit 3.0™ 2 x 7 position 3.0 mm pitch connector manufactured by Molex (www.molex.com) .

Digital inputs have pull-down resistors. All general purpose I/O (GPIO) pins (i.e. all input and outputs) have transient protection.

The I/O port provides for the control of 4 external devices and for monitoring 4 external inputs

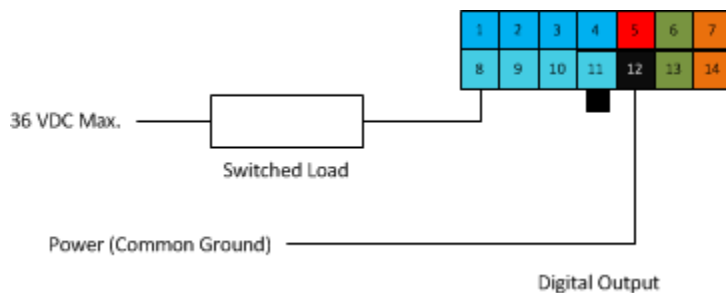
GPIO Block Pin	Signal	Name
1	INPUT1	Single Ended Input 1
2	INPUT2	Single Ended Input 2
3	INPUT3	Single Ended Input 3
4	INPUT4	Single Ended Input 4
5	VCC	Power (Power supply output – fused)
6	RS485	Negative
7	RS232	RxD
8	DOUT1	Output 1
9	DOUT2	Output 2
10	DOUT3	Output 3
11	DOUT4	Output 4
12	GND	Common Ground for Power
13	RS485	Positive
14	RS232	TxD

5.8.1 GPIO 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 20-24 AWG. Note that the OUT GND connection is connected to the CTM-ONE’s supply ground.



5.8.2 GPIO Input Connection

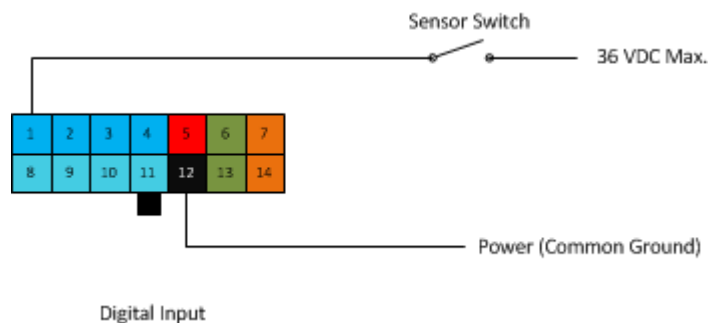
The 4 inputs may be configured in the CTM-ONE for monitoring a digital DC voltage state or an analog DC voltage. All of the inputs are single ended.

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-ONE's supply ground.

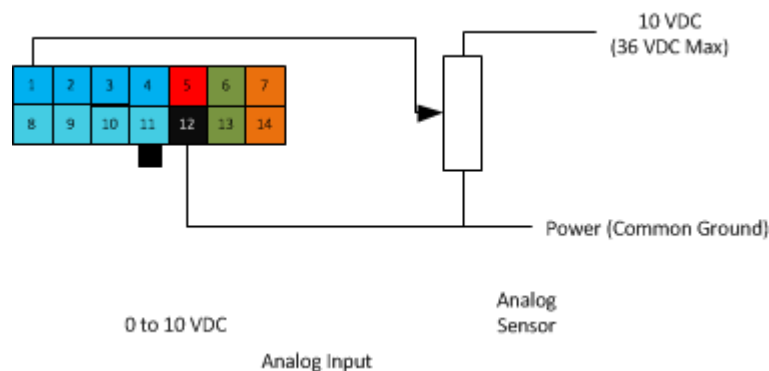
Analog input values will be sampled and can be reported at a maximum frequency of 10Hz.

Example of Digital Input wiring:



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-ONE's supply ground.

Example of single ended analog input wiring:



5.9 Auxiliary Port

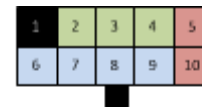
Molex Micro-Fit 3.0™ connector #:

Molex Part Number	Description
43025-1000	Receptacle housing
43030	Crimp Terminals 20-24 AWG

The auxiliary connection enables communication with Maxim iButton™ Devices and provides the ability for remote reset of the CTM-ONE when mounted in hard to access locations using a reset switch.



iButton and Reader



1. Switch Common Ground (GND)
2. Switch_S1
3. Switch_S2
4. Switch_LED Common
5. Switch LED1
6. iButton Ground (GND)
7. iButton LED_Positive
8. iButton LED_Negative
9. iButton Signal
10. Switch LED 2

6. Accessing the CTM-ONE

The CTM-ONE will be ready for access and configuration 15-20 seconds after applying power.

6.1 Wi-Fi Access

By default, the CTM-ONE will broadcast its SSID when powered on. Scan for the SSID and connect after entering the pre-shared key.

Depending on the configuration, some units will ship with customer defined SSID and PSK. The default SSID is **CTMONE-[last 4 digits of MAC]** and the default password is **CypressAccess**.

NOTE: The MAC contains 12 digits. Please only use the last four digits directly after **CTMONE-**

CTM-ONE Web interface is accessible by opening a browser to <http://192.168.2.1>

6.2 LAN Access

When physically connected using an Ethernet cable the CTM-ONE Web interface is accessible by opening a browser to <http://192.168.1.1>

6.3 RS232 Serial Access

When physically connected using a serial cable the CTM-ONE console can be accessed using a terminal application (e.g. HyperTerminal). The default serial port settings are:

Baudrate: 115200

Data bits: 8

Stop bits: 1

Parity: No

6.4 Login

After successfully establishing a Wi-Fi connection or wired connection you will be prompted for a user/password.

Login	Default value
Username	admin
Password	Chameleon

6.5 Web Interface

The Web GUI is designed to be an intuitive system to view and change device settings.

6.5.1 Dashboard

The Dashboard shows general system settings:

Dashboard

Parameter	Value
CELL_IMEI	061000200700000
CELL_ICCID	8802010000000000
CELL_REGISTERED	1
CELL_CONNECTED	1
CELL_NET_TYPE	LTE
CELL_BAND	2
CELL_IPV4	10.61.221.236
SYS_STATE	MAX
GPRS_VIN_SRC	EXTERNAL
GPRS_VCC	11.937524
GPRS_VBATT	3.990780
GPRS_TEMP	48.670000
GPS_VALID	1
SYS_LAST_CHECKIN	1551216195

Network Interfaces

```

eth0 Link encap:Ethernet Hwaddr 08:25:89:11:6A:44
     Inet addr:192.168.100.240 Bcast:192.168.100.255 Mask:255.255.255.0
     Inet6 addr: fe80::225:89ff:fe11:6a44::1 Scope:Link
     UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
     RX packets:154365 errors:0 dropped:0 overruns:0 frame:0
     TX packets:99641 errors:0 dropped:0 overruns:0 carrier:0
     collisions:0 txqueuelen:1000
     RX bytes:63629197 (60.6 MiB) TX bytes:10319170 (9.8 MiB)

lo Link encap:Local Loopback
     Inet addr:127.0.0.1 Mask:255.0.0.0
     Inet6 addr: ::1 Scope:Host
     UP LOOPBACK RUNNING MTU:65536 Metric:1
     RX packets:1497299 errors:0 dropped:0 overruns:0 frame:0
     TX packets:1497299 errors:0 dropped:0 overruns:0 carrier:0
     collisions:0 txqueuelen:0
     RX bytes:241785083 (230.5 MiB) TX bytes:241785083 (230.5 MiB)

wlan0 Link encap:Ethernet Hwaddr 38:D2:69:D6:3E:40
     Inet addr:192.168.2.1 Bcast:192.168.2.255 Mask:255.255.255.0
     Inet6 addr: fe80::3a02:69ff:fe38:d269::1 Scope:Link
     UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
     RX packets:1134 errors:0 dropped:0 overruns:0 frame:0
     TX packets:715 errors:0 dropped:0 overruns:0 carrier:0
     collisions:0 txqueuelen:1000
     RX bytes:179359 (175.1 KiB) TX bytes:180715 (176.4 KiB)

wlan1 Link encap:Ethernet Hwaddr 02:24:05:04:9F:6E
     Inet addr:10.61.221.236 Bcast:10.61.221.239 Mask:255.255.255.240
     Inet6 addr: fe80::d024:5fff:fe04:9f6e::1 Scope:Link
     UP BROADCAST RUNNING NOARP MTU:1428 Metric:1
     RX packets:536 errors:0 dropped:0 overruns:0 frame:0
     TX packets:562 errors:0 dropped:0 overruns:0 carrier:0
     collisions:0 txqueuelen:1000
     RX bytes:78071 (74.2 KiB) TX bytes:32237 (31.4 KiB)
  
```

Post VPS

IPsec is disabled.

6.5.2 System Database

The system database is a searchable page of the various parameters the CTM-ONE can report based on its configuration.

CYPRESS

SOLUTIONS

Dashboard

System Database

Installer

Firmware

Change Password

Configuration

Firmware Version: 1.0.2.1655.eval UTC Time: 22:30:23 up 21:19

System Database

Q

Search By Key or Description

SYSTEM

SYS_BATT_LVL	Battery level in percent	100
SYS_BATT_STATUS	Battery status	CHARGED
SYS_DEVICE_ID	CTM Gateway Device ID	n/a
SYS_DEVICE_MODEL	CTM Device Model	Cypress CTM-ONE Board
SYS_FW_LABEL	CTM FW label	20190220084324
SYS_FW_VER	CTM FW version	1.0.2.1655.eval
SYS_INTEGRATION_SKU	Integration SKU	n/a
SYS_LAST_CHECKIN	UTC time of last device check-in to Cypress-IoT	1551216195
SYS_PCA_SKU	PCA SKU	n/a
SYS_SNF_CYPRESS_IOT	SNF messages for Cypress-IoT	0
SYS_SNF_TOTAL	SNF total messages stored	76250
SYS_SNF_VUE	SNF messages for VUE	76250
SYS_SYNC_TIME	UTC time of last system time sync	1551219639

CELLULAR

CELL_ARFCN	ARFCN	n/a
CELL_BAND	Band (B1 - B44)	2
CELL_BCAST	Bcast addr calculated for cell radio	10.61.221.239
CELL_BSID	Base station ID code	n/a
CELL_CHAN_BW_DL	Channel bandwidth (primary band / downlink)	5

6.5.3 Installer

A page typically used by installers to verify basic device functionality and available vehicle ECU (CAN Bus) Data

Dashboard

System Database

Installer

Firmware

Change Password

Configuration

Installer

Overview

CELL_REGISTERED	1	CELL_CONNECTED	1
CELL_IPV4	10.61.221.236	GPS_VALID	1
GPIO_IGN	1	GPIO_AIN1	0
GPIO_AIN2	0	GPIO_AIN3	0
GPIO_AIN4	0	GPIO_VCC	11.919800
GPIO_VBATT	3.989717		

State

VEH_ODOMETER	200000	VEH_ODOMETER_GPS	200000.483534
VEH_ODOMETER_OBD	200000	VEH_FUELLEVEL	-
VEH_FUELEDUSED	0	VEH_FUELEDUSED_LVL	0
VEH_FUELEDUSED_MAF	-	VEH_FUELEDUSED_RATE	-
VEH_IDLETIME	0	VEH_IDLETIME_IGN	488.195372
VEH_IDLETIME_RPM	-	VEH_ENGHOURS	0
VEH_ENGHOURS_IGN	518.856629	VEH_ENGHOURS_RPM	-
CELL_TOTAL_RX	12719284	CELL_TOTAL_TX	4521553

CAN Data

can0:

=====

No data

can1:

=====

No data


Set Odometer Value

Firmware Version: 1.0.2.1655.eval

UTC Time: 22:32:18 up 21:12

6.5.4 Firmware

A page to locally install device firmware with a sub page for monitoring device specific jobs



Dashboard

System Database

Installer

Firmware

- Install Firmware
- Job History

Change Password

Configuration

Install Firmware

Upload and Install a Firmware Image

Choose File

No file chosen

Firmware Version: 1.0.2.1655.eval UTC Time: 22:33:53 up 21:19

Configuration

- gpio
- gps
- iot
- network
- report
- serial
- system
- vehicle
- wireless

Cypress Solutions Firmware Version: 1.0.2.1655 eval UTC Time: 22:38:53 up 21:19

Dashboard
System Database
Installer
Firmware
 • Install Firmware
 • Job History
Change Password
Configuration

Device Configuration

GPIO Configuration

Try to suspend when ignition is off for X seconds
0
0 to disable

Wake Device on Ignition HIGH

☒ Enable Inputs
Select if any of inputs 1-4 are used

☐ Enable Output 1
☐ Enable Output 2
☐ Enable Output 3
☐ Enable Output 4

Output 1 LPM mode DISABLED
Disable the output, enable the output or don't change output when entering LPM

Output 2 LPM mode DISABLED
Disable the output, enable the output or don't change output when entering LPM

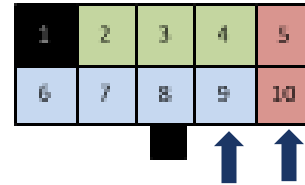
Output 3 LPM mode DISABLED
Disable the output, enable the output or don't change output when entering LPM

Output 4 LPM mode DISABLED
Disable the output, enable the output or don't change output when entering LPM

7. Factory Reset Procedure

7.1 Device with installed battery

1. Re-install the power jumper to turn the unit off completely
2. Short pins 9 and 10 on the connector labeled iBUTTON.



1. Switch Common Ground (GND)
2. Switch_S1
3. Switch_S2
4. Switch_LED Common
5. Switch_LED1
6. iButton Ground (GND)
7. iButton_LED_Positive
8. iButton_LED_Negative
9. iButton Signal
10. Switch_LED 2

3. Remove the power jumper from step 1 and quickly connect the external power supply.
4. Keep pins 9 and 10 shorted for about 30 seconds. **Note:** you will not see any indication via LEDs that factory reset is successful.
5. If the reset was successful, you will be able to access your unit via web GUI at <https://192.168.1.1> or <https://169.254.0.1>.
6. If not successful, repeat the process starting at step 1.

7.2 Device with no battery installed

1. Short pins 9 and 10 on the connector labeled iBUTTON (shown above).
2. Connect external power supply.
3. Keep pins 9 and 10 shorted for about 30 seconds. Note that you will not see any indication via LEDs that factory reset is successful.

4. If the reset was successful, you will be able to access your unit via web GUI at <https://192.168.1.1> or <https://169.254.0.1>.
5. If not successful, repeat the process starting at step 1.

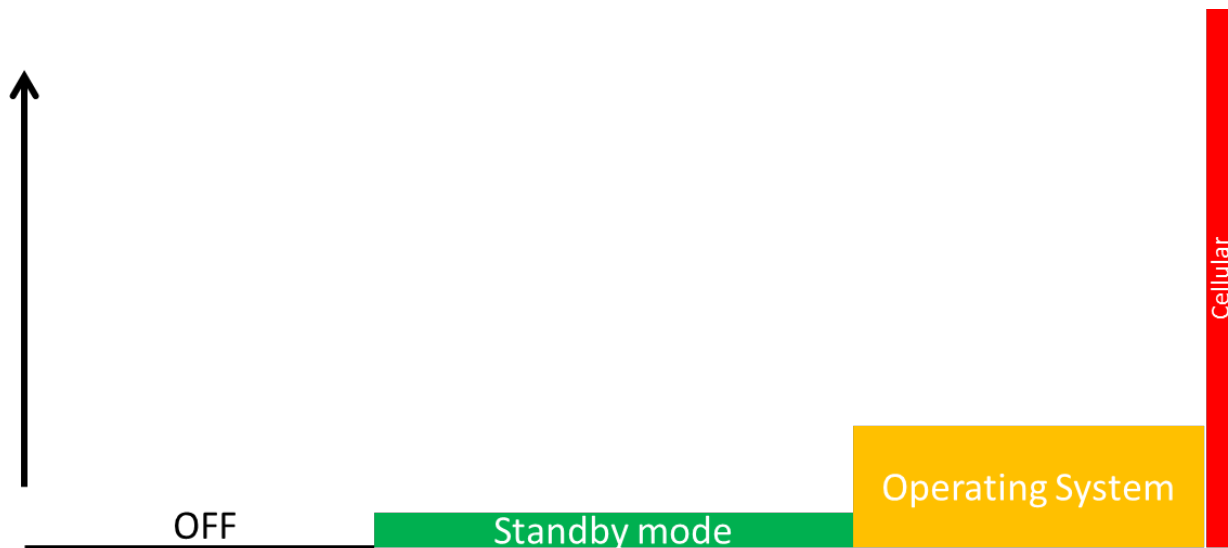
8. Additional Features

8.1 Automatic Power Control

The CTM-ONE supports supply voltages ranging between 7 VDC and 32 VDC.

The Chameleon CTM-ONE gateway has three power modes:

Mode	Current @ 12V	Description	Mode change event
Standby	0.1- 3.3mA	Device is in low power mode; higher current allows for more features such as instant boot. Linux is not running.	The device will spend most of its time in this mode, triggers such as timer, or input state change will bring the device out of this mode into Operating System mode.
Operating system	25- 30mA	Linux is operating, device can communicate with peripherals, Serial, Ethernet, CAN, GPIO, GNSS Processing of data, MODBUS operations.	The device will go back into standby mode when the ignition/standby signal is deactivated or upon expiry of the power ON timer if configured.
Transmit	80-100 mA	In this mode the device is transmitting/receiving data	Transmit time will typically be very short, few seconds or less due to typical low data payloads.



The CTM-ONE 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.

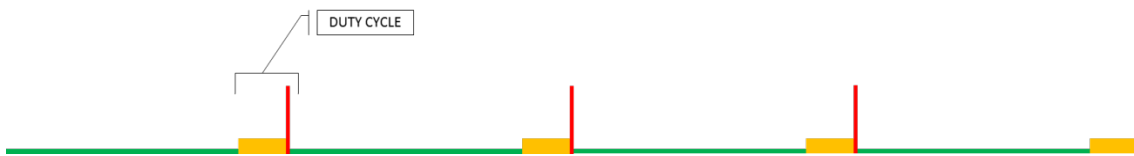
When in its power shutdown mode, the gateway may be configured to resume full operation by monitoring events such as:

- Acceleration
- GPS location (on board Geo-Fence)
- Time
- Speed
- Temperature
- Voltage
- Input events

8.2 Power Consumption

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

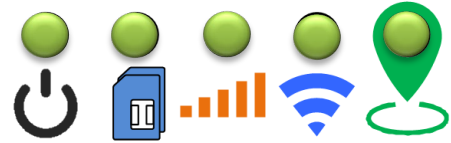
The following table is provided to assist application integrators in defining the power requirements for their specific application. The overall power consumption is related to the overall “duty cycle” of the device. Fixed site applications requiring infrequent polling will require a low duty cycle whereas a mobile solution will require a higher duty cycle to account for accurate geo-location.
















Power Consumption	mW(@12V)	Typical time
Standby Mode	1.2-40 mW	Variable based on duty cycle.
Operating System Mode	300-400 mW	15-60 seconds/session based on data processing/sensing. For Mobile applications device will be typically operated continuously in this mode while the vehicle is in operation.
Transmit	1200 mW	1-3 seconds/session

8.3 LED Indicators

There are five indicators on the CTM-ONE.



LED	Description	Colour	Solid	Blinking	Off
Power 	Power status		Full operating mode running on DC input	Standby	Device has no power
SIM 	SIM status		Using SIM1	Slot 1 selected – no SIM	Cellular connection disabled
			Using SIM2	Slot 2 selected – no SIM	Cellular connection disabled
Cellular 	Wireless data connection status		Connected – good signal	Connected – poor signal	
			Not connected – good signal	Not connected – poor signal	
Wi-Fi 	Access Point (AP) status		AP enabled – connected device	AP enabled – no connected devices	AP disabled
GNSS 	Global Navigation Satellite System (GNSS) status		Valid position fix	GNSS module does not have a valid position fix	
			Dead reckoning mode		

9. General Troubleshooting Operation

All LEDs remain off when the device is powered	<ul style="list-style-type: none"> No power is being applied to the CTM-ONE Check power supply make sure min. 9 VDC is being supplied
PWR LED flashing	<ul style="list-style-type: none"> The device is in standby mode Ensure the standby signal is connected to greater than 9VDC Ensure the supply voltage is greater than 9VDC. Remember that the device is designed to go into standby mode if the standby signal is off after a configured time period (e.g. 10 seconds by default)
PWR LED ON all other LED OFF	<ul style="list-style-type: none"> Device is booting Linux
Device is constantly rebooting every 4 minutes with no user input. Only PWR LED and GPS LED (solid or flashing) are on.	<ul style="list-style-type: none"> Incorrect cellular device is configured. The CTM-ONE is configured by default to auto connect to a cellular network. If the CTM-ONE determines that communication with the internal cellular radio module or device is not working, it will attempt to reset the communication port; this will result in continual system reboots if incorrect module/device is selected.
GPS LED flashing	<ul style="list-style-type: none"> No valid GPS fix. The GPS antenna requires a clear view of the sky to obtain a valid GPS fix. The time to fix can vary from a few seconds to several minutes depending on conditions. GPS LED flashing has no impact on cellular connectivity.
Cellular LED OFF	<ul style="list-style-type: none"> RF signal may not be available; CTM-ONE is located in an area of no cellular activity. Cellular device is not registered on the network; make sure radio module/device/SIM has been activated on the network. Incorrect configuration of internal radio module, ensure correct device has been configured
Cellular LED (solid or flashing)	<ul style="list-style-type: none"> CTM-ONE is registered on the network and is in an area of 3G or 4G coverage but device has not obtained an IP address

Technical Support

Cypress Solutions Service Support Group

1.844.462.9773 or 778.372.4603

5.00am to 5.00pm PST

support@cypress.bc.ca

www.cypress.bc.ca