

MT 3050

User Guide

EMT3050UG001

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General

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Regulatory Compliance

FCC

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits pursuant to Part 15 Subpart B, Part 22, and Part 24 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in an appropriate installation. This equipment generates, uses, and can radiate radio frequency energy and, if not used in accordance with instructions, can cause harmful radiation to radio communication. However, there is no guarantee that interference will not occur in a particular installation.

RF EXPOSURE

Your device is a radio transmitter and receiver. It is designed and manufactured not to exceed the emissions limits for exposure to radio frequency (RF) energy set by the Federal Communications Commission (FCC) of the U.S. Government. These limits are part of comprehensive guidelines and establish permitted levels of RF energy for the general population. These guidelines are based on the safety standards previously set by the U.S. and international standards bodies. The standards include a substantial safety margin designed to assure the safety of all persons, regardless of age and health.

The exposure standard for wireless RF devices, such as the device, employs a unit of measurement known as the Specific Absorption Rate, or SAR. The SAR limit set by the FCC is 1.6W/kg. SAR values at or below that limit are considered safe for the general public.

The device conforms with the RF exposure requirements for portable devices in accordance with FCC Part 2.1093.

The transmitter is configured with a 10% transmission duty factor, for GPRS Multislot class 2 operation, and is excluded from routine RF exposure evaluation in accordance with FCC Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies, KDB447498 D01, V04.



Effective with HW revision B, the device is in conformity with the requirements of the R&TTE directive 1999/5/EC. It has been fully tested and complies with all the requirements of EN301489-1, EN301489-3, EN301489-7 and EN60950-1. Compliance to EN301511 has been demonstrated by testing on both the device and the integrated module.

The hardware revision of the device is identified on the label and also by the presence of the CE mark.

Industry Canada

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

The MT 3050 transmitter is configured with a 10% transmission duty factor, for GPRS Multislot class 2 operation, and is excluded from routine RF exposure evaluation in accordance with the requirements of RSS-102 section 2.5.

Cet appareil est conforme aux normes d'Industrie Canada exempts de licence(s) RSS. Son fonctionnement est soumis aux deux conditions suivantes : (1) cet appareil ne doit pas provoquer d'interférences, et (2) cet appareil doit accepter toute interférence, y compris les interférences pouvant provoquer un fonctionnement indésirable de l'appareil.

L'émetteur MT 3050 est configuré avec un facteur de service de transmission de 10%, pour l'opération en GPRS multislot class 2, et est exclu de l'évaluation de routine d'exposition RF en conformité avec les exigences du CNR-102 section 2.5.

ROHS COMPLIANCE

The device complies with the European Union Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment ([RoHS) Directive (2002/95/EC), effective since July 1, 2006.

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The information and instructions contained within this publication comply with all FCC, GCF, PTCRB, R&TTE, IMEI and other applicable codes that are in effect at the time of publication. Enfora disclaims all responsibility for any act or omissions, or for breach of law, code or regulation, including local or state codes, performed by a third party. Enfora strongly recommends that all installations, hookups, transmissions, etc., be performed by persons who are experienced in the fields of radio frequency technologies. Enfora acknowledges that the installation, setup and transmission guidelines contained within this publication are guidelines, and that each installation may have variables outside of the guidelines contained herein. Said variables must be taken into consideration when installing or using the product, and Enfora shall not be responsible for installations or transmissions that fall outside of the parameters set forth in this publication.

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1 Introduction

1.1 Description

The MT 3050 is an integrated device for the Usage Based Insurance (UBI), telematics, and fleet management markets. It has a rugged plastic housing, and it includes a disconnect alert feature using an in-device backup battery. It is available in GSM/GPRS, 1xRTT, and HSDPA versions. The MT 3050 contains an internal GPS, a cellular antenna, a J1962 compliant OBDII connector, a micro USB connector, and 3 LED indicators.

The GSM2378 and UMT2212 variants also contain an internal SIM card holder.



Figure: 1 - Front Right View



Figure: 2 - Front View

The MT 3050 has a printed label on the top side of the device. The figure below shows the information included on the label.

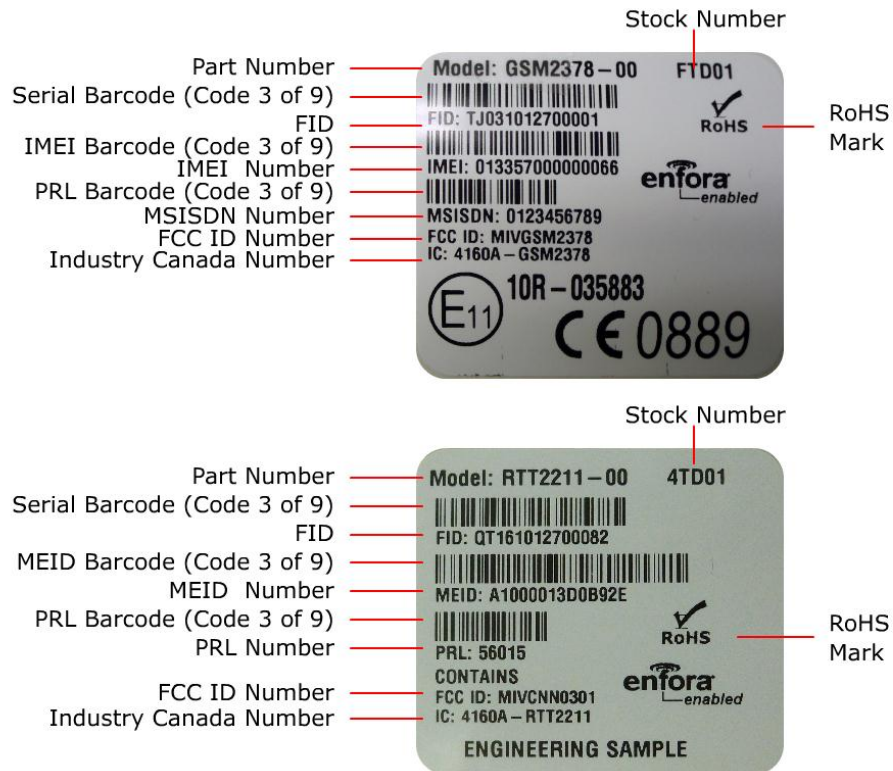


Figure: 3 - MT 3050 Labels

1.2 Technical Specifications

Housing

- Dimensions: (L x W x H) 55 x 49 x 29 mm
- Rugged textured plastic enclosure UL94-Vo fire rated

Environment

- Operating: Battery version: -20°C to +60°C
- Storage: Battery version: -20°C to +60°C
- Humidity: Up to 95% non-condensing
- Vibration: In accordance with SAE J1211

Radio Technology

- GSM/GPRS: 850/900/1800/1900 MHz
- 1xRTT (CDMA2000) : 800/1900 MHz
- HSDPA (UMTS 3G): 850/1900 MHz or 900/1900/2100
- [GSM/GPRS/Edge 2G: 850/900/1800/1900 MHz]

GPS Functionality

- GPS Protocols: NMEA, Binary
- Buffered GPS Message Feature: Yes

Motion Detection

- 3-axis digital accelerometer for motion alerts, towing alerts, and driver behavior reporting (rapid acceleration, harsh braking) using configurable thresholds

Packet Data

Packet data characteristics include:

- Class B, Multislot 8
- GSM/GPRS Rel 97

SMS Functionality includes:

- GSM/HSDPA SMS: Text, PDU, MO/MT, Cell Broadcast
- CDMA SMS: Text, MO/MT

OBD Protocols

- ISO 15765 (CAN)
- ISO 9141-2
- ISO 14230 KWP 2000
- J1850 PWM
- J1850 VPW

Some vehicles only support a subset of these protocols, which may limit the functionality of the MT 3050.

SIM Card / Interface / I/O

- SIM Access: Internal
- Cellular Antenna: Internal
- GPS Antenna: Internal
- LEDs: GPS (blue), Cellular (green), OBD (red)
- I/O Connector: Micro USB (2.0), command port
- OBDII Connector: J1962 compliant

On-Board Diagnostics (OBDII)

- J1850 PWM, J1850 VPW, ISO-9141-2, ISO-14230 KWP2000, and ISO-15765 CAN protocols supported, VIN, excessive engine speed (RPM), vehicle speed, vehicle battery voltage (low battery warning), check engine light (MIL alert), odometer (trip distance), idle time reporting, low fuel alert

Interface

- Host Protocols: AT commands, UDP API, FOTA
- Internal Protocols: UDP API, TCP API
- API Control/Status: AT commands, UDP API, TCP API, AT commands over SMS

Battery

- Rechargeable lithium-ion battery (230mAh)
- Battery recharging range is 0 to +45°C (Internal battery temperature)

Power

- Operating Voltage: 9 - 16 V DC operational for 12 V vehicle support per SAE J1455

Part Numbers

- GSM2378-00 (GSM/GPRS)
- RTT2211-00 (CDMA 1xRTT)
- UMT2212-00 (HSDPA + GPRS/Edge)
- CAB2374-01 (J1962 extension cable)

Additional Features

- GSM Registration
- GPRS Registration
- Velocity
- Geo-Fence
- IP Status
- GPS Status
- Timer
- MT Power Save
- RTC Alarm
- Memory Full Percentage
- Input Event Counter
- GPS Overspeed
- Message Log Count
- SMS Indication
- GPS Distance

Certifications

- FCC: Yes
- CE: Yes
- RoHS Compliant: Yes
- Industry Canada: Yes

Document References

- Spider MT 3050 AT Command Set For GPRS (EMT3050AT001)
- Spider MT 3050 AT Command Set For 1xCDMA (EMT3050AT002)
- Spider MT 3050 AT Command Set For HSDPA (EMT3050AT003)
- GSM Network Configuration Worksheet (GSM0000AN019)

Applicable Products

The MT 3050 series has three models:

- GSM2378-00 (GSM/GPRS)
- RTT2211-00 (CDMA 1xRTT)
- UMT2212-00 (HSDPA + GPRS/Edge)

This user guide identifies the features that are specific to each model.

2.3 On-Board Diagnostics Overview

An On-Board Diagnostics (OBD) system controls engine functions and serves as the diagnostic control network of the vehicle. All cars built and sold in the United States since 1996 must be equipped with the newer OBDII system. The Enfora MT 3050 connects to a vehicle's OBDII port and monitors the OBDII system using a variety of communication protocols.

The MT 3050 can be configured to provide notification messages based on events triggered by:

- Accelerometer change
- Check engine light (MIL alert)
- Engine RPM
- GPS information
- Idle time
- Low fuel
- Trip Odometer (trip distance)
- Vehicle battery voltage (low battery warning)
- Vehicle Identification Number (VIN)
- Vehicle speed
- Other events monitored by the OBDII system



Some vehicles are not compatible with the MT 3050. If the vehicle is not compatible with the parameters the MT 3050 requires, then functionality may be limited, problematic, or unavailable.

The SAE (Society of Automobile Engineers) 1979 standard defines the method for requesting diagnostics data and provides a list of standard parameters from the engine control unit.

Compliance to this standard is the responsibility of the vehicle manufacturer, therefore Enfora cannot guarantee performance of the MT 3050 with every vehicle.

3 Features And Functions

3.1 GPS

GPS functionality includes:

- NMEA update with all data points
- Enfora Binary Packets
- Buffered GPS message feature
- Geo-fencing
- Virtual odometer

3.2 LEDs

The MT 3050 includes LEDs to indicate OBDII, NETWORK, and GPS status.

The following figure shows the MT 3050 connector and LEDs.



Figure: 4 - MT 3050 Connectors and LEDs

The following table describes the LED operation.

MT 3050 LEDs	
OBD (Red)	The OBD LED will flash at a fast rate when the unit is first connected to the OBD port for power. Once a protocol is discovered through the OBD port, the LED will flash at a slow rate.
NETWORK (Green)	The NETWORK LED will flash at a fast rate when the unit is finding cellular coverage. Once cellular coverage is found, the LED shall flash at a slow rate.
GPS (Blue)	The GPS LED will flash at a fast rate when the unit is acquiring a satellite fix. Once a fix is acquired, the LED will flash at a slow rate.

Table: 5 - MT 3050 LEDs

3.3 Power

The MT 3050 requires 9-16 VDC minimum 2 amps input power. Pin 16 on the 16-Pin IO connector is the positive power input, and pin 4 is the ground.

3.4 Accelerometer

The three-axis digital accelerometer provides the following features:

- Motion alert (towing alert)
- Driver behavior reporting
 - Rapid acceleration
 - Harsh braking
- Configurable thresholds
 - Range settings
 - Mode (Normal, Sleep, Wakeup)
 - Wakeup pause (20 to 2560 msec)
 - Sample Rate (0-25 per second)
 - Filter Coefficient and Filter Bandwidth
 - Device Orientation Setup

3.5 GSM Radio

The MT 3050 (GSM2378) contains a quad-band (850/900/1800/1900 MHz) GSM radio.

- Class 4 (2W@850/900 MHz)
- Class 1 (1W@1800/1900 MHz)

3.6 CDMA Radio

The MT 3050 (RTT2211) contains a dual-band (800/1900 MHz) CDMA radio.

- BC0-800 MHz – US Cell
- BC1-1900 MHz – US PCS

3.7 New Event Reporting

The MT 3050 has additional event reporting not supported by other Enfora products. For general event reporting information and for detailed information about these new events refer to the *MT 3050 AT Command Document (GSM2374AT001)*.

3.7.1 Vehicle Identification Number (VIN)

The VIN is used as a unique identifier which is sent at first power up with heartbeat messages and with events.



Vehicle manufacturers are responsible for defining the list of data returned, therefore not all vehicles support returning the Vehicle Identification Number.

3.7.2 Excessive Engine Speed (RPM)

Excessive engine speed alerts are triggered when the engine speed (in RPM) exceeds a defined RPM level (in $\frac{1}{4}$ RPM increments) for a defined period of time in seconds (e.g., 30 seconds).

The MT 3050 has three definable thresholds.

Unnecessary wear and tear on the powertrain control module (PCM) may occur if constant or frequent excessive engine speed is reported. The excessive engine speed event may be caused by one of the following situations:

- Obstructions, such as ice or mud, that may cause wheel slippage if the obstruction is not removed from the vehicle
- Revving the RPM while in neutral
- Speeding or reckless driving that causes excessive RPM engine speed

The following AT command example sets the excessive engine speed threshold at 1 to 4000 RPM. Then, if exceeded for 3 seconds, it triggers the input event. This event will clear once engine RPM is below 4000 for 30 seconds.

```
AT$OBDEES=1,4000,3,30
```

3.7.3 Vehicle Speed

If configured for vehicle speed alerts and the vehicle moves faster than one of the three configurable thresholds (e.g., 70 MPH), then a vehicle speed alert is triggered.

The following AT Command example sets the vehicle speed threshold at 1 to 112 KPH (~70MPH). When the threshold is exceeded for 10 seconds, an input event is triggered. This event will clear when the vehicle speed is reduced to 104KPH (~65MPH).

```
AT$OBDSPD=1,112,10,104
```

3.7.4 Vehicle Battery Voltage (Low Battery Warning)

The vehicle battery voltage alert is triggered when the vehicle's battery is reported to be below a threshold (e.g., 10.8 V) for a user-defined period of time in seconds (e.g., 300 seconds).

The following AT Command example sets the low battery threshold to 10.8 volts. When the voltage remains below this threshold for 300 seconds (5 minutes), it triggers an input event. Restoring voltage above the threshold for 300 seconds (5 minutes) will clear this event.

```
AT$OBDLBLE=10800,300,300
```

3.7.5 Check Engine Light (MIL Alert)

When the vehicle's "Check Engine" light illuminates, this indicates that a vehicle issue requires attention for diagnosis and/or repair. This is also known as a Malfunction Indicator Light (MIL). A user can configure a device to detect a MIL issue through the OBDII protocol, and to send an alert when the device detects such an issue.

3.7.6 Trip Odometer Reporting

Trip odometer reporting provides the odometer miles accumulated from ignition-on to ignition-off, which is considered a "trip".



Ignition events are not yet detected on hybrid or electric vehicles.

3.7.7 Idle Time Reporting

An idle time event is triggered when the vehicle's engine is running without the vehicle moving (i.e., velocity less than 3 KPH) for a defined period of time in seconds (e.g., 300 seconds).

The alert is cleared when the vehicle speed exceeds another speed and time threshold.

Both the violation and clearing of the alert are reported if configured.

The following AT Command example sets the idle time speed threshold to 3 KPH for 5 minutes (300 seconds) with a clearance time of 30 seconds. If the speed remains below this threshold for 300 seconds (5 minutes), it triggers the input event. Restoring speed above this threshold for 30 seconds will clear this event.

```
AT$OBDIDL=3,300,30
```

3.7.8 Low Fuel Alert

The low fuel alert triggers when the vehicle's fuel level falls below a defined threshold in percent (e.g., 12%) for a defined period of time in seconds (e.g., 60 seconds).

The following AT Command example sets the low fuel alert threshold to 12% for 1 minute (60 seconds) with a clearance time of 30 seconds. If the fuel level remains below this threshold for 60 seconds, it triggers the input event. Restoring the fuel level above this threshold for 30 seconds will clear this event.

```
AT$OBDLFL=12,60,30
```

3.7.9 Rapid Acceleration

Rapid acceleration events can be triggered when one of three available thresholds are exceeded as determined by the accelerometer in milli-Gs (e.g., 0.75) for a defined period of time in seconds (e.g., 30 seconds).

The following AT Command example sets the rapid acceleration threshold #1 to .2G. If this threshold is exceeded for 1 second, then an input event is triggered. Keeping the acceleration of the vehicle below this threshold for 30 seconds will clear this event.

```
AT$OBDACL=1,200,1,30
```

3.7.10 Sudden Deceleration (Harsh Braking)

Rapid deceleration events can be triggered when one of three available deceleration thresholds are exceeded as determined by the accelerometer in milli-Gs (e.g., 1.0) for a defined period of time in seconds (30 seconds).

The following AT Command example sets the rapid deceleration threshold #1 to .5Gs. If this threshold is exceeded for 1 second, then an input event is triggered. Keeping the deceleration below this threshold for 30 seconds will clear this event.

```
AT$OBDDCL=1,500,1,3
```

3.7.11 Motion Detection

Motion alerts for vehicles can be configured to communicate that a vehicle is being towed. Motion detection based on measuring movement via the accelerometer occurs when the vehicle ignition is off, and the vehicle is stationary.

A motion alert is triggered when motion defined in milli-Gs is detected for a defined period of time.

3.7.12 OBDII Basic Event Data

Five additional data items can be included with event messages:

- VIN
- Firmware version (\$PKG)
- OBD Protocol (i.e., J1850 PWM)
- Cellular signal strength (RSSI)
- OBD speed

3.7.13 Right Turn

Harsh turn events can be triggered when one of two available thresholds are exceeded as determined by the accelerometer in milli-Gs (e.g., 0.75) for a defined period of time in seconds (e.g. 30 seconds).

The following AT command example sets the Right Turn accelerometer threshold 1 to .25 Gs. If this threshold is exceeded for 2 seconds, trigger the input event. This event will clear in 15 seconds when the acceleration is below this threshold.

```
AT$OBDART=1,250,2,15
```

3.7.14 Left Turn

Harsh turn events can be triggered when one of two available thresholds are exceeded as determined by the accelerometer in milli-Gs (e.g., 0.75) for a defined period of time in seconds (e.g., 30 seconds).

The following AT command example sets the Left Turn accelerometer threshold 2 to .3Gs. If this threshold is exceeded for 1 second, trigger the input event. This event will clear in 20 seconds when the acceleration is below this threshold.

```
AT$OBDALT=2,300,1,20
```

3.7.15 Up

Up accelerometer events can be triggered when the threshold is exceeded as determined by the accelerometer in milli-Gs (e.g., 0.75) for a defined period of time in seconds (e.g., 30 seconds).

The following AT command example sets the Up accelerometer threshold to 1.2Gs. If this threshold is exceeded for 1 second, trigger the input event. This event will clear in 30 seconds when the acceleration is below this threshold.

```
AT$OBDAUP=1,1200,1,30
```

3.7.16 Down

Down accelerometer events can be triggered when the threshold is exceeded as determined by the accelerometer in milli-Gs (e.g., 0.75) for a defined period of time in seconds (e.g., 30 seconds).

The following AT command example sets the Down accelerometer threshold to .8Gs. If this threshold is exceeded for 1 second, trigger the input event. This event will clear in 30 seconds when the acceleration is below this threshold.

```
AT$OBDADN=1,800,1,30
```

3.8 Micro USB Connector

The MT 3050 includes a J1962 compliant OBDII connector and a micro USB I/O port.



The Micro USB (2.0) connector is an input/output connector and is not intended for general use. This connector should only be used when programming the modem.



This USB port cannot be used to supply power to other USB devices and nothing should be connected to this port when the vehicle is in motion. The MT 3050 can not be powered through the USB Port.

The micro USB connector is only used to program the modem. When programming the modem, a micro USB cable is required which you must purchase separately.



Figure: 6 - Micro USB Cable

3.9 Additional Software Features

3.9.1 AT Commands Over SMS

A user can send AT commands to the MT 3050 via SMS. Please refer to Enfora Application Note *ENF0000AN012 - AT Commands Over SMS* for details..

3.9.2 Store/Transmit Event Data

The user can configure the MT 3050 to store event-generated data in its internal memory to be sent over the air to a remote server. This feature can be enabled or disabled using the `AT$MSGLOGEN` command.

“Total Number of Unread Messages” is decremented if an unread message is read via the `AT$MSGLOGRD` command.

Example: Assume there are 50 unread messages in the message queue, and the total number of messages in the message queue is 100. This means that the first 50 messages have been read while the last 50 messages have not been read. If a user sends `AT$GPSLOGRD=0, 1, 51` then the total number of unread messages drops down to 49 after successful transmission of that message. However, if a user sends `AT$GPSLOGRD=0, 1, 99` then the total number of unread messages still remains at 50—that message is transmitted to the remote server.

A user can also read a message stored in the memory by inputting the appropriate starting index number.

3.9.3 Synchronize RTC Time With GPS Time

The Real Time Clock ("RTC") is synchronized with GPS time automatically every time the device is powered up and first acquires valid GPS data. Additionally, the RTC time is synched with GPS time every time the GPS time rolls over from 23:59:59 to 00:00:01.

3.9.4 Reporting Frequency

The minimum reporting frequency of the device is as follows:

- Periodic reporting is limited to max of 1 per 6 seconds.
- The general reporting interval is 1 message every 2 seconds.

4 Installation

4.1 SIM Access (GSM2378 And UMT2212 Only)

SIM Installation procedures include:

- Opening
- Inserting SIM
- Closing

The GSM2378 and UMT2212 versions of the MT 3050 include an onboard SIM carrier. There is no external access to the SIM.



The RTT221 (CDMA) version of the MT 3050 does not use a SIM and should not be opened.

4.1.1 Opening The Device

To prevent damaging the device, we highly recommend that you use the Plastic Lever (Enfora part number ASA-3000-0001) when opening the MT 3050.

To open the MT 3050, follow these steps:

1. Insert the tool into the opening and gently push until that corner of the lid unsnaps as shown below.

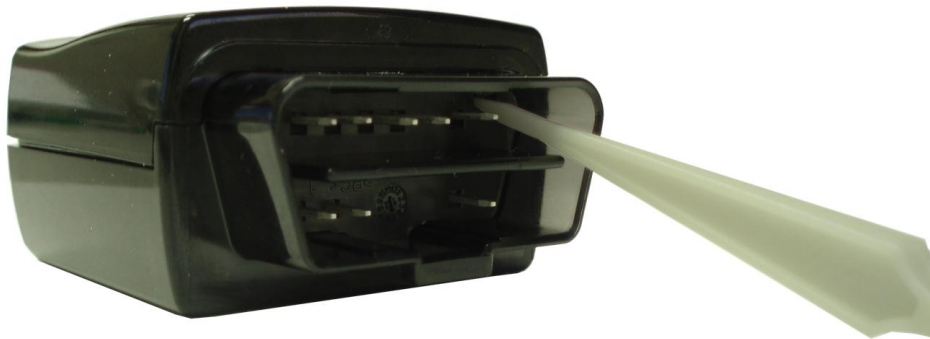


Figure: 7 - Opening the MT 3050 Case

2. Repeat step 1 for the other corner.



Figure: 8 - MT 3050 With Cover Unsnapped

3. Carefully slide the cover off the device.

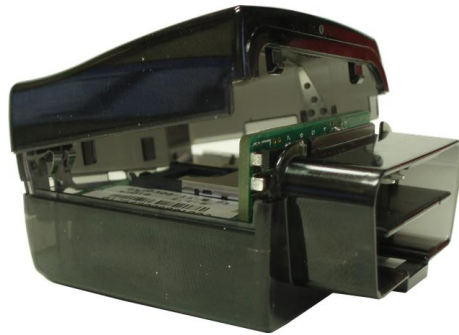


Figure: 9 - MT 3050 With Cover Partially Removed



Figure: 10 - MT 3050 With Cover Removed

4.1.2 Inserting The SIM

Insert the SIM using the following procedure:



The SIM card is not provided with the MT 3050 device. The SIM must be obtained from the GSM/GPRS service provider and must be provisioned by the operator for data. Always take care to protect the SIM. Without the SIM installed, the MT 3050 modem is not able to communicate on the network.

1. Using the correct tool, carefully remove the device cover to access the internal SIM holder as previously described.
2. Insert the SIM into the SIM holder of the MT 3050.
3. Replace the cover as described in the next section.

4.1.3 Closing The Device

Replace the MT 3050 cover by using the following steps:

- A. Place the MT 3050 cover onto the base as shown in the following figure.
 1. Apply gentle downward pressure to the back of the cover first as you carefully slide the cover into place.
 2. Apply gentle down and forward pressure to the front of the cover until it snaps shut.

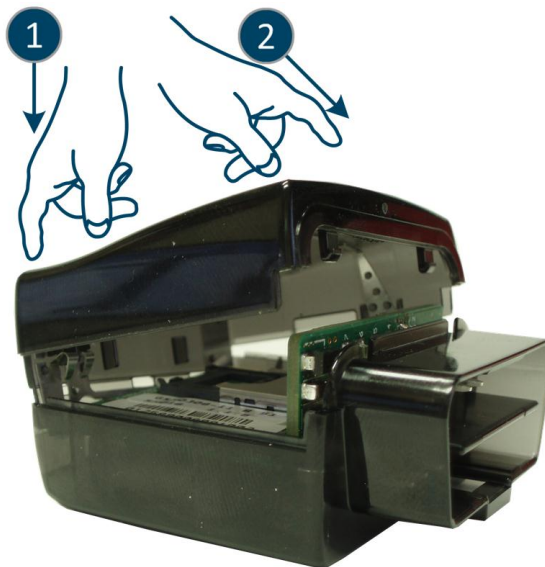


Figure: 11 - MT 3050 Cover Replacement

4.2 Activating The Device

With CDMA devices, the user must contact the service provider to activate the device. They will need to provide the MEID of the device to the provider. Once the provider has acknowledged that the device is ready to activate, the user will then be required to send an activation string to the network.

Send the activation string: AT+CDV*22899. This will initiate a call with the network. A successful call will last approximately 40 seconds. If the call is terminated within 10-15 seconds, the call was not successful. Several attempts might be required. If after a few attempts the call is not successful, please check the MEID of the device and compare it to the MEID provided to the provider.

To verify that the activation has successfully completed, attempt a voice call AT+CDVxxxxxx. If the call is successful, then the OTASP (Over-the-Air Service Provisioning) was successful.

4.3 Device Installation

Make sure the vehicle is parked on level ground prior to installing the MT 3050.

Instructions provided in this section describe the hardware installation of the MT 3050 device. To install the MT 3050 in a vehicle, follow these steps:

1. Locate the OBDII socket. The location will vary between different vehicle manufacturers, models, and production years.
2. Carefully insert the MT 3050 into the OBDII socket.
3. After the device is installed, ensure the device is working properly as evidenced by a GPS lock and cellular connection, which can be validated by the LEDs.



The MT 3050 is NOT a waterproof or sealed device. Care must be taken to ensure the device is kept away from water or any other liquids.

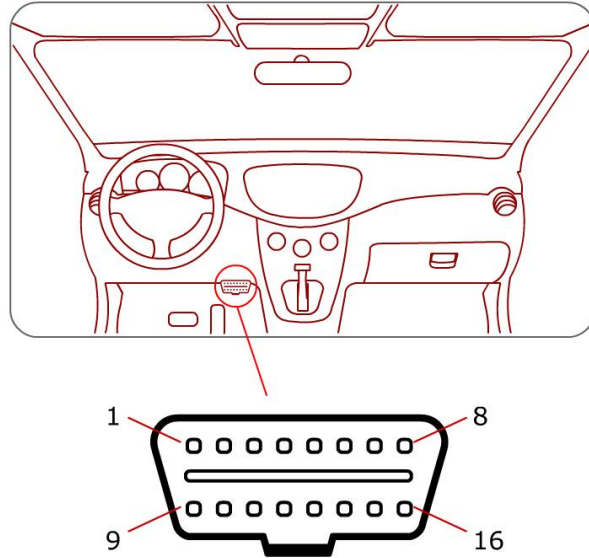


Figure: 12 - Typical OBDII Socket Location



The device starts the accelerometer auto-calibration process immediately after the device is installed and the vehicle's ignition is turned on.

4.4 Accelerometer Calibration

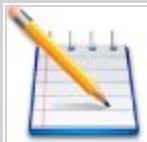
The accelerometer undergoes an automatic calibration sequence on the first drive after any of the following events:

- Device installation
- Software upgrade
- Vehicle battery replacement (or recharge if battery was fully discharged)
- Device auxiliary processor reset



Failure to follow the process below could cause an undesired behavior of the motion feature. Failure to drive straight on level ground during the automatic calibration may reduce the accuracy of the accelerometer and have an adverse impact on events triggered by accelerometer readings.

1. Make sure the vehicle is parked on level ground prior to installing the MT 3050.
2. Drive the vehicle in a straight path on level ground during the automatic calibration. An inclined surface will put part of the gravity vector into the XY plane, which will affect the acceleration thresholds. (A 5.7 degree angle will place 10 % of the gravity vector into the XY plane.)



When the vehicle passes 32 KPH, the auxiliary processor assumes that the vehicle is moving in a straight line and determines the forward axis.

4 USB Driver Installation

4.1 USB Driver Installation Using The Enfora Driver Setup Utility (Windows XP)

These instructions illustrate how to correctly install the USB drivers in Windows XP using the Enfora Driver Setup Utility.

1. Run the Enfora Driver Setup Utility by double-clicking the **EnforaDriverSetup** executable file.



The Enfora Driver Setup Utility Extraction window opens.

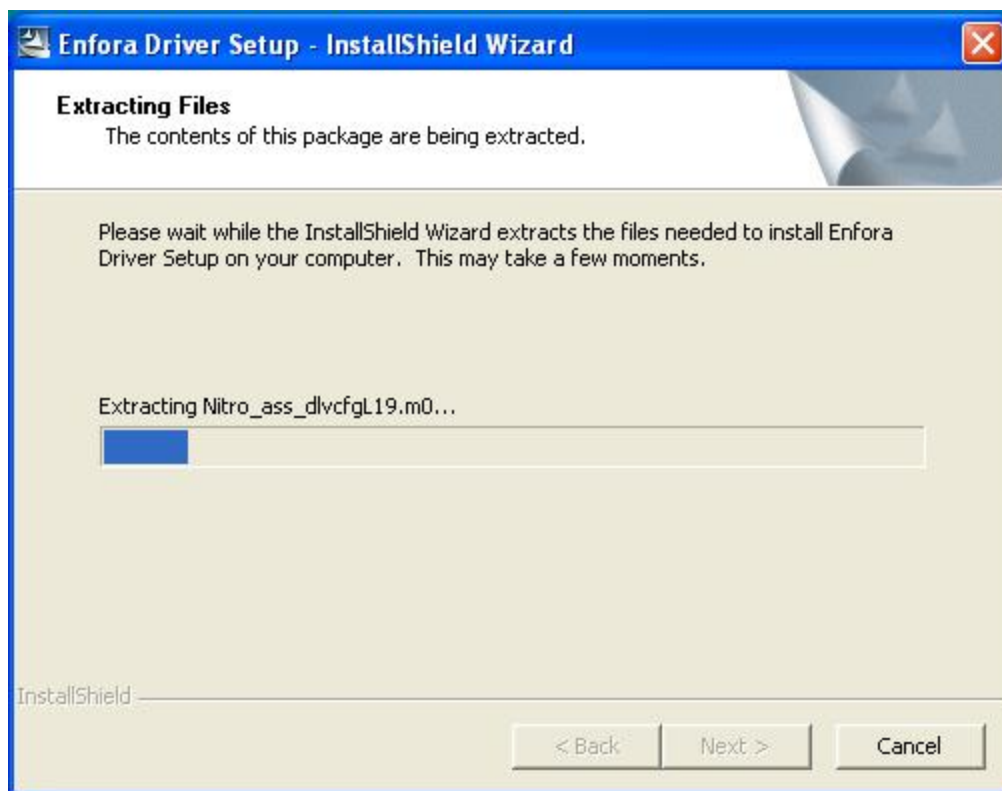


Figure: 13 - Enfora Driver Setup Utility Extraction

Once the contents have been extracted to memory, the Welcome Window opens.



Figure: 14 - Enfora Driver Setup Utility Welcome

2. To install the drivers, select **Install**.

The Enfora Driver Setup Utility Window opens.

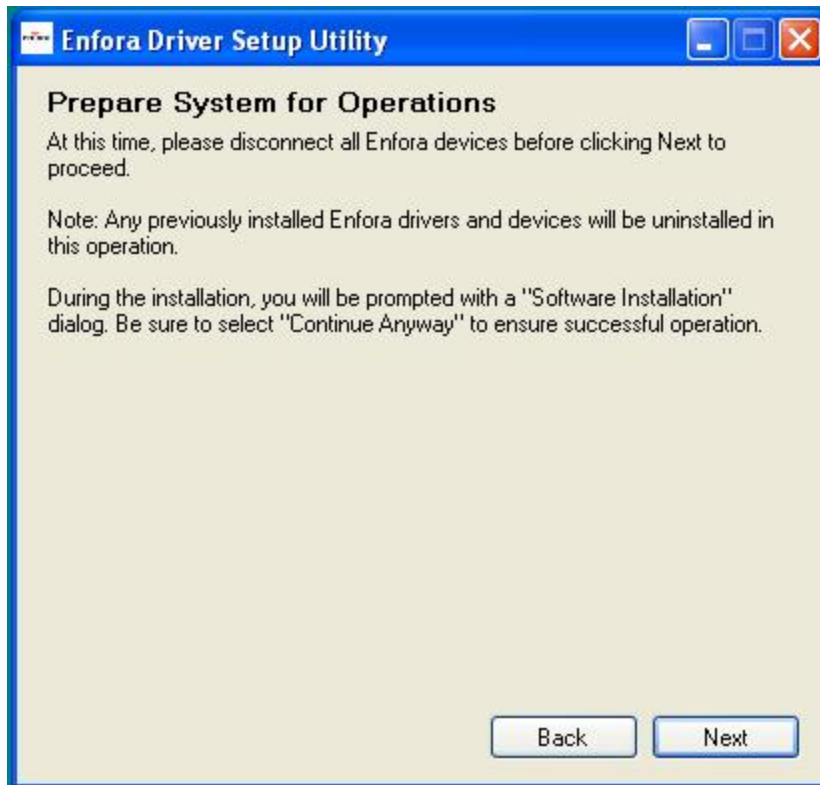


Figure: 15 - Enfora Driver Setup Utility Prepare System Window

3. Select **Next** to continue.

The Enfora Driver Setup Utility Installation Window opens while the system installs the drivers.

4. Disconnect any Enfora devices.

Previous drivers will be removed during this phase.



During the installation, your computer's display may freeze and appear non-responsive. If this occurs, allow the computer to continue working. After 2-3 minutes, the display and installer will resume normal behavior.

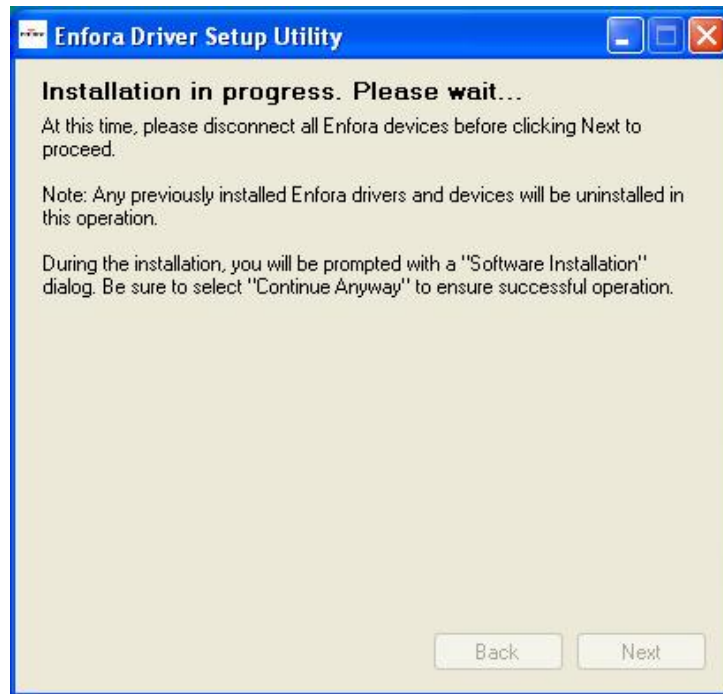


Figure: 16 - Enfora Driver Setup Utility Installation Window



Figure: 17 - Enfora Driver Setup Utility Driver Installation

5. When prompted to install the device driver, select **Next**.



Figure: 18 - Enfora Driver Setup Utility Driver Installation Progress

You may see the following warning message:



Figure: 19 - Windows Security Window

6. Click **Continue Anyway**.

When installation of the USB drivers is complete, the Completion window opens.



Figure: 20 - Enfora Driver Setup Utility Driver Install Completion Window

7. Click **Finish**.

When the installation is complete, the list of attached devices will appear within the Attached Devices Window.



Figure: 21 - Enfora Driver Setup Utility Attached Devices Window

4.2 USB Driver Installation Using The Enfora Driver Setup Utility (Windows 7)

These instructions illustrate how to correctly install the USB drivers in Windows 7 using the Enfora Driver Setup Utility.

1. Run the Enfora Driver Setup Utility by double-clicking the **EnforaDriverSetup** executable file.



The Enfora Driver Setup Utility Welcome window opens.



Figure: 22 - Enfora Driver Setup Utility Welcome Window

Once the contents have been extracted to memory, the Driver Setup Window opens.

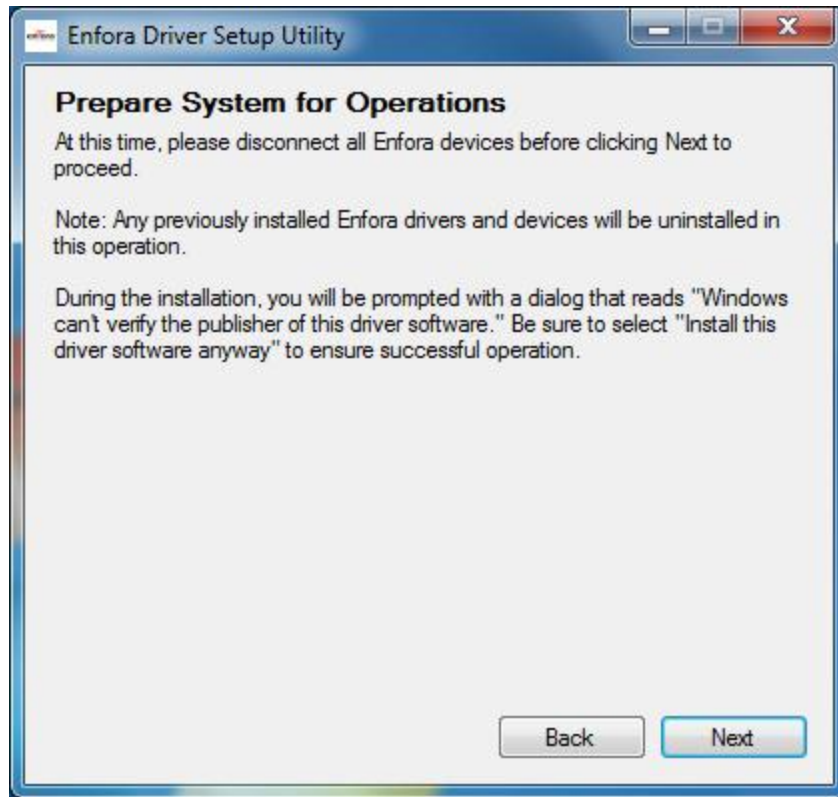


Figure: 23 - Enfora Driver Setup Utility Preparation Window

2. To install the drivers, click **Install**.

The Enfora Driver Setup Utility Prepare System Window opens.

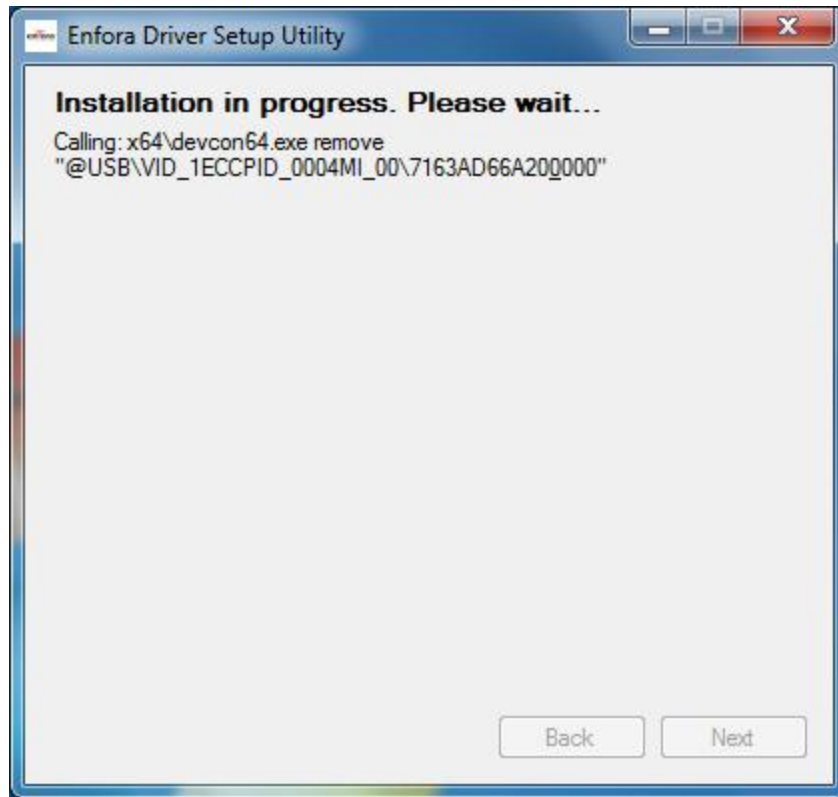


Figure: 24 - Enfora Driver Setup Utility Installation Window

3. Select **Next** to continue.

The Enfora Driver Setup Utility Installation Window opens while the system installs the drivers.

4. Disconnect any Enfora devices.

Previous drivers will be removed during this phase.



During the installation, your computer's display may freeze and appear non-responsive. If this occurs, allow the computer to continue working. After 2-3 minutes, the display and installer will resume normal behavior.

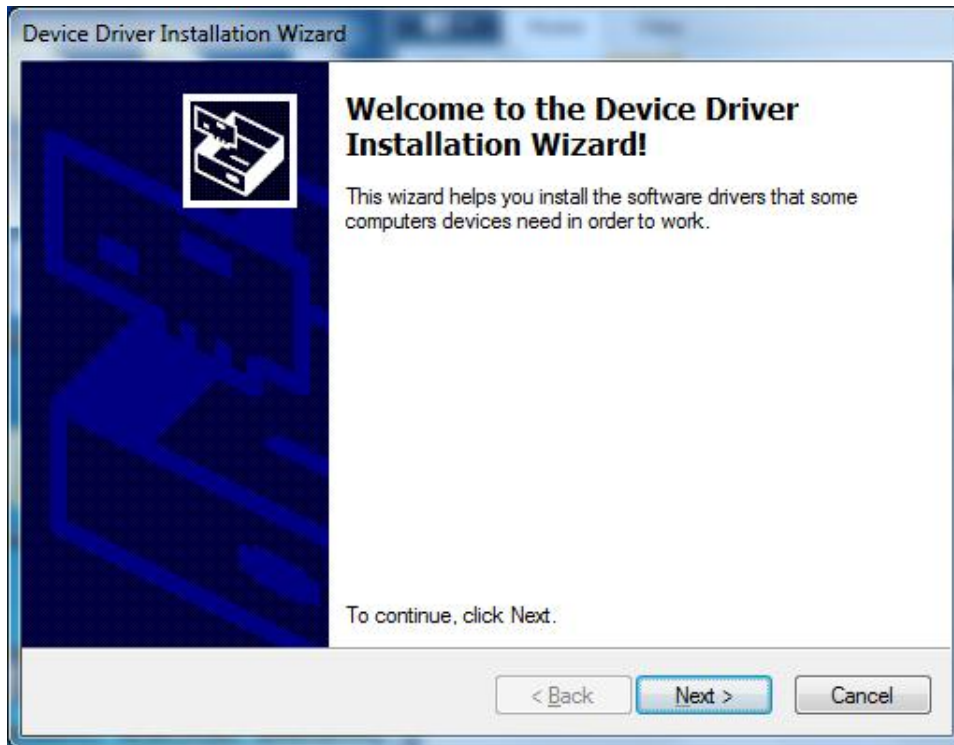


Figure: 25 - Enfora Driver Setup Utility Driver Installation

5. When prompted to install the device driver, select **Next**.



Figure: 26 - Windows Security Window

6. Select **Install this driver software anyway**.

During the driver install phase, you may be prompted to continue or stop installation due to potential compatibility issues.

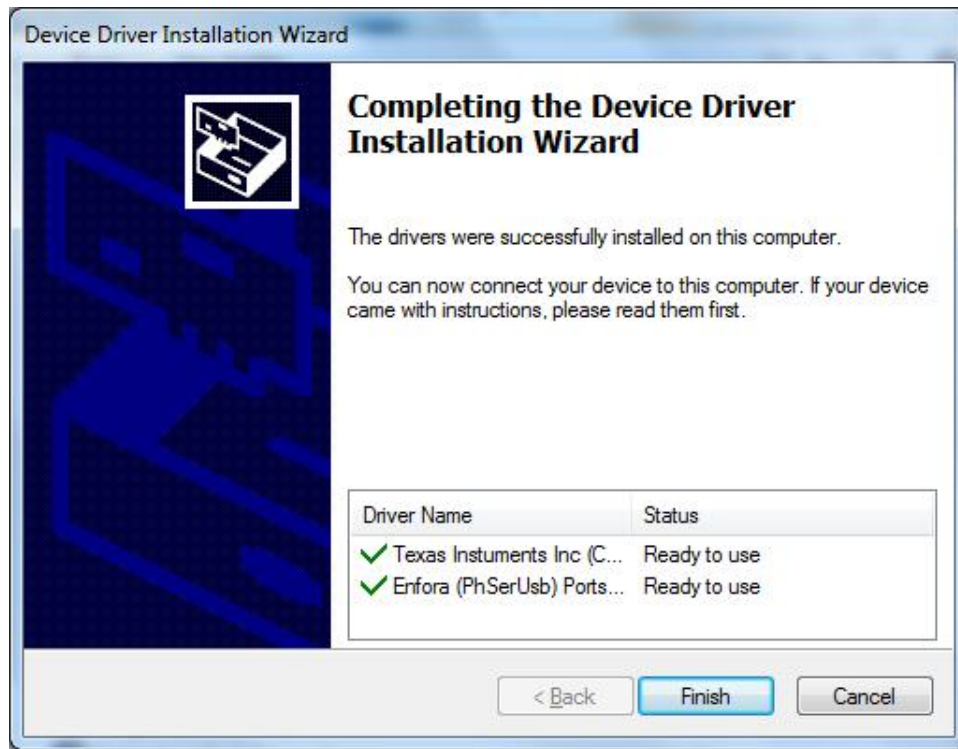


Figure: 27 - Enfora Driver Setup Utility Driver Install Completion Window

When installation of the USB drivers is complete, the Completion window opens.

7. If there are no errors, click **Finish**.
8. If the status displays an issue, click **Correct issues!**
9. At the "OK to apply fix" prompt, click **Yes**.

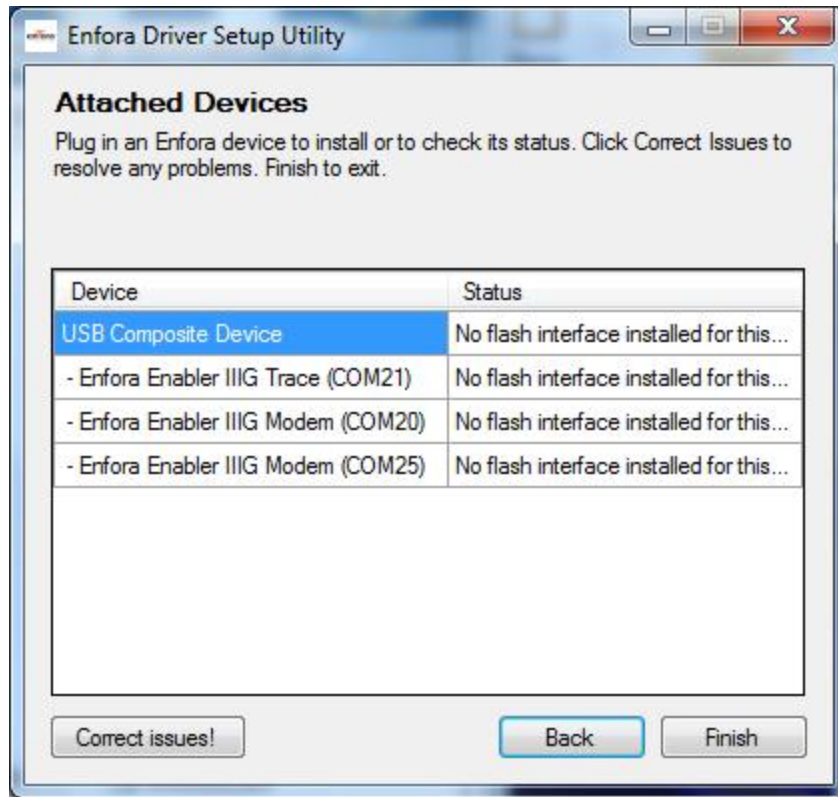


Figure: 28 - Enfora Driver Setup Utility Attached Devices Window

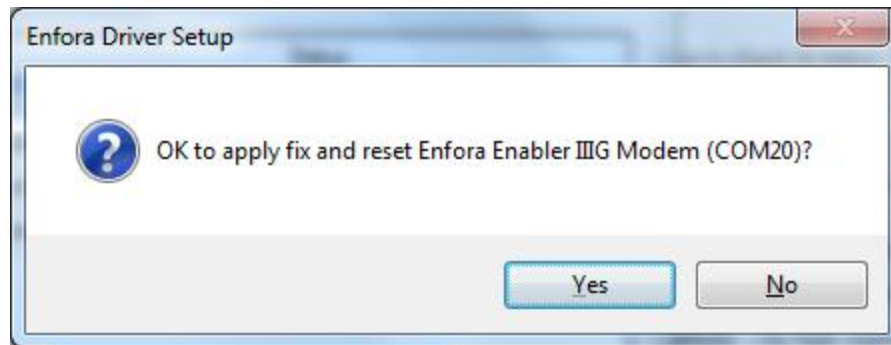


Figure: 29 - Enfora Driver Setup Utility Apply Fix Window

When the installation is complete, the list of Attached Devices appears within the Enfora Driver Setup Utility Attached Devices window.

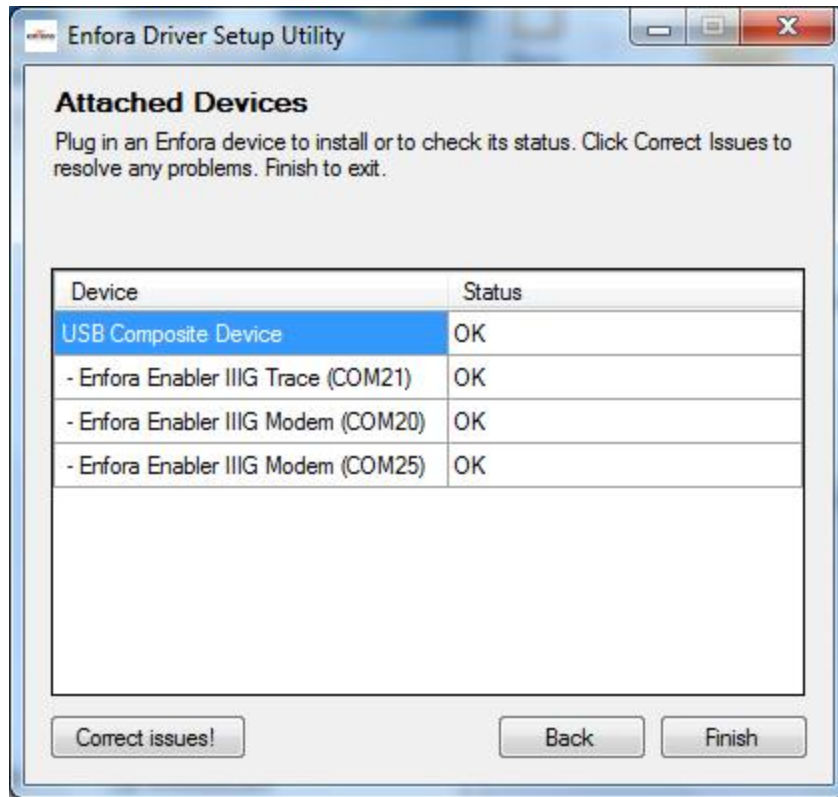


Figure: 30 - Enfora Driver Setup Utility Attached Devices Window

5 Network Test Procedure

Use the following instructions to configure the Enfora modem to communicate with the Enfora test server.

5.1 Configuring The Modem For Test Server Connection

To configure the modem for server interoperability, consider the following:

- Most configurations are Mobile Originate only.
- Mobile modem initiates a conversation with a remote server before it can talk to the modem.
- IP addresses are dynamically assigned and can change.
- Some IP addresses are NAT and are non-routable.

These issues are addressed in the following configuration commands.

- Modem ID/name = "My_MT_TEST"
- Remote Server address = <http://apitest.enfora.com/UDPAPP/>
- Remote Server IP port = 1721

Give the modem a unique name with the following command:

```
AT$MDMID="My_MT_TEST"
```



This command, combined with the wakeup message will allow the server to associate a Public IP address with a specific modem, and can create an opportunity where the server can send commands to the modem.

Configure the modem to talk with a specific server with the following command:

```
AT$FRIEND=1,1,"apitest.enfora.com"
```

Set the port number with the following command:

```
AT$UDPAPI=,1721
```

Set up the server to send out periodic wakeup messages every 60 seconds with the following command:

```
AT$WAKEUP=1,1
```

5.2 Verifying Server Connectivity

For the following tests, ensure that you have Java Runtime installed on your computer. To install Java Runtime, please visit the Java website here: <http://www.java.com/en/download/manual.jsp>

1. Start a web browser and enter the following URL:
<http://apitest.enfora.com/UDPAPP/>



The screenshot shows a web browser window titled "GSM/GPRS Applet HTML Page". Inside the browser, there is a sub-window titled "Connect". The "Connect" window has a light blue background and contains the following elements:

- A text input field with a placeholder text: "Enter the 20 character modem ID (given by \$MDMID) of the GSM/GPRS unit that you would like to monitor".
- A "Connect" button located below the input field.
- A grey box containing the following text:

```
Make sure your modem has following parameters set:  
AT$AREG=2  
AT$FRIEND=1,1,"apitest.enfora.com"  
AT$UDPAPI=,1721  
  
Either:  
AT$WAKEUP=1,1  
AND OR:  
AT$APIOPT=1,1,4
```

Figure: 31 - apitest.enfora.com/UDPAPP/ Window

2. Enter the name used in the Modem ID (MDMID) command in the box.
3. Select **Connect**.

GSM/GPRS Applet HTML Page

Connect My_MT_Test x

Connection Information

Modem ID: My_MT_Test Modem IP: unknown Server IP:Port: 10.6.0.65:1721

Modem Communications

Auto ACK

Commands

Command Type:

- AT Command
- API Read
- API Write
- Unsolicited MSG Request
- Custom Header
- No Header

Header Bytes:

ASCII data:

Send Via:

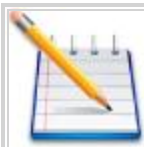
- UDP
- TCP
- Protocol of last received message

Log

Show ASCII + RAW hex view Compress Extended Header Enable Word Wrap Auto-scroll

Time	ASCII
------	-------

4. Select the tab with the modem name (My_MT_Test). Within approximately 60 seconds you should see a wakeup message in the window.



Selecting the **Clear** button will erase the contents from the (ASCII Data) window.

5. Enter the following command in the Command/Data text box:
ATI
6. Click on the **Submit** button.
7. Verify that you see the modem response: Enfora, Inc.
If so, you have successfully configured the modem to talk with the server.

6 Accesories

The following accessories are available for the MT 3050:

Part Name	Part Number
Plastic Lever	ASA-3000-0001
Backup Battery	TBD

6.1 Backup Battery

The backup battery's primary function in the MT 3050 is to provide the ability for a user to be notified when the device is removed from the vehicle.

Input Event 63 can be used to trigger an output event that can be configured in the same manner as the other output events. If the modem is off (power savings), it will be turned on. If GPS data is configured in the output event, and the data is not available, the last known position can be configured to be used in the output message.

AT\$OBDBBT is used to configure the time (in seconds) that the device will stay powered after removal from the vehicle. The range is 30-6000 with the default being 600. In addition, to prevent damage to the battery, the device will turn itself off when the battery reaches the level determined to be the lowest "safe" value.

If the configured output message has not been sent when the timer or battery level dictates the device to shut down (and is configured to do so), it will be saved and sent the next time the device registers on the network.

The following figures show the battery and the connector cable.

Figure: 32 - MT 3050 Battery Mounted in Cover **TBD - Need Image**

Figure: 33 - MT 3050 Battery Connection **TBD - Need Image**

6.2 Plastic Lever

Use the Plastic Lever to open the device. For more information on opening the device, see the SIM Access section in this User Guide.



Figure: 34 - Plastic Lever