

@Road iLM®2720 Installation Guide

Important – Please Read!

Following the simple steps below will ensure optimum performance of your iLM unit.

Should you have questions, please contact
@Road Customer Service toll-free at
1-877-4-AtRoad (1-877-428-7623).

FCC Compliance

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.

FCC RF Exposure Information

Warning: The antenna supplied with this device must be used for installation and operation. Substitution of other antennas must be approved by the manufacturer for compliance to radiation safety limits, which the antenna gain should not exceed 8 dBi for Cellular Band and 5 dBi for PCS Band. The mounting of this device and antenna must be done by professional installers to ensure that the user or nearby persons will maintain at least 20 cm from the antenna in normal use.

Cautions: All persons must be at least 20 cm from modem antenna when transmitter operating to meet FCC RF exposure requirements.

BEFORE THE INSTALLATION

➤ Gather Components

Please ensure you have the following items are together before beginning the installation. There should be one complete set for each vehicle being installed. If any items are missing, contact a local Agent or @Road immediately.

1. iLM Unit

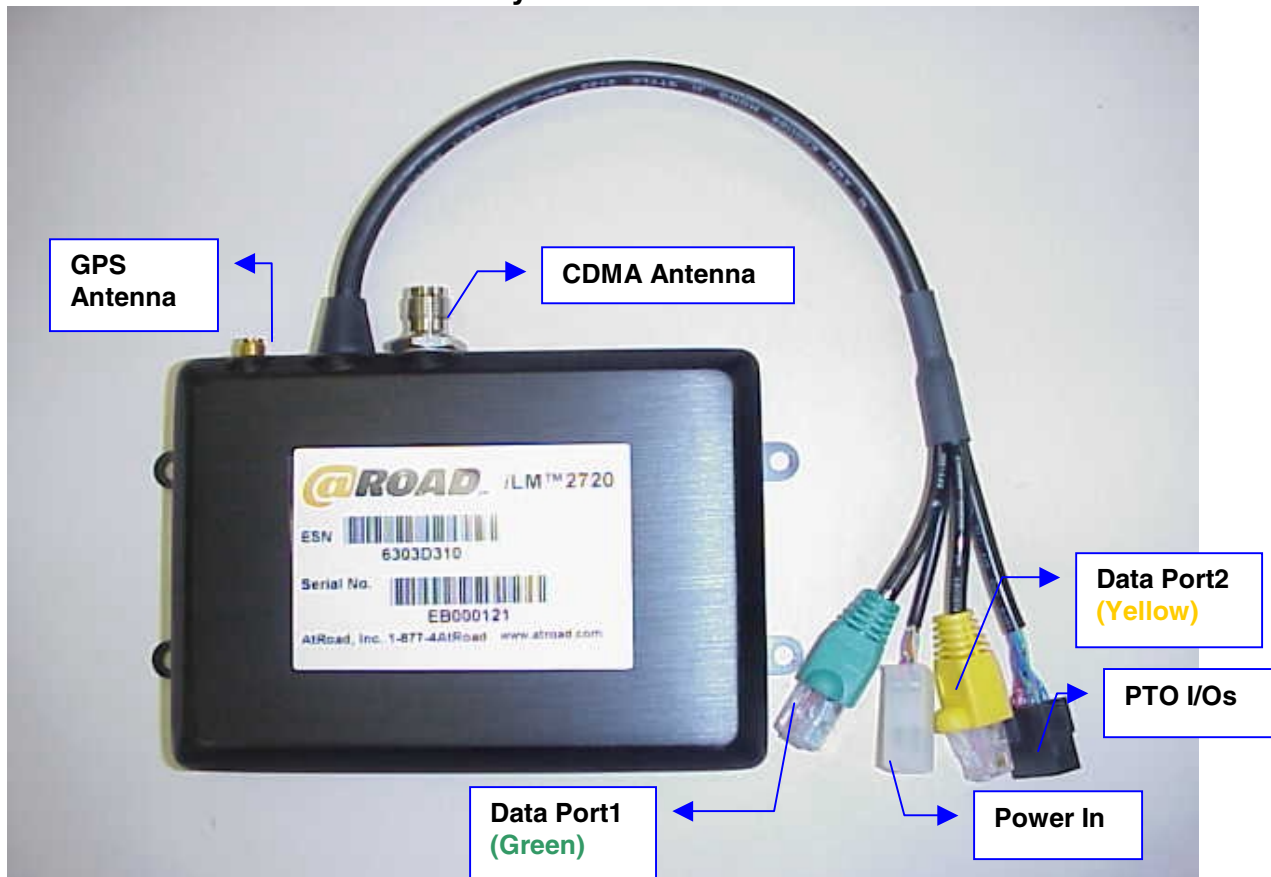
2. Power Cable
3. Installation Parts Kit
4. One of Three Antenna options,
 - Option A: separate GPS and CDMA “on glass” antenna
 - Option B: one-piece permanent roof mount antenna
 - Option C: Limo/Lip mount: one-piece trunk lip mount antenna
5. Installation Information Sheet, 3 part carbon (packaged with iLM Unit)

➤ **BEFORE YOU CONTINUE Verify/Match Unit to Correct Vehicle**

NOTE: Some iLM's are pre-matched to vehicle by number.
This must be known before beginning the installation.

- 1) Check with the customer to see if vehicles were pre-matched by name/VIN/Serial Number.
- 2) Fill out the Installation Information Sheet noting iLM ID's to Vehicles by VIN, License or Car Number. This information is required for the customer to track their vehicles.

iLM 2720 Assembly and External Interface Details



BEGINNING THE INSTALLATION

1) Choose a Location

Determine the best location to install the iLM unit. Recommendations are:

- In the trunk, where luggage and other items will not come into contact with the unit
- Behind or under the seats
- Under or behind the dashboard
- Behind the left or right kick-panels
- In the console (side or overhead)
- In the glove compartment/glove box
- Hidden from driver's view when possible, to limit driver tampering

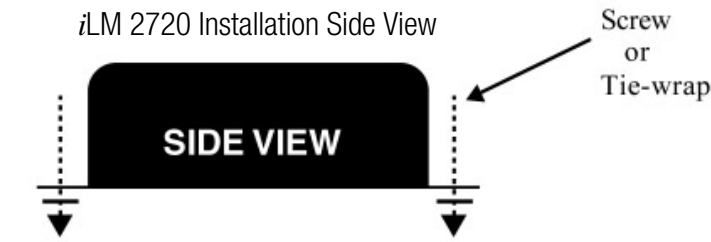
PLEASE NOTE:

Placement should:

- Avoid direct sunlight
- Provide minimal exposure to dust
- Ensure minimal exposure to moisture
- Never be installed in engine compartment
(Unit is designed to be installed inside the

2) Mount the iLM Unit

The iLM should be mounted using screws or tie-wraps



3) Hook Up Power

PLEASE NOTE: It is essential that you follow these steps exactly, as any inaccuracies may cause hardware damage and the @Road system to malfunction.

The iLM should be connected directly to a known 12V-DC power source (range of 10 to 24V-DC), either the column harness or battery of the vehicle. Although the unit has a built-in self-resetting fuse, the iLM2000's power cable must be fused protected at the power source on both the RED and WHITE power connections with the 3 amp fuses and fuse holders, included in the installation kit. Additionally, remember to place the tamper resistant sticker and a tie wrap over the cover of the fuse holder, as shown in the following picture, so that any tampering with power source wires can be easily detected.

Use a voltmeter to verify voltage and hook wires as indicated below.

Black

→ Ground

Red (fused, 3 Amps)

→

to vehicle battery, unswitched (+), this wire must see at least 10 volts at all times, if not the unit will reset continually and send inaccurate information

White (fused, 3 Amps)

→

To true ignition, 12V switched, there must be 12 volt power in the “on”, “start”, and “run” position.

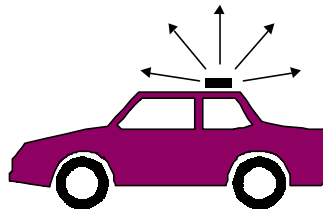
All connections at the column harness must be made by either soldering bare wire to bare wire or using the poke and wrap method. *Note: T-taps, scotch locks, and like connectors are not permitted and must not be used to tie the iLM to its power source.*

4) Position GPS Antenna for Optimum Performance

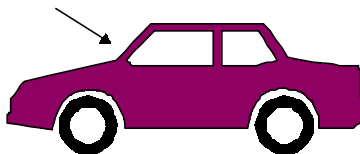
To ensure best reception, install the GPS antenna in a location that provides a clear sky view (greater than a 90 degree angle view of the sky)

SMALL VEHICLE

(A) BEST – Top of vehicle



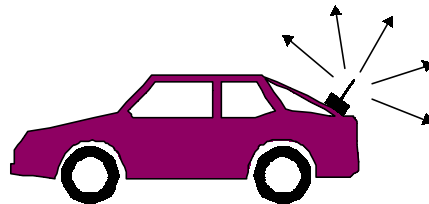
(B) Option – Dashboard of vehicle
non-metallic)



Could be on the dashboard or hidden under non-metallic dashboard. The antenna **must** face toward the sky.

(C) Option – Rear brake light compartment

(must be

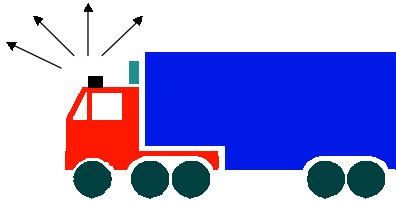


Place under the rear brake light.
Can be accessed through the trunk.

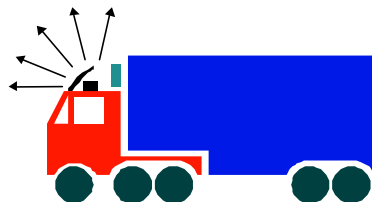
Only recommended when the rear window **has a steep slope.**

LARGE VEHICLE

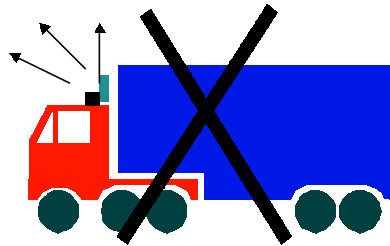
(A) **BEST** – Top of the vehicle and as close to the front as possible



(B) **OPTION** – Middle of the roof



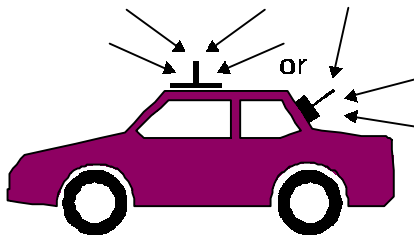
NOTE: THIS POSITION NOT RECOMMENDED (due to restricted sky view)



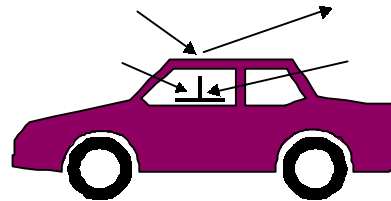
5) Connect CDMA Antenna (if separate CDMA antenna or non-combo antenna)

The CDMA antenna should be installed in an optimum location, to intercept the cellular signals, arriving at slightly above zero degrees from the horizon. Signals will typically penetrate through non-metal material such as glass, fiberglass, and aluminum. Please refer to the illustrations below.

(A) **BEST** – Top of vehicle



(B) **OPTIONAL** – Inside the vehicle



(May experience some lost signal strength)

6) Power On the iLM



STEP 1: The vehicle or equipment must be outside, with a clear and unobstructed view of the sky, **away from tall buildings that may interfere with the units GPS reception is also best.**

STEP 2: Plug in the power connector and turn the unit on.

STEP 3: Once the unit is ON, all four lights should be lit in the following order:

- **ACTIVE LIGHT**

The Active Light will start blinking within 6 seconds, indicating the unit is functioning properly. **This light should always be blinking.**

| ACTIVE LIGHT | |
|---------------------------------|---|
| If the light stays on | This indicates that the power source is insufficient. Check to make sure the power source is at least one Amp. |
| If you see a rapid flash | This indicates that the firmware could be corrupt and needs to be reprogrammed. Please contact your local dealer or @Road customer service if the problem persists. |

- **COM LIGHT** – Will be lit solid when working properly, this may take a few minutes to occur.

If the COM light is OFF, one of three things is the cause:

- (a) The antenna is not working
- (b) There is no CDMA coverage
- (c) Wireless connection has not been established

Please call your CDMA provider to register the modem and/or reset the credentials.

- **GPS LIGHT** - The GPS light will do two things within a few minutes:

(1) BLINKING – A blinking GPS light indicates that the unit is initializing. Normally, this will occur only when the unit is powered on for the first time.

| |
|--|
| IMPORTANT Please allow 15 minutes for complete initialization DO NOT MOVE the vehicle during this process |
|--|

(2) **SOLID** – A solidly lit GPS light indicates the unit is working properly.

- **DATA LIGHT** –

The Status of this light will vary as this light may light periodically when data is being transmitted between the iLM and the server. Please refer to the following chart.

| DATA LIGHT | |
|---|--|
| Light is off | This indicates there is no data in the buffer to be sent to the server, if this light is off it is o.k., it means that there is no data being stored or sent by the iLM. |
| Light is on | This indicates there is data in the buffer waiting to be transmitted to the server. The light will stay on until the data is sent (every 15 minutes automatically). |
| Light stays on for more than 15 minutes | <p>This indicates data is NOT being sent to the server, most likely because you are out of CDMA coverage. (Position data will be transmitted to the server as soon as CDMA coverage is reinstated).</p> <p>If you are certain you are within CDMA coverage, please call @Road Customer Service to verify operation, an IP reset may be required.</p> |

STEP 4 Congratulations After all the of the iLM's lights have all lit successfully as described your installation is complete, please call @Road Customer Service to test unit before leaving customer site to confirm proper functionality of the units installed at 1-877-428-7623, Monday through Friday 5 a.m. to 5 p.m. PDT and Saturdays 7 a.m. to 4 p.m. PDT.

Note: At this time apply the orange torque lock, included in the installation kit, to all of the iLM's connections to help deter unit tampering.

STEP 5: Complete the Installation Information Sheet including customer signature. Keep one copy for yourself, give one to the customer and return one copy to @Road.

Using an iDT to Test/Service an Installation

Requirements

To see the installer screen you will require an iDT2000 or iDT2720 and an iLM with firmware version 0.98 or greater. The iDT must be connected to Data1 Port. For iLM2720 a RJ45 reversed wiring coupler is required and it should be connected to GREEN RJ45 connector through the coupler. Installer should keep at least two spares of this coupler when working with iLM2720. On iLM2000 iDT must be connected to Data1 port or into the Data port on an iLM1000.

To activate the installer screen press the up arrow followed by the down arrow, and continue with this sequence until the password entry screen appears. Enter the sequence 789456,

followed by SEND. The screen will timeout back to the INBOX after 15 minutes to prevent the unit being accidentally left in this mode.

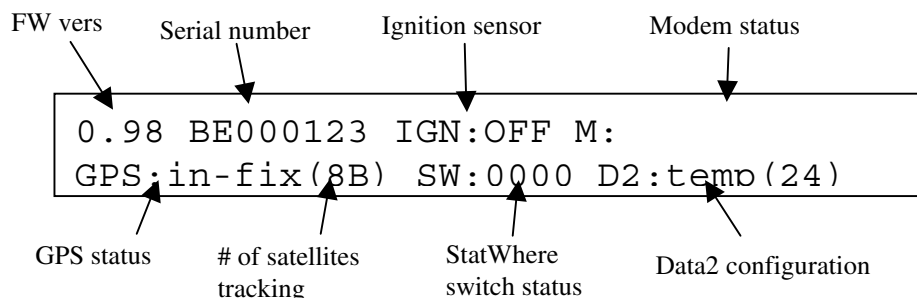
Information on the installer screen

The installer screen is designed to present the most important information in a clear, easy to follow format. If you have feedback on the presentation of the screen then please pass this back to @Road so that the screen information can be improved in future firmware releases. The information presented covers :

- Firmware version of the iLM
- ILM serial number
- Ignition sense state (ON/OFF)
- CDMA signal and registration status
- GPS status (whether making position fixes, and whether tracking satellites)
- StatWhere switch status (ON/OFF)
- Configuration of the Data2 accessory port.

Screen Layout

The screen shows information in the format shown below. If the screen appears grossly different then you have an iLM with an earlier version of firmware, in which case you should press the VIEW key to return to normal operation since none of the information on earlier iLMs is useful to customer satisfaction group or for general installation purposes.



Most of this screen is quite intuitive. However, below is a complete description of the fields and how they can help in troubleshooting an installed unit :

CDMA status values

- **Registered** : this is a normal operating mode. The modem has a good radio signal and is registered.
- **Reg-wk-sig** : The CDMA modem is registered, and the iLM will operate normally, but the radio signal strength is marginal. This is most likely due to poor CDMA coverage but could also indicate a bad/damaged CDMA antenna.
- **Good signal** : The modem is not registered. The iLM will not transmit or receive data. If the signal remains strong for several minutes, but the status does not change to "registered" then there may be a problem with the IP address. Contact @Road customer satisfaction and report the condition.

- **Weak signal** : The modem is not registered and has a weak signal. This is most likely due to being in an area of poor coverage, but may indicate a problem with the CDMA antenna or the IP address. The iLM will not transmit or receive data in this state so @Road customer satisfaction should be contacted.

GPS Status values

The GPS status comprises a description, followed by a number (0-8) and a letter A or B in brackets. The letter is for engineering diagnostics only, but should be reported to customer satisfaction when reporting trouble with a unit.

- **In-fix (7A)** : The GPS module is performing position fixes, and is tracking 7 satellites. This is the normal operating mode. (The actual number of satellites tracked may vary between 4 and 8 when in this mode, the greater the better).
- **Tracking (3B)** : The GPS module is tracking satellites, but is not performing position fixes. In a stationary vehicle the unit may take up to 60 seconds to start to make position fixes when it is tracking satellites. If, after 60 seconds, the unit is still not making position fixes then this is most likely due to not tracking enough satellites (at least 4 must be tracked). This may be due to bad placement of the GPS antenna, or may be because the vehicle is parked in an area of bad coverage (e.g. next to a tall building or under trees. However in this state it is certain that the GPS module is functioning correctly.
- **No-track (0A)** : This indicates that the GPS module is not tracking any satellites. A new unit should start to track satellites within 60 seconds of having the power applied. If not then likely problems are that the vehicle may be parked in a bad location, the GPS antenna may be badly placed, with a limited view of the sky, or the GPS antenna may not be connected fully to the iLM. It is very rare that the problem is in the iLM itself, since this is tested at the factory.

StatWhere switch status

The switch status shows 4 digits which are either 0 (switch not activated) or 1 (switch activated). By activating the switch while observing the display it is possible to confirm that the iLM is correctly sensing the state of the switches.

Data2 status

This field shows which peripheral the iLM is expecting to have connected to data2. If it is configured to be the temperature sensor then the display will also show the current temperature of the sensor in degrees Celsius. (To perform a rough conversion from Celsius to Fahrenheit multiply by 2 and add 32. E.g. 25 C is approximately 82 F).

How to Contact @Road

US Support and Service

Voice: 1-877-428-7623

Email: support@road-inc.com

Fax: 1-510-353-1442

Web site: <http://www.road.com>