KEN-GPS-M3

USER'S MANUAL

(Alarm &Tracker) (Version 1.5.13

Index

Chapter 1 Introduction

KEN-GPS-M3 is an economic waterproof GSM/GPRS/GPS motor alarm tracker kit.

It follows the simple, reliable and all built-in design concept.

It's equipped with Quad Bands GSM/GPRS module, Hi-sensitivity GPS receiver, shocking sensor and RF Receiver. The built-in GSM/GPS antennas significantly short the installation time, built-in or an extra Siren with Off/ON programmable feature will bring u more options for security purpose.

KEN-GPS-M3, support both GPS tracking and LAC/CID (GSM Network Station Code) tracking, which brings you an ideal solution with www.kentalltracking.com fix with no blind area for locating your boat objects.

It can work alone without any third party help, but also could integrate to a monitoring center base by SMS query or TCP connection query.

2. Features & Specification:

2.1 Main Features:
- SMS/GPRS Data Transmit
- Small and compact size with built-in buzzer, GSM/GPS antennas and shocking sensor
- Arm/Disarm by Remote Controller and SMS command
- Programmable for Buzzer and Shocking Sensor ON/Off configuration
- Periodically position report with self-customize time interval
- Illegal Door Open, Engine On, move alarm by SMS and missed Phone Call Alert to preset 4 registered Phone NO.s.
- GEO Fence Setup and breaking alert
- Over-speed limit and over Alert
- Remote Vehicle Engine starter enable and disable (Engine Immobilizer)
- Wireless Panic button on transmitter
- SOS Help
- Voice Listen-in
- Battery Tamper Alert
- System Access password Protection
- Dual Tracking technology: GPS and LAC/CID
- Auto Moving Alarm area activate and alert
- 1 Digital Output and 3 Digital Inputs available
- Device Sleep activate and deactivate for power consumption saving

2.2 Specifications:

- GSM Work Frequency: 850/900 /1800 /1900MHz
- GPS: Frequency: L1, 1575.42 MHz.
- Minimum signal tracked: -159dBm
- Working Temp: -20℃ ~ +75℃
- Humidity: 20~95%
- GSM/GPS antenna Type: Built-in
- Built-in Buzzer: 85dB
- Remote control: Working frequency: 315Hz/433MHz.

- Code: 1527/2240 study
- Working Voltage: 12V (27A 12V dry battery)
- Control Distance: 20-100M
- Mainframe Power supply: 9-36V DC
- Backup battery: Lithium Battery 1000mAH, 3.7V DC
- Tracking Accuracy: 5-10Meters
- Waterproof Level: IP65

3. Application Range
- Boats
- Private Cars
- Home Cars
- Tractors
- Motorcycle,
- Electric Motorbike
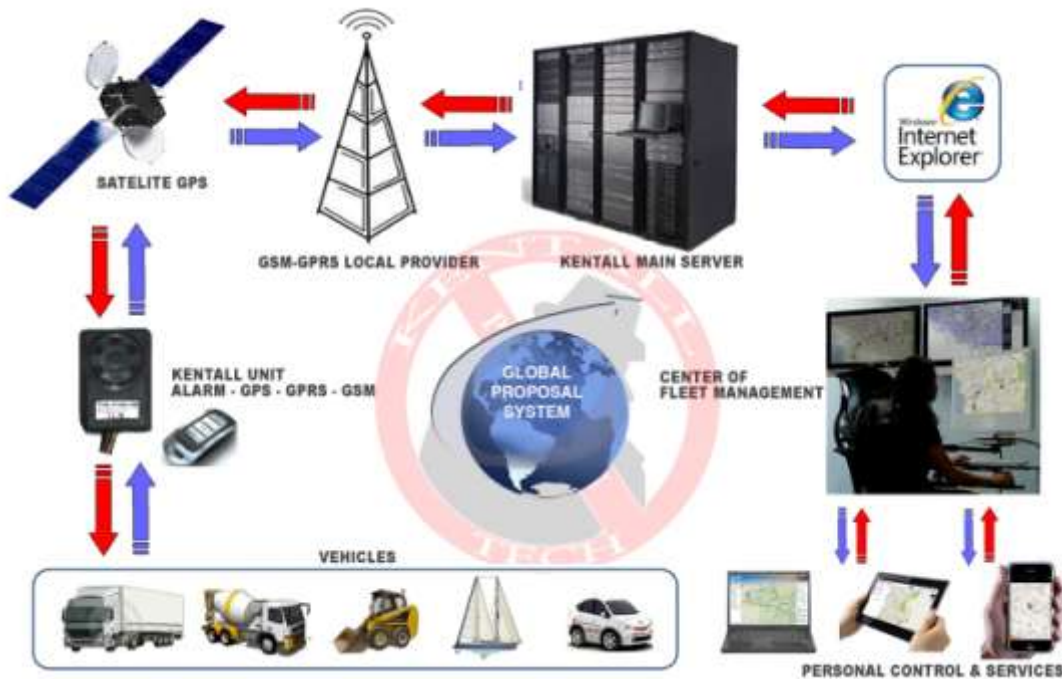
Chapter 2 Product Knowing

Need to know before Usage:

✓ Factory Default Setting:
  a. Password:1234 (User default device control password)
  b. IP/Port/APN: Empty
  c. A/B/C/G recipients are empty. A/B/C is designed for Car owner or his/her family members and friends. A/B/C No will not only receive alarm SMS alert but also missed calls alert to these numbers. G number is designed for a Control Center Service NO. This number will only receive SMS Alerts; it will not receive any phone call alert. But G NO. will have the highest authorization for all device control commands
  d. Shake Alarm: SMS Alert Off, Buzzer sound Alert ON
  e. Speed Over: off
  f. GEO Fence: Off
  g. Auto Move Alert: Off
  h. Default System Status: Disarmed

✓ At the first time of device power on, the default data transmit mode is SMS. IP/PORT/APN is empty.

✓ Internal Battery Charge: when the device is connected with outsource battery, it will begin to charge. When it's charged full, device will stop charge and power the device by outsource power supply. The internal battery only will work when the outsource power is disconnected

✓ Signal strength: GSM signal range from 0-31. 31 is the strongest value.
  The antenna installation position will affect GSM and GPS signal strength. And the car parking location will affect this either.

✓ Immobilizer: default setting is disabled. When alarm events happened, it will enable automatically.

1. How to Insert Simcard

Open Tracker Box to insert Simcard

SIM SLOT

GPS Antenna

Internal Battery Switch
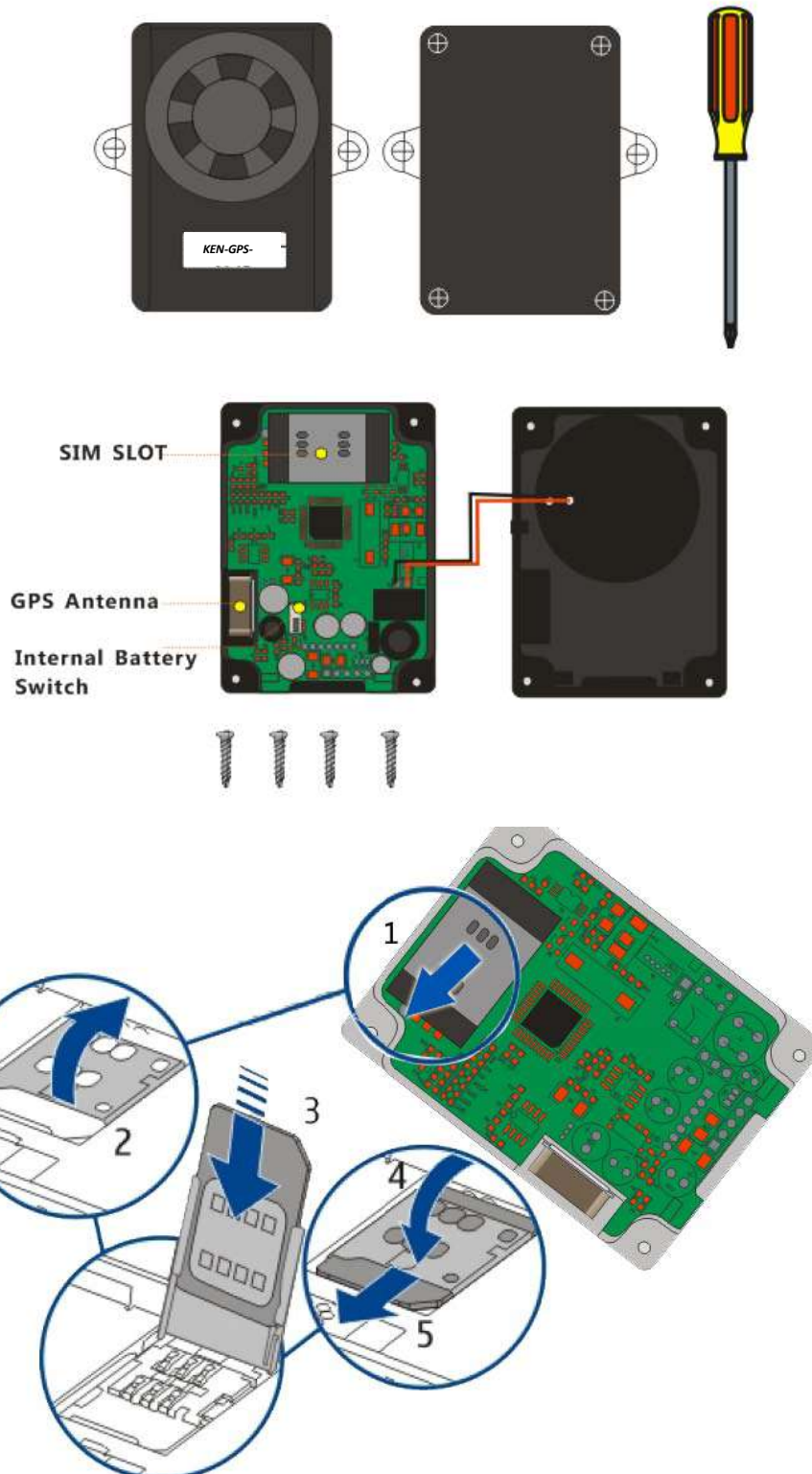
2. Power Supply

KEN-GPS-M3 works with two power supply mode: External Power supply and internal battery Device is designed to work normally by outsource power supply range from 9-36V DC. When the outsource power supply is disconnected, the device will automatically switch to power supply by internal battery and send "Battery Tamper Alert" to all A/B/C/G registered Nos.

Note:

Please make sure to switch the internal battery on after you have finished the device configuration and before you

MOUNT BRACKET
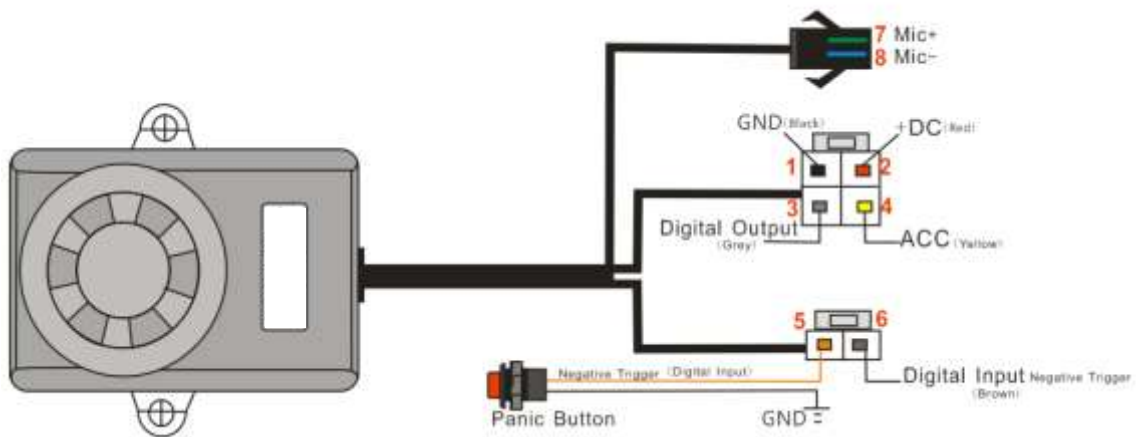
BUILD-IN BUZZER

Item	Pin No.	Wire Color	Function/Specification Description
Power	1	Black	DC Power Ground,0V
	2	Red	Power positive pole, +9-36V
Digital Output	3	Grey	Immobilizer relay control for ignition
Digital Input	4	Yellow	Ignition Check, Positive Trigger(9-36V)
	5	Orange	Negative Trigger (SOS detect)
	6	Brown	Negative Trigger (Door Open/Close Detect)
Microphone	7	Green	Mic+
	8	Blue	Mic-

Note: The unit can work only with 2 cables (Red and Black) Power supply.

![KENTALL Tech© Electronics]

Installation Position Note:

1) Because the device using built-in GSM/GPS antennas, you have to install the mainframe in the place which has no metal cover over the unit. Otherwise it will affect the device to receive GPS signal from satellite

2) GPS Antenna Position
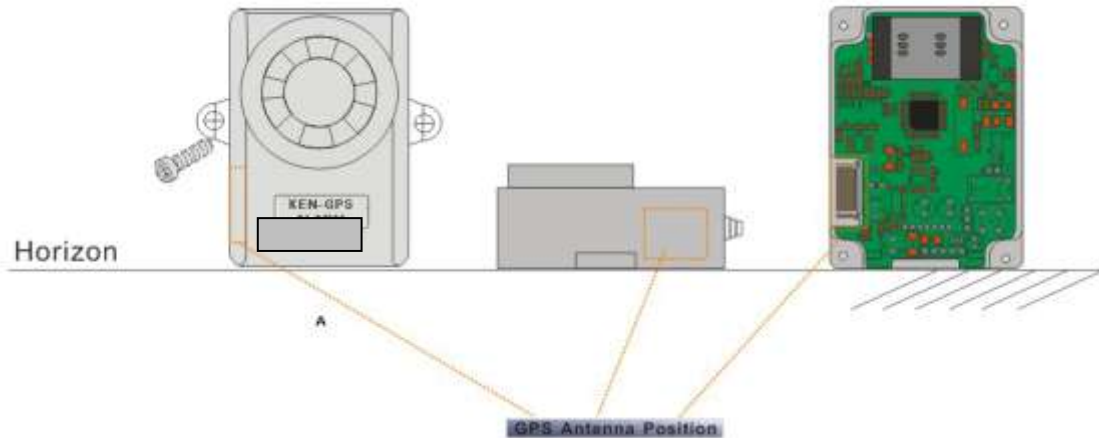
3) Due to fact that we are using mechanical type moving sensor, please refer to the following mainframe installation direction which assure the moving sensor works well.

- Horizontal : √   - Vertical : √

- Wrong place Position: ✗

3. Transmitter Usage

1. **Alarm Arm**
2. **Alarm Disarmer**
3. **Siren Mute**
4. **Siren Activator**

4.1 Transmitter Operation:

1. Arm: Buzzer sound once, Armed with Valid GPS signal.
                If Buzzer sounds three times, it armed with No valid GPS Signal.
2 Disarm: Sound Twice, Disarmed successfully.
3. Mute Key: In siren sounding, press this button to stop the sounding.
4, Activate Siren   it sound to inform any uninvited person to go away..
Note: The unit also can be armed or disarmed with simple SMS from authorized mobile phone

4.2 Code Program Transmitter to device

KEM-GPS3 maximum allow programming 3 Transmitter to control the device.

The program method is as follows:
    1- Power on device and in standby mode
    2- Press once the SOS button
    3- Switch ACC from Off to ON position for 7 times, and the final time is on ACC ON position.
        The ACC Off to ON switching time length is about 1-2 second.
    4- Siren will sound once and get into code learning mode
    5- Press any button of the transmitter, the siren will sound once and it means transmitter code program successfully.
    6- If failed, try again the above process.

4. Alarm Alerts
5.1 The KEN-GPS-M3 has following Alarm alert function:
    - Shake Alert
    - Illegal engine on alert
    - Illegal Door opens Alert
    - SOS help alert
    - Battery Tamper Alert
    - GEO fencing breaks alert
    - Speed over alert
    - Moving Alert

5.2 Alarm alert Notification Method:

1- SMS alert with reason description
2- Missed Calls to registered Phone No.s.
3- Spot siren sounding

5.3 Alarm Alert system:

Alarm Event	Receipient A	Receipient B	Receipient C	Control Center G	Siren Sound	GPRS Report
Shake Alarm	SMS Once			SMS once	Yes	yes
Door Open Alarm	SMS Once&Call Once	SMS Once&Call Once	SMS Once&Call Once	SMS once	Yes	yes
Power Failure Alarm	SMS Once&Call Once	SMS Once&Call Once	SMS Once&Call Once	SMS once	No	yes
Engine On Alarm	SMS Once&Call Once	SMS Once&Call Once	SMS Once&Call Once	SMS once	Yes	yes
SOS Alarm	SMS Once&Call Once	SMS Once&Call Once	SMS Once&Call Once	SMS once	No	yes
GEO Fence Alarm	SMS once	N/A	N/A	SMS once	No	yes
Speed Over Alarm	SMS once	N/A	N/A	SMS once	No	yes
Moving Alarm	SMS Once	N/A	N/A	SMS once	No	yes

Chapter 3 User's Operation

1. Device Setup

1.1 Setup and Query Monitoring Phone No.s

When you are the first time to use this product, you need to register your cell phone No. as the alarm alert No.

If you have setup the control center for service, you also need to setup the G No. .

Setup SMS command:

Setup A/B/C/G Recipients No, Change device UPWD, Query recipients list.

UPWD = UserPassWorD = 1234 factory default User password

Function	SMS Command Format	Device Reply SMS
Setup Recipient A and B and C	*UPWD*Axxxxxx*Bxxxxx*Cxxxxx#	Unarmed/Armed;A:xxxxxB:xxxxxC:xxxxx
Setup Recipient G	*UPWD*Gxxxx#	Armed/Unarmed;G:xxxx
Modify Password	*Old UPWD*Exxxx#	UPWD Has been Changed
Inquiry All Recipient No.	*UPWD*YY#	Armed/Unarmed; A:xxxx B:xxxxC:xxxxG:xxxx

1.2 Setup and Query Device ID

The Device ID is the unique identification code for the AVL Server database. So it's very important to setup this code in both device and register this code in the AVL Server database.

Function	SMS Command Format	Device Reply SMS
Device ID Setup	*UPWD*ID:xxxxxxxxxx#	ID: xxxxxxxxxx
Query Device ID	*UPWD*ID#	ID:13400010001

Note: Xxxxx stands for the device ID code. The device ID only could be number string. Cannot be combination with special icon or letters of an alphabet;

If you are using this device to work alone without tracking server, then you can leave this setup without setting.

1.2 Setup TCP/IP parameters

Function	SMS Command Format	Device Reply SMS
Setup IP/Port	*UPWD* IP:211.154.142.150*9070#	IP:211.154.142.150#9070
Setup APN	*1234* APN:CMNET*username*password#	APN: CMNET**
Query Parameter	*UPWD*QP#	IP:211.154.142.155;Port:9001;Device ID:13400010001; APN:CMNET;Username:China;Password:123456

APN with user name and password setup example:
Setup command: *1234*APN:internet.movistar.com.co*movistar*movistar#
Device reply: APN:internet.movistar.com.co*movistar*movistar

Note:
- Only after APN, IP and Port NO. are setup, then the device will begin to dial for GPRS service
- If you don't need device to work in GPRS, please delete all IP ,port and APN
- Delete Command: IP/Port: ***UPWD*IP:*#**   APN: ***UPWD*APN:**#**

1.4 Setup Device Shocking Sensor sensitivity
User can use SMS command to adjust the shocking sensor sensitivity according to individuals' favorites.

Function	SMS Command Format	Device Reply SMS
Adjust Shocking Sensitivity	*UPWD*VS*xxxx#	Vibration Sensitivity xxxx

Note:
- XXXX ranges from 0001^9999, the value is bigger, the sensitivity is less.
- Recommend Value:
    xxxx=0001, means very sensitive
    xxxx=5000, Medium level
    xxxx=9999, very hard to activate

1.5 Activate/Deactivate Power saving mode:
KEN-GPS-M3 has an intelligent power saving design included which considers boat or vehicle has small battery capacity. And to protect the alarm tracker will use out the battery of during their non-use period.
 In normal working status, the tracker power consumption is normally 70mA.
In Standby Mode, power consumption is about 50mA.
In power saving mode, power consumption could be less than 20mA.
You can use SMS command to setup activate or deactivate power saving.

Function	SMS Command Format	Device Reply SMS
Activate Power Saving	*UPWD*SL*O#	Sleep Open

After you activate the power saving, if the device detected continuous 5secnods with no movements, device will get into sleep mode.

In sleep mode, device behaviors:
- GPRS disconnected with Server
- GPS receiver turns Off
- GSM module get into power saving mode, can receive SMS and call
- SMS and Call will wake up sleep mode immediately

Function	SMS Command Format	Device Reply SMS
Deactivate Power Saving	*UPWD*SL*C#	Sleep Close

After device receives this command, the device will not go to sleep any more. It keeps working as standby mode.

1.6   Query Device IMEI NO. By SMS

Function	SMS Command Format	Device Reply SMS
Query Device IMEI No.	*UPWD*IMEI#	IMEI:XXXXXXX

1.7   Setup/Query Device Time Zone:

Function	SMS Command Format	Device Reply SMS
Setup Time Zone	*UPWD*GMT+/-xxxx#	GMT+/-xxxx Setup OK!
Query Time Zone	*UPWD*GMT#	GMT+/-xxxx Setup OK!

Example:
- Setup Eastern 8 zone time: Command: *1234*GMT+0800# Device Reply: GMT+0800 Setup OK!
- Setup Western 8 zone time:
  Command: *1234*GMT-0800# Device Reply: GMT-0800 Setup OK!

1.8   Activate/Deactivate auto position data report to server with time interval (GPRS)

Function	SMS Command Format	Device Reply SMS
Activate Data Report	*UPWD* ITVxxxx#	ITV Enabled:0010
SMS Disarm	*UPWD*ITVOFF#	ITV Disabled

Note: -

UPWD ITVxxxx#   UPWD= *user's password* **xxxx=** *standards time interval. The unit is Second(s) .*
This time interval can be set by user's favorite
- ITV Disabled:
  If this was disabled, the device will not send any automatic position data to server, exclude server query the device. This function is only be suitable for GPRS function. SMS mode is not applied.

1.9   Recover device to be factory default setting:

Function	SMS Command Format	Device Reply SMS
Reset Device	*UPWD*V#	Factory Setting Recovered

Warning: Please take careful to use this command. After device receive this command, all your setup parameter will reset to factory default setting. And you need to do the parameters setup again.

2. Arm/Disarm

KEN-GPS-M3 work in two modes: Armed/Disarmed. When the system is in armed status, the device is in security monitoring mode, any illegal operation will trigger the alarm. When system is in disarmed status, all operation will treat as legal operation and no alarm will trigger for alert. The user can arm/disarm the system by two ways:

1) Remote Transmitters
Detail operation please refer to transmitter operation

2) SMS commands

3. Tracking by Cell Phone

3.1 Track by Google Map Web-link

The user could use cell phone do SMS tracking. The device will response GPS location query and reply once to the queried phone NO.

Function	SMS Command Format	Device Reply SMS
Web_link	*UPWD*P#	http://maps.google.com/maps?hl=en&q=22.537222+N, 114.020948+E
GPRMC Data	*UPWD*GPS#	$GPRMC,063231.00,A,2232.64712,N, 11355.45466,E,0.581,195.93,050811,,,A*6C
Degree Data	*UPWD*GPSD#	Time:03-08-2011,14:30:20, Speed:60km/h, 22.537222N,114.020948E

Error Reply: "Network Error": due to the device is connected with Server by GPRS, so device cannot get location internet from server.

Note: This function is only available when the device is connected with Sever by GPRS.

4. Vehicle Status Query

KEN-GPS-M3 could help user to get part of the vehicle working status and device status by detecting input/outputs ports. And you can query the data by SMS command for the application purpose. Status Available:

1. Device working mode: Armed/Disarmed
2. ACC Status: ON/Off
3. Door: On/Off
4. GSM signal strength: xx value
5. GSM Network base station code: CID/LAC
6. GPS Co-ordinates with standard GPRMC format

Function	SMS Command Format	Device Reply SMS
Status Inquiry(Immobilizer Disabled)	*UPWD*X#	UnArmed;Engine:off/on;Door:off/on;LAC:xxxxxx;CID:xxxxx;Signal Strength:xx $GPRMC,xxxxxx.xxx,A,xxxx.xxxx,N,xxxxx.xxxx,E,x.x,xxx.x, xxxxxx,,,A*xx
Status Inquiry(Immobilizer Enabled)		Long Distance Off; Engine:off/on; Door:off/on;LAC:xxxxxx;CID:xxxxx;Signal Strength:xx $GPRMC,xxxxxx.xxx,A,xxxx.xxxx,N,xxxxx.xxxx,E,x.x,xxx.x, xxxxxx,,,A*xx

Note:

- In order to make user get aware the immobilizer status, so the device will give different reply for status query in different immobilizer status.
- And this is only suitable for SMS query reply.

5. Immobilizer Enable/Disable

The user use SMS command to remote stop car engine and disable the engine lock. Please see the command as follows:

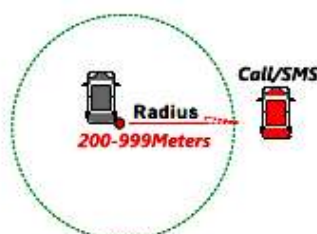| Function	SMS Command Format	Device Reply SMS
Enable Immobilizer	*UPWD*STOP#	Immobilizer enabled; $GPRMC,xxxxxx.xxx,A,xxxx.xxxx,N,xxxxx.xxxx,E,x.x,xxx.x, xxxxxx,,,A*xx
Disable Immobilizer	*UPWD*K#	Immobilizer disabled; $GPRMC,xxxxxx.xxx,A,xxxx.xxxx,N,xxxxx.xxxx,E,x.x,xxx.x, xxxxxx,,,A*xx

Note:

If the immobilizer function has been enabled already, and the user keep sending the same command, the device will reply user by SMS as:

*Long distance Off; $GPRMC,xxxxxx.xxx,A,xxxx.xxxx,N,xxxxx.xxxx,E,x.x,xxx.x, xxxxxx,,,A*xx*

6. Setup Moving Alert Range

The KEN-GPS-M3 has the auto fencing parking area function.

After the car is parked and ACC Off, the device will auto setup a circle as fencing area. In armed status, if the mobile objects moves out the area, device will send moving alert to registered Monitoring cell phone NO. by SMS or Missed calls.

Function	SMS Command Format	Device Reply SMS
Setup	*UPWD*MOVExxx#	MOVE xxx alert on!
Move Alert		Move Alert: http://maps.google.com/maps?hl=en&q=22.537222,114.020948

Example:
*1234*MOVE200#
1234: device UPWD
200: circle Radius
XXX=000, means move alert cancel.
As long as this radius is setup, it will be permanent working until you change the radius or cancel move alert function.

Note:

1. This function's working conditions:
a. When in Arm, device has to be with valid GPS signal. (Please refer to remote controller usage for indication of GPS signal issue by buzzer sound times)
b. Every time, you have to arm the system. In disarmed mode, even device move out the restricted area, it will not make moving alert.
2. This function may have false alarm.

7. Switch ON/Off Siren

User could use SMS command to switch ON/Off the siren. If Siren on, when alarm triggered, the siren will keep sounding If Siren Off, when alarm triggered, the siren will not sound

Function	SMS Command Format	Device Reply SMS
Switch On Siren	*UPWD*SIRENON#	SIRENON OK
Switch Off Siren	*UPWD*SIRENOFF#	SIRENOFF OK

8. Battery tamper alert

In armed working mode, if the external power source was disconnected, the device will send "battery tamper alert" to A/B/C/G Nos. And A/B/C no. will receive phone call alert too.

Function	SMS Command Format	Device Reply SMS
Power Failure Alert		Circuit Cut-off Alert: http://maps.google.com/maps?hl=en&q=22.537222,114.020948

9. SOS Help Alert

If the car is in hijack or need any urgent help, they can press the SOS button, the device will send alert to B/C/G Nos. Please see the SOS help as follows:

Function	SMS Command Format	Device Reply SMS
Hijack Alert		Highjack Alert: http://maps.google.com/maps?hl=en&q=22.537222,114.020948

10. Illegal Engine On alert

The illegal Engine on alert will happen in following two situation:

1) In armed status, if someone try to turn the ACC On, device will send "Engine On" alert to A/B/C/G No.s.

2) In car driving, if the immobilizer was enabled, and if someone try to start the engine again, every trying will trigger once " engine On' alert.

Please see the engine on alert as follows:

Function	SMS Command Format	Device Reply SMS
Engine On Alert		Engine On Alert: http://maps.google.com/maps?hl=en&q=22.537222,114.020948

11. Door Open Alert

In armed status, if someone open the door, device will door open alert to A/B/C/G No.s

Please see the alert as follows:

Function	SMS Command Format	Device Reply SMS
Door Open Alert		Door Open Alert; : http://maps.google.com/maps?hl=en&q=22.537222,114.020948

12. Shake Alert

KEN-GPS-M3 is equipped with a shocking sensor. When device is working in armed status, and if someone shocks the car, it will trigger the shocking sensor and device will send SMS alert to A/B/C Nos. The shocking sensor is with adjustable sensitivity. The user can adjust it to be ideal stage. Normally the shocking alert could have false alarm in some special circumstance, like in thundering weather, heavy truck passed by. nSee the command and alert as follows:

Function	SMS Command Format	Device Reply SMS
Shake alert		Shake Alert: http://maps.google.com/maps?hl=en&q=22.537222,114.020948
Switch On Shake alert	*UPWD*H#	Shake alert On
Switch Off Shake Alert	*UPWD*N#	Shake Alert Off

13. Speed Over Alert:

KEN-GPS-M3 allow user to configure a speed limit value. If the motor exceed the specified speed limit, the device will make alerts by SMS or Buzzer

Function	SMS Command Format	Device Reply SMS
Speed Limit setup	*UPWD*OSxxx#	xxxKm/H
Query Speed Limit value	*UPWD*OS#	xxxKm/H
Speed Over alert		Overspeed Alert:http://maps.google.com/maps?hl=en&q=22.537222,114.020948

Note: When the motor is in speed over status, the buzzer will keep sounding "bi..bi…bi". (This function is only available for customization. Not included in standard version)

14. Voice Listen-in

KEN-GPS-M3 supports users to do voice listen-in with the high sensitivity microphone. The user can use this function by two methods:

- Use registered A/B/C Phone NO. to listen-in:

Pre-registered A/B/C Phone No. can call the device SIMCARD No. directly, and the device will automatically pickup and get into voice listen-in mode.

- Send voice listen-in command from AVL server and let the device to call back defined telephone No.

- Send voice listen-in command from AVL server and let the device to call back your defined telephone No.

Function	SMS Command Format	Device Reply SMS
Voice Listen-in	*UPWD*VMxxxxxxxx#	No SMS reply. Device will call the referred Phone NO.

Note:

XXXXXXX stands the Phone no. which the user want device to call. The user will receive a incoming call from device, and he/she can pickup, so it will automatically lead into voice listen-in mode.

Chapter 4 Device and HQ Air Traffic Protocol

Please refer to KEN-GPS-M3 Air Traffic Protocol Document (Sever Part) This is only provided to system integrator or distributors.

15. Device Remote Reboot:

Function	SMS Command Format	Device Reply SMS
Remote Reboot	*UPWD*Z#	Reset OK

Note: By this command, user can reboot the device remotely. And the parameters setup by user will not be erased.

16. ACC Off Automatic Data Report Activate/Deactivate

In ACC Off, KEN-GPS-M3 provides the user with options to have automatic position data report or not. Device default setting is deactivated.

Function	SMS Command Format	Device Reply SMS
Activate ACC Off ITV Data	*UPWD*AVON#	AVON
Deactivate ACC Off ITV Data	*UPWD*AVOFF#	AVOFF

17. SMS GEO fence setup

If the device only works in SMS mode, the user can use SMS to setup the GEO Fence area for the fencing function.

Function	SMS Command Format	Device Reply SMS
GEO Setup	*UPWD*GEODD.DDDD(N/S),DDD.DDDD(E/W);DD.DDDD(N/S),DDD.DDDD(E/W)#	Geofence OK
Cancel GEO Detection	*UPDWD*GEO00.0000N,000.0000E;00.0000N,000.0000E#	Geofence OK
GEO Alert		GEO Fence Alert; http://maps.google.com/maps?hl=en&q=22.537222,114.020948

Note:

- This function is only suitable for those don't need GPRS function. And they want the device to work in SMS only.

- The coordinates in this setup command need use all data as Degrees. Which means users need to express the coordinates with Degrees Format?