# MEITRACK® Vehicle GPS Tracker



# User Guide

# MVT600

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## 1. Copyright and Disclaimer

## 2. Applications

❍ Vehicle Real Time Tracking

❍ Car Security/Anti-Hijack

❍ Fleet Management

## 3. Product Function and Specifications

### 3.1 Product Function

❍ U-blox 6 GPS and Quad Band GSM 850/900/1800/1900Mhz

❍ AGPS ( with GSM Base Station ID)

❍ Track by SMS/GPRS (MEITRACK Protocol)

❍ Track on Demand

❍ Track by Time Interval

❍ Track by Distance Interval

❍ Track on Mobile Phone

❍ Listen-in or Two-way Audio (Optional)

❍ Internal Flash Memory (8M)

❍ Inbuilt Accelerating Sensor

❍ Inbuilt Motion Sensor

❍ Internal Backup Battery

❍ SOS Alarm

❍ Geo-fence Alarm

❑ GPS Blind Area Alarm

❑ Low Battery Alarm

❑ Speeding Alarm

❑ Over-the-Air Technology(OTA)

❑ GPS Antenna Cut Alarm

❑ External Power Cut Alarm

❑ Mileage Report

❑ Engine Cut (Engine immobilization)

❑ Inbuilt Super Magnet (optional)

❑ LED- Display(optional)

❑ Camera (optional)

❑ A52 Digital Temperature Sensor (optional)

❑ A53 Resistive voltage-output mode fuel sensor (optional)

❑ 3 digital input

❑ 3 output

❑ 1 Input for Analog Detection

❑ 1 Analog Input for Fuel Detection

❑ 1 Input for Digital Temperature Sensor (Optional)


## 3.2 Specifications

| Items | Specifications |
|---|---|
| Dimension | 103*98*32mm |
| Weight | 220g |
| Input Voltage | DC 11V~36V/1.5A |
| Back-up Battery | 850mAh/3.7V |
| Power consumption | 65mA standby current |
| Operating Temperature | -20℃~55℃ |
| Humidity | 5%~95% |
| Work Time | 36 hours in power-saving mode and 8 hours in normal mode |
| LED | 2 LED lights to show GPS, GSM and other status |
| Button | 1 SOS and 1 power on/off |
| Microphone | Optional |
| Memory | 8M Byte |
| Sensor | Vibration sensor (for vibration wakeup )& acceleration sensor(auxiliary judgment of move and standstill) |
| GSM Frequency | GSM 850/900/1800/1900MHz |
| GPS Chip | Latest GPS U-blox chipset, 50 channels all-in-view tracking |
| GPS Sensitivity | -161dB |

| Positioning Accuracy | 10 meters |
|---|---|
| I/O | 3 Digital Input ( 1 positive triggering and 2 negative triggering) |
| | 1 Analog Input Detection |
| | 1 Analog Input for Fuel Detection |
| | 1 Input for Digital Temperature Sensor |
| | 3 Output |
| | 4 RS232 Interface |

## 4. MVT600 and Accessories

| MVT600 with Battery | GPS Antenna | GSM Antenna | I/O Cable + SOS Button | USB Data Cable | CD |
|---|---|---|---|---|---|

**Optional Accessories**

Camera          Handset    RFID        A21    LCD    Player(dialing,    A53 Fuel Sensor

                Phone      Reader      calling, show SMS)

A52 Digital Temperature Sensor +A61          LED-Display

sensor box

## 5. View



GPS LED    Mic./Speaker    SIM    GSM LED

GPS Antenna    USB Port    Micro SD    On/Off    GSM Antenna



Power, I/O    Handset    Camera    Camera    RS232    RFID Reader

## 6. First Use

### 6.1 Install SIM Card

Check that the SIM has not run out of credit (test the SIM in a phone to make sure it can send and receive SMS);

Check that the SIM Lock code is turned off;

If you require the function of sending an SMS location report to the authorized phone number when it makes a call to the MVT600, please make sure the SIM installed supports displaying caller ID.

Before installing the SIM card, turn off the power for MVT600.

Unscrew and remove cover.

Insert the SIM card by sliding it into the card holder with the chip module facing to the connectors on PCB.

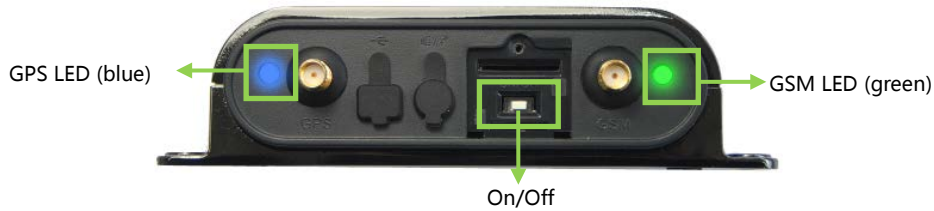Replace the cover and screw it in.

### 6.2 Charging

Please connect GND (-Black) and Power (+Red) wires to 12V or 24 external power and make sure to charge the battery for at least 3 hours. 8 hours is highly appreciated.

Configuration and testing suggested be prior to installation.

## 6.3 LED Indications



GPS LED (blue)

GSM LED (green)

On/Off

Press and hold the Power On/Off button for 3~5 seconds or connect external power supply 11-36V to turn on/off MVT600.

| GPS LED (Blue) | |
|---|---|
| On | One button is pressed or input is active. |
| Flashing ( every 0.1 second) | Initializing or back-up battery power is low |
| Flashing (0.1 second on and 2.9 seconds off) | MVT600 has a GPS fix |
| Flashing (1 second on and 2 seconds off) | MVT600 has no GPS fix |
| GSM LED (Green) | |
| On | A call is coming in / a call is being made |
| Flashing ( every 0.1 second) | Initializing |
| Flashing (0.1 second on and 2.9 seconds off) | MVT600 is connected to the GSM network |
| Flashing (1 second on and 2 seconds off) | MVT600 is not connected to the GSM network |

## 6.4 Track by Calling

Make a call to MVT600 and it will report with one SMS.

For example,

Now,110727 02:48,V,16,23Km/h,61%,http://maps.google.com/maps?f=q&hl=en&q=22.540103,114.082329 &ie=UTF8&z=16&iwloc=addr&om=1



Click on the link then the location can be shown directly on Google Maps on your mobile phone.

Report description:

Now,110727 02:48,V,16,23Km/h,61%,http://maps.google.com/maps?f=q&hl=en&q=22.540103,114.082329 &ie=UTF8&z=16&iwloc=addr&om=1

| Content | Description | Note |
|---|---|---|
| Now | Current Location | Alarm Type |
| 110721 16:40 | Date & Time: 21 July, 2011, 16:40pm | Date & Time in YYMMDD HH:MM |
| V | No GPS fixed | GPS Status Indicator: A = valid, V = invalid |
| 10 | GSM signal=10 | GSM Signal. Decimal Digit (0~31) |
| 0Km/h | Speed=0 | KM/h. Decimal digit |
| 97% | Battery Power: 97% | Battery Power Balance (Percentage) |
| http://maps.google.com/maps?f=q&hl=en&q=22.540103,114.082329▯&ie=UTF8&z=16&iwloc=addr&om=1 | Latitude: 22.513015 Longitude: 114.057235 | Google Maps Web Link with Latitude and Longitude. Click on the link to get the location. |

If your mobile cannot visit HTTP websites, input the latitude and longitude into Google Maps as the following picture shows to get the position:
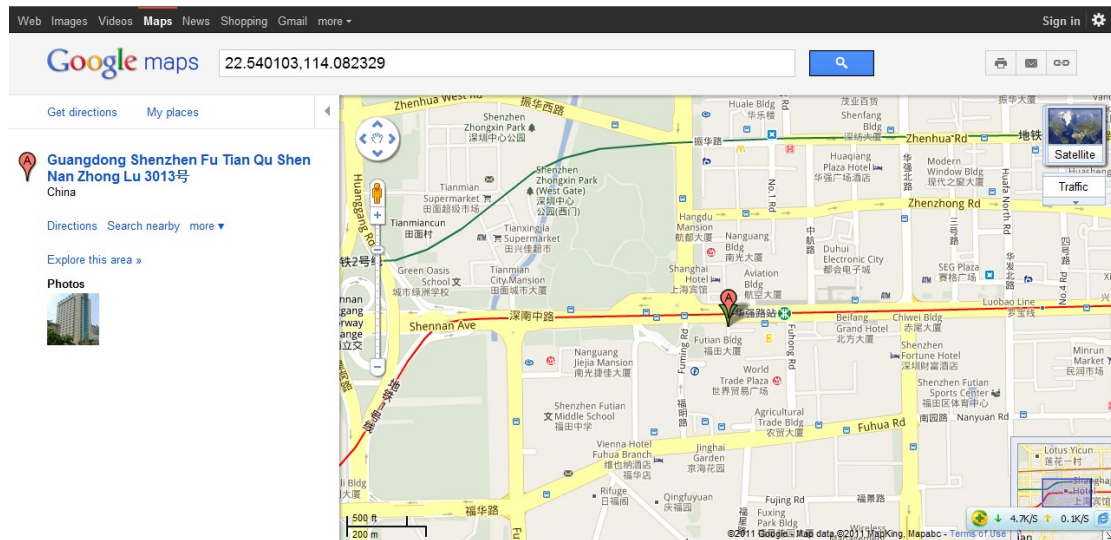


**More SMS commands**

You can configure T1 by mobile phone or by computer using the Meitrack Manager.

For more details, please refer to part 6.5 **Configure by Computer**.

*Note:*

1. *Password is 4 digits only and defaulted as 0000. You can change the password by using the Meitrack Manager and SMS command.*

2. *MVT 600 will only accept commands and send SMS report from a user with the correct password.*
   *If preauthorized phone number was set, only this phone number can receive the preset event SMS reports.*

### 6.4.1 Multiple Phone numbers– A71

**Command:** 0000, A71, phone number 1, phone number 2, phone number 3

**SMS Get:** IMEI, A71, OK

**Note：**

Authorize a phone number for SOS alarm, calling for location report, geo-fence alarm, and low battery alarm.

Phone Number: Max 16 characters.

If no preset phone number, it is empty (default is empty).

Send command "0000, A71" to delete all phone numbers.

When the SOS button is pressed, MVT600 will make a call to phone number 1, 2 and 3. It will stop calling when one number answers.

**Example:** 0000,A71,13811111111,13822222222,13833333333

**SMS Get:** 353358017784062,A71,OK

### 6.4.2 Listening-in (Voice Monitoring)–A72

**Command:** 0000, A72, phone number 1, phone number 2

**SMS Get:** IMEI, A72, OK

**Note:**

Authorize a phone number to make a silent call to the tracker. The tracker will answer the call automatically and allows the caller to listen to what is happening around the tracker. There is no sound when the tracker is working.

Phone Number: 2 monitoring numbers at the most can be set, 16 characters per number.

If no preset phone number, it is empty (default).

If no phone number, but has ",", the number related to this "," is deleted.

Send command "0000, A72" to delete all phone numbers.

**Example:** 0000,A72,13844444444,13855555555

**SMS Get:** 353358017784062,A72,OK

### 6.4.3 Sleep Mode – A73

**Command:** 0000,A73,X

**SMS Get:** IMEI,A73,OK

**Note:**

This setting is for power saving.

X=0, turn off sleep mode (default)

X=1, normal sleep. GSM module work, the GPS will intermittent sleep. The device can work 25% longer than no sleep mode. Note: this is not recommended for users who set "track by interval" or short time interval, because it will affect the completeness of tracking.

X=2, deep sleep, the tracker will enter this mode after it is inactive or stationary(No SOS/any triggered by the button/input/incoming calls/message/movement) for 5 minutes. GPS module stops working and GSM module enters sleep mode. The tracker remains in this mode until it is activated by SOS/any triggered by the button/input/incoming calls/message/movement. After that, it will repeat above processes.

Note: In any condition, the device will directly quit the sleep mode and back to normal working mode by SMS or GPRS command to turn off the sleep mode.

**Example:** 0000,A73,2

**SMS Get:** 353358017784062,A73,OK

### 6.4.4 Geo-fence Alarm – B05

**Command:** B05,P,latitude,longitude,radius,in,out

**SMS Get:** IMEI,B05,OK

**Note:**

P: 1 to 8. Max 8 Geo-fence waypoints can be set.

Latitude: Latitude in decimal degrees of the waypoint center.

Longitude: Longitude in decimal degrees of the waypoint center.

Radius: [1, 4294967295] in meters.

In = 0, turn off the alarm when the tracker enters the waypoint;

In = 1, turn on the alarm when the tracker enters the waypoint.

Out = 0, turn off the alarm when the tracker exits the waypoint;

Out = 1, turn on the alarm when the tracker exits the waypoint.

**Example:** 0000,B05,1,22.91319,114.07988,1000,0,1

**SMS Get:** 353358017784062,B05,OK

*Once the tracker goes outside of the circle (center: 22.91319,114.07988 and radius 1000 meters), the following message will be received.*

*353358017784062,ExitGEO,22.918186,114.089823,080229123816,A,10,22,16,32,1,21,6667,850,,0000*

### 6.4.5 Set Anti-theft – B21

**Command:** 0000,B21,Status

**SMS Get:** IMEI,B21,OK

**Note:**

Status=1, turn on Anti-theft (default); the device alarms when input 2 (negative input) and input 3 (positive input) are active;

Status=0, turn off Anti-theft; the device doesn't alarm when input 2 (negative input) and input 3 (positive input) are active.

### 6.4.6 Time Zone– B35

**Command:** 0000,B35,T

**SMS Get:** IMEI,B35,OK

**Note:**

Default time of the tracker is GMT. You can use this command to change the time on your tracker to your local time. This command is for SMS tracking only.

Time zone of SMS report is separated with that of GPRS data. If you need to set time zone in GPRS data, please use SMS command: 0000, B36, T

T=0, to turn off this function.

T=[-32768,32767] to set time difference in minutes to GMT.

For those ahead of GMT, just input the time difference in minutes directly. For example, GMT+8, W000000,032,480

'-'is required for those behind GMT. For example, W000000,032,-120.

**Example:** 0000,B35,480

**SMS Get:** 353358017784062,B35,OK


*For more details regarding SMS commands, please refer to MEITRACK SMS Protocol.*


## 6.5 Configure by Computer

This part mainly shows you how to use the **Meitrack Manager.**

**Note: Don't connect T1 to external battery when configuring.**


Please refer to the **Meitrack Manager Software** for more information regarding configuration and functions. Before using the Meitrack Manager, please first install USB driver and Meitrack Manager Software. For more information , please read **Meitrack Manager User Guide.**

Run 'PL2303_Prolific_DriverInstaller' to install the driver for the USB data cable of MVT600.



Check if the USB driver is installed: Open **Device Manager** (right-click "My Computer" –"Manage" –"Computer Management"- "Device Manager " ) Click "Port(COM and LPT)", and find "Prolific USB-to-Serial Comm Port" as below. If 'Prolific USB-to-Serial Comm Port' cannot be found, you need to re-install the USB driver (for detailed installation instructions, please refer to *Meitrack Manager User Guide*)

*Note: Remember this Com number. It needs to be input into the Meitrack Manager. It is COM3 in this example and it would be COM4 or COM5... in your computer.*
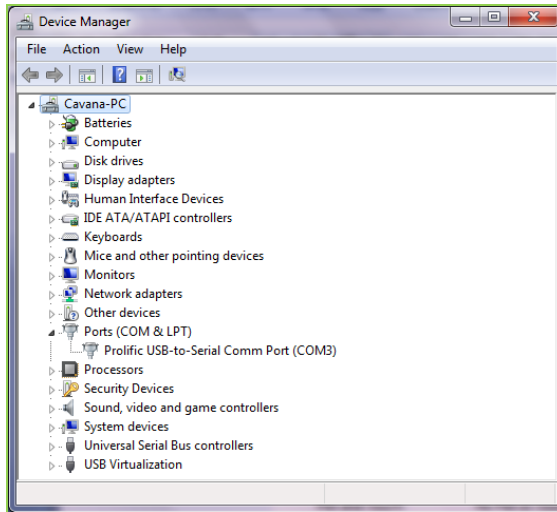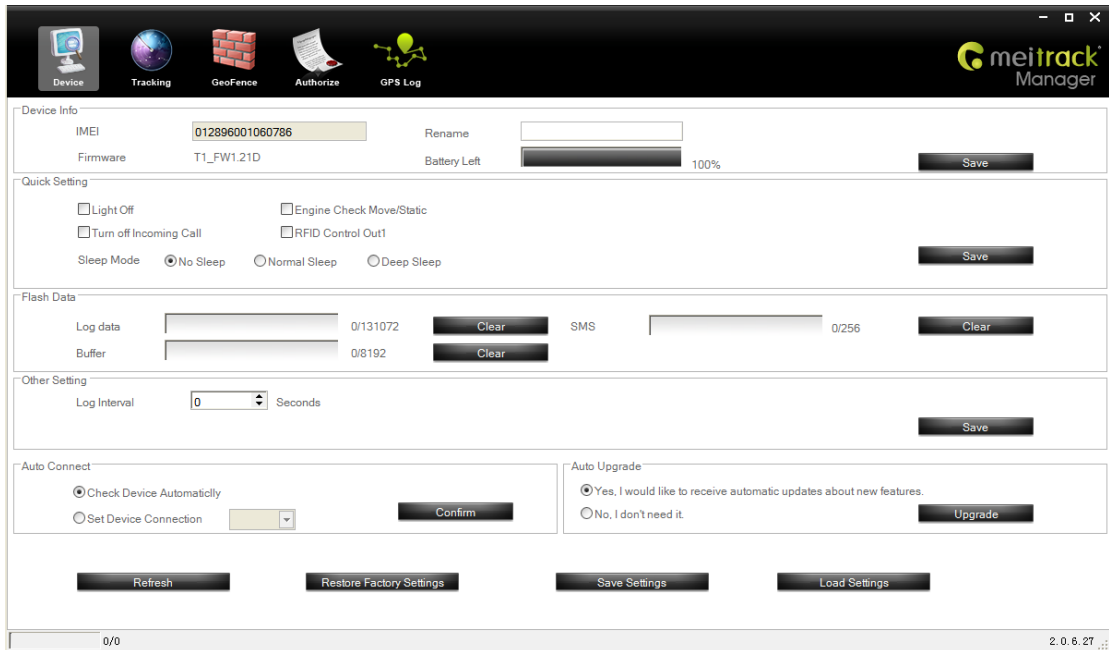
Run 'Meitrack Manager.exe' and the following window will pop up:



The device is power on and the Meitrack Manager will automatically identify the device and enter into configuration interface (column 1:Device) and display the default parameters.
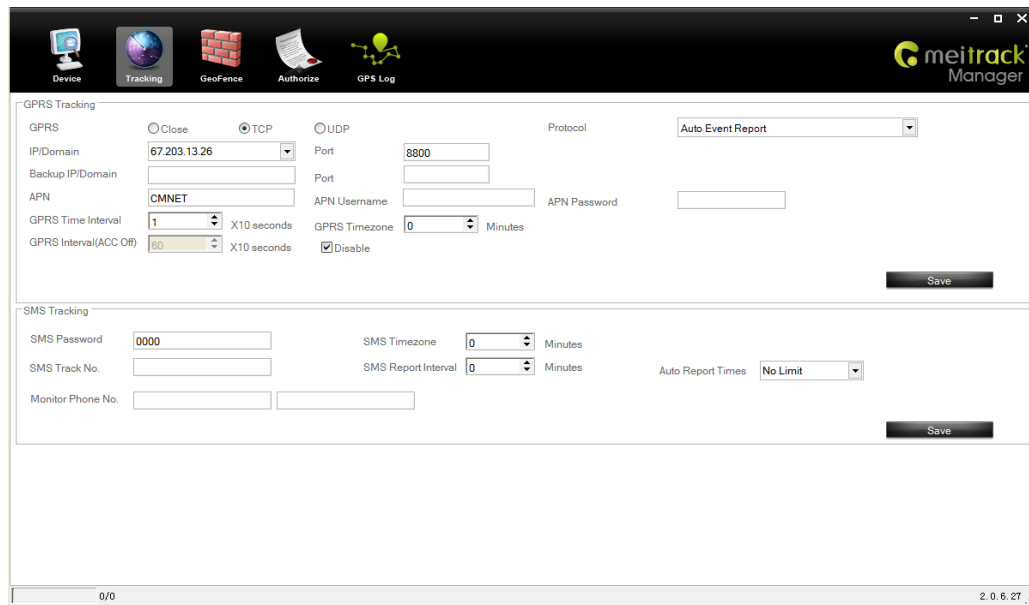
*Note: Meitrack Manager is in the CD. The language will be automatically adjusted to be the same as your PC operation system's language. Please use "Ctrl+L" to change the language.*

### 6.5.1 GPRS Tracking

Select Column2: Tracking

To set GPRS parameters, Select this column to modify. Setup server IP and Port (Meitrack Server IP/Domain: 67.203.13.26, Port: 8800), APN, Time Interval, etc. This column is also used to setup SMS Tracking & monitoring phone number.

**For more details, please refer to Meitrack Manager User Guide.**



### 6.5.2 Geo-fence Configuration

3    Select Column 3: Geo Fence
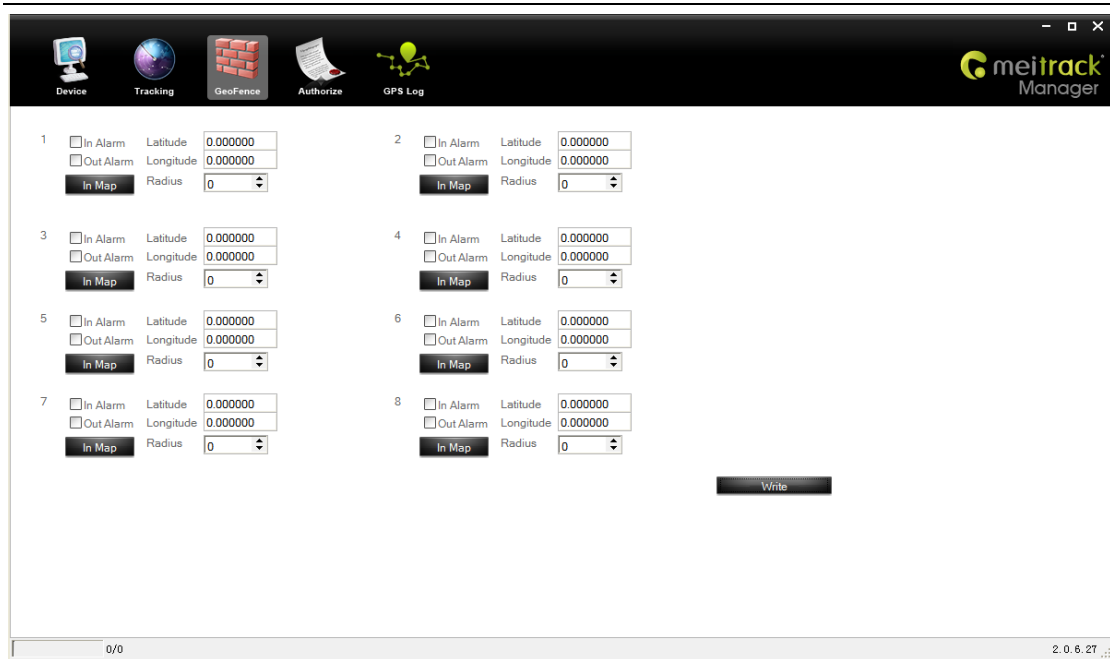
Geo-fence: it is a circular fence which is based on a center point with preset radius. Maximum 8 geo-fence.

Enter Geo-fence: alarm while the device entering geo-fence, the left textbox will show corresponding SMS Header, default as "In Alarm".

Exit Geo-fence: alarm while the device exiting geo-fence, the left textbox will show corresponding SMS Header, default as "Out Alarm".

Map: click "In Map" to make and define geo-fence.

**For complete software functions, please refer to Meitrack Manager User Guide.**

6.5.3 **Authorized Phone Number/GPRS Event**

Select column 4 to set authorized alarm phone number, GPRS event and other functions. For complete software functions, please refer to Meitrack Manager User Guide.

**For more information about GPRS settings, please refer to MEITRACK SMS/GPRS Protocol.**

**6.5.4 GPRS Log**

Column 5: GPS Log

Before using this function, please first setup GPRS log time interval( to set this option under column 1 'Device' in Meitrack Manager), The terminal device will automatically save the log in the storage chip when there exits GPS signal. Recorded tracking & locating data can be exported under this column. No GPRS signal, no log.

# 7 Installation

## 7.1 Install I/O Cable

The I/O cable is a 12-pin cable including power, analog input, digital temperature sensor input, negative/positive input and output.



| I/O | | | | | |
|---|---|---|---|---|---|
| **1** Power(+) | **3** Input 3 | **5** Input 2 | **7** Output 1 | **9** Output 2 | **11** Output 3 |
| **2** GND(-) | **4** Input 1 (-) | **6** GND(-) | **8** AD Input 1 | **10** Fuel Sensor | **12** Digital Temperature Sensor |

| PIN Number | Color | Description |
|---|---|---|
| **1 (Power)** | Red | DC In (power source). Input voltage: 11V~36V. 12V suggested. |
| **2 (GND)** | Black | Ground |
| **3 (IN3)** | White | Digital Input3. Positive triggering, for detecting status of vehicle door or ACC. |
| **4 (IN1)** | White | Digital Input1. Negative triggering( Defaulted as SOS Panic Button) |
| **5 (IN2)** | White | Digital Input2. Negative triggering, for detecting status of vehicle door. |
| **6 (GND)** | Black | Ground. It can be used to connect with temperature/fuel sensor etc. |
| **7 (OUT1)** | Yellow | Output1. It can be used to connect with relay for engine immobilization. Low voltage (0V) when effective and open drain when ineffective. Output open drain sink voltage (ineffective): 45V max. Output low voltage sink current (effective): 500mA max |
| **8 (AD1)** | Blue | 12 Bits Resolution Analog Input1. 0~6V DC Detection. It can be used to connect with temperature/fuel sensor etc. |
| **9 (OUT2)** | Yellow | Output2. It can be used to connect with relay for engine immobilization. Low voltage (0V) when effective and open drain when ineffective. Output open drain sink voltage (ineffective): 45V max. Output low voltage sink current (effective): 500mA max. |
| **10(Fuel Sensor** | Blue | 10 Bits Resolution Analog Inputs 2. 0~6V DC Detection. The AD cable with a white plug is used to connect A53 fuel sensor. |

| Input ) | | |
|---|---|---|
| **11 (OUT3)** | Yellow | Output3. It can be used to connect with relay for engine immobilization. Low voltage (0V) when effective and open drain when ineffective. Output open drain sink voltage (ineffective): 45V max. Output low voltage sink current (effective): 500mA max. |
| **12(Digital Temperatur e)** | Blue | TTL3.3V level, defaulted to be used to connect A52 digital temperature sensor with A61 sensor box Note: the current should be below DC/AC3.3V, otherwise, the device may be damaged |

**Power/GND (PIN1/PIN2)**

Connect GND (-Black) and Power (+Red) wires to the battery of vehicle.
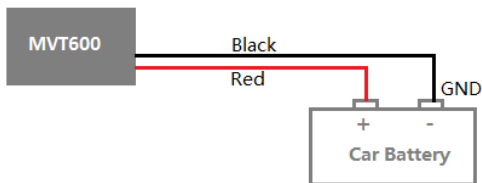


**7.1.2 Digital Input (PIN4/5, negative triggering)**
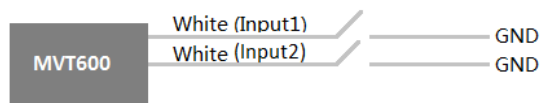


**7.1.3 Digital Input (PIN3, positive triggering)**
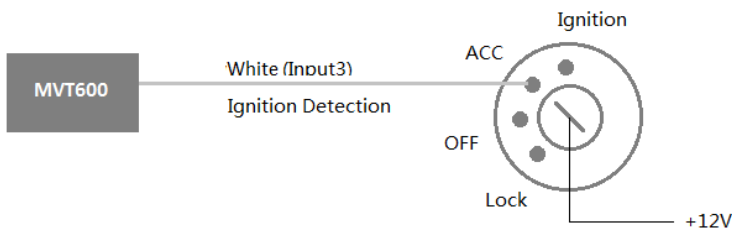
### 7.1.4 Output
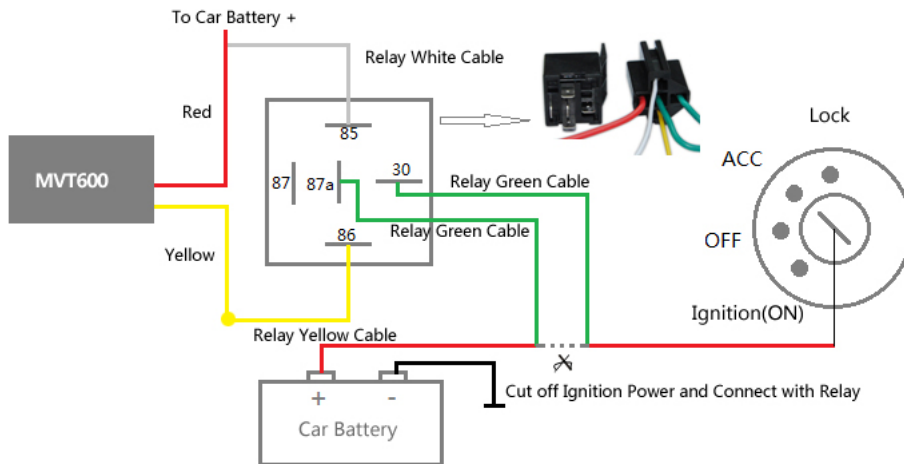


### 7.1.5r Input (PIN8/PIN10/PIN12)

### 7.1.5.1 Sensor Input Application 1– Inner battery voltage and external power voltage caculation formula

Inner battery voltage Caculating Formula: input voltage=(AD4*3.3*2)/4096

Inner battery percentage caculating formula: battery percentage = （（AD4-2114）*100/492）100%

External power voltage caculating formula:   external power input voltage = AD5/4096*3.3*16

Remark: AD4 & AD5 inside the device are defaulted to detect inner battery and external power voltage, not indicated by the analogue input port. ( Please refer to MEITRACK_GPRS Protocol for more details)

### 7.1.5.2 Application 2 –Analog Fuel Detection (percentage of fuel)





**Figure2**

The fuel sensor we provide is A53 resistive voltage-output mode sensor, which needs to connect external power to work. This sensor has three cables: the Power Cable (brown), GND(blue), and data output cable (yellow).
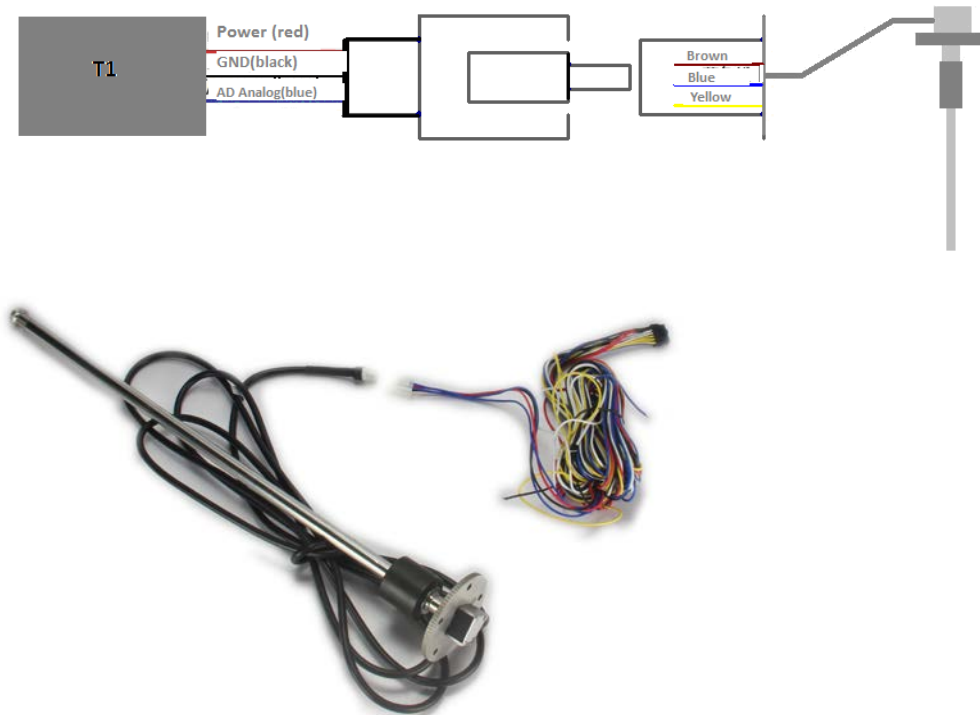
Power Voltage : DC 11V-36V, shared with terminal power. Data output voltage: 0-5V. The terminal AD2 cable has a white plug to connect with the white plug of the fuel sensor. （Figure 2）. If connecting AD1 to fuel sensor, you need to the white plug of the sensor and connect the three cables to the terminal as per figure 1.

*Note: T1 defaults AD2 connect A53 fuel sensor and the program has used the formula to work out the value that AD2 detected, that is, it uploads percentage result of fuel capacity in hexadecimal to the server and the server only needs to resolve the result into decimal*

*For example: 0X2129(hexadecimal)=>High level 21 in decimal is 33, low level 29 in decimal is 41, then the percentage of the residual oil detected is 33.41%*

*Connect AD1 with fuel sensor, thus, use a formula to calculate the result.*

*Formula: AD1\*3.3\*2/4096/5*

*Detect AD1 as 0x040D, then 0x040D=>1037（in decimal）=>1037\*3.3\*2/4096/5=0.3341=33.41%.*

AD analog input voltage calculating formula:

Voltage caculating formula:Input Voltage=(AD\*3.3\*2)/4096

0x0C9B=>3227(in decimal)=>(3227\*3.3\*2)/4096=5.1997V(voltage)

0x0D9D=>3845(in decimal)=>(3845\*3.3\*2)/4096=5.6154V(voltage)

**7.1.5.3 Digital Temperature Sensor Input**

T1 can connect with A53 Fuel Sensor directly as 7.1.5.2 mentioned above. It also can connect A52 Temperature Sensor and A53 Fuel Sensor through the A61 sensor box, illustrated as the following three cases:

**Case A:**（A61+A52 Temperature Sensor）

T1 sen port（Digital Temperature Sensor Input Port） is connected to four temperature sensor probes with a A61 sensor box, to meausre four different temperature spots simultaneously.（such as car: car rear, carriage, car air conditioner air-out, the engine, etc）, illustrated as the picture below:
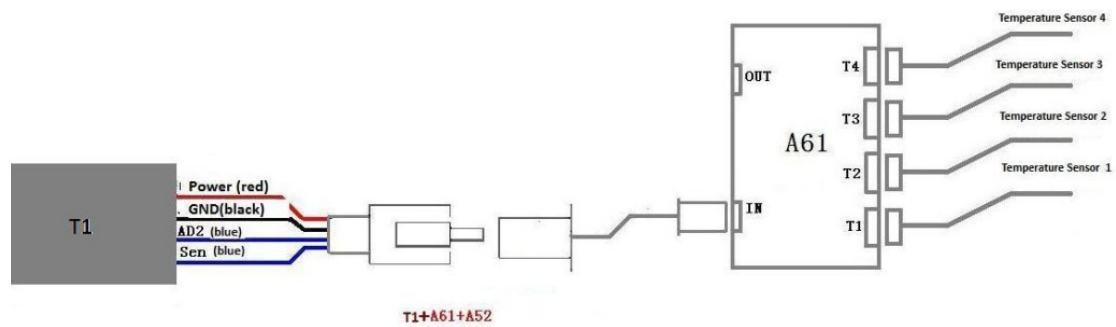


**Case B:**（A61+A52 Temperature Sensor +A53 Fuel Sensor）

To connect four temperature sensor probes and one fuel sensor at the same time, just need to connect A53 Fuel Sensor with the OUT port of A61 sensor box, illustrated as the picture below:

T1+A61+A52+A53



实物图2
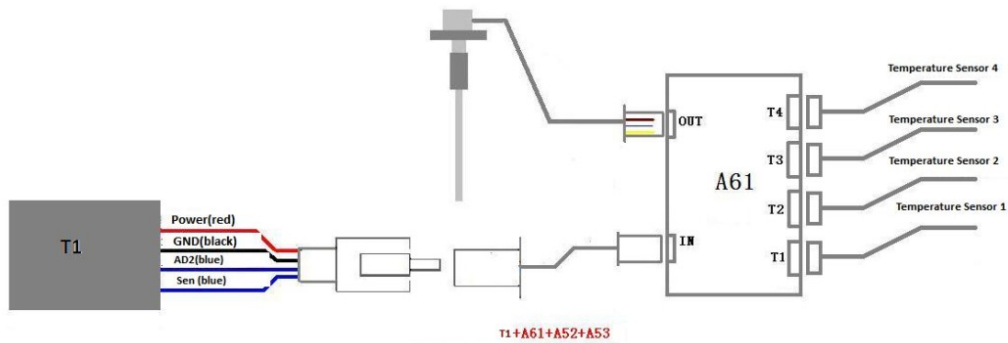
**Case C:** （2*A61+A52 Temperature Sensor +A53 Fuel Sensor）

To connect multiple temperature sensors（4+) and the fuel sensor simultaneously, you just need to use an adapter cable to connect the OUT port of A61 with the IN port of another A61. Both the A61 are connected with corresponding sensors, illustrated as the picture below:
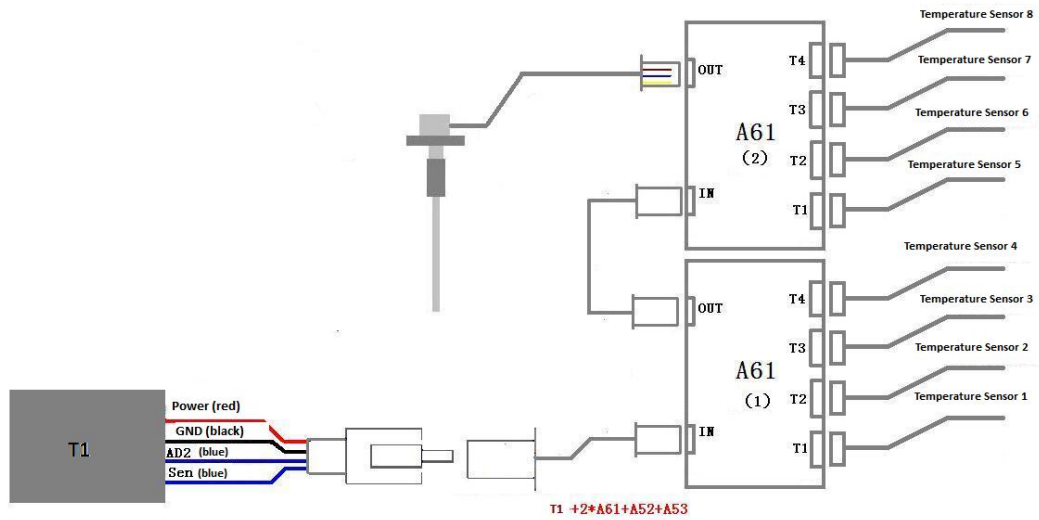
*Note 1: The white plug of T1 harness is made up of four cables: Power Cable (red), GND(black), AD2(blue), sen (blue).*

*Note2: T1 can connect two A61 sensor boxes at most. The number of A52 temprature sensor probe is subject to demands( min:1, max:8).*

### 7.1.6 Install Camera (RS232 Interface)



| PIN Number | Color | Description |
|---|---|---|
| 1 | Red | Power Output. Output Voltage: 5V |
| 2 | Black | Ground |
| 3 | Orange | Handset Phone RS232 TX (mvt600) |
| 4 | Yellow | Handset Phone RS232 RX (mvt600) |
| 5 | Blue | Microphone Positive |
| 6 | Green | Microphone Negative |
| 7 | Purple | Speaker Positive |
| 8 | White | Speaker Negative |

Note: This interface also supports A21 scheduling screen, LED screen and other peripherals.

### 7.1.7 Install Camera (RS232 Interface)



| The first camera interface | | |
|---|---|---|
| PIN Number | Color | Description |
| 1 | Red | Power Output. Output Voltage: 5V |
| 2 | Black | Ground |
| 3 | Yellow | Camera RS232 Sent(MVT600) |
| 4 | Green | (MVT600)Camera RS232 Receives |
| The second camera interface | | |
| PIN Number | Color | Description |
| 1 | Red | Power Output. Output Voltage: 5V |
| 2 | Black | Ground |
| 3 | Yellow | Camera RS232 Sent(MVT600) |
| 4 | Green | (MVT600)Camera RS232 Receives |

| The third camera or GPS data interface | | |
|---|---|---|
| **PIN Number** | **Color** | **Description** |
| 1 | Red | Power Output. Output Voltage: 5V |
| 2 | Black | Ground |
| 3 | Yellow | Camera RS232 Sent(MVT600) |
| 4 | Green | (MVT600)Camera RS232 Receives |

Note: Install the camera must be installed Micro SD card, otherwise unable to take photos.

## .7.1.8 Install Micro SD Card

Must be installed Micro SD card (TF card) If use the camera function. All the pictures are stored in the card surface, instant photos are taken namely to the server, others must be uploaded to the server through the GPRS instruction requirement,.

**There's a Micro SD card slot under the On/Off button. Micro SD card can be used to store the pictures taken by the camera.**



### 7.1.9 Install RFID Reader (Wiegand Interface)



| **PIN Number** | **Color** | **Description** |
|---|---|---|
| 1 | Red | Power Output. Output Voltage: 5V |
| 2 | Black | Ground |
| 3 | Green | RFID Data0 |
| 4 | Yellow | RFID Data1 |
| Remark: T1 RFID is not compatible with MVT600 RFID, MVT600 is the RS232    interface | | |

## 7.2 Install GPS/GSM Antennas

GPS Antenna                                                                                                                GSM Antenna

Connect the GSM antenna to the SMA connector which is 'GSM' text labeled. The GSM antenna is non-directional, so you can hide it in any place of vehicle.

Connect GPS antenna to the GPS connector which is 'GPS' labeled. The optimum location for the GPS antenna is on the roof of the vehicle. The covert and GPS antenna are directional, make sure they are facing up and lying as flat as possible. Secure them in place with glue or zip ties.

Note: Do not shield or cover the GPS antenna with any objects containing metal.

## 7.3 Mount the MVT600 unit

If mounting required, there are 4 screw holes on the MVT600, 2 along either side that act as fixing points to the vehicle
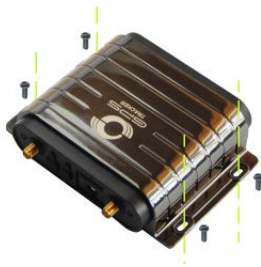
**Please do not hesitate to email us at info@meitrack.com if you have any questions.**