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Project:	MVT100	Creation Date:	2010-09-09
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MEITRACK® GPS Vehicle Tracker



User Guide

MVT100



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2. Product Overview

The MTV100 is a distinct GPS Tracker that can be used with automobiles, motorcycles, yachts and boats. The MVT100's unique design makes its appearance both elegant and cool. Once installed on a motorcycle, the product cannot be easily noticed as a result of its clever design. This product is easy to install and is built with an internal GPS and GSM antenna. The MVT100 is both waterproof and dust proof, making it an exceptional GPS tracker for your car, motorcycle, yacht and boat.

3. Applications

- Vehicle Real Time Tracking
- Car Security/Anti-Hijack
- Tracking for Motorcycles, Yachts and Boats
- Fleet Management

4. Product Function and Specifications

4.1 Product Function

- U-blox 6 GPS and Quad Band GSM 850/900/1800/1900Mhz
- AGPS (with GSM Base Station ID)
- Waterproof (IP66)
- Inbuilt GPS and GSM Antenna
- Track by SMS/GPRS (TCP/UDP) (MEITRACK Protocol)



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- Track on Demand
- Track by Time Interval
- Track by Distance Interval
- Track on Mobile Phone
- Internal 8Mb Memory for Logging
- Inbuilt Motion Sensor
- 850mAh Internal Backup Battery
- SOS Alarm
- Polygon Geo-fence Alarm
- GPS Blind Area Alarm
- Low Battery Alarm
- Speeding Alarm
- Tow Alarm
- External Power Cut Alarm
- Mileage Report
- Engine Cut (Engine immobilization)
- Inbuilt Super Magnet (optional)
- OTA
- I/O: 2 Digital Input (1 negative triggering and 1 positive triggering), 1 Analog Input Detection, 1 Output

4.2 Specifications

Items	Specifications
Dimension	110x72x39mm
Weight	170g
Input Voltage	DC 11V~36V/1.5A
Back-up Battery	850mAh/3.7V
Power consumption	65mA standby current
Operating Temperature	-20 °C~55°C
Humidity	5%~95%
Work Time	43 hours in power-saving mode and 10 hours in normal mode
LED	2 LED lights to show GPS, GSM and other status
Button	1 SOS and 1 power on/off
Microphone	None
Memory	8M Byte
Sensor	Motion Sensor
GSM Frequency	GSM 850/900/1800/1900MHz
GPS Chip	Latest U-blox 6 GPS chipset, 50 channels all-in-view tracking
GPS Sensitivity	-161dB
Positioning Accuracy	10 meters, 2D RMS

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I/O	2 Digital Input (1 negative triggering and 1 positive triggering) 1 Analog Input Detection 1 Output 1 USB port for configuration only
-----	--

5. MVT100 and Accessories



MVT100 with SOS Button
Battery and I/O Cable



3M Sticker



Screws

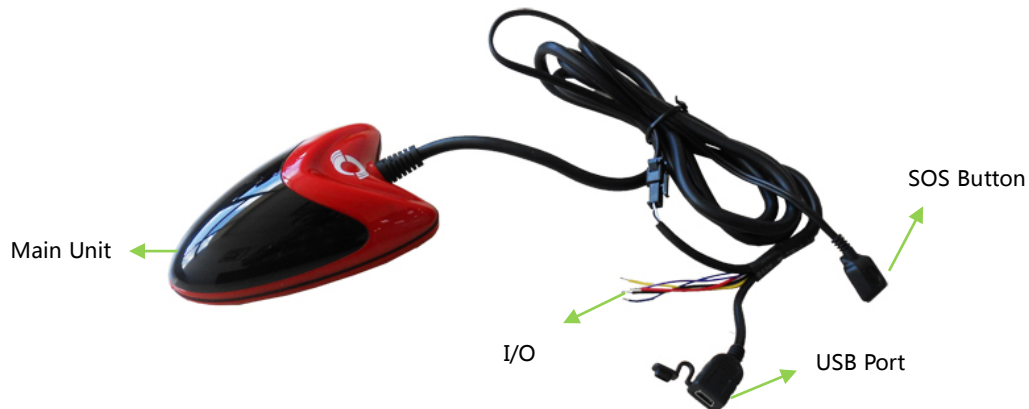


USB Data Cable



CD

6. View



7. First Use

7.1 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 MVT100, please make sure the SIM installed supports displaying caller ID.

Before installing the SIM card, turn off the power for MVT100.

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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 up.

7.2 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 prior to installation.

7.3 LED Indications

There are two methods to turn on/off MVT100: press and hold the Power On/Off button for 3~5 seconds, or connect with external power 11~36V.

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)	MVT100 has a GPS fix
Flashing (1 second on and 2 seconds off)	MVT100 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)	MVT100 is connected to the GSM network
Flashing (1 second on and 2 seconds off)	MVT100 is not connected to the GSM network

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7.4 Track by Calling

Make a call to MVT100 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:

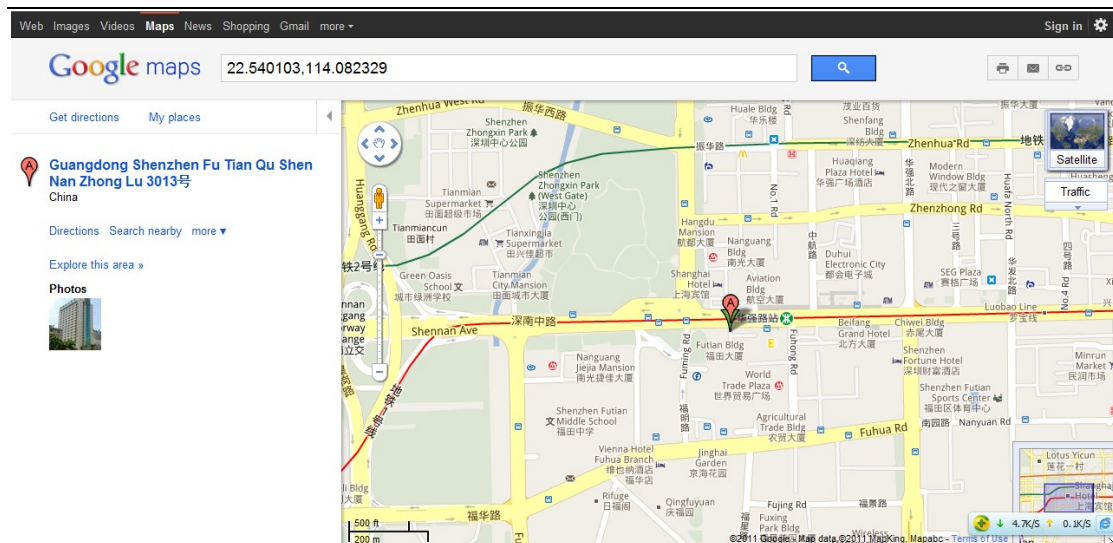
Now,110727 02:48,V,16,23Km/h,61%,<http://maps.google.com/maps?f=q&hl=en&q=22.540103,114.082329&ie=UTF8&z=16&iwloc=addr&om=1>

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, enter the latitude and longitude into Google Maps as the following picture shows to get the position:



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More SMS commands

You can configure MVT100 by mobile phone or by computer using the MEITRACK Manager.

For more details, please refer to part 7.5 **Configure by Computer**.

Note:

1. *Password is 4 digits only and defaulted as 0000. You can change the password by Meitrack Manager and SMS command.*
2. *MVT100 will only accept commands from a user with the correct password and report SMS report to the user. If preauthorized phone number was set, only this phone number can preset SMS reports.*

7.4.1 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, MVT100 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

7.4.2 Sleep Mode – A73

Command: 0000,A73,X

SMS Get: IMEI,A73,OK

Note:



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This setting is for power saving.

X=0, turn off sleep mode (default)

X=1, normal sleep. GSM module work, GPS module work by sleep mode intermittently. 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

7.4.3 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,,

7.4.4 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 (positive input) is active;

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

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7.4.5 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.

7.5 Configure by Computer

The following shows you how to configure MVT100 with **MEITRACK Manager**.

Please refer to the **MEITRACK Manager User Guide** for more details on MEITRACK Manager.

Step 1. Install the USB driver and Meitrack Manager in advance.

Step 2. Connect MVT100 to PC with the USB cable.

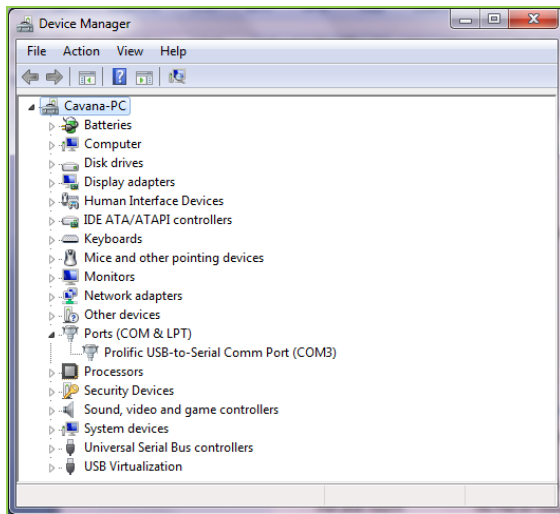


Methods of confirming if USB Driver is installed: Run **Device Manager** (right-click "My Computer" –"Manage" –"Computer Management"- "Device Manager ")

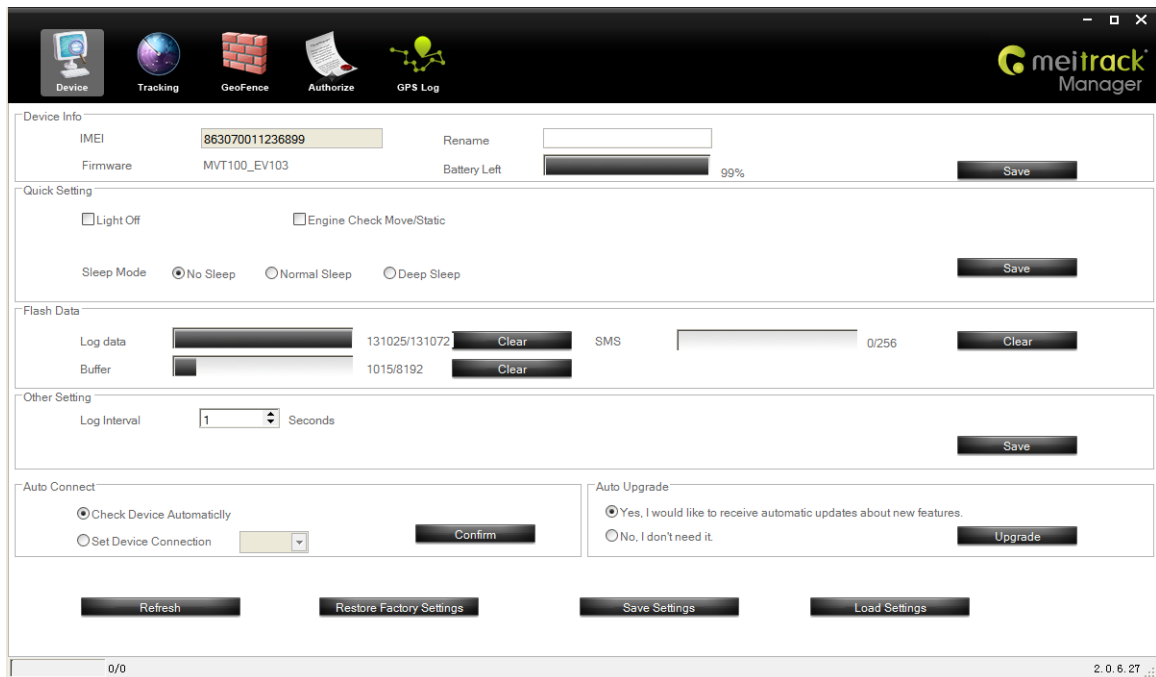
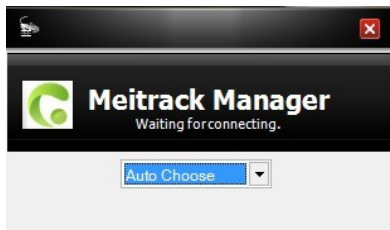
Click "Port(COM and LPT)", and find "Prolific USB-to-Serial Comm Port", if there is no "Prolific USB-to-Serial Comm Port", please re-install the USB driver (please refer to the **MEITRACK Manager User Guide** for detailed guidance).



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Run **MEITRACK Manager**, turn on the device and connect PC and it with USB cable, Meitrack Manager will automatically detect port and model, and enter into the main interface as follow:



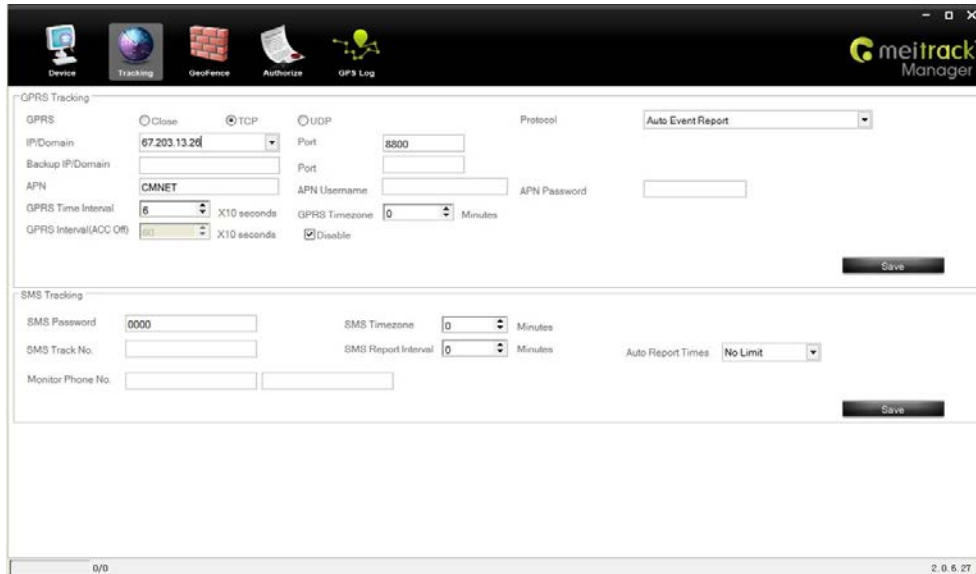
Note: MEITRACK Manager is in the CD. The language will be automatically adjusted to the same language as your PC's operation system. Please use "Ctrl+L" to change the language.

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7.5.1 GPRS Tracking

Select Column 2 Tracking to set SMS tracking & monitoring phone number and GPRS parameters, such as Server IP, and Port (IP/Domain: 67.203.13.26, Port: 8800), APN, Time Interval, etc.

Please refer to the **MEITRACK Manager User Guide** for more detailed information regarding configuration and functions.



The screenshot shows the MEITRACK Manager web interface. At the top, there are navigation icons for Device, Tracking, GeoFence, Authorize, and GPS Log. The main content area is divided into two sections: GPRS Tracking and SMS Tracking.

GPRS Tracking Section:

- Protocol: Auto Event Report (dropdown)
- GPRS: Close, TCP, UDP
- IP/Domain: 67.203.13.26 (dropdown)
- Port: 8800 (input)
- Backup IP/Domain: (input)
- Port: (input)
- APN: CMNET (input)
- APN Username: (input)
- APN Password: (input)
- GPRS Time Interval: 6 (dropdown) X10 seconds
- GPRS Timezone: 0 (dropdown) Minutes
- GPRS Interval(ACC OFF): 60 (dropdown) X10 seconds
- Disable
- Save button

SMS Tracking Section:

- SMS Password: 0000 (input)
- SMS Timezone: 0 (dropdown) Minutes
- SMS Track No.: (input)
- SMS Report Interval: 0 (dropdown) Minutes
- Auto Report Times: No Limit (dropdown)
- Monitor Phone No.: (input)
- Save button

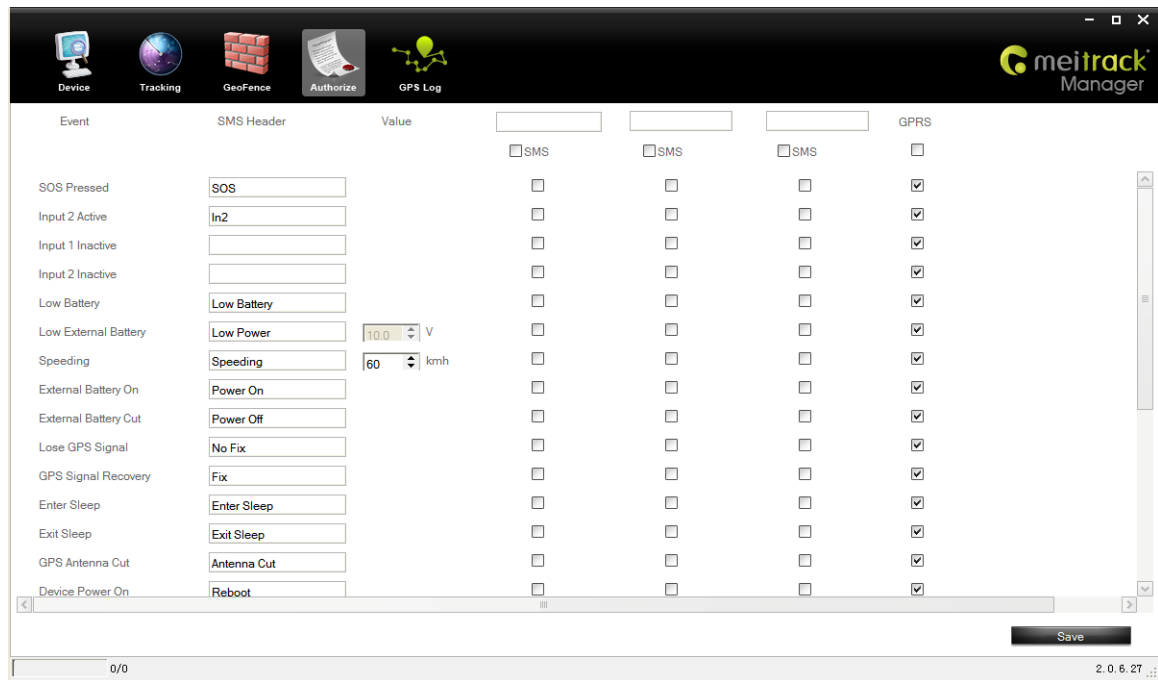
At the bottom of the interface, there is a status bar showing "0/0" and "2.0.6.27".

7.5.2 Set Authorized Phone Number/GPRS Event

Select Column 4 Authorize: to set authorized phone number, event, etc.

Please refer to the **MEITRACK Manager User Guide** for more detailed information regarding configuration and functions.

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

8. Installation

8.1 Install I/O Cable

The I/O cable is a 8-pin cable including power, analog input, negative input, output and USB port for configuration.



1	2	3	4	5	6	7	8	9	10
Power(+)	GND(-)	GND(-)	Input1(-)	Input2(+)	AD1	Out1	USB Port		

PIN	Color	Description
1 Power	Red	DC In (power source). Input voltage: 9V~36V. 12V suggested.

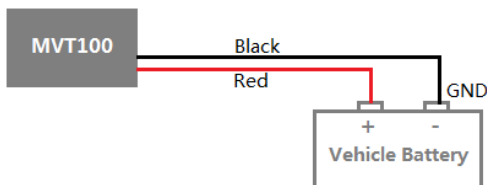
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2 GND	Black	Ground
3 GND	Black	Ground, for connecting with temperature/fuel sensor etc.
4 Input1	White	Digital Input (negative triggering). Socket for SOS panic button. It also can be used for detecting the status of vehicle door. Vehicles from China, Korea, Japan are normally negative triggering.
5 Input2	Purple	Digital Input2 (positive triggering). It can be used for detecting ACC, and the status of vehicle door. Vehicles from Europe, America are normally positive triggering.
6 AD	Blue	12 Bits resolution analog input. 0~6.6V DC detection. It can be used to connect with fuel sensor etc.
7 Out	Yellow	Output. Low voltage (0V) when effective and open drain when ineffective. Output open drain sink voltage (ineffective): 45V max. Output low voltage sink current (effective): 200mA max. It can be used to connect with relay for engine immobilization.
8/9/10 USB Port <i>(For Configuration Only)</i>	Green	TTL232 Rx (MVT100 Tx)
	Orange	TTL232 Tx (MVT100 Rx)
	Black	Ground

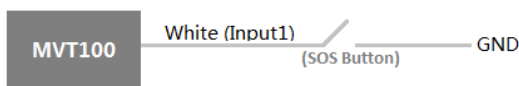
8.2 Install / Connection Diagram

8.2.1 Power/GND (PIN1, PIN2)

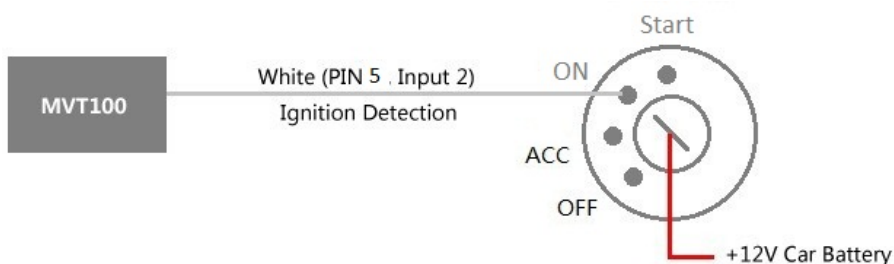
Connect GND (-Black) and Power (+Red) wires to the battery of motorcycle/vehicle.



8.2.2 Digital Input (PIN 3, Negative Triggering)/SOS

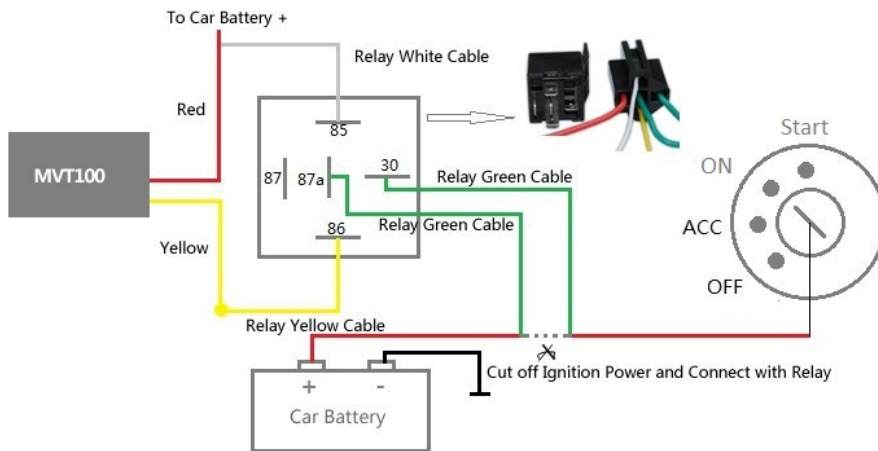


8.2.3 Digital Input (PIN5, Positive Triggering)



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8.2.4 Output (PIN7)



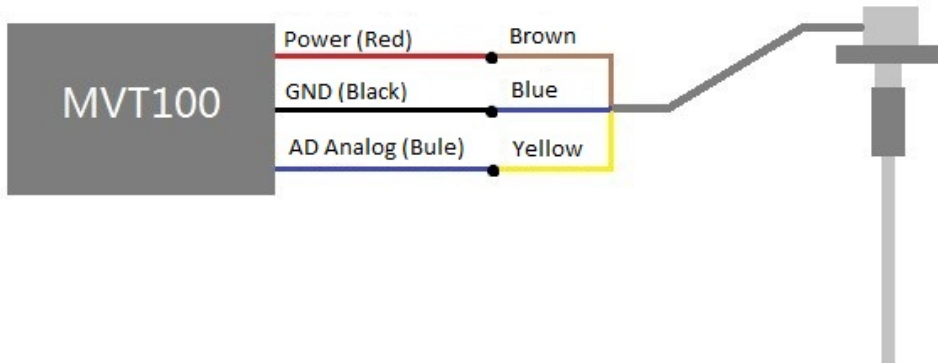
8.2.5 Formula for Built-in Battery Voltage and External Power Voltage

Built-in Battery Voltage = $(AD4 * 3.3 * 2) / 4096$

Batter Percentage = $((AD4 - 2114) * 100 / 492) * 100\%$

External Power Voltage = $AD5 / 4096 * 3.3 * 16$

8.2.6 AD Input (PIN6 Fuel Detection)



Note:

Fuel sensor A53 supplied by our company is resistance-type sensor, it works by external power.

3 cables of fuel sensor: Power Cable (Brown), GND Cable (Blue), Data Input Cable (Yellow). Power cable (DC 11V-36V), connects with device power cable (0-5V). Please see above.

Formula of AD Analog Input:

Input Voltage = $(AD1 * 3.3 * 2) / 4096$

0x0C9B => 3227 (Decimal) => $(3227 * 3.3 * 2) / 4096 = 5.1997V$ (Voltage)

0x0D9D => 3845 (Decimal) => $(3845 * 3.3 * 2) / 4096 = 5.6154V$ (Voltage)

Formula of Remaining Fuel (Percentage)

Remaining Fuel = $AD1 * 6.6 / 20480 * 100\%$

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Note: in GPRS data, the value of fuel sensor is in hexadecimal, need to convert the hexadecimal value to decimal first, and then use the formula above. For example, *0x040D*, decimal 787, remaining fuel is 33.41%.

8.3 Mount the MVT100 unit

Three mounting options:

Option 1:

Using 3M sticker

Option 2:

Using Screws



Option 3:

Using internal super magnet

Please do not hesitate to email us at info@meitrack.com if you have any questions.