USER GUIDE

VG-2000 GPRS/CDMA/3G
Vehicle GPS Tracking Device

Preface

VG-2000 GPS Tracking Device is the updated version based on GPS-GSM/GPRS/CDMA/3G, after years of R&D and marketing experiences.

Helon has the complete GPS product line providing the accurate positioning of the moving target. The superb two way data communication technology of GPS and GMS enables the monitoring center to better manage the jobs of both vehicle and personnel.
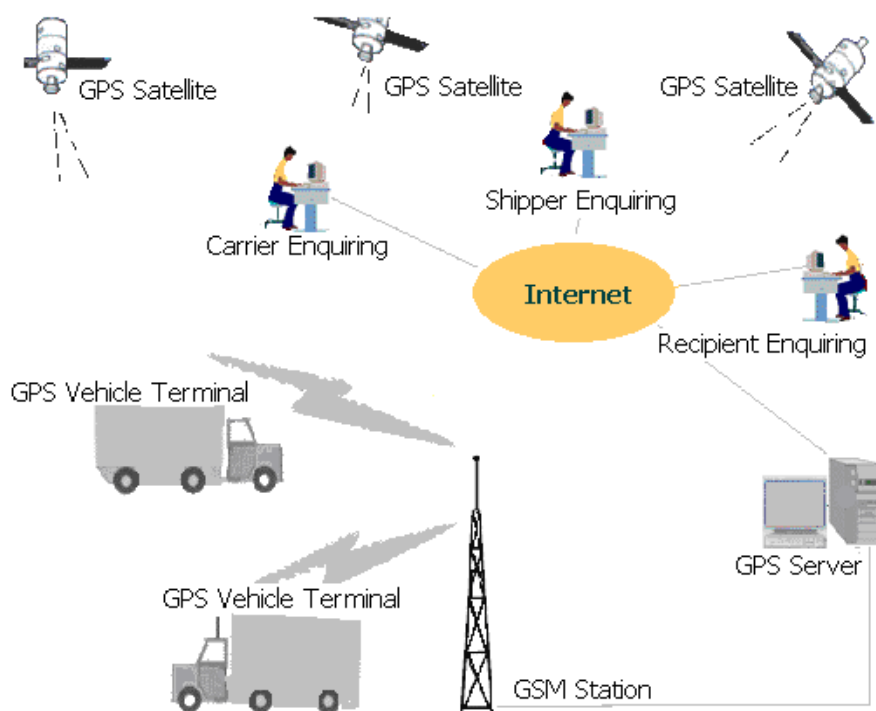
The Helon GPS device are best used for Public security, armored vehicle, fire fighter, Ambulance, Postal service, Cargo Transportation, Government Service, Civil Transportation vehicle, Mines, Chemical plant, Military, etc. For almost anything that can be imagined.

1. Product Preview

1) The System Structure

Schematic:

The package:

2、Performance indicators

2.1 Electrical Specifications

◇	Power Interface:	12V or 24V
◇	Current:	<200mA(Active Status)
◇	Speed Accuracy	<=0.2m/s
◇	Cold startup positioning time	<120s
◇	Warm startup positioning time	<60 Sec.（95% possibility）
◇	Positioning accuracy	25m (no SA, no difference)
◇	Dynamic characteristics	not less than 4g
◇	Frequency Range	GSM 900/1800 MHz; GPS 1575.42 MHz
◇	Telecommunications range	GSM SMS enabled entire network

2. 2、Environmental indicators

◇	Host working temperature	-20℃ ~ +55℃
◇	Storage temperature	-40℃ ~ +70℃
◇	Relative Humidity	93% （Not condensed）
◇	Antenna working temperature	-30℃ ~ +75℃
◇	Storage temperature	-40℃ ~ +90℃
◇	Cable working temperature	Not more than 85℃

2. 3、Physical size and weight:

Size: 102mm x 80mm x 28mm   Weight: 300g
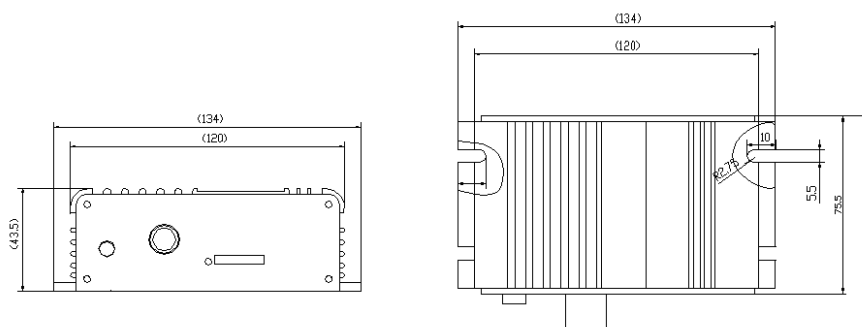
3. Features

3. 1   Main features

◇	GPS Positioning	◇	GSM car phone
◇	SMS Inter-transmission	◇	Infrared remote control dialing
◇	Timely delivery of alarm information and monitoring	◇	Emergency messaging
◇	Remote wireless control of multiple output	◇	Self-protection function for device over voltage

△ : Indicating LCD screen function

Installation and User Guide

1. Installation and connection instructions

Recommended installation location as shown components, different models have different installation methods. (Car for example here)
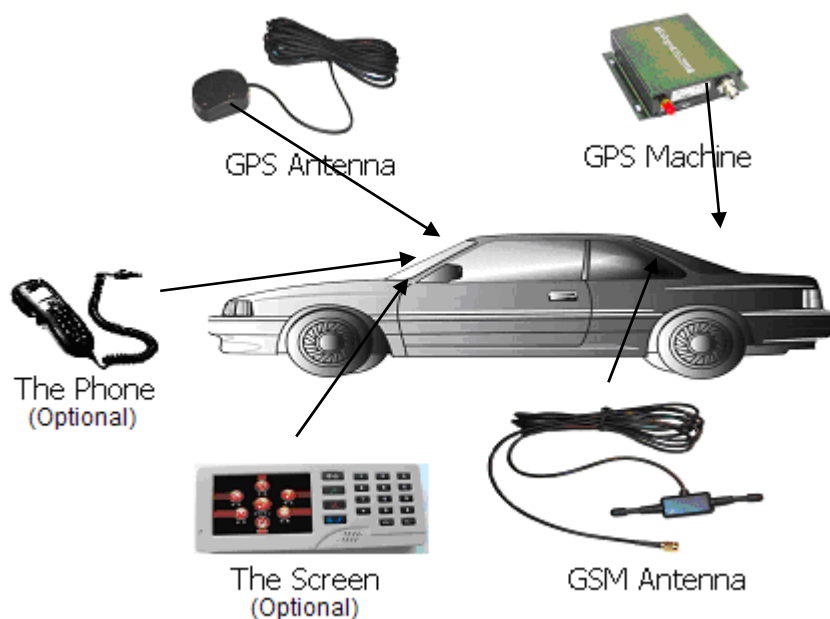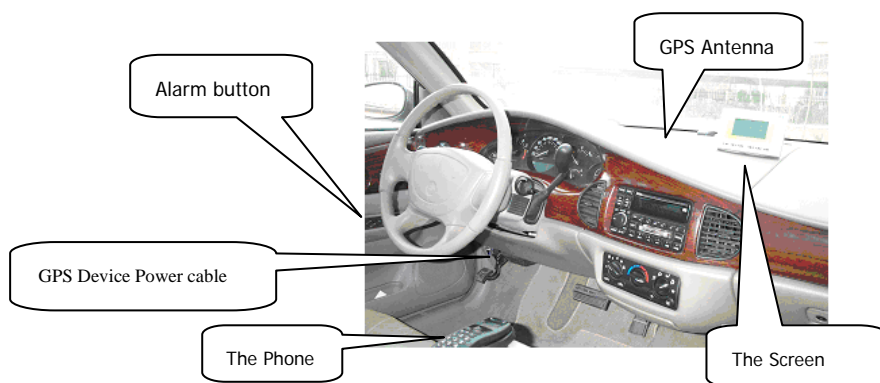
Image 2-A   Installation diagram

Image 2-B   Physical Installation Map

1.1 Installation and Wiring

The GPS Machine can be installed relatively hidden in the vehicle trunk corners, while the power cord that came with the system, the big screen cable and GPS, GSM antenna, and other control cables toward the driving cabinet, then fix the GPS host machine.   Pay attention to the moisture and shock!

GPS antenna fixed location should be selected in front, rear windshield, the location as close to the bottom of the windshield, and to ensure the level of the antenna; it is also important that the GPS antenna is in the most possible free area of no interfering objects to the GPS antenna.

GSM antenna should not be surrounded by metal objects, if objects from above the antenna or too close to the GSM antenna, it may affect the normal signal reception, resulting in decreased accuracy of vehicle terminal, therefore, it requires:

   ◇ As far as possible away from the objects

   ◇ Outside of the radar beam

   ◇ At least 4 meters to the VHF / HF / MF transmitting antenna

The screen connecting thread can be placed to the fixed display large screen.   The Power cord can go to the power fuze box in the driver's cab.
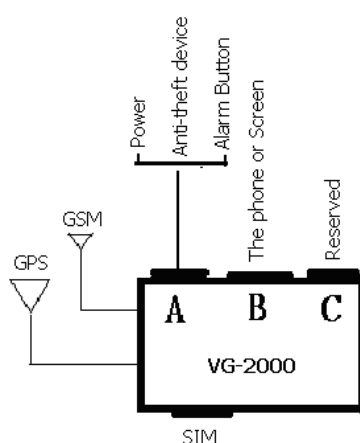
1.2 Cable Connections.

Image 3   Connection Diagram
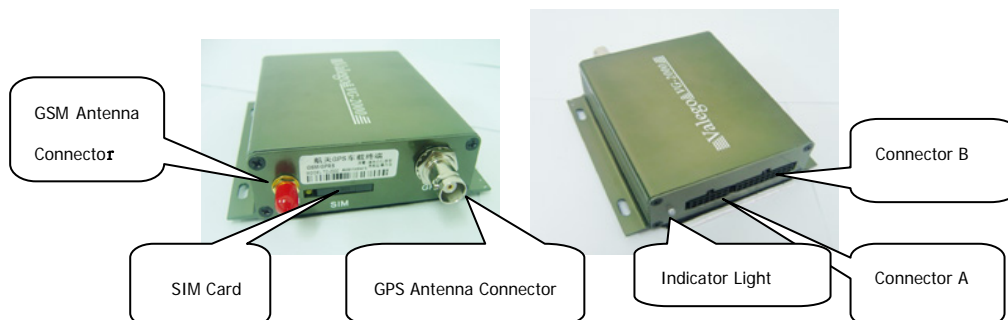
1.2.1 The GPS Main Machine

GSM Antenna Connector

SIM Card

GPS Antenna Connector

Connector B

Indicator Light

Connector A

Image 3_A   The GPS Machine physical map

1.2.2 A/B Connection of the connectors be referred to the following diagram:

Connectors A   **Connectors B**
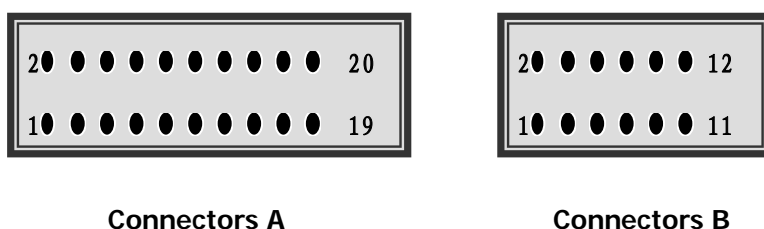
Image 3_B   The Connection Diagram

1.2.3   referring to Image 3_B, The wiring instructions of all connectors.

Connector A: (the function of each cable can be referred to the explanations of the Connector B Appendix.

1. Connecting the red ① and black ② cables to the cable panel of the car battery. (please be very careful not to connect the wrong cable of the battery) !
2. Connecting the yellow ③ cable to car ignition terminal, it must be controlled by the car key.
3. Connecting A1_Z socket to the battery A1_T plug.
4. Connecting A2_Z socket to the Anti Theft Device Plug (Called "Tie Jian Jun" - A Chinese anti theft device model). (Details of Tie Jian Jun cable connections can be referred to installation manual of the optional accessories in Appendix A.)
5. Auto Alarm is for the connectors terminal for other applications which require auto alarm functions.
6. Connecting A3_Z socket to the alarm system button A3_T plug (if reverse connection, after starting up the device, the indicator will not light on when pressing the alarm button). (Optional)
7. This socket is optional for other reserved cables, it can be used for other applications when needed.

Connector B wiring instructions:

1. This socket has 2 plugs, B1_Z (RJ45) crystal head is to connect the screen or hand held device. (optional)

2. Connecting B2_Z to the car amplifier B2_T plug, this is to control the devices connecting or controlling the car amplifier.

See details in Connector B Appendix

User Manual

2. 1 the main box

2.1.1 Power on and off.

This device starts on togeth with the car ignition. It will be off when car ignition is turned off. If at the time of the car ignition being turned off, there is the emergency alarm situation, this device will then continue in the working status, until the emergency alarm is cancelled. .

In normal off status, when there is an emergency alarm situation, the device will auto start up.

2.1.2 Alarming

When emergency situation occurs, or in need of assistance, help, hand press the Alarm button (red), the terminal device will instantly send alarm signals to the Control Center. Auto Alarm will be triggered on if car door, window, or trunk are not intentionally broken in or opened, while the user is not at scene. The alarm alert will be instantly sent to the control center, to alert the user of the event.

2.1.3 Output Control

The system has 7 output controls. Each control can be adjustedto the customer's needs based on the software customs definitions.

2.1.4 Other Functions

All other functions can be obtained through the hand-held device or monitor screen.

3. Diagnosis of Common Issues

Issue	Reasons	Method
Vehicle Position is not accurate	GPS Antenna is interfered or shielded by obstacles, or too close to high rise buildings.	Drive to an area without obvious high rise obstacles; wait for the GPS device picking up correct data.
	Antenna is not installed correctly.	GPS antenna must be leveled in a wide angled space.
	Antenna has faulty connection.	Wind the antenna to position, and try again
	The BNC of the device is malfunctioning.	Make sure BNC plughas the reading of 5V±0.5
	GPS Antenna is Malfunctioning.	Replace the antenna
Alarm signal is not sent or alarm signal is not sent continuously.	Alarm Button is damaged	Check external device connection (e.g. Anti Theft Device).
	Alarm Connection Port is malfunctioning	
	Alarm Method is not chosen correctly	Check Control Center Settings for the alarm method.
GPS device is set up, but does not work at all.	SIM card is not correctly installed.	Check SIM card and insert again.
	GPS cables are not connected correctly	Check GPS cable connections.
	GPS device is malfunctioning.	Replace GPS device
Device has no GSM Signal	Vehicle is in the blind spot area.	Drive to the area that has the GSM reception signals.

4. Maintenance

- This GPS device is running at normal DC 9∽36V±0.5V. Over or under that level, this device will be triggered the auto protection setting and cut off the power automatically, to avoid possible damage. Before device installation, or at the event of auto power off, user shall check the power system to make sure it is working properly. The recommended working voltage is 12V, or 24V. User shall strictly follow the operation instructions of this manual. Device damage due to the user's Improper installation or use is not covered by product warranty.

- The device positioning requires GPS signal receiption, proper and correct antenna connection is very important, user shall make sure the antenna is correctly and properly connected and be sure to place and leveled the antenna in an area without other Radio interference.

- Temperature range for the device is between -20℃ and 55℃, lower or above this range will cause the device malfunction, and user shall not use the device at this temperature.

- When power is on, DO NOT UNPLUG the GPS and GSM antenna, or else the device can be damaged.

- Do not use the device at gas station, near flammable gas or volatile chemicals.

- Do not use the device near medical therapy apparatus or equipment.

- Follow your local rules or laws when using your device.

- Recommended wire protection is to use the fire resistance pipe or stainless pipe (it depends on the installation environment).

- TO ensure the device working properly and avoid damage to the device, this VG-2000 GPS tracking model requires all accessories approved by the company.

- Contact your local dealer or distributor when needed.

Disassembling this device avoids all warranty. DO not do it !

Appendix A

Packaged Accessories and instructions:

GPS Antenna size: 58mm×48mm×15mm (L x W x H)

Features: 20dB; 1575.42MHZ

GSM Antenna size: 100 mm (L x W x H)

Features: 2dB; 900/1800 MHZ

Appendix B

## VG-2000 Connectors Definitions

Connector A

PA1---------GND   Negative Power

PA2---------+12V   Positive Power

PA3---------LALARM（Low Alarm） Emergency Alarm

PA4---------POWCTR   ACC

PA5---------GND   Extension Serial Ports

PA6---------TX（TX232）   Extension Serial Port Stream

PA7---------HALARM（High Alarm） Anti Theft Alarm, High efficiency Alarm,   and input.

PA8---------RX（RX232）   Extension Serial Ports Receiving

PA9---------OUT1   Gas /Power supply off (after 80 pulse output)

PA10--------OUT2   Forward/Reverse Control output

PA11--------OUT3   Door Lock Control (default set to "High" output, door open to 1 second "Low" pulse.

PA12--------OUT4   Door Close Control. (default set to "High" output, door open to 1 second "Low" pulse.

PA13--------OUT5   (BAKLIN，low voltage alarm with external battery checkup.(High sensitive alarm)

PA14~PA20   ---   For internal use only (programming purpose)

Connector B:

PB1---------+5V

PB2---------GND

PB3---------Monitor screen (or hand held device) serial port receiving (RX)

PB4--------- Monitor screen (or hand held device) serial port sending (TX)

PB5---------First channel Audio Input+

PB6--------- First channel Audio Input-

PB7---------First channel Audio Output +

PB8--------- First channel Audio Output -

PB9---------Second Channel Audio Input+

PB10---------Ground

PB11-------- Second Channel Audio Output+

PB12---------Ground
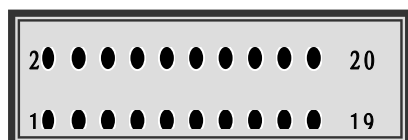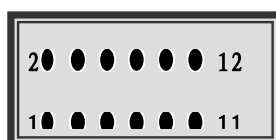
Connector A   Connector B

HANGZHOU HELON TECH LTD.

Disclaimer:

Hangzhou Helon Tech Ltd. complies to the principles of long term development strategy, the company reserves the rights of the descriptions in this manual with regard to the GPS tracking device, and accessories, LCD display, hand held communication device, software and hardware upgrade, improvements, without prior notice. There might be the discrepancies in the printed manual.

This manual is not the legal contract, it is simply the product user manual for reference purpose.   The ultimate interpretation of this manual goes to Hangzhou Helon Tech Ltd.

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