



User Guide: GVT-1000

Release 1.0

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Table Of Contents

1	Introduction.....	1
1.1	About This Manual.....	1
1.2	About the GSM/GPRS GVT-1000	1
1.3	Contents of Basic Package.....	2
1.4	GVT-1000 Front/Back View.....	2
1.5	Technical Specification for GVT-1000	3
2	Installation Guide.....	5
2.1	Welcome.....	5
2.2	Component List.....	5
2.3	Installation Instructions.....	5
2.5	Cautions.....	5
2.6	Red - Constant Power (Required).....	6
2.6.1	Fuse Block.....	6
2.6.2	Ignition Harness/Vehicle's Battery.....	6
2.7	Black – Ground (Required).....	6
2.8	Yellow Key On and Crank (Recommended).....	6
2.9	GPS Antenna Installation.....	6
2.10	LED Indicators.....	7
2.11	SkyGuard® Wiring Diagram.....	8



User Guide

General

Every effort has been made to ensure the accuracy of all material provided in this document. However, SkyGuard products are continually undergoing on-going product development to improve and enhance the product. SkyGuard, LLC may revise products and offerings at any time without prior notice.

The SkyGuard product provided to customer may be used only in conjunction with its lawful and intended use approved by SkyGuard, LLC as contemplated in the SkyGuard sales and marketing materials. Customer shall use only those Devices and Accessories approved by SkyGuard for use on the wireless messaging networks through which the services are provided.

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Regulatory Compliance

FCC

The GVT-1000 has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 Subpart B of the FCC rules. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help.

Disclaimer

SkyGuard disclaims all responsibility for any act or omissions, or for breach of law, code or regulation, including local or state codes, performed by a third party.

SkyGuard strongly recommends that all installations, hookups, transmissions, etc., be performed by persons who are experienced in the fields of radio frequency technologies. SkyGuard acknowledges that the installation, setup and transmission guidelines contained within this publication are guidelines, and that each installation may have variables outside of the guidelines contained herein. Said variables must be taken into consideration when installing or using the product, and Enfora shall not be responsible for installations or transmissions that fall outside of the parameters set forth in this publication.

SkyGuard shall not be liable for consequential or incidental damages, injury to any person or property, anticipated or lost profits, loss of time, or other losses incurred by Customer or any third party in connection with the installation of the Products or Customer's failure to comply with the information and instructions contained herein.

Warning

In order to comply with RF exposure limits established in the ANSI C95.1 standards, it is recommended when using SkyGuard GPS/ GSM Tracking Device that the device is positioned more than 20 cm distance from your body or nearby persons during extended periods of transmitting or operating time. If the device is positioned less than 20 cm distance from the user, it is recommended that the user limit exposure time.



User Guide

Warranty

Scope

SkyGuard, LLC warrants that each Device will be free from defects in design, materials and workmanship so long as the customer is not in default and has an active service account with SkyGuard, LLC in good standing for as long as continuous service is active on the device. Such warranty shall obligate SkyGuard, LLC to repair or replace and return the device, at no charge to Customer, Devices determined to have defects subject to SkyGuard LLC's warranty obligations; provided, that SkyGuard, LLC shall not be responsible for the cost of repair or replacement of Devices due to negligence, accidental or intentional damage, misuse or abuse. Devices shall be returned to SkyGuard, LLC for inspection.

Hardware

Customer shall use only those devices and accessories approved by SkyGuard for use on the wireless messaging networks through which the services are provided. Customer shall be solely responsible for installation of the Devices and Accessories.

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User Guide

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This agreement shall be governed by and construed in accordance with the laws of the State of Delaware without giving effect to any conflicts of law principles. If any provision of this agreement is determined to be unlawful, void or for any reason unenforceable, then that provision shall be deemed severable from this agreement and shall not affect the validity and enforceability of any remaining provisions.

1 Introduction

1.1 About this Manual

Instructions on how to install the GVT-1000 are contained in this manual. Please follow installation tips and instructions closely to avoid personal injury or damage to the GVT-1000 .

1.2 About GSM/GPRS GVT-1000

GVT-1000 GPS Unit wirelessly transmits location, peripheral, and vehicle control data to a data center. Location data, including speed, direction, mileage, and altitude, is provided by an onboard GPS module/chipset. Wireless transmission is achieved using an onboard GSM/GPRS module/chipset. A microcontroller is used to poll location and command data at regular intervals, derive actions based on location, peripheral, and control data, and execute those actions. GPS module, Wireless module, and microcontroller could potentially reside in the same silicon.

Peripheral data indicates the status of the various peripherals that are connected to and/or controlled by the unit. Peripherals include, but not limited to, door locks/un-locks , starter interrupt, ignition, battery, engine, panic button, and collision detector.

Firmware on the device applies intelligent filtering to overcome coverage limitations for both GPS and GSM/GPRS networks.

Motion sensor is used to control the status of the unit, either sleep, idle, or full power, there by controlling the amount of current the unit consumes.

Backup battery and tamper sensing GPS Antennas are primarily used to indicate loss of Main Power and loss of GPS antenna connectivity.

An internal wireless/cellular antenna is used for easy installation.

Device communicates using SMS, TCP or UDP communication protocols. SMS and UDP are the most common protocols used in our deployments.

Device supports Over-the-air firmware upgrade to deliver added functionality without physically touching the device once installed.

User Guide

1.3 Contents of Basic Package

GVT-1000 Device
Installation Guide
GPS Antenna
Power Cable
Internal Back-up battery
SIM Card

1.4 GVT-1000 Front/Back View

Front View



Back View



User Guide

1.5 Technical Specification for GVT-1000

CHARACTERISTICS	
Dimensions (L x W x H)	92x62x30mm (preliminary)
Housing Construction	Plastic (I'll check for material type and name)
Radio Performance	
GSM Module	Siemens
Model #	MC56
FCC ID number	QIPMC56
Frequency (MHz)	850//1800/1900
Transmit Power	1W/1900Mhz, 2W/850MHz
GSM Functionality / GPRS	
GPRS Mode	MultiSlot Class 10 , Mobile Station Class B
GPRS Coding Scheme	CS1,CS2,CS3 and CS4
GSM Antenna	Build In (Internal GSM Antenna)
GPS Functionality	
Receiver	uBlox , 16 Channel Antaris 4 SuperSense Chipset
Sensitivity (Tracking)	-158dBm
Antenna Type	External GPS Active Antenna , 3.3V
Connector	SMA Female
GPS Protocol	NMEA , UBX, RTCM
Onboard Components	
MCU	8-bit Microcontroller
Memory	EEPROM 512Kbit
Motion Sensor	Mechanical Type
Led Indicator	2 , Green (GSM status) , Red (GPS status)
SIM Card/Interface I/O	
SIM Access	Internal (secure behind battery cover)
I/O Connector	16 pin
Serial Data I/O	RS-232 (Optional)
Inputs	3
Outputs	4
Environment	
Operating Temperature	-20°C to +70°C (based on MC56 spec)



User Guide

Power	
DC Voltage Supply Power Consumption (Without Charging Battery)	10 ~ 30V DC Full Power mode : avg 80mA Idle Mode : avg 35mA Sleep Mode : avg 4 mA
	Aprx xx Hrs in Idle mode operation (avg xx mA) (TBD)
	Aprx xx Hrs operation in sleep mode (avg xx mA) (TBD)
Certifications	
FCC	Yes
PTCRB	Yes
US Carrier	Yes

2 Installation Guide

2.1 Welcome

It is very important that you familiarize yourself with these installation instructions before attempting to install your device. The instructions provided here are only a guide and do not necessarily apply to your particular vehicle.

2.2 Component List

GVT-1000 Device

Installation Guide

GPS Antenna

Power Cable

Internal Back-up battery

SIM Card

2.3 Installation Tips

- **Antenna placement in vehicles with metallic coating or film on windshield may require alternate site placement such as outside the passenger compartment.**
- Use pull ties, fastener screws, Velcro®, or the device mounting plate (included) to install the SkyGuard device inside the vehicle passenger cab. **Do not install the device inside the engine compartment.**
- All excess wiring should be neatly coiled and stored so that it is not crimped or rubbing against metal or moving parts or interfering
- Any unused wires should be properly taped or capped so that they do not come into contact with one another, any metal or sharp surfaces or other vehicular electrical sources.
- Once power and antenna are connected, LED indicators should indicate cellular and GPS lock.

Note: GPS performance is severely reduced when vehicle or GPS antenna is located inside metal structures. We recommend testing outside garage/service bays for GPS lock.

2.4 Installation Instructions

The following describes installation steps required for installation. Basic knowledge of automotive electrical systems and functional components is needed in order to successfully install your SkyGuard device. If you are not a qualified automotive electrical technician or do not feel comfortable performing this installation, we strongly recommend that you work with a trusted automotive professional in your area to install SkyGuard according to your needs.

2.5 Cautions

Improper installation of electrical components and any resulting damage may impact your vehicle warranty. SkyGuard, LLC will not be responsible or liable for any damage, injury or other loss suffered as a result of installations covered by these instructions.

User Guide

The cable shipped with your device includes an in-line fuse holder and a 3-amp fuse. **The fuse should be removed from the fuse holder before the install process and should not be replaced until everything else has been installed, the cable is connected to the device, and you are ready to use the device.** Installing the fuse should be your last step to complete the installation.

2.6 Red - Constant Power (Required)

Locate a suitable 12 or 24 volt constant power source. Acceptable sources for power are: The fuse block, ignition harness or vehicle's battery.

- **Fuse Block:** If you choose to get power from the fuse block on your vehicle, you can use a fuse tap and a female quick disconnect. The fuse tap must be installed on the hot side of the fuse. To find the hot side of the fuse, remove the existing fuse from the fuse block and use a test meter to probe the fuse socket. The side that shows 12 or 24 volts DC is the hot side of the fuse where you should insert the fuse tap.
- **Ignition Harness/Vehicle's Battery:** If you choose to get power directly from the battery or another wire on the vehicle be sure to use a suitable connector or splice method (such as soldering) to ensure a permanent connection. The device will not work without power.

2.7 Black - Ground (Required)

Locate a suitable area for grounding the device that is free from paint, dirt and grease. Securely fasten the black wire from the cable to the ground source using a suitable crimp terminal.

2.8 Yellow - Key On and Crank (Recommended)

This installation is recommended for more accurate trip information. Locate a "key on and crank" power source using a test meter. Connect the yellow wire from the cable to this power source. This wire should test hot in both on and start positions.

Note: Most vehicles include a number of sources for Constant Power, Ground, and Key On power under the dash. It is up to the installing technician to choose the best sources for the particular vehicle.

2.9 GPS Antenna Installation

Depending on the type of antenna provided, locate a suitable place on your vehicle to install the antenna.

For optimal performance, the GPS antenna should be mounted under the top of the dash pad without being obstructed by any metal. While you can mount the antennas elsewhere, performance may suffer as a result. Please ensure that the non-magnetic side has unobstructed view of the sky. Any metal construction will restrict or diminish GPS reception.

Make sure there is sufficient cabling to reach from the point of the antenna mount back to the point where you have installed the SkyGuard device. Conceal any excess cable under the carpet, trim, or dash so it will not be exposed to wear. Be careful not to crimp or kink the cable as this may damage the antenna or reduce its effectiveness.

User Guide

2.10 LED Indicators

Two LED's are mounted on the end of the device.

Green (Power and GSM) This LED will steadily illuminate when a good power and ground source is attached to the device and registered to the GSM network.

Red (GPS) This LED will steadily illuminate when the device acquires a GPS lock.



2.11 SkyGuard® Wiring Diagram

GPS Antenna

Device Dimensions
3.86" x 2.28" x 1.25"



Wire Legend

Battery (12 Volts)	Red
Ground	Black
ACC (Ignition Sense)	Yellow
Starter Disable (Relay -)	Orange
Starter Disable (Relay + with EMF Protection)	Orange with White Stripe



Battery

