



GPS-208 USER MANUAL

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REGULATORY COMPLIANCE

FCC

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits pursuant to Part 15 Subpart B, Part 22, and Part 24 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in an appropriate installation. This equipment generates, uses, and can radiate radio frequency energy and, if not used in accordance with instructions, can cause harmful radiation to radio communication. However, there is no guarantee that interference will not occur in a particular installation.

RF EXPOSURE

Your device is a radio transmitter and receiver. It is designed and manufactured not to exceed the emissions limits for exposure to radio frequency (RF) energy set by the Federal Communications Commission (FCC) of the U.S. Government. These limits are part of comprehensive guidelines and establish permitted levels of RF energy for the general population. These guidelines are based on the safety standards previously set by the U.S. and international standards bodies. The standards include a substantial safety margin designed to assure the safety of all persons, regardless of age and health.

The exposure standard for wireless RF devices, such as the device, employs a unit of measurement known as the Specific Absorption Rate, or SAR. The SAR limit set by the FCC is 1.6W/kg. SAR values at or below that limit are considered safe for the general public.

Before a wireless RF device is made available for sale to the Public, it must be tested and certified to the FCC that it does not exceed the SAR limits established by the FCC. Tests for SAR are conducted using the positions and locations (e.g., at the ear or worn on the body) as required by the FCC for each device model.

The device has been tested and meets the FCC RF exposure guidelines when used against the body under normal usage conditions.

R&TTE

Effective with HW revision B, the device is in conformity with the requirements of the R&TTE directive 1999/5/EC. It has been fully tested and complies with all the requirements of EN301489-1, EN301489-3, EN301489-7 and EN60950-1. Compliance to EN301511 has been demonstrated by testing on both the device and the integrated module.

The hardware revision of the device is identified on the label and also by the presence of the CE mark.

ROHS COMPLIANCE

The device complies with the European Union Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) Directive (2002/95/EC), effective since July 1, 2006.

DISCLAIMER

The information and instructions contained within this publication comply with all FCC, GCF, PTCRB, R&TTE, IMEI and other applicable codes that are in effect at the time of publication. Enfora 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. Enfora strongly recommends that all installations, hookups, transmissions, etc., be performed by persons who are experienced in the fields of radio frequency technologies. Enfora 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.

BATTERY INFORMATION AND SAFETY REQUIREMENTS

NOTE: Failure to comply with all of the following precautions could:

- Cause personal injury or property damage
- Cause abnormal chemical reactions which would make the battery over heat, smoke, distort, leak, or catch on fire
- Destroy internal protections built into the battery
- Shorten battery life
- Reduce battery performance

Precautions

- Read this entire manual and the label on the exterior of the battery.
- Keep the battery away from sources of excessive heat such as fire, stoves, or direct sunlight.
- Keep the battery away from sources of high voltage or static discharge.
- Do not use or store the battery with other batteries or where it could touch metal.
- Do not put the battery into a microwave oven.
- Do not allow the battery to be crushed.
- Keep the battery away from children.
- Do not drop the battery.
- Do not allow anything to touch any of the battery contacts, or to connect two or more of the contacts.
- Do not disassemble, destroy, or attempt reassembly of the battery.
- Do not place or leave the battery in a damp or wet environment.
- Do not allow water to touch the battery.
- Do not wrap the battery with conductive material.
- Properly dispose of the battery.
- Do not incinerate or burn the battery.
- Do not leave or discard the battery where it could get wet or become submerged in water.
- Do not damage the battery.
- Do not weld or solder anything to the battery, the attached wires, or the connector.
- Do not use this battery in any device other than supplied.
- Do not touch a leaking battery. Avoid leaked-out materials. Do not allow it to touch your skin or clothes. If touched, immediately rinse affected areas thoroughly with water. Leaked materials may cause skin irritation. Seek medical attention if irritation persists. If it contacts your eyes, do not rub your eyes. Rinse the eyes thoroughly with water, and see a doctor immediately.
- Use of this battery in other devices could result in unsafe conditions.
- Risk of explosion if battery is replaced by an incorrect type.

CHANGE LOG

Date	Author	Description
09/20/11	Doug Hamilton	Initial Release (1.0)
11/01/11	Doug Hamilton	Added info on the two wire harnesses available for the GPS-208

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1.0 Introduction

The GPS-208 is one of the smallest and most economical GPS asset tracking devices available today. The device is neither weather, dust or splash proof.

GPS and event data is made available on-board the GPS-208 for transmission to FleetLinc™ (CES web based subscriber fleet management service).

The GPS-208 can also be licensed for use with POWER-trak3™ PC/Server software. Please contact CES for further information on this.

1.1 About the GPS-208

The GPS-208 is an Automated Vehicle Locating (AVL) device that utilizes a GSM/GPRS cellular modem and a Global Positioning Satellite (GPS) module. Working together, these technologies allow the GPS-208 to simultaneously act as a stand alone GPS reporting device and wireless data retrieval unit. The GPS-208 provides a flexible AVL solution with three inputs, an ignition input and two outputs. The GPS-208 is designed to work as a stand-alone device in a vehicle. It requires DC power. No antennas are required – the GPS and quad-band GSM antennas are built in to the GPS-208.

The GPS-208 has a V₀ fire rated plastic housing. The SIM holder is internal. The interface connector is a 16-pin Molex I/O connector. There are three LED indicators.

1.2 About This Manual

This manual contains instructions on how to install and configure the GPS-208. Please follow the instructions closely to avoid damaging the GPS-208.

1.3 Basic Package Contents

The basic package will contain the following:

- GPS-208 - GPS/GSM/GPRS Tracking and Fleet Management Device
- 16-pin interface connector with DC cable (HRNS-062)

1.4 Accessories

The following accessories are available from CES Wireless Technologies:

- PRG-05: Programming Cable - 16-pin cable with USB Connector, power and ground
- DP-1000S: Programming Software (can be downloaded from the CES FTP site, and is also available on CD-SOFT1 CD).

1.5 System Requirements

It is necessary to have a computer running Windows 2000, Windows XP, Windows Server 2003 or Windows7 to program the device. The system must include a USB port in order to configure the GPS-208.

1.6 GPS-208 Front View

Front View: On the front of the GPS-208 is the 16 pin interface connector. To the right of the connector are three LEDs. The functionality of these LEDs is:

- USR1 (Green) – This LED indicates the state of the GSM connection. If blinking the GPS206 is attempting to establish the connection. If solid the GSM connection has been established.
- PWR GPS (Red) – When this LED is illuminated it indicates that the GPS206 has power.

- **USR2 (Blue)** – This LED indicates the state of the GPS fix. If illuminated the GPS206 has established a position fix from satellites in the GPS satellite constellation that are viewable from its current location.



Figure 1: Front view of the GPS-208

1.7 Label

The GPS-208 has a printed label on its top side. It is important that when the GPS-208 is mounted that the label side is pointing towards the sky.



Figure 2: Label indicating the top side of the GPS208

2.0 Specifications

Note: Specifications subject to change without notice.

2.1 System Information

Dimensions	3.23 x 1.81 x .83 inches (82 x 46 x 21 mm)
Weight	
Housing:	Rugged textured plastic enclosure, V ₀ fire rated
TX Power:	Class 4 (2W @850/900 MHz) Class 1 (1W @1800/1900 MHz)
Frequency:	850/900/1800/1900

2.2 GPRS Packet Data

Mode:	Class B, Multislot 10
Protocol:	GSM/GPRS Rel 97 AMR Rel 99
Coding Schemes:	CS1-CS4
Packet Channel:	PBCCH/PCCCH

2.3 GPS Functionality

Antenna:	Built In
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2.4 Environment

Operating:	-30°C to +85°C
Storage:	-40°C to +85°C
Humidity:	Up to 95% non-condensing
Vibration:	In accordance with SAE J1211

2.5 Certifications

FCC:	Part 15, 22 & 24
GCF:	Version 3.40.0
PTCRB:	Version 5.6
Industry Canada	RSS-210, 132, 133
CE Mark	Article 3.1a, 3.1b, 3.2
Emark	Yes
RoHS Compliant	Yes
Anatel	Yes
AT&T	Yes
ICASA	Yes (pending)

2.6 SIM Card/Interface/I/O

SIM Access:	Internal
GSM Antenna:	Built In
I/O Connector:	16 Pin 1 User Input (0-40V) Ignition Sense 2 Outputs

2.7 Power

DC Voltage	9-16V
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2.8 Battery

Battery	Optional rechargeable lithium-ion battery (230mA)
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3.0 Installation

The instructions in this section describe the hardware installation of the GPS-208. To install the GPS-208 in a vehicle follow these steps:

- Choose a convenient location in the vehicle – either in the trunk or interior of a vehicle. Avoid locations that might expose the GPS-208 to excessive heat or moisture.
- The GPS-208 has a printed label on the top side of the device. It is important that this label be facing towards the sky when the GPS-208 is installed.
- An optional backup battery is available for the GPS-208. If the device is equipped with a battery it is important that the power switch for the battery be turned on. The image below shows the location of the power switch. In the image it is in the off state.

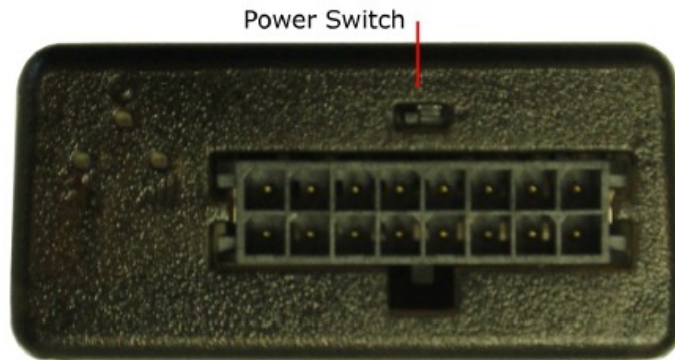


Figure 3: GPS-208 Power Switch for the optional backup battery



The GPS-208 is **NOT** a waterproof or sealed device. Care must be taken to ensure that the device is kept away from water and other liquids. The GPS-208 can be mounted inside a weather proofed box if necessary.

3.1 Installing Cables

To ensure proper operation of the GPS-208 please follow these precautions:

- Remove power from the GPS-208.
- Do not create sharp bends, loops or crimps in the cables.
- Attach all cables to the vehicle and equipment in such a way as to reduce stress or wear caused by the vibration generated by moving vehicles.
- No more than a combined total of ten (10) pounds force can be applied to the GPS-208 connector.
- Properly terminate all power cables.

3.1.1 HRNS-062 - 16-Pin I/O Connector

HRNS-062 is a 16-pin external I/O connector and cable. This connector provides power and can be used to interface the GPS-208 with inputs and outputs.

CES Wireless Technologies can also provide optional cables with connectors. The part numbers vary with the cable's intended use. Please contact your CES Wireless Technologies sales or support executive for more information.

You may also build your own cable. Table 1 describes the functionality of this 16-pin connector. CES recommends using 20-gauge wire when building the connector. Pins that are not planned for usage should be left open without anything connected to them.

Pin Number	Functionality	HRNS062 Color Codes	HRNS063 Color Codes
1	N/A	No Connection	No Connection
2	N/A	No Connection	No Connection
3	Ignition Sense	White	White (Cable 1)
4	N/A	No Connection	No Connection
5	N/A	No Connection	No Connection
6	Ground	Black	Black (Cable 1 & 2)
7	N/A	No Connection	No Connection
8	Output 1	No Connection	Brown (Cable 2)
9	N/A	No Connection	No Connection
10	N/A	No Connection	No Connection
11	Power Input (9-16 VDC)	Red	Red (Cable 1)
12	N/A	No Connection	No Connection
13	Input 1	No Connection	Blue (Cable 2)
14	Output 2	No Connection	Red (Cable 2)
15	Input 3	No Connection	White (Cable 2)
16	Input 2	No Connection	Green (Cable 2)

Table 1: 16-pin I/O Connector Functionality. HRNS062 is the Power only cable. HRNS063 is for Power (Cable 1) and I/O (Cable 2).

The following figure shows the pin connections for the 16-pin connector as viewed from the wire entry side.

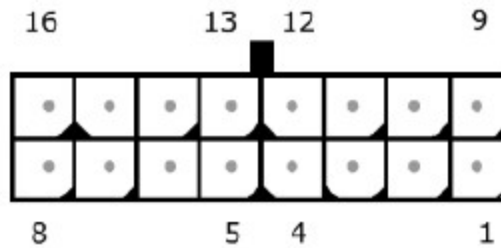


Figure 4: 16 Pin Connector

The manufacturer part numbers for the parts needed to build the cables is noted in the following table.

Item	Manufacturer	Part Number
Connector	Molex	43025-1600
Pins	Molex	43030-0008 20-24 AWG 43030-0011 26-30 AWG
Crimp Tool	Molex	63819-0000A

Table 2: Manufacturer Part Numbers to Build Cables

3.2 Opening and Closing the GPS-208

3.2.1 Opening the GPS-208

To open the GPS-208 it is highly recommended that the special lever be used (P/N GPS-208-LEVER) in order to prevent damaging the device.

Follow these steps to open the GPS-208:

- 1) Insert the curved end of the lever into the space between the lid and the body as shown.

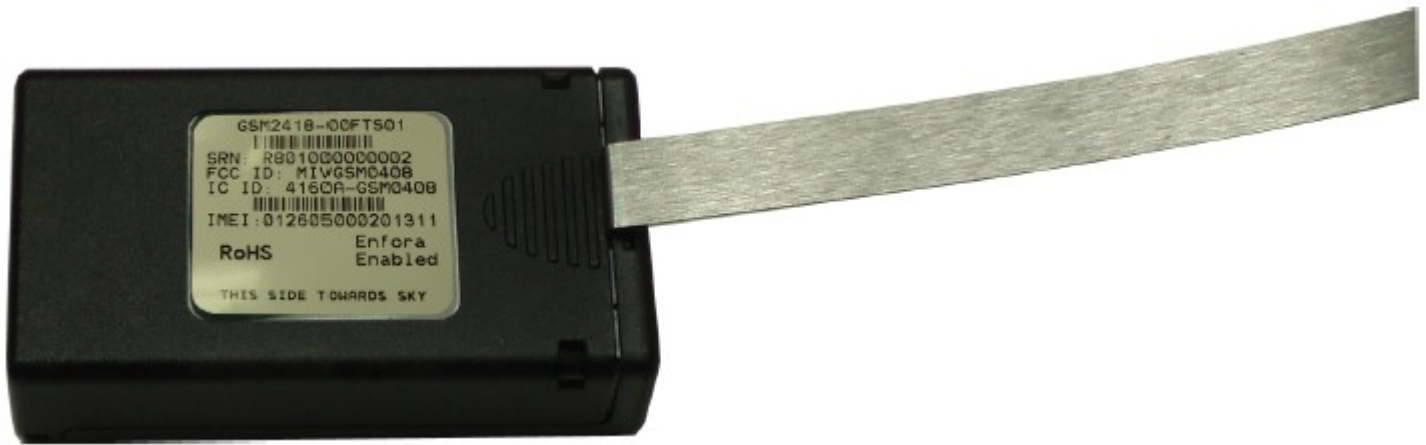


Figure 5: Opening the enclosure of the GPS-208

2) Apply gentle pressure upwards on the lever until the lid snaps open.



Figure 6: Enclosure unsnapped on the GPS-208

3) Carefully slide the cover off of the GPS-208.

3.2.2 Closing the GPS-208

To close the GPS-208 place the cover onto the base as shown in Figure 6. Carefully slide the lid until it snaps into place.

3.3 Installing the SIM (Subscriber Identity Module) Card

The SIM card is an integral part of any GSM terminal device. On the GPS-208 the SIM card is internal. The enclosure must be opened in order to install the SIM card. Following the instructions in Section 3.2 open the GPS-208 enclosure. Insert the SIM card in the SIM holder. The SIM card is inserted into the GPS-208 with the notch on the SIM card on the right and going in last.

NOTE: Not all GPS-208's are provided with SIM cards. The SIM card will be provided by CES Wireless Technologies only if GSM/GPRS data service is purchased along with the device. If purchasing the SIM card separately take steps to ensure that the SIM card is provisioned by the operator for data.



Figure 7: Internal view of the GPS-208. Note the orientation of the SIM card.

NOTE: Always take care to protect the SIM card. The GPS-208's GSM/GPRS related functionality will not operate without the SIM card installed.



Ensure the power to the GPS-208 is disconnected before inserting the SIM card. Failure to do so might result in an unusable GPS-208 or a damaged SIM card.

3.4 Connecting Power

The GPS-208 has an input voltage range of 9-16 VDC. The power and ignition pins can support 9-16 VDC input voltage. The user has an option to connect these wires depending on the desired functionality. Described below are the desired functionality and their associated wire connecting procedure:

Power to the GPS-208 can be supplied in three different methods, depending upon the application.

GPS-208 Always ON

- Connect the power and ground wires of the GPS-208 to the battery leads. The GPS-208 will always remain ON as long as the battery lasts. If equipped with the optional backup battery, the GPS-208 will remain on until its internal lithium-ion battery is depleted (approximately 1 hour).
- The GPS-208 will be non-operational when the input voltage and current requirements are not met (battery drains – both external and internal).
- The Ignition wire has to be left open (not connected).

GPS-208 Turns Off when Ignition Turned Off

- Connect the power line of the GPS-208 to an auxiliary power source, i.e. ignition.
- Connect the ground wire to the chassis or negative terminal of the battery
- The Ignition wire has to be left open (not connected).

GPS-208 with Ignition Connected to Provide Ignition On/Off Events

- Connect the power and ground wires of the GPS-208 to the battery.

- Connect the ignition wire of the GPS-208 to an auxiliary power source, i.e. ignition.
- Device goes through a reset upon ignition on.

3.5 **Optional Backup Battery**

An optional 230 mAH backup battery is available for the GPS-208. The battery may need to be connected during the installation process. The battery will need to be turned on via the power switch (see Section 3.0 for more information).



Figure 8: GPS-208 optional backup battery connected to the main circuit board.

3.6 **GPS-208 Installation**

The enclosure for the GPS-208 includes molded anchor points for mounting as shown. Also, it is very important that the top side of the GPS-208 (the side with the label) be facing towards the sky.



Figure 10: GPS-208 mounting anchors.



The battery switch must be turned on prior to connecting any auxiliary I/O devices. Failure to do so may result in damage to the GPS-208 and/or the attached I/O device.

4.0 Support

If you need help, we are easily accessible

Telephone: Call 407-679-9440, and ask for product support.

Fax: 407-679-8110

Email: support@ceswireless.com

Skype: Please email support@ceswireless.com to obtain your currently assigned support engineer's Skype address.

Product support may ask you to **E-MAIL** a copy of the programmed parameters to us for analysis. To do this, go to **FILE** on the DP-1000S main menu, and click on **SAVE AS**. Note the path to the saved file in the save file dialog. Attach this file to an e-mail and send it to you product support representative or to the e-mail address noted above.

Product support may ask you to **PRINT** a copy of the programmed parameters, and fax to for analysis. To do this, go to **FILE** on the DP-1000S main menu, and click on **PRINT**.

Support Resources: www.ceswireless.com

FTP Site: Please go to www.ceswireless.com and register for an FTP site User Name and Password