

GPS Mobile Locator GM-44[®] (5V)



Installation Guide



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9. QUICK START:

1. Please review the System Lay-out wiring and PC power is OFF before proceedings.

2. Connect the DB09 data cable to your PC com-port, locate the PS2 power DIN6 connector and insert to your Laptop PS2 jack(same jack is used for ternal mouse).

3. Make certain that your new GM-44® is secure properly.

4. Turn your Laptop power on and run your Map program, be sure that your Map program uses the standard NMEA sentences mention in this manual, Some programs proprietary software and it requires their GPS hardware to run.

5. Select your proper COM-PORT number of your Laptop:

Note: Most Laptop share com-port #1 (PCMCIA & SERIAL DB09) and the BIOS will detect which rial is being used. If your BIOS cannot detect the rial port, then it must be manually selected during your Laptop PC start-up.

TABLE 7

\$GPGGA,161229.487,3723.2475,N,12158.3416,W,1,07,1.0,9.0,M,, , ,0000*18

Name	Example	Units	Description
Message ID	\$GPGGA		GGA protocol header
UTC Position	161229		hhmmss
Latitude	3723.2475		ddmm.mmmm
N/S Indicator	N		N=north or S=south
Longitude	12158.3416		dddmm.mmmm
E/W Indicator	W		E= east or W=west
Position Fix Indicator	1 see table below		GPS SPS mode,fix valid
Satellites Used	07		Range 0 to 12
HDOP	1.0		Horizontal Dilution of Precision
MSL Altitude	9.0	meters	
Units	M	meters	
Geoid Separation		meters	
Units	M	meters	
Ages of Diff. Corr.		second	Null fields when DGPS is not used
Diff. Ref. Station ID	0000		
Checksum	*18		
<CR> <LF>			End of message

0=invalid	1=Fix valid GPS	2=DGPS Fix	3=GPS PPS Fix
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Package Contents

- 1 **One GM-44® w/serial & PS2 connector**
- 2 **One PS2 Ciga-Lighter Adapter**
- 3 **User Manual**
- 4 **Free Evaluation GPS Map Software GPSS with country maps of the world. <http://www.gpss.co.uk>**

Please check if all of the contents listed are included and it not damage from shipping If any of the items are missing or damage, please notify San Jose Navigation, Inc.

**<http://www.sanav.com>
sanav@sanav.com**

Important Notes

Keep the GM -44® unit stowed in a secure location before power is applied.

Do not use power and data cable extension for the GM-44®, due to such cable may interfere or degrade proper operation.

Secure the Power/Data cable of the GM_44 to protect it against mechanical stress or vibrations.

Do not connect the PS2 connector of the data cable directly to a POWER source other than the PC PS2 outlet or the PS2 power adapter for the ciga-lighter with a built-in DC/DC regulator.

NOTE: DAMAGE MAY OCCUR IF IMPROPER INPUT POWER IS APPLIED.

TABLE 6

GSV - GNSS Satellites in View
\$GPGSV,2,1,07,79,048,42,02,51,062,43,26,36,256,42,27,27,138,42*71

Name	Example	Units	Description
Message ID	\$GPGSV		GSV protocol header
Number of Message	2		Range 1 to 3
Message Number	1		
Satellites in View	07		
Satellite ID	07		Channel 1 (1~32)
Elevation	79	degrees	Channel 1(max. 90)
Azimuth	048	degrees	
SNR (C/No)	42	dBHz	0~99,null when not tracking
....		
Satellite ID	27		Channel 4(1~32)
Elevation	27	degrees	Channel 4(max. 90)
Azimuth	138	degrees	Channel 4(True,0~359)
SNR(C/No.)	42	dBHz	range 0~99, null not track
Ages of Diff. Corr.		second	
Checksum	*71		
<CR> <LF>			End of message

TABLE 4 VTG- Course Over Ground and Ground Speed

\$GPVTG, 309.62,T, ,M,0,13,N,0,2,K*6E

Name	Example	Units	Description
Message ID	\$GPVTG		VTG protocol header
Course	309.62		Measured heading
Reference	T		True
Course		degrees	Measured heading
Reference	M		Magnetic
Speed	0.13	knots	Measured horizontal speed
Units	N		Knots
Speed	0.2	km/hr	Measured horizontal speed
Units	K		Kilometer per hour
Checksum	*6E		
<CR> <LF>			End of message

TABLE 5 GLL - Geographic Position-Latitude/Longitude
\$GPGLL, 3723.2475,N,12158.3416,W,161229.487,A*2C

Name	Example	Units	Description
Message ID	\$GPGLL		GLL protocol header
Latitude	3723.2475		ddmm.mmmmm
N/S Indicator	N		N=north or S=south
Longitude	12158.3416		ddd.mm.mmmmm
E/W Indicator	W		E=east or W= west
UTC Position	161229		hhmmss
Status	A		A=valid or V=not valid
Checksum	*2C		
<CR> <LF>			End of message

1.1 Introduction

GM-44® Mobile Locator

Congratulation on your purchase of the GM-44® Mobile Locator. This is the latest GPS product innovation in combining GPS receiver technology and mini-antenna in a Plug-Navigate-Location concept from SAN JOSE NAVIGATION, INC.

The GM-44® device unit received the FREE broadcast signal from the Low Orbit Global Positioning System(GPS), a satellite-base transmitter which emit ranging/satellite information/ high precision time signal that the GM-44® receiver can use to determined positions & time.

1.2 System Requirements

System requirements for operating your new GM-44® Mobile Locator are as follows.

PC running DOS , Windows OS or any OS that accept GPS NMEA data format. PDA, Palm-PC, Chart Plotter, Notebook or Micro-controller using UART as serial bus.

Power source using our PS2 for Notebook PC, Ciga-Lighter for Car.

NOTE: Regulated DC must be use to this unit either through our PS2 connector to your Notebook/PC or the Ciga-Lighter power adapter with a built-in regulator provided.

Un-obstructed view of the SKY for the satellites over the sky can be seen by the unit.

2. Installing the GM-44[®] Mobile Locator

2.1 Hardware lay-out/ Wiring

The GM-44[®] Mobile Locator is designed as a center mount unit with a hex fastener for permanent installation.

Figure 1: GM-44[®] System Illustration

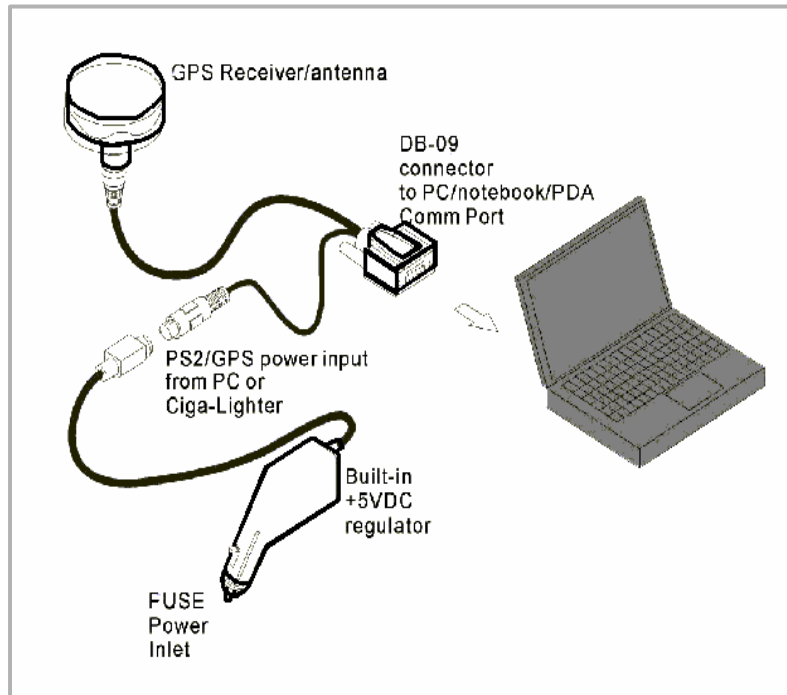


TABLE 3

GSA- GNSS DOP and Active Satellites

\$GPGSA,161229.487,3723.2475,N,12158.3416,W,1,07,1.0,9.0,M, , , ,.0000*18

Name	Example	Units	Description
Message ID	\$GPGSA		GSA protocol header
Mode1	A		Automatic-switch 2D/3D
Mode 2	3		1=No Fix, 2=2D, 3=3D
Satellite Used	07		Sv on Channel 1
Satellite Used	02		Sv on Channel 2
	.		
Satellite Used			Sv on Channel 12
PDOP	1.8		Position Dilution of Precision
HDOP	1.0		Horizontal Dilution of Precision
VDOP	1.5		Vertical Dilution of Precision
Checksum	*33	meters	
<CR> <LF>		meters	End of message

TABLE 2

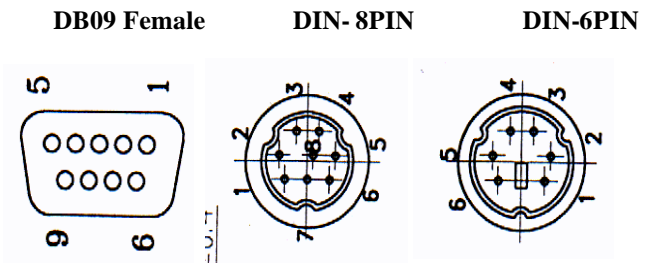
RMC- Recommended Minimum Specific GNSS Data

RMC- Recommended Minimum Specific GNSS Data

Name	Example	Units	Description
Message ID	\$GPRMC		RMC protocol header
UTC Position	161229		hhmmss
Status	A		A=data valid or V=Not
Latitude	3723.2475		ddmm.mmmm
N/S Indicator	N		N=north or S=south
Longitude	12158.3416		dddmm.mmmm
E/W Indicator	W		E= east or W=west
Speed Over ground	0.13	knots	
Course Over Ground	309.62	degrees	True
Date	120598		ddmmyy
MSL Altitude	9.0	meters	
Magnetic Variation		degrees	E= east or W=west
Checksum	*10		
<CR> <LF>			End of message

**2.2 Cable harness wiring layout,
Please note that the connector wire destination
DOES not coincide with wire the signal name.**

Figure 2: Connector Wire pin-out:



<u>pin1=n/c</u>	<u>pin1=TXA</u>	<u>pin1=n/c</u>
<u>pin2=TXA</u>	<u>pin2=RXA</u>	<u>pin2=GND</u>
<u>pin3=RXA</u>	<u>pin3=+5VDC</u>	<u>pin3=n/c</u>
<u>pin4=n/c</u>	<u>pin4=1pps/TTL</u>	<u>pin4=n/c</u>
<u>pin5=GND</u>	<u>pin5=n/c</u>	<u>pin5=+5VDC</u>
<u>pin6=n/c</u>	<u>pin6=GND</u>	<u>pin6=n/c</u>
<u>pin7=n/c</u>	<u>pin7=n/c</u>	
<u>pin8=n/c</u>	<u>pin8=n/c</u>	
<u>pin9=n/c</u>		

3. Installation & Operating procedure

After a complete familiarity of your new Mobile Locator using Figure 1 & Figure 2 , you are ready to interface the unit to your computing device. PLEASE MAKE SURE THAT POWER IS OFF BEFORE PROCEEDING.

Step 1: Install your new GM-44® in an open sky view to a secure location.

Step 2: Locate the data DIN 8PIN connector and plug it to your GM-44® and secure the cable harness from vibration.

Step 3: Locate the data DB09 connector and plug it to your computing device serial COM -PORT.

Step 4. Locate the power DIN 6 PIN connector and connect it to a power source (PS2 of Notebook or our Ciga-Lighter) PS2.

NOTE: The GM -44® Mobile Locator DOES NOT have a power switch so if power source is applied, this in turn also power the unit and data is output in 1Hz(1second) interval.

Evaluating Program is included for your computer running WINDOWS . Please load the program to your computer and follow the instruction in running and loading your own MAPS.

Please see <http://www.gpss.co.uk> web pages for more information .

9. NMEA-0183 APPROVED SENTENCES

Approved sentences are those of which formats are defined format NOT user-definable. An approved sentences generally takes the following form: See Tables examples: ZDA,RMC,GSA, VTG,GSV,GLL,GGA.

\$<address field>, <data field>.....[*<checksum field>] <CR><LF>

TABLE 1:

ZDA - DATE/ TIME

\$GPZDA, 123456,01,02,2001,+09,00,*6B

Name	Example	Units	Description
Message ID	\$GPZDA		ZDA protocol header
UTC: Time	12-34-56		hh-mm-ss
UTC: Day of Month	01		DD
UTC: Month	02		MM
UTC: Year	2001		YYYY
Local Zone Time	+09		hh
Local Zone Time	00		mm
Checksum	*6B		
<CR> <LF>			End of message

Interpreting Example:

February, 1, 2001

12:34:56

Local Zone Time: +09:00

7. Product Limited Warranty

This unit can be use as part of a navigational aids, and is not intended to replace other means of navigation or aids . San Jose Navigation, Inc. warrants this GPS receiver and accessories to be free of defect for a period of 12 months from the date of original purchase.

THIS WARRANTY APPLIES ONLY TO ORIGINAL CHASE.

In any event of a product defect while in normal usage, San Jose Navigation, Inc. will replace or repair the defective with no charge to the original purchaser for parts and labor. However, San Jose Navigation, Inc. reserves the right of determination to replace or repair the defective product. The replacement or repaired product will be warranted for a total of 90 days(ninety) from the date of turn shipment, or for the remaining balance of the original warranty, whichever is longer.

PURCHASER? DUTIES

The purchaser must return defective unit postpaid, with the proof of original purchase and a return address to San Jose Navigation, Inc.
9F, No. 105, Shi-Cheng Road, Pan-Chiao City
Taipei Hsien, Taiwan, R.O.C.(220)

Tel: 886-2-26879500
Fax: 886-2-26878893
HomePage: <http://www.sanav.com>
Technical Support:
sanav@sanav.com

3.1 Software information:

The GM-44® Mobile Locator is NMEA 0183 compatible data format, output sentences in which ALL mapping software or GIS software will support

The following are example of commercial Map Software:

Street Atlas
Fugawi
Route66

3.2 Communication Specification

System: Asynchronous

Speed: 4800bps

Start Bit: 1 bit

Data Length: 8bits(MSB=0)

Stop Bit: 1 bit

Parity Bit: None

4. Application

GM-44® Mobile Locator can be use towards applications in GPS Navigational needs or Precise Timing source.

Mobile Navigation
Marine GPS Chart Plotter
Fleet Management GPS System
Avionics
Land Survey GPS data collection
AVL GPS data
? GPS Network Timing

5. System Specifications:

Characteristics Performance

Receiver.....12 CH/Parallel
Frequency.....1575.42MHz
Tracking Code.....C/A codes
Max. Number of Satellites Tracked.....12 satellites
Acquisition Time.....18seconds typ. (warm start)
Position Accuracy.....15m or 50ft RMS*(DOP<3)
Velocity Accuracy.....0.1knots RMS steady state
Update Rate.....1Hz (1 second continuous)

Interface

Serial Communication.....RS232 (standard)
Output Format.....NMEA 0183
\$GPGGA,\$GPRMC,\$GPGSV,\$GPVTG,\$GPGLL,\$GPGSA

Power:

Input.....+8~+35VDC reverse protected
Power Consumption.....0.9watt max.

Environmental

Operating Temperature.....-30~+75degree C
Storage Temperature.....-40~+80degree C
Humidity.....95%non-condensing

Construction

Radome.....Polycarbonate
Body Frame.....Hard-steel with course tread
Mounting.....Center mount
Size.....52mmX 22mm

6. Troubleshooting Tips:

1. No output:

If you are using your PS2 Notebook supply, check if the PS2 connector is connected to your notebook properly.

Check to see if the COM PORT is enable.

If you are using the PS2 Ciga-Lighter adapter, check to see if the RED LED is let, if not check the built-in FUSE 1A inside the Adapter.

2. GPS Data is not in correct positions:

During the FIRST COLD start situation, when the unit is turn-on at your location. The unit will AUTOMATICALLY search for the satellites and accumulate new data for your receiver and this may take from 4~5min.

NOTE: One can use any comm-program or WINDVIEWER to see the raw data at 1Hz, 4800bps.

3. No activity or the Map Software is not receiving any GPS data. In the FREE GPSS program the software will auto search for COM1 & COM2 data as soon as the program is execute, be sure that the GM-44® is connected to COM1 & COM2.