GC-101
GPS/GSM Micro Tracker

Aug. 31 2007

Version: 1.66F

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1. Hardware Description

1.1 Front Face

GSM Status Indicator

Flashing: Searching GSM signals

Light on: GSM fixed

GPS Status Indicator

Flashing: Firmware running

Light off: Searching GPS signals

Light on: GPS fixed

1.2 Side Face

Power Switch

SOS Button

Press when in an emergency

ON OFF

SOS
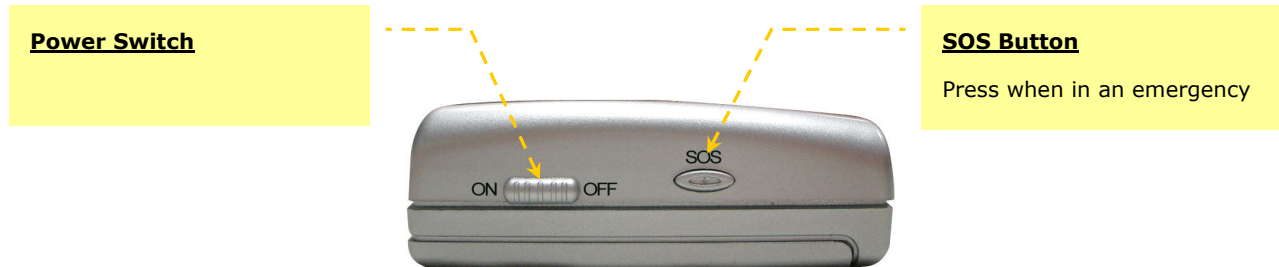
Below is the indication of LED light status of GC-101

When you operate the GC-101, there are 4 different color lights to indicate different status of GC-101. Please refer to below chart for the detail information.

LED	Indication	Status	Explanations
Red	GSM	Off	1.GSM Shut Down
			2.Busy line (voice)
		Still	Power Saving
		A quick flash at every 4 seconds	Hook on the network
		A flash per second	Searching for network
Blue	GPS	Still (100% brightness)	GPS Fix
		Still (50% of original brightness)	Power Saving
		A flash per second	Controller executing
		Off	No GPS Fix
Orange	Reporting or Low Power	A flash per second	Low power
		A quick flash	Sending a report
		Still	Park Mode
Green	Charging	Off	Full Charge or No Charging
		Still	Charging
		Flashing	Cannot Charge
		Fast Flashing	Cannot Charge

1.3 Bottom Face

6V DC

Power Input

Use the chargers provided by SANAV to charge the battery.

ADAPTOR

Wall Charger

Cigar Charger

1.4 Charging

When power is ON

When GC-101 is charged with power **switched on** and GPS is fixed, you shall see a faint green light here. That means it is charging.

When power is OFF

When GC-101 is charged with power **switched off**, you shall see a clear green light here. That means it is charging.

1.5 Rear Face (Battery Cap)

Use your thumb to press the battery cap and then slide downward to open it.	Open the cap and move put away the battery.	Put in the SIM card in the correct orientation.

2. Specifications

SPECIFICATIONS		
Electrics Data		
Frequency	Tri Band 850/1800/1900 or 900/1800/1900 Mhz	
	1575.42 Mhz	
GPS Receiver	Acquisition time	Reacquisition < 2sec.
		Cold < 60sec. TTFF (Time To First Fix)
		Warm < 35 sec. TTFF
		Hot < 10sec. TTFF
	TTFF Accuracy	Position 10 meters RMS without SA
		Velocity 0,1m/s without SA
Power		
Battery Power	3.7V DC Li-Ion Battery, 1100mA	
External Power	6V DC	
Battery Life	50 hours after full charged, in stand –by mode	
Environmental Conditions		
Operating Temperature	-10℃ to +45℃	
Storage Temperature	-10℃ to +50℃	
Relative Humidity	5% to 95 %, non-condensing	
Mechanics Data		
Size	44.82(L) x68.2W) x22.81 (H) mm	
Weight	75g (1100mA battery included	

＊Specification subject to change without prior notice

3. Function Overview

3.1 General

GC-101 is using the GPRS service to upload the RMC sentences containing latitude, longitude, speed and time to an assigned web server. It is specially designed for the intensive tracking applications, such as fleet management and life security.

Note1：When GPRS network is not available, SMS will be sent instead in the HTTP/SMS mode.
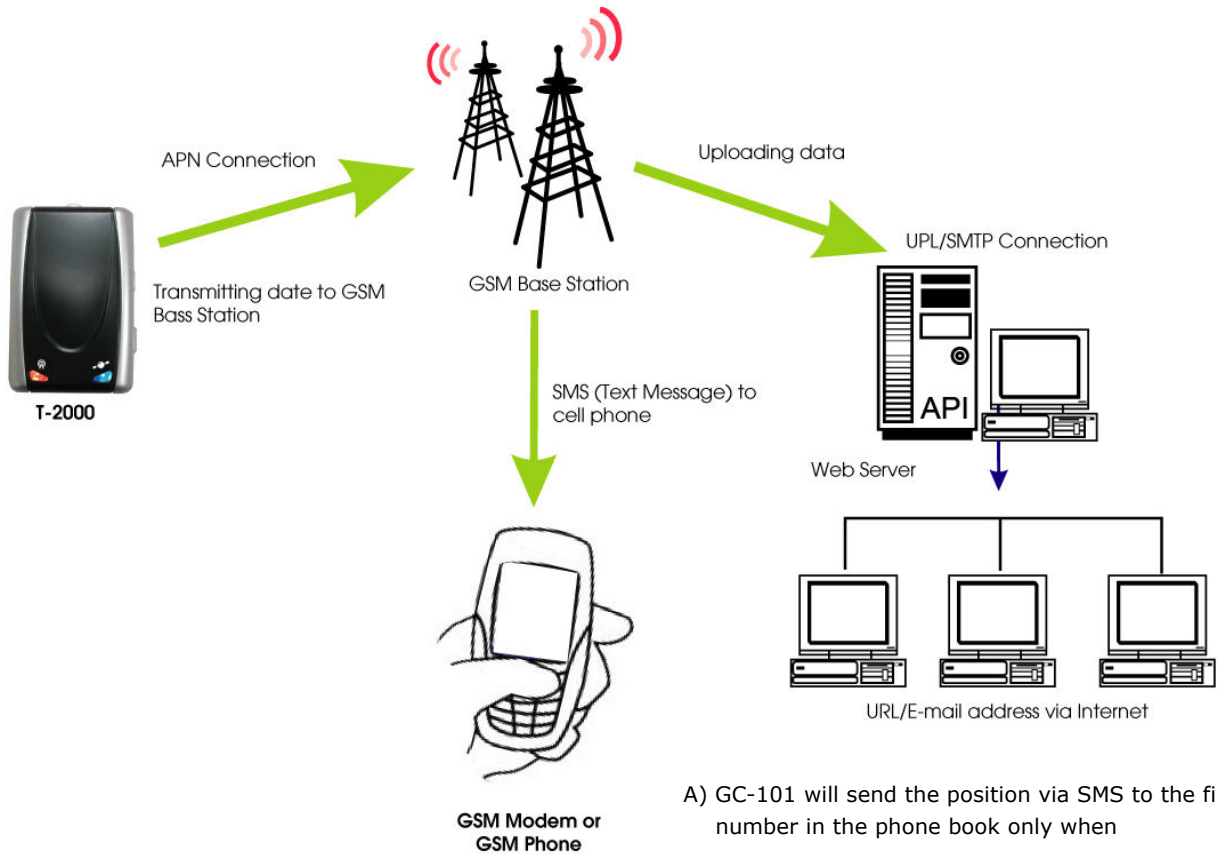
A) GC-101 will send the position via SMS to the first number in the phone book only when

1. APN is incorrect
2. GPRS is not available
3. URL is incorrect or website is down
4. GC-101 is in SMS-only is down

B) GC-101 will send the conformation SMS to the caller's GSM modem after any setup is done.

9

3.2 Features

● **Panic**

The diagram bellow shows the action after Panic button is pressed under HTTP/SMS mode. Please refer to 5.19.

Please note panic report interval is 60 seconds a time and total are 60 times. Interval is unable to be set.

```
┌─────────────────────────┐
│      Press Panic        │
└────────────┬────────────┘
             │
             ▼
┌───────────────────────────────────────────────┐
│ Upload messages to URL via GPRS. (The default  │
│ report frequency is a message every 60 seconds │
│ for 60 times)                                   │
└──────┬────────────────────────────────▲────────┘
       │                                 │
       ▼                                 │
    ◇ No                           ◇ GPRS
     GPRS                            comes
       │                                 ▲
       ▼                                 │
┌───────────────────────────────────────────────┐
│    Send the SMS to the first number in the     │
└───────────────────────────────────────────────┘
```
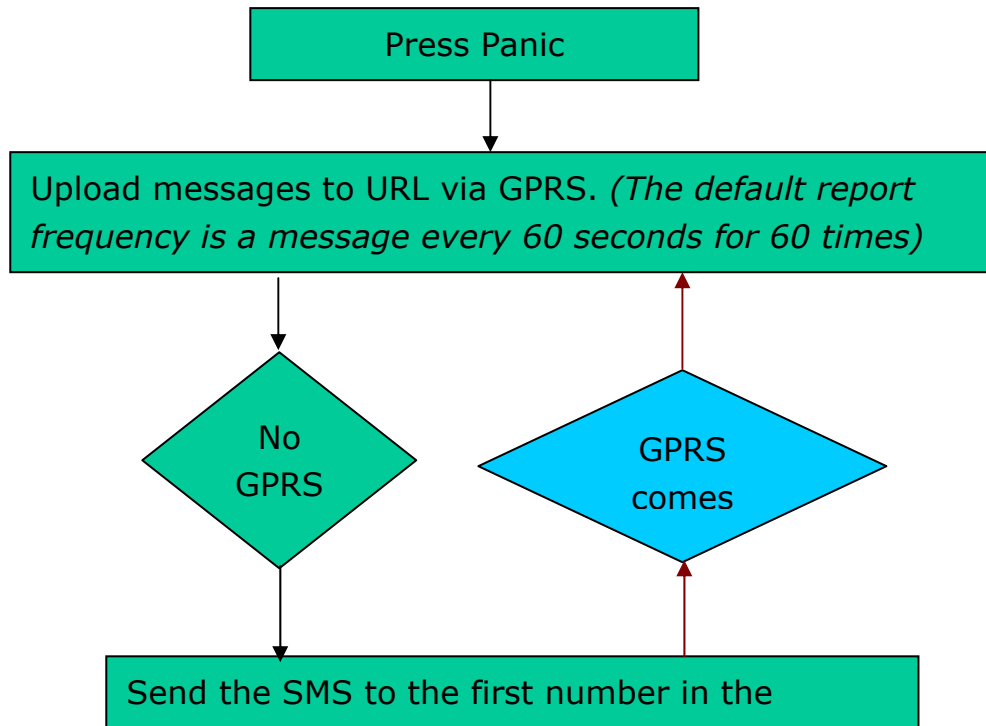
● **Auto Report**

You can set up auto report function to receive a regular report, and note that the default setup is off, Please refer to chapter 5.6 for detailed information.

● **Voice Monitoring**

You can also set up the voice monitoring function in order to overhear surrounding. For the detail setting, please refer to chapter 5.16 for detailed information. Please note this function is only available for GC-101 M version.

Applications

⊕ Fleet Management
⊕ Vehicle Security and Recovery
⊕ Asset tracking
⊕ Yacht watching
⊕ Covert Tracking

4. Easy Start

All the settings are done by SMS. Please use your cellular phone to send the following SMS to GC-101 to start experiencing it.

1. **Request for the imei code of GC-101.**

If the command has been transferred successfully, GC-101 will send an imei code to your cell phone otherwise a failure message will be sent instead.

＃username,0000,Imei＊

2. **Set up APN (Access Point Name) that is provided by your GSM provider.**

If you are not sure about your APN, please refer to the APN table in the CD or contact your local mobile phone service. After sending the SMS command, GC-101 will response a message to your cell phone to see if the GC-101 does receive the command. *Please note that the GC-101 is not able to determine the validity of the APN*.

＃username,0000,3,your APN,user,password＊

3. **Set up the phone book.**

When either APN or URL is incorrect or GPRS/URL is not available, the GC-101 will not be able to upload the data to the website. In any case mentioned above, the GC-101 will send a SMS instead containing GPS position to the 1st predefined number.

＃username,0000,5,cellular phone number*

4. **Set up Auto Report.**

After sending the SMS command shown below with success, the GC-101 will start sending data to SANAV's Website at the interval of 60 seconds and total of 5 reports. However, if either GPRS is not available or APN is incorrect or URL is down, the GC-101 will send the data via SMS to the 1st predefined number in the phone book.

＃username，0000，6，60，5＊

5. If you do not have the SMS containing the position, please surf to following website and key in your imei code as the 4.1 shown to check out the GPS data.

http://www.sanav.com/eric-gga/gprs_read.aspx
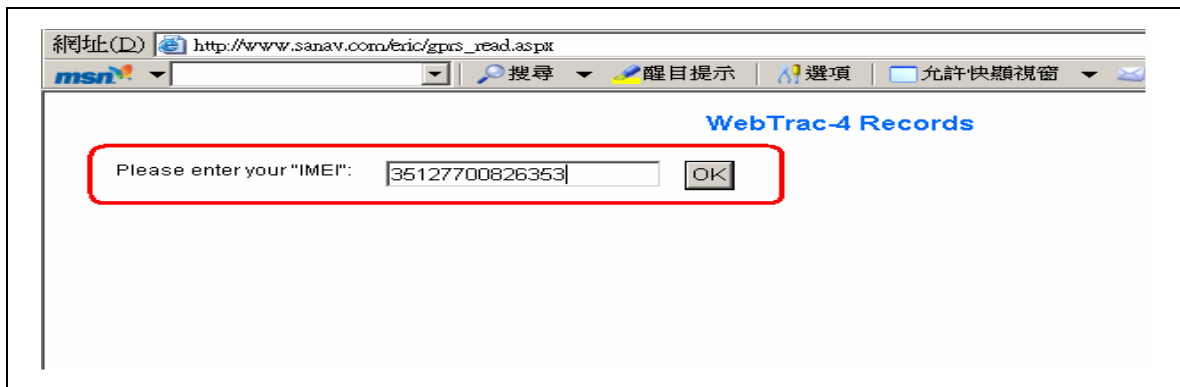
4.1

6. Click on OK and you shall read the RMC data. If you have the message of "invalid imei code", please kindly contact us.

4.2

7. You also can click on the "Show Last 10 Records on Map" and you shall see the position from the Google Map and Google Earth.
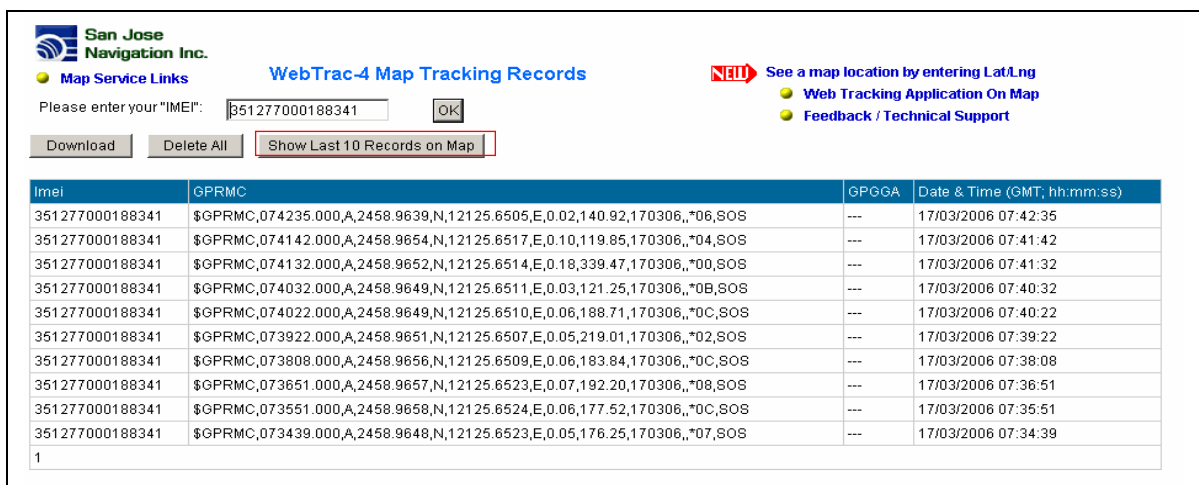
5. Setup

GC-101 currently provides 19 commands for setup. You can setup the GC-101 by following the instructions shown in this chapter via SMS from a cellular phone. Key the specific SMS message in your cellular phone as the instruction and send it to the SIM number of GC-101. The setup messages are showed in the following sections.

Note1: The default settings are shown as below.

    a.   Default GC-101 ID is "username", and please read Chapter 5.1 in order to change the ID.

    b.   Default password is "0000", and please read Chapter 5.2 in order to change the password.

    c.   There's no number in the default contact, and please read Chapter 5.5 in order to add the phone number.

    d.   Default setting of Auto Report is deactivated, and please read Chapter 5.6 in order to setup the auto regular report.

    e.   Default setting of APN is only suitable for Taiwan GSM network and please read Chapter 5.3 in order to change the APN.

    f.   Default setting of IP/domain is **http://www.sanav.com/eric-gga/gprs.aspx** and please read Chapter 5.4 in order to change the IP/domain.

    g.   Please be aware of the upper and lower cases when you send the SMS command to GC-101.

Note2: Before doing any setup, please ensure GC-101 is connected with the GSM network. The red LED must lights on. And please note that GC-101 must not be under Panic mode.

Note3: While you are keying in any setup message, note that NO space is allowed between the characters in the SMS. Characters can be letters, commas or any signs.

Note4: Any setup message must be started with a "#" sign and ended up with a "*" sign.

Note5: Only when the password, username and setup message are correct, the GC-101 will update information according to user's definition. If the command is not valid, a failure report is going to be sent to the commander cell phone.

5.1 Change Username

You can change the ID of GC-101 by following the format below. No space is allowed between the characters. For example, if you send the SMS message shown in the example below to the GC-101, you will change the ID from "username" to "ason"

Setup format：#「username」,「Password」,「Function Code」,「New username」*

Example：#username,0000,1,ason*

The table 5.1.1 describes the meaning of each segment in the message above.

Text Keyed In SMS	Description
#	Start sign.
username	Default ID of GC-101
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
1	Mode 1 defines the ID setup
Ason	✧ New ID defined by the owner. ✧ At the maximum of 8 letters.
*	End sign.

Table 5.1.1

The table 5.1.2 shows each confirmation message reply after setup

Situation	Message Reply
Setup Succeeds	[username] + GC-101 username is updated.
Setup Fail	[username] + GC-101 username setup fail!
Incorrect password	[username] + Password setup Fail!
Incorrect username or command format	[username] + command error
GC-101 is in Emergency Mode	[username] + in emergency, changing username is not allowed.

Table 5.1.2

5.2 Change Password

Use this SMS message example seen below to change the password of GC-101. For example, by following the example below, you will change the default password, "0000" to a new password, "1111".

Setup format：#「username」,「Password」,「Function Code」,「new Password」,「new Password」*
Example：#username,0000,2,1111,1111*

The table 5.2.1 describes the meaning of each segment in the message above.

Text Keyed In SMS	Description
#	Start sign.
username	✧ Default ID of GC-101. ✧ If you have changed the username, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
2	Mode 2 defines to change the password
1111	New password
1111	Reconfirm the password
*	End sign.

Table5.2.1

The table 5.2.2 shows each confirmation message reply after setup

Situation	Message Reply
Setup Succeeds	[username] + GC101 Password is updated.
Setup Fail	[username] + Password setup Fail!
Incorrect password	[username] + Password setup Fail!
Incorrect username or SMS format	[username] + command error
GC-101 is in Emergency Mode	[username] + in emergency, changing password is not allowed.

Table 5.2.2

5.3 Set up the GPRS APN (Access Point Name)

For uploading the data to a web server, you must have a set of GPRS APN from your GSM network. Various GSM network provides different GPRS APN settings. Please check the referential tables for APN in the Chapter 8 before setup. If you could not find the name of your GSM service provider, please ask your GMS service provider about the APN settings. If the username and password of APN are indefinite or showed in blank, just leave the parameters blank (no space). You can follow the Setup Format below to setup the APN that is provided by your GSM network.

Setup format：#「username」,「Password」,「Function Code」,「access point name」,「user」,「password」*

Example：#username,0000,3,internet,user,password*

The table 5.3.1 describes the meaning of each segment in the message above.

Text Keyed In SMS	Description
#	Start sign.
username	✧　　Default ID of GC-101. ✧　　If you have changed the Username, please use the updated one.
0000	✧　　Default password. ✧　　If you have changed the password, please use the updated one.
3	Mode 3 defines the APN
Internet	Name of APN
User	Username of APN
Password	Password of APN
*	End sign.

Table 5.3.1

The table 5.3.2 shows each confirmation message reply after setup.

Situation	Message Reply
Setup Succeeds	[username] + GC101 GPRS APN is updated.
Setup Fail	[username] + GC-101 GPRS APN setup Fail!
Incorrect password	[username] + Password setup Fail!
Incorrect username or command format	[username] + command error
GC-101 is in Emergency Mode	[username] + in emergency, GPRS APN setup is not allowed.

Table5.3.2

5.4 Set up Host Name (URL) to Transmit Data

This command (SMS) instructs the GC-101 to access an URL or fixed IP for data transmission. If you send the SMS according to the example seen below to GC-101, the URL "http://www.sanav.com/eric-gga/gprs.aspx " will be assigned to receive the data sent from the GC-101. Please note that the question mark "?" or any symbol is not allowed to be keyed in behind the URL. The GC-101 will add the necessary symbol(s) on automatically.

Setup format：#「username」,「Password」,「Function Code」,「Fixed IP or URL」*

Example：#username,0000，4,http://www.sanav.com/eric-gga/gprs.aspx*

The table 5.4.1 describes the meaning of each segment in the message above.

Text Keyed In SMS	Description
#	Start sign.
username	✧　　Default ID of GC-101. ✧　　If you have changed the Username, please use the updated one.
0000	✧　　Default password. ✧　　If you have changed the password, please use the updated one.
4	Mode 4 defines to trasmit data to a specific website
http://www,sanav.com/eric-gga/gprs.aspx	Default domain name, Sign "?" is not allowed to write in the area.
*	End sign.

__Table 5.4.1__

The table 5.4.2 is showing each confirmation message reply after setup.

Situation	Message Reply
Setup Succeeds	[username] + GC-101 IP/Domain is updated.
Setup Fail	[username] + IP/Domain setup Fail!
Incorrect password	[username] + Password setup Fail!
Incorrect username or command format	[username] + command error
GC-101 is in Emergency Mode	[username] + in emergency, IP/Domain setup is not allowed.

__Table 5.4.2__

5.5 Set up Phone Number List

Setup format: # 「username」,「Password」,「Function Code」,「PH-01」,「PH-02」,「PH-03」*

Example：#username,0000,5,+886123456789,+492234567890,+866323456789*

Note that both adding and not adding the "+ "sign in front of the cellular phone number(s) are both acceptable, while the"+" sign should precede the national code.

The table 5.5.1 describes the meaning of each segment in the message above.

Text Keyed In SMS	Description
#	Start sign.
username	✧ Default ID of GC-101. ✧ If you have changed the Username, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
5	Mode 5 defines the changes of the built-in phone number list.
+886123456789	1st cellular numbers, **PH-01**
+492234567890	2nd cellular numbers, **PH-02**
+866323456789	3rd cellular numbers, **PH-03**
*	End sign.

Table 5.5.1

The table 5.5.2 shows each confirmation message reply after setup.

Situation	Message Reply
Setup Succeeds	[username] + GC-101 phone book is updated.
Setup Fail	[username] + GC-101 phone book setup Fail!
Non-numeric data is input for numbers	[username] + Parameter error
Incorrect password	[username] + Password setup Fail!
Incorrect username or command format	[username] + command error
GC-101 is in Emergency Mode	[username] + in emergency, phone book setup is not allowed.

Table 5.5.2

Note: The program will overwrite the previous contact list if the users do this setup.

5.6 Set up Auto Report

Use this command to set up the frequency of Auto Report. If you send the SMS according to the example shown below to GC-101, you will have an Auto Report Message every 300 seconds for 99 messages. Once the loop is done, you can send a SMS message to update/renew, or switching off it in order to renew it.

Note1: You may limit the amount of the Auto reply messages by inputting the digits from 1 to 9998 in the 「total number of report」field. When you input 9999, the Auto Report Message will not stop unless you define a new Auto Report Setting.

Setup format：# 「username」, 「Password」, 「Function Code」, 「intervals (sec)」, 「total number of report」 *

Example1：#username,0000,6,300,99*

The table 5.6.1 describes the meaning of each segment in the message above.

Text Keyed In SMS	Description
#	Start sign.
username	✧　Default ID of GC-101. ✧　If you have changed the Username, please use the updated one.
0000	✧　Default password. ✧　If you have changed the password, please use the updated one.
6	Mode 6 defines to change the intervals and times of sending-back data
300	A constant interval of sending data
99	The amount of 99 messages sent automatically
*	End sign.

Table 5.6.1

The table 5.6.2 shows each confirmation message reply after setup

Situation	Message Reply
Setup Succeeds	[username] + Setup OK.GC-101 Auto Report setting is updated.
Setup Fail	[username] + Auto Report setting Setup Fail!
Incorrect password	[username] + Password setup Fail!
Incorrect username or command format	[username] + command error
GC-101 is in Emergency Mode	[username] + in emergency, Auto Report setting is not allowed.

Table 5.6.2

5.7 All Parameters Reset to Default

Use this SMS message to reset GC-101 to factory default. You can just send the SMS according to the example seen below. It will overwrite all the current parameters to default.

Setup format：#「username」,「Password」,「Function Code」*

Example：#username,0000,9*

The table 5.7.1 describes the meaning of each segment in the message above.

Text Keyed In SMS	Description
#	Start sign.
username	✧ Default ID of GC-101. ✧ If you have changed the Username, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
9	Mode 9 defines to change all the parameter to default value
*	End sign.

Table 5.7.1

The table 5.7.2 shows each confirm message reply after setup.

Situation	Message Reply
Setup Succeeds	[username] + Setup OK. GC-101 resets to default
Setup Fail	[username] + Reset Fail!
Incorrect password	[username] + Password setup Fail!
Incorrect username or command format	[username] + command error
GC-101 is in Emergency Mode	[username] + in emergency, reset to default is not allowed.

Table 5.7.2

5.8 Acquire Report of Current Position

You can send the SMS according to the example shown below. It will transmit current data to the web server (URL) at once.

Setup format：＃＃username」,「Password」,「Function Code」*

Example：#username,0000,10*

The table 5.8.1 describes the meaning of each segment in the message above.

Text Keyed In SMS	Description
#	Start sign.
username	✧　　Default ID of GC-101. ✧　　If you have changed the Username, please use the updated one.
0000	✧　　Default password. ✧　　If you have changed the password, please use the updated one.
10	Mode 10 defines to transmit current data to the web server at once.
*	End sign.

Table 5.8.1

The table 5.8.2 shows each confirm message reply after setup.

Situation	Message Reply
Setup Succeeds	[username] + Polling OK!
Setup Fail	[username] + Polling Fail!
In mail mode, the setup parameters are empty	[username] + Mail address or SMTP server parameter is empty
Incorrect password	[username] + Password setup Fail!
Incorrect username or command format	[username] + command error

Table 5.8.2

Note that the message reply shown in Table 5.8.2 will only be sent back to cell phone that sent the SMS to do configuration.　The caller's ID of cellular phone must be activated in order to let the GC-101 recognize the caller ID and response accordingly.

5.9 Set up E-mail Address to Receive Data

In addition to receiving data from URL, you can also obtain data from a specified E-mail address via GPRS service. After setting up the APN, you can also define an E-mail address to receive data by following the instruction below, please note that, since processing the transformation from APN to E-mail address might cost longer time, so receiving data from URL is still recommended.

Setup format：#「username」,「Password」,「Function Code」,「Email address」*

Example：#username,0000,12,mail@sanav.com*

The table 5.9.1 describes the meaning of each segment in the message above.

Text Keyed In SMS	Description
#	Start sign.
username	✧　Default ID of GC-101. ✧　If you have changed the Username, please use the updated one.
0000	✧　Default password. ✧　If you have changed the password, please use the updated one.
12	Mode 12 defines to setup an E-mail address data to a specific website
mail@sanav.com	The E-mail address that receives the data.
*	End sign.

Table 5.9.1

The table 5.9.2 shows each confirmation message reply after setup.

Situation	Message Reply
Setup Succeeds	[username] + mail address Setup OK.
Setup Fail	[username] + mail address setup fail.
GC-101 is in Emergency Mode	[username] + in emergency, Mail address setting is not allowed.
Incorrect password	[username] + Password setup Fail!
Incorrect username or command format	[username] + command error
GC-101 is in Emergency Mode	[username] + in emergency, Mail address setting is not allowed.

Table 5.9.2

5.10 Set up SMTP Server

After setting up the E-mail address, you still have to setup a SMTP server so that the GC-101 can use the SMTP server send E-mails. Setup SMTP by following instruction:

Setup format：#「username」,「Password」,「Function Code」,「SMTP server」*

Example：#username,0000,13,sanav.com*

The table 5.10.1 describes the meaning of each segment in the message above.

Text Keyed In SMS	Description
#	Start sign.
username	✧ Default ID of GC-101. ✧ If you have changed the Username, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
13	Mode 13 defines to setup a SMTP server
sanav.com	The SMTP server
*	End sign.

Table 5.10.1

The table 5.10.2 shows each confirmation message reply after setup.

Situation	Message Reply
Setup Succeeds	[username] + SMTP Setup OK.
Setup Fail	[username] + SMTP server updated fail!
	[username] + SMTP server error.
GC-101 is in Emergency Mode	[username] + in emergency, SMTP server setup not allowed.
Incorrect password	[username] + Password setup Fail!
Incorrect username or command format	[username] + command error
GC-101 is in Emergency Mode	[username] + in emergency, SMTP server setting is not allowed.

Table 5.10.2

5.11 Set up Router for Transmitting Data by URL/IP or E-mail

You can choose the router to transmit the data by URL/IP, E-mail or SMS message,. Please refer to the following table for setup the router.

The table 5.11.1 describes the meaning of each segment in the message above.

Router code	Representation
0	HTTP/SMS, send data to URL, if the URL is untouchable, then send it via SMS instead.
1	Mail/SMS, send data to e-mail address, if the e-mail address is untouchable, then send it via SMS instead.
2	HTTP only, send data to URL, if the URL is untouchable, it won't send the data by SMS.
3	E-mail only, send data to the e-mail address, if the e0mail address is untouchable, it's won't send the data by SMS.
4	SMS only, send data by SMS only.
6	TCP/SMS, send data to an assigned IP address, if the IP is untouchable, then send it via SMS instead.
7	TCP Only, only send data to an assigned IP address.
8	UDP/SMS; send data to an assigned IP address, if the IP is untouchable, then send it via SMS instead.
9	UDP Only; only send data to an assigned IP address

Table 5.11.2

Setup format：#「username」,「Password」,「Function Code」,「0, 1,2,3,4,6,7,8 or 9」*

Example：#username,0000,14,1*

The table 5.11.2 describes the meaning of each segment in the message above.

Text Keyed In SMS	Description
#	Start sign.
username	✧ Default ID of GC-101. ✧ If you have changed the Username, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
14	Mode 14 defines to setup router.
0/1/2/3/4/6/7/8/9	Please see the definition of the code above
*	End sign.

Table 5.11.2

The table 5.11.2 shows each confirmation message reply after setup.

Situation	Message Reply
Setup Succeeds	[username] + Device is switching to HTTP/SMS mode
	[username] + Device is switching to Mail/SMS mode
	[username] + Device is switching to HTTP mode
	[username] + Device is switching to Mail mode
	[username] + Device is switching to SMS mode
	[username] + Device is switching to Map Center mode
	[username] + Device is switching to TCP/SMS mode
	[username] + Device is switching to TCP mode
Setup Fail	[username] + HTTP/SMS setup fail!
	[username] + Mail/SMS setup fail!
	[username] + HTTP setup fail!
	[username] + Mail mode setup fail!
	[username] + SMS mode setup fail!
	[username] + Map Center mode setup fail!
	[username] + TCP/SMS mode setup fail!
	[username] + TCP mode setup fail!
GC-101S is in Emergency Mode	[username] + in emergency, switching to HTTP/SMS mode is not allowed.
	[username] + in emergency, switching to Mail/SMS mode is not allowed.
	[username] + in emergency, switching to HTTP mode is not allowed.
	[username] + in emergency, switching to Mail mode is not allowed.
	[username] + in emergency, switching to SMS mode is not allowed.
	[username] + in emergency, switching to Map Center mode is not allowed.
	[username] + in emergency, switching to TCP/SMS mode is not allowed.
	[username] + in emergency, switching to TCP mode is not allowed.
Incorrect username or password	[username] + Username or Password error
Incorrect function code	[username] + command error

Table 5.11.2

5.12 Request Imei Code

Imei stands for international mobile equipment identification. We offer you a command to acquire the Imei number from GC-101 via SMS. Actually, every GC-101 budget has a different default Imei code. You can send the SMS according to the example shown below to check its imei number so as to register to the web server for tracking.

Setup format：#「username」,「Password」,「Function Code」*

Example：#username,0000,imei*

The table 5.12.1 describes the meaning of each segment in the message above.

Text Keyed In SMS	Description
#	Start sign.
username	✧ Default ID of GC-101. ✧ If you have changed the Username, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
imei	Mode imei is to inquire for international mobile equipment identification of GC-101
*	End sign.

__Table 5.12.1__

The table 5.12.2 shows each confirmation message reply after setup.

Situation	Message Reply
Setup Succeeds	[username] + ",[imei]"
Incorrect password	[username] + Password setup Fail!
Incorrect username or command format	[username] + command error

__Table 5.12.2__

5.13 Deactivate Panic Mode

In this function, it helps you to deactivate panic mode forcedly. The SMS command is as following:

Setup format：# 「username」,「Password」,「Function Code」*

    Example：#username,0000,offpanic*

    The table 5.13.1 describes the meaning of each segment in the message above.

Text Keyed In SMS	Description
#	Start sign.
username	✧ Default ID of GC-101. ✧ If you have changed the Username, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
offpanic	Mode offpanic is to deactivate the panic status of GC-101
*	End sign.

__Table 5.13.1__

    The table 5.13.2 shows each confirmation message reply after setup.

Situation	Message Reply
Setup Succeeds	[username] + is forced to deactivate panic status.
Setup Fail	[username] + is not in Panic mode
Incorrect password	[username] + Password setup Fail!
Incorrect username or command format	[username] + command error

__Table 5.13.2__

5.14 Activate/Deactivate Park Function

This command is used for activate and deactivate the Park function. When GC-101 is in park mode,

Setup format：#「username」,「Password」,「Function Code」*

Command: username,0000,7*

Text Keyed In SMS	Description
#	Start sign.
username	✧ Default ID of GC-101. ✧ If you have changed the Username, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
7	Mode 7 is to activate/deactivate the park mode.

Speed Limit Setup:

This command is to define the speed limit for Park function. When GC-101 exceeds the speed limit in Park mode, it will trigger the event and start sending report according to the setting.

Setup format：#「username」,「Password」,「Function Code」,「Speed in knots/hour」*

Command: #username,0000,11,10*

Text Keyed In SMS	Description
#	Start sign.
username	✧ Default ID of GC-101. ✧ If you have changed the Username, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
11	Mode 11 is to define the speed limit for Park function
10	Speed in knots/hour
*	End sign.

Move Alarm Report:

This command is to define the report interval when Park is triggered.

Setup format：#「username」,「Password」,「Function Code」,「Time Interval」,「Total Report」*

Command: #username,0000,16,60,12*

Text Keyed In SMS	Description
#	Start sign.
username	✧ Default ID of GC-101. ✧ If you have changed the Username, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
16	Mode 16 is the Move report interval setting
0~32,000	Time interval in second
0~9999	Total report. Note that 9999 means infinite reporting.
*	End sign.

5.15 Setup Geofence Coordinate:

This command is to activate the geofence and define the trigger condition.

Setup format：#「username」,「Password」,「Function Code」,「Lat.」,「N/S」,「Long.」,「E/W」,「Condition」*

Command: #username,0000,gf,2458.9741,N,12125.6460,E,500,0~3*

Text Keyed In SMS	Description	
#	Start sign.	
username	✧　　Default ID of GC-101. ✧　　If you have changed the Username, please use the updated one.	
0000	✧　　Default password. ✧　　If you have changed the password, please use the updated one.	
gf	Mode gf means Geofence setup mode	
2458.9741	Latitude in Degree.Minute format	
N	N = North, S = South	
12125.6460	Longitude in Degree.Minute format	
E	E= East, W= West	
500	The geofencing distance in meters	
0~3	0	It will cancel the geofence.
	1	It will trigger the alarm when the tracker is outside of the geofence.
	2	It will trigger the alarm when the tracker is inside of the geofence.
	3	It will trigger the alarm when the tracker is either outside or inside of the geofence.
*	End sign.	

Geofence Alarm Report:

This command is to define the report interval when Geofence is triggered.

Setup format：#「username」,「Password」,「Function Code」,「Time Interval」,「Total Report」*

Command: #username,0000,17,60,12*

Text Keyed In SMS	Description
#	Start sign.
username	✧　　Default ID of GC-101. ✧　　If you have changed the Username, please use the updated one.
0000	✧　　Default password. ✧　　If you have changed the password, please use the updated one.
17	Mode 17 is the Geofence report interval setting
0~32,000	Time interval in second
0~9999	Total report. Note that 9999 means infinite reporting.
*	End sign.

5.16 Set up Voice Monitoring Mode

This function allows the user to select "Overhearing" or "Dial Polling" feature. User can hear the voice around the surrounding if overhearing is selected. Please note this function is only available for GC-101 M Version

Setup format：#「username」,「Password」,「Function Code」,「1: hidden microphone 2:Voice polling」*
Example：#username，0000，8，1*

The table 5.8.1 describes the meaning of each segment in the message above.

Text Keyed In SMS	Description
#	Start sign.
Username	✧ Default ID of GC-101.
	✧ If you have changed the Username, please use the updated one.
0000	✧ Default password.
	✧ If you have changed the password, please use the updated one.
8	Mode 8 defines the switch between one-way phone and hidden microphone
0,1 or 2	✧ 0: GC-101 will automatically get in the voice monitoring
	✧ 1: GC-101 will get in voice monitoring function after waiting for "do" sounds for 10 seconds
	✧ 2: Voice polling then GC-101 will send a GPS data via assigned router to terminal.
*	End sign.

Table 5.16.1

The table 5.16.2 shows each confirmation message reply after setup.

Situation	Message Reply
Setup Succeeds (one-way phone)	Username, Device is switching to MIC mode
Setup Succeeds (Dial polling)	Username, Device is switching to voice polling mode
Incorrect function code	Username, is switching to MIC mode without success!

Table 5.16.2

5.17 Activate the Buzzer

GC-101 offers a buzzer to alert the user when he is in Emergency situation. The beep sound could be either turned off or turned on. When the SOS key is pressed, the buzzer will start to beep continuously for 20 seconds. This command allows users to enable/disable the buzzer. Please note that the buzzer will beep when there is no SIM card in the GC-101. Please note this function is only available for GC-101 M version.

Setup format：#「username」,「Password」,「Function Code」,「Buzzer OFF/ON」*

Command: #username,0000,19,1*

Text Keyed In SMS	Description
#	Start sign.
username	✧ Default ID of GC-101. ✧ If you have changed the Username, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
19	Mode 19 is to activate/deactivate the buzzer.
0 or 1	✧ 0: to make the buzzer turned off ✧ 1: to make the buzzer turned on

Table 5.17.1

The table 5.17.2 shows each confirmation message reply after setup.

Situation	Message Reply
Setup Succeeds	1. Username, setup OK. Device buzzer is turned off. 2. Username, setup OK. Device buzzer is turned on.
Incorrect function code	Username, buzzer setup fail.

Table 5.17.2

5.18 Input TCP/IP Address

This function is to input TCP/IP address for TCP transmission. Please note that data will only be uploaded to this TCP/IP address when TCP transmission mode is selected. The SMS command is as following:

Setup format：#「username」,「Password」,「Function Code」,「TCP/IP Address」*

Example：#username,0000,17, 210.242.12.73*

The table 5.18.1 describes the meaning of each segment in the message above.

Text Keyed In SMS	Description
#	Start sign.
username	✧ Default ID of GC-101S. ✧ If you have changed the Username, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
17	Function code
210.242.12.73	TCP/IP Address
*	End sign.

Table 5.18.1

The table 5.18.2 shows each confirmation message reply after setup.

Situation	Message Reply
Setup Succeeds	[username] +", setup ok. Device TCP/IP is updated."
Setup Fail	[username] +", TCP/IP setup fail!"
GC-101S is in Emergency Mode	[username] + "in emergency, TCP/IP is not allowed."
Incorrect username or password	[username] + Username or Password error
Incorrect function code	[username] + command error

Table 5.18.2

5.19 SOS Phone Setting

While Panic function is triggered, GC-101 will automatically call the SOS phone to the user if SOS phone is set. The command format will be like following:

Setup format：# 「username」, 「Password」, 「Sosphone」, 「Phone Number」*
Example：#username,0000,sosphone,+886933123456*

     The table 5.19.1 describes the meaning of each segment in the message above.

Text Keyed In SMS	Description
#	Start sign.
username	✧ Default ID of GC-101S. ✧ If you have changed the Username, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
sosphone	Function code
+886933123456	Phone number of SOS phone
*	End sign.

Table 5.18.1

Note:

Panic Report: The panic report will be 60 seconds a time and total 60 times. The interval is unable to be set.

5.20 Operate Log Function

User can use this command to define the log mode of GC-101. There are two log modes can be defined. For the detail, please refer to following explanation and also the diagram of log function logic at the page of 36 and 37.

Setup format：#「username」,「Password」,「21」,「0,1, or 2」*

Example：#username,0000,21,0*

The table 5.20.1 describes the meaning of each segment in the message above.

Text Keyed In SMS	Description
#	Start sign.
username	✧ Default ID of GC-101S. ✧ If you have changed the Username, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
22	Function code
0,1 or 2	0: disable the log function
	1: Backup the data when GPRS is unavailable. That is when GPRS is unavailable; GC-101 will log the data, and logged data will be sent to assigned router once GPRS comes back.
	2: Backup the data then send the data to assigned router when defined number of interval has completely logged. <u>Please note the number of logged data is counted by the number of auto report only.</u>
*	End sign.

The table 5.20.2 shows each confirmation message reply after setup.

Situation	Message Reply
Setup Succeeds	0: username, setup OK. Device log mode is disabled. 1: username, setup OK. Device is switching to backup mode. 2: username, setup OK. Device is switching to interval log mode
Incorrect function code	Username, log setup fail.
Incorrect username or password	[username] + Username or Password error
Incorrect function code	[username] + command error

5.21 Define Log Interval

When the log function is set "2" (username,0000,21,2), you will have to define the number of position data. Please refer to following command setting.

Setup format：#「username」,「Password」,「20」,「Number of logged times recorded」*

Example：#username,0000,20,10*

The table 5.21.1 describes the meaning of each segment in the message above.

Text Keyed In SMS	Description
#	Start sign.
username	✧ Default ID of GC-101S. ✧ If you have changed the Username, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
20	Function code
10	When 10 or other defined number of data has completely logged, at the same time, the data will be sent back to assigned router if GPRS is checked to be available. Default is 2
*	End sign.

The table 5.21.2 shows each confirmation message reply after setup.

Situation	Message Reply
Setup Succeeds	Username, setup OK. Device log report time is updated
Incorrect function code	Username, log setup fail.
Incorrect username or password	[username] + Username or Password error
Incorrect function code	[username] + command error

Operation logic of log mode is set "1"; #username,0000,21,1*

```
                    ┌──────────────┐
                    │   GC-101     │
                    └──────┬───────┘
                           │
         ┌─────────────────┼──────────────────┐
         │                 ▼                   │
         │        ┌──────────────────┐         │
         │        │ The time of sending        │
         │        │ data to assigned router    │
         │        └────────┬─────────┘         │
         │                 │                   │
         │                 ▼                   │
         │              ◇ Check the ◇          │
         │   Yes    availability of     No     │
         │         GPRS then SMS               │
         │                                     │
         ▼                                     ▼
  ┌──────────────┐                    ┌──────────────┐
  │ Send all the data                 │  Back up     │
  │ to a URL or an IP                 │  the data    │
  │ address        │                  └──────────────┘
  └──────────────┘
```

38
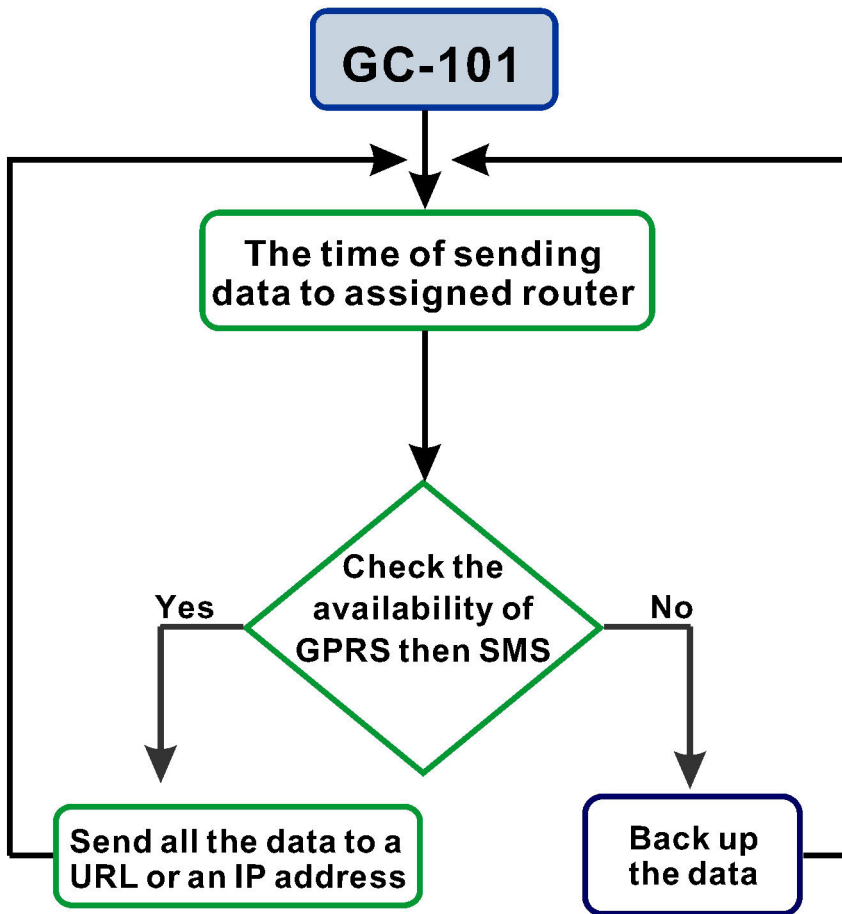
Operation logic of log mode is set "2"; #username,0000,21,2*

Log data interval is set "X"; #username,0000,20,X*

```
                    ┌─────────────────────────────┐
        ┌──────────▶│      GC-101 has logged       │◀──────────┐
        │           │   "X" number of position     │           │
        │           └─────────────┬───────────────┘           │
        │                         │                            │
        │                         ▼                            │
        │                      ╱──────╲                        │
        │         Yes        ╱  Check the ╲       No            │
        │   ┌───────────────│  availability of │───────────┐   │
        │   │                ╲ GPRS then SMS ╱            │   │
        │   │                  ╲──────╱                   │   │
        │   ▼                                             ▼   │
        │ ┌──────────────────┐          ┌──────────────────────┐
        └─│ Send all the data │          │ Store the "X" number of │
          │ to a URL or an IP │          │ position data and keep  │─┘
          │ address           │          │  logging another "X"    │
          └──────────────────┘          │ number of position data.│
                                         └──────────────────────┘
```

GC-101 has logged "X" number of position

Check the availability of GPRS then SMS

Yes

No

Send all the data to a URL or an IP address

Store the "X" number of position data and keep logging another "X" number of position data.

5.22 Erase the Logged Data

The user can use this command to erase the data stored at the flash.

Setup format：#「username」,「Password」,「ER」*

Example：#username,0000,er*

The table 5.22.1 describes the meaning of each segment in the message above.

Text Keyed In SMS	Description
#	Start sign.
username	✧ Default ID of GC-101S. ✧ If you have changed the Username, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
ER	Function code to erase the stored logged data.
*	End sign.

The table 5.22.2 shows each confirmation message reply after setup.

Situation	Message Reply
Setup Succeeds	Username, setup OK. Device logged data is erased
Incorrect function code	Username, log setup fail.
Incorrect username or password	[username] + Username or Password error
Incorrect function code	[username] + command error

6. <u>Respond messages</u>

This chapter shows you how to read and understand the different response messages sent from GC-101. When GC-101 is in GPRS/SMS mode it will upload the data to the assigned URL first. However, if GPRS service is not available, it will send the SMS to the predefined phone number instead. In the case of GPRS-only mode, GC-101 will only send the data by GPRS no matter there is GPRS service or not. Basically, there're 6 different situations that trigger the GC-101 to response its position (Auto Report, Polling, Emergency, Move, Geofence, Park) and are shown in the following pages.

<u>Event Table:</u>
This event table helps you to know what event triggers the response.

Event	Descriptions
Auto	When the monitor sends a valid Auto Report command to GC-101, it will send a report including an "Auto" behind each GPRMC sentence.
SOS	When the user presses the Panic button, it will send the report including an "SOS" event behind each GPRMC sentence. No configuration is allowed in SOS mode. The SOS mode will only be released by special commands (Master Reset and Off Panic) and switching it off/on.
Move	When GC-101 exceeds the speed limit in Park mode, it will trigger the "Move" event and start sending report according to the setting.
POLL	When using the SMS to poll the report, the event will be "poll".
GFIN	When GC-101 enters the geofence area, it triggers the "GFIN" event.
GOUT	When GC-101 moves out from the geofence area, it triggers the "GOUT" event.
PARK	When the park function is triggered, the event "Park" will be sent.
UNPK	When the park function is removed, the event "UNPK" will be sent.

Note: When GC-101 experiences the low battery power, it will send an SMS to the 1st phone number in the phonebook. The message will be **"username, Device Power low, Check/recharge".** It will send a second SMS when the power is really too low. The message will be **"username, Device Power too low, recharge battery first".**

6.1 Auto Report

6.1.1. Uploading Auto data to URL when GPS is fixed

When execute the Auto Report according to the settings with a GPS fixed, GC-101 will upload the data to your URL. The data format will be like the following.

Format:

URL?imei=IMEI,RMC=GPRMC,AUTO

Example:

http://www.sanav.com/eric-gga/gprs.aspx?imei=351277000000000&

RMC= GPRMC,095838.000,A,2458.9733,N,12125.6583,E,0.41,79.21,220905,,*30,AUTO

6.1.2. Uploading Auto data to URL when GPS is not fixed

Example:

http://www.sanav.com/eric-gga/gprs.aspx?imei=351277000000000&

RMC= GPRMC,095838.000,V,2458.9733,N,12125.6583,E,0.41,79.21,220905,,*30,AUTO

Field	Descriptions
IMEI	The username of GC-101 that is a unique number.
GPRMC	It is a full sentence of GPRMC including the current Lat/Long, UTC and others.
AUTO	This is the event triggers the response.

!! Note: 1. When in GPRS or e-mail mode and there is no GPRS service, the report will be sent to the 1st predefined number. In the mean while, the "IMEI" will be changed to the "Username" and the "username" is changeable by using SMS command.

2. The "A" is the GPRMC sentence indicates the GPS status, which is GPS fixed. If the GPS is not fixed, letter "V" will substitute the letter "A".

6.2 Emergency Response

When there is GPRS, GC-101 will upload the data to the URL/e-mail. If the GPRS is not available, it will send the SMS instead. Please read Chapter 3.1 for how Panic works.

6.2.1. Uploading Emergency data to URL/e-mail when GPS is fixed

When there is GPS fixed, send a single SMS to the built-in numbers with the contents like following:

Format:

URL?imei=IMEI,RMC=GPRMC,SOS

Example:

http://www.sanav.com/eric-gga/gprs.aspx?imei=351277000000000&

RMC= GPRMC,095838.000,A,2458.9733,N,12125.6583,E,0.41,79.21,220905,,*30,SOS

6.2.2. Uploading Emergency data to URL/e-mail when GPS is not fixed

When there is GPS fixed, send a single SMS to the built-in numbers with the contents like following:

Example:

http://www.sanav.com/eric-gga/gprs.aspx?imei=351277000000000&

RMC= GPRMC,095838.000,V,2458.9733,N,12125.6583,E,0.41,79.21,220905,,*30,SOS

Field	Descriptions
IMEI	The username of GC-101 that is configurable.
$GPRMC	It is a full sentence of $GPRMC including the Lat/Long, UTC and others.
SOS	This is the event triggers the response.

!! Note: 1. When in GPRS or e-mail mode and there is no GPRS service, the report will be sent to the 1st predefined number. In the mean while, the "IMEI" will be changed to the "Username" and the "username" is changeable by using SMS command.

2. The "A" is the GPRMC sentence indicates the GPS status, which is GPS fixed. If the GPS is not fixed, letter "V" will substitute the letter "A".

6.3 Polling Response

6.3.1. Uploading Poll data to URL when GPS is fixed

When send an SMS to poll a report with a GPS fixed, GC-101 will upload a data to your URL. The data format will be like the following.

Format:

URL?imei=IMEI,RMC=GPRMC,POLL

Example:

http://www.sanav.com/eric-gga/gprs.aspx?imei=351277000000000&

RMC= GPRMC,095838.000,A,2458.9733,N,12125.6583,E,0.41,79.21,220905,,*30,POLL

6.3.2. Uploading Poll data to URL when GPS is not fixed

When send an SMS to poll a report without a GPS fixed, GC-101 will upload the data to your URL. The data format will be like the following.

Example:

http://www.sanav.com/eric-gga/gprs.aspx?imei=351277000000000&

RMC= GPRMC,095838.000,V,2458.9733,N,12125.6583,E,0.41,79.21,220905,,*30,POLL

Field	Descriptions
IMEI	The IMEI of GC-101 that is a unique number.
GPRMC	It is a full sentence of GPRMC including the **previous** Lat/Long, UTC and others.
POLL	This is the event triggers the response.

!! Note: 1. When in GPRS or e-mail mode and there is no GPRS service, the report will be sent to the 1st predefined number. In the mean while, the "IMEI" will be changed to the "Username" and the "username" is changeable by using SMS command.

2. The "A" is the GPRMC sentence indicates the GPS status, which is GPS fixed. If the GPS is not fixed, letter "V" will substitute the letter "A".

6.4 Move Report

6.4.1. Uploading park alarm data to URL when GPS is fixed

When execute the Auto Report according to the settings with a GPS fixed, GC-101 will upload the data to your URL. The data format will be like the following.

Format:

URL?imei=IMEI,RMC=GPRMC,Move

Example:

http://www.sanav.com/eric-gga/gprs.aspx?imei=351277000000000&

RMC= GPRMC,095838.000,A,2458.9733,N,12125.6583,E,0.41,79.21,220905,,*30,Move

6.4.2. Uploading Auto data to URL when GPS is not fixed

Example:

http://www.sanav.com/eric-gga/gprs.aspx?imei=351277000000000&

RMC= GPRMC,095838.000,V,2458.9733,N,12125.6583,E,0.41,79.21,220905,,*30,Move

Field	Descriptions
IMEI	The username of GC-101 that is a unique number.
GPRMC	It is a full sentence of GPRMC including the current Lat/Long, UTC and others.
MOVE	This is the event triggers the response.

| **!! Note:** 1. When in GPRS or e-mail mode and there is no GPRS service, the report will be sent to the 1st predefined number. In the mean while, the "IMEI" will be changed to the "Username" and the "username" is changeable by using SMS command. |
| 2. The "A" is the GPRMC sentence indicates the GPS status, which is GPS fixed. If the GPS is not fixed, letter "V" will substitute the letter "A". |

6.5 Park Activated/ Deactivated Report

6.5.1. Uploading park alarm data to URL when GPS is fixed

When the user activates or deactivates the park function, the following sentence will be sent.

Format:

URL?imei=IMEI,RMC=GPRMC,PARK/UNPK

Example:

http://www.sanav.com/eric-gga/gprs.aspx?imei=351277000000000&

RMC= GPRMC,095838.000,A,2458.9733,N,12125.6583,E,0.41,79.21,220905,,*30,PARK/UNPK

6.5.2. Uploading Auto data to URL when GPS is not fixed

Example:

http://www.sanav.com/eric-gga/gprs.aspx?imei=351277000000000&

RMC= GPRMC,095838.000,V,2458.9733,N,12125.6583,E,0.41,79.21,220905,,*30,PARK/UNPK

Field	Descriptions
IMEI	The username of GC-101 that is a unique number.
GPRMC	It is a full sentence of GPRMC including the current Lat/Long, UTC and others.
PARK/UNPK	This is the event triggers the response.

!! Note: 1. When in GPRS or e-mail mode and there is no GPRS service, the report will be sent to the 1st predefined number. In the mean while, the "IMEI" will be changed to the "Username" and the "username" is changeable by using SMS command.

2. The "A" is the GPRMC sentence indicates the GPS status, which is GPS fixed. If the GPS is not fixed, letter "V" will substitute the letter "A".

6.6 NMEA 0183 GPRMC Sentence

$GPRMC (out) – UTC, position, course, speed, etc.

Example

$GPRMC	,123456.789	,A	,3444.1234,N	,13521.4567,E	,005.6… …	,123.52	,020197
Field#	1	2	3 4	5 6	7	8	9

,,	*07	CR LF
10	11	12

#. Description	Range
1. UTC: Time	
"12": hh	00-23
"34": mm	00-59
"56": ss	00-59
".789" : .sss	.000 - .999
2. Status	A or V
	"A": Data valid
	(Stand-alone or DGPS)
	"V": Navigation receiver warning
3-4. Latitude	
"34": degree	00-90
"44": minute (integer)	00-59
"1234": minute (fraction)	0000-9999
"N": North/South	N or S
5-6 Longitude	
"135": degree	000-180
"21": Minute (integer)	00-59
"4567": Minute (fraction)	0000-9999
"E": East/West	E or W

7. Speed (kts)   000.0-999.9
Note: A null field is output unless speed information is available.

8. True Course (degree)
"123.52"   000.00-359.99
Note: A null field is output unless true course information is available.

9. UTC: Date

"02": DD	01-31
"01": MM	01-12
"97": YY	97-40
	(1997-2040)

10 Magnetic Deviation (degree)
"   "   SiRF Technology Inc. does not support magnetic declination.
                                               W or E
                                               "W": West (MAG = TRUE-DEV)
                                               "E": East (MAG = TRUE+DEV)

12. Checksum
    8 bits data between "$" and "*" (excluding "$" and "*") are XORed, and the result is converted to 2 bytes of hexadecimal letters. Only RMC sentences are transmitted with checksum. All other output sentences do not include checksum fields.

7. Warranty

Warranty Time Period and Repair Coverage

SAN JOSE NAVIGATION, INC. warrants GC-101 to be free from all defects and malfunctions in materials and workmanship for a period of 12 months from the original purchase date from San Jose Navigation or authorized dealers. If the equipment functions improperly during the warranty period, San Jose Navigation will either repair or replace the unit without charge. Such repair service will include necessary adjustments, remanufacture, and replacements. The product should be returned freight-prepaid by the purchaser within valid warranty period. **Notice that you must contact San Jose Navigation for a RMA (Return Material Authorization) number before returning the goods for repair**. Telephone assistance will also be provided during the warranty period.

Limitations

This warranty is limited only to the repair or replacement of defective parts confirmed by San Jose Navigation to be a result of faulty materials or workmanship. Instruments mechanically or physically damaged due to the following conditions are beyond our warranty:

Neglect, misuse or abuse, such as a incorrect testing, installation, or operation.

Place subject in extreme environments beyond the limits of the specifications.

Subjected to disassembling, soldering, alteration, unauthorized repair, and electrical shock by nature.

Any incidental or consequential losses or damages result from the purchase.

Disaster, accident, using any unauthentic substitutive equipment or loss of any accessory that's not provided by San Jose Navigation.

For damages caused under the above conditions, we'll contact you to discuss replacement options.

SANJOSE NAVIGATION, INC.
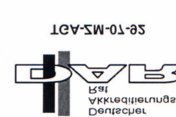
9F NO. 105 SHI-CHENG ROAD, PAN-CHIAO CITY

TAIPEI HSIEN, TAIWAN, R.O.C.

TEL: 886-2-26879500

FAX: 886-2-26878893

WWW.SANAV.COM

Technical Support: **sanav104@sanav.com**