G3A User Manual

V1.6

ATTENTION!

□Do not disassemble the device. Do not touch before unplugging the power supply if the device is damaged, the power supply cables are not isolated or the isolation is damaged.
□All wireless data transferring devices produce interference that may affect other devices which are placed nearby.
□The device may be connected only by qualified individuals.
□The device must be firmly fastened in the predefined location.
□The device is susceptible to water and humidity.

INSTRUCTIONS OF SAFETY

□This chapter contains information on how to operate “G3A” safely.
□BY following these requirements and recommendations you will avoid dangerous situations. You must read these instructions carefully and follow the strictly before operating the device!
□The device uses a 8V-32V DC power supply. The nominal voltage is 12V DC. It is advised to transport the device in an impact-proof package.
□Before usage, the device should be placed so that its LED indicators are visible, which show what status of operation the device is in.
□When connecting the connection cables to the vehicle, the appropriate jumpers of the power supply of the vehicle should be disconnected.
□Before dismounting the device from the vehicle, the connection must be disconnected.

LEGAL NOTICE

INTRODUCTION

The G3A Feature Rich Powerful GPS Tracker is the latest solution for track and trace applications and extreme level fleet management.
G3A is designed for service providers, integrators, and enterprise customers to enhance mobile resources and improve their dispatch system; the G3A is a dependable quad-band GSM/GPRS tracking device, delivering the key features fulfilling the most demanding applications: fleet management, insurance telemetric, dispatch, vehicle location and recovery, and more.

With accurate GPS location performance, a robust programmable rules engine, 2-axis accelerometer for measuring driver behavior and vehicle impacts, geo-fencing, messaging and much more, the G3A is designed for powerful solution deployment..

The G3A is powered by over-the-air device management and maintenance system, (Programming, Updates, and Logistics System). FOTA (Firmware update over the air), GSM Jamming detection and 156 hardware based geo-fences makes this the perfect choice for superior safety and security of your vehicle.

Contents

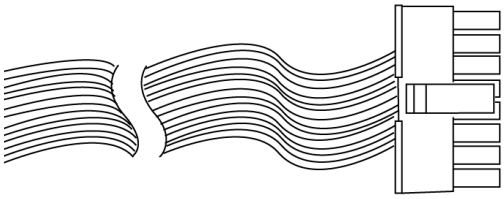
1. Packing List

■Standard

The G3A box is packaged with all the components that is necessary for operation, it contains:

□G3A device x1

□2*8/2*5 PIN I/O connector cable x1

To connect with external power supply and optional accessory		To the back panel I/O connector of device

NOTE: SIM card which for GSM/GPRS connectivity is not supplied in the package, please consult your local SIM provider for further information.

■Optional accessory

Name	Purpose
USB cable	To configure device via configuration tool on computer
Microphone	It enables device for voice monitoring features
Immobilizer	It enables the device to kill/restore engine
Panic button	Device reports or calls when this button being pressed
Magic tape	It helps to attach device firmly
Fuse	Protecting device from electrical surge
Backup battery	Rechargeable, Li-Po 3.7V, 1000mAh

2. Specifications

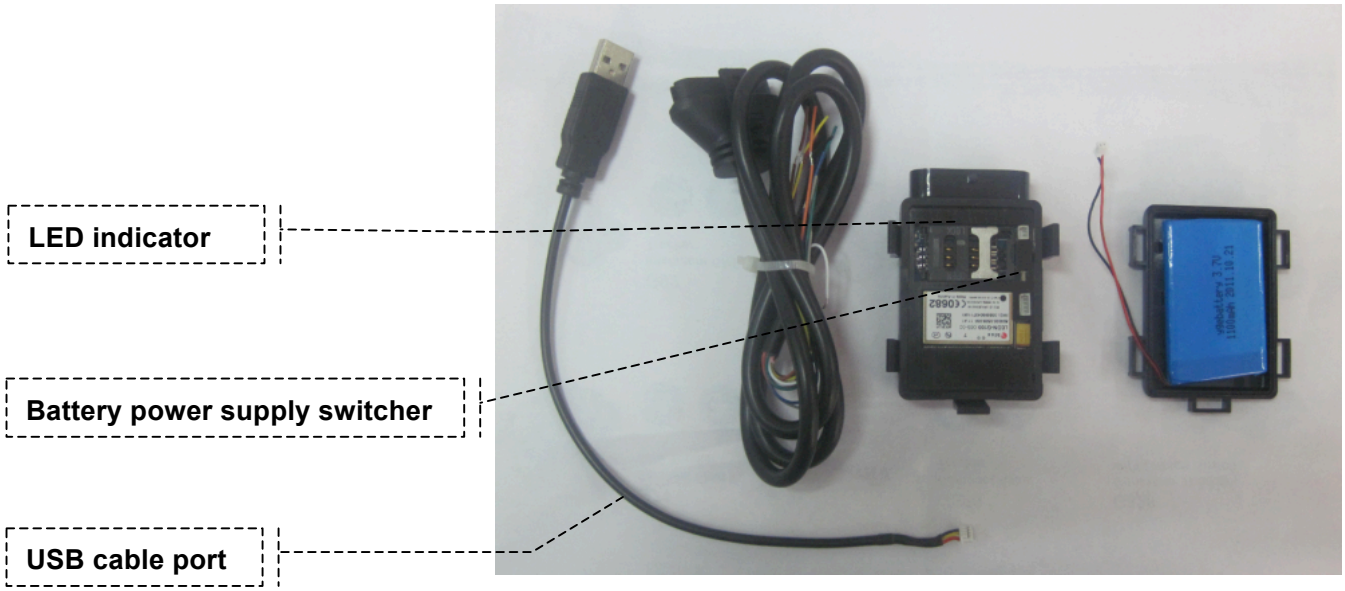
Physical	Dimension	77(L) x 54(W) x 24(H)mm	
	Weight	~80g (With battery)	
Environment	Operating temperature	-40℃~+80℃ (without backup battery) -10℃~+50℃ (with backup battery)	
I/O connector	ACC input	1 channel	
	Digital input	2 channels	
	Analog/Digital	*2 channels	
	Digital output	3 channels	
	Microphone	1 channel	
USB	Mini USB	2.0	
CPU	ARM	STM32F103	UcOS
LED indicator	3 LED indicators	GSM & GPS & POWER	
Power supply	External	DC 8 to 32V	
	Backup battery	Type	Rechargeable, Li-Po 3.7V, 1000mAh
Power consumption	Standby: 70mA@12V, Working: 100mA@12V		
GSM/GPRS	Antenna	Built-In	
	Model	Cinterion BGS2-W	
		Quad band: GSM 850/900/1800/1900MHz	
		Multiple-slot Class 8 (dual band)/10 (quad band) GPRS class 10/Station class B	
		TCP/IP over PPP	
	SIM card	1.8V & 3.3V	
GPS	Internal antenna	25*25 with amplifier	
	External antenna	GPS Active Antenna	
	Model	uBlox NEO 6M	
	Channel	50 Parallel Channels	
	Accuracy	Autonomous<2.5M	
	Sensitivity	-162dBm	
Sensor	Accelerate sensor	Built-In, 2-axis	
Flash storage	16Mbits	Built-In, Maximum to save 8,000 GPS postions	

3. Overview

3.1. Device Capabilities

- ✓ FOTA, Firmware Upgrade Over The Air
- ✓ Flexible Programming Rules
- ✓ GSM Jamming Detection
- ✓ Quad Band GSM Modem
- ✓ HDOP For Precise Location
- ✓ Multiple Data Upload Modes
- ✓ 2-Axis Accelerometer Sensor
- ✓ 156 Hardware Based Geo-Fence/Point of interest
- ✓ Over Speed Management
- ✓ Multiple Inputs & Outputs
- ✓ Configurable Inputs & Outputs
- ✓ Internal Backup Battery

3.2. Mechanical construction



4. Installation

4.2. Insert the SIM card

1, Flip up cover of SIM holder, facing metal side of SIM card to the PCB board as step1.

2, Insert SIM card to cover then flip it down, pull the cover at the direction as step2 to lock up SIM card firmly.

Note: Please disconnect any kind of power source for device in advance.

4.3. Install direction

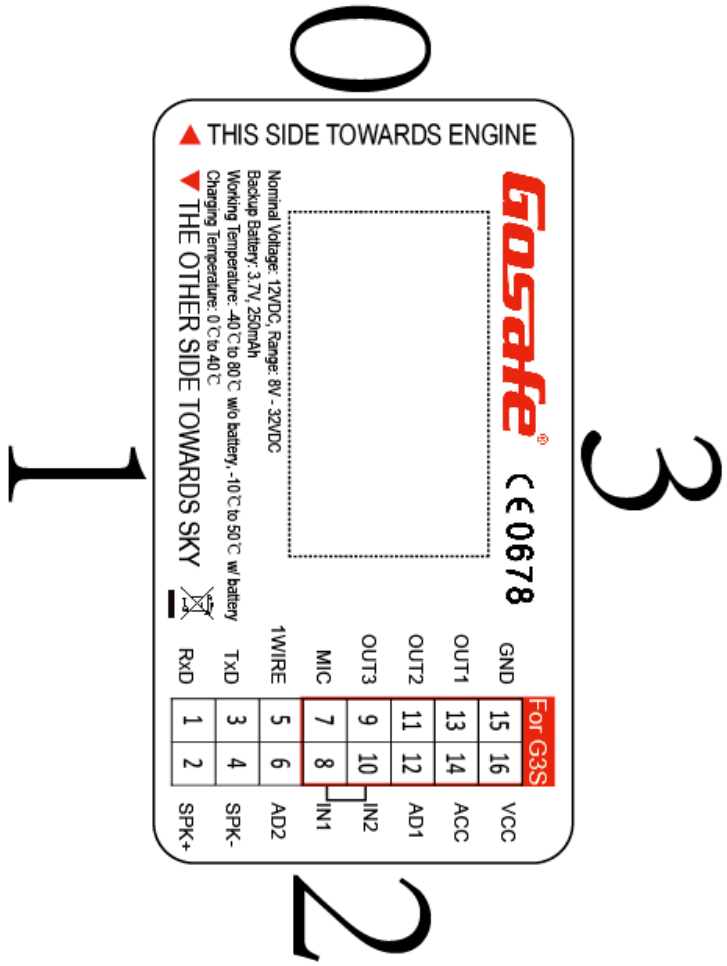
■G3A has accident & harsh detection features that based on built-in 2-axis sensor. Its accuracy will be affected by install direction of device, please find the sticker on housing of device for recommended direction.

1, By default you need to point side “0” to the engine, which is the direction of vehicle heading.

2, If you prefer other side pointing to engine, please send command to change the default setting of installation direction.
E.g.:
Side “1” is pointing to engine,
Command to send:

1234,BDS;1

Note: 1234 is the default user password to send command, and default is 1234,BDS;0 , and please set phone number as User number before sending this command.

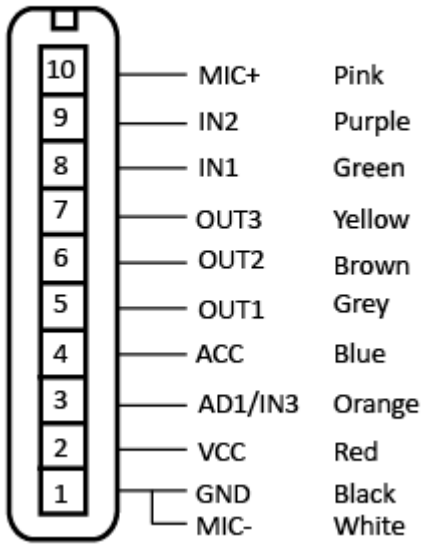


5. I/O Connector

PIN definition

PIN#	Color	Name	Definition	Remark/Default
1	**White**	MIC-	Negative (-)	
	Black	GND	Negative (-)	
2	**Red**	VCC	Positive (+)	8V-32V DC
3	**Orange**	AD1/IN3	Analog/Digital input channel	High level active (>6V)
4	**Blue**	ACC	ACC/Ignition signal input	High level active
5	**Grey**	OUT1	Digital output channel 1	
6	**Brown**	OUT2	Digital output channel 2	
7	**Yellow**	OUT3	Digital output channel 3	
8	**Green**	IN1	Digital input channel 1	Low level active
9	**Purple**	IN2	Digital input channel 2	Low level active
10	**Pink**	MIC+	Microphone	

G3A



6. LED Indicator Behavior

■GSM LED: Green

Server socket connected: Flash once quickly every 3 seconds

GSM network registered: Flash twice quickly in a row every 3 seconds

GSM network unregistered: Flash 3 times quickly in a row every 3 seconds

SIM card error: Flash 4 times quickly in a row every 3 seconds

Serial link communication error: Flash 5 times quickly in a row every 3 seconds

GSM module OFF: Never flash

■GPS LED: Yellow

GPS fixed: Flash once quickly every 3 seconds

GPS unfixed: Flash twice quickly in a row every 3 seconds

GPS communication error: Flash 3 times quickly in a row every 3 seconds

GSM module OFF: Never flash

■Power LED: Red

Using external power supply: Flash once quickly every 3 seconds

Using backup battery: Flash twice quickly in a row every 3 seconds

Backup battery low voltage: Flash 3 times quickly in a row every 3 seconds

Under iButton mode: Glowing constantly

Set successfully: Flash once every 1 second

7. User Command

■Set User Phone Number

There are 2 users phone supported by G3A, they have the same authorization.

User1's command words are ***UNO0, UPW0, USP0.***

User2's command words are ***UNO1, UPW1, USP1.***

Below will take user1 as example:
To set your cell phone number as User1 to control and receive messages from device, please send ***UNO*** command to the device, e.g.:

1234,UNO0;+8613912345678

Or

1234,UNO0;13912345678

Explanations:
1234: Default password.
UNO0: Command control word for setting user number.
+8613912345678: Phone number with country code.
13912345678: Phone number without country code.
Device is supposed to reply a confirmation SMS to you, if the device does not accept the command, it also reply a message with content: **Command err**.

■Modify User Password
Factory default password **1234**
Changing the factory password at the first usage is highly suggested.
New password should be 4 digits that from number "0-9".
To modify password, send ***UPW*** command from your USER phone number, e.g.:

1234,UPW0;5678

Explanations:
1234: Factory Password
UPW0: Command control word for setting new password
5678: New Password

■Set position report interval to user phone
Device is able to report its current position periodically according to the setting, default is every 30 minutes. To change it please send ***USP*** command, e.g.:

1234,USP0;0;30S;G;W

Explanations:
1234: User password
USP0: Command control word

0: Interval Mode, related with dynamic report condition
0: Mode0
1: Mode1

30S: Report interval
S: Second, range from 30 to 900.
M: Minute, range from 15 to 59.
H: Hour, range from 1 to 240.

G: Working mode

O: Disable periodically report to USER.

G: GPS location information as first priority, if it is invalid, will be replaced by LBS information.

S: Using LBS information only.

L: Device will voice call USER periodically for voice monitoring purpose.

W: Location information type

T: Text for current location, showing GPS coordinate.

W: Google map hyper link for current location.

8. Message Explanation

■Periodical SMS report

Below are the different kinds of message will be received by user periodically according to the setting of command ***USP***, example on G3A.

"W" mode

1. GPS is fixed

Content of message	*Explanation*

G3A V1.00	*Device name/Firmware version*
LTM 2013-06-06 14:17:12	*Date/Time*
http://maps.google.com/maps?q...	*Google map hyper link*
GSM -52dBm	*GSM network signal strength*
EXT_PWR=12.08V	*External power voltage*
BAT=3.86V	*Built-in battery voltage*
#30	*Consumed messages*

There are 2 kinds of map hyper link available, static and dynamic, it depends on the setting of command USP, e.g.:
Static link:
http://maps.google.com/staticmap?zoom=14&size=300x300&markers =%n(,%e&sensor=false
Dynamic link:
URL0;http://maps.google.com/maps?q=%n(,%e&t=m&z=16

2. GPS is not fixed
Map hyper link will be LBS (URL1) instead of GPS (URL0)

Content of message	*Explanation*
G3A V1.00	*Device name/Firmware version*
LTM 2013-06-06 14:17:12	*Date/Time*
http://maps.google.com/maps?q...	*Google map hyper link*
GSM -52dBm	*GSM network signal strength*
EXT_PWR=12.08V	*External power voltage*
BAT=3.86V	*Built-in battery voltage*
#30	*Consumed messages*

"T" mode

1. GPS is fixed

Content of message	*Explanation*

G3A V1.00	*Device name/Firmware version*
LTM 2013-06-06 09:41:22	*Date/Time*
GPS 1.55/0.50/3/4	*HDOP/ALTITUDE in meter/Fixed satellite number/Time of first fixed*
N23.164302	*N means north/S means south*
E113.428456	*E means east/W means west*
SPD:0km/h 0	*Speed/Heading*
GSM -52dBm	*GSM signal strength*
EXT_PWR=12.13V	*External power voltage*
BAT=3.96V	*Built-in battery voltage*
#27	*Consumed messages*

2. GPS is not fixed, using LBS instead

Content of message	*Explanation*
G3A V1.00	*Device name/Firmware version*
LTM 2013-02-28 23:51:09	*Date/Time*
MCC/MNC/LAC/CID/RSSI	*Base station information type*
460/0/2503/962C/-53dBm	*Main station, MNC/MNC/Local area code/Station ID/Signal strength*
460/0/2731/40F4/-60dBm	*Neighbor station 1*
460/0/2703/4050/-70dBm	*Neighbor station 2*
GSM -58dB	*GSM network signal strength*
EXT_PWR=5.13V	*External power voltage*
BAT=4.17V	*Built-in battery voltage*
#20	*Consumed messages*

■Event SMS report

If an assigned event is triggered, device will send notify SMS to user according to the setting.

"W" mode

1. GPS is fixed

Content of message	*Explanation*
G3A V1.00	*Device name/Firmware version*
LTM 2013-06-06 14:17:12	*Date/Time*
http://maps.google.com/maps?q...	*Google map hyper link*
ETD:6/ACC ON	*Event ID/User defined event name/Data*
GSM -52dBm	*GSM network signal strength*
EXT_PWR=12.08V	*External power voltage*
BAT=3.86V	*Built-in battery voltage*
#301	*Consumed messages*

3. GPS is not fixed

Map hyper link will be LBS (URL1) instead of GPS

Content of message	*Explanation*

G3A V1.00	*Device name/Firmware version*
LTM 2013-06-06 14:17:12	*Date/Time*
http://maps.google.com/maps?q...	*Google map hyper link*
ETD:6/ACC ON	*Event ID/User defined event name/Data*
GSM -52dBm	*GSM network signal strength*
EXT_PWR=12.08V	*External power voltage*
BAT=3.86V	*Built-in battery voltage*
#301	*Consumed messages*

"T" mode

1, GPS is fixed

Content of message	*Explanation*
G3A V1.00	*Device name/Firmware version*
LTM 2013-02-28 23:51:09	*Date/Time*
GPS 1.55/0.50/3/4	*HDOP/ALTITUDE in meter/Fixed satellite number/Time of first fixed*
N23.164302	*N means north/S means south*
E113.428456	*E means east/W means west*
SPD:0km/h 0	*Speed/Heading*
ETD:6/ACC ON	*Event ID/User defined event name/Data*
GSM -52dBm	*GSM network signal strength*
EXT_PWR=12.13V	*External power voltage*
BAT=3.96V	*Built-in battery voltage*
#28	*Consumed messages*

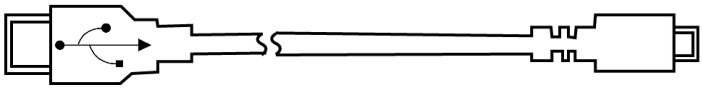
2. GPS is not fixed, using LBS instead

Content of message	*Explanation*
G3A V1.00	*Device name/Firmware version*
LTM 2013-02-28 23:51:09	*Date/Time*
MCC/MNC/LAC/CID/RSSI	*Base station information type*
460/0/2503/962C/-53dBm	*Main station, MNC/MNC/Local area code/Station ID/Signal strength*
460/0/2731/40F4/-60dBm	*Neighbor station 1*
460/0/2703/4050/-70dBm	*Neighbor station 2*
ETD:6/ACC ON	*Event ID/User defined event name/Data*
GSM -52dBm	*GSM network signal strength*
EXT_PWR=12.13V	*External power voltage*
BAT=3.96V	*Built-in battery voltage*
#28	*Consumed messages*

Appendix

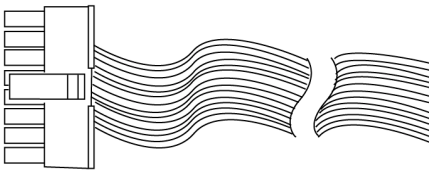
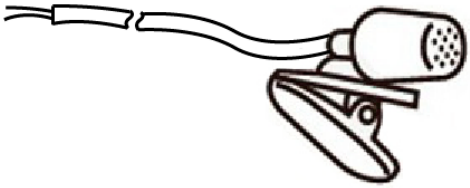
Optional accessory

■USB cable

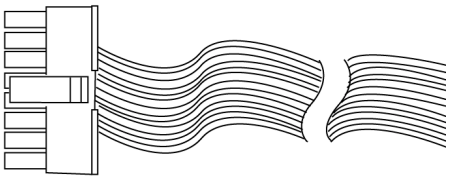
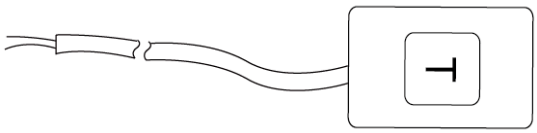
To the computer that runs configuration tool		To the front panel of device

■Microphone

Item	Parameter
Length	3 meters
Material	Al-Si
Output impedance	2.2Kohm
Sensitivity	-30db to 60db
Frequency	50HZ to1600HZ
Channel	Stereo

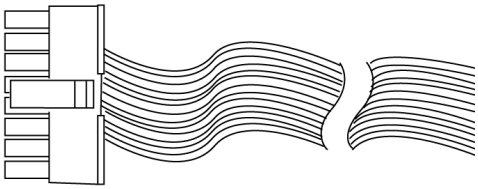
PIN1 PIN10 	Black wire: To PIN1 Red wire: To PIN10 	This accessory is necessary for voice related functionalities.

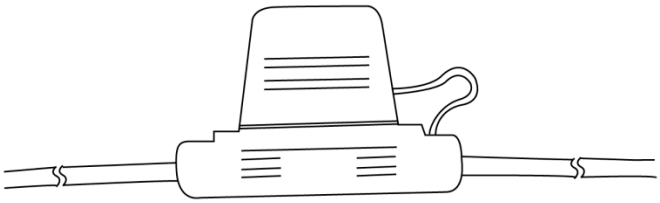
■Panic button

PIN8/9 PIN1 	Black/White wire: To PIN8/9 Black wire: To PIN1 	Press button to send SOS message/call from G3A

■Fuse

This accessory protects the device when illegal power supply has been connected.

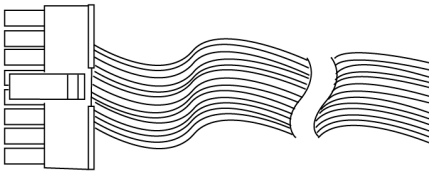
PIN2 	Red wire: PIN2	To external power supply



■Immobilizer

Immobilizer is an electronic security device fitted to an automobile that prevents the engine from running, it can be control by digital output channel from G3A

PIN5/6/7



85: To +12V/24V

86: To PIN5/6/7

87a & 30: Between ignition wire