

LGG User Manual

1.2.0



GeoSat Corporation



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Federal Communications Commission (FCC) Statement

15.21

You are cautioned that changes or modifications not expressly approved by the part responsible for compliance could void the user's authority to operate the equipment.

15.105(b)

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

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

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

Operation is subject to the following two conditions:

- 1) this device may not cause interference and
- 2) this device must accept any interference, including interference that may cause undesired operation of the device.

FCC RF Radiation Exposure Statement:

1. This Transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
2. This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

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Chapter 1: Installation

Installation Requirement

You can find the below LGG accessories from the product delivery which are necessary to complete the installation:

1. Power cable x1
2. GSM antenna x1
3. GPS antenna x1
4. DI/O cable x1
5. Console cable x 1
6. LGG
7. LGG mounting screws x 4

Others:

1. GPRS enabled SIM card
2. Power DC 9~32V
3. Screw driver and some tools

Step to install LGG

Below are the steps to install LGG

1. Select the power input jumper(factory setting is 12V) as In the Figure1. (If needed, please disassemble the screws of LGG and reset the jumper)
Jumper on the left side: 12VDC
Jumper on the right side: 24VDC
2. Plug the console cable and perform configuration .
(please reference "LGG External Interface.pdf")
3. Hold the SIM card with cut edge on the upper left side and insert into the LGG SIM plug; lock the SIM plug door
4. Assemble the GSM antenna to the LGG GSM antenna plug
5. Assemble the GPS antenna to the LGG GPS antenna plug
6. Plug the DI/O cable to LGG DI/O plug (Voltage DC 8~24V)
DI0: + **red** line, - black line (below **red** line)
DI1: + **white** line, - black line (below **white** line)
DI2: + **grey** line, - black line (below **grey** line)
DI3: + **brown** line, - black line (below **brown** line)

DO0: + **blue** line, - black line (below **blue** line)
DO1: + **yellow** line, - black line (below **yellow** line)
7. Mount the LGG to a dry/flat place and fix it with screws
8. Plug the power cable to power on LGG(Voltage DC 9~32V).
Power cable with fuse set is shown in the Figure3.
+ **red** line
- **black** line

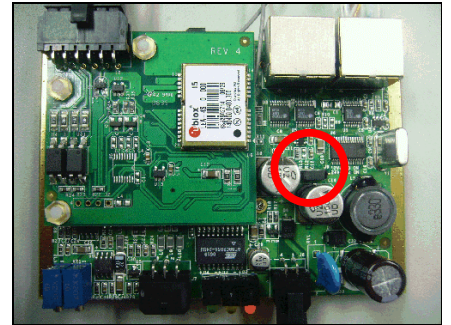


Figure 1

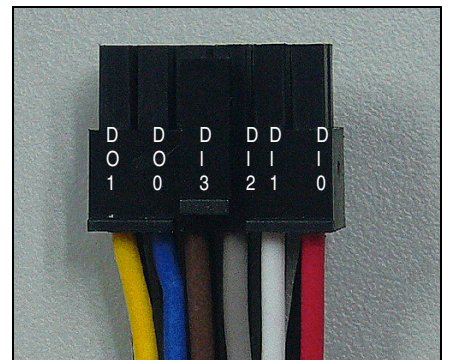


Figure 2

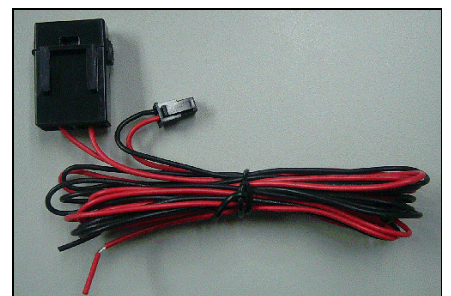


Figure 3

Chapter 2: Configuration

Before start running LGG, LGG must be configured properly.
There are two ways to configure LGG: manual configure or remote configure.

Configurable items

Configurable items are in the format of:
Keyword=value

Care should be taken that all keywords of the configuration items are case sensitive.

Catalog	Config Name	Data type	Measurement	Description
GSM	cpc-gsm-pin	int		The GSM pin code (4 digits) if pin code is required
	cpc-gsm-band-prefer	int		Preferred GSM radio band 1: GSM 900 MHZ 2: GSM 1800 MHZ 4: GSM 1900 MHZ 8: GSM 850 MHZ 3: GSM 900 + 1800 MHZ 5: GSM 900 + 1900 MHZ 10: GSM 850 + 1800 MHZ 12: GSM 850 + 1900 MHZ
	cpc-gsm-band-allow	int		Allowed GSM radio band 1: GSM 900 MHZ 2: GSM 1800 MHZ 4: GSM 1900 MHZ 8: GSM 850 MHZ 3: GSM 900 + 1800 MHZ 5: GSM 900 + 1900 MHZ 10: GSM 850 + 1800 MHZ 12: GSM 850 + 1900 MHZ 15: all bands
	cpc-gsm-monitor	string		When LGG receive phone call from this caller, LGG will restart itself
	cpc-gsm-immobilizer	string		When LGG receive SMS from this caller with specific SMS context, LGG will trigger both DOO,1 to close
GPRS	cpc-gprs-nameServer	string		The GPRS name server
	cpc-gprs-apn	string		The GPRS APN
	cpc-gprs-user	string		The GPRS username
	cpc-gprs-passwd	string		The GPRS password
	cpc-gprs-ip	string		The receiver program's GPRS IP+Port

				Eg: 211.75.11.234:8080
GPS	cpc-gps-interval	int	second	Duration to send GPS data This interval must >= 3
	cpc-gps-reset	int	second	Duration to reset GPS when fail to get valid GPS data
Business	cpc-biz-customer-id	string		The custom's id
	cpc-biz-car-id	string		The car's id
	cpc-biz-timezone	int		Timezone area; range from 0~23
DI	cpc-di0	int		1 : digital input; high level trigger 0: digital input; low level trigger
	cpc-di1	int		1 : digital input; high level trigger 0: digital input; low level trigger
	cpc-di2	int		1 : digital input; high level trigger 0: digital input; low level trigger
	cpc-di3	int		1 : digital input; high level trigger 0: digital input; low level trigger
	cpc-do0	int		1 : default output open 0: default output close
	cpc-d01	int		1 : default output open 0: default output close
AI	cpc-speed	int		1: enable speed AI 0 disable speed AI
	cpc-rpm	int		1: enable the RPM AI 0: disable the RPM AI
Misc	cpc-debug-level	string		"gsm" to enable GSM message "gps" to enable gps message "spi" to enable spi message "urc" to enable urc message eg. Cpc-debug-level=gps:gsm
	cpc-otap-svr	String		OTA server URL eg. http://211.75.179.140/ This function is disabled at this version.

Table 1

Manual Configure

Pre-requirements:

1. LGG console cable
2. Host machine (Windows platform)
3. LGG support CD

Steps:

1. Make sure MES is installed and configured properly (please reference "MES Installation Guide.pdf");
2. Plug the console cable to LGG console port and host Machine (Figure4);
3. Launch the AutoStart-OnOff.exe program in your hosts Machine. Select the com port of the host machine connected to LGG. Select Product as "LGG". Select "OFF" radio item in AutoStart Group (Figure 5);
4. Power on LGG;
5. Wait 10 seconds, click to "Alter AutoStart State" button;
6. When status bar show "Done", power off LGG; else power off LGG and repeat from step 4;
7. Power on LGG, open file explorer of the host machine. You can see a module icon; (Figure 6)
8. Open the module icon, you can see many system files(Figure 7). Copy lgg.ini to your local disk;

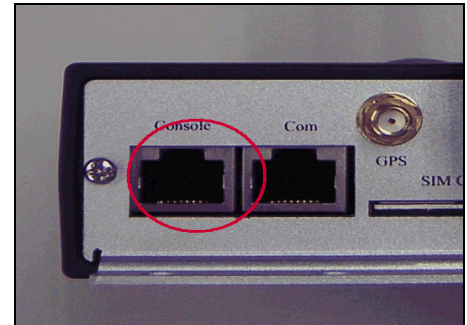


Figure 4

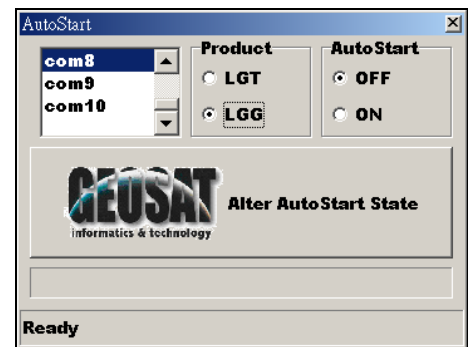


Figure 5

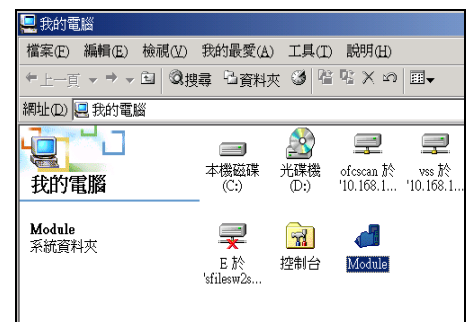


Figure 6

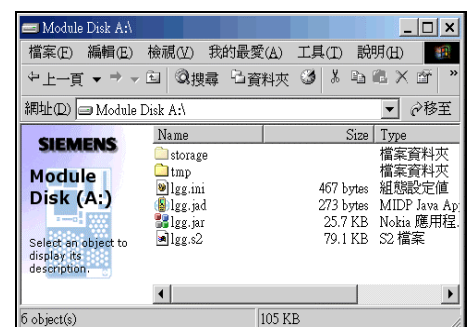


Figure 7

9. Use notepad to edit your configuration file (lgg.ini) in your host machine;

```
cpc-gsm-pin=0000
cpc-gsm-band-allow=3
cpc-gsm-band-prefer=3
cpc-gprs-nameServer=
.....

cpc-gps-interval=60
cpc-biz-customer-id=5555
cpc-biz-car-id=1234
cpc-biz-timezone=8
```

10. Power off LGG
11. Power on LGG and wait 10 seconds;
12. Open the module icon, copy your local configuration file (lgg.ini in step 9) to the module and replace it;
13. Close the module icon, and wait 10 seconds;
14. In AutoStart-OnOff.exe program, select "ON" radio item in AutoStart Group, click "Alter AutoStart State" button to enable autostart;
15. If status bar show "Done", power off LGG; else repeate step 12;
16. Complete

Remote Configure

It is possible for backend server to remote configure LGG through GPRS network. Table 2 lists the remote configuration command supported by LGG.

Command	LGG acknowledge of the command	Description
\$CUSTOM_ID\$GGST300#	Yes, GPS data with status code 80	Set GPS report interval to 300 seconds; Interval must >= 3
\$CUSTOM_ID\$CID8888#	yes, GPS data with status code 83	Renew car id to 8888; please be noticed that please don't send this command to all LGG
\$CUSTOM_ID\$CHIP61.30.90.241,10999#	yes, GPS data with status code 91	Change server IP to 61.30.90.241 Port to 10999

Table 2

Chapter 3: LEDs Lighting

Users can check LGG status from the 3 LEDs in the front panel.
Below table list the meaning of LEDs indicators:

LED	Appearance	Description
Red LED (Power status)	Permanently off	POWER DOWN
	Permanently on	POWER ON
Yellow LED (GSM status)	Permanently off	POWER DOWN
	600 ms on / 600ms off	Limited Network Service: No SIM card inserted or no PIN entered, or network search in progress, or ongoing user authentication, or network login in progress.
	75 ms on / 3 s off	IDLE
	75 ms on / 75 ms off / 75 ms on / 3 s off	One or more GPRS PDP contexts activated
	500 ms on / 50 ms off	Packet switched data transfer is in progress.
Green LED (GPS status)	Permanently off	POWER DOWN or Position is not fixed
	Flash	Position is fixed

Table 3

Chapter 4: Command to LGG

It is possible for backend server to send specific remote commands a LGG to perform works by via of GPRS network. Table 3 lists the commands LGG supports under GPRS mode:

Command	CPC acknowledge of the command	Description
\$CUSTOM_ID\$END0001#	no	Acknowledge of the record 0001
\$CUSTOM_ID\$GGSS#	Yes, GPS data with status code 0	Command LGG to send the newest GPS record immediately
\$CUSTOM_ID\$DO=a,b#	yes, GPS data with status code 92,93	a: {0/1} port 0 or port 1 b: {0/1} value 0(close) or 1(open)

Table 4

Another important feature is to trigger DO by via of SMS. When LGG receive SMS from a specific caller(set in `cpc-gsm-immobilizer`) with specific context, LGG will pull DO0,1 to open or close according to the SMS context:

SMS context is "<immobilize aaaa bbbb>" will cause LGG pull both DO0,1 to close

SMS context is "<mobilize aaaa bbbb>" will cause LGG pull both DO0,1 to open

Where aaaa, bbbb is custid(set in `cpc-biz-customer-id`), carid(set in `cpc-biz-car-id`) respective.

Chapter 5: LGG Data Format

LGG data format is backward compatible with GeoSat's AVL products family.
LGG produces two kinds of data: GPS data and DI data. The following paragraphs are the detail data format:

GPS Data

\$aa\$bbbbccddddeeeeffgghhiijjklmmmmmmmmnnoooooppqqrrr#			
Item	byte	Description	Reference
\$	1	start character	
aa	2	Data type: must equal 01	
\$	1	separator	
bbbb	4	data serial number, 0000~5000	
c	1	GPS status: 1:valid; 2:invalid	
dddd	4	Customer ID	cpc-biz-customer-id
eeee	4	Car Id	cpc-biz-car-id
ff	2	year	
gg	2	month	
hh	2	day	
ii	2	hour	
jj	2	minute	
kk	2	second	
l	1	East or west longitude. 1: east longitude; 2: west longitude	
mmmmmmmm	9	Longitude degree, 3 bytes for degree, 6 bytes for minute	
n	1	North or south latitude. 1: north latitude; 2: south latitude	
ooooooo	8	Latitude degree, 2 bytes for degree, 6 bytes for minute	
pp	2	Status: 00:GENERAL 69:Power Low 80:GGST 83: CID 91:CHIP 92:DOO 93:DO1	
qqq	3	speed	
rrr	3	Angle of Direction	
#	1	End character	

DI Data

\$aa\$bbbbccdddeeeffgghhiijjkllmmmm#			
Item	byte	Description	Reference
\$	1	Start character	
aa	2	Data type, must equals 03	
\$	1	end_symbol	
bbbb	4	data serial number, 5001~9999	
c	1	GPS status: 1:valid; 2:invalid	
dddd	4	Customer name	cpc-biz-customer-id
eeee	4	Car Id	cpc-biz-car-id
ff	2	year	
gg	2	month	
hh	2	day	
ii	2	hour	
jj	2	minute	
kk	2	second	
ll	2	Status	
mmmm	4	DI value Byte 1-4, DI0~DI3 Each DI is one byte long, 0/1	
#	1	End character	

Appendix1

Document History

Date	Author	Description	Remark
2006/5/12	David	First Draft	