

GLL-160 Smart Electronic Lock

User Guide

V2.9



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1 Copyright and Disclaimer

2 Product Overview

GLL-160 is 2G/3G/4G Smart Electronic Lock, built-in 10400mAh battery, G-sensor and RFID reader, and monitor the container or asset's location and door status. through the wireless technology, User can open the GPS lock remotely by SMS password or (android or IOS) app. If there is no cellular network, user can also open the lock by the authorized RFID key on spot.

3 Product Functions






Hardware/ Firmware	Main Functions	Description
Hardware	2G/4G cellular network	3G customizable
	GPS+LBS Positioning	LBS info.(CELL ID and LAC)
	Dual SIM cards	It can be installed with two Micro SIM cards and supports the dual SIM single standby mode. The device will automatically select a SIM card to register the network.
	Build in 10400mAh Rechargeable 18650 lithium battery	Customizable
	Build in 3 Axis acceleration sensor	Motion or vibration detecting
	Buzzer and LED indicators reminder	Different device Status Buzzer and LED indicator reminder
	Charger	5V DC -2A charging
	Bluetooth(Optional)	Unlocking via APP or Download historical Track data through Bluetooth(replace serial port)
Firmware	Real time Position querying	Query current location by SMS command
	Unlock by Password	Unlock the device by Password(GPRS/SMS)
	Unlock device by authorized RFID key	Unlock the device by authorized RFID keys
	Locked automatically	The device will automatically lock when the lock rope is inserted
	50 authorized RFID keys	Unlock the device by authorized RFID keys
	Polygon Geo-fence	10 Polygon Geo-fences
	5 Authorized Phone Numbers	Receiving short message alert or command response and sending command
	Supports 9 alerts	Lock rope tamper,

		Swiping unauthorized RFID key, Unlocking, Wrong password, Vibration, Enter Geo-fence, Exit Geo-fence, Low battery, Back Cover Opened, Motor Fault
	Lock and Unlock Report	The way to lock or unlock, unlock by Password or RFID key, report time, locked /unlocked successful or failed
	Wake up source	Vibration, RFID Key Reading, Back Cover Opened, Lock rope inserted and unplugging, Sleep and timing wake up(RTC)
	FOTA	Firmware upgrading via OTA

4 Specifications

Items	Description
Size	195mm x 114mm x 37mm
Weight	1000g(Include main unit and 35CM Lock rope)
Material	Engineering plastic
GPS Module	AT6558R
GSM module	Quectel M25 or EC200
Working temperature	-20°C -- +80°C
Store temperature	-40°C -- +80°C
Humidity	5%—99%
Standard battery	Rechargeable battery 10400mAh
Average working current	<90 mA
Average current standby	<100uA
Working hour	2G device(10400mAh) normal working mode: 140 hours 3G device(10400mAh) normal working mode: 110 hours
Waterproof	IP67
Transmission mode	Support TCP(GPRS) or SMS(short message)

5 Standard Package and Optional Accessories

Items	Figure	Standard	Optional
GLL-160 Main unit	 A black, rectangular electronic device with a textured top surface and a small display or indicator on the front panel.	•	
Lock rope	 A metal braided rope with a locking mechanism at one end.	•	
RFID Keys(2 pcs)	 Two RFID keys: one is a blue, oval-shaped key, and the other is a blue, rectangular key.	•	
Micro USB configure cable	 A black cable with a Micro USB connector on one end and a standard USB connector on the other.		•
Charger Adapter (DC5V- 2A output)	 A black, rectangular power adapter with two prongs at the bottom and a label on the front.		•

6 Description of Product Appearance

6.1 Front View



1 Lock rope: standard size 35 cm

2 Swipe RFID Key Area: Swipe RFID Key

6.2 Bottom View




1 Charger Interface 5V DC -2A Charger

2 Buzzer: Different Device Status ,Buzzer reminder


6.3 Side View



1 LED indicator:

: GSM-Red led :Cellular network connection Status

: GPS-Green led: GPS fix Status

: LVS-Yellow led: Low Battery Status

: CHG-Red led: Charging or Charging full Status

6.4 Back View and Back Cover Opened

Back View



- 1 Cushioned silicone pad:** Prevent equipment damage when equipment crashes
- 2 Nameplate:** Device Brand Name, IMEI and so on.
- 3 Strong magnet:** Prevent equipment shake and collision monitoring assets

Back Cover Opened



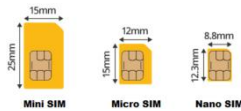
- 1 Power switch:** Turn the switch to the left, power on the device;
Turn the switch to the right, power off the device.
- 2 Micro USB socket:** Connect Micro USB configure cable to PC, initialize parameters or debug purpose and Firmware upgrade.
- 3 SIM2 slot:** Push the SIM card holder down vertically to open it, and then put the **Micro-SIM** card 2 inside, Press down then push the SIM card holder up vertically to lock the SIM card
- 4 SIM1 slot:** Push the SIM card holder down vertically to open it, and then put the **Micro-SIM** card 1 inside, Press down then push the SIM card holder up vertically to lock the SIM card
- 5 Light sensor:** it's used to detect whether Back Cover opened or not.

7 First Use

7.1 Installing a SIM card

Please refer to section '[Back Cover Opened](#)', Open the Back Cover by screwdriver.

- Open the SIM1 Or SIM2 SIM card slot
- Insert the **Micro SIM card** into the card slot with its gold-plated contacts facing towards the Printed Circuit Board (PCB)



- Slide the SIM card holder to lock it in place







- Ensure that SIM card's SMS/Cellular Network service are available .
- Ensure that the phone card PIN lock has been closed properly.

7.2 Power on the GLL-160 device

Please refer to section '[Back Cover Opened](#)', Turn the switch to the left, power on the device .Look LED lights ,If **Yellow LED** Blinking every 3 sec ,It indicates low battery, Please refer to section '[6.2 Bottom View](#)' , charge the device by 5V DC adapter about 8 hours.

7.3 LED indicators and Buzzer Description

LED Indicators Description

ICON	LED Indicators	Status	Description
	RED LED GSM	Blinking very fast, 3 times in one sec	Registered GSM and connected to GPRS network, sending data to server
		Blinking every 3 sec	Registered GSM, but can't connect to GPRS network, need to check parameters setting and if SIM card was activated GPRS function
	Green LED GPS	Blinking every 10 sec	GPS positioning valid
		Blinking every 3 sec	GPS signal is invalid
		Off	The device is in sleep mode or power off
	Yellow LED Low BAT	Blinking every 3 sec	When the internal battery power is lower than 20%
	Red LED Charging	Charging or charging full	When charging , Red light is always on; When charged full, Red light turns green

Buzzer Sound Description

No.	Operation/condition	Buzzer sound Description
1	Swipe authorized RFID key	Buzzer ring once , indicates RFID key is read; the Motor running, and Buzzer ring twice Indicates that the lock rope can now be pulled out.
2	Inserted the lock rope properly, the device lock automatically	Buzzer ring once , indicates The device detects that both ends of the lock rope are inserted into the proper position; Motor running, Buzzer ring twice Indicates that the device locked successfully.
3	Unlocking but never unplug the lock rope	After unlocking for 10 seconds, the lock rope is not pulled out and the buzzer will continue to beep for 60 seconds ; During the buzzer ringing, if the lock rope is pulled out, the buzzer stops ringing; or after 60 seconds, the buzzer stops ringing and the device starts to lock automatically.
4	Unlock by Password	Buzzer ring 3 second continuously , After unlocking for 10 seconds, the lock rope is not pulled out and the buzzer will continue to beep for 60 seconds
5	Swipe unauthorized RFID key	Buzzer ring 3 second continuously

7.4 Device Initialization by SMS command

Note: Please wake up the device firstly before sending the SMS command. Red and Green Led should be blinking after wake up.

No.	Function Name	SMS Command Example	Response from GLL-160	Response Description
1	Set Authorized phone numbers to send and receive SMS command response	Set the first Authorized number-8613910102345: (P11,1,1,8613910102345) Set the second Authorized number-8615899874401: (P11,1,2,8615899874401) Note: The SMS command content includes brackets '(' and ')'	(8845578923,P11,1,8613910102345)	(max: 5 phone numbers)
2	Set SIM1's IP Port and GPRS network parameters(when Insert SIM card to SIM1)	(P06,1,dxapi.trac4you.com,11600,APN ,APNuser,APNpass) Note: If APN without account. Keep it blank as below: (P06,1,dxapi.trac4you.com,11600,APN ..)	(8845578923,P06,dxapi.trac4you.com,11600,CMNET,user,pass word,0)	Reply content is "IP" "Port", Host IP Address: dxapi.trac4you.com Port:11600 0 indicates SIM1 Note: Please get Host IP and Port from XXXXXX sales
3	Set SIM2's IP Port and GPRS network parameters(when Insert SIM card to SIM2)	(P06,3,dxapi.trac4you.com,11600,APN ,APNuser,APNpass) Note: If APN without account. Keep it blank as below: (P06,3,dxapi.trac4you.com,11600,APN ..)	(8845578923,P06,dxapi.trac4you.com,11600,CMNET,user,pass word,1)	When device go to another country ,User can use another local SIM card in order to Save on roaming charges. 1 indicates SIM2 Note: SIM1 and SIM2 can't be working at the same time.
4	Set Position Data Reporting Time interval and Timing wake up interval	(P04,1,30,30) //command parameters description: P04 means command code 1 means set ; 0 mean query 30 means Position Data Reporting Time interval. Unit in sec. range: [5,600] 30 means Timing wake up interval, unit in min. Range:[30,1440]	(8845578923,P04,30,30)	Product Working Logic: Normally, if there is no any external wake up source, the device will go to sleep ,and wake up according to RTC wake up interval(30 minutes as default value) When swipe the RFID key, detected vibration, Back Cover opened, lock rope inserted and unplugging , RTC timing wake up, these Wake up source will wake up this device, when device wake up, it will work about 10 minutes, during the 10 minutes, it reports position data according to Position Data Reporting Time interval (30 sec as default value)
5	Query current Position of device	(P02)	8845578923,09-28 12:11:02,Speed:0km/h,Battery:85%,GPS:3 ,Lock Close, http://maps.google.com/?q=22.549737,114.076685	Unit ID: 8845578923 Date time: 09-28 12:11:02 Month/day HH:mm:ss GPS Speed: Speed:0km/h Internal Battery Level: Battery:85% Number of captured satellites: GPS:3 Lock status: Lock close/open

				Google Map Link: http://maps.google.com/?q=22.549737,114.076685
6	Unlock device by Password	(P43,888888) 888888 is the default password	(8845578923,P43,0,2)	0 means failed, "1" means successfully, 2 means continuously input wrong password times
7	Change Unlock Password	(P44, #12aAM,888888) '#12aAM' is the new password '888888' is default password	(8845578923,P44,1)	1 means change password successfully; 0 means unsuccessfully
8	Register authorized RFID key	add 10 RFID key, use below command : (P41,1,1,10,0000112345,0000212345,0000312345,0000412345,0000512345,0000612345,0000712345,0000812345,0000912345,0000012345) 1 means add 10 total 10 Unlock RFID keys	(8845578923,P41,1,10)	1 means Register operation 10 means total 10 RFID keys in device
9	Delete all authorized RFID key	(P41,1,3)	(8845578923,P41,3,0)	3 indicates Delete All operation 0 means Total 0 RFID keys in device
10	Reboot Device	(P15)	(8845578923,P15)	Device will restart itself after 30 sec
11	Set the Time difference(only effect short message alert data)	(P10,1,480) 480: time difference. Unit in minute. e.g. Beijing time is 8 hour different from UTC, 8 hours = 480 min. value range is -720 to 780.by default, it's 0. (P10,1,-180) -180 means UTC -03:00	(8845578923,P10,480)	Time difference is 480 minutes. UTC +08:00
12	Restore Factory setting of device	(P13) Exclude for IP address, Authorized phone numbers, APN, APN account & password, all parameters will be restored factory setting	(8845578923,P13)	

7.5 Product working Logic

Normally, if there is no any external wake up source, the device will go to sleep ,and wake up according to RTC wake up interval(30 minutes as default value)

When swipe the RFID key, detected vibration, Back Cover Opened, lock rope inserted and unplugging, RTC timing wake up, these Wake up source will wake up this device, when device wake up, it will work about 10 minutes, during the 10 minutes, it reports position data according to Position Data Reporting Time interval (30 sec as default value).

7.6 Lock and Unlock Device

7.6.1 Lock the device

When inserted the two ends of lock rope inside device in place, the GLL-160 device will lock itself automatically.

Working Process: *Buzzer ring once, Motor running, Buzzer ring twice.*

'Buzzer ring once' indicates The device detects that both ends of the lock rope are inserted into the proper position;

'Buzzer ring twice' Indicates that the device locked successfully.

7.6.2 Unlock the device

7.6.2.1 Unlock by Password

Send below command via short message or GPS platform

(P43,888888)

Working Process: *When unlock successfully, Buzzer ring 3 second continuously, User can take out the lock rope. After unlocking for 10 seconds, the lock rope is not pulled out and the **buzzer will continue to beep for 60 seconds**; During the buzzer ringing, if the lock rope is pulled out, the buzzer stops ringing; or after 60 seconds, the buzzer stops ringing and the device starts to lock automatically.*

7.6.2.2 Unlock by Authorized RFID key

Customer will get 2 authorized RFID keys in the package. When the device battery is normal, after turning on the power switch, swipe one of the authorized RFID keys to unlock.

Working Process: *When unlock successfully, **Buzzer ring once**, indicates RFID key is read; the Motor running, and **Buzzer ring twice** Indicates that the lock rope can now be pulled out, and then User can take out the lock rope.*

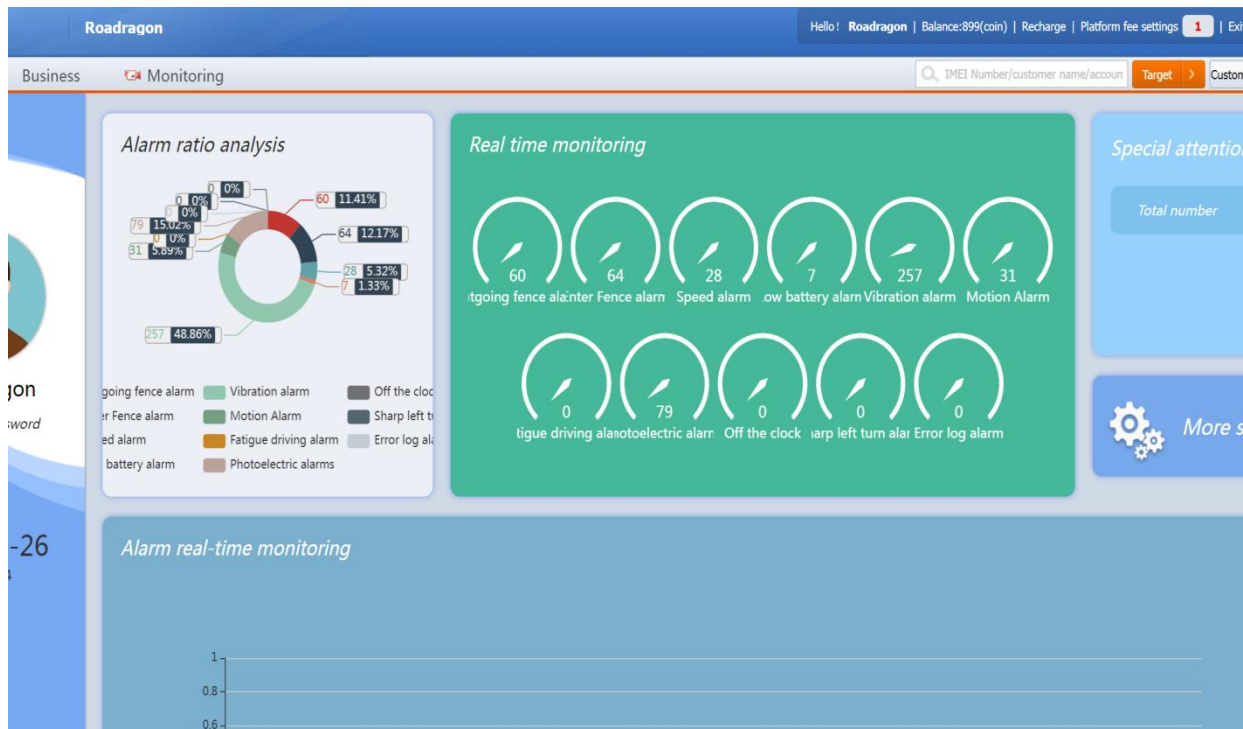
Note:

If swiped with a unauthorized RFID key, Buzzer ring 3 second continuously. and User can't take out the lock rope ,device will also trigger a alert to platform.

8 Tracking the device in XXXXXX GPS Platform

8.1 Principle of communication

In order to have more understanding of GLL-160 device, it is recommended to experience the related functions of this product on our GPS platform.



8.2 Get the login ID

Please get the Login ID of GPS tracking system from Platform providers(XXXXXX sales),and Monitor the device's current position and others.

8.3 Login Software Platform

Please get the Web App link / PC based software / Android/IOS App and Manuals from XXXXXX sales or other Platform Providers , and manage your asset in the software Platform.

XXXXXX Web App link:

<http://www.roadragon.net/>

9 Device Installation

The GLL-160 device is easy to install, and the installer simply inserts the lock rope through the lock hole and the strong magnet behind the device will firmly cling to the case.



10 Warranty Terms

- The warranty period will be 12 months from the delivery date, the warranty shall not apply to any defect, failure or damage caused by improper use, disassembled and alteration without authorization.
- Our obligations are limited to repair of the defect or replacement the defective part or at its discretion replacement of the product itself.
- Repair or replacement under the terms of this warranty does not provide right to extension or renewal of the warranty period.
- The warranty is not applicable to cases other than defects in material, design and workmanship.