Queclink
WIRELESS SOLUTIONS

GSM/GPRS/GPS Tracker **GL200**
User Manual

TRACGL200UM001

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http://www.queclink.com
sales@queclink.com

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Contents

0. Revision history

Revision	Date	Author	Description of change
1.01	2010-09-19	Ella HUANG	Initial
1.02	2010-12-20	Ella HUANG	1. Modify interface define and pictures in chapter 2.4,2.6,3.3;
1.03	2011-04-11	Ken JI	1.Add Ignition Detection connection position in chapter 2.5 2.Add the input function description in chapter 2.6 3.Add the output function description in chapter 2.7 4.Modify the external cable interface description in chapter 3.3
1.04	2012-03-21	Miranda Wang	1.Add a description of GSM LED in chapter 2.3

1. Introduction

GL200 is a powerful GPS locator which is designed for vehicle, pets and assets tracking. With superior receiving sensitivity, fast TTFF and GSM frequencies 850/900/1800/1900. Its location can be real time or schedule tracked by backend server or specified terminals. Based on the embedded @Track protocol, GL200 can communicate with the backend server through GPRS/GSM network, and transfer reports of emergency, Geo-fencing, device status and scheduled GPS position etc… Service provider is easy to setup their tracking platform based on the functional @Track protocol.

2. Product Overview

2.1. Appearance

2.2. Buttons/Mini USB Interface Description

| Button /Mini USB Interface Description	
Power Key	- Turn on GL200 - Turn off GL200 when without charging. (If power key is enabled)
Function Key	- Geo-Fence mode Long press the key to enable/disable Geo-Fence ID0 - Geo-Fence in current position mode Long press the key to enable/disable Geo-Fence ID0. If enable Geo-Fence ID0, using the current position as the centre of Geo-Fence 0. - SOS mode (default) Long press the key to active SOS alarm
Mini USB interface	- Connect a 5V DC adapter can power GL200 and charge the internal battery - Connect a 3.7V Li-ion or Li-Polymer battery can power GL200 - Backend server developer or administrator can use the Data_Cable_M to configure GL200

2.3. LEDs Description

There are three LED in GL200, the description as following.

LED	Event	State
GSM LED	Searching network	Fast flash
	Network has been registered	Slow flash
	Power off	Dark
	SIM-PIN Locked	Solid
	Receives a valid protocol command	Turn on for 3 seconds
	<LED on> is 2	Dark
GPS LED	GPS has fixed	Solid
	GPS is in fixing	Fast flash
	GPS is on and GPS data wrong	Slow flash
	GPS is off	Dark
	If *<LED on>* is 0, 150 seconds later after powers on.	Dark
	<LED on> is 2	Dark
Power LED	Power on and normal	Dark
	Charger inserted and charging completed	Solid
	Charger inserted and charging	Fast flash
	Power key was pressed and prepare to power off	Fast flash
	Abnormal	Fast flash
	Power low alert	Slow flash
	Power off or turn off the power light by command	Dark
	<LED on> is 2	Dark

## 2.4. External Power Interface

2.4.1. External DC Charger Interface

The Pin2 on Mini-USB connector are used for charging and named as VCHG pin, It can be connected to a 5V DC power supply to power GL200 and charge the internal battery.
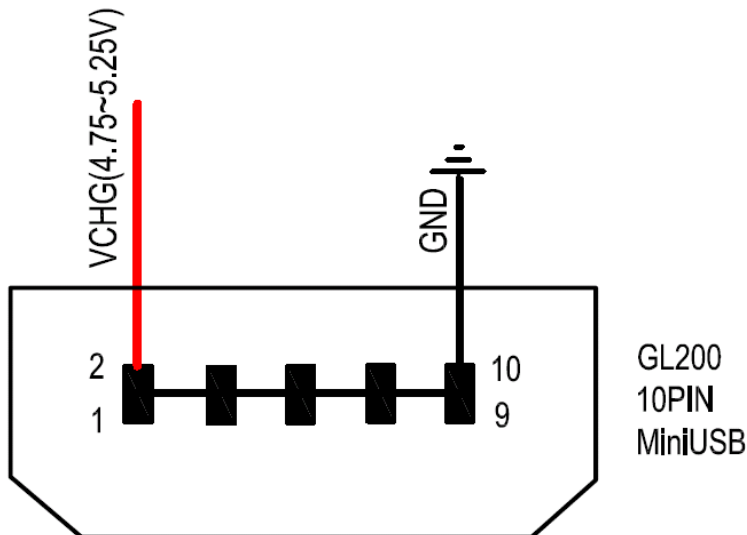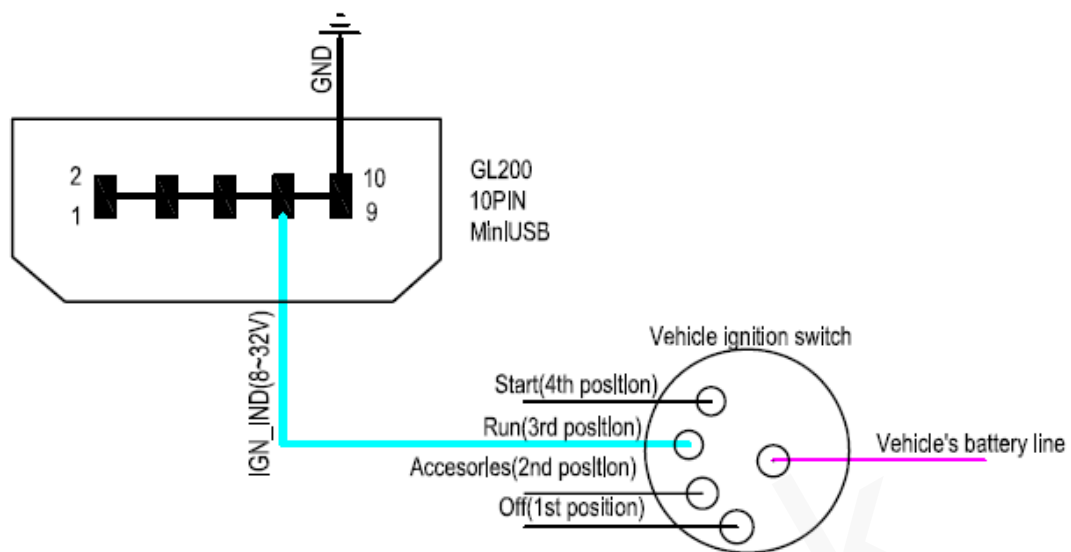
2.4.2. External Battery Interface

The Pin 8 on Mini-USB connector is for external battery and named as EXTBAT pin, It can be connected to 3.7V Li-ion or Li-Polymer battery to power GL200.
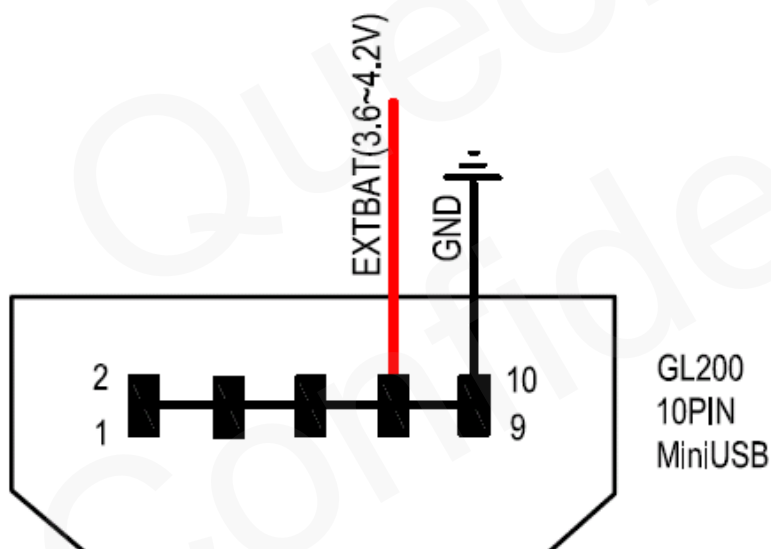
2.5. Ignition Detection

The Pin 7 on Mini-USB connector is for ignition detection when GL200 is used in vehicle tracking application, It is named as IGN_IND pin.

Another easy way is to connect PIN7 to a power output in the fuse box of the vehicle which is only enabled after the vehicle is ignition on. For example: the power output for radio FM.
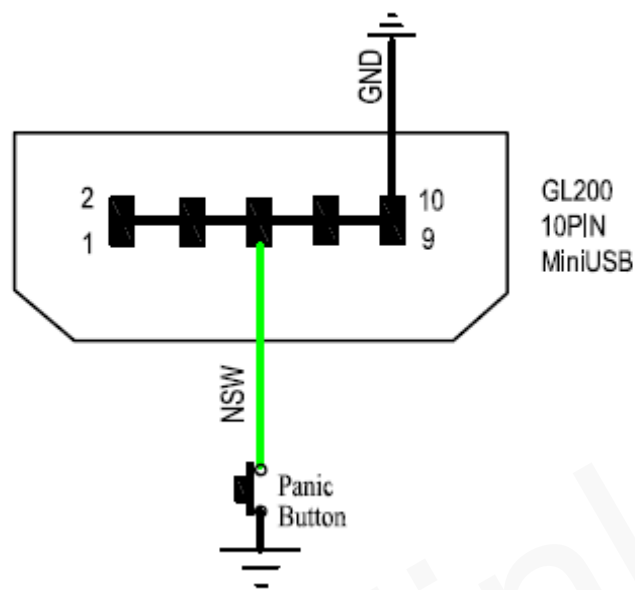
2.6. External Input Interface

The older hardware version of the GL200 whose IMEI code is between 35946403600001X(ignore the last one parity bit X) and 35946403607338X do not support the input function ,before using the input function ,you should check if the GL200 is a newer hardware version.

The Pin 5 on Mini-USB connector is a negative trigger input in newer hardware version, It is named as NSW pin.
For negative trigger input the electrical conditions are:

Logical State	Electrical State
Active	0V to 0.8V
Inactive	1.7V to 32V or Open

An input example is shown as following figures:

Example of NSW pin connect to a panic button

2.7. External Output Interface

The older hardware version of the GL200 whose IMEI code is between 35946403600001X(ignore the last one parity bit X) and 35946403607338X do not support the output function ,before using the output function ,you should check if the GL200 is a newer hardware version.

The Pin 9 on Mini-USB connector is a negative trigger output in newer hardware version, It is named as OUT pin.

The output is Open-Drain type with no internal pull-up resistor which also can be used to control a relay. It means that the user has to connect a pull-up resistor or a relay coil between the Output pin and any positive voltage (32V max.) to generate a correct output.. It can drive a maxim continuous current of 0.15A.
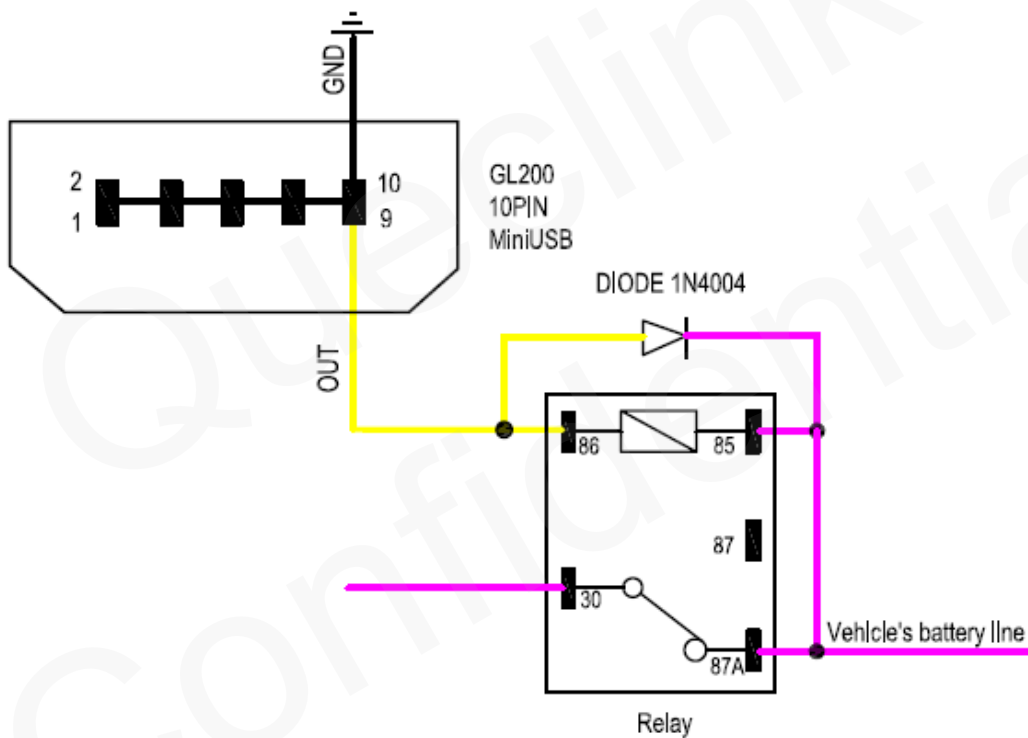
For negative trigger output the electrical conditions are:

Logical State	Electrical State
Enable	<0.4V, max current is 0.15A
Disable	Open or the pull-up voltage (max 32V)

The output examples are shown as following figures:
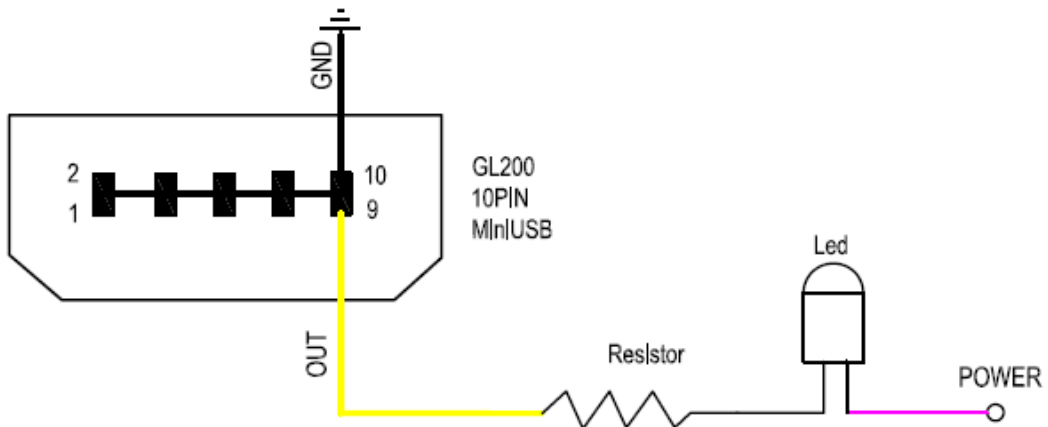
Example of OUT pin drive a LED

Example of OUT pin drive a relay

If the digital output is used to drive a relay, a catch diode is showed across the relay coil, this is necessary to prevent damage to the digital output when the relay is turned off. Many modern relays come with this diode pre-installed internal to the relay itself. If the relay has this diode, insure the proper relay polarity connected is used. If this diode is not internal, it should be added externally. A common diode such as a 1N4004 will work in most circumstances.

2.8. External GPS antenna specification

There is a MMCX RF connector on GL200 and it is for external GPS antenna. The specification of the external GPS antenna is listed in following table.

GPS antenna:	Frequency: 1575.42MHz
Bandwidth:	>5MHz
Beamwidth:	>120 deg
Supply voltage:	3.3V
Polarization:	RHCP or Linear
Gain:	Passive: 0dBi minimum Active: 15dB
Impedance:	50 Ω
VSWR:	< 2
Noise figure:	<3
Connector	MMCX

3. Getting Started

3.1. Parts List

Name	Picture	Remark
GL200 Locater		The GSM/GPRS/GPS locator.
AC-DC Power Adapter (Standard accessory)		It is used to charge the internal battery of GL200.
GL200 Sheath (Optional accessory)		It is used to attach the GL200 to belt.

Car Cigarette Charger (Optional accessory)		It is used to power the GL200 with the cigarette power output on the vehicle.
Car Kit Charger (Optional accessory)		It is used to power the GL200 with the battery output on the vehicle.
External Battery Kit (Optional accessory)		It is a set of accessories include an external battery, a power control unit and a pelican waterproof casing. It will greatly improve the working time of GL200 and also let the GL200 can be used for some special application like container tracking. Please refer to "GL200 External Battery Kit User Manual.pdf" for detail.
GL200 Data Cable (Optional accessory)		It is the USB data cable which can be used for firmware upgrading and configuration.
GL200 External Cable (Optional accessory)		It is the extend cable which include the charger interface and external battery interface on GL200. It also includes the ignition detection interface on the GL200.
GL200 External GPS Active Antenna (Optional accessory)		External GPS active antenna is optional according to application scenarios.
GL200 Holder Without Magnet (Optional accessory)		It is used to hold the GL200, mount to somewhere with the screw.
GL200 Holder With Magnet (Optional accessory)		It is used to hold the GL200, attached to metal with the magnet on it.

3.2. Battery Charging

- Please connect AC-DC power adapter with GL200.
- Insert the AC-DC power adapter into the power socket.
- During charging, the PWR LED is flashing fast. When the battery is full charged, the PWR LED will be Ever-light.
- You can also charge the battery by USB cable which connects GL200 with the PC.
- Charging time is about 5 hours.

Note: Before the first time using GL200, please full charge the battery.

3.3. GL200 External Cable Interface

- GL200 External Cable is a cable with a Mini USB connector and six wires which include the external power interface, ignition detect and input/output interface for GL200. Please find the detail description in following table.


Color	Name	Remark
RED	External DC IN (5V)	Please refer to 2.4.1 for detail
Black	Ground	Please refer to 2.4.1 for detail
Blue	External Battery IN (DC 3.4V to 4.2V)	Please refer to 2.4.2 for detail
White	Ignition Detect	Please refer to 2.5for detail
Green	NSW （negative trigger input）	Please refer to 2.6 for detail
Yellow	OUT(negative trigger output)	Please refer to 2.6 for detail

If the IMEI code of the GL200 is between 35946403600001X (ignore the last one parity bit X) and 35946403607338X, the *green* wire and *yellow* wire of the external cable should not be used. Some earlier external cables contains only four wires, the earlier external cables can only be used in the older hardware version of GL200.

Color	Name	Old hardware version IMEI code from 35946403600001X to 35946403607338X	New hardware Version The other IMEI code.
RED	External DC IN (5V)	Can be used	Can be used
Black	Ground	Can be used	Can be used
Blue	External Battery IN (DC 3.4V to 4.2V)	Can be used	Can be used
White	Ignition Detect	Can be used	Can be used
Green	NSW（negative trigger input）	*Can not be used*	Can be used
Yellow	OUT(negative trigger output)	*Can not be used*	Can be used

3.4. Install SIM Card

● First, open the cover of SIM card..
● Then insert the SIM card into the slot of SIM card according to the direction shown.
● Finally, cover the slot.
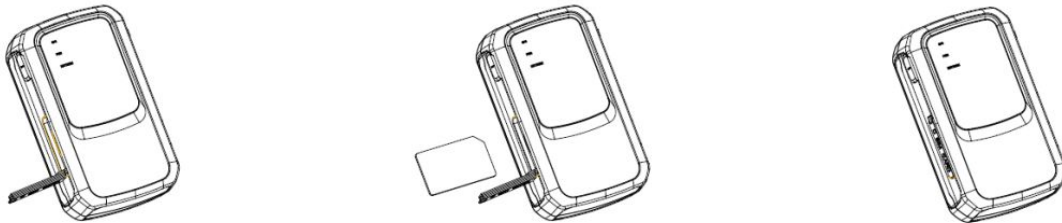
3.5. Install Device Into The Holder

● Please install the GL200 into the holder follow the following process.

3.6. Turn on/Turn off

● Turn on:
   ◆ Method 1: Press the Power key at least 3 seconds and release it to turn on GL200. At the same time, PWR LED will light on.
   ◆ Method 2: Connect device to charger or external battery, and it will turn on automatically, PWR LED will light on.
● Turn off:
   ◆ Method 1: Press the power key about 2 seconds; PWR LED will fast flash and then turn off, it indicates that GL200 is turned off. The time of power off is depended on the quality of network. The maximum time of power off is 90 seconds. It is only valid to turn off when using internal battery. Please note the end-user can not power off GL200 when the power key is disabled by protocol.
   ◆ Method 2: If using external battery, device will power turn-off when external battery disconnect.

4. Troubleshooting and Safety info

4.1. Troubleshooting

Trouble	Possible Reason	Solution
After GL200 is turned on, the GSM LED flashes quickly always.	The SIM card is not inserted.	Please insert the SIM card into GL200.
	The signal is too weak; GL200 can't register to the network.	Please move GL200 into place with good GSM coverage.
	PIN locked	Using SIM card without SIM-PIN, or unlock SIM-PIN.
Messages can't be reported to the backend server by GPRS.	The SIM card in GL200 doesn't support GPRS.	Try a GPRS supported SIM card.
	APN is wrong. Some APN can not visit the internet directly.	Ask the network operator for the right APN.
	The IP address or port of the backend server is wrong.	Make sure the IP address for the backend server is an identified address in the internet.
Unable to power off GL200.	The function of power key was disabled by AT+GTSFR.	Enable the function of power key by AT+GTFKS.
	Unable to power off GL200 if charger connected or using external battery.	Disconnect charger or external battery, and try again.
No response from UART when configure GL200 through UART	GL200 is in power saving mode.	Remove the Data_Cable_M, and plug it in again. After this operation, GL200 will exit from power saving mode for 10 seconds.
		Re-try GL200 manager tool again, it will try to wake up device.
GL200 can't get successful GPS fixing.	The GPS signal is weak.	Please move GL200 to a place with open sky.
		It is better to let the top surface face to sky. (The same surface with indication LED)

4.2. Safety info

- Please do not disassemble the device by yourself.
- Please do not put the device on the overheating or too humid place, avoid exposure to direct sunlight. Too high temperature will damage the device or even cause the battery explosion.
- Please do not use GL200 on the airplane or near medical equipment.