TRAMIGO

TRACKING & CONNECTIVITY

IQL 4G Vehicle Tracker
User Manual

EGPRS/LTE Cat-M1/LTE Cat-NB1/GNSS Tracker

IQL 4G VEHICLE TRACKER UM0

Version: 1.00

General Notes

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1. Introduction

The IQL 4G VEHICLE TRACKER includes GSM and LTE microGPS trackers designed for a wide variety of vehicle tracking applications. They have multiple I/O interfaces that can be used for monitoring or controlling external devices. The built-in GPS receiver has superior sensitivity and fast initial positioning. Their multiband LTE Cat-M1 and Cat-NB1 allow the IQL 4G Vehicle Tracker' location to be monitored in real time or periodically tracked by a backend server and mobile devices. System integration is straightforward as complete documentation is provided for the full featured @Track protocol. The @Track protocol supports a wide variety of reports including emergency alarm, geo-fence boundary crossings, as well as external power supply monitoring and position reports.

1.1. IQL 4G Vehicle Tracker Products

Table 1. IQL 4G Vehicle Tracker Products

Model No.	Region	Technology	Operating Band (MHz)
IQL 4G VEHICLE TRACKERA	North America	LTE	LTE: B2/B4//B5/B12/B13
IQL 4G VEHICLE TRACKERE	GSM/LTE	eMTC/NB-IoT	GSM:900/1800M HzLTE: B3/B8/B20

1.2. Reference

Table 2. IQL 4G Vehicle Tracker Protocol Reference

SN	Document name	Remark
[1]	IQL 4G Vehicle Tracker @Track Air Interface Protocol	The air protocol interface between IQL 4G Vehicle Tracker and backend server.

1.3. Terms and Abbreviations

Table 3. IQL 4G Vehicle Tracker Terms and Abbreviations

Abbreviation	Description
RXD	Receive Data
TXD	Transmit Data
VIN	External DC Power Input
IGN	Ignition
OUT1/IN1	Output 1/Input 1
OUT2	Output 2
GND	Ground

2. Product Overview

2.1. Product Appearance

Figure 1. IQL 4G VEHICLE TRACKER Appearance

Note! IQL 4G Vehicle Tracker has EMBEDDED eSIM card.
Please do not try to install a SIM card.

2.2. LED Description

Figure 3. IQL 4G Vehicle Tracker LEDs

There are two LEDs on IQL Series. For details, please see the table below.

Table 4. IQL 4G Vehicle Tracker LED Description

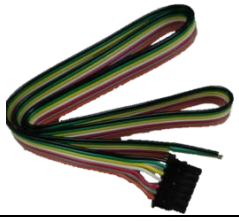
CELL (green)	Device is searching for CELL network.	Fast flashing
	Device has registered to CELL network.	Slow flashing
GPS (red)	GPS is asleep.	OFF
	GPS is fixed.	ON
	Device is searching for GPS.	Fast flashing

Note:

1. Fast flashing intervals are about 100ms ON/200ms OFF.
2. Slow flashing intervals are about 200ms ON/1000ms OFF.

2.3. Parts List

Table 5. IQL 4G Vehicle Tracker Parts List

Name	Picture	Description
IQL 4G VEHICLE TRACKER Locator	 90mm*55mm*13mm	EGPRS/LTE Cat-M1/LTE Cat-NB1/GNSS Tracker
User Cable		IQL 4G Vehicle Tracker standard cable
Charger & USB Cable(Optional)		To supply power and configurethe device

3. Interface Definition

The IQL 4G VEHICLE TRACKER has a 7-pin interface connector. It contains the connections for power, and I/O. Thesequence and description of the connector are shown in the following figure:

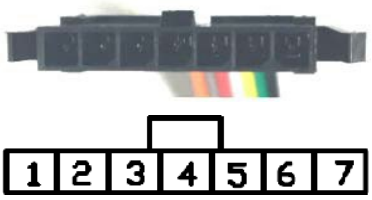


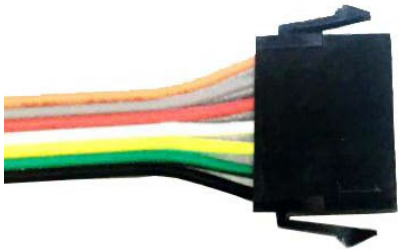
Figure 4. 7-pin Connector of the IQL 4G

VEHICLE TRACKER Table 6. Description

Index	Description	Comment
1	RXD	UART RXD; TTL
2	TXD	UART TXD; TTL
3	VIN	External DC power input, 8-32V
4	IGN	Ignition input, positive trigger
5	OUT1/IN1	Digital output/input; Open drain,150mA max
6	OUT2	Open drain, 150mA max
7	GND	GND

4. IQL 4G VEHICLE TRACKER Series Device Cable Color

Table 7. IQL 4G VEHICLE TRACKER Device Cable Color Definition

Definition	Color	Pin No.	Cable
RXD	Orange	1	
TXD	Gray	2	
VIN	Red	3	
IGN	White	4	
OUT1/IN1	Yellow	5	
OUT2	Green	6	
GND	Black	7	

5. Getting Started

5.1. Switching on the Backup Battery

To use the IQL 4G VEHICLE TRACKER backup battery, the switch must be at the ON position. The switch and theON/OFF position are shown as below.

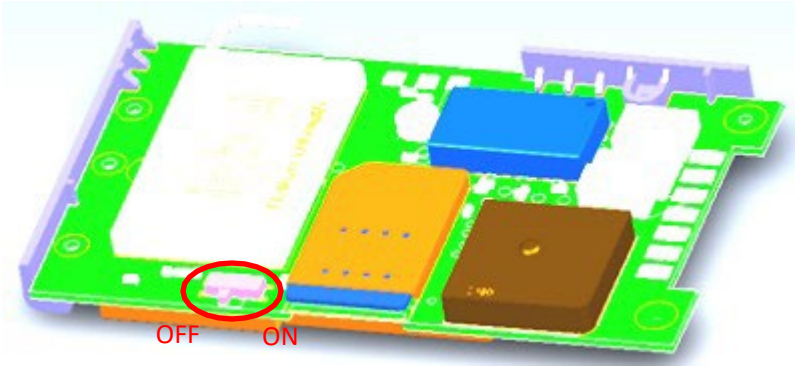


Figure 7. Switch ON/OFF Position

Note:

1. The switch must be at the “OFF” position when the IQL 4G VEHICLE TRACKER is being shipped on an aircraft.
2. When the switch is at the “OFF” position, the battery cannot be charged or discharged.

5.2. Power Supply Connection

VIN (pin 3)/GND (pin 7) are the power input pins. The input voltage range for this device is from 8V to 32V. The device is designed to be installed in vehicles that operate on 12V/24V systems without the need for external transformers.

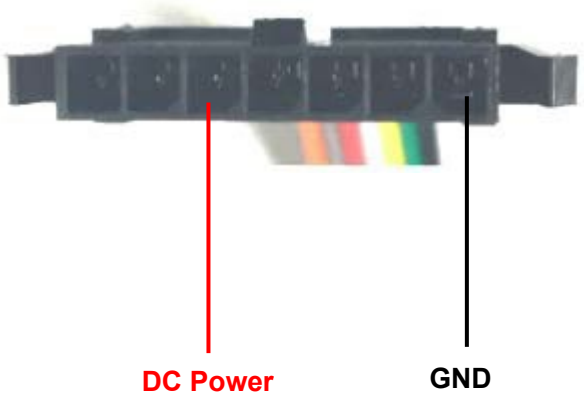


Figure 8. Typical Power Connection

5.3. Ignition Detection

IGN (pin 4) is used for ignition detection. It is recommended to connect this pin to the “RUN”position of the vehicle ignition switch as shown below.

An alternative to connect to the ignition switch is to find a non-permanent power source that isonly available when the vehicle is running. For example, the power source for the

FM radio.
IGN signal can be configured to transmit information to the backend server when ignition is onand enter power saving mode when ignition is off.

Table 8. Electrical Characteristics of Ignition Detection

Logical State	Electrical Characteristics
Active	5.0V to 32V
Inactive	0V to 3V or Open loop

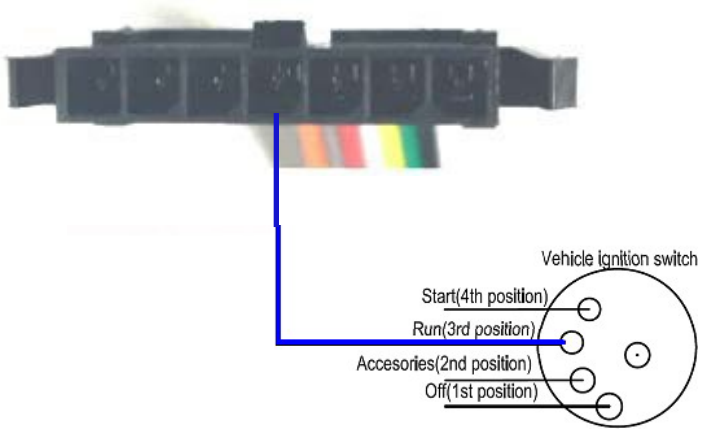


Figure 9. Typical Ignition Detection

5.4. Digital Output/Input

OUT1/IN1 (pin 5) is a digital Output/Input on IQL 4G VEHICLE TRACKER. It is of open drain type and the maximum drain current is 150mA. The OUT1/IN1 (pin 5) can be used either as a digital output or a (positive and negative trigger) digital input.

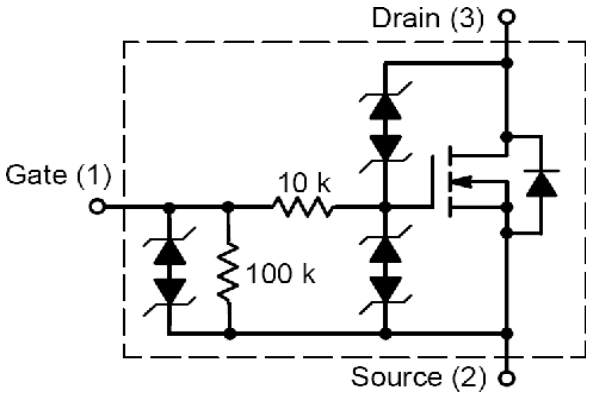


Figure 10. Digital Output Internal Drive Circuit

Table 9. Electrical Characteristics of Digital

Logical State	Electrical Characteristics
Enable	<1.5V @150mA
Disable	Open drain

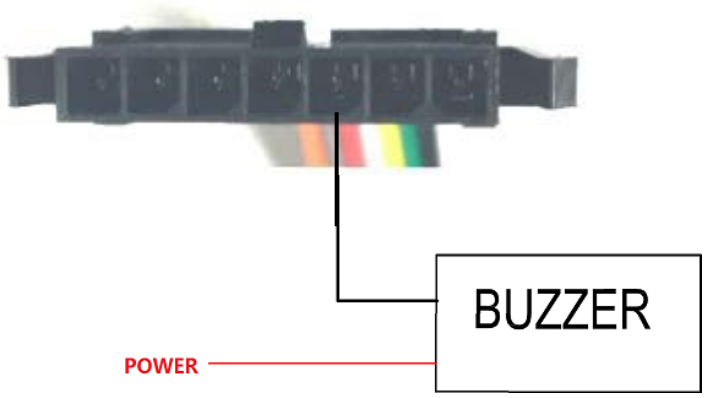


Figure 11. Typical Connection with a Buzzer as Digital

OutputTable 10. Electrical Characteristics of Digital

Input

Logical State	Electrical Characteristics
Active	0V to 0.8V
Inactive	Open loop

The following shows the recommended connection of a digital input.

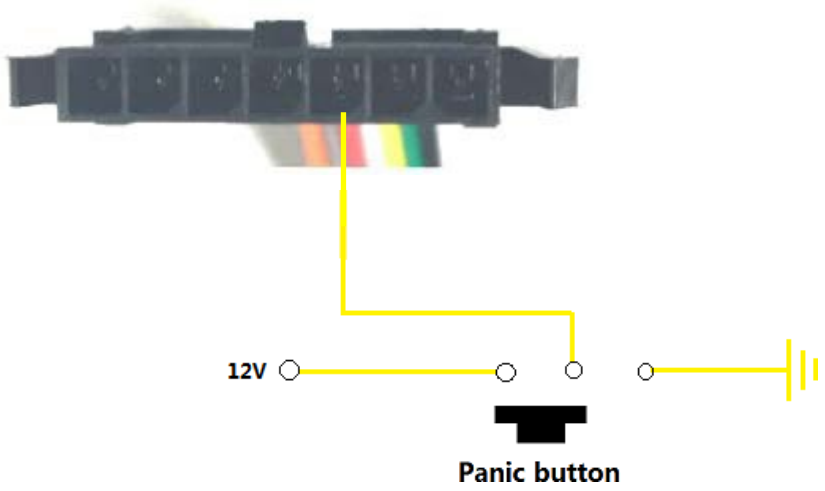


Figure 12. Typical Digital Input Connection

5.5. Digital Output

There is a digital output (pin 6) on IQL 4G VEHICLE TRACKER. It is of open drain type and the maximum drain current is 150mA.

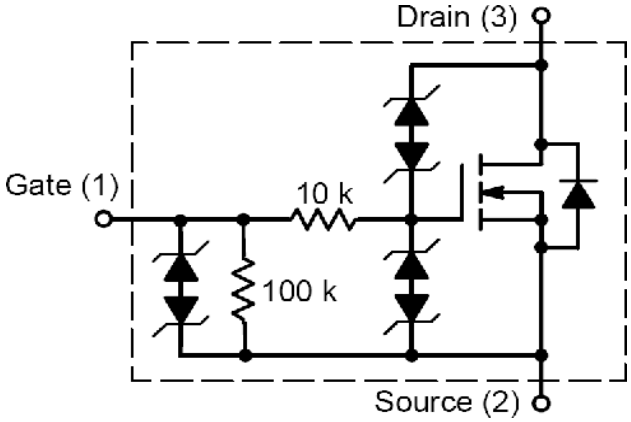


Figure 13. Digital Output Internal Drive Circuit

Table 11. Electrical Characteristics as Digital Outputs

Logical State	Electrical Characteristics
Enable	<1.5V @150mA
Disable	Open drain

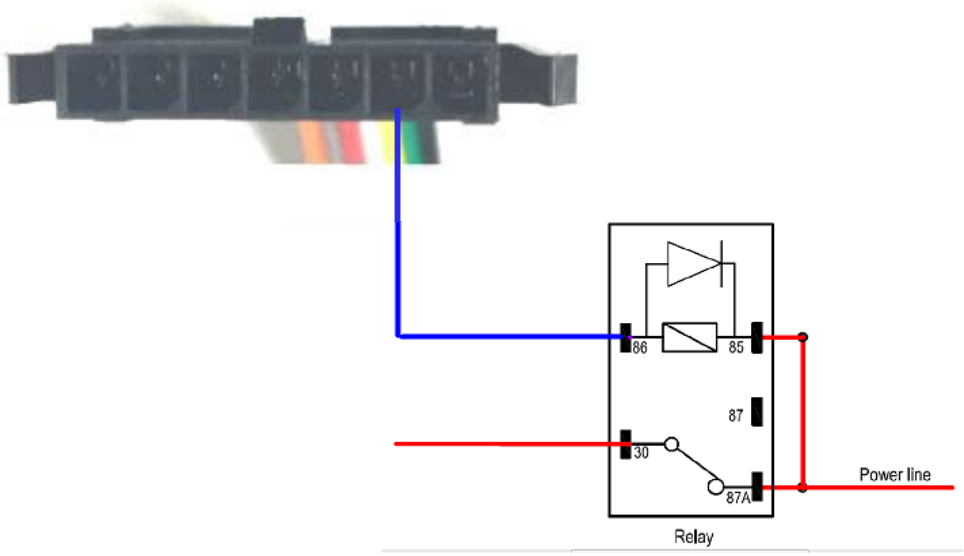


Figure 14. Typical Connection with a Relay

Warning: Many modern relays come with a flyback diode pre-installed internal to the relay itself. If the relay has this diode, ensure the relay polarity connected is properly used. If this diode is not internal, it should be added externally. A common diode such as a 1N4004 will work in most circumstances.

6. Installation Precautions

- Firmly install the device to a reliable surface to prevent falling off.
- Make the side with antenna face sky to have better signal reception.
- Do not install the device under metal surface or in enclosed environments having difficulty in getting GPS and network signal.

7. Troubleshooting and Safety Info

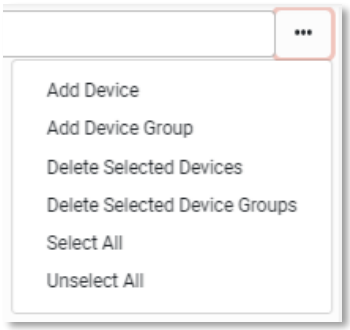
7.1. Troubleshooting

Problem	Possible Reason	Solution
After the device is turned on, the CEL LED always flashes quickly.	The signal is too weak. The device isn't registered to the network.	Move the device to a place with good network coverage.
Messages can't be reported to the backend server by network.	APN is not right.	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.
There is no response from UART when the device is configured by using UART.	The port is not ready or the device is not powered on.	Please check the port and the device to ensure they are working properly.
The device can't get GPS fix.	The GPS signal is weak.	Move the device to a place under open sky.
		It is better to make the side with antenna face the sky.

Drop-down menu for single and multiple group or devices found on the list windowpane.

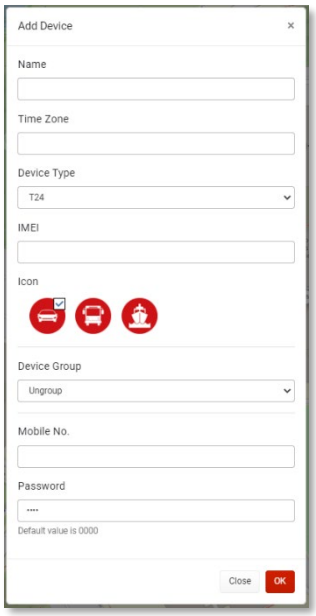
8. How to add the device to Tramigo Cloud

Found at the right of search bar.



a. Add Device

Option to add device on the cloud in a group or individual. You can indicate the type of Tramigo product to add and it will automatically send Owner registration, timezone settings command upon saving.



b. Add Device Group

Let you add Group/Folder Name and its description (optional)

c. Delete Selected Devices

Using check boxes, you can delete individual or multiple devices that are not needed anymore in the list.

d. Delete Selected Devices Groups

Using again check boxes, you can delete one or more folders/device group that are not needed anymore.

e. Select All

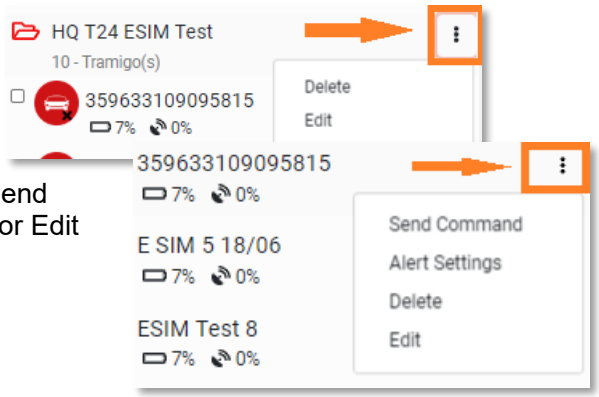
Toggle to select all device and device group in the list view pane.

f. Unselect All

Toggle to deselect all checked device and device group in the list view pane.

i. Device Group Options

Button found at the right of Device Group Name, lets you Delete the device group or Edit the device group name and description



ii. Device List Option

Button found at the right of Device Name, lets you Send Command, adjust Alert Settings, Delete the device, or Edit the device name and description

9. How to add the device to Tramigo App

a. Open mobile application

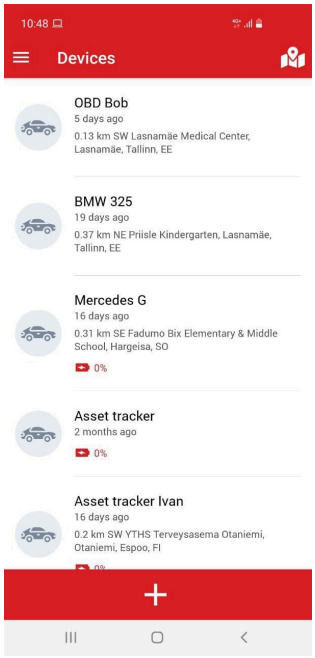
Go to Tramigo mobile application using Android OS or Apple IOS. At the front page you can see plus icon.

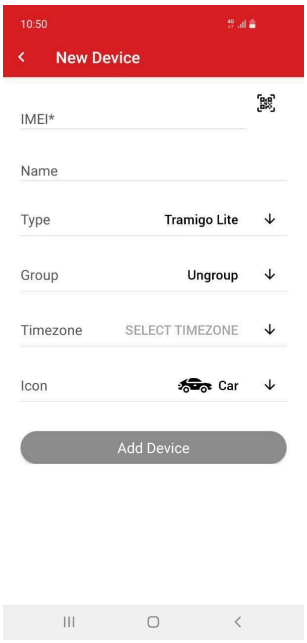
b. Add Device

Tap on the plus icon and write in mandatory* information. IMEI number can be found on the device's sticker.

c. Ready to go

After everything is done, click add device and you can start tracking!





10. Safety Info

- Do not disassemble the device by yourself.
- Do not put the device in over heated too humid place, and avoid exposure to direct sunlight. Too high temperature will damage the device or even cause battery explosion.
- Do not use the device on the airplane or near medical equipment.

11. Appendix: Supported Accessories

Currently, no external accessory is supported.