GV75W User Manual

WCDMA/GSM/GPRS/GPS Tracker

TRACGV75WUM001

Version: R1.00

International Telematics Solutions Innovator

www.queclink.com

Document Title	GV75W User Manual
Version	1.00
Date	2016-09-09
Status	Release
Document Control ID	TRACGV75WUM001

General Notes

Queclink offers this information as a service to its customers, to support application and engineering efforts that use the products designed by Queclink. The information provided is based upon requirements specifically provided to Queclink by the customers. Queclink has not undertaken any independent search for additional relevant information, including any information that may be in the customer's possession. Furthermore, system validation of this product designed by Queclink within a larger electronic system remains the responsibility of the customer or the customer's system integrator. All specifications supplied herein are subject to change.

Copyright

Contents

Table Index

Figure Index

0. Revision History
- 5 -

Revision	Date	Author	Description of Change
1.00	2016-09-09	Super Zhao	Initial

1. Introduction - 6 -

The GV75W is a compact waterproof GPS tracker designed for a wide variety of vehicle tracking applications. It has multiple I/O interfaces that can be used for monitoring or controlling external devices. Its built-in GPS receiver has superior sensitivity and fast time to first fix. Its triple band WCDMA subsystem supports UMTS/HSDPA 850 (Band V)/1900 (Band II)/2100 (Band I) MHz and quad band GSM/GPRS 850/900/1800/1900 MHz, allowing the GV75W's location to be monitored in real time or periodically tracked by a backend server and mobile devices. Its built-in 3-axis accelerometer allows motion detection and extends battery life through sophisticated power management algorithms. 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, geo-fence boundary crossings, driving behavior, low battery and scheduled GPS fix.

1.1. Reference

SN	Document Name	Remark
[1]	GV75W @Track Air Interface Protocol	The air protocol interface between GV75W and backend server.
[2]	@Track Air Interface for Garmin-FMI Protocol	

Table 1 : Reference

1.2. Terms and Abbreviations

Abbreviation	Description
DIN	Digital Input
DOUT	Digital Output
GND	Ground
LATCH_OUT	Latched Digital Outputs
IGN	Ignition
USB_VBUS	USB power connector
USB_DM	USB digital negative
USB_DP	USB digital positive
RXD	Receive Data
TXD	Transmit Data

Table 2: Terms and Abbreviations

2. Product Overview

2.1. Appearance

Figure 1: Appearance of GV75W

2.2. Parts List

Name	Picture
GV75W Tracker	102mm*46mm*20.5mm
GV75W Extension Cable	
USB-232 Cable (optional)	
12V DC Supply (optional)	
GV75W_UART_USB_PWR_Convert_CABLE (optional)	

Table 3: Parts List

2.3. Interface Definition

GV75W has 11 interfaces which include the connection for power, ignition input, digital input, digital output, USB, TXD and RXD, etc. The user cable info is shown in the following table.

Index	Colour	Description	Comment
1	Red	Power	External DC power input, 8-32V
2	Black	Ground	System ground (connected to the vehicle's frame directly)
3	Yellow	Digital input	Digital input, negative trigger
4	White	Ignition	Ignition input, positive trigger
5	Green	Digital output2	Digital output, low side 150mA max
6	Blue	Digital output1	Digital output, low side 150mA max with latch
7	Purple	TXD	UART TXD, RS232
8	Gray	RXD	UART RXD, RS232
9	Orange	USB_VBUS	USB power connector
10	Brown	USB_DM	USB digital negative
11	Pink	RXD_DP	USB digital positive

Table 4: Description of GV75W Interface

Index	Colour	Description	Comment
1	Red	Power	External DC power input, 8-32V
2	Black	Ground	System ground(connected to the vehicle's frame directly)
3	Yellow	Digital input	Digital input, negative trigger
4	White	Ignition	Ignition input, positive trigger
5	Green	Digital output2	Digital output, low side 150mA max
6	Blue	Digital output1	Digital output, low side 150mA max with latch
7	Purple	TXD	UART TXD, RS232
8	Gray	RXD	UART RXD, RS232

Table 5: Description of GV75W Extension Cable

3. Getting Started

3.1. Install a SIM Card

Step 1: Remove the top cover.

Step 2: Insert the SIM card into the SIM card holder. Note: Press down on the SIM card slightly to make it slide into the slot.

Step 3: Place the top cover on the bottom cover, and tighten both covers until they snap.
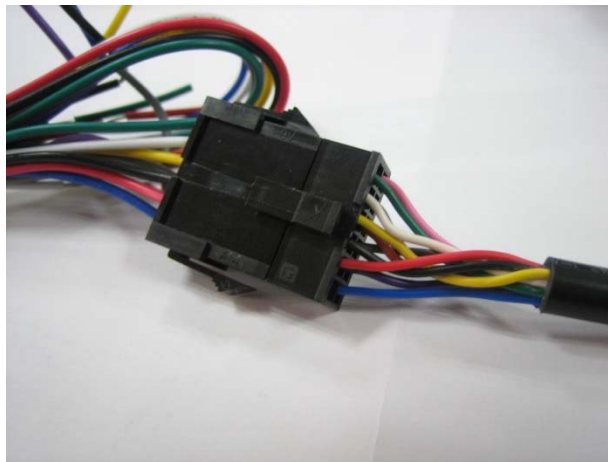

Note: Make sure that the seal ring is in place and there is no obvious gap between covers and seal ring.

Step 4: Turn over the device and tighten the screw with screw cushion.

Step 5: Connect the device to extension cable or cut off the 12Pin Molex connector.

3.2. Switch on the Device

The method to power on GV75W: Use external power to turn on.

When the external power is removed, GV75W will switch to internal backup battery and keep on running. When internal backup battery is exhausted, GV75W will report a message and then turn off.

3.3. Power Connection

The red wire is power wire and the black wire is ground wire. 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 or 24V systems without the need for external transformers.
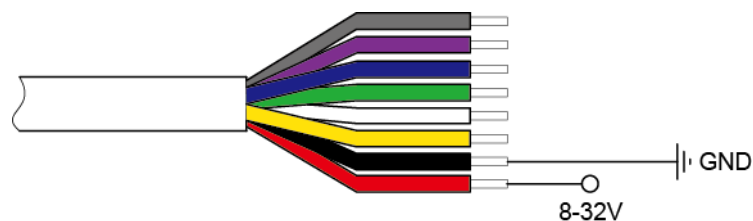
Figure 2: Typical Power Connection

3.4. Ignition Detection

Logical Status	Electrical Status
Active	5.0V to 32V
Inactive	0V to 3V or open

Table 6: Electrical Characteristics of Ignition Detection
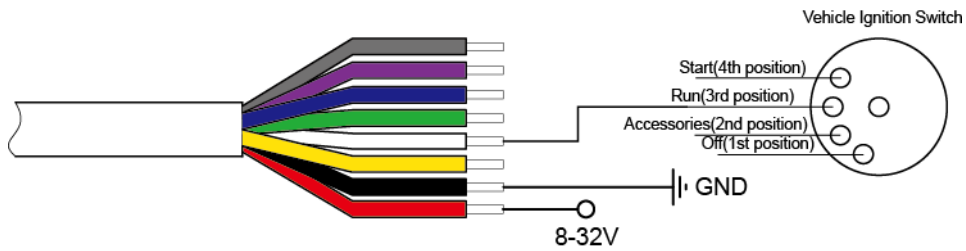

Figure 3: Typical Ignition Detection

The white wire is used for ignition detection. It is strongly recommended to connect this wire to ignition key at "RUN" position as shown above.

An alternative to connecting to the ignition switch is to find a non-permanent power source (like the power source for FM radio) that is only available when the vehicle is running. Ignition signal can be configured to start transmitting information to the backend server when ignition is on and to enter power saving mode when ignition is off.

3.5. Digital Input

There is a negative trigger input on GV75W. For negative trigger input, the electrical conditions are as follows:

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

Table 7: Electrical Conditions of Negative Trigger Inputs
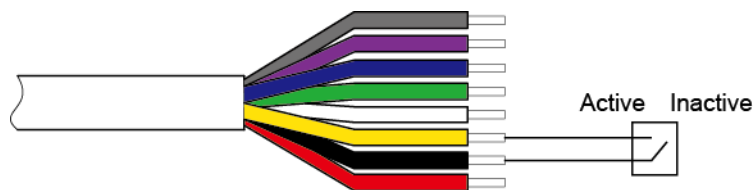
The connection is shown as follows:

Figure 4: Connection for Negative Trigger Inputs

3.6. Digital Output

The outputs are Open-Drain type with no internal pull-up resistor which 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 correct output. Each output can drive a continuous current of 0.15A.

The green wire is low side 150mA max, and the blue wire is low side 150mA max with latch.

The electrical conditions are shown in the following table:

Logical State	Electrical State
Enable	<1.5V, drive current is 0.15A
Disable	Open or the pull-up voltage (max 32V)

Table 8: Electrical Conditions of Digital Outputs

Note:

The relay output can be latched by the software, so even if the GV75W is restarted or powered down in some cases, the relay output will not change. To use the latch function, the main power and backup battery should be connected. Otherwise the relay will always be in normally closed state.

Digital outputs are used for cutting/restoring GND. The connections are shown below.

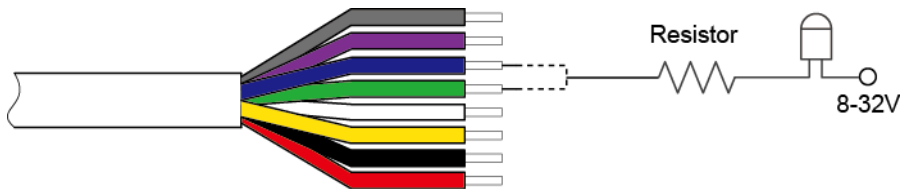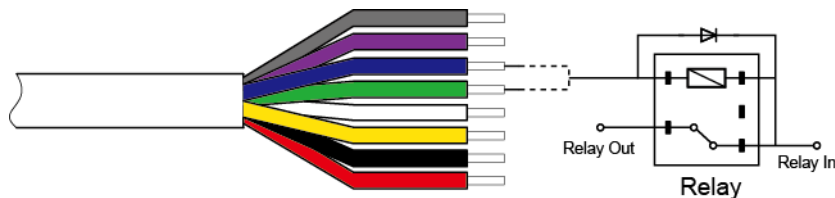
Figure 5: Connection to Drive an LED

Figure 6: Connection to Drive a Relay

Note: All outputs are internally pulled up to PWR pin by a diode. So no external flyback diode is needed when the output is connected to an inductive load.

3.7. UART Interface

There is one UART interface on GV75W. UART is used for configuration, firmware download, and communicating with external devices such as CAN Bus module and RFID reader.

Please note the UART interfaces are all RS232 level. For RS232 level, valid signals are 3V to 15V and -3V to -15V, and the -3V to +3V is not a valid level. 3V to 15V corresponds with logic 0 of TTL level, while -3V to -15V corresponds with logic 1.

The examples of connections of UART with female DB-9 and with external devices are shown as follows.
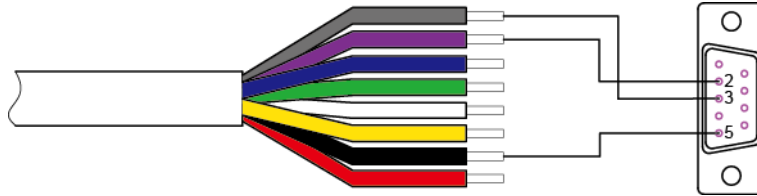
Figure 7: The Connection of UART with Female DB-9
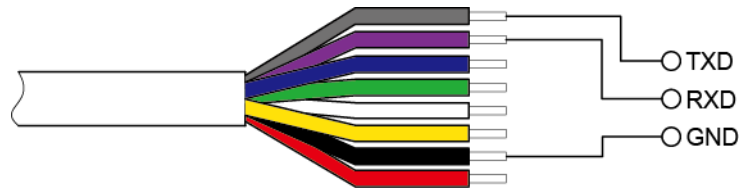
Figure 8: The Connection of UART with External Devices

3.8. USB Interface

Gv75W has one USB interface which is used for firmware download and connects to the GV75W_UART_USB_PWR_Convert_CABLE (optional). The GV75W_UART_USB_PWR_Convert_CABLE is used when downloading the firmware.

3.9. Indicator Light Description

Figure 9: GV75W LED

LED	Device Status	LED Status

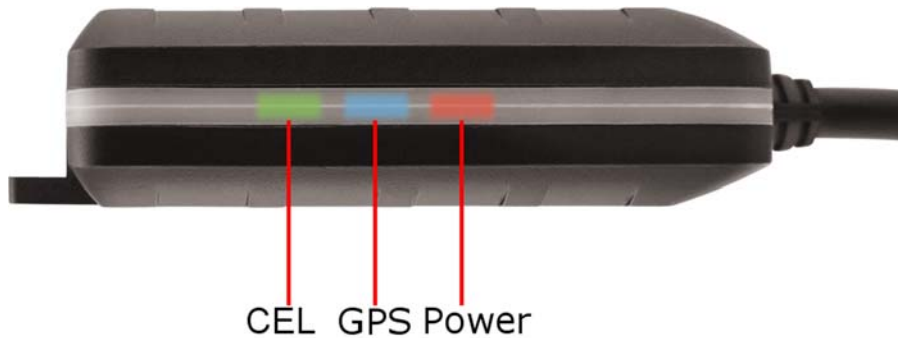| CEL
(Note 1) | Device is searching GSM network. | Fast flashing
(Note 3) |
	Device has registered to GSM network.	Slow flashing (Note 4)
	SIM card needs pin code to unlock.	ON
GPS (Note 2)	GPS chip is powered off.	OFF
	GPS sends no data or data format error occurs.	Slow flashing
	GPS chip is searching GPS info.	Fast flashing
	GPS chip has gotten GPS info.	ON
PWR (Note 2)	No external power and backup battery voltage is lower than 3.35V.	OFF
	No external power and backup battery voltage is below 3.55V.	Slow flashing
	External power in and backup battery is charging.	Fast flashing
	External power in and backup battery is fully charged.	ON

Table 9: Definition of Device Status and LED

Note:

1 - CEL LED cannot be configured.

2 - GPS LED and PWR LED can be configured to turn off after a period of time by using the configuration tool.

3 - Fast flashing is about 60ms ON / 780ms OFF.

4 - Slow flashing is about 60ms ON / 1940ms OFF.

4. Troubleshooting and Safety Info

4.1. Troubleshooting

Trouble	Possible Reason	Solution
After GV75W is turned on, the CEL LED always flashes quickly.	The SIM card is not inserted.	Please insert the SIM card into GV75W.
	The signal is too weak; GV75W can't register to the network.	Please move GV75W into places with good GSM coverage.
	The SIM card is PIN locked.	Use SIM card without SIM PIN, or unlock SIM PIN.
Messages can't be reported to the backend server by GPRS.	The SIM card in GV75W doesn't support GPRS.	Try a GPRS supporting SIM card.
	APN is wrong. Some APNs cannot 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 on the Internet.
GV75W doesn't power off.	The function of power key is disabled by **AT+GTSFR**.	Enable the function of power key by **AT+GTFKS**.
GV75W can't get successful GPS fix.	The GPS signal is weak.	Please move GV75W to a place with open sky.
		It is better to let the top surface face the sky.

4.2. Safety Info

- Please do not disassemble the device by yourself.
- Please do not put the device in an overheated or too humid place, and avoid exposure to direct sunlight. Too high temperature will damage the device or even cause battery explosion.
- Please do not use GV75W on an airplane or near medical equipment.

    WARNING:
- This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

-
- NOTE:
- 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.

RF Exposure Statement:

For the product,under normal use condition is at least 20cm away from the body of the user,the user must keeping at least 20cm distance to the product.