OBD Telematics Dongle

VG04

User Manual

CONTENTS

1. Preview

This user guide is written for end users mainly to introduce how to use OBD telematics dongle VG04.

2. Device

2.1 General Introduction

VG04 is plug-and-play monitoring and diagnostic device with OBDII port and internal communication and GPS module. It uses high performance communication module and high sensitive GPS module as well as internal communication and GPS antennas. It supports GPRS, SMS, TCP, UDP and OTA.

It adapts advanced power management solution. It supports low power consumption and auto-sleep. It can continue working for some time even if disconnected from automotive power.

It supports various automotive data communication protocol. It can be used for many vehicle types. Installation is very simple and easy.   User can save much time and cost compared to traditional vehicle GPS monitoring device.

Device has been used widely for logistic, enterprise fleet, insurance, passenger transport, automotive mortgage and rental, 4S dealers and automotive manufacturers etc.

2.2 Product Features

| |
|---|
| ● OBDII and CANBUS protocol, DC 12V and 24V; |
| ● 2G GSM/GPRS 850/900/1800/1900MHz; |
| ● 3G UMTS/HSPA 2100/1900/850/900MHz; |
| ●4G LTE network

EC25-AU: B1/B2/B3/B4/B5/B7/B8/B28 for Latin America (e.g. Anatel)

EC25-A: B2/B4/B12 for the USA (e.g. AT&T)

EC25-E: B1/B3/B5/B7/B8/B20 for Europ, Asia (e.g. Vodafone)

●CAT M1, NB-IoT network (UbloxSara) |
| ●Support WiFi Hotspot (optional) |
| ● Plug and play, small size, no installation cost; |
| ● Collect fuel consumption, fuel level data; |
| ● Very accurate mileage data (accuracy>99%); |
| ● Collect DTC (Diagnostic Trouble Code) for remote diagnostic; |
| ● Collect RPM, VIN, engine temperature data; |
| ● Internal GSM and GPS antennas; |
| ● TCP and UDP; |
| ● Update firmware over the air; |

● Illegal start-up, impact and rollover alarm;
● Detect harsh acceleration, braking, turn and high revolution;
● Driving behavior recording and analysis;
● Store break points data in non-volatile memory;
● Track on Google map and other maps;
● Auto sleep mode to save automotive power;
● Wide working temperature range: -30 to +80℃.

2.3 Technology Specifications

Appearance Features	
16 Pin Connector	Insert in OBDII port in vehicle
LED Indication	1. Red LED: quick blinking means not located, slow blinking means located. 2. Blue LED: quick blinking means off-line, slow blinking means online. 3. Green LED: On means sleeping mode, off means working mode.
USB Port	Locally update firmware and debug program
GPS Antenna	Internal
Communication Antenna	Internal
Technology Parameters	
CPU	NXP ARM7
GPS Module	U-blox
Communication Module	QuectelEC25
3D Accelerometer	Range：±2g/±4g/±8g Dynamic, Optional Output data rate(ODR): 1.56-800Hz
Protocol	ISO 15765-4 (CAN) ISO 14230-4 (Keyword Protocol 2000) ISO 9141-2 (Asian, European, Chrysler vehicles) SAE J1850 VPW (GM vehicles) SAE J1850 PWM (Ford vehicles) ISO 15765 ISO 11898 (raw CAN) SAE J1939 protocol Non-legislated OBD protocols (can be added, not standard function): Single Wire CAN (SW-CAN) – GM proprietary network

	Medium Speed CAN (MS-CAN) – Ford proprietary network
General Statement	
Material	ABS
Size	62*48*20mm
Weight	70g
Battery	50mAh li-polymer
Battery	DC 9 - 32V
Current	70mA (Working), 20mA(Sleeping)
Working Temperature	-30℃-75℃
Working Humidity	95%（Non-condensed）

2.4 Interface
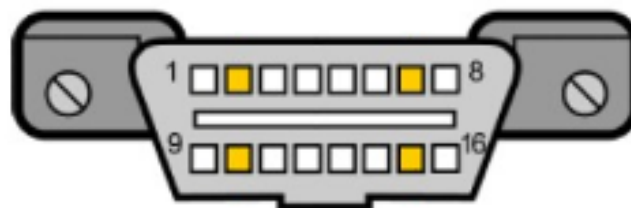
PIN	Function	PIN	Function
1	NC	9	NC
2	SAEJ1850 bus +	10	SAEJ1850 BUS-
3	NC	11	NC
4	Vehicle body GND	12	NC
5	Signal GND	13	NC
6	CANBUS HIGH	14	CANBUS LOW
7	K line	15	L or K2 line
8	NC	16	Power +

2.5 IMEI

There is IMEI on device, it is used to identifydevice, it is also called PN:

PN：Product number, 15 digits, the only identification for device

2.6 Installation

It is very easy to install device. User only need insert device in OBDII port in vehicle. Different vehicle maybe have different OBDII position. User can querydevice status after finishing installation.

3. Main Functions

3.1 Vehicle Protection

Vibration alarm: set protection status on smartphone APP. If device has inspected that vehicle is vibrating under sleeping status, device will wake up automatically and send alarm after being online.

Starting alarm: set protection status on smartphone APP. If device has inspected that engine is turned on under sleeping status, device will wake up automatically and send alarm after being online.Special situation: there will be illegally starting alarm if engine is turned onbefore the first-time online that device goes online before installation or wakes up regularly.

Special situation: device will issue illegal starting alarm if the vehicle is ignited before online at first time or timing wake-up. This is starting alarm under special situation. APP will tell there is illegal starting alarm.

Moving alarm: set protection status on smartphone APP. If device has inspected vehicle is moving under sleeping status, device will wake up automatically and send alarm after being online.

Power disconnection alarm: device will send power disconnection alarm message to the server. The alarm message will be shown on platform software.

3.2Vehicle Positioning

When speed is more than 8km/h and turn is more than 50°, device will send position information including positioning time, GPS speed, meter speed, direction, altitude, position and ignition status information in order to improve driving trace accuracy.

When there is harsh acceleration, harsh deceleration, harsh turn, protection alarm and emergency alarm, device will send position information including positioning time, GPS speed, meter speed, direction and altitude etc.

Users can query driving trace on platform or smart phone APP calculated according to the above position information.

3.3EmergencyRescue

Rollover alarm: if vehicle rolls over during driving (three-axis acceleration sensor detects that rollover degree is more than 60°), device will send alarm and make emergency rescue call.

Impact alarm: if vehicle impacts during driving (three-axis acceleration sensor detects that acceleration is more than 19.6 m/s²), device will send alarm and make emergency rescue call.

Smart phone APP dose not distinguish rollover alarm and impact alarm, both are considered as emergency alarm.

If there is impact or rollover during sleeping, device will wake up and send alarm after being online. If there is impact or rollover during working, device will send alarm immediately.

3.4 Device Status

Device indicators status: when device gets power at first time, three indicators will blink at same time and then turn off. The yellow and red indicators will blink after that, which means initialization has been finished. The yellow is online indicator, quick blinking means offline, slow blinking means online. The red is positioning indicator, quick blinking means not fixed position, and slow blinking means fixed position.

Device status query: when device is online, user can query status by smart phone APP, can obtain detailed working status and know current working status.

Uploading contents: device ID, protection status, online status, status update time, communication signal strength, satellites positioning status, accelerator sensor status, bus connection status, device firmware version, module version and runtime etc.

Device sleeping: if device starts at first time, device will keep online until device sleep after fixing position. If device does not fix position in 25 minutes, it will sleep soon. If device has already fixed position, it will sleep in 2 minutes. Device will wake up 1 time every 1 hour during sleeping, and thensleep again after 200 seconds.

3.5 Mileage and Fuel Consumption Collection

Mileage collection: device can collect GPS speed and meter speed to calculate interval mileage and send to platform. Platform works out total mileage according to interval mileages.

Fuel consumption collecting: device can connect BUS to collect interval fuel consumption data and send to platform. Platform works out total fuel consumption according to interval fuel consumption data, and make various fuel consumption diagrams.

3.6Driving Behavior Optimizing

Device can collect harsh acceleration, harsh deceleration, high engine revolution times, mismatch between speed and revolution, over speed times and idle times etc and send to platform for calculation and statistics. Smart phone APP grades driving behavior according to platform data.

Over speed: if driving speed is over than preset speed and last preset time, it will be considered as over speed. Harsh acceleration: when acceleration in 2 seconds is more than preset acceleration, it will be considered as harsh acceleration.

Harsh deceleration: if deceleration in 2 seconds is more than preset deceleration, it will be considered as harsh deceleration.

Harsh turn: if turn in 5 seconds is more than 50° and driving speed is more than 3.5 km/h, it will be considered as harsh turn.

High revolution: if revolution is more than preset revolution, it will be considered as high revolution.

Speed not matches revolution: device obtains vehicle speed and engine revolution, and then check whether the matching relation between the revolution and the speed has obeyed the preset matching relations.

Idle times: if vehicle keeps static status or speed is always less than preset value, it will be considered as idle status. The idle times will add one more every 10 minutes if vehicle is in idle status. Idle times are judged by

ignition and speed.

3.7Remote Update

Device supports automatically update and manual update.

Automatically update: platform configure update files. Platform sendssynchronizationparameters when device is online. If it is different version, device will start to update automatically.

Manual update: platform sends update command when device is online. If it is different version, device willstart to update. Device will restart and run new program after finishing update.

Device can keep waking up during update until finishing update.

3.8 Trouble Code Diagnosis

Device supports various protocols. It can read vehicle fault information and send to server. User can check detailed fault information on smart phone APP.