User Manual

Of

Tekion OBD Devices

Prepared by

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Submitted to

Tekion Corp.

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Authorization and Approval

Activity	*Name and Designation*	*Date*
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Tekion OBD- An introduction and its distinct features

Introduction:-

Tekion OBD is next level to On-Board Diagnostic cum Vehicle tracking device which uses multiple protocols to read vehicle parameters like Vehicle Identification Number(VIN),Odometer reading, Vehicle Battery voltage to list few and transmit these data to the remote cloud. It uses wireless networks like Bluetooth and **Lora**(**Lo**ng **Ra**nge) for communication. For Location tracking, it uses BLE Beacon devices installed on multiple locations in the vicinity and transmits information to the remote gateway which then forwards the information to the cloud network.

Unique Features

Unlike other OBD devices available in market, it has various unique features as mentioned below which makes it far better and easier to use.

- provides Pass-through mechanism for connecting 3rd party devices to operate in parallel.
- has standalone Li-Po battery backup which can withstand up to 6hours or more on normal operation.
- can read vehicle parameters through various protocols.
- provides vehicle tracking facility to locate its existence.
- Uses different led indications.
- implements firmware upgrade functionality
- easy handheld device.
- implements mechanism to plug-in detect to notify in case it is plugged in or out.
- implements intruder alarm for theft detection.
- Flash Light for locating OBD port
- Motion detection

How to use Guide

Tekion OBDs are easy handheld equipment which can be carried to any place. It uses multiple led indications to indicate various states as explained below

Led indications and their Descriptions:-

Led States	Description

Blue blinking	Bluetooth advertising/ready to connect
Blue continuous	Bluetooth connected to mobile app
Orange slow blinking	OBD Battery low/running out
Orange fast blinking	OBD not provisioned
Orange continuous	Firmware Upgrade in progress
White slow blinking	Out of range/Not connected to Lora Network
White fast blinking	Connected to lora network
No Indications	OBD Off/battery ran OFF

Note:- Refer to **EEPROM Read Failure** in case of misbehavior or Led Indications not as mentioned to any of the states

Switch and its functions:-

Single on board switch provides multiple functionalities as explained below

Press Type	Effects/Actions	Process to follow
Single press	Starts Bluetooth Advertising	OBD is ready to connect to mobile App
Double Press	Toggles current flash light status	Turns flash light on/off.
Long Press	Reboots the System	System reboots to initialize configurations

Note:- When flash light is turned ON by double switch press, it gets OFF automatically after 10seconds in order to save power. User needs to double press again for reuse.

Slide Switch and its functions:-

Slide switch can be used to turn the Tekion OBD ON and OFF at any point of time. This can be useful specially when reboot is required due to system hanged state. It can also be useful during transport in turned off condition in order to save the backup power.

Note:- Tekion OBDs are designed to operate 24x7. Hence it should not be turned off intentionally when in use. In case it is not plugged into vehicle, it should be plugged into charging station.

How to Operate:-

Tekion OBDs are easy to operate. To start with, slide switch is present on the side wall of OBD. Bring the slide switch to the ON side to start the operations. After the slide switch is brought to ON condition, system starts booting. Alternate white and Orange led indication for 2seconds can be seen on the OBD which indicates that OBD has started booting. It takes around 15-20seconds to initialize the configurations or boot. User is strictly prohibited to perform any action while the system boots up. Refer to **OBD Boot Failure** in case user finds some misbehavior.

During initialization process, there are two possible states of led indications.

I. Slow White Blinking
II. Fast orange blinking
III. Slow orange blinking

Slow White blinking

White blink of half second on and 2second off indicates normal boot configuration. After the configuration is over, OBD will try to connect to the remote gateway network. In case, OBD is in range of Gateway, it will get connected to it and led indication changes from slow white blinking to fast white blinking. In case it fails to connect, slow white blinking will continue to glow.

Fast Orange Blinking

Fast orange blinking at startup indicates that OBD is not provisioned which means it is not configured for the gateway configurations. User should undergo provisioning steps to make it provisioned and start its normal operation. Refer to **OBD Provisioning** for details on provisioning.

Slow Orange blinking

This is indication of OBD battery is getting low and also an intimation that it needs charging. User should keep the obd for charging before it can be used again else OBD would get OFF after sometimes. User should connect the OBD to charging station for getting it charged.

After the boot configurations are over, system will start its normal operation. During normal operation, OBD will transmit hearbeat packet every 2minutes to the gateway in case it is connected which would include its location information, battery status, temperature etc.

Check-IN

When the OBD is running in normal mode, it is ready for reading vehicle parameters.

User can press button to start bluetooth advertising. Tekion app can be connected through bluetooth now to receive the vehicle data.

User can insert the OBD into vehicle OBD port present beneath with male side of Tekion OBD connector facing to the vehicle OBD port. As sson as it is inserted, OBD starts reading vehicle parameters and it transmits the read data to the Tekion App. It also starts transmitting the vehicle diagnostic data along with its location information through lora network. It continues transmitting lora packets the same piece of information repeatedly for 2 minutes at 15secong interval. After 2 minutes is over, OBD starts its normal operation of sending heratbeat packet every 2minutes.

Motion Detection

Tekion OBD has one unique feature of vehicle motion detection. When OBD is plugged into car, it can detect when the vehicle starts moving or when the vehicle stops moving. Depending on its movement it will transmit lora packets every 15seconds for 2 minutes and then it would start its normal operation of sending heartbeat packet every 2minutes.

Check-OUT

When OBD is plugged into vehicle, it can be taken out any time out of vehicle OBD port. As soon as it is plugged out, OBD starts transmitting lora packets every 15sec along with its location information for 2 minutes. After 2 minutes, it again starts its normal operation of sending heartbeat packet every 2minutes. After OBD is plugged out of vehicle, user is instructed to plug the OBD into charging station for charging.

Low Battery Indications

When the internal OBD battery goes low, it transmits lora packet every 15sec for 2minutes duration to indicate that it need to be kept for charging

Firmware Upgrade

Tekion OBD firmware can be upgraded through two ways.

I. Through bluetooth
II. Through Tekion Smart Charging Station

Firmware upgrade through bluetooth requires manual interventions where as firmware upgrade through Tekion Smart Charging Station is automatic upgrade process.

Refer to **Firmware Upgrade Manual** for more details on firmware upgrade.

Safety Precautions

Although intense care has been taken to build the design, however Tekion OBD must be used with certain safety and precautions.

- It should not be heated in any condition. It should be stored in room temperature below 60 degree.
- In case of any disuniformity is reported, user must turn OBD OFF instantly with slide switch present.
- In case similar issue is found when plugged into vehicle OBD port or charging station, it should be instantly plugged out and switched OFF.

Please note that the safety precautions listed above are not limited. These are meant to avoid any accidental damage.

OBD Boot Failure

OBD Boot Failure can be due to 2 reasons.

I. OBD Battery too Low to start the operation
II. EEPROM Read Failure

OBD Battery Low

In case OBD battery is low, user will not be able to find any led indications in OBD ON state. User is instructed to keep the OBD for charging in Charging Station. After half an hour time, system will be ready to start the operation. It should be noted that it is not full charged condition and hence either it can be left plugged in to charging station or plugged into car for normal operation.

EEPROM Read Failure

There might be a case when OBD fails to boot due to EEPROM read failure. In this case, alternate orange and white led indications would glow continuously with 1sec interval. User is instructed to reboot the system in such case. In case OBD retains this state again and again then this is indication of permanent failure of OBD and manufacturer should be contacted for this purpose in order to overcome this situation. User is instructed to switch the OBD OFF permanently.

OBD Provisioning

OBD can be provisioned through Tekion Android App. Refer to OBD provisioning manual for more details.

FCC statements:

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications or changes to this equipment. Such modifications or changes 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.

FCC RF Exposure Statement

When using the product, maintain a distance of 20cm from the body to ensure compliance with RF exposure requirements.