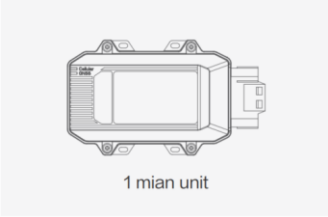
Version: V1.0
Date: Aug 2021

Vehicle Telematics

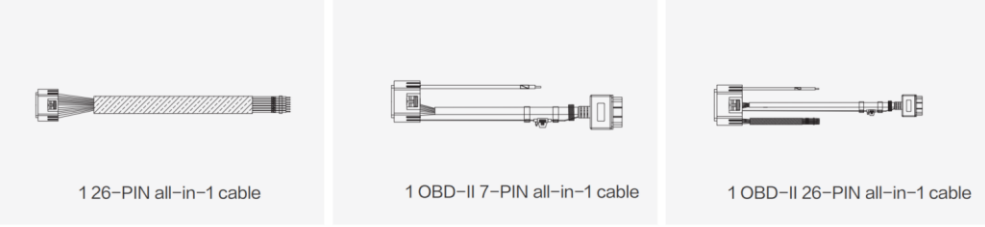
Quick Start

1. Packing List

Standard packing list:



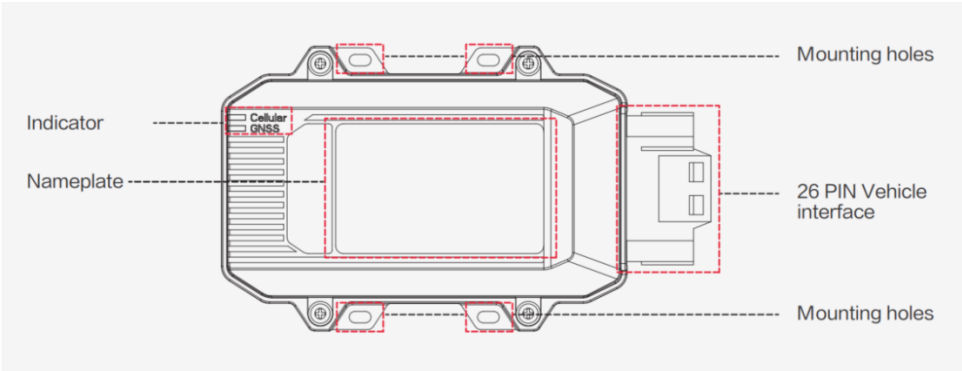
Optional parts:

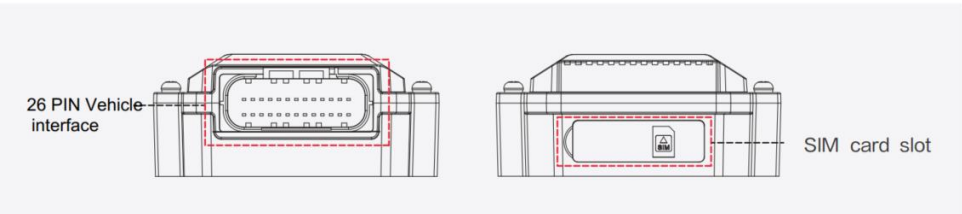


2. Supported Vehicle Models

- Dongfeng Kinland
- Dongfeng Tianjin
- Sinotruk Howo
- BAIC Foton
- BAIC Auman (BJ4259SNHKB-AA)
- Iveco (NJ6725DC)
- Iveco (NJ6605DC)
- Iveco (NJ1045EFCS)
- Iveco (NJ6605DC)
- Yutong Heavy Industries

3. Appearance



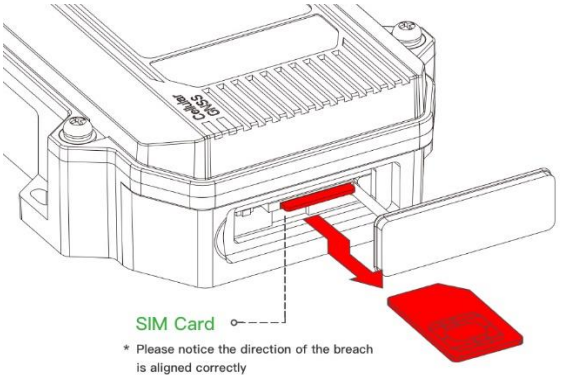


4. Installation

For general use, insert a SIM card to the device, plug the cable, and install the device in the vehicle.

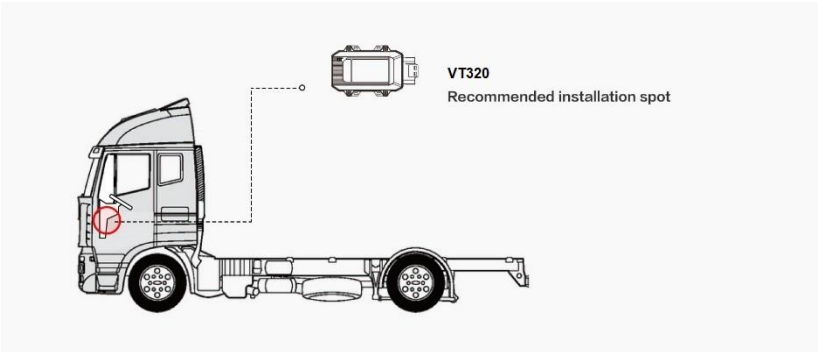
1) Inserting the SIM card

Insert the SIM card if you use dial-up to access the Internet. When the device is powered on, it automatically accesses the Internet through dial-up. Remove the water guard from the side of VT320 and insert the SIM card as shown in the following figure.



2) Installing the device

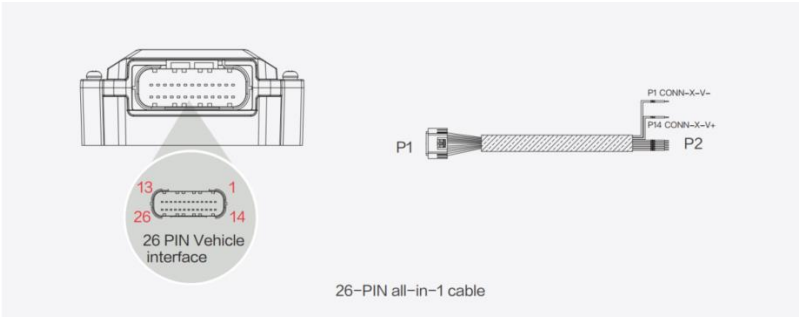
Use bolts to mount VT320 onto the vehicle. It is recommended to install it under the front windshield to ensure stable GPS signal receiving and easy connection to the OBD-II diagnosis interface of the vehicle.



3) Connecting the cable

Three types of cables are provided for different scenarios. Their connection methods are as follows:

1. 26-pin all-in-one test cable:
Suitable for indoor testing, and a 9-48 V adapter is required.

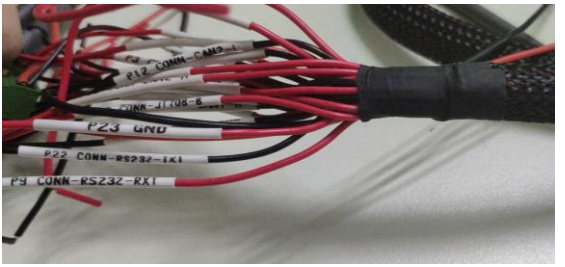


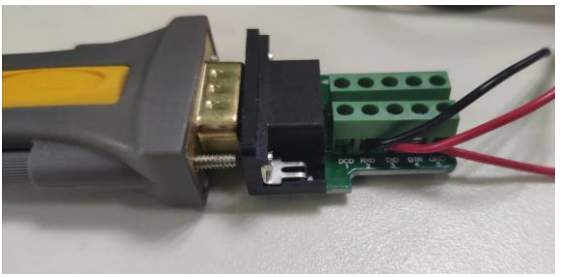
Procedure:

(1) Connect the 26-pin socket at the P1 end to the VT320 interface.

(2) Connect CONN-X-V- and CONN-X-V+ at the P2 bare wire end to the negative pole and positive pole of the power adapter respectively.

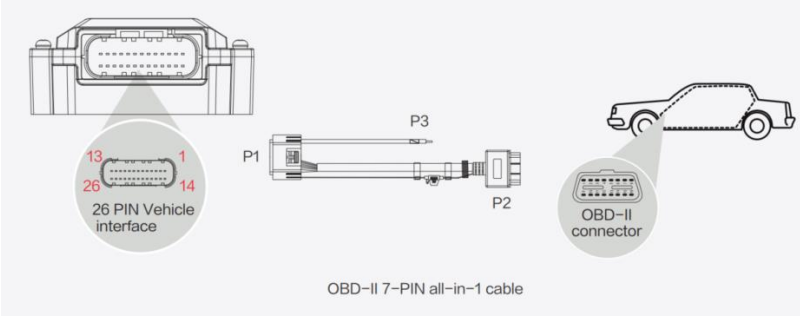
(3) Connect CONN-RS232-RX1, CONN-RS232-TX1 and GND (any) of the cable to TXD, RXD and GND holes of DB9. Then use USB to DB9 data cable to connect to the computer.





2. OBD-II 7-pin all-in-one test cable:

Suitable for heavy trucks with the OBD-II diagnosis interface. VT320 is powered by the diagnosis interface, so you need to start the vehicle before using it.

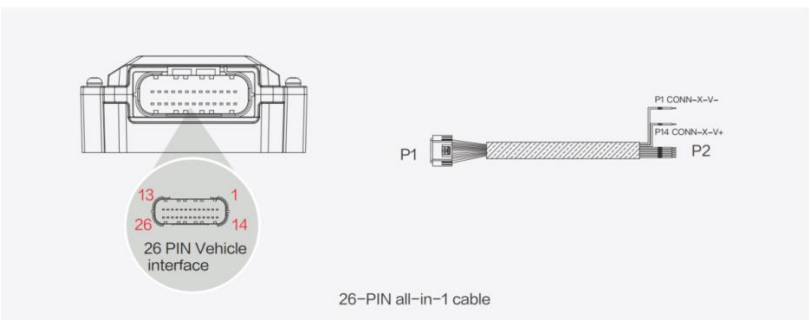


Procedure:

(1) Connect the 26-pin socket of the P1 end to the VT320 interface.
(2) Connect P2 to the OBD-II diagnosis interface of the vehicle.
(3) To check whether the vehicle has started, connect P3 to the ignition switch of the vehicle.

3. OBD-II 26-pin all-in-one test cable:

Suitable for heavy trucks with the OBD-II diagnosis interface. VT320 is powered by the diagnosis interface, so you need to start the vehicle before using it. Compared with the OBD-II 7-pin all-in-one test cable, this cable provides a 19-pin I/O bare wire end. It is recommended to use this cable if I/O or 1-Wire hardware is used.

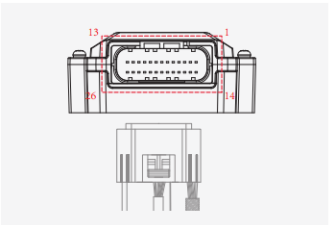


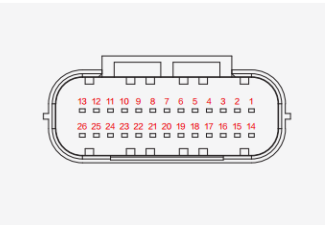
Procedure:

(1) Connect the 26-pin socket of the P1 end to the VT320 interface.
(2) Connect P2 to the OBD-II diagnosis interface of the vehicle.
(3) To check whether the vehicle has started, connect P3 to the ignition switch of the vehicle.
(4) You can connect the P4 bare wire end to the I/O device as required. For details, see the following section.

4) Connecting the I/O interface

The I/O interface is integrated in the 26-pin vehicle-mounted interface and provides three digital output channels with a maximum current of 300 mA, four digital input channels, one analog input channel, one 1-Wire channel, one RS232 serial port, and one ignition signal channel. Here are some examples of I/O interface connection.





Definition of the 26-pin vehicle-mounted interface:

Pin	Terminal	Pin	Terminal	Pin	Terminal	Pin	Terminal
1	V-	8	1-Wire	14	V+	21	GND
2	GND	9	RS232_RX	15	IGT	22	RS232_TX
3	DI2	10	GND	16	DI1	23	GND
4	DI4	11	CAN_1L	17	DI3	24	CAN_1H
5	GND	12	CAN_2L	18	GND	25	CAN_2H
6	DO2	13	J1708_B	19	DO1	26	J1708_A
7	AI			20	DO3		

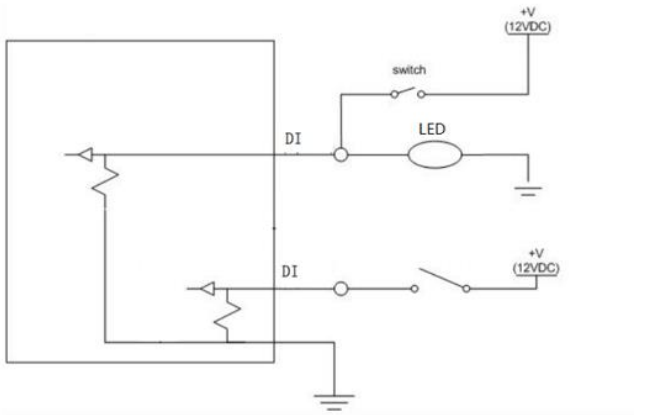
1. RS232 serial port:

The RS232 serial port is used for debugging. Before using it, connect the RS232_RX, RS232_TX, and GND terminals of VT320 to the TXD, RXD, and GND terminals of the DB-9 serial port connector respectively, and then use an RS232-to-USB adaptation cable to connect to the DB-9 serial port connector.

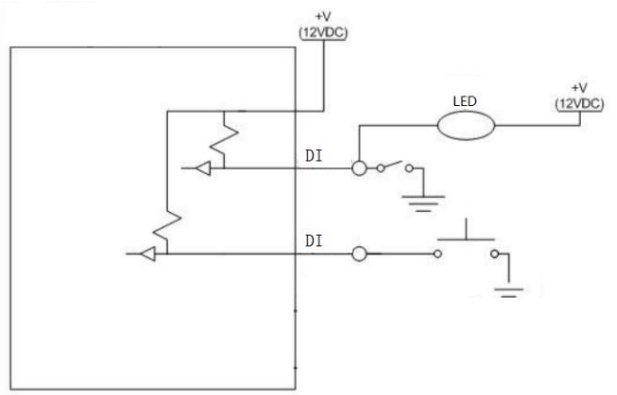
2. Digital input (DI for short):

DI can detect the switch status, for example, whether the button is pressed down and whether the switch is in the ON or OFF position. VT320 supports configurable pull-up resistance. By default, DI has 10 kΩ of resistance pulled down to GND. When pull-up resistance is configured for DI, 20 kΩ of resistance is pulled up to the power voltage. When using DI, you need to determine whether pull-up resistance is used.

The following figure shows the external circuit when pull-up resistance is not used for DI:

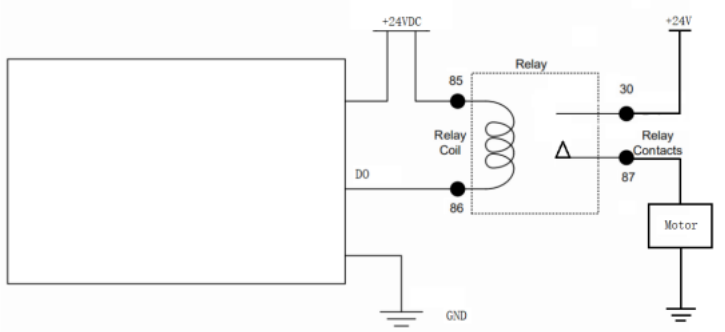


The following figure shows the external circuit when pull-up resistance is used for DI:



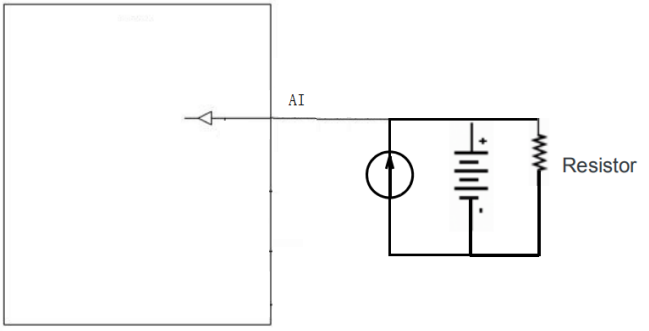
3. Digital output (DO for short):

DO can output DC voltage. DO is open-drain output and supports up to 300 mA of current. It is generally used with a relay.



4. Analog input (AI for short):

AI can detect DC voltage, so you can input analog voltage values. The following figure shows the external circuit when AI is used:



5. 1-Wire:

1-Wire is generally used with small communication devices, such as digital thermometers and iButton devices. Before using it, you need to connect the DQ pin to pin 8 of VT320 and the VDD and GND pins to the GND pin of VT320.

6. Ignition sense (IGT for short):

IGT is connected to the ignition switch of the vehicle, so that VT320 can detect whether the vehicle is started.

5. Device Startup

You can start the device for debugging after the preceding steps. You can check the device status according to the indicators. To avoid battery power loss during transport, the VT320 is set in transport mode by factory settings. You need to activate it with an external power supply or through the diagnosis interface of the vehicle.

1) GNSS indicator

Indicator Status	Function Status
Off	The device is not started, or GNSS is disabled.
Quick blinking at 0.5 Hz	GNSS timing is successful.
Slow blinking at 1 Hz	GNSS is enabled.
Remains on	Positioning is successful.

2) Cellular indicator

Indicator Status	Function Status
Off	The device is not started, or dial-up is disabled.
Quick blinking at 0.5 Hz	Dial-up is successful.
Slow blinking at 1 Hz	Dial-up is enabled.

6. Using the Configuration Tool

(1) Downloading the Configuration Tool

Visit the official website and select VT310 Vehicle Tracking Gateway from the IoT products. Download the configuration tool installation package under **Documentation**. Select a path to complete the installation.

(2) Recording the COM Port Number

Power on the VT320 by using a 26-pin all-in-one testing cable with an external adapter. Insert the CONN-RS232-RX1, CONN-RS232-TX1, and GND (any one) pins to the TXD, RXD, and GND holes of the DB9 connector. Then, use a USB-to-DB9 data cable to connect the VT320 to a computer. If the GNSS or Cellular indicator flashes, the VT320 is started.

Access the **Computer Management** page on the computer and choose **Device Manager** > **Ports (COM & LPT)** to check the COM port number. Figure 2-1 shows the configuration page.

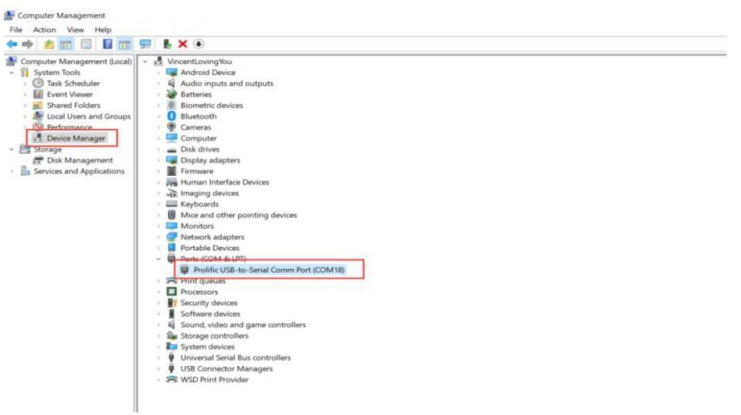


Figure 2-1

(3) Connecting the VT320

Double-click 

to open the VT320 configuration tool.

Click **Connect**. In the dialog box that is displayed, enter the user name and password, select the serial port recorded in the previous step, set the baud rate, and click **Connect**. The default user name, password, and baud rate are **admin**, **123456**, and **115200**, respectively. Figure 3-3 shows the configuration page.

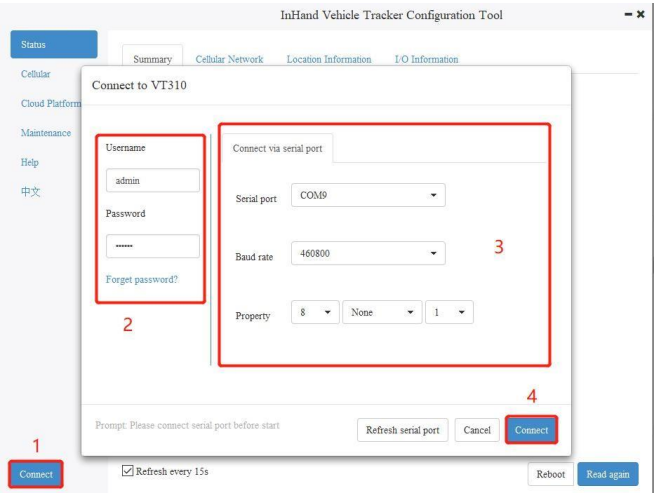


Figure 3-3

You can also connect the VT320 through Bluetooth 4.2 or higher. Click **Connect**. In the dialog box that is displayed, enter the user name and password, click the **Connect via bluetooth** tab, select the Bluetooth device with the same name as the device SN, and click **Connect**. The default user name and password are **admin** and **123456**, respectively. Figure 3-4 shows the configuration page.

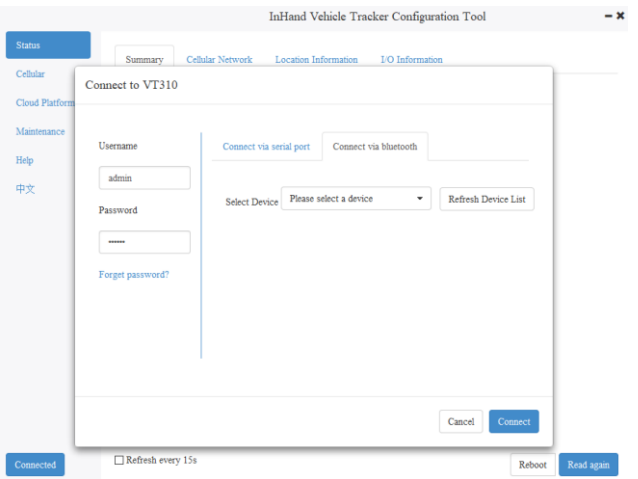


Figure 3-4

When the message "You can now view the device status and operate on the device." is displayed, click **OK**. Then, you can preview or modify the configuration. Figure 3-5 shows the configuration page.

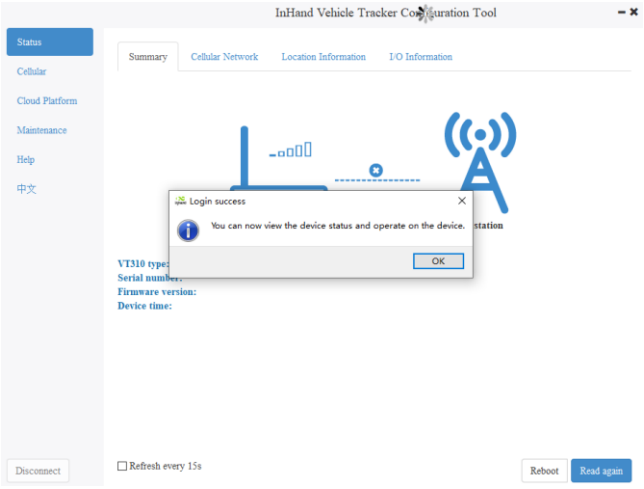


Figure 3-5

(4) Viewing the Device Status

Click **Status** in the left-side navigation pane and then the **Summary**, **Cellular Network**, **Location Information**, and **I/O Information** tabs to view relevant information. Figure 4-1 shows the configuration page.

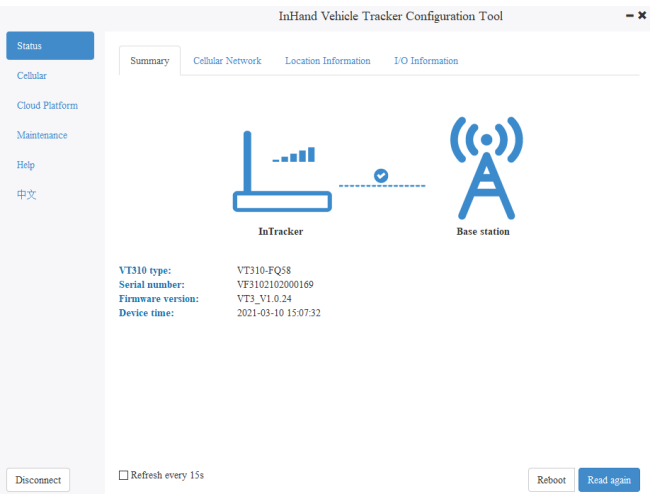


Figure 4-1

(5) Configuring the Cellular Network

Step 1: Click **Cellular** in the left-side navigation pane to access the configuration page. Typically, you only need to set the **APN**, **Network dial username**, **Network dial password**, and **Authentication mode** parameters and click **Save configurations**. The configurations take effect after the device is restarted. Figure 5-1 shows the configuration page.

For trial use, you can click **Show Advanced Option** to show more configuration items. Set the **Network dialing number**, **PIN**, and **Default bearer APN** parameters as required. Figure 5-2 shows the configuration page.

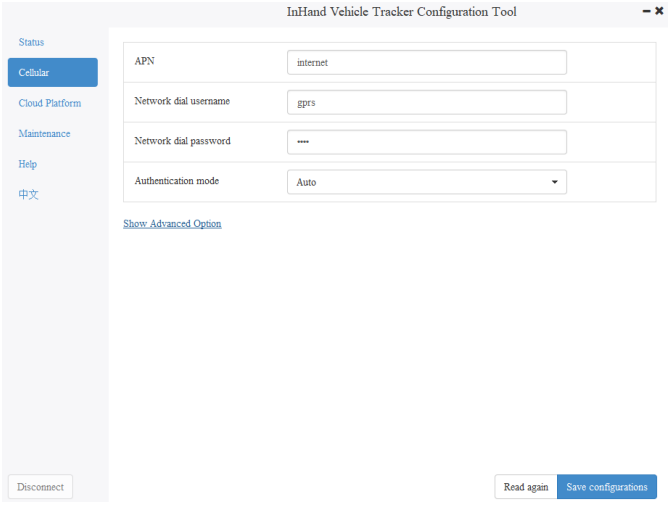


Figure 5-1

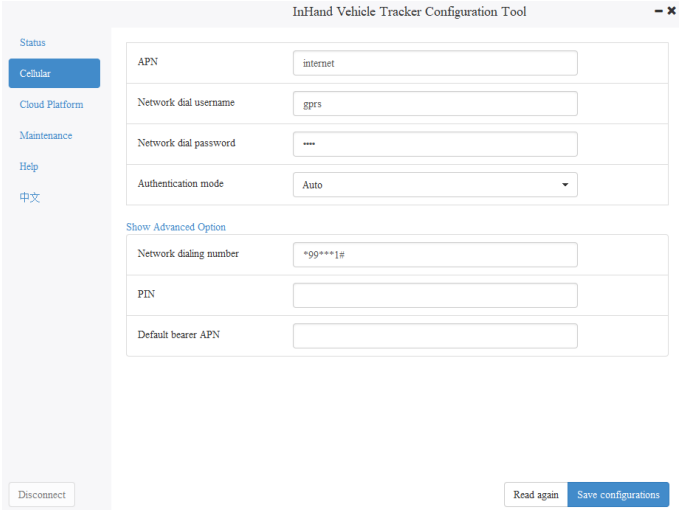


Figure 5-2

(6) Configuring the Cloud Platform

The VT320 can connect to two cloud platforms at most. However, it is not recommended that you connect the VT320 to two cloud platforms. You need to restart the device to make the cloud platform configuration take effect.

Step 1: Click **Cloud Platform** in the left-side navigation pane to access the configuration page. Select the target cloud platform and click **Modify** in the **Action** column. Figure 6-1 shows the configuration page.

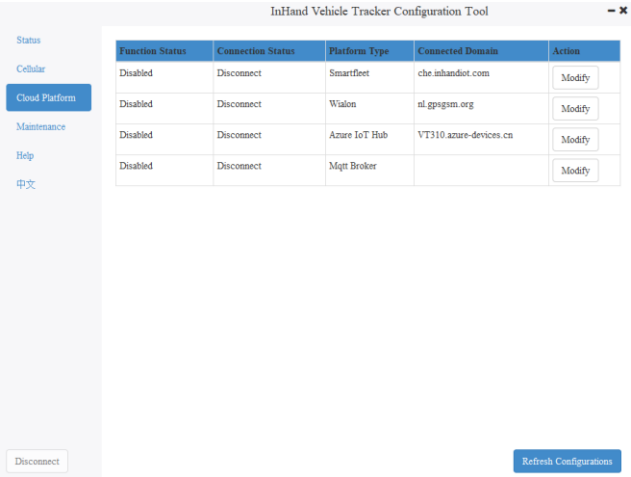


Figure 6-1

Step 2: If you select the Smartfleet platform, select **Enabled** and set the **Domain**, **Account**, and **License Plate Number** parameters. Click **Save configurations** and restart the device. If you set the **Domain** parameter to **user-defined**, you need to enter a custom domain name as required. Figure 6-2 shows the configuration page.

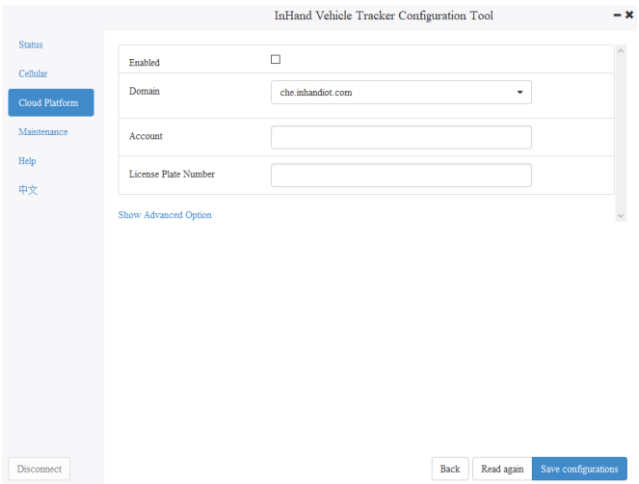


Figure 6-2

If you want to adjust the data reporting frequency, click **Show Advanced Option** to show more configuration items. Set the **LBS Interval**, **Data Interval**, and **Heart Beat Interval** parameters as required. Figure 6-3 shows the configuration page.

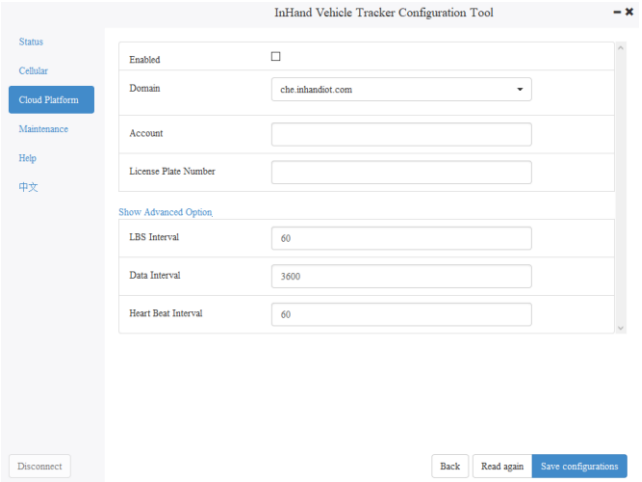


Figure 6-3

Step 3: If you select the Wialon platform, select **Enabled** and set the **Domain** and **Port** parameters. Click **Save configurations** and restart the device. Figure 6-4 shows the configuration page.

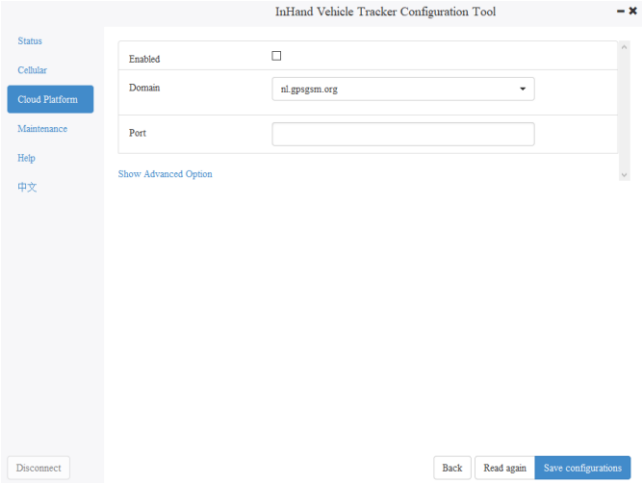


Figure 6-4

If you want to adjust the data reporting frequency, click **Show Advanced Option** to show more configuration items. Set the **Upload Interval** parameter. Figure 6-5 shows the configuration page.

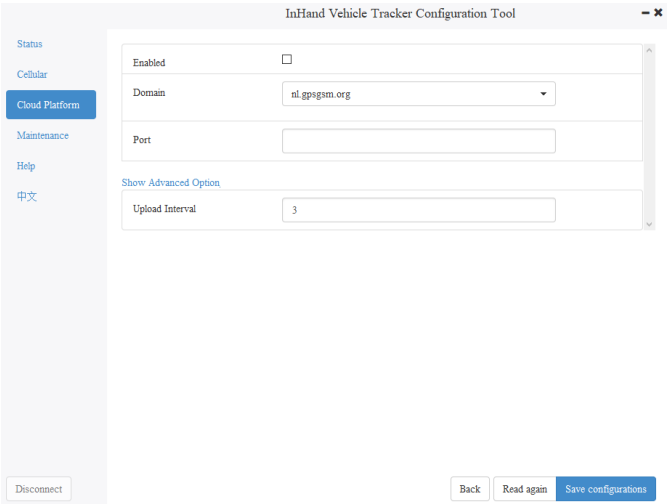


Figure 6-5

Step 4: If you select the Azure IoT Hub platform, select **Enabled** and set the **Connect String** parameter. Click **Save configurations** and restart the device. Figure 6-6 shows the configuration page.

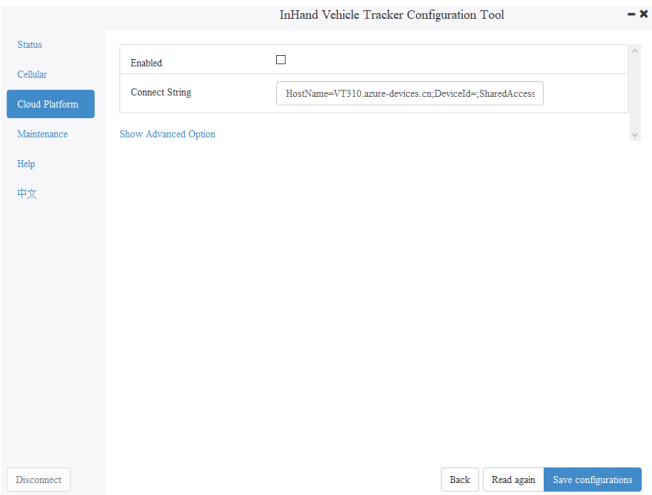


Figure 6-6

If you want to display invalid data, click **Show Advanced Option** to show more configuration items. Select **Publish Invalid Data**. Figure 6-7 shows the configuration page.

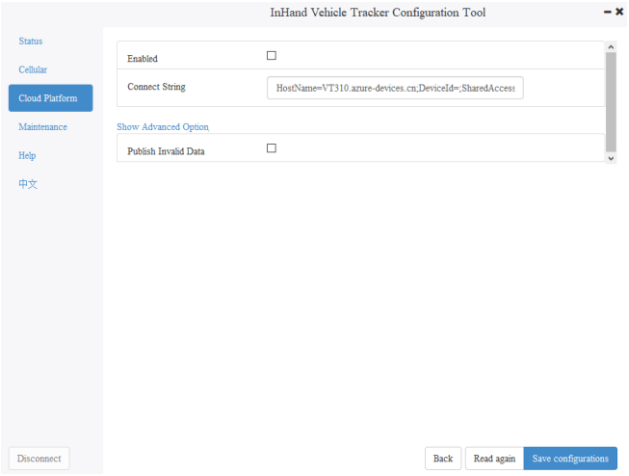


Figure 6-7

Step 5: If you select the MQTT Broker platform, select **Enabled** and set the **Domain**, **Port**, **username**, and **passwoad** parameters. Click **Save configurations** and restart the device. Figure 6-8 shows the configuration page.

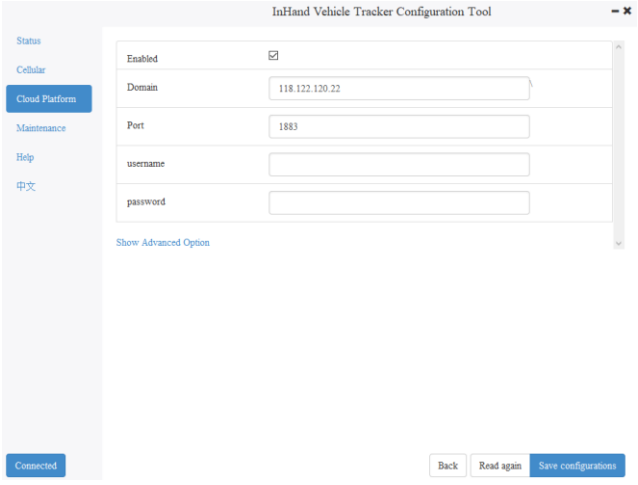


Figure 6-8

If you want to display invalid data, click **Show Advanced Option** to show more configuration items. Select **Publish Invalid Data**. Figure 6-9 shows the configuration page.

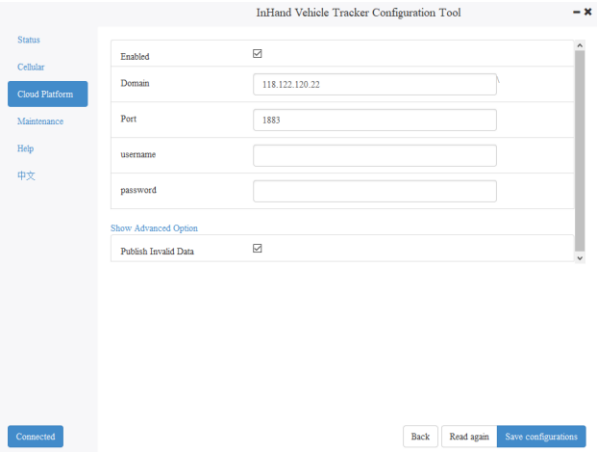


Figure 6-9

After the configurations are complete, click **Cloud Platform** in the left-side navigation pane and check the platform connection status in the **Connection Status** column. Figure 6-10 shows the configuration page.

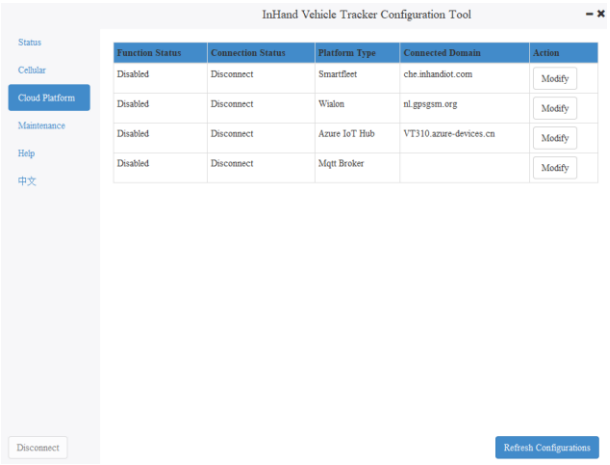


Figure 6-10

(7) Upgrading the Device

Step 1: Click **Maintenance** in the left-side navigation pane to access the configuration page. Click **Upgrade firmware** to access the upgrade page. Figure 7-1 shows the configuration page.

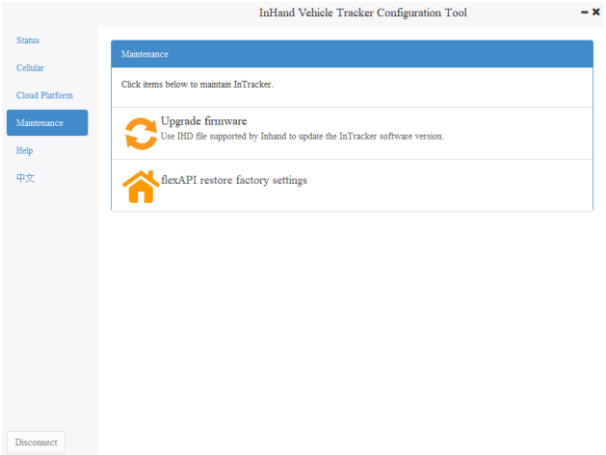


Figure 7-1

Step 2: Click **Browse file** and select the target firmware. Then, click **Upgrade** and wait for the firmware to be installed. Figure 7-2 shows the configuration page.

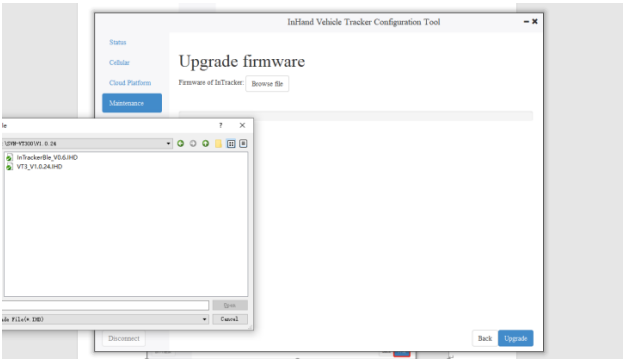


Figure 7-2

When the message "Will switch to the new version after restarting VT320" is displayed, the VT320 is upgraded. Figure 7-3 shows the configuration page.

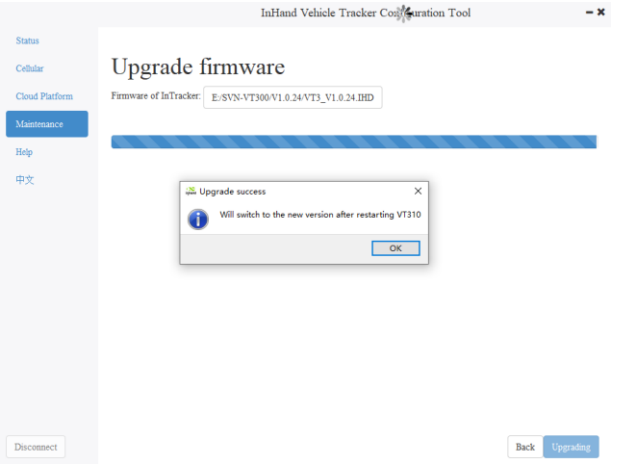


Figure 7-3

Note: After the device is upgraded, restart the device before configuring and using the device.

FCC STATEMENT

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 1: 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, 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.
NOTE 2: Any changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
RF Exposure
The equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This device should be installed and operated with minimum distance 20cm between the radiator & your body.
This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. The availability of some specific channels and/or operational frequency bands is country dependent and firmware programmed at the factory to match the intended destination. The firmware setting is not accessible by the end user.

IC STATEMENT

This device complies with Industry Canada license-exempt RSS standard(s): Operation is subject to the following Two conditions:
(1) this device may not cause interference, and
(2) This device must accept any interference, including interference that may cause undesired operation
of the device.
Le present appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :
(1) l'appareil ne doit pas produire de brouillage, et
(2) l'utilisateur de l'appareildoit accepter tout brouillage radioélectrique subi, même si le brouillage est
susceptible d'en compromettre le fonctionnement.
CAN ICES-3 (B)
Avis d' Industrie Canada
Le présent appareil est conforme aux CNR d'industrie Canada applicables aux appareils radio exem pts de licence L'exploitation est autorisée aux deux conditions suivantes:
1) I'appareil ne doit pas produire de brouillage; et
2) I'utillsateur de I'appareil doit accepterbrouillage radioélectrique subi meme si le brouillage
est susceptible d'encompromettre le fonctionnement. mauvais fonctionnement de I'appareil.
Cet appareil numériquie de la classe B est conforme à la norme NMB-003 du Canada.
CAN NMB-3 (B)
Radiation Exposure Statement:
This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.
Déclaration d'exposition aux radiations:
Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20cm de distance entre la source de rayonnement et votre corps.