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# ***AS500 / Long Standby Asset Tracker***

*User Manual DVT-V02 Feb. 15, 2023*

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# 1. Notification

## 1.1. Disclaimer

This document, and all other related products, including device, firmware, and software, are exclusively developed by ATrack Technology Inc.

Due to the continuous developments and improvements of device functionalities, changes in the protocol, specification, and firmware functions are subjects to change without notice. ATrack Technology Inc. reserves the right to modify all documentations based on its own timelines. Document modification notices will be released to ATrack Technology Inc.'s customers upon completion.

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## 1.2. Copyright

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## 1.3. Warning

Connecting of the input wires can be hazardous to both the installer and your vehicle's electrical system if not done by an inexperienced installer. This document assumes you are aware of the inherent dangers of working in and around a vehicle and have qualified understanding of electrical behaviors.

## 1.4. CE Representatives

The followings are authorized to represent ATrack Technology, in compliant to CE regulation.



**Company:** APEX CE SPECIALISTS LIMITED

**Address:** Unit 3D North Point House, North Point Business Park, New Mallow Road, Cork, T23 At2P, Ireland



**Company:** APEX CE SPECIALISTS LIMITED

**Address:** 89 Princess Street, Manchester, M1 4HT, UK

## 1.5. Document Amendments

Rev.	Pub. Date	Comments	F/W Version
V02	Feb. 15, 2023	<ul style="list-style-type: none"><li>Added the Bluetooth Section</li></ul>	
V01	Nov. 01, 2022	<ul style="list-style-type: none"><li>Initial version</li></ul>	

**Note:** For the F/W Version column with specific firmware number, it means the modification(s) on the Comments column is done on this corresponding firmware version (and the versions thereafter). Please make sure you upgrade the firmware to the specified version before applying any changes made in this protocol.

## 1.6. RF Statement

1. 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 of the device.

2. 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.

3. You are cautioned that changes or modifications not expressly approved by the part responsible for compliance could void the user's authority to operate the equipment.

4. This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation

distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

5. This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(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.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique 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, and

(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

6. Radio Frequency (RF) Exposure Information

The radiated output power of the Wireless Device is below the Industry Canada (IC) radio frequency exposure limits. The Wireless Device should be used in such a manner such that the potential for human contact during normal operation is minimized.

This device has also been evaluated and shown compliant with the IC RF Exposure limits under mobile exposure conditions. (antennas are greater than 20cm from a person's body).

Informations concernant l'exposition aux fréquences radio (RF)

La puissance de sortie émise par l'appareil de sans fil est inférieure à la limite d'exposition aux fréquences radio d'Industry Canada (IC). Utilisez l'appareil de sans fil de façon à minimiser les contacts humains lors du fonctionnement normal.

Ce périphérique a également été évalué et démontré conforme aux limites d'exposition aux RF d'IC dans des conditions d'exposition à des appareils mobiles (antennes sont supérieures à 20 cm à partir du corps d'une personne).

## 2. Installation

### 2.1. Package Content

Verify that you received the following items in the package:



1x AS500 Device



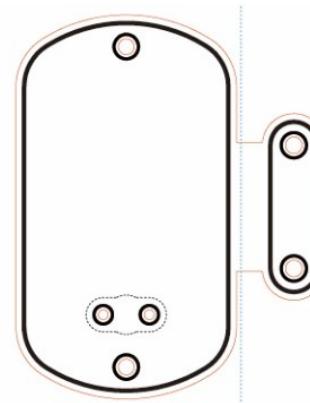
6x Screws for lock back cover



2x Screws  
for mounting tracker to wood surface



2x Screws  
for mounting tracker to Metal surface



Mounting Sticker

### 2.2. Optional Accessories

The optional accessories are:



Door Open Detection Magnet Kit



Tamper Detection Magnet Kit



3x Li-SOCl2 Battery



3x Li-FeS2 Battery



Magnet Mounting Kit

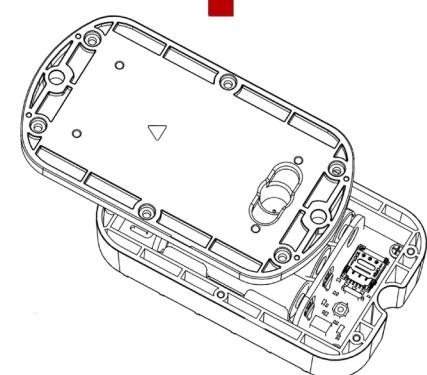
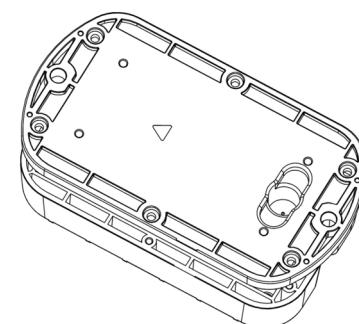


1x USB Configuration Cable

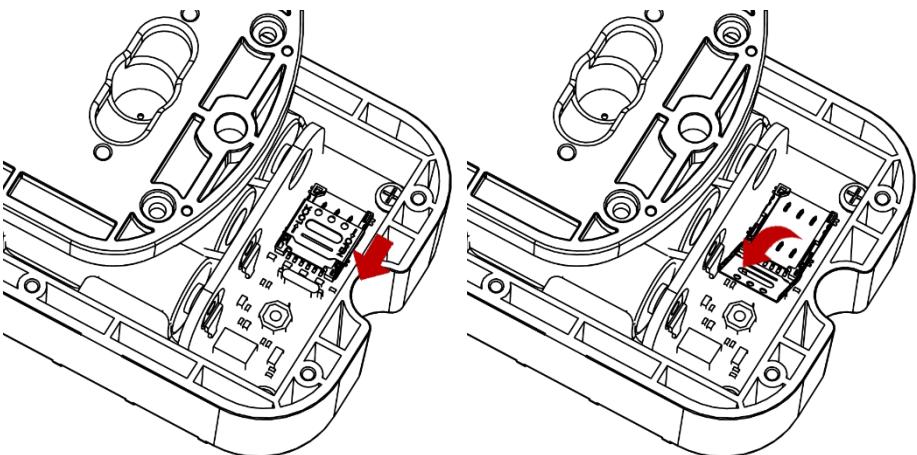
### 2.3. SIM Card Installation

AS500 supports installation of one NANO SIM card. To install a SIM card, please follow the instruction below to remove the cover and insert the SIM.

1. Open the back cover.



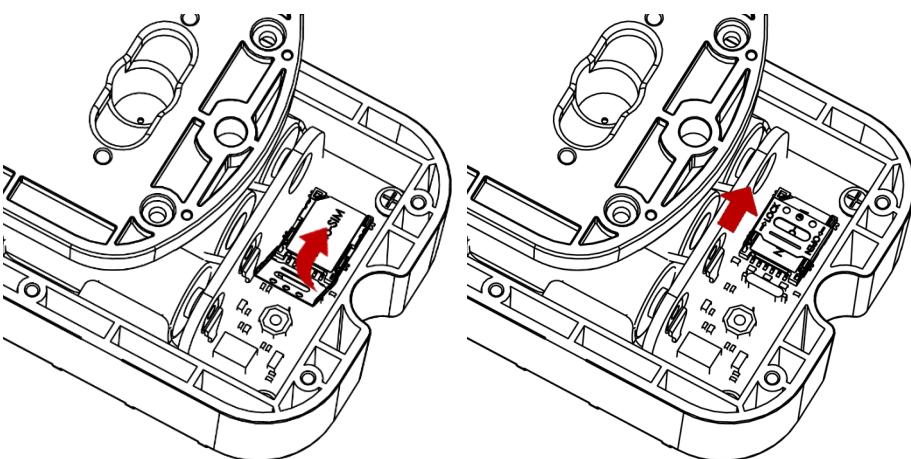
2. Unlock the SIM holder by sliding it up, and flip it up slightly



4. Ensure the rubber ring sits correctly in the groove before putting the back cover on. This rubber ring plays an important role in sealing.

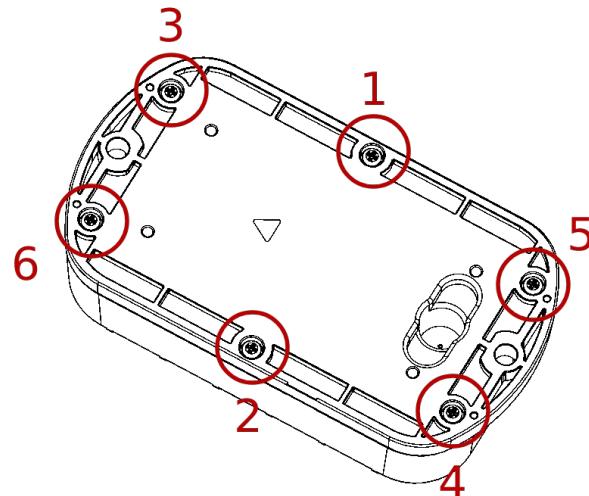


3. Place the NANO SIM horizontally by the direction shown. Flip the holder down, and slide it until a "click" sound is heard.



Also, ensure the surface is clean before putting the cover back on. Any dirt on the surface or groove can cause the water to get in.

5. Lock back cover with screws. Follow the proper order from 1 ~ 6 to affix the screws.

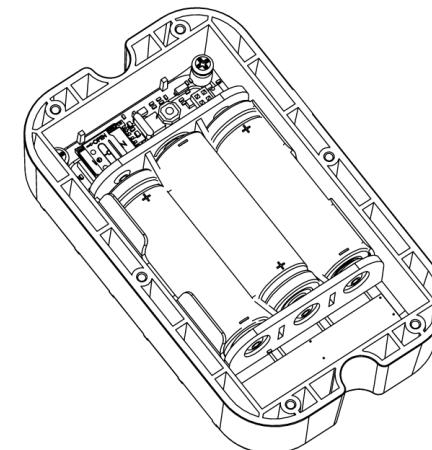


6. The proper/recommend screwdriver size to tighten the screws is **PH1**.

7. The maximum torque value to tighten the screws is **3.5±0.3Kgf/Cm**

## 2.4. Battery Installation

- Use AA batteries 3PCS
- Do not mix old and new batteries.
- Do not mix different types of batteries
- Never short circuit the battery terminals.
- Insert the AA batteries into the battery compartment, making sure the positive and negative ends are pointing in the correct direction.



## 2.5. Configuration Port and Setting

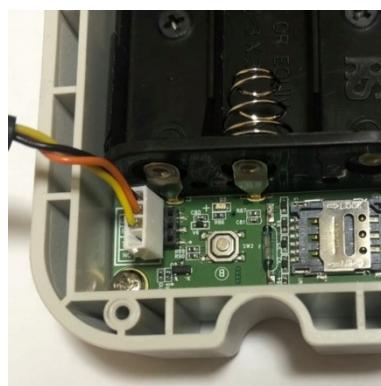
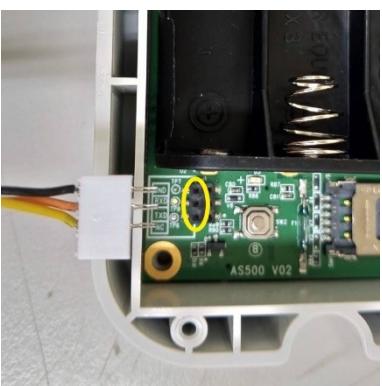
The configuration cable is used to connect to the socket inside the AS500 and PC for configuring parameters and firmware upgrade. When the configuration cable is connecting to your

PC/laptop, a "USB Serial Port" will show up in the device manager. This will be used as serial port to communicate with AS500. Please note down the COM port in order to select it correctly when using a terminal emulator.

- >  Imaging devices
- >  Intel WiUSB
- >  Keyboards
- >  Mice and other pointing devices
- >  Monitors
- >  Network adapters
- >  Ports (COM & LPT)
  -  USB Serial Port (COM2)
  -  USB Serial Port (COM4)
  -  USB Serial Port (COM8)
- >  Print queues
- >  Processors
- >  Sensors

Next, connect the 3-pin board-to-board connector as shown below.

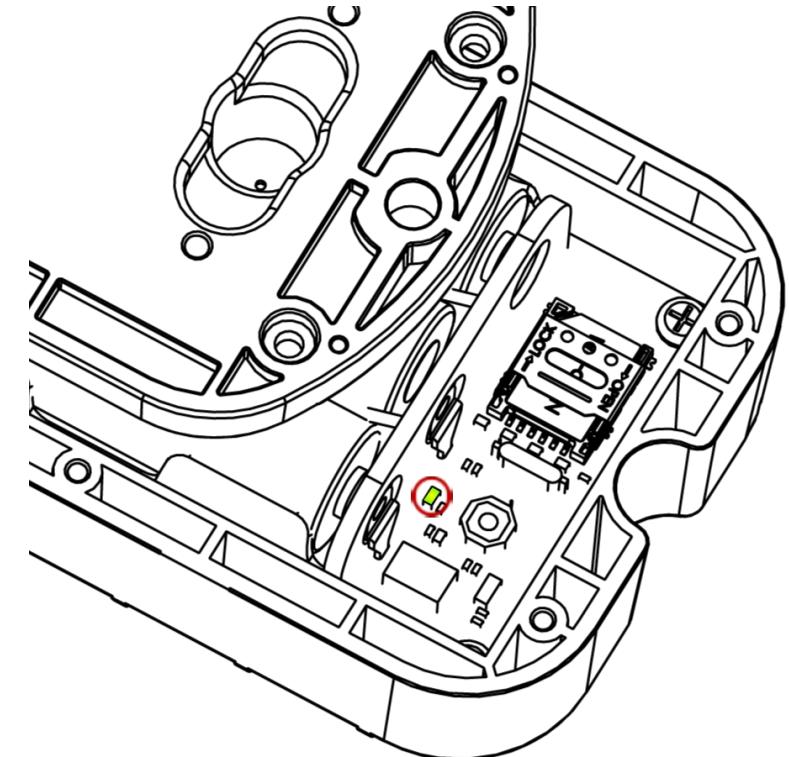
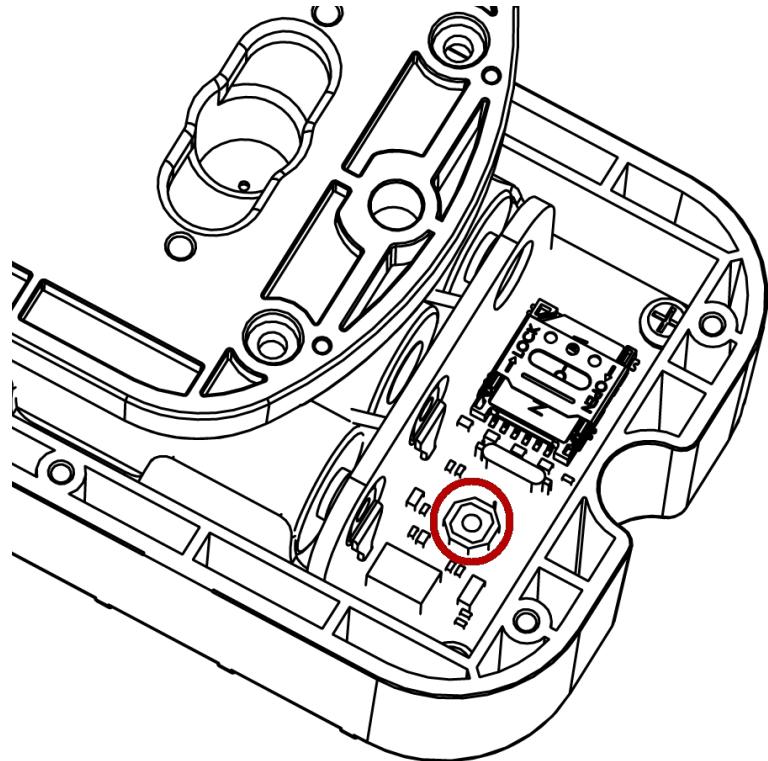
Note that the black wire is on the side of battery holder



## 2.6. LED Indication for Battery Capacity

Press the button  to make LED blink.

The following figure shows the location of AS500's LEDs.

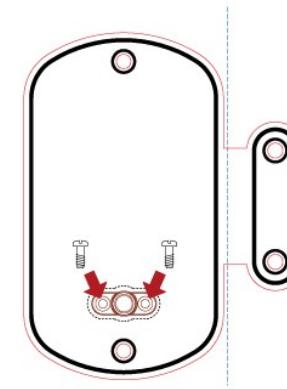
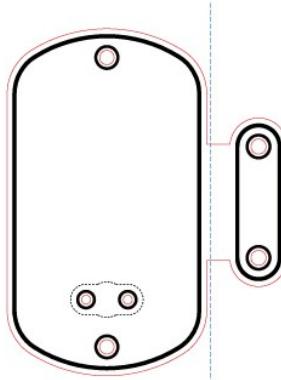


LED	Color	Indication	Description
Battery	Green	LED Flash 1 time 500ms duty cycle	1~25%

LED	Color	Indication	Description
Capacity		LED Flash 2 time 500ms duty cycle	26~50%
		LED Flash 3 time 500ms duty cycle	51~75%
		LED Flash 4 time 500ms duty cycle	76~100%

## 2.7. Mounting Device, Tamper detection, and Door detection

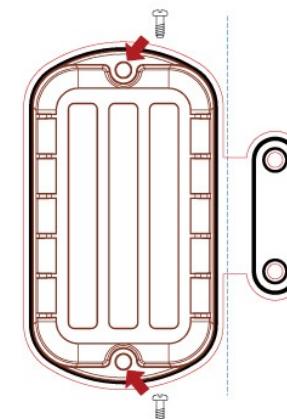
1. Paste mounting sticker



3. Mounting the device and match the sticker hole

(The maximum torque value to tighten the screws is  $4.5\pm0.3\text{Kg/Cm}$ )

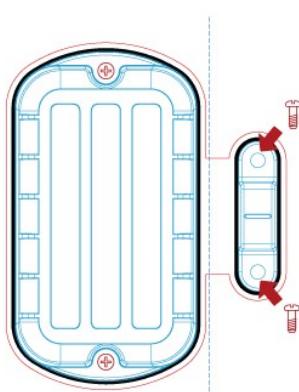
2. Mounting the tamper detection and match the sticker hole





4. Mounting the door detection and match the sticker hole

(The maximum torque value to tighten the screws is  $4.5\pm0.3\text{Kg/Cm}$ )



Note:

1. Make sure the screws don't cause any mechanical interference or damage the components of the vehicle during the installation.
2. Make sure the tracker case is not deformed after the installation, in order not to affect the waterproof capability.
3. Please be aware the door detection need to be within 15mm from the AS500.

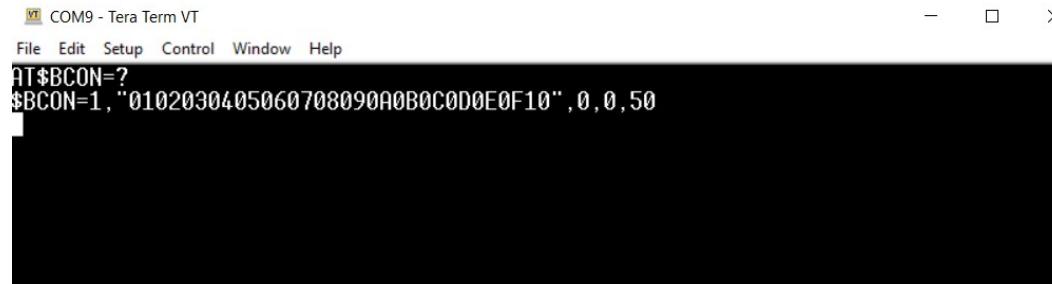
### 3. Bluetooth

**This section will explain how to set Bluetooth Low Energy (single mode) configuration. Note that the Bluetooth transmission requires flow control. Once the Bluetooth connection is established, the device becomes a wireless COM Port enabling to access the commands and firmware upgrade. Warning: To avoid buffer overflow, the string size must be less than 160 for both "JData Fields" & "ZData Fields" combined.**

#### 3.1. AT\$BCON

To turn on the Bluetooth, you can issue AT\$BCON=1

To turn it off, you can issue AT\$BCON=0



```
AT$BCON=?  
$BCON=1, "0102030405060708090A0B0C0D0E0F10", 0, 0, 50
```

For more details, please refer to the AS500 protocol document.

#### 3.2. AT\$BTEN

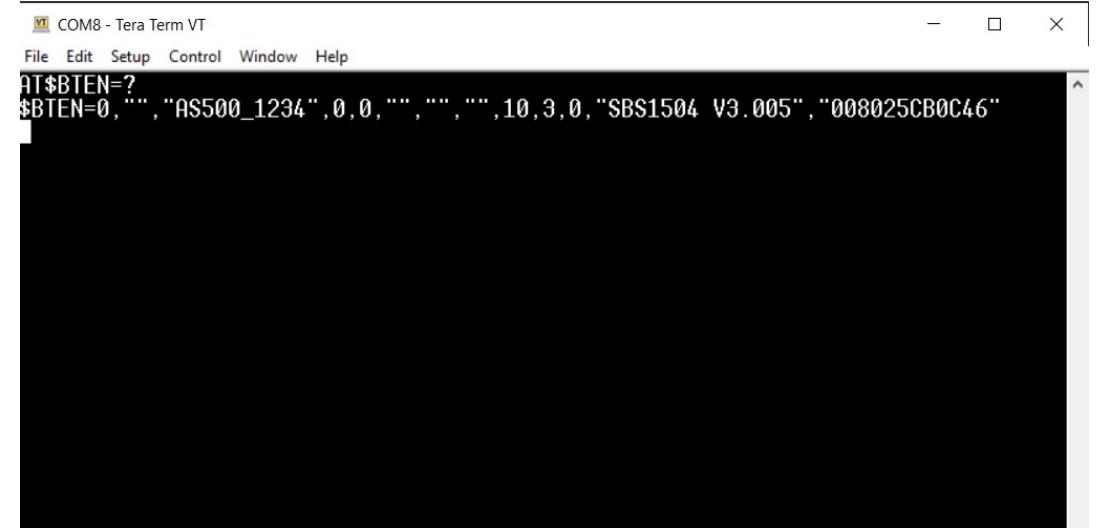
This command is used to set Bluetooth Low Energy (single mode) configuration. Note that the Bluetooth transmission requires flow control.

Once the Bluetooth connection is established, the device becomes a wireless COM Port

enabling to access the commands and firmware upgrade.

You can configure the name and the password of the Bluetooth, as well as the data you want to be transferred via Bluetooth.

**Warning: To avoid buffer overflow, the string size must be less than 160 for both "JData Fields" & "ZData Fields" combined.**

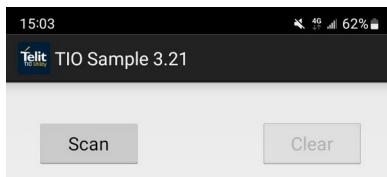


```
AT$BTEN=?  
$BTEN=0, "", "AS500_1234", 0, 0, "", "", 10, 3, 0, "SBS1504 V3.005", "008025CB0C46"
```

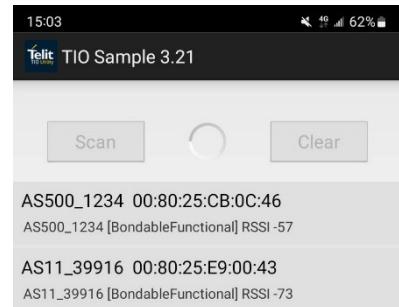
For more details, please refer to the AS500 protocol document.

### 3.3. Demo App

1. Please download “Terminal IO” from either Apple Store or Google Play. And you can see the screen below when you open the APP.



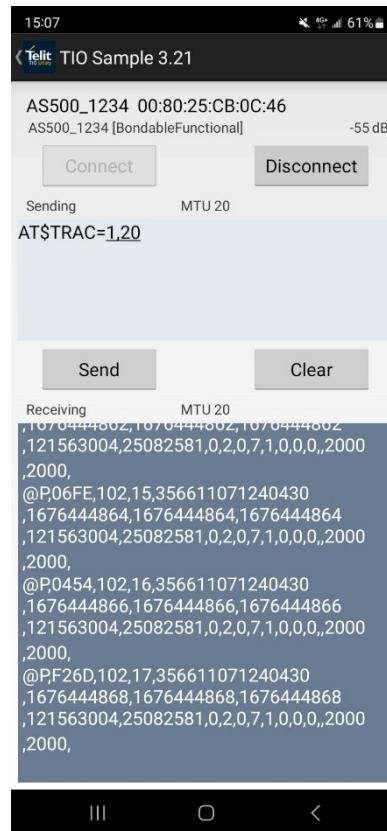
2. Press [Scan] button to scan AS500. The default name “AS500\_last\_5\_digits of IMEI” should be found and shown in the list. Press [Connect] button to get the connection established.



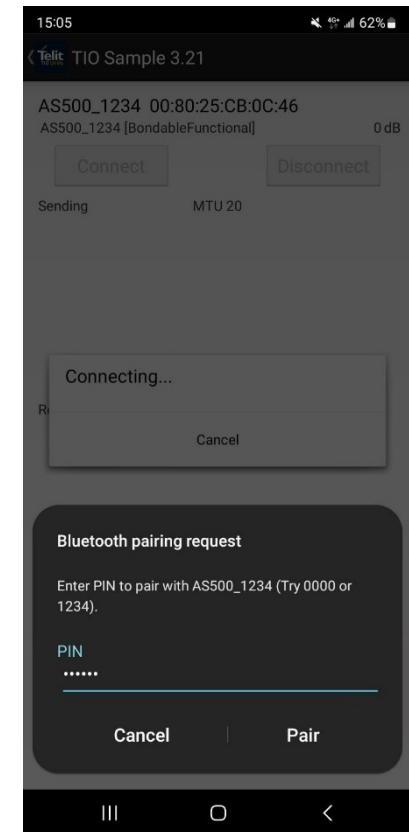
3. After the [Connect] button is pressed, the connecting process will be executed immediately. And, the message box of Bluetooth Pairing Request should be popped up in short. The default password is “000000”



4. The icon at the bottom can be seen if the connecting process is successfully finished. Please press the icon to jump into next page.



Bluetooth.



### 3.4. SDK for Android and iOS APP

Please contact your technical consultant at ATrack for the SDK document.

- With a proper configuration, the position report can be obtained by the APP via

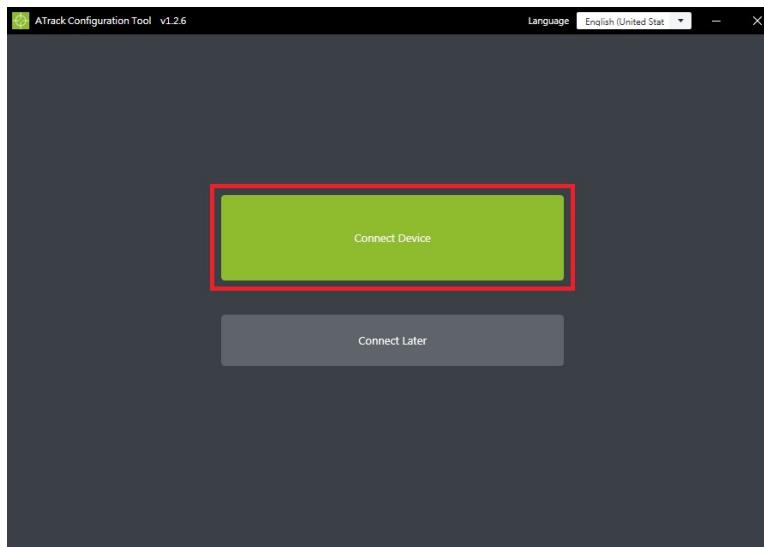
## 4. Configuration

You may explore great features on the AS500 through AT commands either over the direct serial connection or remote via SMS/GPRS. The command syntax for direct or remote connections is the same. Each command should be following the specified format in the Protocol Document, and the command shall end with carriage-return and line-feed characters.

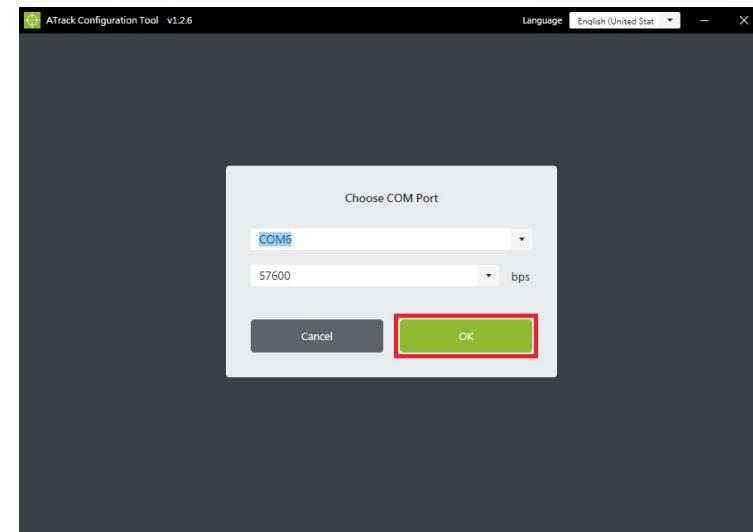
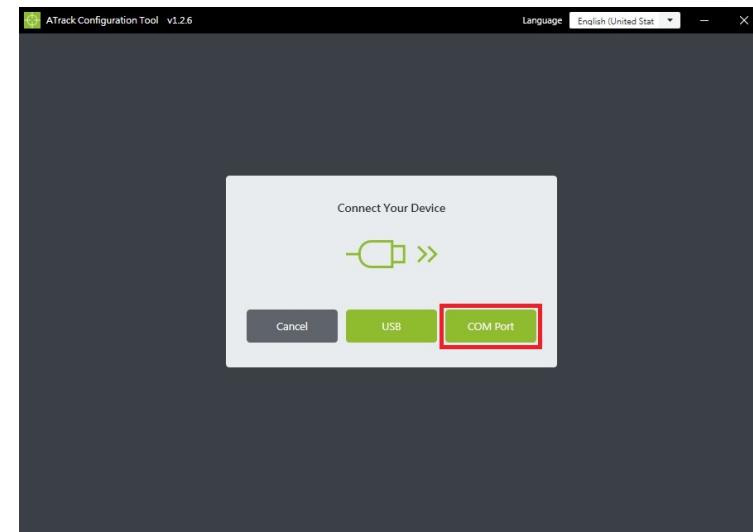
### 4.1. Connecting AS500 Using ACT Tool (no support ACT for DVT phase)

The following example shows how to connect the AS500 through ACT Tool.

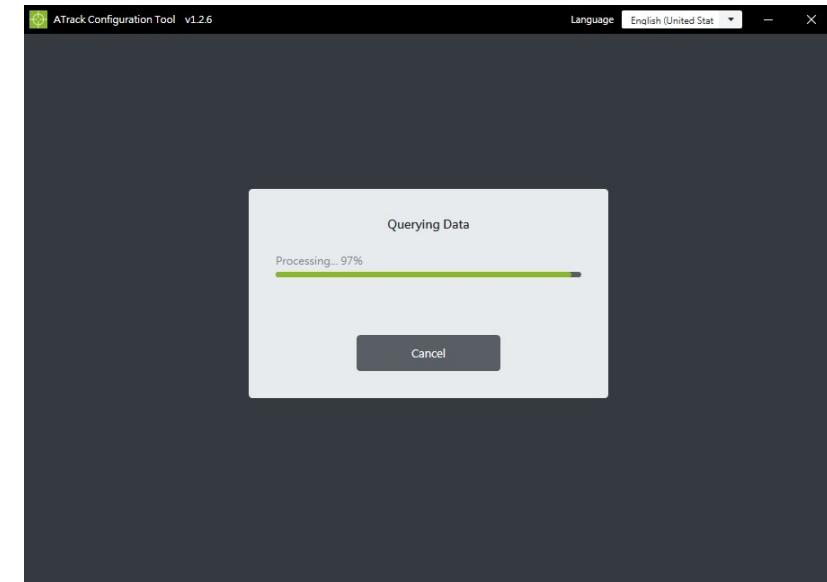
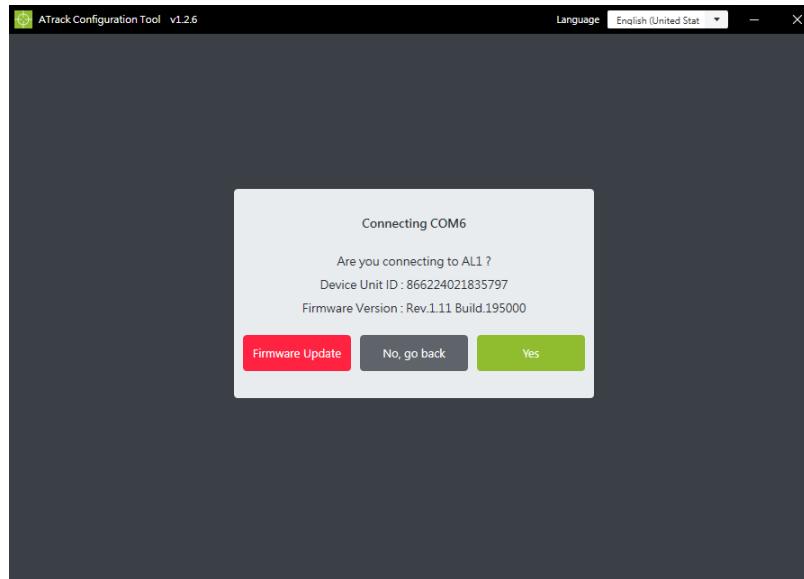
8. Run ACT Tool and click on the [Connect Device].



9. Click on the [COM Port] and select the correct COM port with Baud rate 57600 (default).



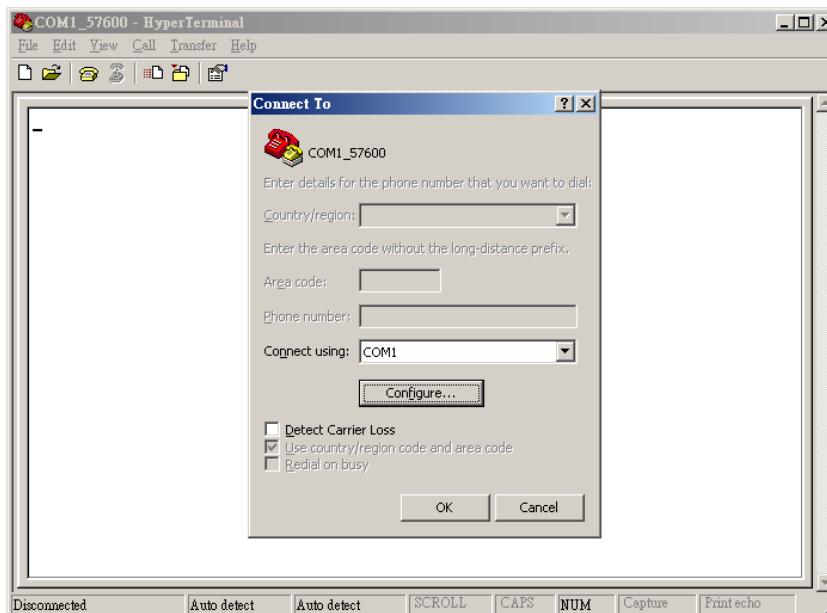
10. Click on the [Yes] and wait until the querying data process is done.



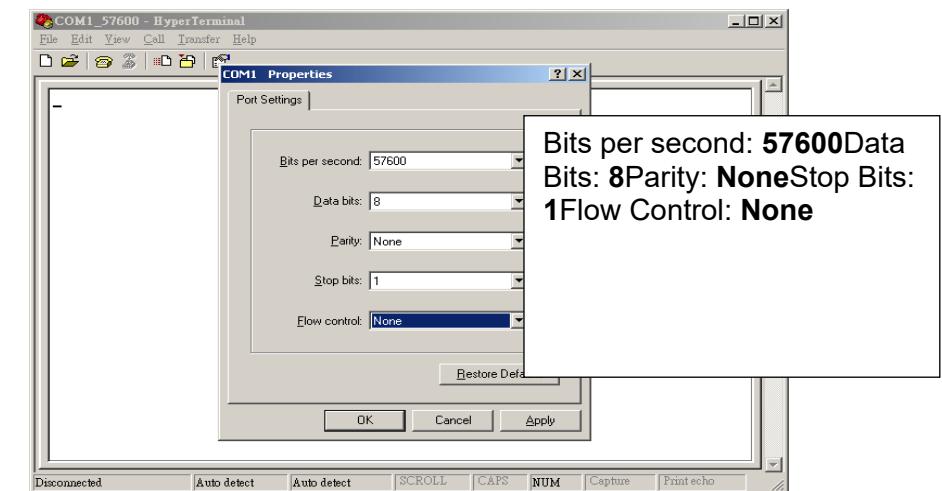
## 4.2. Connecting AS500 Using HyperTerminal

The following example shows how to connect the AS500 through HyperTerminal. You may use other popular terminal emulators such as **Putty** or **Tera Term Pro** to establish a console session with the AS500.

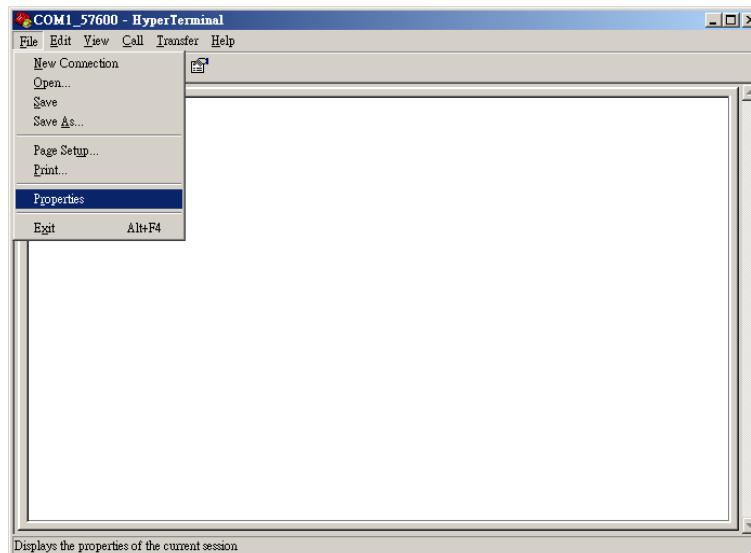
1. Run HyperTerminal, select the correct COM port, and then click on the [Configure...] button.



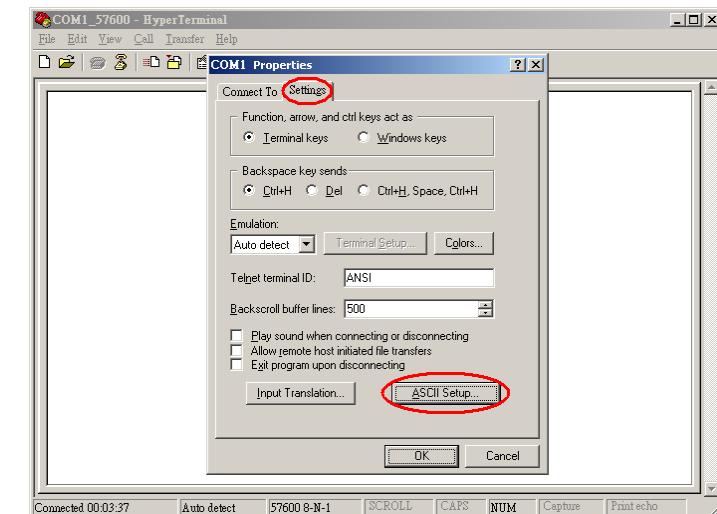
2. The **Port Settings** should be as follows. Click on the [OK] button to close the Properties window.



3. Click on [File] → [Properties].



4. Click on the [Settings] tab and click on the [ASCII Setup...] button.



5. Check the following options and click on the [OK] button.

