



AG-300 Plus2
Gateway
Operation Manual

Federal Communications Commission (FCC) Statement

Statement shall be listed in the label

(if the product is smaller than palm size, it could be listed in user manual for instead.)

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.

Statement shall be listed in the manual

15.21

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.

15.105(b)

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.

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.

FCC RF Radiation Exposure Statement:

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters from your body.

USB Port only connection Vibration gauge (VB-200STU)

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Overview

Tecom smart portable vibration diagnosis instrument is one of the most innovative mobile maintenance products in the world. By making the most of IoT, sensor, and management software technology it is designed to measure vibration of running E&M equipment without extra power cord or network cable. With fully PnP based convenience, it is ideal for small and medium size manufacturers and enterprises in pursuing productivity 4.0.

Featuring IoT WiFi gateway (AG-300 Plus2), integrated vibration gauge VB-200STU, IR temperature sensor, power bank, and iOS and Android platform available diversified smartphone APP (which can be downloaded, installed, and used immediately), Tecom smart portable vibration diagnosis instrument system is ideal for equipment installation or maintenance engineers for measuring temperature and vibration at equipment power contact, E&M, rotary machinery, and motor on the spot. In addition, it combines measurements made on site with interactive analysis and diagnosis of the system to provide instant, helpful, and effective target E&M equipment health analysis which, in turn, not only enable easy manufacturing E&M equipment management and upkeep in healthy status but also prevent hazardous system shutdown from happening.

Tecom smart portable vibration diagnosis instrument may connect up to 4 vibration gauges for multiple diagnosis at the same time. With a breakthrough in vibration measurement concept, it integrates vibration measurement, analysis, and diagnosis operation in one portable device to save working hours and reduce onsite maintenance and repair time significantly.

Tecom smart portable vibration diagnosis instrument system may help acquiring full first commissioning operation data that is critical for later maintenance and big data analysis for manufacturer in future product release.

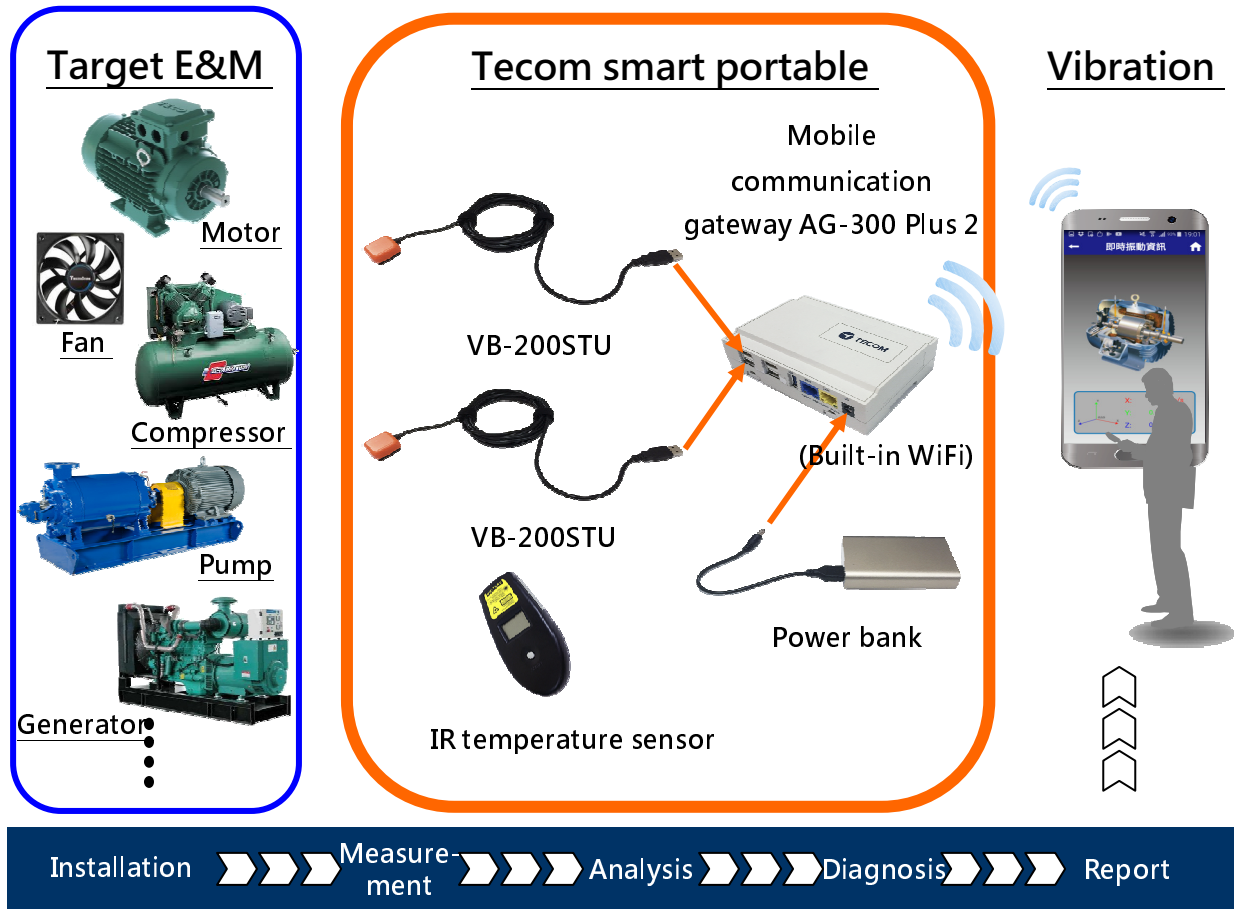
In situ and instant vibration diagnosis information

Productivity 4.0



AG-300 Plus2 Configuration

1. System structure

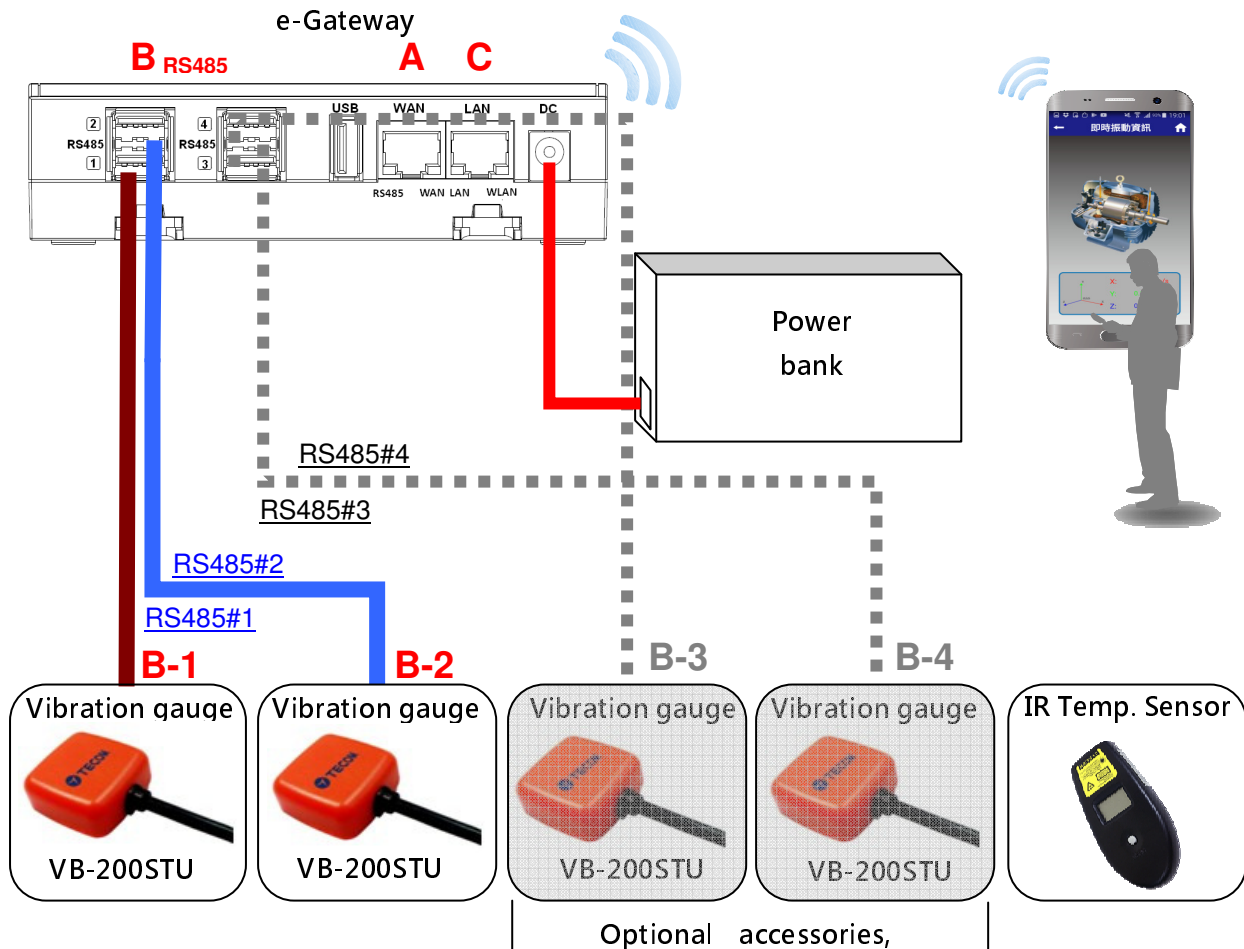


2. Equipment wiring

Open **portable vibration diagnosis instrument** carrying case and belt, and connect them according to wiring diagram shown below.

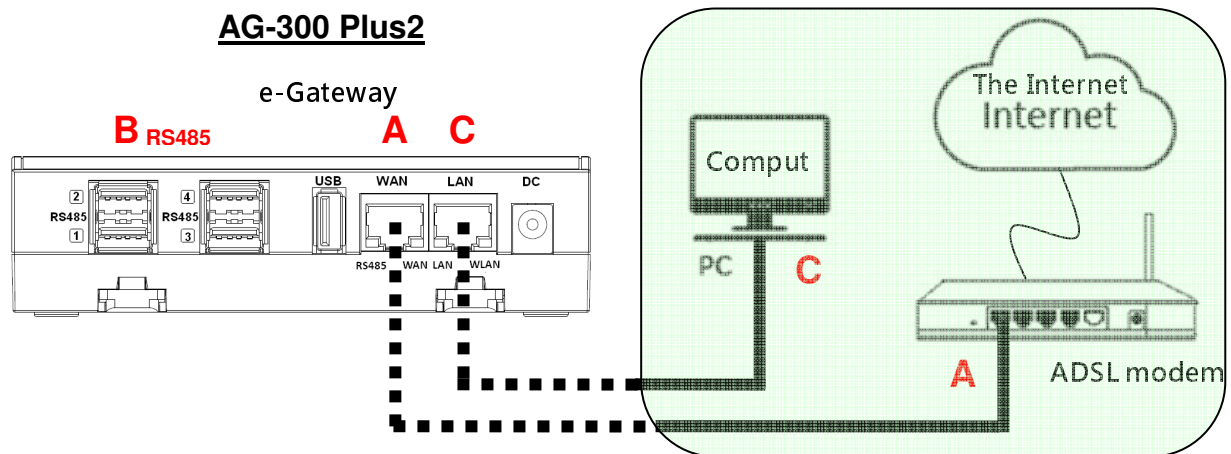
- Connect AG-300 Plus2 to VB-200STU with RS485(1/2)
- Connect AG-300 Plus2 DC Jack to power bank to the power cord
- WiFi connect smartphone to built-in WiFi router of AG-300 Plus2
- Mount (magnetic) vibration gauge to target equipment according to its installation guidelines

AG-300 Plus2



Once wired according to aforementioned diagram, your smartphone is now ready to execute test, analysis, and diagnosis over target equipment with the "vibration diagnosis" APP; follow the following diagram and steps E~F for computer and the Internet connection as required.

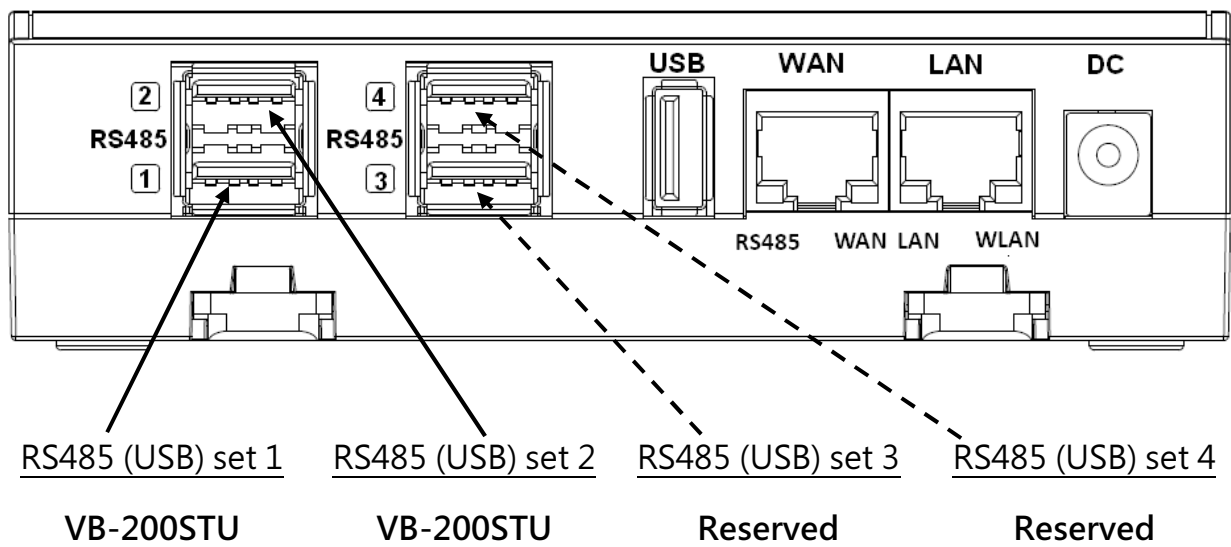
- E. Connect AG-300 Plus2 WAN port (blue) and LAN port of ADSL modem with network cable
- F. Connect AG-300 Plus2 LAN port (yellow) and PC with network cable (for system setup only)



3. RS485 wiring

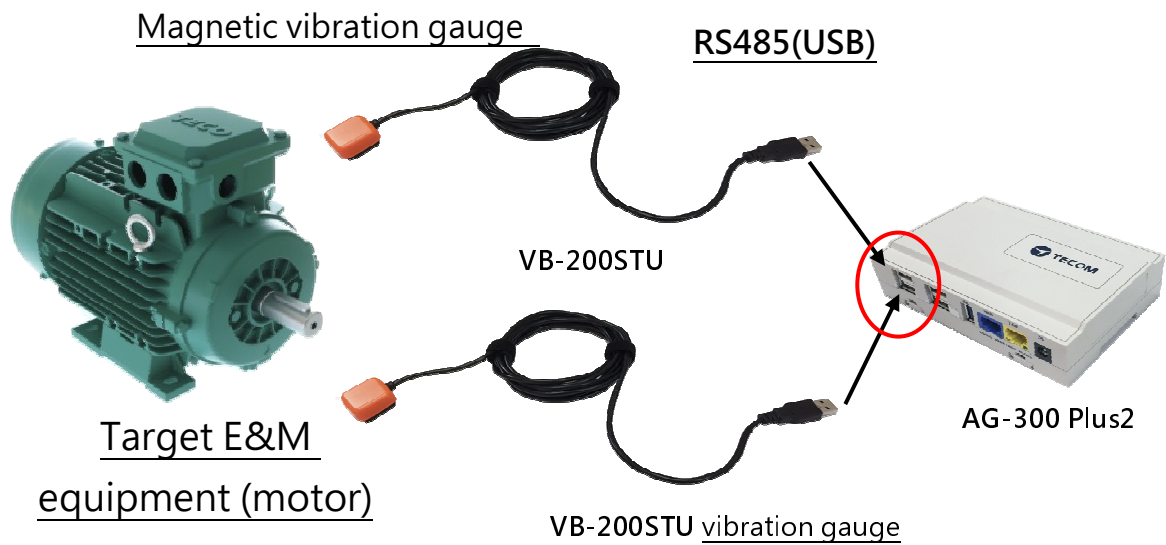
(1) AG-300 Plus2

E-gateway AG-300 Plus2 supports up to 4 vibration gauge with RS485 (USB) connection as shown in figure below:



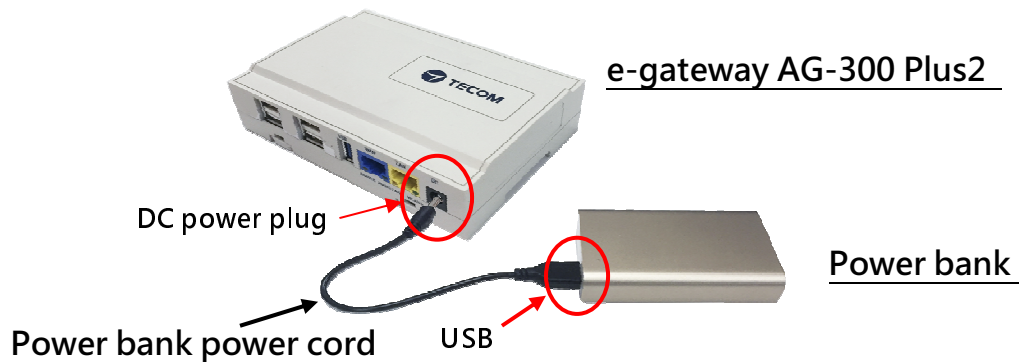
(2) VB-200STU

This portable vibration diagnosis instrument comes with 2 built-in vibration gauges VB-200STU; featuring integrated RS485 cable and USB connector the latter may direct connect to e-gateway AG-300 Plus2 as shown in the figure below:



4. Power bank wiring

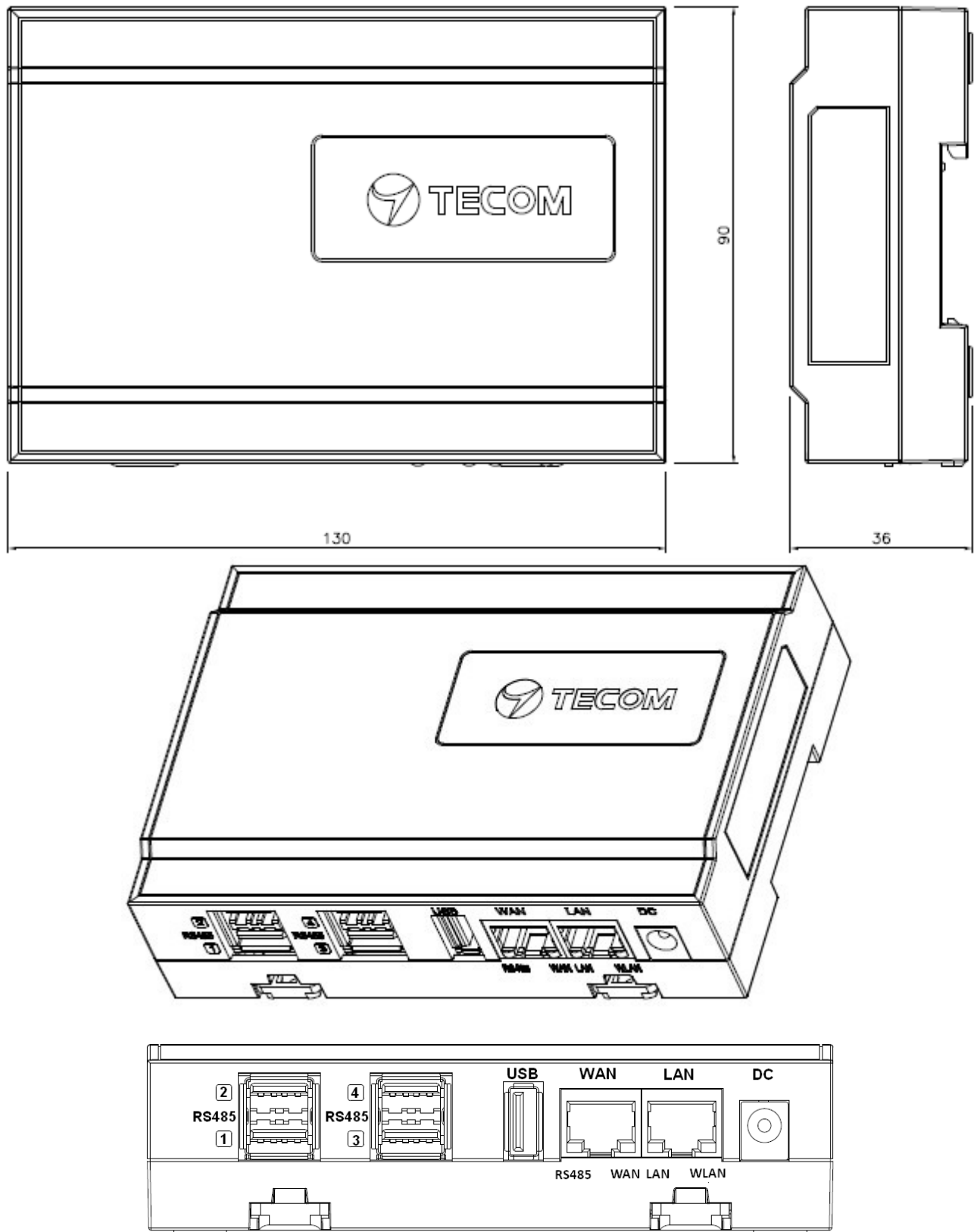
This portable vibration diagnosis instrument comes with power bank power cord, please connect DC Plug to DC jack of AG-300 Plus2 and USB connector to USB port in power bank as shown in figure below:



5. Equipment dimension

AG-300 Plus2 dimension: 130mm (length) x 90mm (width) x 36 mm (height)

6. AG-300 Plus2 view



Equipment setup

1. Network setup

Step 1

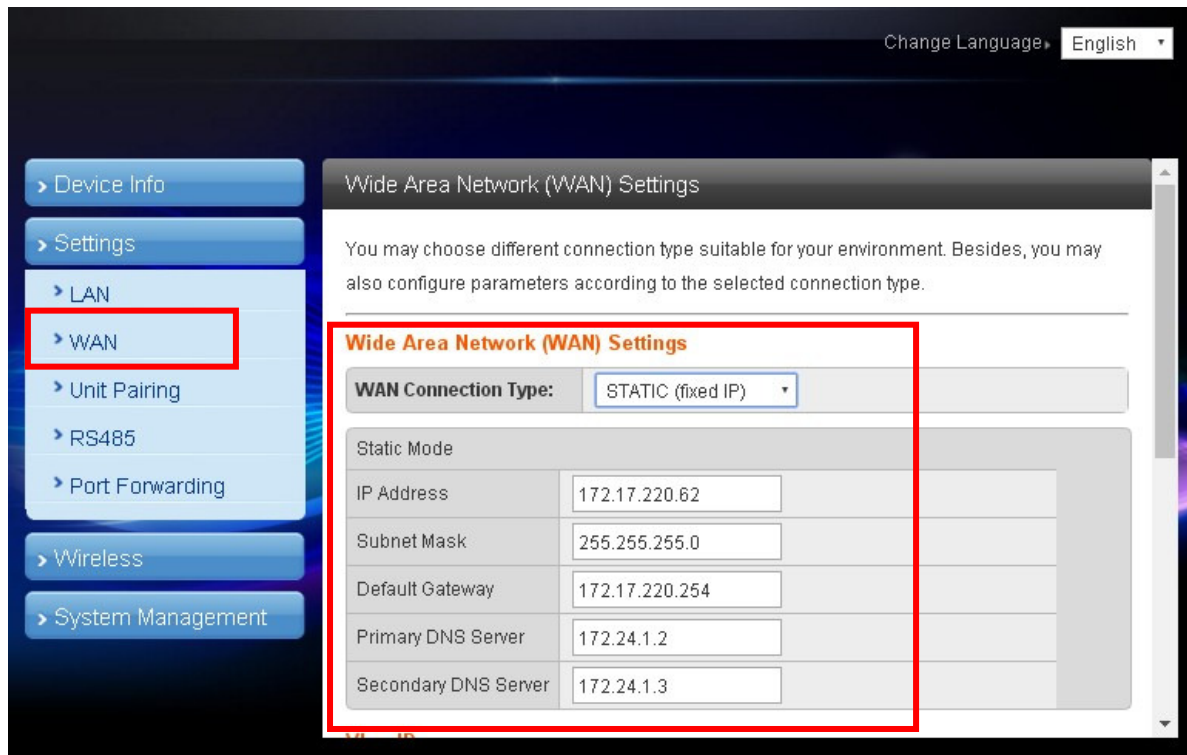
- Keep your PC / NB and e-gateway AG-300 Plus2 in the same LAN segment (better have DHCP enabled on your PC / NB)
- Connect PC/NB and AG-300 Plus2 (LAN port) with Ethernet cable
- Connect power adaptor to AG-300 Plus2
- Open a browser on the connection, input AG-300 Plus2 setup page address <http://192.168.168.10>
- Input user name: **admin**
- Input password: **IP585xAdmin**
- Click **OK**



Step 2

(Skip this step for DHCP PnP network)

- In main menu on the left, click [Settings] → [WAN].
- In WAN connection type dropdown menu, select [STATIC (Fixed IP)]



- **IP address:** input IP data.
- **Subnet mask:** input subnet mask data.
- **Default gateway:** input default gateway data.
- **Primary DNS server:** input main DNS server data.
- **Secondary DNS server** input secondary DNS server.
- Click the [Apply] button at bottom of page once all settings were made successfully.

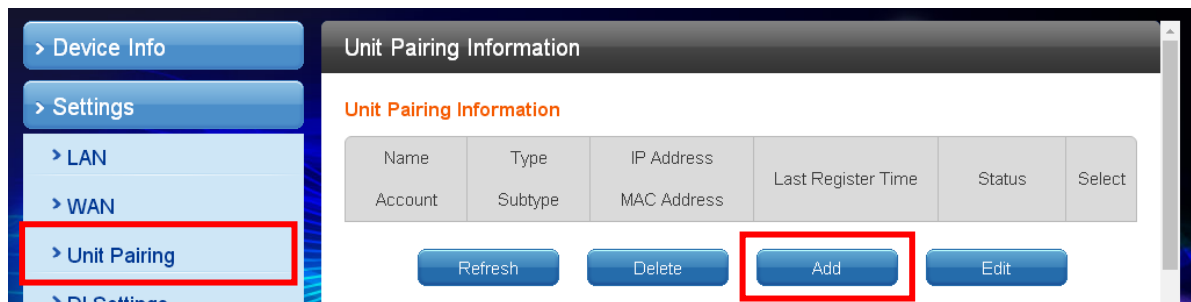
Try connecting to popular web sites (e.g., edition.cnn.com and www.yahoo.com.tw) to validate external networking function

Set smartphone APP communication port to TCP 53100 ~53199 in case firewall management service is in existence.

2. Account setup

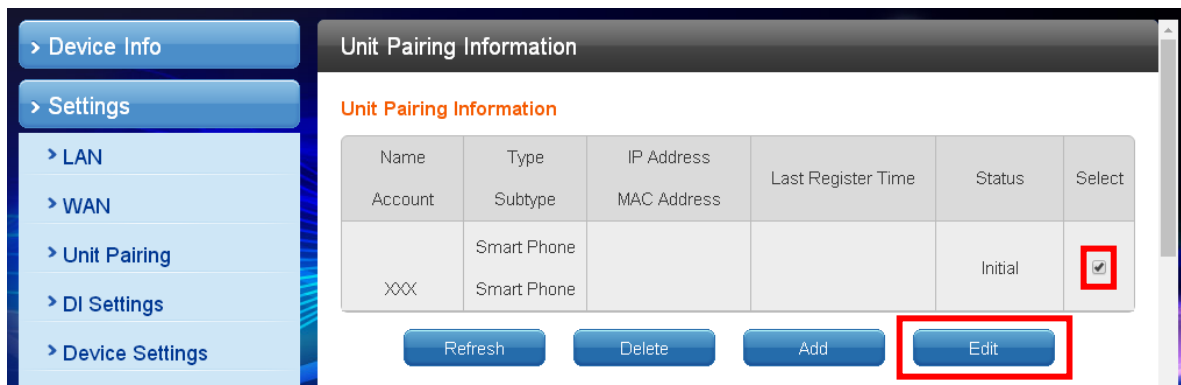
Step 1

In main menu on the left, click [**Settings**] → [**Unit pairing**] before selecting [**Add**] button.



Step 2

Check the [**Select**] column before selecting the [**Edit**] button



- **Name** : input user name.
- **Account** : e.g. 103 (you can have 20 account with number in range of 100-119).
- **Password**: input password (better the same as account ID).
- Click [**Save**] button at bottom of page to keep settings you have made.
- Click [**Start pairing**] button.

Account	Name	Type	MAC Address	IP Address	Status	
100	Jerry	Smart Phone	a8:b8:6e:48:03:dc	192.168.168.214	Disconnected	☐
101	EE2	Smart Phone	4c:66:41:0e:70:4f	192.168.168.72	Disconnected	☐
102	Richard	Smart Phone	40:4e:36:2e:43:e9	192.168.168.127	Connected	☒
103		Smart Phone	ec:1f:72:6c:86:d8			

- To edit user account: check the [Select] column; click the [Edit] button, and the existing settings of the account displays for you to change.
- To delete user account: when the user was disconnected check the [Select] column, click the [Delete] button to remove the account.

3. VB200 setup

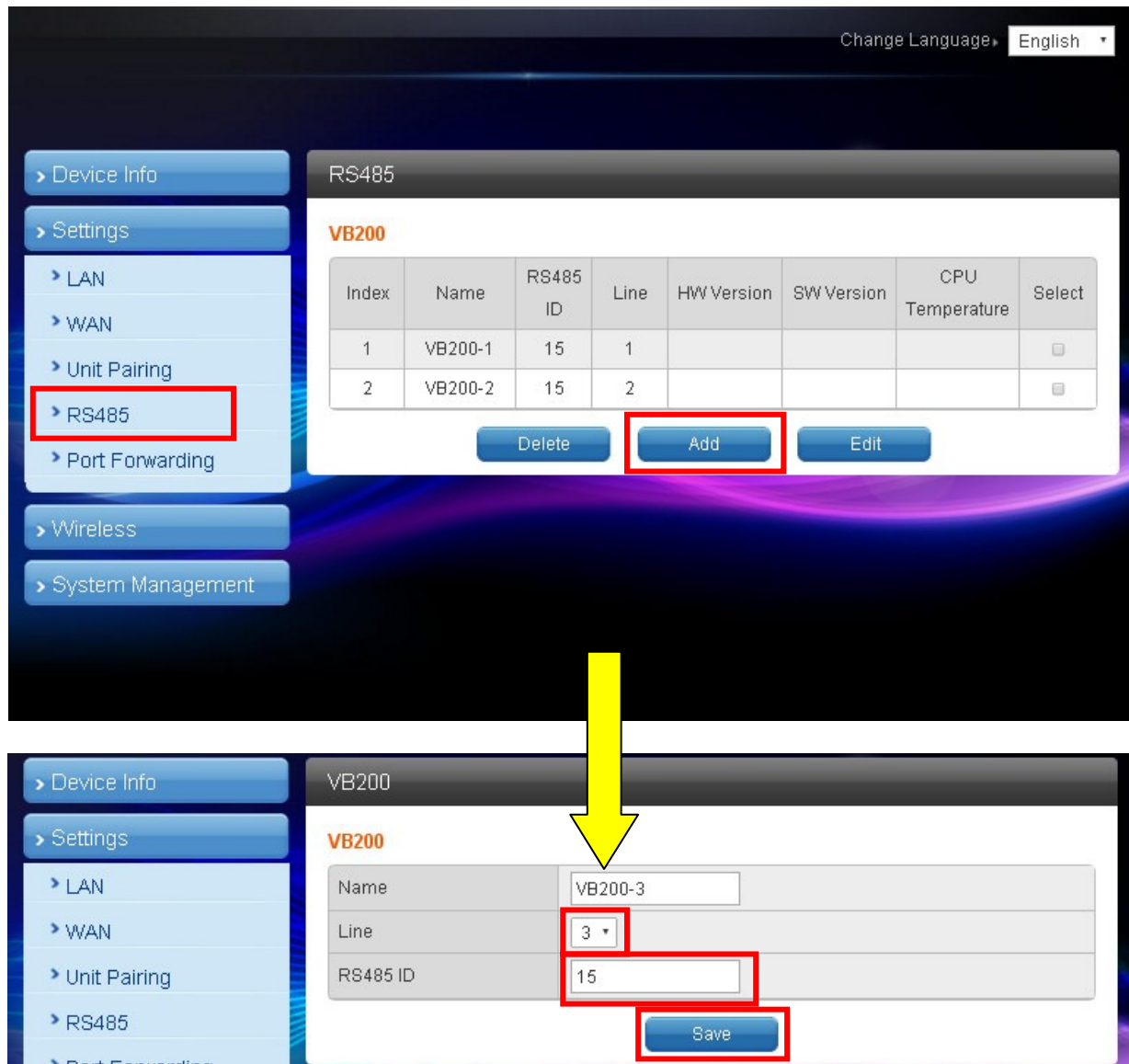
This portable vibration diagnosis instrument supports up to 4 magnetic VB-200ST(U)/VB-200SC for concurrent measurement, analysis, and diagnosis; see section "RS485 wiring" for its installation.

The VB-200 series vibration gauge comes with default value of RS485 ID at 15; one RS485 cable may connect one VB-200 series vibration gauge only; factory default of this portable vibration diagnosis instrument may connect two VB-200 series vibration gauge; please connect the latter to the 1st and 2nd RS485 port of AG-300 Plus2; the 3rd and 4th RS485 ports are reserved for expansion in the future; to connect 3 or more VB-200 series vibration gauge you need to add RS485 device in the management page first.

Connect only one VB-200 series vibration gauge in a RS485 port, otherwise the system may fail to identify individual gauge as each of them bears the same RS485 ID value of 15; please make sure only one VB-200 series vibration gauge is connected to one RS485 port to prevent setup confusion.

Please follow steps below to add the 3rd VB-200 series vibration gauge:

- In main menu on the left, click **[Settings]** → **[RS485]**.
- The VB200 page displays and click **[Add]** **option in it.**



- **Name:** "VB-200" or any name you like.
- **Line:** select line 3 ~ 4 (line 1~2 added by factory default).
- **RS485 ID:** please fill in a value compliant with your RS485 configuration (this system support RS485 ID in range of 0-15).
- Click [**Save**] button at bottom of page.



- To edit the settings of VB-200: check the [Select] column, click the [Edit] button, and the existing settings display for you to change.
- To delete settings of VB-200: check the [Select] column, click the [Delete] button to remove the VB-200 vibration gauge.
- To add VB-200 vibration gauge: click the [Add] button to add new VB-200 setup.

4. Wireless setup

Designed for e-gateway AG-300 Plus2 hardware, the "wireless setup" page contains options of WiFi mode, "Basic", "Advanced", "Security", and "Station list".



You may set WiFi mode into "Wireless AP mode" and "Wireless client mode".

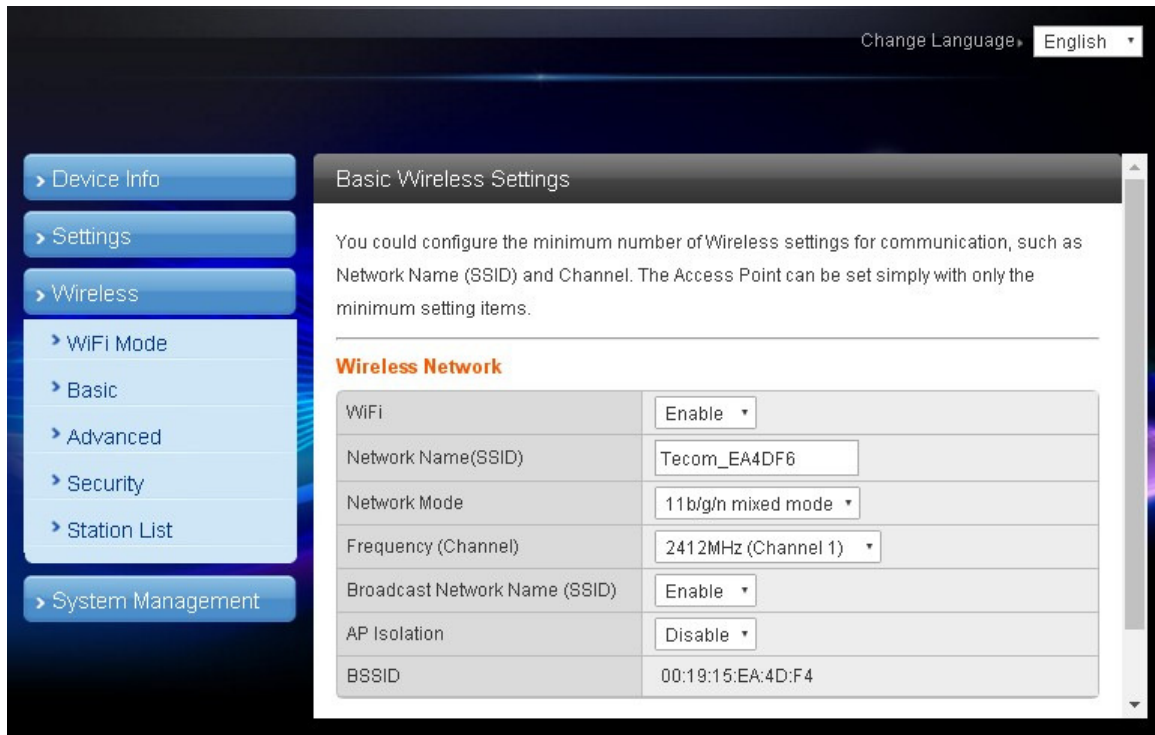
The wireless AP mode is an AP with gateway serving as WiFi access point.

The wireless client mode set the gateway as a client to connect to other WiFi AP.

4.1 The wireless AP mode configuration (WiFi mode setup)

4.1.1 Basic wireless settings

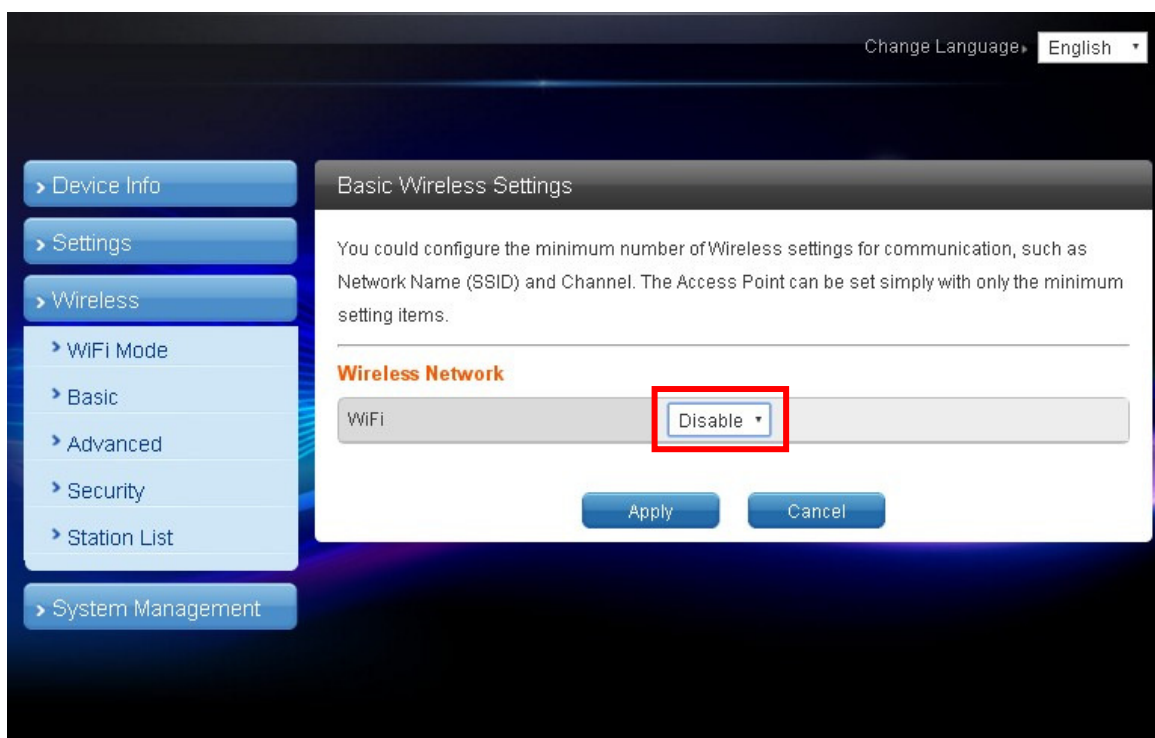
This option enables user to set up basic wireless communication parameters including network name and mode with WiFi function default to Enable. WiFi [Enable] page: see figure below:



The screenshot shows the 'Basic Wireless Settings' page in the device's web interface. The left sidebar contains navigation links: Device Info, Settings, Wireless (selected), WiFi Mode, Basic, Advanced, Security, Station List, and System Management. The main content area is titled 'Basic Wireless Settings' and includes a description: 'You could configure the minimum number of Wireless settings for communication, such as Network Name (SSID) and Channel. The Access Point can be set simply with only the minimum setting items.' Below this is a section titled 'Wireless Network' containing a table of settings:

Wireless Network	
WiFi	Enable ▾
Network Name (SSID)	Tecom_EA4DF6
Network Mode	11b/g/n mixed mode ▾
Frequency (Channel)	2412MHz (Channel 1) ▾
Broadcast Network Name (SSID)	Enable ▾
AP Isolation	Disable ▾
BSSID	00:19:15:EA:4D:F4

WiFi [Disable] page: see figure below:

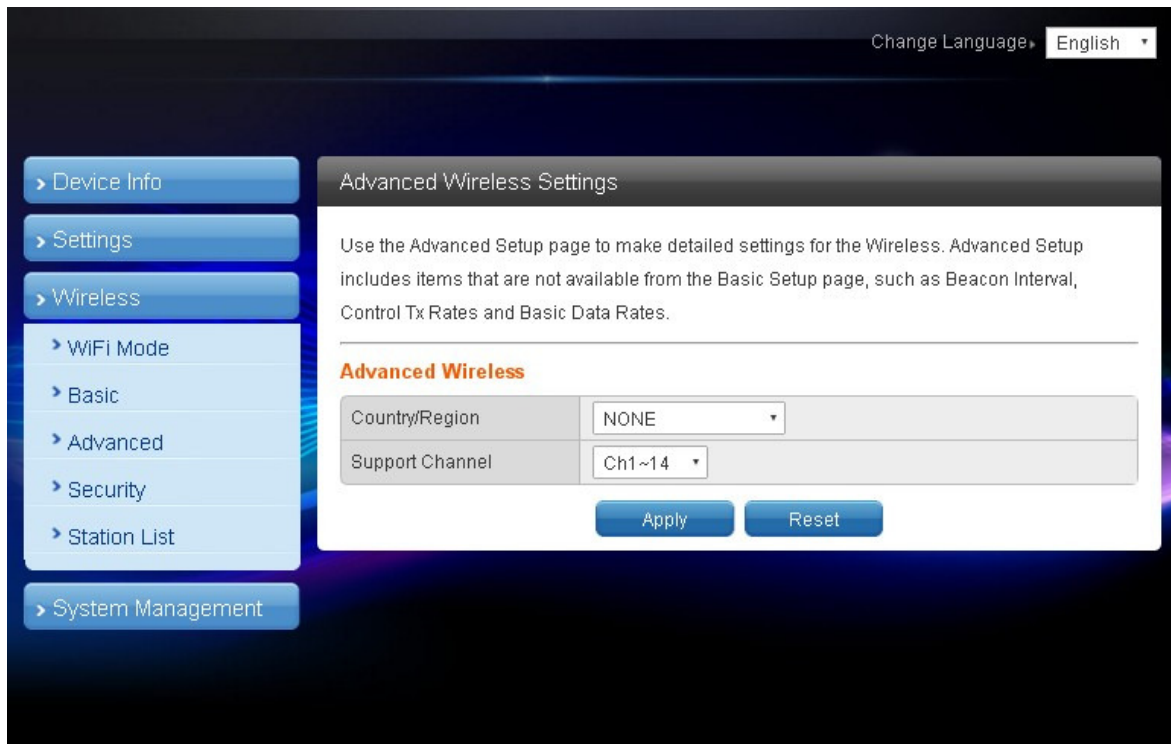


The screenshot shows the 'Basic Wireless Settings' page with the 'WiFi' setting changed to 'Disable'. The 'WiFi' dropdown menu is highlighted with a red rectangle. The 'Apply' and 'Cancel' buttons are visible at the bottom of the settings area.

Wireless Network	
WiFi	Disable ▾

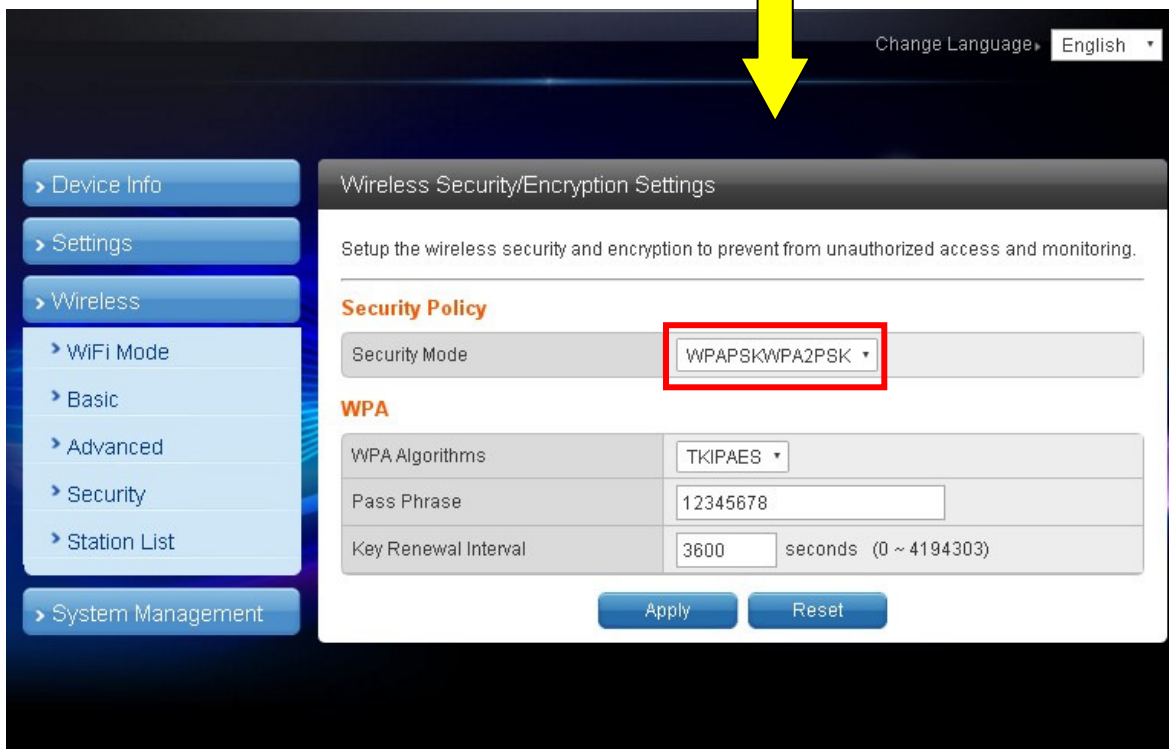
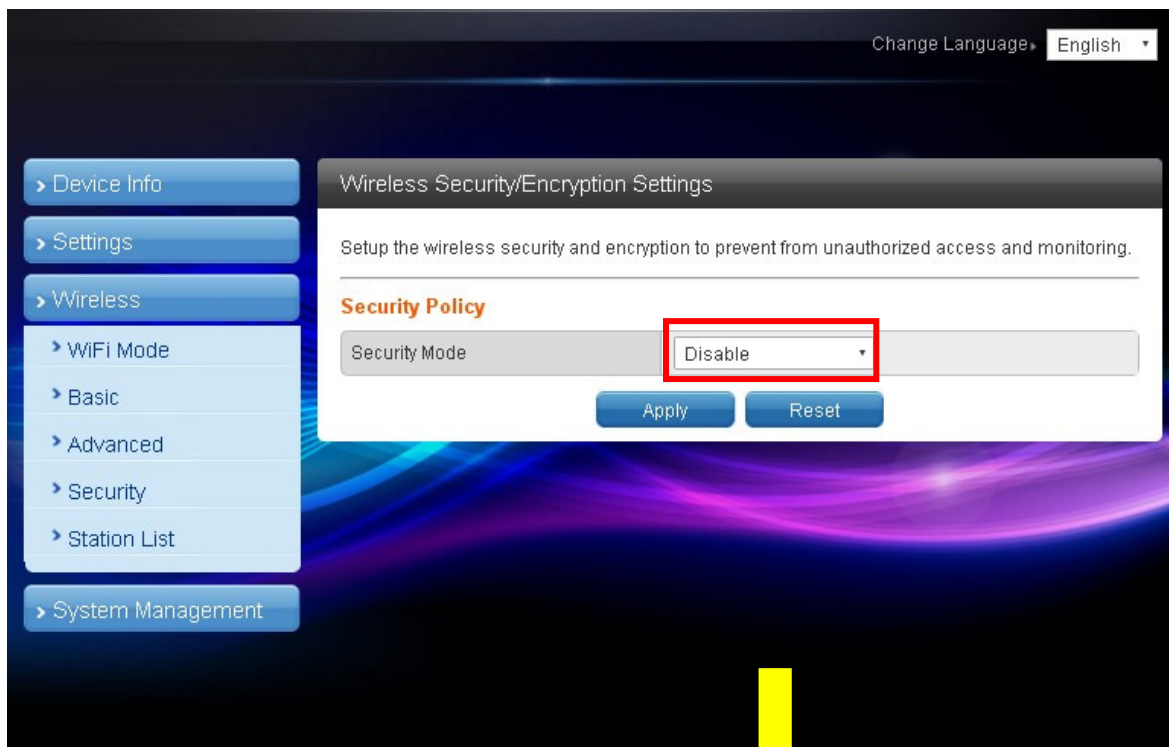
4.1.2 Advanced wireless settings

This option is aimed at setting up country/region and support channel with page as shown in figure below:

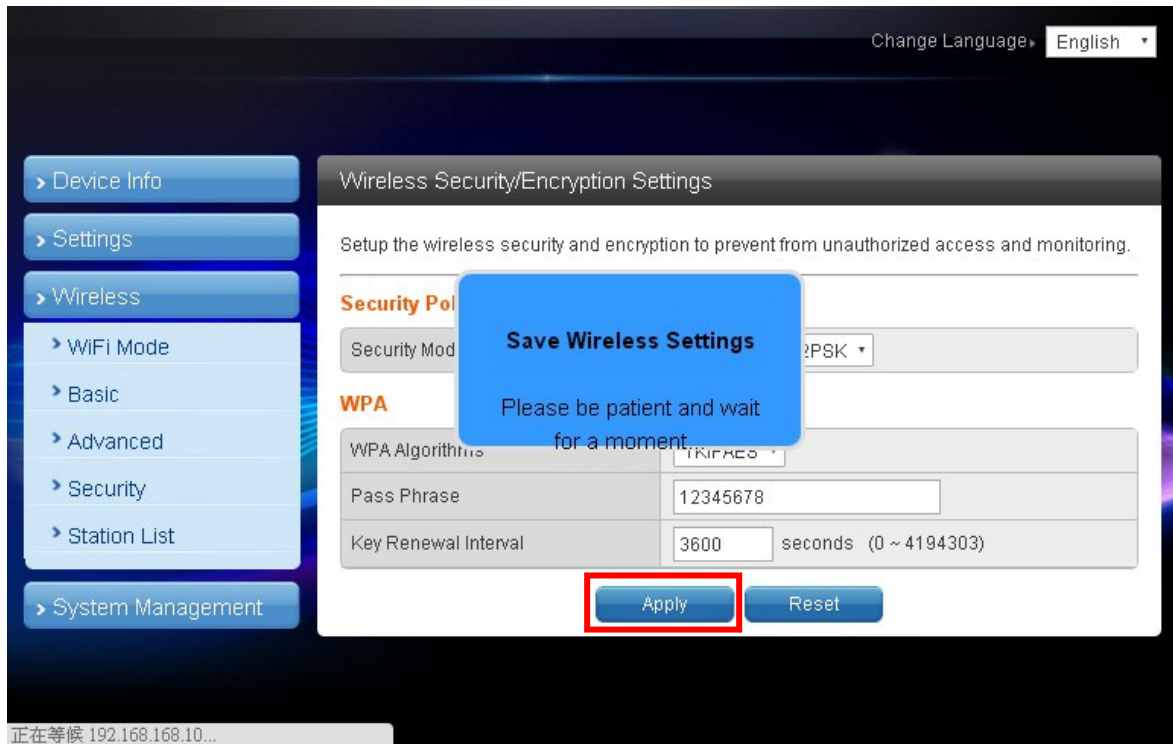


4.1.3 Wireless security/encryption settings

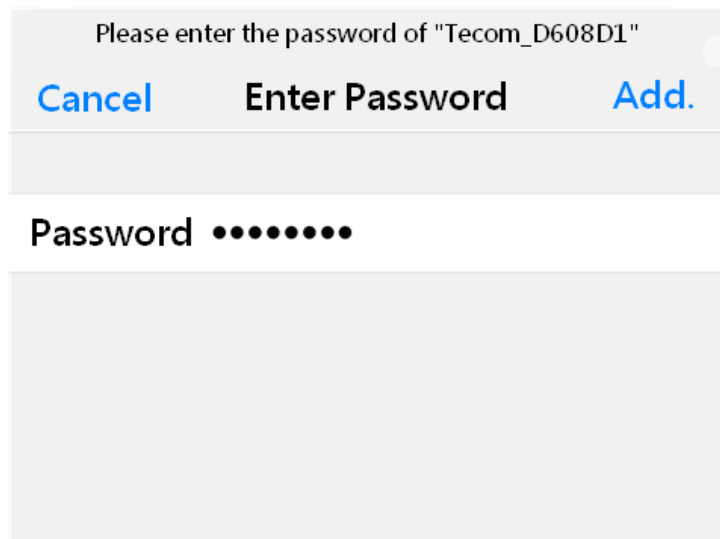
This option is aimed at setting up wireless security and encryption to prevent equipment access and monitoring without certification; available security modes are WPASKWPA2PSK and Disable with factory default set to the latter. See figure below for page of this option:



Set up WPA algorithm, pass phrase, and key renewal interval; once set up and saved successfully users are required to input pass phrase set up here to connect to WiFi.

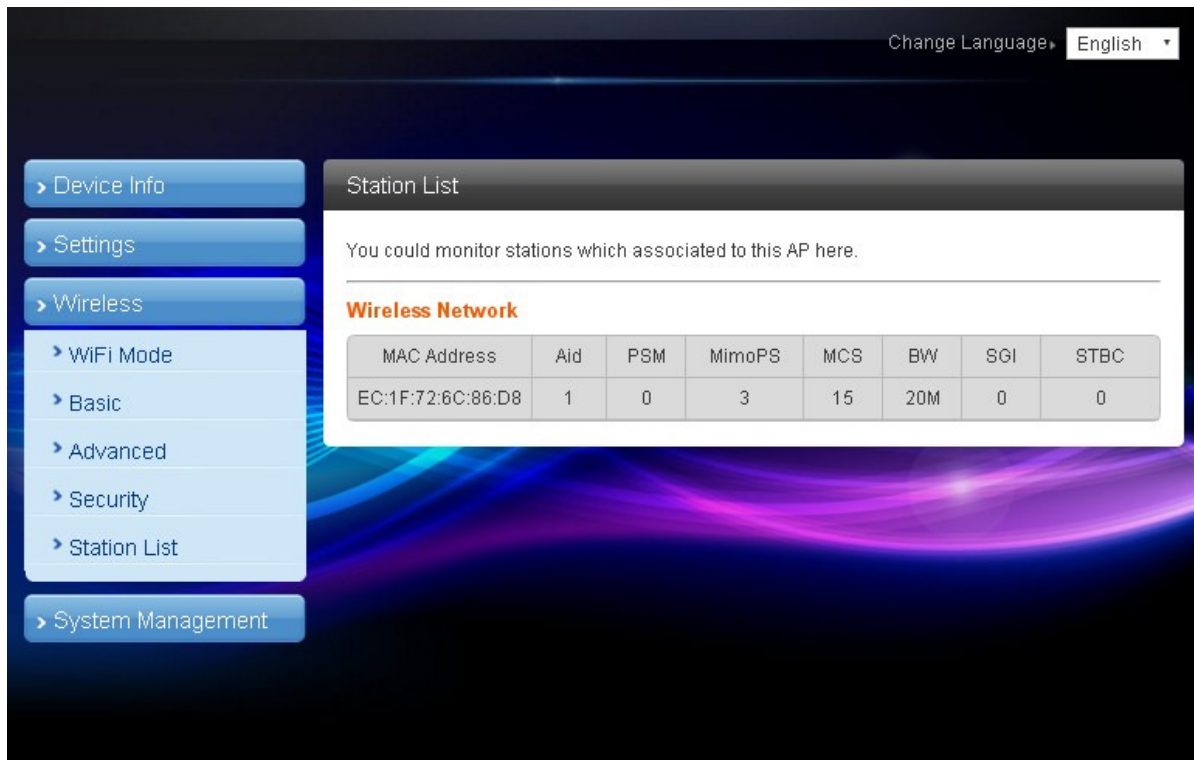


The client end is required to log in WiFi router of e-gateway AG-300 Plus2 with his/her smartphone:



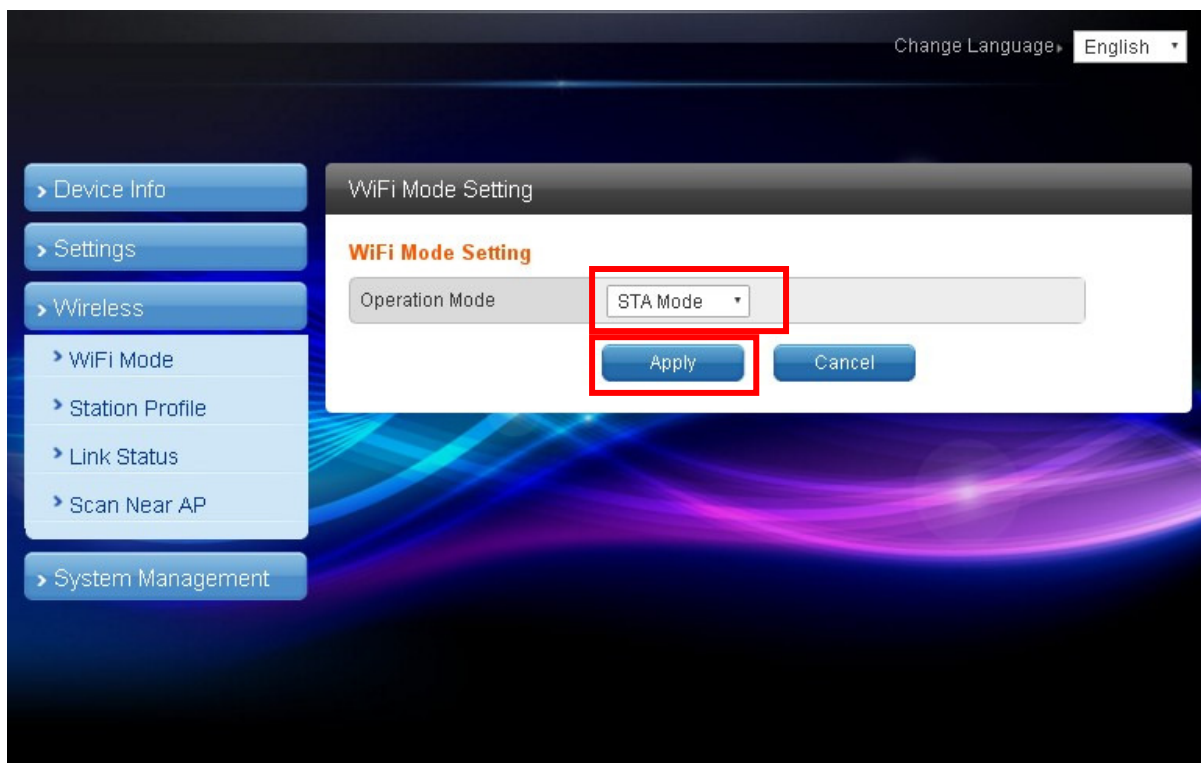
4.1.4 Station list

Users of this solution may monitor clients connected to AP.

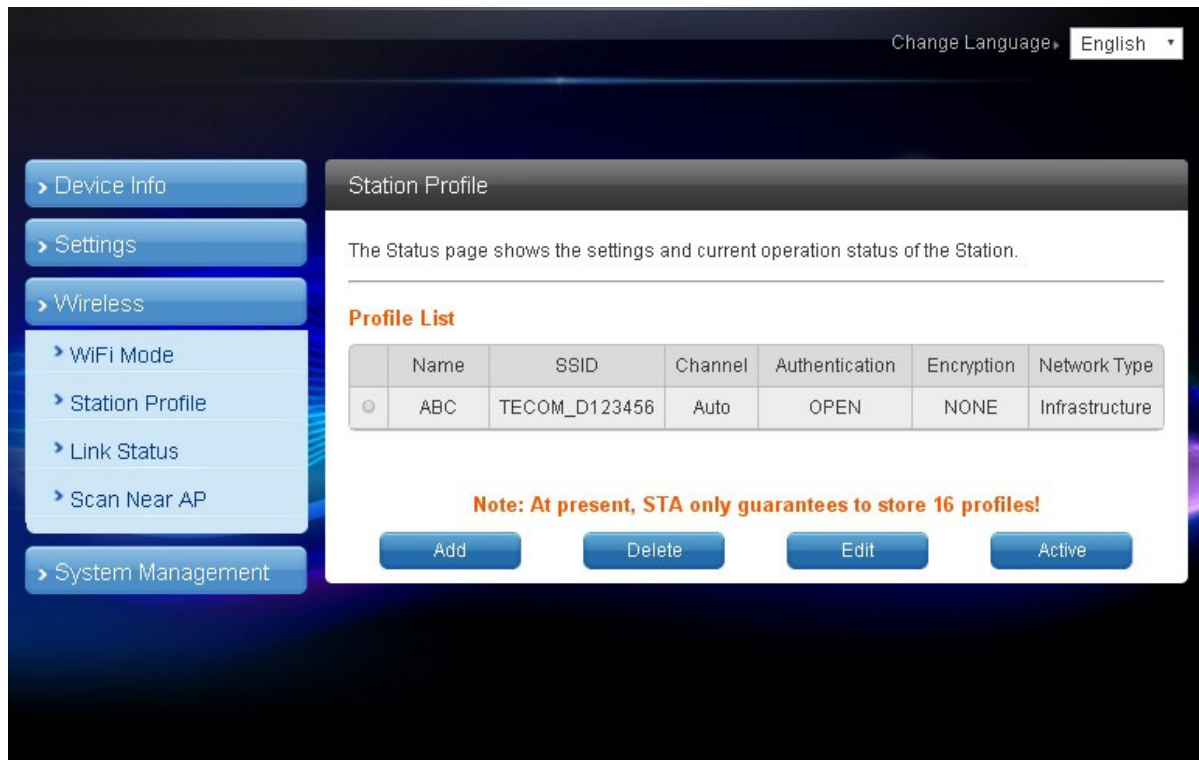


4.2 WiFi mode setting

Select STA mode and click [Apply] in the WiFi mode setting.



4.2.1 Station profile



Having a gateway as an ordinary client, this page displays information of APs saved in the gateway; you may add, delete, and edit information of desired AP; select an AP and click "Open", the gateway will then auto connect to the AP; even after gateway restart connection to pre-set AP will be established automatically.

Click the "Add" or "Edit" button and the AP data edit page displays.

4.2.2 Edit station profile

Change Language ▾ English ▾

▸ Device Info

▸ Settings

▸ Wireless

▸ WIFI Mode

▸ Station Profile

▸ Link Status

▸ Scan Near AP

▸ System Management

Edit Station Profile

System Configuration

Name	ABC
SSID	TECOM_D123456
BSSID	
Network Type	Infrastructure ▾
Power Saving Mode	CAM (Constantly Awake Mode) ▾
RTS Threshold	☐ Used 2347 (range 1 - 2347, default 2347)
Fragment Threshold	☐ Used 2346 (range 256 - 2346, default 2346)

Security Policy

Security Mode	OPEN ▾
---------------	--------

In most cases, users may change parameters of "Name", "SSID", "BSSID" and "Security policy" and leave default value of the others intact in the station profile edit page.

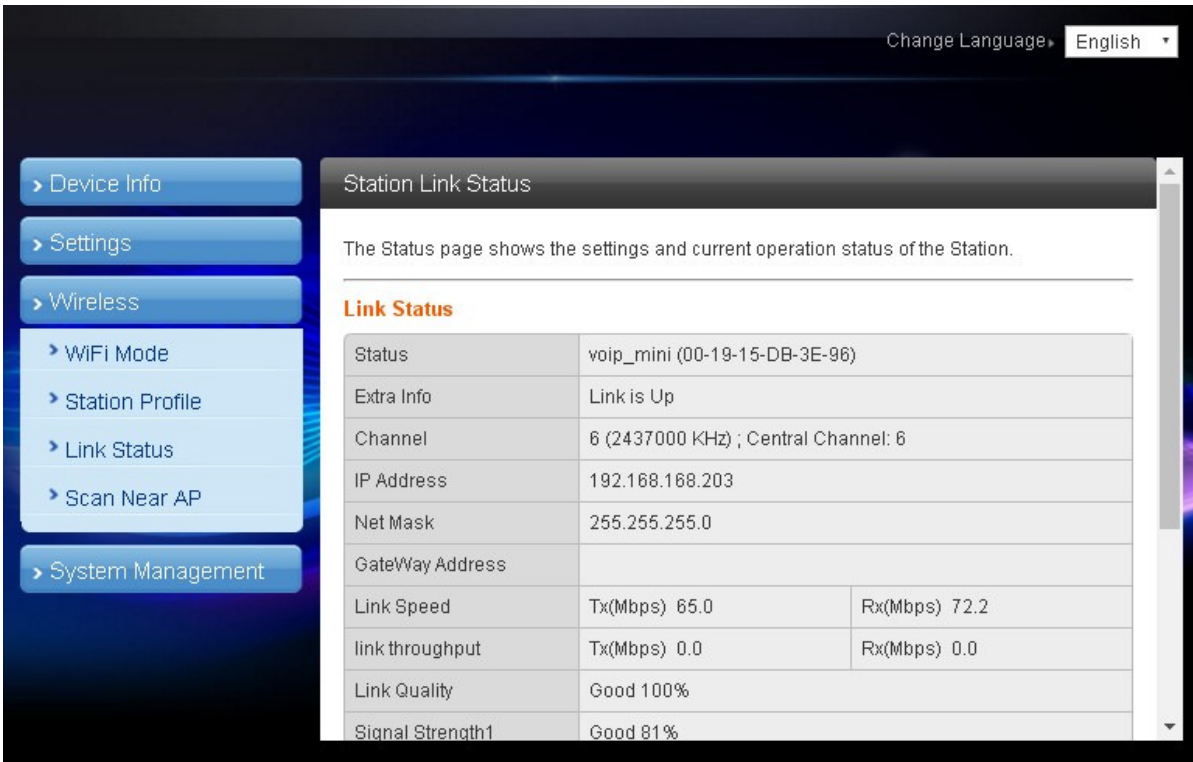
"Name": name of the profile

"SSID": name of AP

"BSSID": MAC address of AP

"Security policy": encryption mechanism of given AP

4.2.3 Station link status

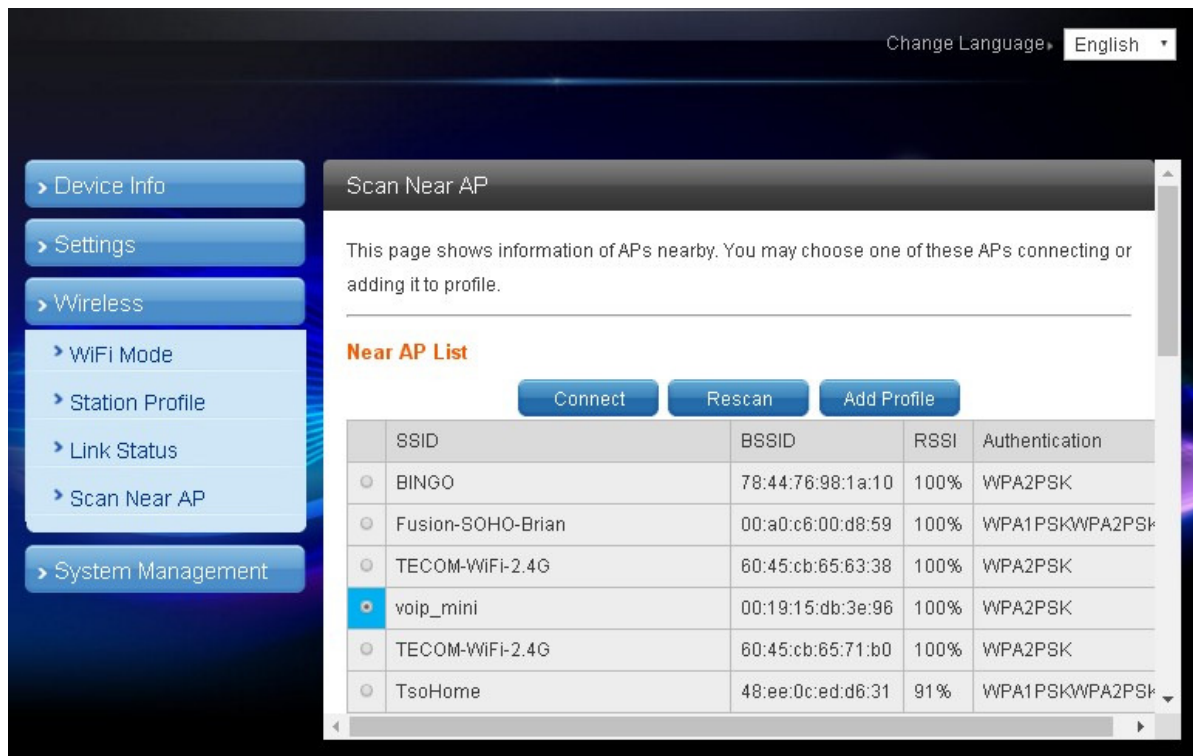


The screenshot shows the 'Station Link Status' page. On the left is a navigation menu with options: Device Info, Settings, Wireless (selected), WiFi Mode, Station Profile, Link Status, Scan Near AP, and System Management. The main content area has a title bar 'Station Link Status' and a description: 'The Status page shows the settings and current operation status of the Station.' Below this is a section titled 'Link Status' containing a table with the following data:

Status	voip_mini (00-19-15-DB-3E-96)	
Extra Info	Link is Up	
Channel	6 (2437000 KHz) ; Central Channel: 6	
IP Address	192.168.168.203	
Net Mask	255.255.255.0	
GateWay Address		
Link Speed	Tx(Mbps) 65.0	Rx(Mbps) 72.2
link throughput	Tx(Mbps) 0.0	Rx(Mbps) 0.0
Link Quality	Good 100%	
Signal Strength1	Good 81%	

Link information after gateway connected to AP is shown here.

4.2.4 Scan near AP



The screenshot shows the 'Scan Near AP' page. The navigation menu is the same as in the previous screenshot. The main content area has a title bar 'Scan Near AP' and a description: 'This page shows information of APs nearby. You may choose one of these APs connecting or adding it to profile.' Below this is a section titled 'Near AP List' with three buttons: 'Connect', 'Rescan', and 'Add Profile'. A table lists nearby APs with the following data:

	SSID	BSSID	RSSI	Authentication
☐	BINGO	78:44:76:98:1a:10	100%	WPA2PSK
☐	Fusion-SOHO-Brian	00:a0:c6:00:d8:59	100%	WPA1PSKWPA2PSK
☐	TECOM-WIFI-2.4G	60:45:cb:65:63:38	100%	WPA2PSK
☒	voip_mini	00:19:15:db:3e:96	100%	WPA2PSK
☐	TECOM-WIFI-2.4G	60:45:cb:65:71:b0	100%	WPA2PSK
☐	TsoHome	48:ee:0c:ed:d6:31	91%	WPA1PSKWPA2PSK

Scan gateway neighboring APs for information

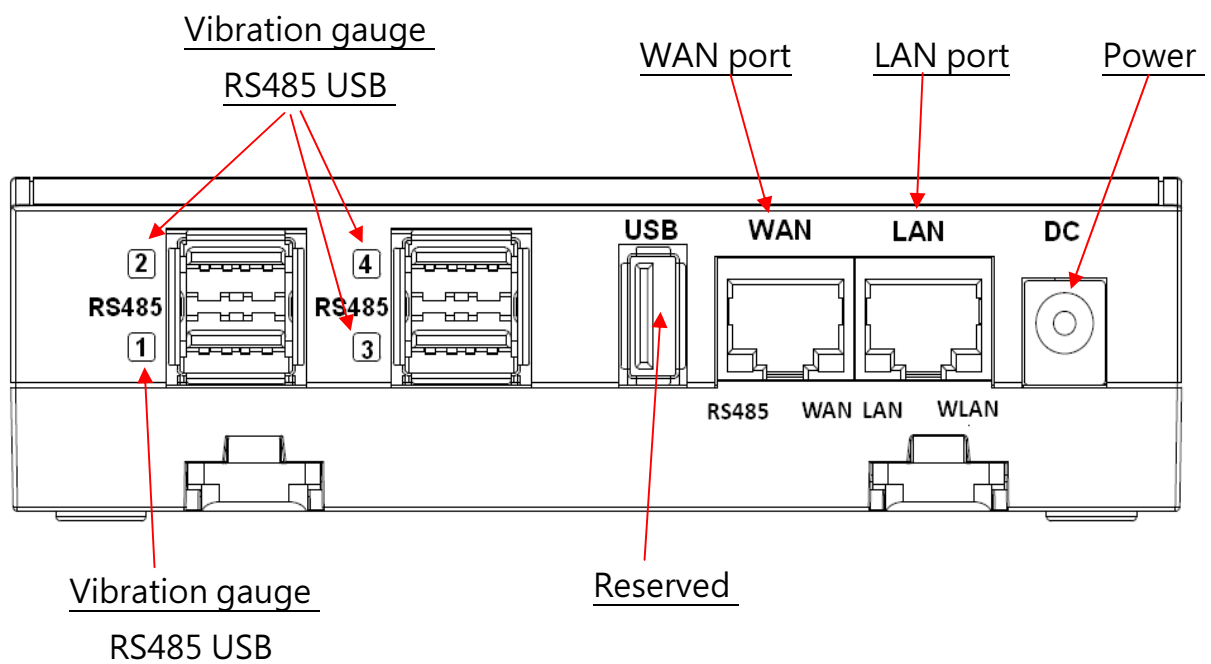
Click "Connect" to connect the AP; data of the latter are not saved (data lost after gateway restarted).

Click "Rescan to scan" neighboring APs once again. Scanning may fail to identify all APs when there are many available nearby; rescan couple of times may be needed in case like this.

Click the "Add profile" button to save AP data in station profile file.

5. Hardware setup

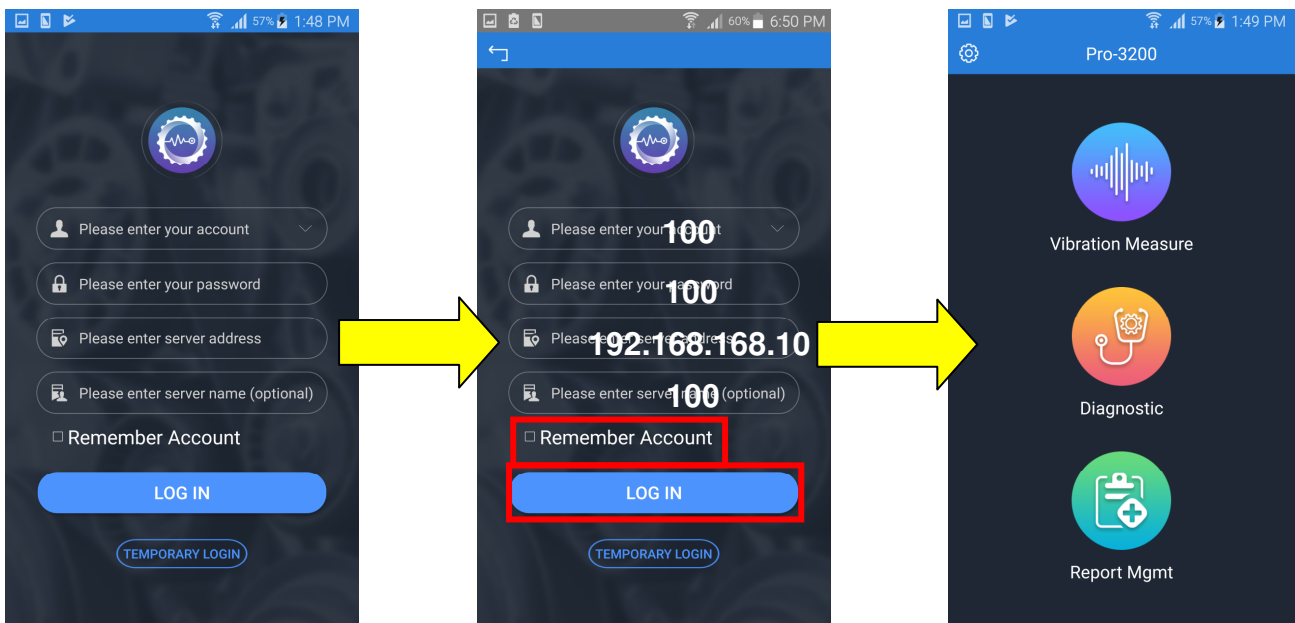
AG-300 Plus2 pins definition diagram



APP software operation

By following steps set in homepage of [Pro-3200 installation and measurement quick guide 1-2-3] users of this vibration diagnosis instrument may auto connect to it for instant operation data query and vibration diagnosis analysis and report without account setup and login. Follow steps below to set up your vibration diagnosis instrument for user account and server IP address.

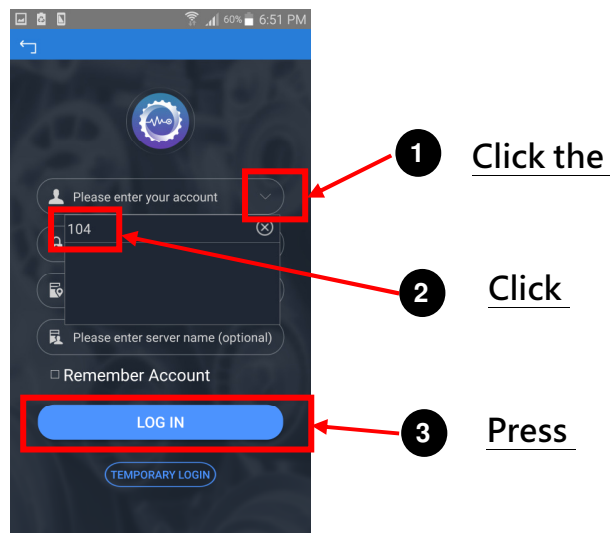
1. Open the [Vibration Diagnosis] APP on your smartphone
2. This vibration diagnosis instrument provides PnP quick online diagnosis; log in account 100~119 without other parameter settings as shown in figure below:



3. Input Account: 100, Password: 100, Address: 192.168.168.10, Name: 100 or custom values defined earlier; initial values of account, password, and name are set to be the same; the system comes with 20 accounts (100~119) for equipment pairing use.
 - **Account:** 100 (there are 20 accounts available with ID in range of 100-119).
 - **Password:** your personal password (better the same as account ID).
 - **Server IP:** the IP address or server ID set by AG-300 Plus2.
 - **Server name:** name of AG-300 Plus2 server.

4. Check [**Remember account**], press [**Log in**], and the vibration diagnosis instrument page displays.
5. Please follow APP wizard to execute the following vibration diagnosis operation:
 - (1) **Vibration measures:** select this option to monitor vibration readings of target E&M equipment; note that this is a pure monitoring function and without data saving.
 - (2) **Diagnosis:** Select this option for vibration measurement, analysis, and diagnosis with steps: [Input equipment data] → [Vibration measurement] → [Analysis diagnosis]; please follow APP wizard to get complete vibration analysis and diagnosis report.
 - (3) **Report management:** Access and manage reports provided by the system; distribute them to relevant personnel by email or communication software anywhere anytime.
6. If you have checked the [**Remember Account**] option, you may click the "V" icon on the right of account direct and fast login as shown in figure below:

Quick login step 1-2-3



7. Please check steps below if you failed to login:
 - (1) Is networking function of your smartphone enabled?
 - (2) Is network signal of smartphone in good conditions?
 - (3) Is AG-300 Plus2 powered on?
 - (4) AG-300 Plus2 **equipment pairing** set up?
 - (5) Is AG-300 Plus2 networking function in normal conditions?
 - (6) Is smartphone and AG-300 Plus2 WiFi [connected]?
-

Note: you may get Host ID on the AG-300 setup page once it is connected to external network.

In the main menu on the left, click [Device Info] → [Status Overview] option, to get Host ID in the System Info window.



TECOM Corp., Ltd

No.23, R & D Rd. II,
Hsinchu Science-based Industrial Park,
Hsinchu, Taiwan, 300
TEL: +886-3-5775141
FAX: +886-3-5776855
<http://www.tecom.com.tw>

Distributor

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This manual may be modified when necessary because of improvement of the product, modification, or change in specifications. This manual is subject to change without notice.
