VDU2506 Datasheet

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Product List

Item	Model Number	Number	Remark
UWB TWR ranging anchor	VDU2506	1 pcs	
5V2A 5V 2A DC Power Adapter	TBD	1pcs	Optional

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Content

1 .Product Induction

VDU2506 is an UWB anchor based on TWR high precision ranging. It can receive tag broadcast package to calculate the distance and send command to tags at the same time, making it easy for bi-direction alert, electrical fence and distance keeping function, etc.

VDU2506 can be perfectly integrated with the indoor environment with white curved shell design. Its unique waterproof structure fits outdoor environment as well.

Figure 1.1 VDU2506 outlook

VDU2506 use 2 stage of Power Amplifers and single stage Low Noise Amplifer to enhance the transmit and receive performance. The coverage of VDU2506 can be more than 500 meters ranging with tags that using 2 stage PA or with another VDU2506. And the static precision is 0.3m in CEP95 condition.

VDU2506 support multiple power supply ways. Power over Ethernet way can reduce construction difficulty; DC 5V 1A power supply and WiFi network can reduce the network wiring cost; Also, the internal PCBA reserves 2-pin-2.54mm-pitch-JST battery connection interface for Li-battery power supply. And it can charge the battery with up to 800mA current, which is convenient to continue working in case of power failure.

VDU2506 supports up to 64GigaByte SD card(or TF card) conforming to the standard of SD-XC (Class 10) protocol, so that offline data storage(like history distance trajectory) can be restored for long time when the network is disconnected.

The application of VDU2506 is wide, both in indoor and outdoor ranging and position. And the TWR way can shift easizily from one dimension ranging to two dimension positioning. It can be used in construction sites, coal yards, mines, tunnels and other places to range and locate personnel and vehicles.

VDU2506 PCBA support UART to USB transfering for debug use. It support TTL to UART 485 transfering for industrial machines. It also support WiFi and Ethernet connection to TCP/IP or UDP server, making it easy to build a TWR positioning system. The PCBA can be directly installed to customer's machine, and support secondary development. We can supply 4.3 inch display screen and its demo software(not free). And we also supply 2 ranging module by overlaying anothor PCBA on VDU2506 PCBA and its demo software. In this way the stablity can be enhanced or the tag's direction can be determined.
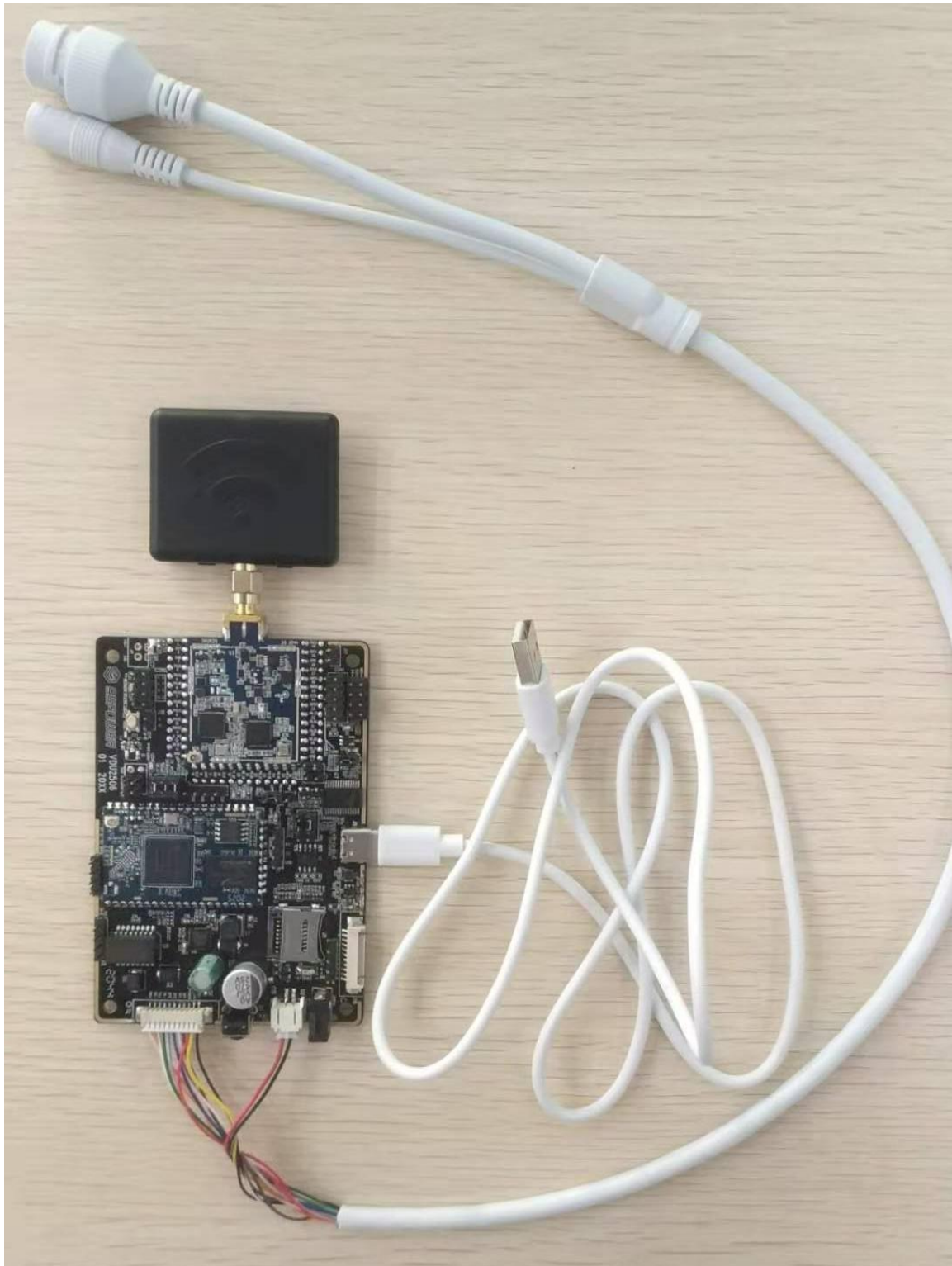
Figure1.2   VDU2506 PCBA

2.Basic parameters

Power Supply	
POE	POE 48V
DC Power Adapter	Input: DC 5V 2A
Battery supply	Li+ rechargable Battery 3.4~4.3V，charge current 800mA
UWB	
Supported protocol	IEEE802.15.4-2011 UWB
Frequence	Default 3.9936GHz(with PA) support all channels ch1-5(Without PA)
Tx POWER	Max 21dBm @CH2(Double PA)
Rx Sensitivity	-105dBm @110Kbps
Data rate	Default 6.8Mbps，support 110Kbps，850kbps
Data storage	Support data storage without network
WiFi	
Wifi Protocol	IEEE 802.11n, IEEE 802.11g, IEEE 802.11b
Data rate	IEEE 802.11 b Standard Mode: 1,2,5.5,11Mbps
	IEEE 802.11g Standard Mode: 6,9,12,18,24,36,48,54Mbps
	IEEE 802.11n : 72Mbps @ HT20　　150Mbps @ HT40
Rx Sensitivity	HT40 MCS7 : -70dBm@10% PER(MCS7)
	HT20 MCS7 : -73dBm@10% PER(MCS7)
	54M: -77dBm@10% PER
	11M: -89dBm@ 8% PER
Tx Power	IEEE 802.11n: 14dBm @HT40 MCS7　　15dBm@HT20 MCS7
	IEEE 802.11g: 15dBm
	IEEE 802.11b: 18dBm
Wireless security	WPA/WPA2, WEP, TKIP, and AES
Workig mode	Bridge、Gateway、AP Client
BLE	**Default off 30s after power on**
Supported Protocol	BLE4.2

	802.15.4
Frequency	2400MHz-2483.5MHz
Tx POWER	-20~+4dBm in 4dB step
Rx Sensitivity	-96dBm
Positioning performance	
Accuracy	<30cm
Anchor distance	Default <200m, <500m if using tags with double PA
Data uploading	100M Ethernet WiFi 2.4G
Environment	
Op. temperature	-20℃~70℃
Storage temperature	-40℃~85℃
Waterproof	IP67
Dimension	178.0mmx94mmx58.0mm±2mm

3. Product Dimension
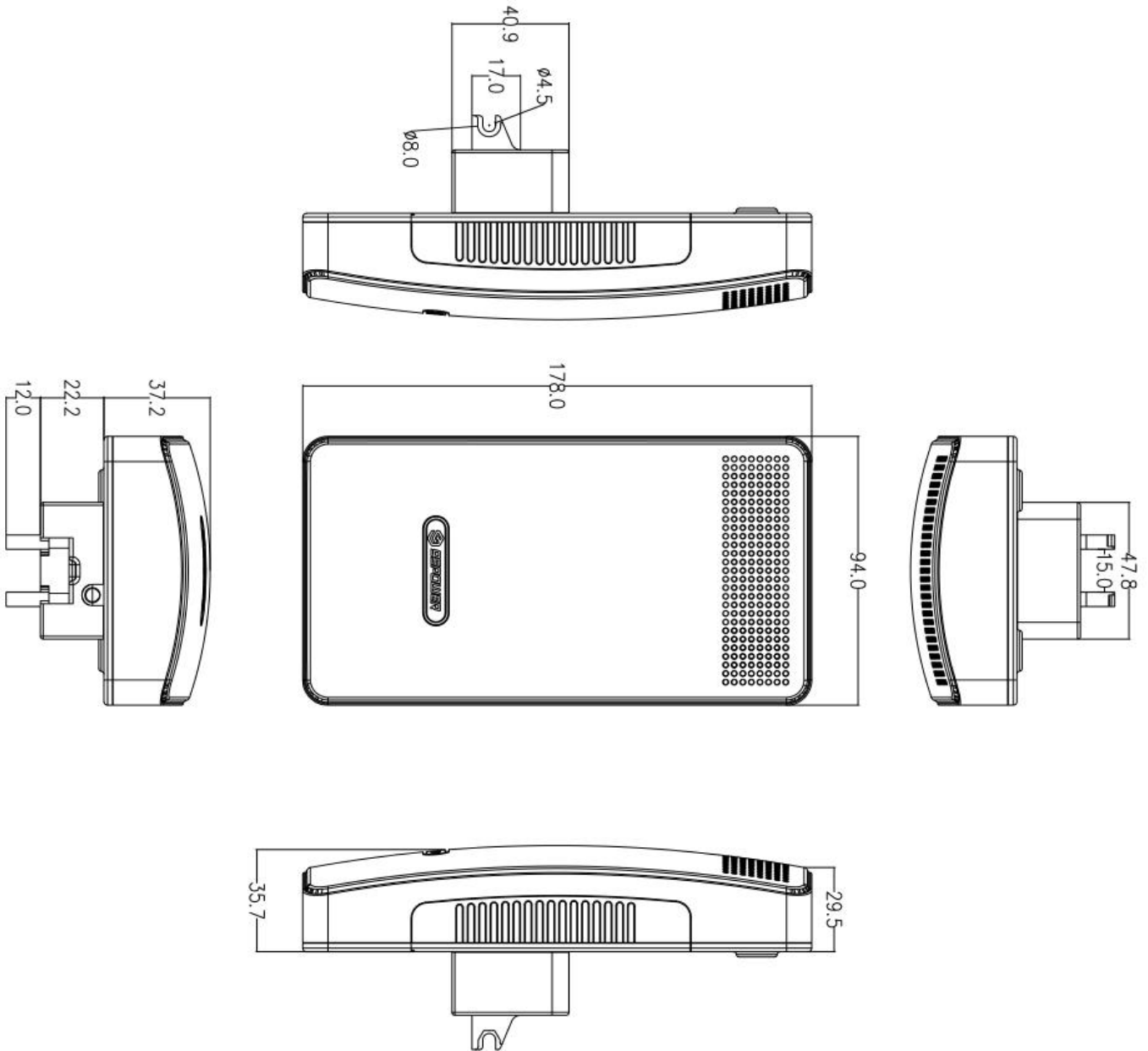
Figure 3.1 Main Body Size (Unit mm)
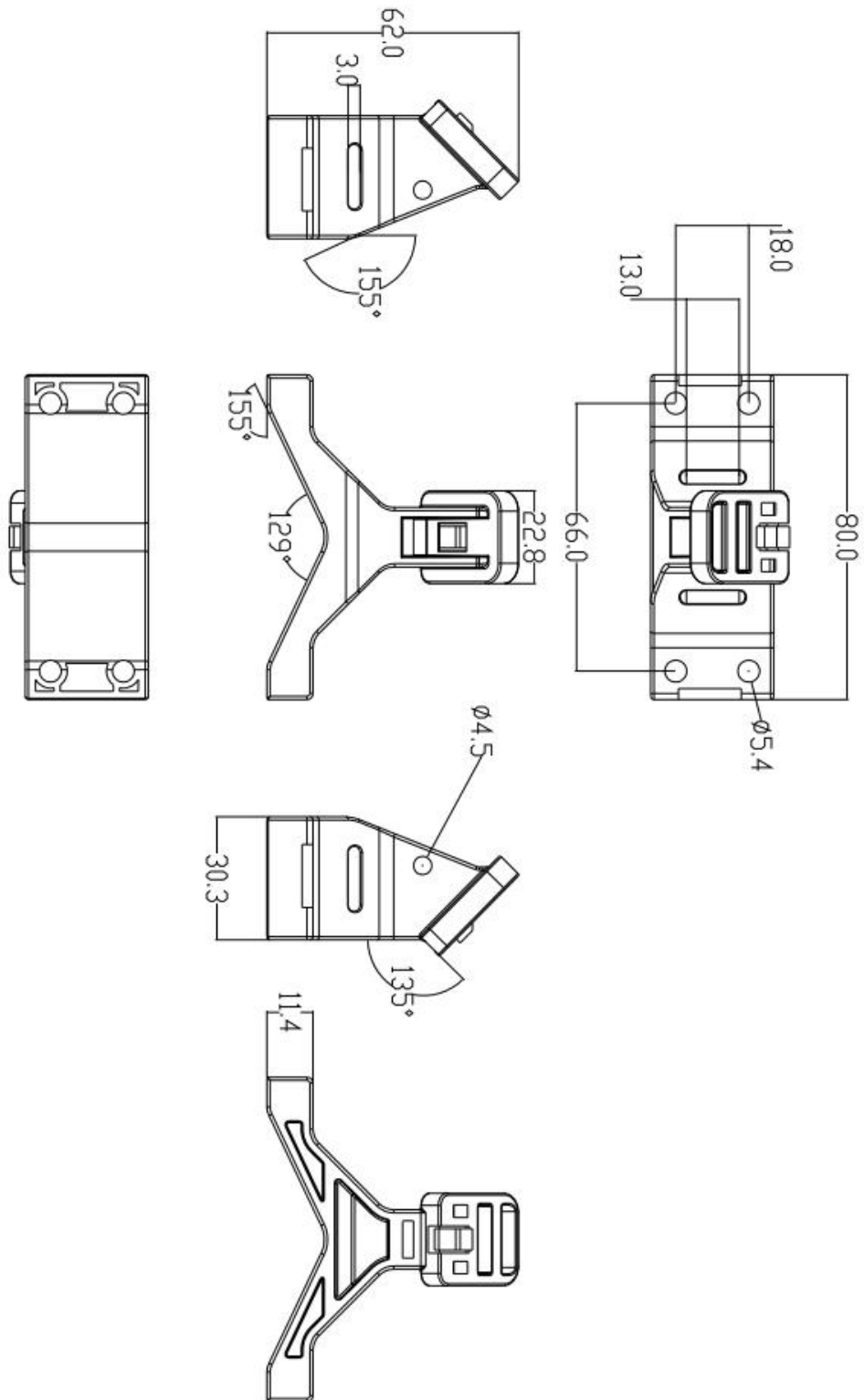
Figure 3.2 Holder Size

4. Installation

Anchor needs to be installed more than 2.5m off the ground. And the anchor distance is relevant with tags' and anchors' broadcasting power. Single stage PA with max gain support max 200m distance. Double stage PA with max gain support max 500m distance.
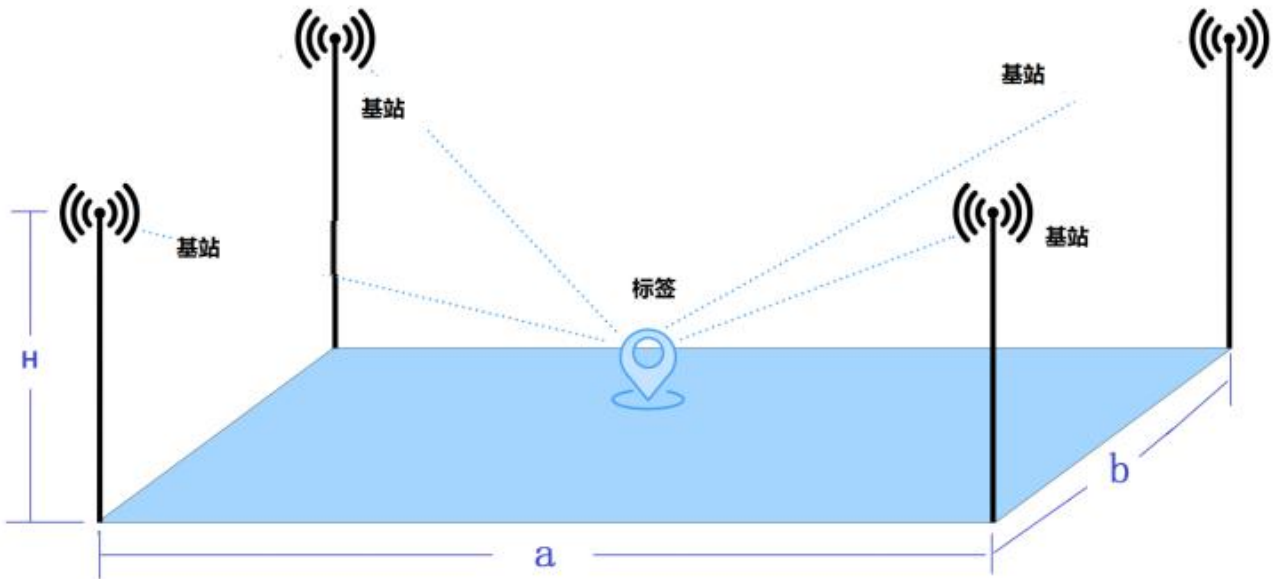
Figure 4.1 Anchor installation location and tag's best position area

Basic Requirement： 1m<a<200m ,1m<b<200m ,3.5m> H>2.5

Note that the anchor should keep more than 15cm away from ceilings or walls

 Install steps：

（1）Using the expansion screws and fix the holder on the wall (You can change the screws depend on the wall material).

Screw pack   Holder
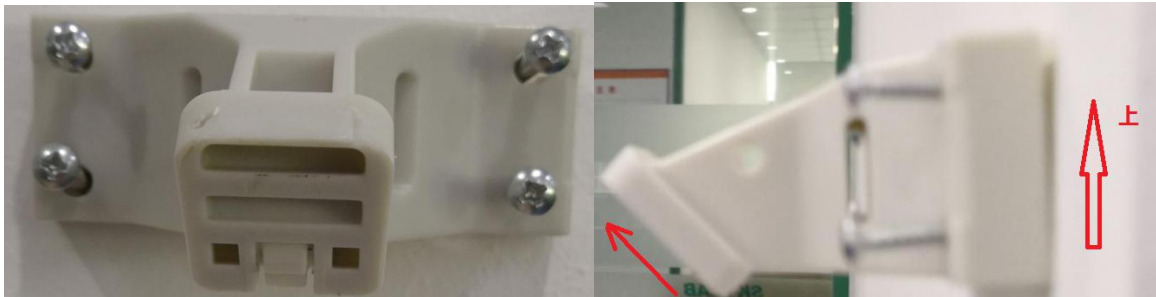
（2）For cylinder install, please thread the hold hoop through the oval groove of the holder as shown in the figure.

(Note:Hoop length depending on the cylinder diameter, and the thickness should be less than 3mm, width should be less than 13mm)

(3) After fixing the holder, put the anchor stuck to the holder from top to bottom

（4）After installing the anchor, plug the DC 5mm power adapter or POE netcable. If the signal LED light as the right figure , the anchor start to work normally.

5. Configuration

5.1network topology

5.1.1Access through the superior routing network segment

In the Gateway mode of VDU2506, the only network port is WAN, PC and VDU2506 connect the same superior route, access VDU2506.

VDU2506 works in AP Client mode, where the PC accesses VDU2506 by net-cable connection directly .

The following figure is the topology of the network connection. The WAN port of VDU2506 is connected to the ROUTER's LAN port, and the PERSONAL PC is also connected to the router's LAN port or wireless hotspot. At this point, the management interface of VDU2506 can be accessed through the browser on the PC.
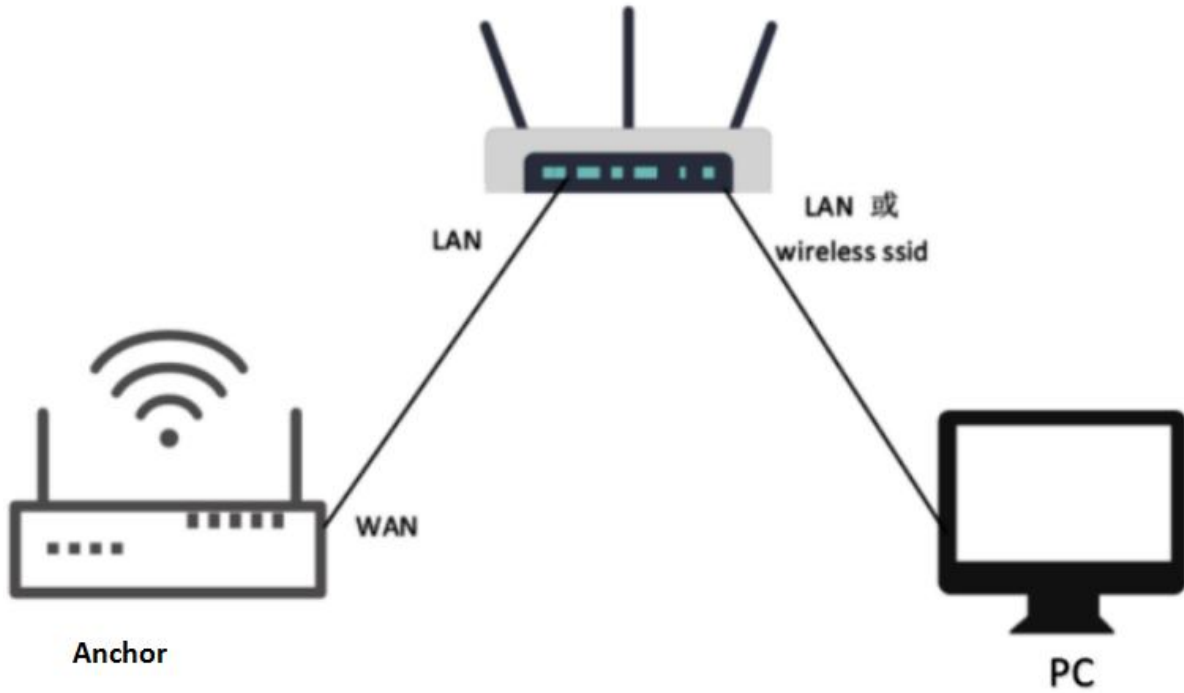
Access through the superior routing network segment

It is assumed that the IP address assigned to VDU2506 by the router is 192.168.0.106, and the IP assigned to THE PC is 192.168.1.118. At this time, the browser can access 192.168.0.106 on the PC, and the Web authentication interface of VDU2506 can be entered.As shown in the figure below
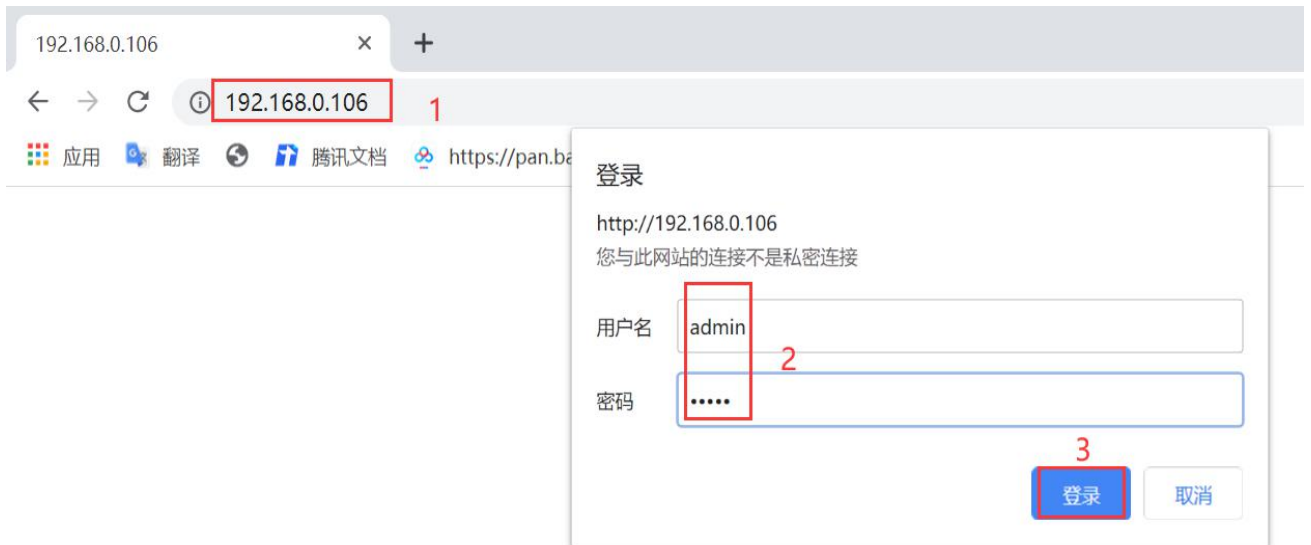
The password of VDU2506 is admin/admin.

5.1.2 Connect via LAN

VDU2506 in Gateway mode, the PC accesses the WIFI module through the WIFI hotspot of VDU2506.

VDU2506 In AP-CLI mode, THE PC can access the WIFI module through the WIFI hotspot of VDU2506 and the unique network port.

After connecting to VDU2506 in the above way, VDU2506 will assign the IP address to the PC.Users can log in to the administration interface of VDU2506 on a PC by accessing the gateway IP.The default IP address network segment is 10.10.10.0/254. Assuming that the user has not modified the IP network segment of VDU2506, then the user can go to the management interface of VDU2506 through the browser on the PC at 10.10.10.254.
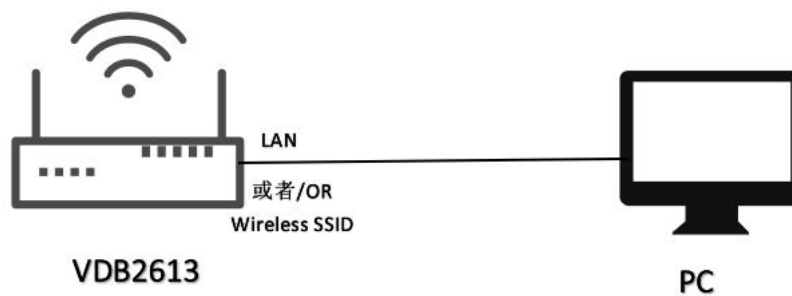
Access via VDU2506 LAN

The following is a screenshot of the access on PC:
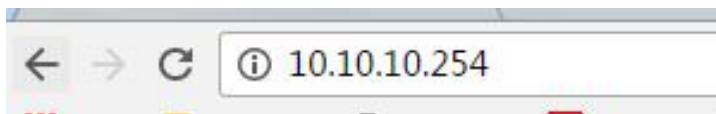
5.2 Wan configuration

5.2.1 Wan port access to the Internet

（1）The system works in gateway mode by default;

Note: Click Save, the configuration can be saved, but it will not take effect immediately. It can be determined once the system is configured.

Click "OK", it will take effect immediately, the network will restart, need to wait for the network recovery;

（2）Wan for dynamic address allocation;

（3）Check the status

5.2.2wireless internet

（1）The system mode is configured as APCLI mode. Follow the operation as shown in the figure below and click "Save" to refresh

（2）The WAN is configured for dynamic address assignment;

（3）Configure superior AP information;

5.3LAN configuration

5.3.1Change the LAN IP address

The default LAN segment of VDU2506 is 10.10.10.254/24. Customers can modify the LAN IP address according to their needs. The following steps are described:

（1）Follow the steps below;

（2） After the IP address is modified, the network will restart. If the WIFI hotspot is used to connect, the network may be disconnected. Connect to the hotspot again and use the newly set IP address to access the module.

5.3.2 Add LAN segment

Lan2 can be added to LAN segment in VDU2506. Lan2 is not enabled by default.

（1）Follow the steps below to set up LAN2

（3）After lan2 is set up, the user can set the static IP for the network segment and communicate with the set through lan2's IP access gateway.
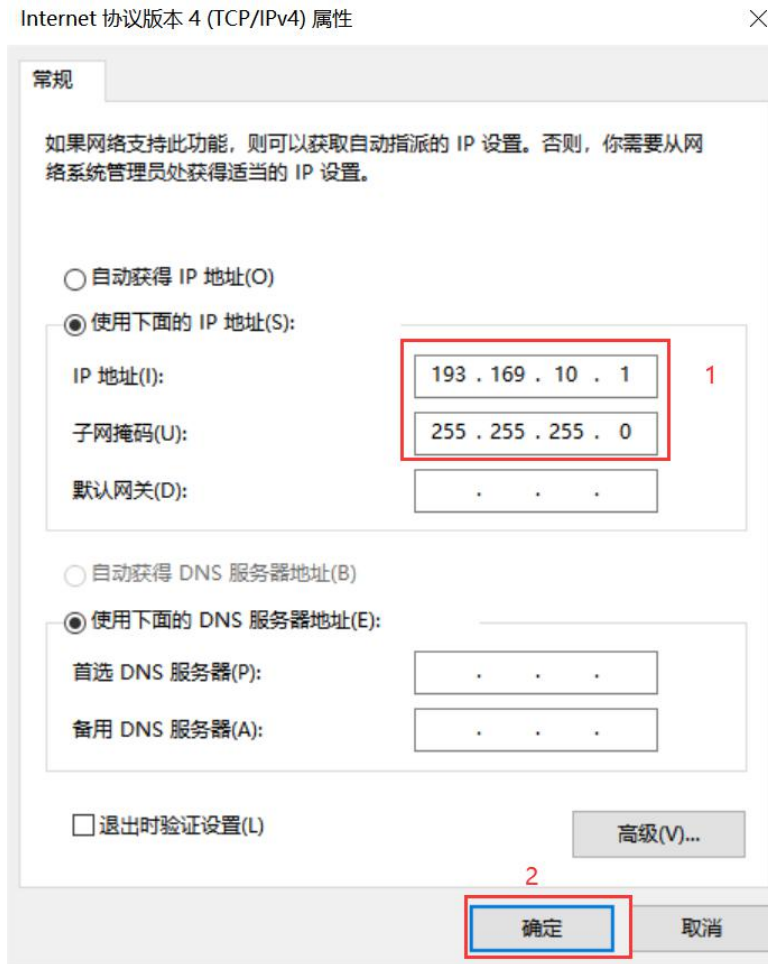
5.3.3 configuration DHCP

VDU2506 supports users to modify various DHCP parameters, including starting IP, ending IP, IP address lease time and other parameters, and also supports users to turn off DHCP function and use static IP connection.

（1）The following steps are to close the DHCP service

Here are the steps to set the DHCP server parameters:

（1）Set according to the steps shown in the diagram

5.3.4 Bind IP address

In the debugging process, when the server side is simulated on PC for testing, the IP address of THE PC can be bound so that the IP address of the server can be fixed during the test.

（1）You can first check the DHCP list of VDU2506 and copy the MAC corresponding to PC.The following is the steps to view the DHCP list:
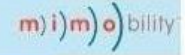
（2）Bind THE IP address of PC through the following method. After binding, the PC is connected to VDU2506, and the IP obtained is the binding IP address.

5.4 Wireless parameter configuration

5.4.1

Modify WIFI hotspot name and set fixed channel

5.4.2 Set hotspot encryption/unencryption

Here is the step-by-step diagram for setting up an open hot spot:

Here is the configuration diagram for setting up a password connection:

6、 Server information configuration

The user can configure the server address and port information through the Web interface, which requires VDU2506 to be accessible.In addition, the default Internet access mode of VDU2506 is UDP protocol. In the Web

interface, you can customize the communication protocol, and the optional protocol is TCP/UDP/MQTT.The configuration method is as follows:

6.1 Configure for TCP protocol communication

The configuration is the communication mode of TCP protocol. The configuration screenshot is as follows

6.2 It is configured for UDP protocol communication

The configuration is UDP protocol communication. The configuration screenshot is as follows:

6.3 Configure for MQTT protocol communication

7.System management configuration

7.1 Set up the WEB interface display

　　VDB2613 web pages support simplified Chinese, traditional Chinese, English display, default for simplified Chinese display.Customers can switch the displayed language according to their needs. The operation steps are as follows:

（1）Select the language to be switched. Take Switching to English as an example. In figure 2, select English.

（1）Check the switching effect
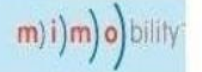
7.2 factory data reset；restore factory setting

If you need to restore factory Settings, please follow the steps shown below.
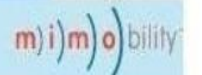
7.3 Restart the system

Here are the steps to restart the system

7.4 upgrade system

WIFI firmware can be upgraded through the Web interface. The upgrade steps are as follows:

（1）After clicking 2 in the figure below, select the firmware you need to upgrade locally. When you confirm, a prompt of 3 appears and click OK to start the upgrade.

（2）During the upgrade process, a prompt as shown in the figure below will appear. Do not power off until the prompt disappears. At this point, power off may cause the module to be upgraded to brick

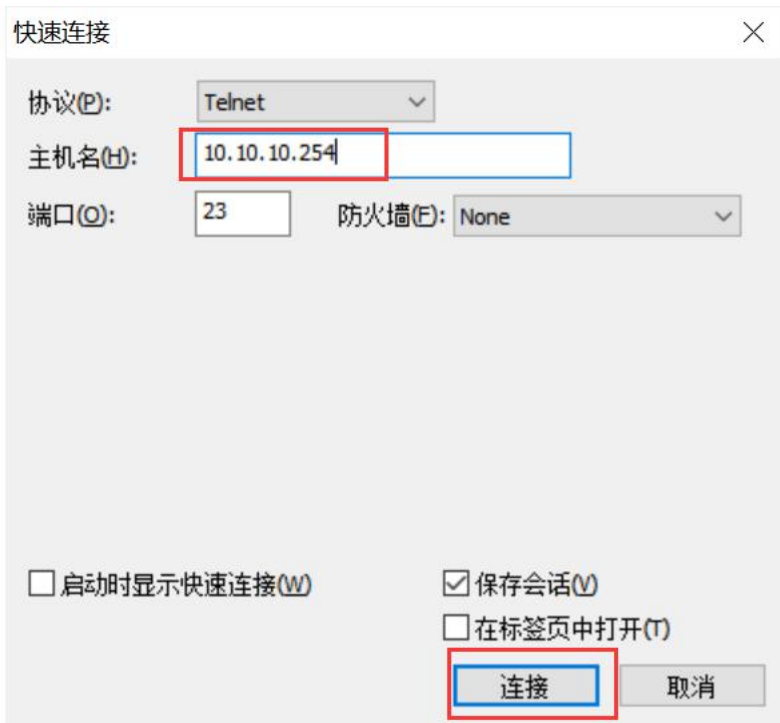（3）After the successful upgrade, there will be a prompt to restart the system, as shown in the figure below.

7.5 Telnet test management

The following describes the process of configuring Telnet using the SecureCRT tool.

（1）Select Telnet protocol, host name 10.10.10.254, port default 23;

（2）After entering the administrative terminal, use the command detection

```
✔ 10.10.10.254 (6)                                                          ◁

BusyBox v1.12.1 (2020-09-07 19:21:03 CST) built-in shell (ash)
Enter 'help' for a list of built-in commands.

# ping 10.10.10.100
PING 10.10.10.100 (10.10.10.100): 56 data bytes
64 bytes from 10.10.10.100: seq=0 ttl=128 time=4.900 ms
64 bytes from 10.10.10.100: seq=1 ttl=128 time=5.600 ms
64 bytes from 10.10.10.100: seq=2 ttl=128 time=4.100 ms
^C
--- 10.10.10.100 ping statistics ---
3 packets transmitted, 3 packets received, 0% packet loss
round-trip min/avg/max = 4.100/4.866/5.600 ms

# █



就绪                    Telnet        16. 3   24行. 80列  VT100            大三 数字
```

8 Package

基站 VDU2506

外箱尺寸: 535*400*285mm
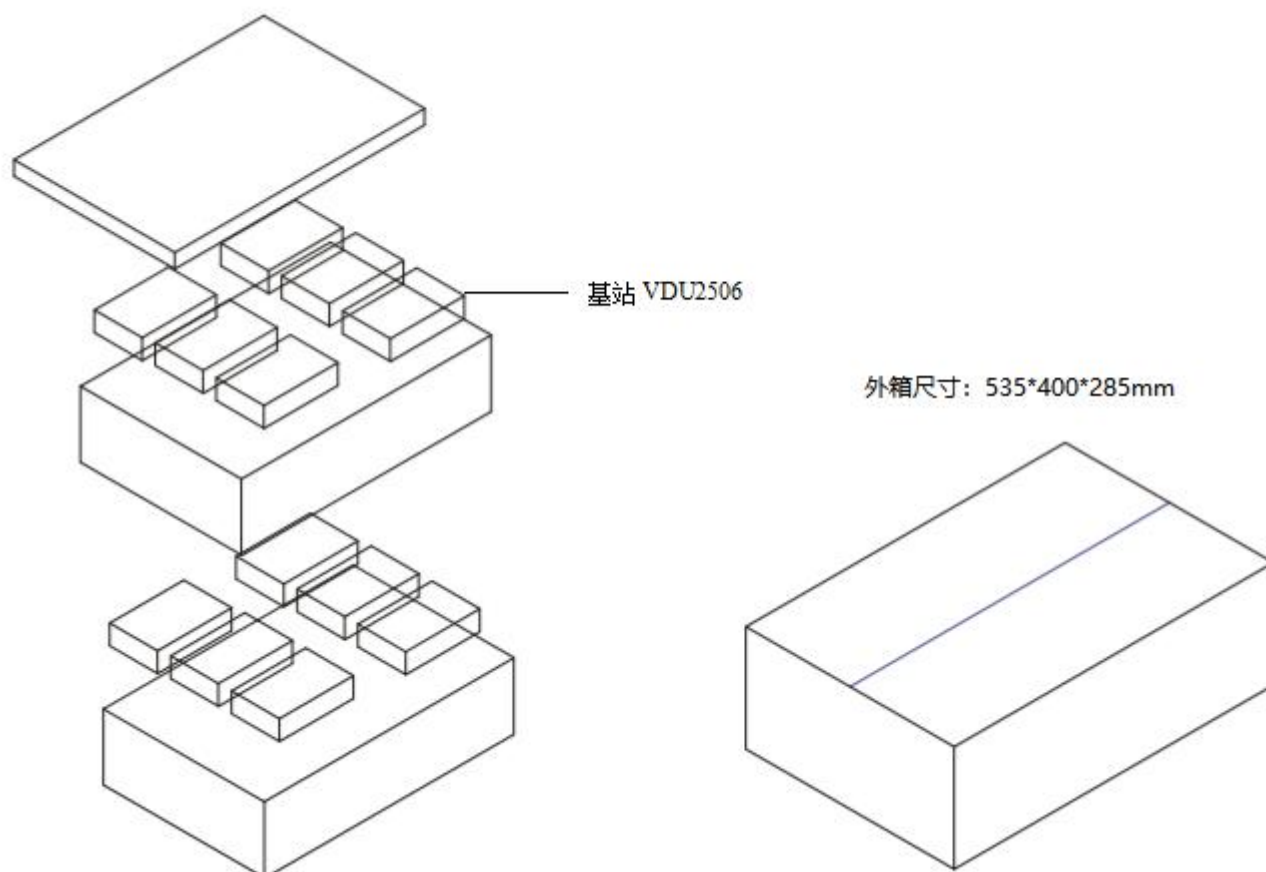
Accessories	Quantity	Remark
DC power supply	12/box (each base station/1)	Customers do not need to use POE power supply
Mounting screws	12 packs (each base station/1 pack)	Required options
Plastic rack	12 (each base station/1)	Required options

9 Reversion History

Version	Remark	Maker	Date
V1.01	Initial Release	Rowen	2020/11/23
V1.02	Update software configuration guide	Sherman	2020.12.10

10 Contact information

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