VAR1200-L Product Specification

VAR1200-L is an industrial-grade dual-band Gigabit wireless repeater and bridge meticulously developed by Houtian Networks. It operates simultaneously on both 5GHz and 2.4GHz bands, utilizing digital-analog temperature-compensated frequency stabilization technology (TAFC) for more stable WiFi signals and reduced disconnections. Key features include:

- WiFi intelligent bridge relay, which can realize wireless to wired and wired to wireless functions;
- Support wide voltage DC12V-48V power supply, two-level automatic overvoltage protection 58V;
- WiFi supports both 2.4G frequency band and 5G frequency band;
- Support 802.11ac, 802.11a, 802.11n and other WiFi transmission protocols;
- Wireless transmission rate: 300Mbps(2.4G)+900Mbps(5G), 2T2R;
- Transmit power: 2.4G is 17dBm/25dBm, 5G is 19dBm/25dBm optional;
- Point-to-point barrier-free maximum transmission distance: 2.4G 500 meters;
- Support routing mode and bridge relay mode；
- In routing mode, support WiFi WAN access and WAN/LAN switching of wired network ports;
- Built-in 4 high-power FEM, built-in intelligent automatic start-stop cooling fan;
- 3-port device, supports 2 POE outputs (RJ45 cable, LAN port, 48V power supply in effect), 1 POE input (both are not in effect at the same time, when POE input is in effect, the POE output is a normal Gigabit LAN port);
- WiFi hotspot automatic reconnection, two hotspot matching methods (complete matching authentication mode, SSID and password authentication mode);
- WiFi hotspot memory, maximum memory 100 hotspots;
- Support to connect more than 20 WiFi terminal devices at the same time;
- Support SSA signal strength detection and reporting function to realize WiFi mobile positioning;
- Support to manually turn off SSID broadcast, manually turn off WiFi hardware;
- Hotspot connection parameter import and export function;
- Adopt VDNS virtual domain name configuration technology to reduce user configuration difficulties;
- Using WEB management, can freely switch between Chinese and English configuration interface;
- Using digital-analog temperature compensation and frequency stabilization

technology, the WiFi signal is more stable and not easy to drop;

- Built-in heat sink, with convection cooling holes on both sides of the shell, more effective heat dissipation;
- Working environment temperature: -20℃ to 55℃;
- Support IP layer transparent transmission and MAC layer transparent transmission two bridge modes to meet various bridge applications;
- IP layer transparent transmission (factory default), transparent transmission of IP layer data, which can meet most of the bridge applications;
- MAC layer transparent transmission, transparent transmission of MAC layer (link layer) and all data above the MAC layer, including IP layer data. MAC transparent transmission can solve some special applications for MAC layer encryption, such as AP managed by AC, GoPro camera, Cisco AP, Hikvision surveillance system, etc.

One: Hardware Spec

Protocol Standards	IEEE 802.11ac, IEEE 802.11a; IEEE 802.11n, IEEE 802.11g, IEEE 802.11b;
Transmission rate	2.4GHz band: 300Mbps 5GHz band: 900Mbps
External interface	A DC power cable; A set of 100/1000m adaptive Ethernet cable，Support POE power supply； Two 10/100/1000M adaptive gigabit network ports；
Button	Reset button (long press 5 seconds, then release, the device will automatically restore the factory)
LED	Status instruction: Ethernet port status light (Yellow); 2.4G WiFi connection status light (Blue); 5G WiFi connection status light (Green); Connect to 48V/1.2A power supply, POE output status light (red light)；
Antenna	Built-In 2pcs Smart omnidirectional 2.4G Antennas; Built-In 2pcs Smart omnidirectional 5G Antennas;
Product size	97*57*29mm（L x W x H）
Item weight	100g

Two: WiFi Related

Basic Function	1) Routing mode, support WiFi WAN access and WAN/LAN interchange; 2) Smart WiFi bridge(IP layer transparent transmission, MAC layer transparent transmission); 3) WiFi hotspot exchange; 4) WiFi hardware exchange; 5) 2.4G WiFi mode optional: 11B/G/N, 11B/G, 11N, 11G, 11B; 5G WiFi mode optional: 11AC/AN/A, 11AC/AN, 11A/N, 11A, 11N; 6) WiFi hotspots automatically reconnected, and two hotspot matching methods (full match authentication mode, SSID and password authentication mode); 7) WiFi hotspot memory, maximum memory 100 hotspots; 8) Support SSA signal strength detection and reporting function ; 9) Hotspot connection parameter import and export function;
Supported band	2.4G band channel: 1-14; 5G band channel: 36, 40, 44, 48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140, 149, 153,157,161, 165
WiFi transmit power	2.4G: ordinary power: 17dBm; enhanced power: 25dBm; 5G: ordinary power: 19dBm; enhanced power: 25dBm;
Compliance acceptance sensitivity	-76dbm (2.4G) -73dbm (5G)
Application Method	WiFi Repeater (WiFi signal repeater), can extend WiFi transmission distance; WiFi Bridge: IP layer transparent transmission, MAC layer transparent transmission WiFi access point (AP);
WiFi Security	64/128/WEP encryption; WPA-PSK/WPA2-PSK、WPA/WPA2 security mechanism;
System Function	Firmware Upgrade Reboot device Reset factory Account and password revise

Three: Electrical performance parameters

1.Power supply parameters

Supply Voltage Range	Input Power	Typical Power Supply
DC12V-48V	≥36W	12V/3A、48V/1.2A

2. Working Electrical Performance Parameter Measurement Form (Environment Temperature: 26℃)

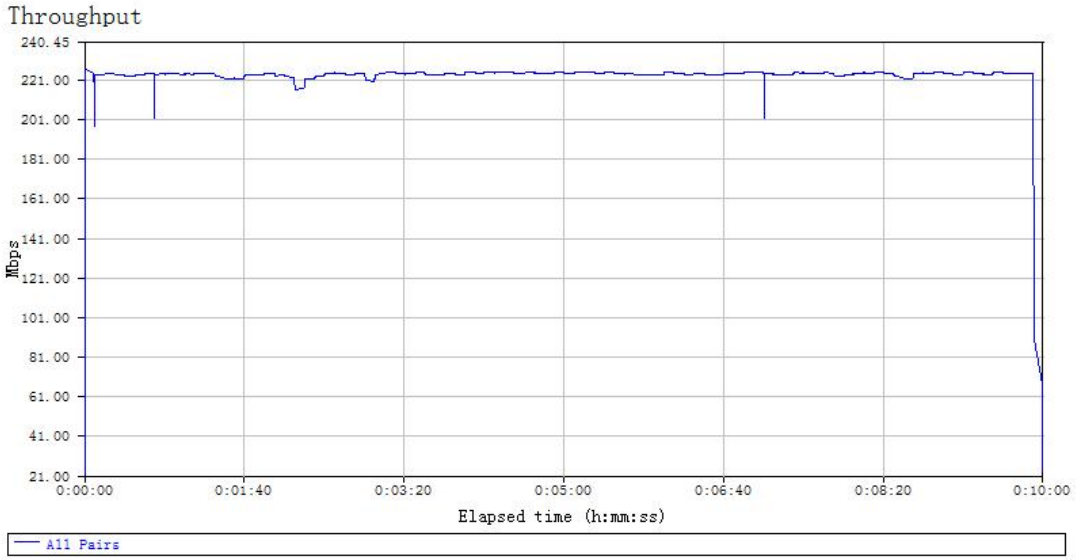
Work Band	Supply Voltage	Work Stage	Work Current (mA)	Main chip temperature (℃)
2.4G	12V	Booting Up	160-700	26-50
		Standby	310-690	50-60
		Transfer Data	350-700	50-60
5G	12V	Booting Up	160-640	26-50
		Standby	320-580	50-60
		Transfer Data	350-650	50-60
Dual Band	12V	Booting Up	160-700	26-50
		Standby	310-750	50-60
		Transfer Data (2.4G)	350-1000	55-65
		Transfer Data (5G)	350-1000	55-65
		Transfer Data (Dual Band)	350-1100	60-75

Note: PSE function requires 48V power supply voltage to use!
If the POE output port (PSE) is connected to a non-POE network port (PD is an access network port), please use it with caution and ensure that the access network port is isolated from the ground, otherwise it may cause damage to the access device!

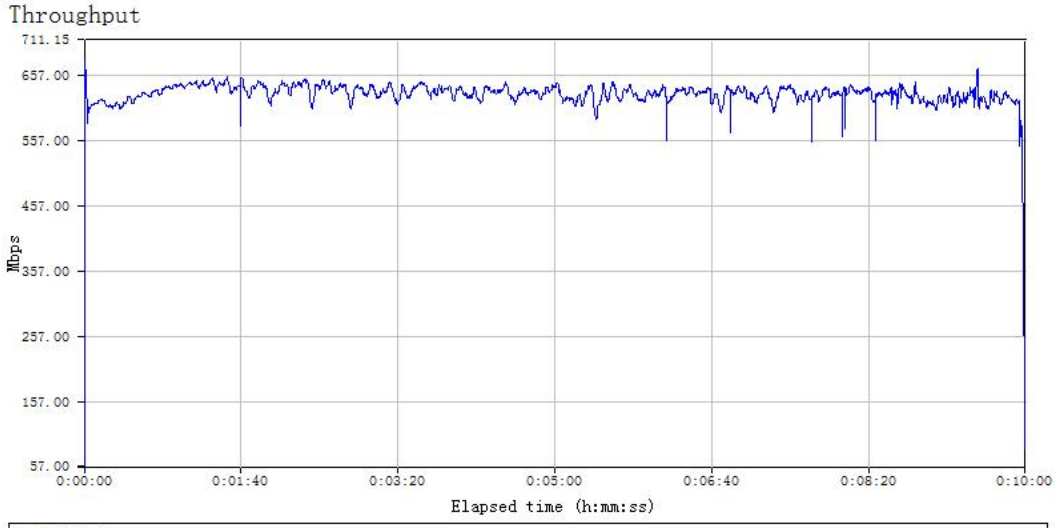
Four: Network Throughput Test Report

Device	2pcs VAR1200-L, 2pcs Computers	
Test Tool	IxChariot Software	
Top relationship	PC1 ---->VAR1200-L(AP) （ （ （ （ （ VAR1200-L(Client)---->PC2	
Test Result:		
Band	WiFi Protocol	Throughput (Mbps)
2.4G	B/G/N	221
5G	AC/A/N	648

2.4G (B/G/N) Throughput Test Fluctuation Chart:



5G (AC/A/N) Throughput Test Fluctuation Chart:



Five: RF Test Report

2.4G RF Parameters Form (Hardware Version: 7.0)

Channel Frequency	1 2412MHZ	3 2422MHZ	6 2437MHZ	7 2442MHZ	9 2452MHZ	11 2462MHZ	13 2472MHZ
Normal Power	17.6	18	18.5	18.6	18.8	18.4	18.3
EVM1	-37	-37	-37	-37	-37	-37	-37
Enhanced Power	22.3	22.7	23.1	23.2	23.4	23.1	23.0
EVM1	-31	-30	-29	-29	-29	-29	-30
Normal Power	18.3	18.5	18.7	18.7	18.8	19.2	19.2
EVM2	-37	-37	-37	-37	-37	-38	-38
Enhanced Power	22.8	22.9	23.2	23.1	23.2	24.6	23.6
EVM2	-31	-30	-30	-30	-30	-29	-28

5G RF Parameters Form (Hardware Version: 7.0)

Channel Frequency	36 5180MHZ	52 5260MHZ	64 5320MHZ	100 5500MHZ	128 5640MHZ	149 5745MHZ	157 5785MHZ	165 5825MHZ
Normal Power	19.9	19.6	19.4	19.4	19.4	19.5	19.5	19.4
EVM1	-37	-37	-36	-36	-36	-36	-36	-36
Enhanced Power	23.8	23.3	23.1	23.0	22.8	22.3	22.6	22.6
EVM2	-32	-31	-30	-30	-29	-30	-29	-30
Normal Power	19.6	19.7	19.9	19.6	19.6	19.3	19.6	19.6
EVM1	-37	-37	-37	-37	-36	-36	-36	-35
Enhanced Power	24.2	24.2	23.8	23.4	23.3	22.6	22.8	22.3
EVM2	-30	-31	-30	-30	-29	-29	-29	-29

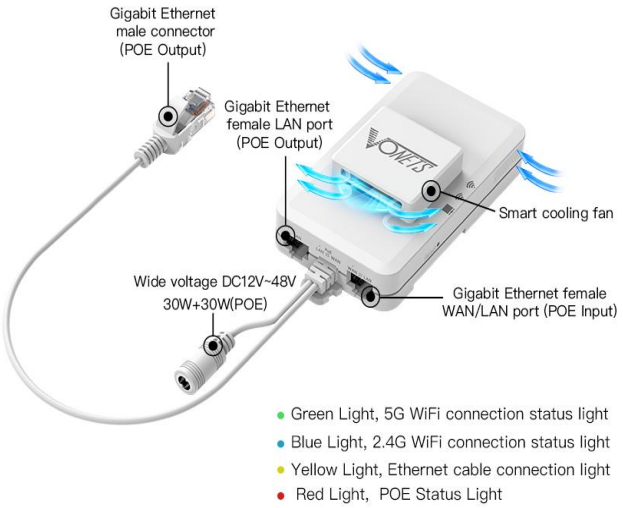
Sixth: Antenna Matching Test Report:

Standing Wave Ratio Parameters Form (Hardware Version: 8.0)					
Band / Antenna / Channel	2.412GHz	2.432GHz	2.452GHz	2.462GHz	2.477GHz
ANT1	1.23	1.15	1.09	1.11	1.18
ANT2	1.21	1.18	1.16	1.16	1.20
Band / Antenna / Channel	5.180GHz	5.350GHz	5.550GHz	5.700GHz	5.825GHz
ANT1	1.32	1.38	1.40	1.29	1.16
ANT2	1.31	1.19	1.38	1.47	1.83

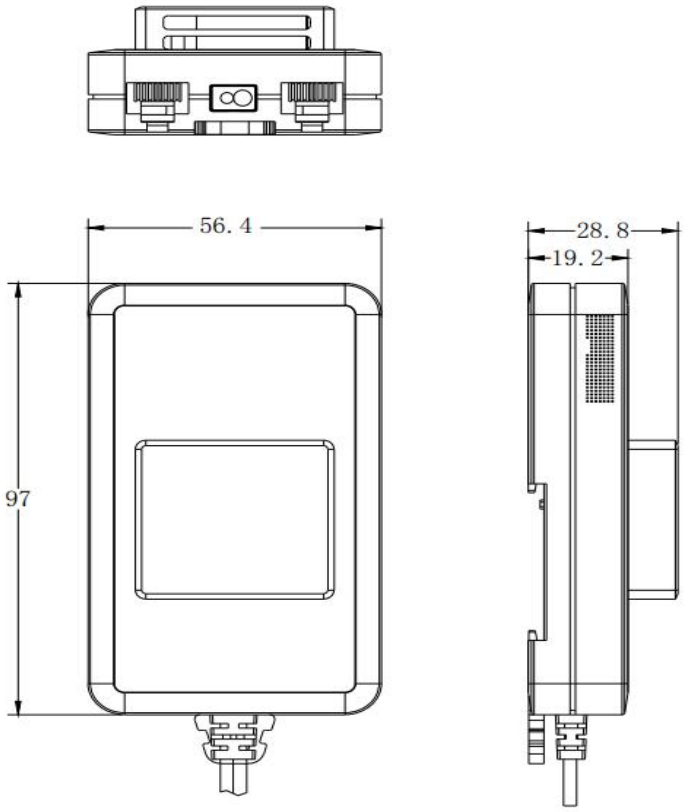
Seven、 Product Picture as below

Product Specification

Product Name	VAR1200-L
WiFi Function	Repeater/Bridge/Router
WiFi Band	2.4GHz/5.8GHz
WiFi Protocol	802.11ac/a/b/g/n
transmission rate	300Mbps+900Mbps
Work Voltage	12V-48V (Typical 12V/3A Applicable for No POE) 48V(Applicable for POE)
Color	White
Device size	97X57X29mm
Package	140X95X36mm
Weight	100g



Eight、 Product size



Nine、Product accessories

1、Power adapter (POE option)（48V/1.2A）	2、Power adapter (No POE option)（12V/3A）	3、DC terminal block (standard accessories)
		

Ten、Product application and secondary development precautions

1. Problems related to wireless interference:

1.1 Use the ping command to test the wireless transmission performance. If it is found that the delay of the ping packet response is extremely uneven, and there are many responses with a large delay, it can basically be judged that the wireless has been strongly interfered;

1.2 The product antenna should be kept as far away as possible from sources of interference, such as switching power supplies, antennas of other modules or wireless products, etc.;

1.3 If it is too close to the antenna of other wireless products, it will cause mutual interference, resulting in an increase in the transmission bit error rate and a slower transmission rate. At this point, the wireless signal must be properly attenuated. The methods of attenuating the signal include adding obstacles, extending the distance, and adding a resistor in series between the antenna feed point and the antenna, etc., to meet the actual application requirements;

2. Selecting a suitable power supply is the key to good and stable wireless transmission and stable operation of the product. Improper power supply will cause damage to the product or poor wireless performance. The selected power supply must meet the voltage range and input power requirements of the power supply input, and the ripple must be less than the required maximum power supply ripple (100mV);

3. POE related issues:

3.1 If the product has PSE function (POE output), it needs 48V power supply voltage and meets the power requirements of POE output before it can be used;

3.2 If the network port of the product has a POE output port, if it is connected to other non-POE network ports, please use it with caution, and ensure that the access network port is isolated from the ground, otherwise it may cause damage to the connected product!

A safe way is: let the product use a two-pin switching power supply without ground (AC TO DC, AC input is two-pin instead of three-pin).