VAR600-H Product Specification

The VAR600-H is an industrial-grade 2.4GHz single-band Gigabit wireless repeater and bridge meticulously developed by Houtian Network. It employs 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;
- Support 802.11b, 802.11g, 802.11n and other WiFi transmission protocols;
- Wireless transmission rate: 600Mbps(2.4G), 4T4R;
- Transmit power: 2.4G is 17dBm/25dBm;
- 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 network port equipment, support POE power supply (RJ45 network cable, 48V power supply POE effective);
- 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 802.11n, IEEE 802.11g, IEEE 802.11b;
Transmission rate	2.4GHz band: 600Mbps
External interface	A DC power cable; A 10/100/1000M adaptive Ethernet cable that supports 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); Connect to 48V/1.2A power supply, POE output status light (red light)；
Antenna	external 4pcs Smart omnidirectional 2.4G Antennas;
Product size	97*57*29mm（L x W x H）
Item weight	143.5g

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: 11N, 11G, 11B; 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;
WiFi transmit power	2.4G: ordinary power: 17dBm; enhanced power: 25dBm;
Compliance acceptance sensitivity	-76dbm (2.4G)
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℃)

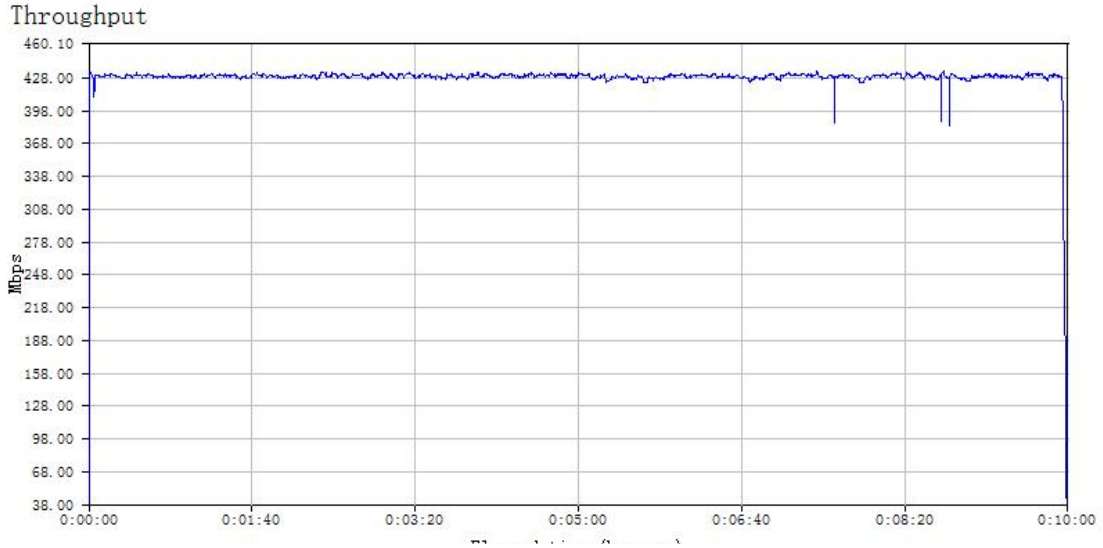
Work Band	Supply Voltage	Work Stage	Work Current (mA)	Main chip temperature (℃)
2.4G	12V	Booting Up	160-700	26-50
		Standby	310-690	50-60
		Transfer Data	350-700	50-60

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 VAR600-H, 2pcs Computers	
Test Tool	IxChariot Software	
Top relationship	PC1 ---->VAR600-H(AP) （ （ （ （ （ VAR600-H(Client)---->PC2	
Test Result:		
Band	WiFi Protocol	Throughput (Mbps)
2.4G	B/G/N	428

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



Five: RF Test Report

2.4G RF Parameters Form (Hardware Version: 7.0)

Channel frequency	1 (2412M)	3 (2422M)	6 (2437M)	7 (2442M)	9 (2452M)	11 (2462M)	13 (2472M)
Normal Power/ Enhance Power	18.4 /24.8	18.4 /24.8	18.5 /24.9	18.4 /24.8	18.4 /24.7	18.5 /25	18.4 /24.7
EVM1	-38/-31	-37/-31	-37/-30	-38/-31	-38/-31	-38/-30	-38/-31
Normal Power/ Enhance Power	18.4 /24.4	18.5 /24.4	18.6 /24.5	18.6 /24.5	18.6 /24.5	18.6 /24.5	18.5 /24.5
EVM2	-38/-31	-38/-31	-38/-31	-37/-30	-38/-31	-38/-31	-38/-31
Normal Power/ Enhance Power	18.0 /24.2	18.1 /24.1	18.4 /24.5	17.9 /24.0	18.0 /24.1	17.9 /24.1	17.8 /24.0
EVM3	-37/-30	-37/-30	-37/-30	-37/-31	-37/-31	-37/-31	-37/-31

Normal Power/ Enhance Power	17.8 /23.8	17.9 /23.8	17.8 /23.9	17.8 /23.9	17.8 /23.8	18.0 /24.1	17.8 /23.9
EVM4	-37/-32	-37/-32	-37/-31	-37/-31	-37/-31	-37/-30	-37/-31

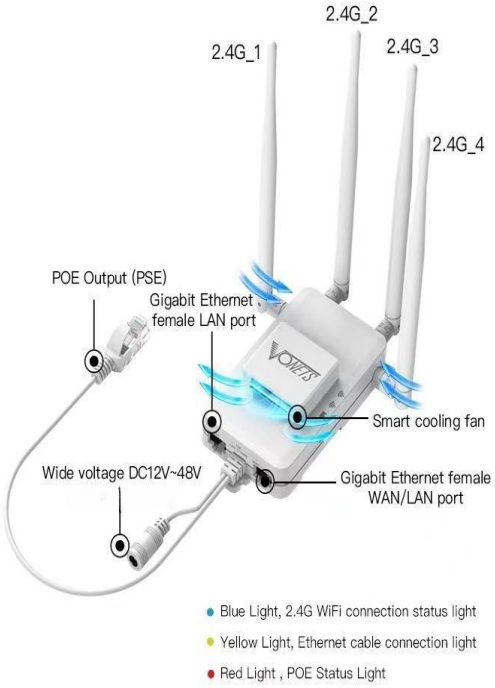
Sixth: Antenna Matching Test Report:

Standing Wave Ratio Parameter Table (Hardware Version: 9.0)					
Frequency / Antenna Channel	2.412GHz	2.427GHz	2.442GHz	2.457GHz	2.472GHz
ANT1	1.34	1.5	1.34	1.34	1.34
ANT2	1.34	1.5	1.34	1.34	1.34
ANT3	1.34	1.5	1.34	1.34	1.34
ANT4	1.34	1.5	1.34	1.34	1.34

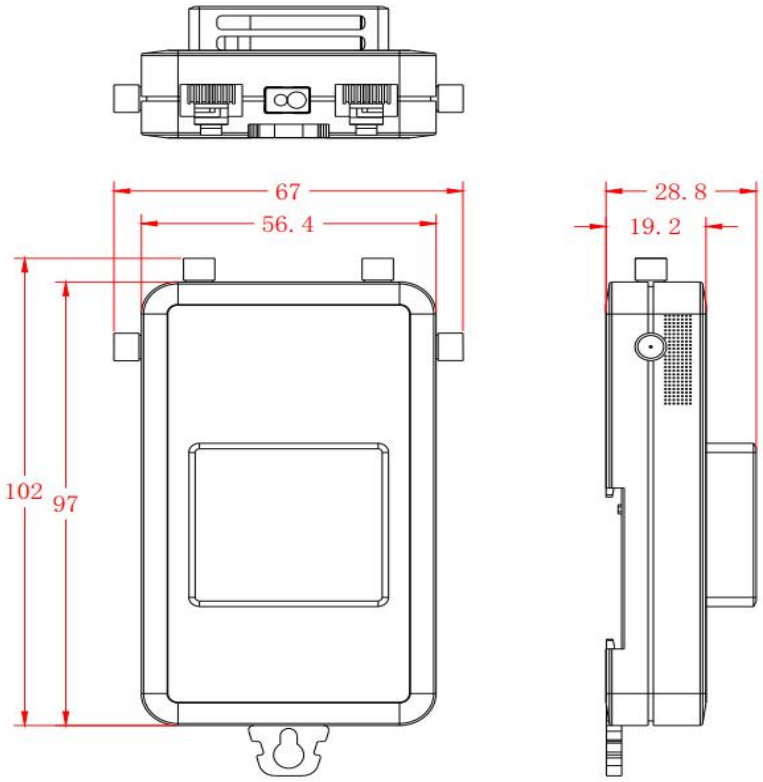
Seven、 Product Picture as below:

Product Specification

Product Name	VAR600-H
WiFi Function	Repeater/Bridge/Router
WiFi Band	2.4GHz
WiFi Protocol	802.11b/g/n
transmission rate	600Mbps
Work Voltage	12V-48V (Typical 12V/3A Applicable for No POE) 48V(Applicable for POE)
Color	White
Device size	97X57X29mm
Package	228*130*40mm
Weight	180g



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)	4、2.4G antenna (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).