

RAH305 Wi-Fi HaLow Router



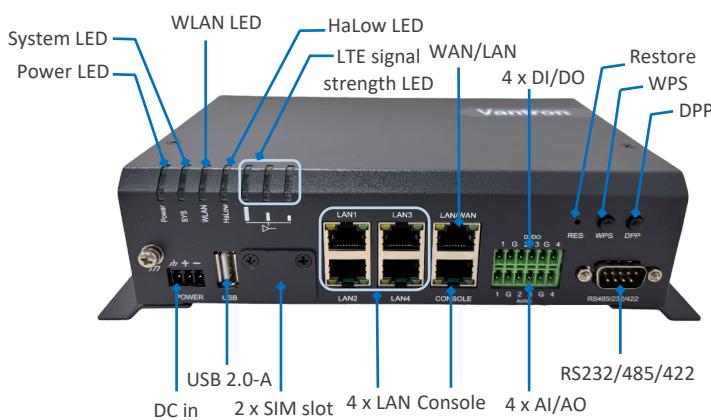
Product Brief

Powered by the advanced MM6108 Wi-Fi HaLow chipset, Vantron RAH305 redefines the long-range connectivity. Complying with the IEEE 802.11ah (Wi-Fi HaLow) standard and the latest WPA3 security protocol, it delivers exceptional kilometer-range wireless coverage with superior penetration through obstacles. This enables secure, massive connectivity for thousands of IoT devices across vast areas. It also supports traditional Wi-Fi 6, providing unparalleled deployment flexibility for large-scale industrial, agricultural, and smart city applications.

RAH305 ensures always-on connectivity with integrated LTE CAT 4 backup, precise GNSS location tracking, and Bluetooth 5.3 support. Its wired connectivity includes five Gigabit Ethernet ports—one configurable WAN/LAN and four LAN—delivering robust network infrastructure. A comprehensive suite of industrial interfaces, including a USB 2.0 port, a DB9 serial port (configurable for RS232/422/485), and 4 x DI/DO and 4 x AI/AO channels, allows for seamless integration with a wide array of machinery, sensors, and legacy systems.

RAH305 features WPS and DPP buttons for quick Wi-Fi 6 and Wi-Fi HaLow pairing. It supports AP mode for both Wi-Fi 6 and Wi-Fi HaLow, with the latter also supporting Mesh functionalities, facilitating resilient, scalable, and future-proof IoT network deployment.

Exterior and Features



Left-side antennas (far → near): LTE, HaLow, LTE
Right-side antennas (far → near): Wi-Fi 6, GNSS, Wi-Fi 6

RAH305	
	Both Wi-Fi HaLow and Wi-Fi 6 combined
	4 x LAN, 1 x WAN, LTE CAT 4, BT 5.3, GNSS
	Sub-1 GHz frequency bands supported
	Longer distance: up to 1km
	Better penetration through walls and obstacles
	AI/AO, DI/DO, USB, Serial port
	Enhanced security protections
	Wide input voltage
	Fast pairing supported
	Auto reconnection, multi-link failover

RAH305 Wi-Fi HaLow Router Datasheet

RAH305			
HARDWARE			
System	CPU	Ti AM64 64-bit Arm® Cortex®-A53 microprocessor, up to 1GHz	
	Wi-Fi HaLow SoC	Morse Micro MM6108	
	Memory	1GB DDR4	
	Storage	8GB eMMC	
WLAN	Wi-Fi 6	Standard: IEE 802.11ax/ac/a/b/g/n	
		Frequency range: 2.400GHz~2.835GHz, 5.150GHz~5.850GHz (Subject to local regulations)	
		Channel bandwidth: 20/40/80MHz	
		Data rate: up to 1200Mbps @80MHz	
		Quick pairing: WPS quick pairing supported	
		Working mode: AP	
Wi-Fi HaLow		Standard: IEE 802.11 ah	
		Frequency range: 903.5MHz~926.5MHz (US)	
		Channel bandwidth: 1/2/4/8MHz, dynamic channel selection (DCS) supported	
		Transmit power: 23dBm	
		Data rate: up to 32.5 Mbps @8MHz or 15 Mbps @4MHz	
		Application mode: Mesh, BridgeWAN	
Bluetooth*		Quick pairing: DPP quick pairing supported	
		Working mode: AP, Mesh	
		BT 5.3	
		Category	
		LTE CAT 4	
Cellular	Frequency Band	LTE-FDD: B1, B2, B3, B4, B5, B7, B8, B12, B13, B18, B19, B20, B25, B26, B28, B66 LTE-TDD: B34, B38, B39, B40, B41	
	Data rate	Theoretical: 150 Mbps (DL) / 50 Mbps (UL)	
GNSS*	Satellite support	GPS, Beidou, GLONASS, GALILEO, QZSS (A-GNSS supported)	
	Positioning precision	2.5m (CEP50)	
I/O	Ethernet	5 x RJ45, 10/100/1000Mbps (1 x WAN/LAN, 4 x LAN)	
	Console	1 x RS232-to-RJ45 port	
	USB	1 x USB 2.0 Type-A	
	Serial port	1 x RS485/232/422 (DB9, baud rate: 115200)	
	DI/DO	4 x DI/DO (Software switchable, measurement: DI: 0-VIN, DO: 0-VIN)	
	AI/AO	4 x AI/AO (Software switchable, measurement: AI: 0-10V, AO: 4-20mA)	
	SIM slot	2 x Micro SIM slot	
	Antenna	1 x Wi-Fi HaLow antenna	2 x Wi-Fi (6) antenna
		2 x 4G LTE antenna	1 x GNSS antenna

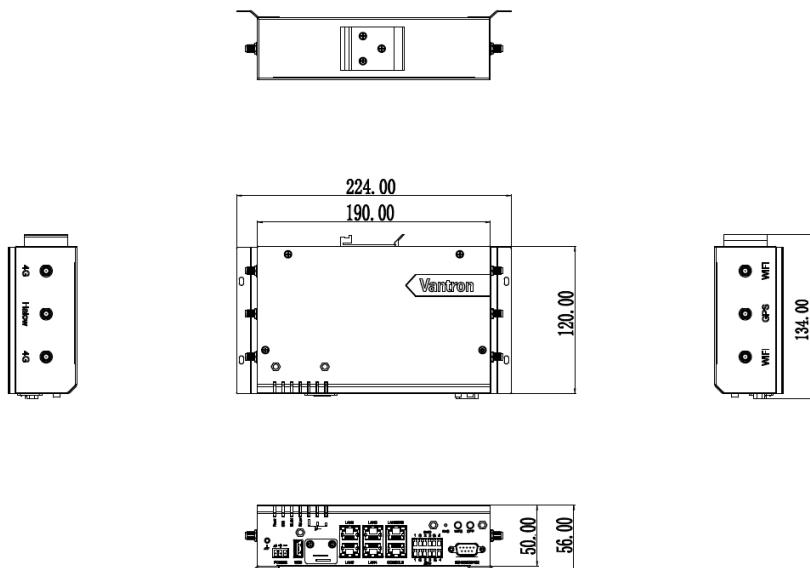
* Function under development

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System Control	LED indicators	1 x Power indicator	1 x Wi-Fi HaLow activity indicator
		1 x System indicator	1 x WLAN (Wi-Fi 6) activity indicator
		3 x LTE signal strength indicator	
Miscellaneous	Button	1 x Restore button (pinhole)	
		1 x WPS button (For Wi-Fi quick pairing)	1 x DPP button (For HaLow quick pairing)
Mechanical	RTC	Supported	
	WDT	Supported	
Power	Casing material	SGCC (Steel Galvanized Cold Commercial)	
	Dimensions	224mm x 134mm x 56mm	
Environmental	Installation	Wall mounting, DIN rail mounting	
	Input	9V ~ 36V DC	
Certification	Port	3-Pin x 3.81mm terminal (Over-current protection, reverse polarity protection)	
	Temperature	Operating: -20°C~+60°C	Storage: -40°C~+70°C
Certification	Humidity	Storage: 5%~95% RH (Non-condensing)	
	Compliance	FCC, ISED, PTCRB (In progress)	
	Carrier certification	AT&T, Verizon, T-Mobile	
SOFTWARE			
Device Management	Operating system	Web-based VantronOS	
	Configuration	VantronOS, SSH, console, cloud-based BlueSphere GWM (Optional)	
	Remote management	BlueSphere GWM (Optional)	
Routing & Network Reliability	Network protocol	IPV4, HTTPS, TCP & UDP, NTP client and server, ARP, TLS	
	Link detection & report	Address: IP, URL	Protocol: ICMP, TCP, HTTP
	Failover	Auto routing	Network priority: Ethernet > Wi-Fi client > LTE/5G (Def.)
	Dual SIM	Dual SIM failover, automatic switch	
	NAT	Network address translation Supported	
	WAN protocol	DHCP client, PPPoE, Static IP	
	IP application	Ping, Traceroute, DHCP Server/Client, DDNS	
Network Diagnostics	IP routing	Static routing	
	Statistics	Traffic data and up time at Ethernet WAN, Wi-Fi client WAN, cellular WAN Cellular and Wi-Fi signal strength; SIM card switch frequency	
	Health check	Usage of CPU, memory, disk; service running status Alarm on Ethernet/Wi-Fi/cellular hardware abnormality	
Security	Log	System log, diagnostic log; log export supported	
	Firewall	Stateful, whitelist control, ingress/egress filtering	
	Access control	MAC address filtering, IP address filtering	
	VPN	PPTP*, L2TP*, GRE*, IPSec, OpenVPN	
	Firmware validation	SHA256 checksum	

* Function under development

Product Outlines



Ordering Information

Ordering No.	Memory	Storage	Description	Installation
RAH305	1GB	8GB	4 x LAN, 1 x WAN/LAN, LET CAT 4, Wi-Fi HaLow, Wi-Fi 6, BT5.3, GNSS, AI/AO, DI/DO	Wall mounting, DIN rail mounting

Packing List

RAH305 Wi-Fi HaLow router	1	12V 2A DC power adapter	1 kit
Wi-Fi HaLow antenna	1	DC power connector	1
2.4GHz/5GHz Wi-Fi antenna	2	3.81mm x 6-pin terminal connector	2
LTE antenna	2	GNSS antenna	1

Since 2002 established by two Silicon Valley entrepreneurs, Vantron Technology has been a pioneer in connected IoT devices and IoT platform solutions. Today, Vantron is serving customers all over the world, including many Global Fortune 500 companies. The product lines cover intelligent edge hardware, IoT communication devices, industrial displays and the cloud-based BlueSphere device management platform.

Vantron offers IoT communication devices that enable multi-protocol connections for industrial equipment and local data processing through edge computing. With abundant wired and wireless connectivity options, remote operations and maintenance have become easier than ever. Such devices can be deployed across different sectors such as smart retail, medical and warehousing. Moreover, Vantron's IoT solutions are designed to facilitate enterprises' digital transformation, streamline operations, enhance productivity, etc.