

# IPWAP-3004

## Industrial Multifunction VPN Router w/up to 2x WiFi 11ac + 2 serial ports\*\* + 4 Gigabit Ethernet PoE Switch + 2WAN ports w/ Load Balancing, VPN, Protocol Gateway, Storage\*\*; 24V input

- Up to 2 concurrent WI-FI 11ac and redundancy(2AC model)
- Built-in 4 Gigabit PoE at/af Managed Switch with budget 80W@12V/24V/48V
- Managed Switch functions cover port management, QOS, VLAN, multicast, redundant ring and security function
- Dual radio for 802.11ac/a/b/g/n with concurrent 5GHz & 5GHz bands up to 2.6Gbps Wi-Fi bandwidth(2AC model)
- WI-FI radio for 802.11ac/a/b/g/n with 5GHz or 2.4GHz;
- Support WI-FI 802.11e traffic prioritization and WMM
- MIMO technology 3T3R up to 6 antenna(2AC); SMA type external antennas
- Support roaming with 802.11k & v
- Supports AP/ Bridge/Client/MESH modes
- Support 802.11s Wireless Mesh Network
- Air-teaming\*\* for WI-FI high-sustainability and aggregated bandwidth
- Advanced wireless security WEP64/128bits/ WPA/ WPA-PSK (TKIP,AES)/ WPA2/ WPA2-PSK (TKIP,AES)
- VPN router for Multi-site VPN, OpenVPN, L2TP over IPsec, IPsec, PPTP\*\*, L2 over GRE , IPGRE
- Optional EMMC Flash storage on-board\*\*
- Load Balancing built-in 5 mechanism
- Support NAT and Firewall
- Support Modbus gateway on serial ports\*\*
- Support 2 RS422/RS485 ports with 2.5KV isolation or 2x RS232 ports
- Dual input voltage selection 9~56VDC (24V model)
- Vehicle E-marking\*\* certificate
- ITxPT compliant w/ ignition function\*\*
- Environmental monitoring for router inside info with voltage, current temperature and total PoE load; WI-FI graphic signal strength
- Editable login page of captive portal for hot-spot application
- USB port to backup, restore the configuration file and upgrade firmware; Dual image firmware\*



## OVERVIEW

Lantech IPWAP-3004 series is a next generation industrial multi-function VPN router w/up to 2x 802.11ac Wi-Fi + u 4x Gigabit Ethernet PoE switch + 2WAN + 2 serial ports\*\* that supports advanced function of VPN, Load-Balancing (Basic & Full package), EMMC Flash storage\*\*, Protocol gateway(Modbus), and Wi-Fi roaming. The dual core CPU with 1.6GHz + 256M flash enables the router to multi-task smoothly.

### IEEE 802.11ac dual band radio up to 2.6Gbps bandwidth

With IEEE 802.11ac capability, IPWAP-3004 can operate either 5GHz or 2.4GHz bands, offering the maximum speed of

2.6Gbps bandwidth (1.3Gbps per 1AC). It is also compatible with 802.11g/n that can work with 2.4GHz for longer range transmission.

The Wi-Fi 11ac supports AP/Bridge/AP Client modes can be diverse for most of wireless application. Working with load-Balancing "Priority" mode, the AP client can enable router to transmit on Wi-Fi with first priority.

### Support AP/Bridge/Client mode, Mesh w/802.11k, v roaming

IPWAP-3004 supports AP/Bridge/Client mode for different

applications. Client mode supports PMK\*\* Caching and pre-authentication.

It also supports 802.11k, v roaming to allow encryption keys to be stored on all of the APs in a network.

**Built-in Wireless Mesh network (WMN)**

IPWAP-3004 supports Mesh network composed of different nodes. The set of SSIDs allow the wireless client to roam freely without the need for complicated account management. With Mesh protocol, it can provide a reliable, scalable, stable and seamless network topology.

**Air-teaming\*\* for wireless high-sustainability and aggregated bandwidth**

The innovative Air-teaming\*\* can combines multiple wireless links to achieve both high-sustainability and aggregated bandwidth. High sustainability can keep the network traffic alive even one link is down or severely interfered. Aggregated bandwidth can bind two link channels to provide the maximum throughput.

**Optional EMMC Flash storage\*\***

The optional EMMC flash storage on router can offer 8G/16G/32G capacity

**MIMO technology with 3T3R and SMA type connectors**

Lantech IPWAP-3004 series adapts MIMO technology with smart antenna transmission and reception for 3T3R. With six external detachable Omni connectors and optional antennas, IPWAP-3004 can have better Wi-Fi coverage.

**Wireless WMM QoS**

IPWAP-3004 supports 802.11e standard which defines a set of Quality of Service for wireless LAN applications as well as WMM (Wi-Fi multimedia)

**Advanced security & 16 SSIDs**

The security support standards including 64/128bits WEP, WPA/WPA2 PSK (TKIP, AES), 802.1x ensures the best security and active defense against security trends. Lantech IPWAP-3004 support up to 16 SSIDs, each SSID has its independent security and encryption.

**Load Balancing with 8 mechanisms for multi-WANs (premium license)**

IPWAP-3004 supports Load Balancing for WAN connections. There are eight schemes for Load Balancing function:

Pack	Algorithm	Description
Basic Package	Fixed	Manually route by traffic type through fixed WAN link.
	Failover	Routes connections through preferred WAN link while others stand-by. Sequentially activate another link if preferred link fail occurs. Once failover will not

		failback until link loss.
	Priority	Routes connections through preferred WAN link as primary while others follow by. Ex. Wi-Fi client>LTE>others
	Weighted Round-Robin	Evenly distribute the traffic over all working WAN links in circular order according to the specified weights.
	Custom Route	Routing through the selected WAN for each specific traffic, ex: TCP/UDP port number and IP address.
Full Package** (incl. basic package)	Sticky Session*	Binding all connections in an application session to particular WAN link to ensure all connections in the session are routed to the same WAN link , that is suitable for security services like online payment etc.
	Smallest Load*	Routes connections through the WAN link with highest free bandwidth ratio. The ratio = 1 - (traffic load / the capability of a WAN link). The traffic load could be defined by downstream, upstream or total traffic
	Fastest*	Routes connections through the WAN link with lowest latency time.

**2 port serial connection, Modbus\*\* gateway**

It builds in 2 port serial connection for RS232, RS422, RS485 in which RS422/RS485 has 2.5KV isolation protection.

The built-in Modbus gateway can convert Modbus RTU/ASCII to Modbus TCP for device control.

**VPN and firewall**

Besides traditional VPN peer to peer tunneling, IPWAP-3004 support latest Multi-Site VPN function that is an efficient way for mesh tunneling. The registration is under cloud service and encrypted by SSH makes the connection easy and safe.

It supports Multi-Site VPN, OpenVPN, L2TP over IPsec, IPsec, PPTP\*\*, L2 over GRE, IPGRE, and NAT for various VPN applications.

The built-in Layer-4 firewall includes DDoS, IP address filter / Mac address filter / TCP / UDP port number.

**DIDO for alarm & email notice; Event log; Remote Web control**

2 sets of DIDO function can support additional high/low physical contact for designate applications besides Port / Power events, for example, DIDO function can trigger alarm if the router was moved or stolen. In case of events, the IPWAP-3004 will immediately send email and trap.

When the router is at remote area with limited access, Web

control can help to get router status or remotely reboot.

**Wide range input voltage from 9V-56VDC (24V model);**

**Built-in 4 port PoE at/af switch with 80W@12V /24V/48V**

The IPWAP-3004 is able to work from 9VDC to 56VDC for PoE at/af with PoE budget 80W @12V /24V/48V that is particular good for vehicle, rail train, depot etc. application.

**Environmental monitoring for inside router info& alerting;**

**Graphic WI-FI signal strength**

The built-in environmental monitoring can detect router ambient temperature, voltage, current and total PoE load where can send the SNMP traps Syslog, and email\*\* alert when abnormal.

The graphic WI-FI signal strength shows connection status at a glance.

**Ignition Sensing\***

Ignition sense allows you to delay power off the router with a designated time delay.

**Built-in Managed Switch Function**

Managed switch function is built-in and provides various L2+ functions for network access deployment. It delivers ports and PoE management, VLAN, QoS, multicast, redundant ring, and security functions.

**USB port for back up, restore configuration and upgrade firmware; Dual image firmware\***

The built-in USB port can upload/download the configuration and upgrade firmware through USB dongle for router replacement.

It support dual-image firmware\* to choose which one to start.

**Editable login page of captive portal**

The IPWAP-3004 supports editable captive portal function that allows administrator to force end-users redirect to authentication page.

**Ruggedized industrial design and FCC, CE & E-marking\*\* certificate**

The IPWAP-3004 is designed to meet with industrial network environment with IP30 housing. It passed serious tests under extensive Industrial EMI and environmental vibration and shocks standards.

With CE & FCC radio certification for WI-FI and E-marking\*\* certificate, the IPWAP-3004 is best for outdoor community, vehicle, process control automation etc application. For more usage flexibilities, IPWAP-3004 supports wide operating temperature from -20°C to 70°C or -40°C to 70°C(-E)

## FEATURES & BENEFITS

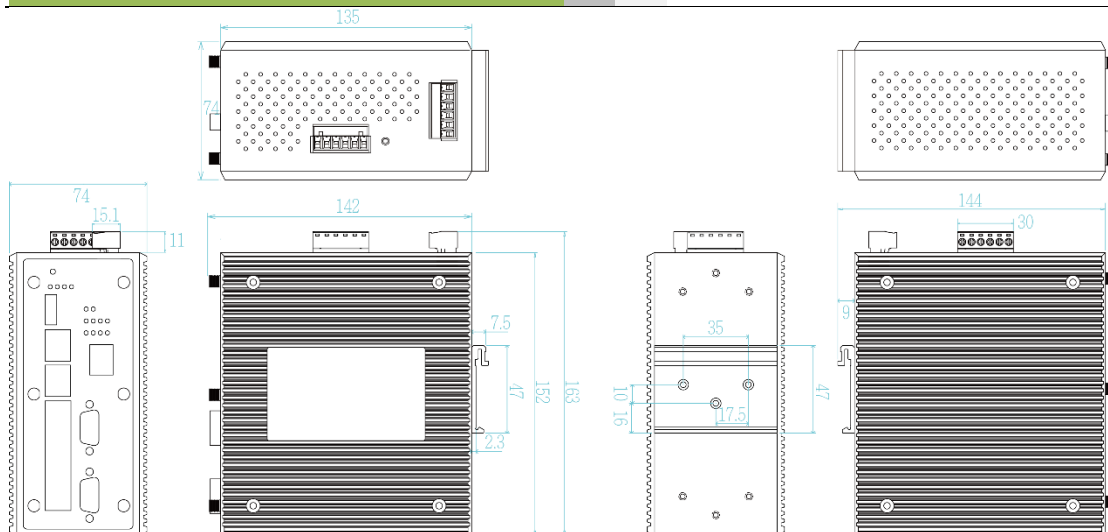
- High Speed Air Connectivity: WLAN interface support up to 2.6Gbps link speed(2AC) or 1.3Gbps (1AC)
- Built-in 4 Gigabit PoE switch + 2 WAN port with 80W@12V /80W@24V&48V PoE budget
- EMMC-FLASH storage\*\*8/16/32G
- Dual band 2.4G and 5GHz with 802.11ac/a/b/g/n
- Support 2.4Ghz operating within the following frequency bands:
  - 2.412~2.472 GHz
- Support 5Ghz operating within the following frequency bands:
  - 5.180~5.825 GHz
- MIMO smart antenna technology with 3T3R
- 6 SMA type connectors for Wi-Fi
- Optional Air-teaming\*\* protection(2AC)
  - **High-sustainability:** if one link member is down or severely interfered, the other link will keep the network traffic alive.
  - **Aggregated bandwidth :** The bandwidth of two link members can be aggregated to provide maximum throughput
- Output power : <24dBm Transmit power adjustment
- VAP (virtual access point) support up to 16 SSIDs
- Operation modes : AP/ Bridge / Client
- IEEE 802.11h DFS and automatic TPC
- Support AP/Bridge/Client/MESH mode
- Support roaming with 802.11k & v
- Support 802.11s Wireless Mesh Network
- Traffic control for each SSID\*\*
- Band preference for same SSID services on dual band\*\*
- Rate selection to disable low data rate access\*\*
- Highly Security Capability: WEP64/128bits/ WPA/ WPA-PSK (TKIP,AES)/ WPA2/ WPA2-PSK (TKIP,AES)
- HTTP/HTTPS/Telnet/SSH & Administration access
- Support IPv6 & IPv4 protocol
- Radius Authentication, EAP-TLS, EAP-TTLS, PEAP; SSID broadcast disable supported
- Multiple channel bandwidths of 20MHz and 40MHz for 2.4G.
- Multiple channel bandwidths of 20MHz, 40MHz and 80MHz for 5G only.
- Wi-Fi Multimedia (WMM) and 802.11e traffic prioritization
- Support Multi-Site VPN for Mesh tunneling as well as Open VPN, L2TP over IPsec, IPsec, PPTP\*\*, L2 over GRE , IPGRE and NAT for secured network connection
- The built-in Layer-4 firewall includes DDoS, IP address filter / Mac address filter / TCP/UDP port number
- NAT/DMZ/Port Forwarding
- Support SNMP\*v1/v2c/v3
- Load Balancing supports 8 mechanism between multiple WANs

Pack	Algorithm	Description
<b>Basic Package</b>	Fixed	Manually route by traffic type through fixed WAN link.
	Failover	Routes connections through preferred WAN link while others stand-by. Sequentially activate another link if preferred link fail occurs. Once failover will not fallback until link loss.
	Priority	Routes connections through preferred WAN link as primary while others follow by. Ex. Wi-Fi client>LTE>others
	Weighted Round-Robin	Evenly distribute the traffic over all working WAN links in circular order according to the specified weights.
	Custom Route	Routing through the selected WAN for each specific traffic, ex: TCP/UDP port number and IP address.
<b>Full Package** (incl. basic package)</b>	Sticky Session*	Binding all connections in an application session to particular WAN link to ensure all connections in the session are routed to the same WAN link, that is suitable for security services like online payment etc.
	Smallest Load*	Routes connections through the WAN link with highest free bandwidth ratio. The ratio = 1 - (traffic load / the capability of a WAN link). The traffic load could be defined by downstream, upstream or total traffic
	Fastest*	Routes connections through the

		WAN link with lowest latency time.
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- Built-in 2 x serial ports\*\*(RS232/RS422/RS485)
- Serial port\*\* with 2.5KV isolation on RS422/RS485
- Supports 2DI / 2DO (Digital Input / Output)
- Built-in Modbus gateway converting Modbus RTU/ASCII to Modbus/TCP for serial ports\*\*
- Event alerting by Syslog, SNMP Trap, Email, Relay ;
- Permanent local log rotation / Maxi 1K records
- Remote Web control to get status or re-boot by Web
- Graphic WI-FI signal strength
- Support SNTP to synchronize system clock
- Support LLDP discovery protocol
- Support DHCP Server and Client
- Built-in environmental monitoring for system input voltage, current and ambient temperature; Able to set alert when abnormal
- Dual image firmware\* to choose which to start
- Firmware upgradeable through TFTP/HTTP
- Configuration backup and restoration
  - Supports text configuration file for system quick installation
  - USB port to upload/download configuration by USB dongle
- Reset button for factory default mode
- Support editable captive portal login page
- IP30 housing for industrial environment
- DIN-Rail and Wall-mount\*\* installation
- ITxPT compliant w/ ignition function\*\*
- Operation temperature -20~70C or -40°C to 70°C (-E)

**DIMENSIONS (unit=mm)**



**SPECIFICATION**

<b>WLAN Interface</b>		
Radio Frequency Type	DSSS, OFDM	
Wireless Standard	IEEE 802.11ac/n/a 5GHz IEEE 802.11b/g/n 2.4GHz	
Wireless bandwidth	5GHz: Up to 1300Mbps 2.4GHz: Up to 450Mbps	
Modulation	<b>802.11b: DSSS</b> <b>802.11a/g:</b> OFDM (BPSK, QPSK, 16-QAM, 64-QAM) <b>802.11n:</b> OFDM (BPSK, QPSK, 16-QAM, 64-QAM) <b>802.11ac:</b> OFDM (BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM)	
Operating Frequency	IEEE 802.11 a/b/g/n ISM Band, 2.412GHz-2.472GHz, 5150MHz-5850MHz	
Transmission Rate	IEEE802.11ac: up to 1300Mbps IEEE802.11b: 1 / 2 / 5.5 / 11 Mbps IEEE802.11a/g: 6 / 9 / 12 / 18 / 24 / 36 / 48 / 54 Mbps IEEE802.11n: up to 450Mbps	
IEEE 802.11b/g/n(2.4Gbps)	<b>Output Power Tx +/- 2dB(per chain)</b> 18dBm @ 1-11Mbps 18dBm @ 6-54Mbps 20/20dBm @ MCS0-MCS7 (HT20/40) <b>Receiver Sensitivity Rx +/- 2dB</b> ≤ -95dBm @ 1-11Mbps ≤ -92dBm @ 6-18Mbps ≤ -88dBm @ 24Mbps ≤ -85dBm @ 36Mbps ≤ -81dBm @ 48Mbps ≤ -80dBm @ 54Mbps ≤ -94dBm @ MCS0 (HT20/40) ≤ -76dBm @ MCS7 (HT20/40)	
IEEE 802.11a/n/ac(5Gbps)	<b>Output Power Tx +/- 2dB(per chain)</b> 20dBm @ 6-24Mbps 16dBm @ 36-54Mbps 19/18dBm @ MCS0 (HT20/40) 16/16dBm @ MCS7 (HT20/40) 19/18/18dBm @ MCS0 (VHT20/40/80) 13/13/13dBm @ MCS8 (VHT20/40/80) 13/13dBm @ MCS9 (VHT40/80) <b>Receiver Sensitivity Rx +/- 2dB</b> ≤ -92dBm @ 6-18Mbps ≤ -86dBm @ 24Mbps ≤ -84dBm @ 36Mbps ≤ -81dBm @ 48Mbps ≤ -80dBm @ 54Mbps ≤ -93dBm @ MCS0 (HT20/40) ≤ -71dBm/≤ -80dBm @ MCS7 (HT20/40) ≤ -90dBm @ MCS0 (VHT20/40/80) ≤ -69dBm @ MCS8 (VHT20/40/80) ≤ -66dBm @ MCS9 (VHT40/80)	
Encryption Security	WEP : (64-bit ,128-bit key supported) WPA /WPA2 : IEEE802.11i(WEP and AES encryption) WPA-PSK (256-bit key pre-shared key supported) OKC** and 802.11r** EAP-TLS,EAP-TTLS, PEAP	
Wireless Security	SSID broadcast disable	
<b>Software</b>		
IPv6/4	Present	
Operation Mode	AP/Bridge/Client/MESH mode	
Air-teaming**(2AC)	<ul style="list-style-type: none"> <li>High sustainability with fail over link</li> <li>Aggregated bandwidth</li> </ul>	
WMM	Wi-Fi multimedia and 802.11e traffic prioritization	
VPN	Multi-site VPN, Open VPN, PPTP**, L2TP over IPSec, IPSec, L2 over GRE, IPGRE and NAT	
Firewall	DDoS, IP address filter / Mac address filter / TCP/UDP port number.	
Load Balancing	8 schemes for multiple WAN	
<b>Basic Package</b>		
Fixed	Manually route by traffic type through fixed WAN link.	
Failover	Routes connections through preferred WAN link	
		while others stand-by. Sequentially activate another link if preferred link failure occurs.
Priority		Routes connections through preferred WAN link while others stand-by. Sequentially activate other links if overflow occurs.
Weighted Round-Robin		Evenly distribute the traffic over all working WAN links in circular order according to the specified weights
Custom Route		Routing through the selected WAN for each specific traffic ex: TCP/UDP port number and IP address.
<b>Full Package** incl. basic package</b>		
Sticky Session*		Binding all connections in an application session to particular WAN link to ensure all connections in the session are routed to the same WAN link , that is suitable for security services like online payment etc.
Smallest Load*		Routes connections through the WAN link with highest free bandwidth ratio. The ratio = 1 - (traffic load / the capability of a WAN link). The traffic load could be defined by downstream, upstream or total traffic
Fastest*		Routes connections through the WAN link with lowest latency time.
Security		WEP64/128bits/ WPA/ WPA-PSK (TKIP,AES)/ WPA2/ WPA2-PSK (TKIP,AES)/SSH/SSL/HTTPS
Roaming		802.11k & v
MESH		Support 802.11s Wireless Mesh Network
Authentication		Radius Authentication, EAP-TLS, EAP-TTLS, PEAP; SSID broadcast disable supported
SSID		16 sets
Login Security		Supports IEEE802.1x Authentication/RADIUS
Access Security		HTTP/HTTPS/Telnet/SSH & Administration; SNMP*v1/v2/v3 access for authentication via MD5/SHA(v3) and Encryption via DES/AES(v3)
Protocol		PPPoE Client, DHCP server/client, Adjustable MTU, Port forwarding (NAPT), DMZ; NAT, SNTP, Firewall(Firewall(DDoS/ IP address filter / Mac address filter / TCP/UDP port name),VRRP**, DDNS+
Protocol Gateway		Modbus on serial ports**
Management		SNMP*v1, v2c, v3/ Web/Telnet/CLI
Client mode		PMK** Caching and pre-authentication.
Environmental Monitoring		System status for input voltage, current , ambient temperature to be shown in GUI and sent alerting if any abnormal status
Graphic signal display		Graphic Wi-Fi signal strength
Timer		Built-in Real Time Clock to keep track of time always(RTC)
Discovery		IEEE 802.1ab Link Layer Discovery Protocol (LLDP)
SNMP trap		Device cold / warm start Port link up / link down Di/DiO high / low
Remote Web control		To reboot or get status of router by Web UI
Captive portal		Editable captive portal login page
Maintenance		Firmware upgradeable through TFTP/HTTP
Configuration backup & restore		Supports text configuration file for system quick installation USB port to upload/download configuration by USB dongle
<b>Physical Ports &amp; System</b>		
Connectors		10/100/1000T: 6x ports RJ 45 with 2 WAN ports and 4 PoE ports USB x 1 RS-232 connector: 1 x RJ 45 Serial connector : 2 DB9 RP-SMA connector for Wi-Fi 2AC: 6 (female) RP-SMA connector for Wi-Fi 1AC: 3 (female) Power & P-Fail connector: 1 x 6-pole terminal block DIDO: 1 x 5-pole terminal block
Serial Baud Rate		1000Kbps high data rate, 250kbps normal for RS232 ; 20Mbps high data rate, 250kbps normal for RS422/RS485
Serial Data Bits		5, 6, 7, 8
Serial Parity		odd, even, none, mark, space



Serial Stop Bits	1, 1.5, 2	<b>Environmental</b>
RS-232	TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND	
RS-422	Tx+, Tx-, Rx+, Rx-, GND	
RS-485 (2-wire)	Data+, Data-, GND	
Isolation protection	RS422/RS485 2.5KV isolation; 8KV contact & 15KV air RS232 8KV contact and 15KV air ESD DIDO 3KV isolation Input power 1.5KVA isolation	Storage Temperature
EMMC Storage**	8/16/32 GB	Operating Temperature
DI/DO	2 Digital Input (DI) : Level 0: -30~2V / Level 1: 10~30V Max. input current:8mA 2 Digital Output(DO): Open collector to 40 VDC, 200mA	Operating Humidity
<b>LED Indicators</b>		<b>Regulatory approvals</b>
System & Power	Per unit: Power 1 (Green), Power 2 (Green), P-Fail (Red) , Ring Master(Green), Storage(Green), Serial1/Serial2(Green) ,Ready(Green)	Safety
10/100/1000Base-T(X) port indicator	Link/Activity (Green), Speed (1000T: Yellow; 10/100TX: off), PoE (Green)	EMC
Fault	Red: Ethernet link down or power down	EMS
<b>Fault contact</b>		Radio Frequency
Relay	Relay output to carry capacity of 1A at 24VDC	Vehicle certificate
<b>Power</b>		MTBF
Input power	Dual DC input, 9~56VDC (24V model)	Warranty
PoE Budget	80W @12V/24V/48V	
Power consumption (Typ.)	30.5W (1L1AC)	
<b>Physical Characteristic</b>		
Enclosure	IP 30 Metal case	
Dimension	74 (W) x 142 (D) x 152 (H) mm	
Weight	900g	

\*Future Release

\*\*Optional

**RF Performance Table**

	Data Rate	TX Power (per chain)	TX Power (3 chains)	Tolerance	RX Specifications Sensitivity	Tolerance
2.4GHz 802.11b	1Mbps	20dBm	25dBm	±2dB	-95dBm	±2dB
	2Mbps	20dBm	25dBm	±2dB	-94dBm	±2dB
	5.5Mbps	20dBm	25dBm	±2dB	-92dBm	±2dB
	11Mbps	20dBm	25dBm	±2dB	-90dBm	±2dB
2.4GHz 802.11g	6Mbps	21dBm	26dBm	±2dB	-94dBm	±2dB
	9Mbps	21dBm	26dBm	±2dB	-93dBm	±2dB
	12Mbps	21dBm	26dBm	±2dB	-93dBm	±2dB
	18Mbps	21dBm	26dBm	±2dB	-90dBm	±2dB
	24Mbps	21dBm	26dBm	±2dB	-90dBm	±2dB
	36Mbps	20dBm	25dBm	±2dB	-85dBm	±2dB
	48Mbps	19dBm	24dBm	±2dB	-82dBm	±2dB
2.4GHz 802.11n HT20	54Mbps	18dBm	23dBm	±2dB	-80dBm	±2dB
	MCS 0	21dBm	26dBm	±2dB	-94dBm	±2dB
	MCS 1	21dBm	26dBm	±2dB	-92dBm	±2dB
	MCS 2	21dBm	26dBm	±2dB	-89dBm	±2dB
	MCS 3	20dBm	25dBm	±2dB	-84dBm	±2dB
	MCS 4	20dBm	25dBm	±2dB	-83dBm	±2dB
	MCS 5	20dBm	25dBm	±2dB	-80dBm	±2dB
2.4GHz 802.11n HT40	MCS 6	18dBm	23dBm	±2dB	-79dBm	±2dB
	MCS 7	16dBm	21dBm	±2dB	-77dBm	±2dB
	MCS 0	20dBm	25dBm	±2dB	-93dBm	±2dB
	MCS 1	20dBm	25dBm	±2dB	-91dBm	±2dB
	MCS 2	20dBm	25dBm	±2dB	-89dBm	±2dB
	MCS 3	19dBm	24dBm	±2dB	-84dBm	±2dB
	MCS 4	19dBm	24dBm	±2dB	-82dBm	±2dB
MCS 5	19dBm	24dBm	±2dB	-80dBm	±2dB	
MCS 6	18dBm	23dBm	±2dB	-79dBm	±2dB	
MCS 7	16dBm	21dBm	±2dB	-75dBm	±2dB	

	Data Rate	Tx Power (per chain)	Tx Power (3 chains)	Tolerance	RX Specifications Sensitivity	Tolerance
5GHz 802.11a	6Mbps	20dBm	25dBm	±2dB	-94dBm	±2dB
	9Mbps	20dBm	25dBm	±2dB	-94dBm	±2dB
	12Mbps	20dBm	25dBm	±2dB	-92dBm	±2dB
	18Mbps	20dBm	25dBm	±2dB	-91dBm	±2dB
	24Mbps	20dBm	25dBm	±2dB	-90dBm	±2dB
	36Mbps	18dBm	23dBm	±2dB	-86dBm	±2dB
	48Mbps	16dBm	21dBm	±2dB	-83dBm	±2dB
5GHz 802.11n/ac VHT20	54Mbps	15dBm	20dBm	±2dB	-80dBm	±2dB
	MCS 0	19dBm	24dBm	±2dB	-93dBm	±2dB
	MCS 1	19dBm	24dBm	±2dB	-90dBm	±2dB
	MCS 2	19dBm	24dBm	±2dB	-87dBm	±2dB
	MCS 3	18dBm	23dBm	±2dB	-83dBm	±2dB
	MCS 4	18dBm	23dBm	±2dB	-80dBm	±2dB
	MCS 5	17dBm	22dBm	±2dB	-77dBm	±2dB
	MCS 6	16dBm	21dBm	±2dB	-74dBm	±2dB
5GHz 802.11n/ac VHT40	MCS 7	14dBm	19dBm	±2dB	-73dBm	±2dB
	MCS 8	13dBm	18dBm	±2dB	-71dBm	±2dB
	MCS 0	18dBm	23dBm	±2dB	-90dBm	±2dB
	MCS 1	18dBm	23dBm	±2dB	-88dBm	±2dB
	MCS 2	18dBm	23dBm	±2dB	-85dBm	±2dB
	MCS 3	17dBm	22dBm	±2dB	-82dBm	±2dB
	MCS 4	17dBm	22dBm	±2dB	-80dBm	±2dB
	MCS 5	16dBm	21dBm	±2dB	-75dBm	±2dB
	MCS 6	15dBm	20dBm	±2dB	-73dBm	±2dB
5GHz 802.11ac VHT80	MCS 7	14dBm	19dBm	±2dB	-73dBm	±2dB
	MCS 8	13dBm	18dBm	±2dB	-70dBm	±2dB
	MCS 9	13dBm	18dBm	±2dB	-68dBm	±2dB
	MCS 0	18dBm	23dBm	±2dB	-89dBm	±2dB
	MCS 1	18dBm	23dBm	±2dB	-87dBm	±2dB
	MCS 2	18dBm	23dBm	±2dB	-85dBm	±2dB
	MCS 3	17dBm	22dBm	±2dB	-83dBm	±2dB
	MCS 4	17dBm	22dBm	±2dB	-80dBm	±2dB
	MCS 5	16dBm	21dBm	±2dB	-78dBm	±2dB
MCS 6	15dBm	20dBm	±2dB	-75dBm	±2dB	
MCS 7	14dBm	19dBm	±2dB	-72dBm	±2dB	
MCS 8	13dBm	18dBm	±2dB	-70dBm	±2dB	
MCS 9	13dBm	18dBm	±2dB	-68dBm	±2dB	

## ORDERING INFORMATION

For -40~70°C operational temperature model, the model name will add -E

- **IPWAP-3004-1AC-24V.....P/N: 8665-017**  
One WI-FI 11ac/a/b/g/n Load Balancing Multifunction Router + 4 Giga PoE at/af Managed Switch + 2WAN ports; dual input 9V~56VDC; -20°C ~ 70°C
- **IPWAP-3004-2AC-24V.....P/N: 8665-018**  
Two WI-FI 11ac/a/b/g/n Load Balancing Multifunction Router + 4 Giga PoE at/af Managed Switch + 2WAN ports; dual input 9V~56VDC; -20°C ~ 70°C
- **IPWAP-3004-1AC-2S-24V.....P/N: 8665-011**  
One WI-FI 11ac/a/b/g/n Load Balancing Multifunction Router w/ 2 RS232 serial ports and 4 Giga PoE at/af Managed Switch + 2WAN ports; dual input 9V~56VDC; -20°C ~ 70°C
- **IPWAP-3004-1AC-2SA-24V.....P/N: 8665-012**  
One WI-FI 11ac/a/b/g/n Load Balancing Multifunction Router w/2 RS422 serial ports and Giga ports 6incl. 4 PoE at/af ports + 2WAN ports Managed switch; dual input 9V~56VDC; -20°C ~ 70°C
- **IPWAP-3004-1AC-2SB-24V.....P/N: 8665-015**  
One WI-FI 11ac/a/b/g/n Load Balancing Multifunction Router w/2 RS485 serial ports and Giga ports 6incl. 4 PoE at/af ports + 2WAN ports Managed switch; dual input 9V~56VDC; -20°C ~ 70°C
- **IPWAP-3004-2AC-2S-24V.....P/N: 8665-013**  
Two WI-FI 11ac/a/b/g/n Load Balancing Multifunction Router w/ 2 RS232 serial ports and 4 Giga PoE at/af Managed Switch + 2WAN ports; dual input 9V~56VDC; -20°C ~ 70°C
- **IPWAP-3004-2AC-2SA-24V.....P/N: 8665-014**  
Two WI-FI 11ac/a/b/g/n Load Balancing Multifunction Router w/2 RS422 serial ports and 4 Giga PoE at/af Managed Switch + 2WAN ports; dual input 9V~56VDC; -20°C ~ 70°C
- **IPWAP-3004-2AC-2SB-24V.....P/N: 8665-016**  
Two WI-FI 11ac/a/b/g/n Load Balancing Multifunction Router w/2 RS485 serial ports and 4 Giga PoE at/af Managed Switch + 2WAN ports; dual input 9V~56VDC; -20°C ~ 70°C
  
- **EMMC Flash Storage**
- **8G.....P/N: 8850-113**
- **16G.....P/N: 8850-114**

- 32G.....P/N: 8850-115
  - Software License
- LOAD BALANCING Full Package.....P/N: 9000-102

## OPTIONAL ACCESSORIES

### Management System

- InstaAir.....P/N: 9000-121  
Cloud Based Fleet Management System for Routers

### Wi-Fi Antenna

- ANT11000051 2.4/5GHz SMA dipole Wi-Fi antenna, 3dBi (2.4GHz), 4dBi (5GHz)



- ANT11000055 2.4/5GHz SMA dipole Wi-Fi antenna, 6dBi (2.4GHz), 4dBi (5GHz)



- ANT11000090 2.4/5GHz omnidirectional Wi-Fi antenna, 802.11ac 3x3 MIMO, 5dBi, IP67, cable length: 3M



### Antenna Base

- ADA11000052 Magnetic antenna base for Wi-Fi, RP SMA Jack Base, Length : 1M



### Lantech Communications Global Inc.

www.lantechcom.tw  
info@lantechcom.tw

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