IPWAP-3004

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

- *Up to 2 concurrent WI-FI 11ac and redundancy(2AC model)*
- *Built-in 4 Gigabit PoE at/af Switch with budget 80W@12V/24V/48V*
- *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 antenna*
- *Fast roaming**, 802.11r standard*
- *Supports AP/ BRIDGE/Client modes*
- *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)*
- *Optional TWCC** (Train Wireless Carriage Coupling)for auto wireless coupling*
- *VPN router for Multi-site VPN, OpenVPN, L2TP, IPsec, PPTP**,L2 over GRE*
- *Optional EMMC Flash storage on-board***
- *Load Balancing** support 8 mechanism*
- *Support NAT and Firewall*
- *Support Modbus gateway on serial ports*
- *Support 2 RS422/485 ports with 2.5KV isolation or 2x RS232 ports*
- *Input voltage selection 9~56VDC (24V model)*
- *Environmental monitoring for router inside info with voltage, current temperature and total PoE load; WI-FI graphic signal strength & TX/RX rate display*
- *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 802.3ac Wi-Fi + u 4x Gigabit Ethernet PoE switch + 2WAN/2LANs + 2 serial ports that supports advanced function of VPN, Load-balancing** (Basic & Full package), EMMC Flash storage**, TWCC**, Protocol gateway(Modbus), Storage**, and Wi-Fi roaming**. The dual core CPU with 1.6GHz + 256M flash enables the router to multi-task smoothly.

Optional TWCC** (Train Wireless Carriage Coupling) for auto coupling

IPWAP-3004 supports optional TWCC** (Train Wireless Carriage Coupling) that enables auto wireless coupling to reconnect APs.

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.

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.

802.11r fast roaming**
IPWAP-3004 support fast roaming** (optional) in coordination with Lantech Wireless Controller to allow encryption keys to be stored on all of the APs in a network. Client mode supports PMK** Caching and pre-authentication.

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 treads. 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
Standard	Fixed	Manually route by traffic type through fixed WAN link.
Basic Package	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, 485 in which RS422/485 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, Open VPN, L2TP, IP sec L2 over GRE , NAT and PPTP** for various VPN applications.

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

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; 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 and TX/RX rate display
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 and TX/RX rate display shows connection status at a glance

Cloud/Host based InstaView**/InstaAir** software for router / fleet management and monitoring
Lantech InstaView** can offer fixed location router central management, configuration, and monitoring via secured Cloud or Host server. InstaAir** can offer fleet router management including remote configuration/upgrade, monitoring/alerting and report function

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 IP 30 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. 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

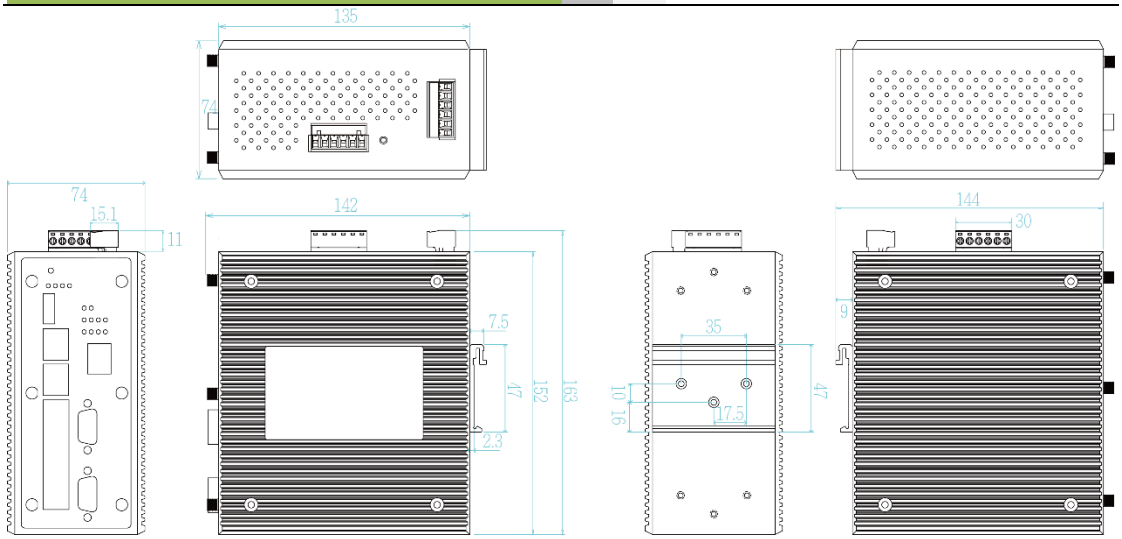
- **High Speed Air Connectivity: WLAN interface support up to 2.6Gbps link speed(2AC) or 1.3Gbps (1AC)**
- **Built-in 4 Gigabit PoE switch + 2 WAN/LAN port with 80W@12V /80W@24V&48V PoE budget**
- **Optional TWCC** (Train Wireless Carriage Coupling) for auto wireless coupling**
- **EMMC-FLASH storage****
- **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**
- **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-MD5, 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, IP sec L2 over GRE, and PPTP** fro secured network connection**
- **The built-in Layer-4 firewall includes DoS**, IP address filter / Mac address filter* / TCP/UDP port number.**
- **Support SNMP*v1/v2c/v3**
- **NAT/DMZ**
- **Fast roaming** (Optional) between APs by Wireless Controller**
- **Load Balancing** supports 8 mechanism between multiple WANs**

Pack	Algorithm	Description
Standard	Fixed	Manually route by traffic type through fixed WAN link.
Basic Package	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.

- **Built-in 2 x serial ports(RS232/RS422/485)**
- **Serial port with 2.5KV isolation on RS422/485**
- **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 & TX/RX rate display**
- **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/FTP/HTTP**
- **Configuration backup and restoration**
  - *Supports text configuration file for system quick installation*
  - *USB port to upload/download configuration by USB dongle*
  - *InstaView/AIR** for centralized configuration deployment, backup & upgrade*
- **Reset button for factory default mode**
- **Support editable captive portal login page**
- **IP 30 housing for industrial environment**
- **Cloud/Host based InstaView/AIR** for fixed/fleet router management/configuration/monitoring**
- **DIN-Rail and Wall-mount** installation**
- **Operation temperature -20~70C or -40°C to 70°C(-E)**

DIMENSIONS (unit=mm)



SPECIFICATION

WLAN Interface

Operating Mode	AP/BRIDGE/Client modes
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	**802.11b: DSSS** **802.11a/g:** OFDM (BPSK, QPSK, 16-QAM, 64-QAM) **802.11n:** OFDM (BPSK, QPSK, 16-QAM, 64-QAM) **802.11ac:** 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)	**Output Power Tx +/- 2dB(per chain)** 18dBm @ 1~11Mbps 18dBm @ 6~54Mbps 20/20dBm @ MCS0~MCS7 (HT20/40) **Receiver Sensitivity Rx +/- 2dB** ≦-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)	**Output Power Tx +/- 2dB(per chain)** 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) **Receiver Sensitivity Rx +/- 2dB** ≦-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,MD5,EAP,TLS,EAP,TTLS,EAP MsCHAPv3 and PEAP **
Wireless Security	SSID broadcast disable**

Software

IPv6/4	Present
Fast Roaming **	802.11r (optional)
TWCC**	Optional Train Wireless Carriage Coupling for Auto wireless Coupling
Air-teaming**(2AC)	● High sustainability with fail over link ● Aggregated bandwidth
WMM	WI-FI multimedia and 802.11e traffic prioritization
VPN	Multi-site VPN, Open VPN, PPTP**, L2TP, IPsec , L2 over GRE, NAT
Firewall	DoS**, IP address filter / Mac address filter* / TCP/UDP port number.
Load Balancing**	8 schemes for multiple WAN
Fixed(standard)	Manually route by traffic type through fixed WAN link.
Basic Package**	
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.
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.
Security	WEP64/128bits/ WPA/ WPA-PSK (TKIP*,AES)/ WPA2/ WPA2-PSK (TKIP*,AES)/SSH/SSL/HTTPS
Authentication	Radius Authentication, EAP-MD5, 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(DoS**/ 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 & TX/RX rate display
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/DO 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/FTP/HTTP
Configuration backup & restore	Supports text configuration file for system quick installation USB port to upload/download configuration by USB dongle InstaView/AIR** for mass configuration/upgrade

Physical Ports & System

Connectors	10/100/1000T: 6x ports RJ 45 with 2 WAN/LAN ports and 4 PoE ports USB x 1 RS-232 connector: 1 x RJ 45 Serial connector : 2 DB9 SMA connector : 6 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 RS422/485
Serial Data Bits	5, 6, 7, 8
Serial Parity	odd, even, none, mark, space
Serial Stop Bits	1, 1.5, 2
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	RS422/485 2.5KV isolation; 8KV contact & 15KV air RS232 8KV contact and 15KV air ESD DIDO 3KV isolation Input power 1.5KVA isolation
Micro SD	128G or 256G(MSD model)
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

LED Indicators

System & Power	Per unit: Power 1 (Green), Power 2 (Green), P-Fail (Red) , Ring Master(Green), Storage(Green), Serial1/Serial2(Green) ,Ready(Green)
10/100/1000Base-T(X) port indicator	Link/Activity (Green), Speed (Yellow), PoE (Green)
Fault	Red: Ethernet link down or power down

Fault contact

Relay	Relay output to carry capacity of 1A at 24VDC

Power

Input power	Dual DC input, 9~56VDC (24V model)
PoE Budget	80W@12V/24V/48V
Power consumption (Typ.)	30.5W (1L1AC)

Physical Characteristic

Enclosure	IP 30 aluminum case
Dimension	74 (W) x 142 (D) x 152 (H) mm
Weight	1000g

Environmental

Storage Temperature	-40°C ~ 85°C (-40°F ~ 185°F)
Operating Temperature	-20°C ~ 70°C (-4°F ~ 140°F) -40°C ~ 70°C (-4°F ~ 140°F) –E model
Operating Humidity	5% to 95% Non-condensing

Regulatory approvals

EMC	FCC* Part 15 Class A, EN55032*
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
E-marking**	E13
MTBF	NA
Warranty	5 years

*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
	54Mbps	18dBm	23dBm	±2dB	-80dBm	±2dB
2.4GHz 802.11n HT20	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
	MCS 6	18dBm	23dBm	±2dB	-79dBm	±2dB
	MCS 7	16dBm	21dBm	±2dB	-77dBm	±2dB
2.4GHz 802.11n HT40	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
	54Mbps	15dBm	20dBm	±2dB	-80dBm	±2dB
5GHz 802.11n/ac VHT20	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
	MCS 7	14dBm	19dBm	±2dB	-73dBm	±2dB
	MCS 8	13dBm	18dBm	±2dB	-71dBm	±2dB
5GHz 802.11n/ac VHT40	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
	MCS 7	14dBm	19dBm	±2dB	-73dBm	±2dB
	MCS 8	13dBm	18dBm	±2dB	-70dBm	±2dB
	MCS 9	13dBm	18dBm	±2dB	-68dBm	±2dB
5GHz 802.11ac VHT80	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 -40~70C operational temperature model, the model name will add -E

- **IPWAP-3004-1AC-2S-24V…..……...…….....P/N: 8665-011**
  One WI-FI 11ac/a/b/g/n Load Balancing** AP VPN Mobile Router w/ 2 RS232 serial ports and 4 Giga PoE at/af Switch + 2WAN/2LAN ports; dual 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** AP VPN Mobile Router w/2 RS422/485 serial isolated ports and Giga ports 6incl. 4 PoE at/af ports + 2WAN/2LAN ports switch; dual 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** AP VPN Mobile Router w/ 2 RS232 serial ports and 4 Giga PoE at/af Switch + 2WAN/2LAN ports; dual 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** AP VPN Mobile Router w/2 RS422/485 serial isolated ports and 4 Giga PoE at/af Switch + 2WAN/2LAN ports; dual 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 Basic Package…….....…….....P/N: 9000-101**
- **LOAD BALANCING Full Package……..…….....P/N: 9000-102**
- **TWCC…..……..…….....P/N: 9000-103**
- **WIRELESS ROAMING…..……..…….....P/N: 9000-107**

OPTIONAL ACCESSORIES

Wireless Connector Adapter

- **ADA11000052** RP SMA Jack Base, Length : 1M

Wireless Antenna

- **ANT11000051** 2.4G&5.8GHz SMA Omni-directional / dipole antenna, 2dBi or 5.8GHz 3dBi

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