IPWAP-3004DF

Industrial Multifunction VPN Router Managed Switch w/up to 2x WiFi 11ac + 2 serial ports + 4 Gigabit Ethernet + 2 WAN Dual Speed SFP switch (incl. 4 PoE) w/Load Balancing**, TWCC**, VPN, Protocol Gateway, Storage**; 24V input

- *Up to 2 concurrent WI-FI 11ac and redundancy(2AC model)*
- *Optional TWCC**(Train Wireless Carriage Coupling) for auto wireless coupling*
- *Built-in 4 Gigabit Ethernet ports + 2 WAN Dual Speed SFP managed switch including 4 PoE at/af w/budget 80W*
- *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)*
- *MIMO technology 3T3R; SMA type up to 6 external antenna*
- *Fast roaming** , 802.11r standard*
- *Supports AP/Bridge /Client modes*
- *Air teaming** for Wi-Fi high-sustainability and aggregated bandwidth*
- *VPN router for Multi-site VPN, OpenVPN, L2TP over IPsec, IPsec, PPTP**, L2 over GRE , IPGRE*
- *Load Balancing** support 8 mechanism*
- *Support NAT and Firewall*
- *Optional EMMC Flash storage on-board**
- *Support 2 RS422/485 ports with 2.5KV isolation or 2x RS232 ports*
- *Dual isolated input voltage 9V to 60VDC (24V model) for vehicle, station and process automation applications*
- *Ignition sensing on 24V model*
- *Vehicle E-marking* certificate*
- *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**
- *Environmental monitoring for router inside info with voltage, current, temperature and total PoE load; WIFI graphic signal strength*

OVERVIEW

Lantech IPWAP-3004DF series is a next generation industrial multi-function VPN router managed switch w/up to 2x 802.3ac Wi-Fi + 4x Gigabit Ethernet+ 2 WAN dual speed SFP incl. 4 PoE ports + 2 serial ports that supports advanced function of VPN, Load-balancing**(Basic & Full Package), EMMC Flash storage** , TWCC**, 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-3004DF series 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-3004DF can operate either 5GHz or 2.4GHz bands, offering the maximum speed of 2.6Gbps bandwidth 1.3GMbps per 802.11ac module). It is also compatible with 802.11b/g/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.

Optional EMMC Flash storage*

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

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

The innovative Air-teaming protection 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.

MIMO technology with 3T3R and SMA type connectors

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

Optional 802.11r fast roaming **

IPWAP-3004DF support fast roaming* 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 (move to roaming section).

Managed switch Function

W/ port managed functions, QOS, VLAN, Multicast, Redundant protection, security

Wireless WMM QoS

IPWAP-3004DF 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-3004DF support up to 16 SSIDs, each SSID has its independent security and encryption.

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

IPWAP-3004DF supports Load Balancing** for WAN (client mode) 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

It builds in 2 port serial connection for RS232, RS422, 485 in which RS422/485 has 2.5KV isolation protection.

VPN and firewall

Besides traditional VPN peer to peer tunneling, IPWAP-3004DF 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 optional 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-3004DF 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-60VDC (24V model) ; Built-in 4 port Gigabit Ethernet

The IPWAP-3004DF is able to work from 9VDC to 60VDC (24V

model) that is particular good for vehicle, rail train, depot etc. application.

Graphic Wi-Fi signal strength

The graphic Wi-Fi signal strength shows connection status at a glance

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 supports dual-image firmware* to choose which one to start.

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.

Editable login page of captive portal

The IPWAP-3004DF 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-3004DF is designed to meet with outdoor 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-3004DF is best for outdoor community, vehicle, process control automation etc application.

For more usage flexibilities, IPWAP-3004DF 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 1.3GMbps (1AC)**
- **Built-in 4 Gigabit ports + 2 WAN Dual Speed SFP managed switch incl. 4 PoE at/af for PoE budget 80W**
- **Managed switch functions**
- **Optional TWCC** (Train Wireless Carriage Coupling) for auto wireless coupling**
- **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 with 6 SMA type connectors and optional antennas**
- **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.*
- **Fast roaming** (Optional) between APs by Wireless Controller**
- **IEEE 802.11h DFS and automatic TPC**
- **Output power : <24dBM**
- **EMMC-FLASH storage**8/16/32G**
- **Transmit power adjustment**
- **VAP (virtual access point) support up to 16 SSIDs**
- **Operation modes : AP / Bridge / Client**
- **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**

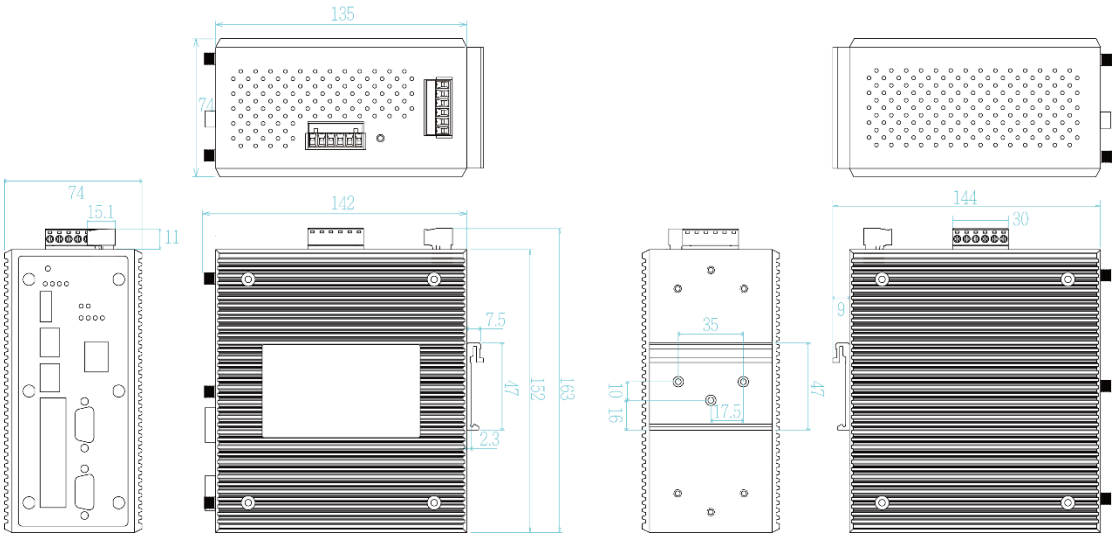
Pack	Algorithm	Description
Standard	Fixed	Manually route by traffic type through fixed WAN link.
Basic	Failover	Routes connections through

Package		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 optional 2DI / 2DO(Digital Input / Output)**
- **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**
- **Support SNTP to synchronize system clock**
- **Support LLDP discovery protocol**
- **Support DHCP Server and Client**
- **Reset button for factory default mode**
- **Graphic WI-FI signal strength**
- **Firmware upgradeable through TFTP/FTP/HTTP**
- **Configuration backup and restoration**
  - *Supports text configuration file for system quick installation*
  - *USB port to upload/download firmware by USB dongle*
- **Support editable captive portal login page**
- **IP 30 housing for industrial environment**
- **DIN-Rail and Wall-mount** installation**
- **Operation temperature -20~70°C or -40°C to 70°C (-E)**
- **Wide range input voltage from 9V-60V (24V model)**

DIMENSIONS (unit=mm)

2AC-2S model



SPECIFICATION

WLAN Interface			
Operating Mode	AP/BRIDGE/Client modes	Wireless bandwidth	5GHz: Up to 1300Mbps 2.4GHz: Up to 450Mbps
Radio Frequency Type	DSSS, OFDM	Modulation	**802.11b: DSSS** **802.11a/g:** OFDM (BPSK, QPSK, 16-QAM, 64-QAM) **802.11n:**
Wireless Standard	IEEE 802.11ac/n/a 5GHz IEEE 802.11b/g/n 2.4GHz		

	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-TLS,EAP-TTLS, PEAP
Wireless Security	SSID broadcast disable

Software

IPv6/4	Present
Login Security	Supports IEEE802.1x Authentication/RADIUS
TWCC**	Optional Train Wireless Carriage Coupling for Auto wireless Coupling
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*
Management	SNMP*v1,v2c,v3/ Web/Telnet/CLI
Load Balancing**	8 schemes for multiple WAN
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 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.
Fast Roaming**	802.11r work with Lantech controller
Air-teaming protection(2AC)**	● High sustainability with fail over link ● Aggregated bandwidth
WMM	Wi-Fi multimedia and 802.11e traffic prioritization
Security	WEP64/128bits/ WPA/ WPA-PSK (TKIP,AES)/ WPA2/ WPA2-PSK (TKIP,AES)/SSH/SSL/HTTPS
Authentication	Radius Authentication, EAP-TLS, EAP-TTLS, PEAP; SSID broadcast disable supported
SSID	16 sets
Client mode	PMK** Caching and pre-authentication.
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**
Graphic signal display	Graphic Wi-Fi signal strength
Remote Web control	To reboot or get status of router by WebUI
Captive portal	Editable captive portal login page
Maintenance	Firmware upgradeable through TFTP/FTP/HTTP
Configuration backup & restore	Supports text configuration file for quick system installation USB port to upload/download firmware by USB dongle

Physical Ports & System

Connectors	10/100/1000T: 2x ports RJ 45 with Auto MDI/MDI-X function 10/100/1000T: 4x ports RJ 45 + 2 WAN Dual Speed SFP (incl 4 PoE ports) USB x 1 RS-232 connector: 1 x RJ 45 Serial connector : 2 DB9 SMA connector : 6 male 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

LED Indicators

Power & System indicator	Per unit: Power 1 (Green), Power 2 (Green), P-Fail (Red) , Ring Master(Green), Storage(Green), Serial1/Serial2/Serial3/Serial4(Green) ,Ready(Green)
10/100/1000Base-T(X) port indicator	Link/Activity (Green), Speed (Yellow) , PoE (Green)
WLAN LEDs	WLAN 1 , WLAN2 Link /ACT : Green
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
EMMC Storage**	8/16/32 GB
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
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 isolated inputs, 9V~60VDC (24V model) ; 80W@12V /80W@24V
Power consumption (Typ.)	20 Watts
Physical Characteristic	
Enclosure	IP 30 aluminum case
Dimension	74 (W) x 142 (D) x 152 (H) mm
Weight	900g
Environmental	
Storage Temperature	-40°C ~ 85°C (-40°F ~ 185°F)
Operating Temperature	-20°C ~70°C (-4°F ~ 158°F) -40°C ~70°C (-40°F ~ 158°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-3004DF-1AC-2S-24V…..……..……..P/N: 8694-001**
  One Wi-Fi 11ac/a/b/g/n Load Balancing** Multifunction Router Managed Ethernet Switch w/ 2 RS232 serial ports and 4 port Giga ports and 2 WAN dual speed SFP managed Switch (incl. 4 PoE) ; dual isolated input 9V~60VDC; -20~70C
- **IPWAP-3004DF-1AC-2SA-24V…..……..……..P/N: 8694-002**
  One Wi-Fi 11ac/a/b/g/n Load Balancing** Multifunction Router Managed Ethernet switch w/ 2 RS422/485 serial isolated ports and 4 port Giga ports and 2 WAN dual speed SFP managed Switch (incl. 4 PoE) ; dual isolated input 9V~60VDC; -20~70C
- **IPWAP-3004DF-2AC-2S-24V…..……..……..P/N: 8694-003**
  Two Wi-Fi 11ac/a/b/g/n Load Balancing** Multifunction Router Managed Ethernet Switch w/2 RS232 serial ports and 4 port Giga ports and 2 WAN dual speed SFP managed Switch (incl. 4 PoE) ; dual isolated input 9V~60VDC -20~70C
- **IPWAP-3004DF-2AC-2SA-24V…..……..……..P/N: 8694-004**
  Two Wi-Fi 11ac/a/b/g/n Load Balancing** Multifunction Router Managed Switch w/2 RS422/485 serial isolated ports and 4 port Giga ports and 2 WAN dual speed SFP managed Switch (incl. 4 PoE) ; dual isolated input 9V~60VDC; -20~70C

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

DIN Rail Power

NDR-480 Series	480W Single Output Industrial Din Rail Power; 90-264VAC / 127-370VDC Input Range; Cooling by free air convection; RoHS2 ; Operating Temp. -20°C~70°C (ambient, derating each output at 2.5% per degree from 50°C ~ 70°C)
NDR-240 Series	240W Single Output Industrial Din Rail Power; 90-264VAC / 127-370VDC Input Range; Cooling by free air convection; RoHS2 ; Operating Temp. -20°C~70°C (ambient, derating each output at 2.5% per degree from 50°C ~ 70°C)
NDR-120 Series	120W Single Output Industrial Din Rail Power; 90-264VAC / 127-370VDC Input Range; Cooling by free air convection; RoHS2 ; Operating Temp. -20°C~70°C (ambient, derating each output at 2.5% per degree from 50°C ~ 70°C; For 115VAC, please refer to derating curve on NDR-120 Series datasheet)
NDR-75 Series	75W Single Output Industrial Din Rail Power; 90-264VAC / 127-370VDC Input Range; Cooling by free air convection; RoHS2 ; Operating Temp. -20°C~70°C (ambient, derating each output at 2.5% per degree from 50°C ~ 70°C; For 115VAC, please refer to derating curve on NDR-120 Series datasheet)

Mini GBIC (SFP)

8330-162X	MINI GBIC 1000SX (LC/0.5km) Transceiver
8330-163X	MINI GBIC 1000SX2 (LC/2km) Transceiver
8330-165X	MINI GBIC 1000LX (LC/10km) Transceiver
8340-0591	MINI GBIC 1000LHX (LC/40km) Transceiver
8330-166	MINI GBIC 1000XD (LC/50km) Transceiver
8330-169	MINI GBIC 1000XD (LC/60km) Transceiver
8330-167	MINI GBIC 1000ZX (LC/80km) Transceiver
8330-170	MINI GBIC 1000EZX (120km) Transceiver
8330-168	MINI GBIC 1000T (100m) Transceiver
8330-188	LTSFP-1000BX-10KM Transceiver (WDM 1310)
8330-189	LTSFP-1000BX-10KM Transceiver (WDM 1550)
8330-186	LTSFP-1000BX-20KM Transceiver (WDM 1310)
8330-187	LTSFP-1000BX-20KM Transceiver (WDM 1550)
8330-180	LTSFP-1000BX-40KM Transceiver (WDM 1310)
8330-182	LTSFP-1000BX-40KM Transceiver (WDM 1550)
8330-181	LTSFP-1000BX-60KM Transceiver (WDM 1310)
8330-183	LTSFP-1000BX-60KM Transceiver (WDM 1550)
8330-184	LTSFP-1000BX-80KM Transceiver (WDM 1490)
8330-185	LTSFP-1000BX-80KM Transceiver (WDM 1550)
8330-262	MINI GBIC 2.5G 850nm VCSEL (LC/0.3km) Transceiver
8330-263	MINI GBIC 2.5G 1310nm FP (LC/2km) Transceiver
8330-265	MINI GBIC 2.5G 1310nm DFB (LC/15km) Transceiver

All SFP ended with D are with Diagnostic function

LTE Antenna

ANT11000041	791-960/1710~2170/2500~2700MHZ, SMA plug, EUNA
ANT11000042	704-960/1710~2170MHZ, SMA plug, US

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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