

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, VPN, Protocol Gateway, Storage**; 24V input**

- Up to 2 concurrent Wi-Fi 11ac and redundancy(2AC model)
- 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 antennas
- 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 built-in 5 mechanism
- Support NAT and Firewall
- Optional EMMC Flash storage on-board**
- Support 2 RS422/RS485 ports with 2.5KV isolation or 2x RS232 ports
- Support roaming with 802.11k & v
- Supports AP/ Bridge/Client/MESH modes
- Support 802.11s Wireless Mesh Network
- Dual input voltage 9V to 56VDC (24V model) for vehicle, station and process automation applications
- Vehicle E-marking* certificate
- ITxPT compliant w/ ignition function*
- 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 802.11ac 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**, 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-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.

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

IPWAP-3004DF 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-3004DF 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.

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.

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 threats. 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
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 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.
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, RS485 in which RS422/RS485 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-56VDC (24V model) ;

Built-in 4 port Gigabit Ethernet

The IPWAP-3004DF is able to work from 9VDC to 56VDC (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**
- **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.
- **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**
- **Support AP/Bridge/Client/MESH mode**
- **Support roaming with 802.11k & v**
- **Support 802.11s Wireless Mesh Network**
- **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
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

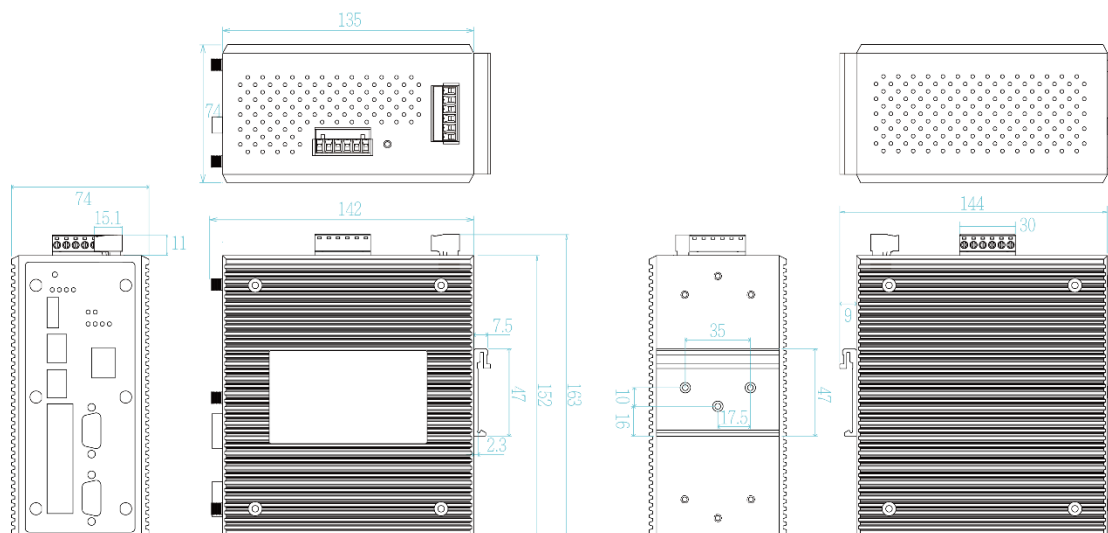
		another link if preferred link fail occurs. Once failover will not failback until link loss.
	Priority	Routes connections through preferred WAN link as primary while others follow by. Ex. Wi-Fi client>LTE>others
	Weighted Round-Robin	Evenly distribute the traffic over all working WAN links in circular 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.
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- Built-in 2 x serial ports**(RS232/RS422/RS485)
- Serial port** with 2.5KV isolation on RS422/RS485
- 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/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)
- ITxPT compliant w/ ignition function*
- Wide range input voltage from 9V-56V (24V model)

DIMENSIONS (unit=mm)

2AC-2S model



SPECIFICATION

WLAN Interface		Basic Package	
Radio Frequency Type	DSSS, OFDM	Fixed	Manually route by traffic type through fixed WAN link.
Wireless Standard	IEEE 802.11ac/n/a 5GHz IEEE 802.11b/g/n 2.4GHz	Failover	Routes connections through preferred WAN link while others stand-by. Sequentially activate another link if preferred link failure occurs.
Wireless bandwidth	5GHz: Up to 1300Mbps 2.4GHz: Up to 450Mbps	Priority	Routes connections through preferred WAN link while others stand-by. Sequentially activate other links if overflow occurs.
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)	Weighted Round-Robin	Evenly distribute the traffic over all working WAN links in circular order according to the specified weights
Operating Frequency	IEEE 802.11 a/b/g/n ISM Band, 2.412GHz~2.472GHz, 5150MHz~5850MHz	Custom Route	Routing through the selected WAN for each specific traffic ex: TCP/UDP port number and IP address.
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	Full Package** incl. basic package	
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)	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.
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)	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
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	Fastest*	Routes connections through the WAN link with lowest latency time.
Wireless Security	SSID broadcast disable	Roaming	802.11k & v
Software		MESH	Support 802.11s Wireless Mesh Network
IPv6/4	Present	Air-teaming protection(2AC)**	<ul style="list-style-type: none"> High sustainability with fail over link Aggregated bandwidth
Operating Mode	AP/Bridge/Client/MESH modes	WMM	Wi-Fi multimedia and 802.11e traffic prioritization
Login Security	Supports IEEE802.1x Authentication/RADIUS	Security	WEP64/128bits/ WPA/ WPA-PSK (TKIP,AES)/ WPA2/ WPA2-PSK (TKIP,AES)/SSH/SSL/HTTPS
Access Security	HTTP/HTTPS/Telnet/SSH & Administration; SNMPv1/v2/v3 access for authentication via MD5/SHA(v3) and Encryption via DES/AES(v3)	Authentication	Radius Authentication, EAP-TLS, EAP-TTLS, PEAP; SSID broadcast disable supported
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*	SSID	16 sets
Management	SNMPv1,v2c,v3/ Web/Telnet/CLI	Client mode	PMK** Caching and pre-authentication.
Load Balancing	8 schemes for multiple WAN	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/ 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 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
		RS-232	TxD, Rx/D, 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		80W @12V /80W @24V 20 Watts
LED Indicators		Physical Characteristic	
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)	Enclosure	IP 30 Metal case
10/100/1000Base-T(X) port indicator	Link/Activity (Green) , Speed (1000T: Yellow; 10/100TX: off), PoE (Green)	Dimension	74 (W) x 142 (D) x 152 (H) mm
WLAN LEDs	WLAN 1 , WLAN2 Link /ACT : Green	Weight	900g
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	Environmental	
EMMC Storage**	8/16/32 GB	Storage Temperature	-40°C ~ 85°C (-40°F ~ 185°F)
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 Temperature	-20°C ~70°C (-4°F ~ 158°F) -40°C ~70°C (-40°F ~ 158°F) -E model
Fault	Red: Ethernet link down or power down	Operating Humidity	5% to 95% Non-condensing
Fault contact		Regulatory approvals	
Relay	Relay output to carry capacity of 1A at 24VDC	EMC	FCC* Part 15 Class A, EN55032*
Power		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
Input power	Dual DC inputs, 9V~56VDC (24V model) ;	Vehicle certificate	E13** ITxPT compliant*
		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
5GHz 802.11n/ac VHT40	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
5GHz 802.11ac VHT80	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-24V.....P/N: 8694-007**
One Wi-Fi 11ac/a/b/g/n Load Balancing Multifunction Router Managed Ethernet Switch + 4 port Giga ports and 2 WAN dual speed SFP managed Switch (incl. 4 PoE) ; dual input 9V~56VDC; -20~70C
- **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 input 9V~56VDC; -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 serial ports and 4 port Giga ports and 2 WAN dual speed SFP managed Switch (incl. 4 PoE) ; dual input 9V~56VDC; -20~70C
- **IPWAP-3004DF-1AC-2SB-24V.....P/N: 8694-005**
One Wi-Fi 11ac/a/b/g/n Load Balancing Multifunction Router Managed Ethernet switch w/ 2 RS485 serial ports and 4 port Giga ports and 2 WAN dual speed SFP managed Switch (incl. 4 PoE) ; dual input 9V~56VDC; -20~70C
- **IPWAP-3004DF-2AC-24V.....P/N: 8694-008**
Two Wi-Fi 11ac/a/b/g/n Load Balancing Multifunction Router Managed Ethernet Switch + 4 port Giga ports and 2 WAN dual speed SFP managed Switch (incl. 4 PoE) ; dual input 9V~56VDC -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 input 9V~56VDC -20~70C
- **IPWAP-3004DF-2AC-2SA-24V.....P/N: 8694-004**

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Two Wi-Fi 11ac/a/b/g/n Load Balancing Multifunction Router Managed Switch w/2 RS422 serial ports and 4 port Giga ports and 2 WAN dual speed SFP managed Switch (incl. 4 PoE) ; dual input 9V~56VDC; -20~70C

■ **IPWAP-3004DF-2AC-2SB-24V.....P/N: 8694-006**

Two Wi-Fi 11ac/a/b/g/n Load Balancing Multifunction Router Managed Switch w/2 RS485 serial ports and 4 port Giga ports and 2 WAN dual speed SFP managed Switch (incl. 4 PoE) ; dual input 9V~56VDC; -20~70C

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

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

All SFP ended with D are with Diagnostic function

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



Antenna Base

■ **ADA11000052**

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



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