

T(P)WAP-5004

EN50155 Multifunction VPN Router w/1x WiFi 11ac + 2 serial ports** + 4 Gigabit X-coded (PoE) Switch + 2 WAN/LAN w/Load Balancing, VPN, Protocol Gateway, Storage**; WV input

- Built-in 4 Gigabit X-coded (PoE) Ethernet managed switch +2 WAN/LAN ports
- WIFI radio for 802.11ac/a/b/g/n with 5GHz or 2.4GHz;
- Support WIFI 802.11e traffic prioritization and WMM
- MIMO technology 3T3R up to 6 antennas; Detachable antenna connectors with 6 SMA/QMA** type incl. 3 WIFI
- 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, L2 over GRE, IPGRE
- Load Balancing built-in 5 mechanism
- Support NAT and Firewall
- Support Modbus gateway on serial ports**
- Support Client-base roaming
- Supports AP/ Bridge/Client/MESH modes
- Support 802.11s Wireless Mesh Network
- Support 2 RS422/RS485 ports with 2.5KV isolation or 2x RS232 ports
- Optional 2 GT smart bypass protection
- Galvanic isolation on WV model from 16.8V~137.5V input
- PoE model: PoE budget 60W
- Environmental monitoring for router inside info with voltage, current, temperature and total PoE load; WIFI graphic signal strength
- Editable login page of captive portal for hot-spot application
- Optional EMMC Flash storage on-board**
- USB port to backup, restore the configuration file and upgrade firmware; Dual image firmware
- EN50155/EN61373/EN45545-2 verification



With 2 serial ports



Without 2 serial ports



OVERVIEW

Lantech T(P)WAP-5004 series is a next generation EN50155 multi-function VPN router w/ 1 x 802.11ac Wi-Fi + 1 x 4 Gigabit X-coded (PoE) Ethernet switch + 2 WAN/LAN ports + 2 serial ports** that support advanced function of VPN, Load-Balancing, EMMC Flash Storage**, Protocol gateway, Storage**, Wi-Fi roaming for on-board / onboard-to-ground applications. The dual core CPU with 1.6GHz + 256M flash enables the router to multi-task smoothly.

IEEE 802.11ac one band radio up to 2.6Gbps bandwidth

With IEEE 802.11ac capability, T(P)WAP-5004 can operate either 5GHz or 2.4GHz bands, offering the maximum speed of

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

Support AP/Bridge/Client mode, Mesh roaming

T(P)WAP-5004 supports AP/Bridge/Client mode for different applications.

It also supports client-base roaming to swap between the APs in a network.

Built-in Wireless Mesh network (WMN)

T(P)WAP-5004 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 the router can offer 8G/16G/32G capacity.

MIMO technology with 3T3R and standard SMA / optional QMA type connectors

Lantech T(P)WAP-5004 series adapts MIMO technology with smart antenna transmission and reception for 3T3R. With six external detachable antenna SMA/QMA** connectors and optional antennas, T(P)WAP-5004 can have better Wi-Fi coverage.

Wireless WMM QoS

T(P)WAP-5004 supports 802.11e standard which defines a set of Quality of Service for wireless LAN applications as well as WMM (WIFI 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 T(P)WAP-5004 support up to 16 SSIDs, each SSID has its independent security and encryption.

Load Balancing with 5 mechanisms for multi-WANs

T(P)WAP-5004 supports Load Balancing for WAN connections. There are five schemes for Load Balancing function:

Pack	Algorithm	Description
Basic	Fixed	All traffic will be distributed to a single WAN.
	Failover	Routes connections through preferred WAN link while others stand-by. Sequentially activating another link if the preferred link fails.
	Priority	Select the active WAN according to priority.
	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.

Optional 2 port serial connection, Modbus gateway

It builds optional 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.

Support various VPN applications and firewall

Besides traditional VPN peer to peer tunneling, T(P)WAP-5004 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, 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.

Support Routing Protocol: Static route / RIPv2 / OSPF / BGP / EIGRP

Lantech router series supports two routing methods: static routing and dynamic routing. Dynamic routing makes use of RIPv2, OSPF, EIGRP and BGP. The user can either choose one routing method to establish the routing table.

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 T(P)WAP-5004 will immediately send email and trap. The event log can be sent via syslog, emails or trigger the alarm relay. When the router is at remote area with limited access, Web control can help to get router status or remotely reboot by Web.

Wide range input voltage from 16.8~137.5VDC (WV model); PoE model built-in 4 port PoE at/af with 60W budget

The T(P)WAP-5004 is able to work from 16.8~137.5V (WV with isolation) and PoE model built-in 4 port PoE at/af with PoE budget 60W that is particular good for vehicle, rail train, depot etc. application

Environmental monitoring for inside router info& alerting; Graphic WIFI signal strength

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

Dual image firmware

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

Built-in Managed Switch Function

Managed switch function is built-in and provides various L2+ functions for network aggregation 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

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

Editable login page of captive portal

The T(P)WAP-5004 supports editable captive portal function that allows administrator to force end-users redirect to authentication page.

Ruggedized EN50155 design and FCC/CE & E-marking certificate**

The T(P)WAP-5004series is verified with EN50155, EN61373, EN45545 standard with IP65/54 housing. It passed tests under extensive Industrial EMI and environmental vibration and shocks standards. With CE, FCC and E-marking** certificate, the T(P)WAP-5004 is best for outdoor community, vehicle, power substation, process control automation etc. For more usage flexibilities, T(P)WAP-5004 supports operating temperature from -20°C to 70°C or -40°C to 70°C(-E model).

FEATURES & BENEFITS

- High Speed Air Connectivity: WLAN interface support 1.3Gbps
- Built-in 4 Gigabit X-coded (PoE) Ethernet managed switch + 2 WAN/LAN ports
- Dual DC input from 16.8V~137.5VDC input
- PoE model with 60W 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:
 - 5.180~5.825GHz
- MIMO smart antenna technology with 3T3R
- 6 STANDARD SMA / OPTIONAL QMA type connectors for Wi-Fi
- Output power : <24dBm
- Transmit power adjustment
- VAP (virtual access point) support up to 16 SSIDs
- Operation modes : AP/ Bridge / Client / MESH
- Traffic control for each SSID
- Support AP/Bridge/Client/MESH mode
- Support Client-base roaming
- Support 802.11s Wireless Mesh Network
- Band preference for same SSID services on dual band
- 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, L2 over GRE , IPGRE and NAT for secured network connection
- Support Routing Protocol: Static route / RIPv2 / OSPF / BGP / EIGRP
- 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 5 mechanism between multiple WANs

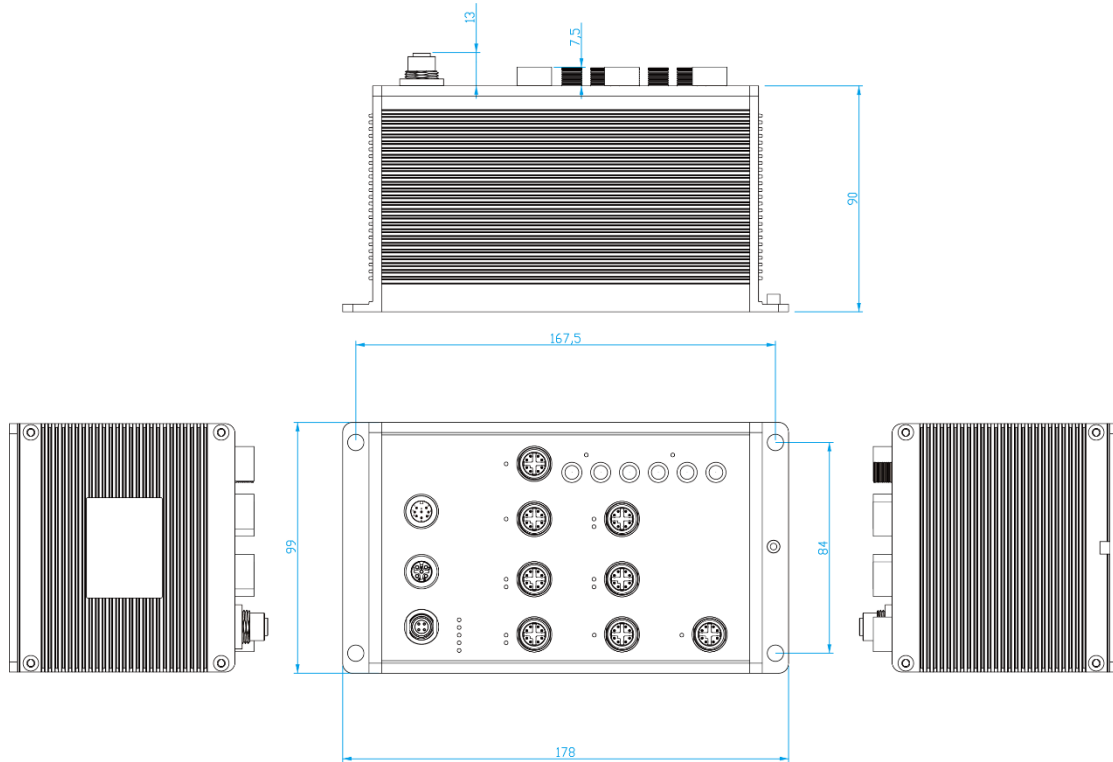
Pack	Algorithm	Description
Basic	Fixed	All traffic will be distributed to a single WAN.
	Failover	Routes connections through preferred WAN link while others stand-by. Sequentially activating another link if the preferred link fails.
	Priority	Select the active WAN according to priority.
	Weighted Round-Robin	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.

- Optional 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 Support SNTP to synchronize system clock
- Support LLDP discovery protocol
- Support DHCP Server and Client
- Graphic WIFI signal strength
- Built-in environmental monitoring for system input voltage, current and ambient temperature; Able to set alert when abnormal
- 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
- Dual image firmware
- IP 65/54 housing for water proof environment
- Support editable captive portal login page
- Wall-mount installation

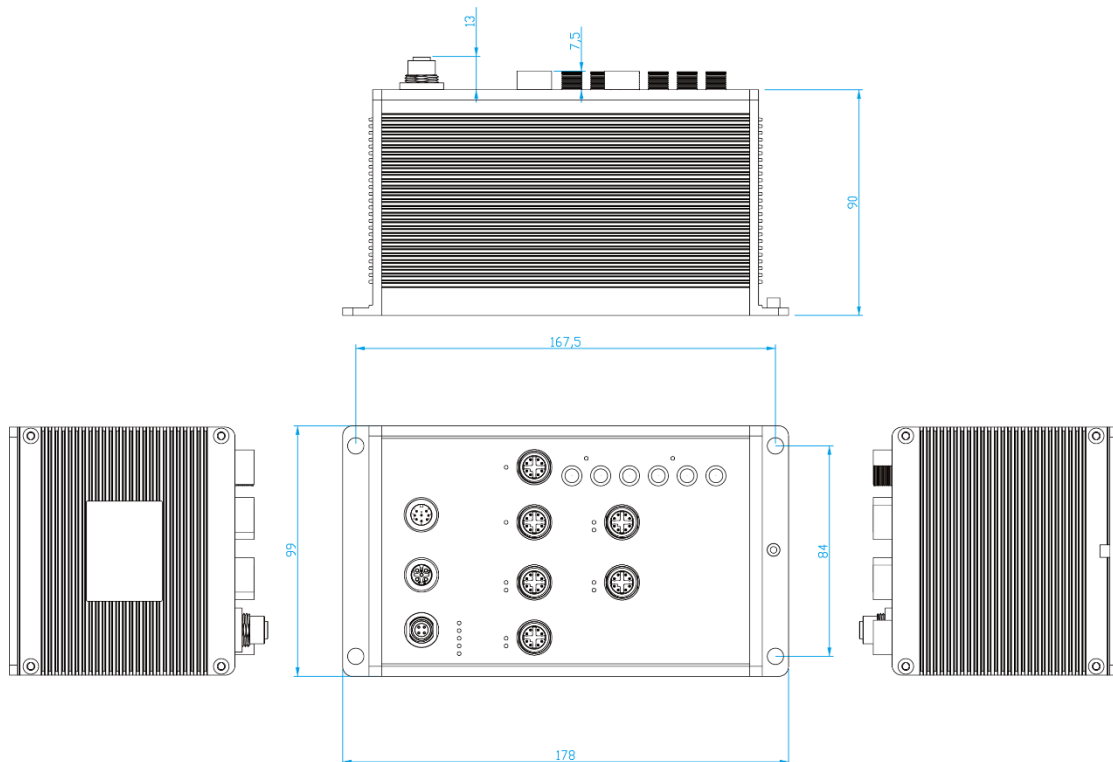
- Visible LED to show the power & port link and activity
 - Operation temperature -20~70C or -40~70C(-E)
- EN45545-2 Fire & Smoke, EN50155 and EN61373 shock/vibration verification

DIMENSIONS (unit=mm)

With serial ports



Without serial ports



SPECIFICATION

WLAN Interface		Fixed	All traffic will be distributed to a single WAN.
Radio Frequency Type	DSSS, OFDM	Failover	Routes connections through preferred WAN link while others stand-by. Sequentially activating another link if the preferred link fails.
Wireless Standard	IEEE 802.11ac/n/a 5GHz IEEE 802.11b/g/n 2.4GHz	Priority	Select the active WAN according to priority.
Wireless bandwidth	5GHz: Up to 1300Mbps 2.4GHz: Up to 450Mbps	Weighted Round-Robin	Evenly distribute the traffic over all working WAN links in circular order according to the specified weights
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)	Custom Route	Routing through the selected WAN for each specific traffic ex: TCP/UDP port number and IP address.
Operating Frequency	IEEE 802.11 a/b/g/n ISM Band, 2.412GHz~2.472GHz, 5150MHz~5850MHz	Roaming	Client-base roaming
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	MESH	Support 802.11s Wireless Mesh Network
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)	WMM	Wi-Fi multimedia and 802.11e traffic prioritization
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)	Security	WEP64/128bits/ WPA/ WPA-PSK (TKIP,AES)/ WPA2/ WPA2-PSK (TKIP,AES)/SSH/SSL/HTTPS
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) EAP-TLS,EAP-TTLS, PEAP	Authentication	Radius Authentication, EAP-TLS, EAP-TTLS, PEAP; SSID broadcast disable supported
Wireless Security	SSID broadcast disable	SSID	16 sets
Software		Timer	Built-in Real Time Clock to keep track of time always(RTC)
IPv6/4	Present	Discovery	IEEE 802.1ab Link Layer Discovery Protocol (LLDP)
Operation Mode	AP/Bridge/Client/MESH mode	SNMP trap	Device cold / warm start Port link up / link down DI / DO high / low
Login Security	Supports IEEE802.1x Authentication/RADIUS	Environmental Monitoring	System status for input voltage, current , ambient temperature to be shown in GUI and sent alerting if any abnormal status
Access Security	HTTP/HTTPS/Telnet/SSH & Administration; SNMP v1/v2/v3 access for authentication via MD5/SHA(v3) and Encryption via DES/AES(v3)	Graphic signal display	Graphic Wi-Fi signal strength
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 number), VRRP, DDNS	Remote Web control	To reboot or get status of router by Web
Routing	Static route / RIPv2 / OSPF / BGP / EIGRP	Captive portal	Editable captive portal login page
Management	SNMP v1,v2c,v3/ Web/Telnet/CLI	Maintenance	Firmware upgradeable through TFTP/ HTTP
Load Balancing	5 schemes for multiple WAN	Configuration backup & restore	Supports text configuration file for quick system installation USB port to upload/download firmware by USB dongle Dual image firmware
Basic		IPv6/4	Present
		Access Security	HTTP/HTTPS/Telnet/SSH & Administration; SNMP v1/v2/v3 access for authentication via MD5/SHA(v3) and Encryption via DES/AES(v3)
		Physical Ports & System	
		Connectors	10/100/1000T: 6x ports M12 8pole X-coded incl. 2 WAN/LAN ports and 4 PoE ports (PoE model) USB/Console connector: 1 x M12 8-pole A-coded DIDO : 1 x M12 5-pole A-coded Power Input connector : 1 x M12 4-pole A-coded Optional Serial connector : 2 x M12 8-pole X-coded RP-SMA/QMA** connector for Wi-Fi 2AC: 6 (female) RP-SMA/QMA** connector for Wi-Fi 1AC: 3 (female)
		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, 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 2.5KV isolation Input power 1.5KVA isolation
		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 80 VDC, 50mA
		LED Indicators	
		Power & System indicator	Per unit: Power 1 (Green), Power 2 (Green), P-Fail (Red) , Ring Master(Green), System Ready(Green), Serial 1/Serial2(Green)
		10/100/1000Base-T(X) port indicator	Link/Activity (Green), Speed (Yellow), PoE (Green, PoE model)
		Fault	Red: Ethernet link down or power down

Fault contact		Relay	Relay output to carry capacity of 1A at 24VDC	EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-6-2
Power					
Input power	Dual DC input, 16.8VDC~137.5VDC for (WV model)	Radio Frequency	EN 301 489-1, EN 301 489-17, EN 301 489-19, EN 301 489-52, EN 300 440, EN 301 893, EN 300 328, EN 62311		
PoE budget (PoE model)	60W				
Power consumption (Typ.)	20W Watts				
EMMC Storage**	8/16/32 GB				
Physical Characteristic		Safety	EN60950 (LVD), AS60950 (LVD)		
Enclosure	IP 65/54 aluminum case	Stability Testing	EN61373 (Shock & Vibration)		
Dimension	178 (W) x 99 (D) x 103 (H) mm	Verifications & report	EN50155, EN50121-3-2, EN50121-4 verification EN45545-2 R13/R22/R23/R24/R25 (EN ISO 4589-2, EN ISO 5659-2, NF X70-100-1 & 2) Fire & Smoke verification		
Weight	1000g				
Environmental		MTBF	NA		
Storage Temperature	-40°C ~ 85°C (-40°F ~ 185°F)	Warranty	5 years		
Operating Temperature	-20°C ~ 70°C (-4°F ~ 158°F)	*Future Release **Optional			
Operating Humidity	5% to 95% Non-condensing				
Regulatory approvals					
EMC	FCC Part 15 Class A, EN55032 , EN55024				

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
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

All standard models are non-conformal coated, optional conformal coated models are available with -C model name; QMA connector models are with -Q model name; -40~70C models are with -E model name.

- **TPWAP-5004-1AC-WV-65.....P/N:8645-002**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 4 Gigabit X-coded Ethernet PoE switch + 2 WAN/LAN w/Load Balancing, VPN, Protocol Gateway; dual 9V~56VDC; IP65; -20~70C
- **TPWAP-5004-1AC-WV-54.....P/N:8645-004**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 4 Gigabit X-coded Ethernet PoE switch + 2 WAN/LAN w/Load Balancing, VPN, Protocol Gateway; dual 9V~56VDC; IP65; -20~70C
- **TPWAP-5004-2AC-WV-65.....P/N:8645-006**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 4 Gigabit X-coded Ethernet PoE switch + 2 WAN/LAN w/Load Balancing, VPN, Protocol Gateway; dual 9V~56VDC; IP65; -20~70C
- **TPWAP-5004-2AC-WV-54.....P/N:8645-008**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 4 Gigabit X-coded Ethernet PoE switch + 2 WAN/LAN w/Load Balancing, VPN, Protocol Gateway; dual 9V~56VDC; IP65; -20~70C
- **TPWAP-5004-1AC-2S-WV-65.....P/N: 8645-013**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 2 serial RS232 ports + 4 Gigabit X-coded Ethernet PoE switch + 2 WAN/LAN w/Load Balancing, VPN, Protocol Gateway; dual 16.8V~137.5VDC; IP65; -20~70C
- **TPWAP-5004-1AC-2SA-WV-65.....P/N:8645-014**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 2 serial RS422 ports + 4 Gigabit X-coded Ethernet PoE switch + 2 WAN/LAN w/Load Balancing, VPN, Protocol Gateway; dual 16.8V~137.5VDC; IP65; -20~70C

- **TPWAP-5004-1AC-2SB-WV-65.....P/N:8645-015**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 2 serial RS485 ports + 4 Gigabit X-coded Ethernet PoE switch + 2 WAN/LAN w/Load Balancing, VPN, Protocol Gateway; dual 16.8V~137.5VDC; IP65; -20~70C
- **TPWAP-5004-2AC-2S-WV-65.....P/N: 8645-017**
EN50155 Multifunction VPN Router w/2x Wi-Fi 11ac + 2 serial RS232 ports + 4 Gigabit X-coded Ethernet PoE switch + 2 WAN/LAN w/Load Balancing, VPN, Protocol Gateway; dual 16.8V~137.5VDC; IP65; -20~70C
- **TPWAP-5004-2AC-2SA-WV-65.....P/N:8645-018**
EN50155 Multifunction VPN Router w/2x Wi-Fi 11ac + 2 serial RS422 ports + 4 Gigabit X-coded Ethernet PoE switch + 2 WAN/LAN w/Load Balancing, VPN, Protocol Gateway; dual 16.8V~137.5VDC; IP65; -20~70C
- **TPWAP-5004-2AC-2SB-WV-65.....P/N:8645-019**
EN50155 Multifunction VPN Router w/2x Wi-Fi 11ac + 2 serial RS485 ports + 4 Gigabit X-coded Ethernet PoE switch + 2 WAN/LAN w/Load Balancing, VPN, Protocol Gateway; dual 16.8V~137.5VDC; IP65; -20~70C
- **TPWAP-5004-1AC-2S-WV-54.....P/N: 8645-023**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 2 serial RS232 ports + 4 Gigabit X-coded Ethernet PoE switch + 2 WAN/LAN w/Load Balancing, VPN, Protocol Gateway; dual 16.8V~137.5VDC; IP54; -20~70C
- **TPWAP-5004-1AC-2SA-WV-54.....P/N:8645-024**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 2 serial RS422 ports + 4 Gigabit X-coded Ethernet PoE switch + 2 WAN/LAN w/Load Balancing, VPN, Protocol Gateway; dual 16.8V~137.5VDC; IP54; -20~70C
- **TPWAP-5004-1AC-2SB-WV-54.....P/N:8645-025**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 2 serial RS485 ports + 4 Gigabit X-coded Ethernet PoE switch + 2 WAN/LAN w/Load Balancing, VPN, Protocol Gateway; dual 16.8V~137.5VDC; IP54; -20~70C
- **TPWAP-5004-2AC-2S-WV-54.....P/N: 8645-027**
EN50155 Multifunction VPN Router w/2x Wi-Fi 11ac + 2 serial RS232 ports + 4 Gigabit X-coded Ethernet PoE switch + 2 WAN/LAN w/Load Balancing, VPN, Protocol Gateway; dual 16.8V~137.5VDC; IP54; -20~70C
- **TPWAP-5004-2AC-2SA-WV-54.....P/N:8645-028**
EN50155 Multifunction VPN Router w/2x Wi-Fi 11ac + 2 serial RS422 ports + 4 Gigabit X-coded Ethernet PoE switch + 2 WAN/LAN w/Load Balancing, VPN, Protocol Gateway; dual 16.8V~137.5VDC; IP54; -20~70C
- **TPWAP-5004-2AC-2SB-WV-54.....P/N:8645-029**
EN50155 Multifunction VPN Router w/2x Wi-Fi 11ac + 2 serial RS485 ports + 4 Gigabit X-coded Ethernet PoE switch + 2 WAN/LAN w/Load Balancing, VPN, Protocol Gateway; dual 16.8V~137.5VDC; IP54; -20~70C
- **TWAP-5004-1AC-WV-65.....P/N: 8642-011**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 4 Gigabit X-coded Ethernet Managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; dual 16.8V~137.5VDC; IP65; -20~70C
- **TWAP-5004-2AC-WV-65.....P/N: 8642-012**
EN50155 Multifunction VPN Router w/2x Wi-Fi 11ac + 4 Gigabit X-coded Ethernet Managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; dual 16.8V~137.5VDC; IP65; -20~70C
- **TWAP-5004-1AC-WV-54.....P/N: 8642-021**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 4 Gigabit X-coded Ethernet Managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; dual 16.8V~137.5VDC; IP54; -20~70C
- **TWAP-5004-2AC-WV-54.....P/N: 8642-022**
EN50155 Multifunction VPN Router w/2x Wi-Fi 11ac + 4 Gigabit X-coded Ethernet Managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; dual 16.8V~137.5VDC; IP54; -20~70C
- **TWAP-5004-1AC-2S-WV-65.....P/N: 8642-013**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 2 serial RS232 ports + 4 Gigabit X-coded Ethernet Managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; dual 16.8V~137.5VDC; IP65; -20~70C
- **TWAP-5004-1AC-2SA-WV-65.....P/N:8642-014**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac +2 serial RS422 ports + 4 Gigabit X-coded Ethernet Managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; dual 16.8V~137.5VDC; IP65; -20~70C
- **TWAP-5004-1AC-2SB-WV-65.....P/N:8642-015**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac +2 serial RS485 ports + 4 Gigabit X-coded Ethernet Managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; dual 16.8V~137.5VDC; IP65; -20~70C
- **TWAP-5004-2AC-2S-WV-65.....P/N: 8642-017**
EN50155 Multifunction VPN Router w/2x Wi-Fi 11ac + 2 serial RS232 ports + 4 Gigabit X-coded Ethernet Managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; dual 16.8V~137.5VDC; IP65; -20~70C
- **TWAP-5004-2AC-2SA-WV-65.....P/N:8642-018**
EN50155 Multifunction VPN Router w/2x Wi-Fi 11ac +2 serial RS422 ports + 4 Gigabit X-coded Ethernet Managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; dual 16.8V~137.5VDC; IP65; -20~70C
- **TWAP-5004-2AC-2SB-WV-65.....P/N:8642-019**
EN50155 Multifunction VPN Router w/2x Wi-Fi 11ac +2 serial RS485 ports + 4 Gigabit X-coded Ethernet Managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway ; dual 16.8V~137.5VDC ; IP65 ; -20~70C
- **TWAP-5004-1AC-2S-WV-54.....P/N: 8642-023**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 2 serial RS232 ports + 4 Gigabit X-coded Ethernet Managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway ; dual 16.8V~137.5VDC ; IP54 ; -20~70C
- **TWAP-5004-1AC-2SA-WV-54.....P/N:8642-024**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 2 serial RS422 ports + 4 Gigabit X-coded Ethernet Managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway ; dual 16.8V~137.5VDC ; IP54 ; -20~70C
- **TWAP-5004-1AC-2SB-WV-54.....P/N:8642-025**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 2 serial RS485 ports + 4 Gigabit X-coded Ethernet Managed Switch +

- 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway ; dual 16.8V~137.5VDC ; IP54 ; -20~70C
- **TWAP-5004-2AC-2S-WV-54.....P/N: 8642-027**
EN50155 Multifunction VPN Router w/2x Wi-Fi 11ac + 2 serial RS232 ports + 4 Gigabit X-coded Ethernet Managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway ; dual 16.8V~137.5VDC ; IP54 ; -20~70C
- **TWAP-5004-2AC-2SA-WV-54.....P/N:8642-028**
EN50155 Multifunction VPN Router w/2x Wi-Fi 11ac + 2 serial RS422 ports + 4 Gigabit X-coded Ethernet Managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway ; dual 16.8V~137.5VDC ; IP54 ; -20~70C
- **TWAP-5004-2AC-2SB-WV-54.....P/N:8642-029**
EN50155 Multifunction VPN Router w/2x Wi-Fi 11ac + 2 serial RS485 ports + 4 Gigabit X-coded Ethernet Managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway ; dual 16.8V~137.5VDC ; IP54 ; -20~70C

- EMMC Flash Storage**
- **8G.....P/N:8850-113**
- **16G.....P/N:8850-114**
- **32G.....P/N:8850-115**

OPTIONAL ACCESSORIES

Management System

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

Wi-Fi Antenna

- **ANT11000056** Wi-Fi hinge rotatable antenna, WiFi Dual Bands 2.4/5.8GHz, SMA Connector



Antenna Base

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



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