

## 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



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**

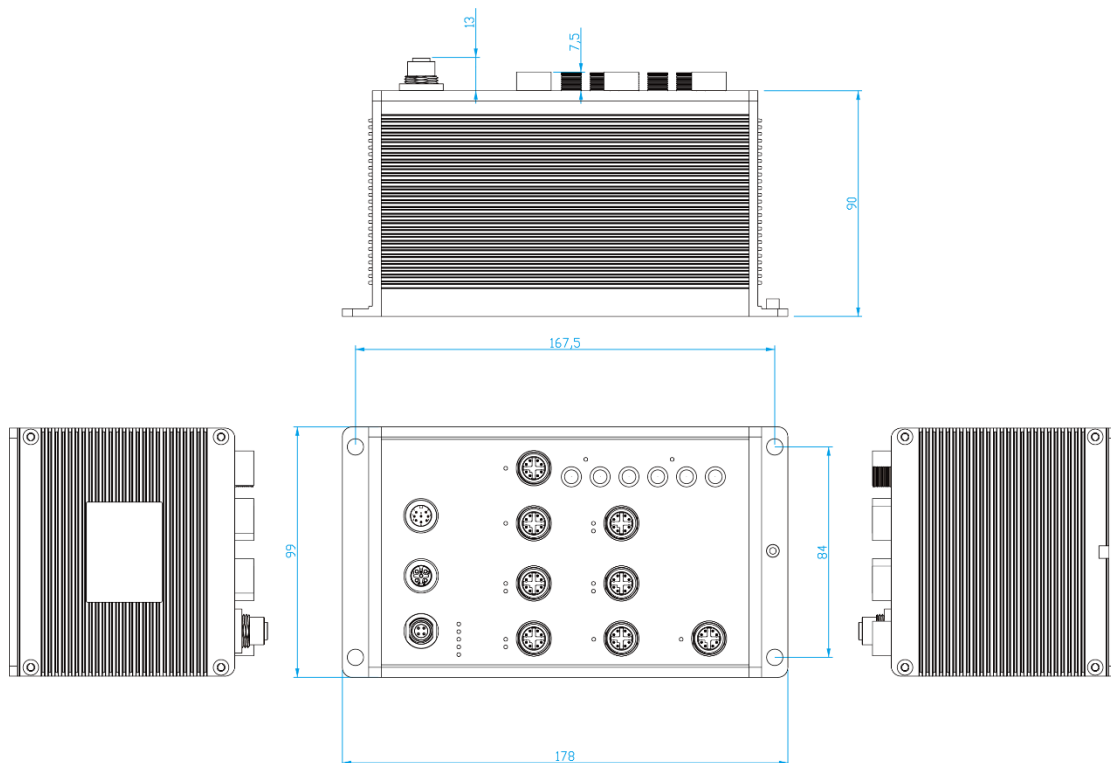
The T(P)WAP-5004 supports editable captive portal function that allows administrator to force end-users redirect to authentication page.

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

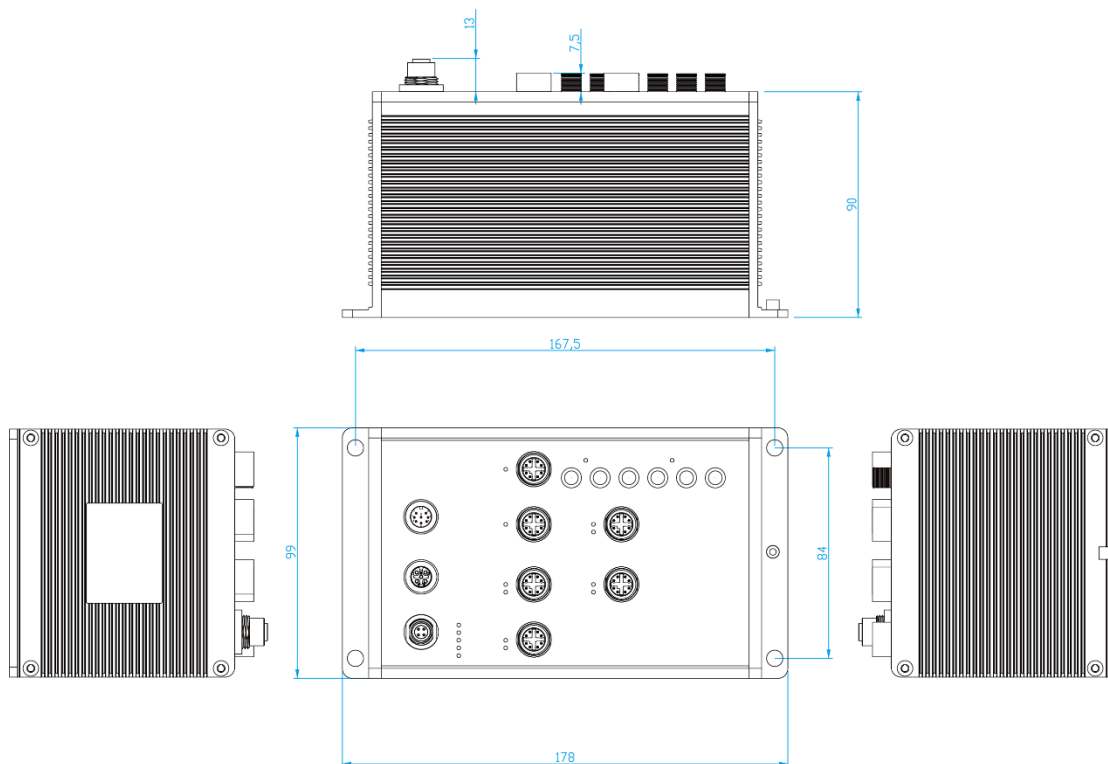
The T(P)WAP-5004series is verified with EN50155, EN61373, EN45545 standard with IP65/54 housing. It passed tests under extensive Industrial EMI and environmental vibration and shocks standards. With CE, FCC and E-marking\*\* certificate, the T(P)WAP-5004 is best for outdoor community, vehicle, power 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).

**DIMENSIONS (unit=mm)**

**With serial ports**



**Without serial ports**



## SPECIFICATION

| WLAN Interface           |   |
|--------------------------|---|
| Radio Frequency Type     | DSSS, OFDM  |
| Wireless Standard        | IEEE 802.11ac/n/a 5GHz<br>IEEE 802.11b/g/n 2.4GHz   |
| Wireless bandwidth       | 5GHz: Up to 1300Mbps<br>2.4GHz: Up to 450Mbps   |
| Modulation               | <b>802.11b: DSSS</b><br><b>802.11a/g:</b><br>OFDM (BPSK, QPSK, 16-QAM, 64-QAM)<br><b>802.11n:</b><br>OFDM (BPSK, QPSK, 16-QAM, 64-QAM)<br><b>802.11ac:</b><br>OFDM (BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM)  |
| Operating Frequency      | IEEE 802.11 a/b/g/n ISM Band,<br>2.412GHz~2.472GHz, 5150MHz~5850MHz   |
| Transmission Rate        | IEEE802.11ac: up to 1300Mbps<br>IEEE802.11b: 1 / 2 / 5.5 / 11 Mbps<br>IEEE802.11a/g: 6 / 9 / 12 / 18 / 24 / 36 / 48 / 54 Mbps<br>IEEE802.11n: up to 450Mbps   |
| IEEE 802.11b/g/n(2.4GHz) | <b>Output Power Tx +/- 2dB(per chain)</b><br>18dBm @ 1~11Mbps<br>18dBm @ 6~54Mbps<br>20/20dBm @ MCS0~MCS7 (HT20/40)<br><b>Receiver Sensitivity Rx +/- 2dB</b><br>≤ -95dBm @ 1~11Mbps<br>≤ -92dBm @ 6~18Mbps<br>≤ -88dBm @ 24Mbps<br>≤ -85dBm @ 36Mbps<br>≤ -81dBm @ 48Mbps<br>≤ -80dBm @ 54Mbps<br>≤ -94dBm @ MCS0 (HT20/40)<br>≤ -76dBm @ MCS7 (HT20/40)                               |
| IEEE 802.11a/n/ac(5GHz)  | <b>Output Power Tx +/- 2dB(per chain)</b><br>20dBm @ 6~24Mbps<br>16dBm @ 36~54Mbps<br>19/18dBm @ MCS0 (HT20/40)<br>16/16dBm @ MCS7 (HT20/40)<br>19/18/18dBm @ MCS0 (VHT20/40/80)  |
| Encryption Security      | 13/13/13dBm @ MCS8 (VHT20/40/80)<br>13/13dBm @ MCS9 (VHT40/80)<br><b>Receiver Sensitivity Rx +/- 2dB</b><br>≤ -92dBm @ 6~18Mbps<br>≤ -86dBm @ 24Mbps<br>≤ -84dBm @ 36Mbps<br>≤ -81dBm @ 48Mbps<br>≤ -80dBm @ 54Mbps<br>≤ -93dBm @ MCS0 (HT20/40)<br>≤ -71dBm/ ≤ -80dBm @ MCS7 (HT20/40)<br>≤ -90dBm @ MCS0 (VHT20/40/80)<br>≤ -69dBm @ MCS8 (VHT20/40/80)<br>≤ -66dBm @ MCS9 (VHT40/80) |
| Wireless Security        | WEP : (64-bit ,128-bit key supported)<br>WPA/WPA2 : IEEE802.11i(WEP and AES encryption)<br>WPA-PSK (256-bit key pre-shared key supported)<br>EAP-TLS,EAP-TTLS, PEAP   |
| Wireless Security        | SSID broadcast disable  |
| Software                 |   |
| IPv6/4                   | Present   |
| Operation Mode           | AP/Bridge/Client/MESH mode  |
| Login Security           | Supports IEEE802.1x Authentication/RADIUS   |
| Access Security          | HTTP/HTTPS/Telnet/SSH & Administration; SNMP v1/v2/v3 access for authentication via MD5/SHA(v3) and Encryption via DES/AES(v3)  |
| Protocol                 | PPPoE Client, DHCP server/client, Adjustable MTU, Port forwarding (NAPT), DMZ, NAT, SNTP, Firewall(Firewall(DDoS;IP address filter / Mac address filter / TCP/UDP port number ), VRRP, DDNS   |
| Routing                  | Static route / RIPv2 / OSPF / BGP / EIGRP   |
| Management               | SNMP v1,v2c,v3/ Web/Telnet/CLI  |
| Load Balancing           | 5 schemes for multiple WAN  |
| 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  | RS232 8KV contact and 15KV air ESD<br>DIDO 2.5KV isolation<br>Input power 1.5KVA isolation   |
| Custom Route                       | Routing through the selected WAN for each specific traffic ex: TCP/UDP port number and IP address.   | DI/DO<br>2 Digital Input (DI) :<br>Level 0: -30~2V / Level 1: 10~30V<br>Max. input current:8mA<br>2 Digital Output(DO): Open collector to 80 VDC, 50mA   |
| Roaming                            | Client-base roaming  | <b>LED Indicators</b><br>Power & System indicator Per unit: Power 1 (Green), Power 2 (Green), P-Fail (Red) , Ring Master(Green), System Ready(Green), Serial1/Serial2(Green)<br>10/100/1000Base-T(X) port indicator Link/Activity (Green), Speed (Yellow), PoE (Green, PoE model)<br>Fault Red: Ethernet link down or power down<br><b>Fault contact</b><br>Relay Relay output to carry capacity of 1A at 24VDC<br><b>Power</b><br>Input power Dual DC input, 16.8VDC~137.5VDC for (WV model)<br>PoE budget (PoE model) 60W<br>Power consumption (Typ.) 20W Watts<br>EMMC Storage** 8/16/32 GB<br><b>Physical Characteristic</b><br>Enclosure IP 65/54 aluminum case<br>Dimension 178 (W) x 99 (D) x 103 (H) mm<br>Weight 1450g<br><b>Environmental</b><br>Storage Temperature -40°C ~ 85°C (-40°F ~ 185°F)<br>Operating Temperature -20°C ~ 70°C (-4°F ~ 158°F)<br>-40°C ~ 70°C (-40°F ~ 158°F) -E model<br>Operating Humidity 5% to 95% Non-condensing<br><b>Regulatory approvals</b><br>EMC FCC Part 15 Class A, EN55032 , EN55024<br>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<br>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<br>Safety EN60950 (LVD), AS60950 (LVD)<br>Stability Testing EN61373 (Shock & Vibration)<br>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<br>MTBF NA<br>Warranty 5 years |
| MESH                               | Support 802.11s Wireless Mesh Network  |  |
| 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  |  |
| 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<br>Port link up / link down<br>DI / DO high / low   |  |
| 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  |  |
| Remote Web control                 | To reboot or get status of router by Web   |  |
| Captive portal                     | Editable captive portal login page   |  |
| Maintenance                        | Firmware upgradeable through TFTP/ HTTP  |  |
| Configuration backup & restore     | Supports text configuration file for quick system installation<br>USB port to upload/download firmware by USB dongle<br>Dual image firmware  |  |
| 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)   |  |
| <b>Physical Ports &amp; System</b> |  |  |
| Connectors                         | 10/100/1000T: 6x ports M12 8pole X-coded incl. 2 WAN/LAN ports and 4 PoE ports (PoE model)<br>USB/Console connector: 1 x M12 8-pole A-coded<br>DIDO : 1 x M12 5-pole A-coded<br>Power Input connector : 1 x M12 4-pole A-coded<br>Optional Serial connector : 2 x M12 8-pole X-coded<br>RP-SMA/QMA** connector for Wi-Fi 2AC: 6 (female)<br>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  |  |

\*Future Release  
\*\*Optional

**RF Performance Table**

|                           | Data Rate | TX Power (per chain) | TX Power (3 chains) | Tolerance | RX Specifications Sensitivity | Tolerance |
|---------------------------|-----------|----------------------|---------------------|-----------|-------------------------------|-----------|
| 2.4GHz<br>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<br>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<br>802.11n<br>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<br>802.11n<br>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<br>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<br>802.11n/ac<br>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<br>802.11n/ac<br>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<br>802.11ac<br>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**  
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- **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**  
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- **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 +

**EN50155 Multifunction Router + (PoE) 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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