

TWAP-5004

EN50155 Multifunction VPN Router w/up to 2x WiFi 11ac + 2 serial ports + 4 Gigabit X-coded Ethernet Switch + 2WAN/2LAN w/Load Balancing, VPN, Protocol Gateway**, Storage**, WV input**

- Built-in 4 Gigabit X-coded Ethernet Managed Switch + 2WAN/2LAN ports
- Wi-Fi radio for 802.11ac/a/b/g/n with 5GHz or 2.4GHz;
- Support Wi-Fi 802.11e traffic prioritization and WMM
- MIMO technology 3T3R up to 6 antennas; Detachable antenna connectors with 6 SMA/QMA** type incl. 3 Wi-Fi
- Optional Air-teaming** for Wi-Fi high-sustainability and aggregated bandwidth
- Advanced wireless security WEP64/128bits/ WPA/ WPA-PSK (TKIP,AES)/ WPA2/ WPA2-PSK (TKIP,AES)
- 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
- Support roaming with 802.11k & v
- Supports AP/ Bridge/Client/MESH modes
- Support 802.11s Wireless Mesh Network
- Optional EMMC Flash storage on-board**
- Optional support Modbus gateway on serial ports**
- 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
- Environmental monitoring for router inside info with voltage, current, temperature; Wi-Fi graphic signal strength
- Editable login page of captive portal for hot-spot application
- 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 TWAP-5004 series is a next generation EN50155 multi-function VPN router w/ 1 x 802.11ac Wi-Fi + 4 Gigabit X-coded Ethernet Switch + 2WAN/2LAN ports + 2 serial ports** that supports advanced function of VPN, Load-Balancing(Premium pack), EMMC Flash Storage**, Protocol gateway**, Wi-Fi roaming, and Air teaming** for on-board / onboard-to-ground applications.. The dual core CPU with 1.6GHz + 256M flash enables the router to multi-task smoothly.

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

roaming

TWAP-5004 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)

TWAP-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.

IEEE 802.11ac one band radio up to 2.6Gbps bandwidth

With IEEE 802.11ac capability, TWAP-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.

Optional EMMC Flash storage**

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

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

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

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

The innovative Air-teaming** can combines multiple wireless links to achieve both high-sustainability and aggregated bandwidth. High sustainability can keep the network traffic alive even one link is down or severely interfered. Aggregated bandwidth can bind two link channels to provide the maximum throughput.

Wireless WMM QoS

TWAP-5004 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 TWAP-5004 support up to 16 SSIDs, each SSID has its independent security and encryption.

Load Balancing with 8 mechanisms for multi-WANs (premium license)

TWAP-5004 supports Load Balancing for WAN 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.

Optional 2 port serial connection, Modbus gateway

It builds in 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, TWAP-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, 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 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 TWAP-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 dual input voltage from 16.8-137.5V (WV model)

The TWAP-5004 is able to work from dual 16.8V ~137.5V DC input (WV model) that is particular good for vehicle, rail train, depot etc. applications.

Environmental monitoring for inside router info& alerting; Graphic Wi-Fi signal strength

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

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.

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.

Dual image firmware*

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

Editable login page of captive portal

The TWAP-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 TWAP-5004 series 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 E-marking** certificate, the TWAP-5004 is best for outdoor community, vehicle, power substation, process control automation etc. For more usage flexibilities, TWAP-5004 supports operating temperature from -20°C to 70°C or -40°C to 70°C(-E)

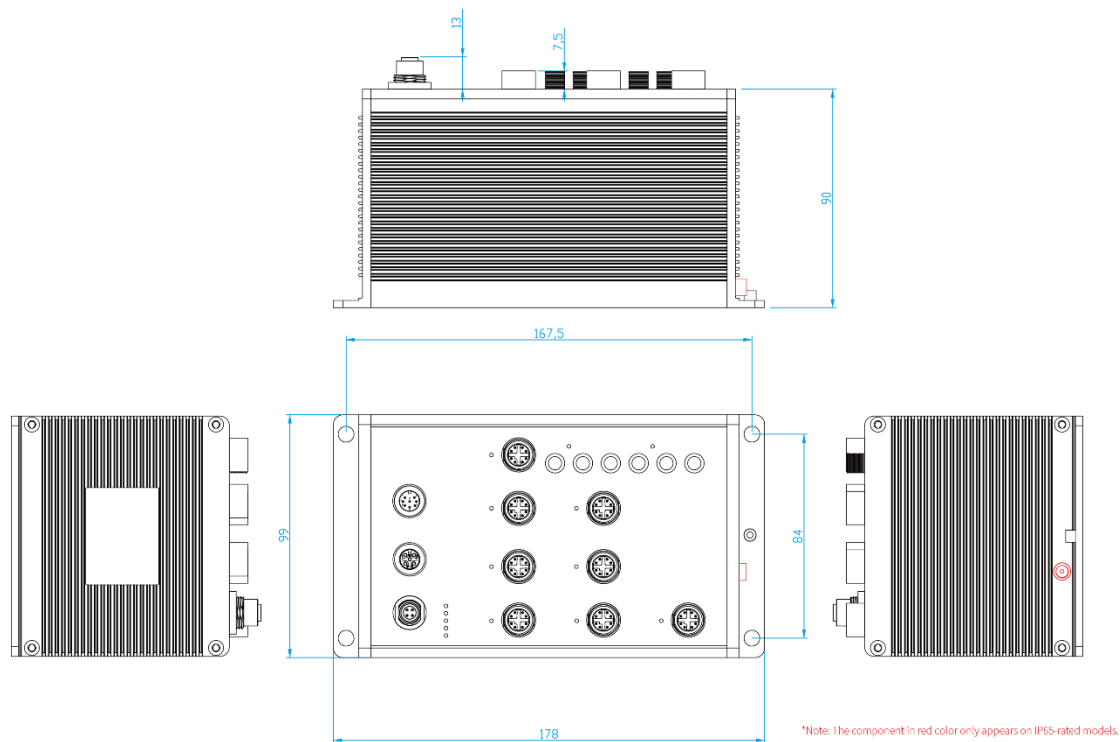
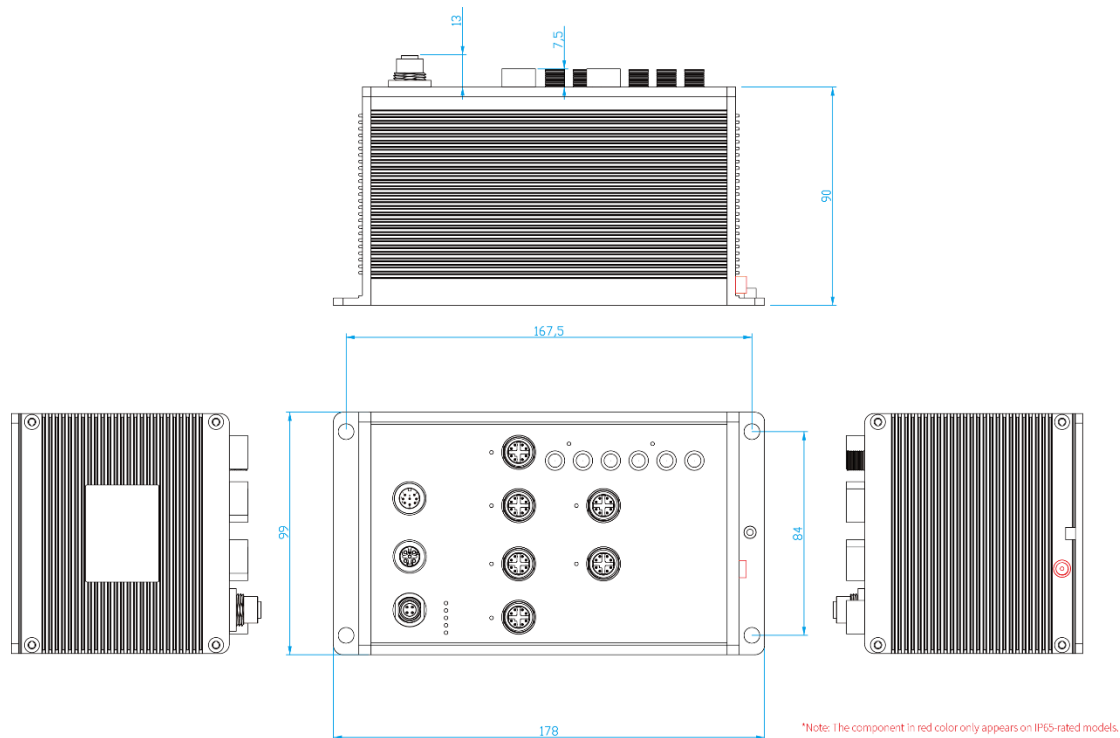
FEATURES & BENEFITS

- High Speed Air Connectivity: WLAN interface support up to 2.6Gbps link speed (2AC)
- Built-in 4 Gigabit X-coded Ethernet Managed Switch + 2WAN/2LAN ports
- Dual DC input from 16.8V~137.5VDC power input (WV model)
- EMMC-FLASH storage**8/16/32G
- Optional Air-teaming** protection(2AC)
 - **High-sustainability:** if one link member is down or severely interfered, the other link will keep the network traffic alive.
 - **Aggregated bandwidth :** The bandwidth of two link members can be aggregated to provide maximum throughput
- 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
- Support AP/Bridge/Client/MESH mode
- Support roaming with 802.11k & v
- Support 802.11s Wireless Mesh Network
- Load Balancing supports 8 mechanism between multiple WANs
- 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
- EN45545-2 Fire & Smoke, EN50155 and EN61373 shock/vibration verification

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 = $1 - (\text{traffic load} / \text{the capability of a WAN link})$. 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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- 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, 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 WI-FI 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)

DIMENSIONS (unit=mm)**With serial ports****Without serial ports**

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	WMM	Wi-Fi multimedia and 802.11e traffic prioritization
Operation Mode	AP/Bridge/Client/MESH mode	Security	WEP64/128bits/ WPA/ WPA-PSK (TKIP,AES)/ WPA2/ WPA2-PSK (TKIP,AES)/SSH/SSL/HTTPS
Login Security	Supports IEEE802.1x Authentication/RADIUS	Authentication	Radius Authentication, EAP-TLS, EAP-TTLS, PEAP; SSID broadcast disable supported
Access Security	HTTP/HTTPS/Telnet/SSH & Administration; SNMP*v1/v2/v3 access for authentication via MD5/SHA(v3) and Encryption via DES/AES(v3)	SSID	16 sets
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*	Client mode	PMK** Caching and pre-authentication.
Management	SNMP*v1,v2c,v3/ Web/Telnet/CLI	Timer	Built-in Real Time Clock to keep track of time always(RTC)
Load Balancing	8 schemes for multiple WAN	Discovery	IEEE 802.1ab Link Layer Discovery Protocol (LLDP)
		SNMP trap	Device cold / warm start Port link up / link down 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 USB port to upload/download firmware by USB dongle Dual image firmware*
		Physical Ports & System	
		Connectors	10/100/1000T: 6x ports M12 8pole X-coded incl. 2WAN/2LAN ports USB/Console connector: 1 x M12 8-pole A-coded RP-SMA/QMA** connector for Wi-Fi 2AC: 6 (female) RP-SMA/QMA** connector for Wi-Fi 1AC: 3 (female) Power Input connector : 1 x M12 4-pole A-coded D/DO : 1 x M12 5-pole A-coded
		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 3KV isolation Input power 1.5KVA isolation	Environmental	
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	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	
LED Indicators		EMC	FCC Part 15 Class A, EN55032 , EN55024
Power & System indicator	Per unit: Power 1 (Green), Power 2 (Green), P-Fail (Red) , Ring Master(Green), System Ready(Green), Serial1/Serial2(Green)	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
10/100/1000Base-T(X) port indicator	Link/Activity (Green), Speed (Yellow)	Radio Frequency	EN301 489-1, EN301 489-17, EN301 489-19, EN301 489-52, EN300 440, EN301 893, EN300 328, EN301 908-1, EN303 413, EN62311
Fault	Red: Ethernet link down or power down	Safety	EN60950 (LVD), AS60950 (LVD)
Fault contact		Stability Testing	EN61373 (Shock & Vibration)
Relay	Relay output to carry capacity of 1A at 24VDC	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
Power		MTBF	NA
Input power	Dual DC input, 16.8VDC~137.5VDC for (WV model)	Warranty	5 years
Power consumption (Typ.)	20 Watts		
EMMC Storage**	8/16/32 GB		
Physical Characteristic			
Enclosure	IP 65/54 aluminum case		
Dimension	178 (W) x 99 (D) x 103 (H) mm		
Weight	1000g		

*Future Release

**Optional

*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
2.4GHz 802.11n HT20	54Mbps	18dBm	23dBm	±2dB	-80dBm	±2dB
	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
2.4GHz 802.11n HT40	MCS 7	16dBm	21dBm	±2dB	-77dBm	±2dB
	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
	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 operational models are with -E model name.

- **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**
- Software License**
- **LOAD BALANCING Full Package.....P/N: 9000-102**

OPTIONAL ACCESSORIES

Management System

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

Wi-Fi Antenna

- **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, cable length: 3M



Antenna Base

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



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