

TWMR-5004

EN50155 Multifunction VPN Router w/1x WiFi 11ac + 1 LTE 4G + 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
- Support LTE Cat 6 (APAC & EUNA models) or Cat 12/9/13 (WW model)
- 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 + 3 LTE
- Support roaming with 802.11k & v
- Supports AP/Bridge/Client/MESH modes
- Support 802.11s Wireless Mesh Network
- 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
- Optional EMMC Flash storage on-board**
- Support NAT and Firewall
- 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; WIFI & LTE 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*
- EN50155/61373/45545 verification for railway application



OVERVIEW

Lantech TWMR-5004 series is a next generation EN50155 multi-function VPN router w/ 1 x 802.11ac Wi-Fi + 1 x LTE modem +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(Modbus), Storage**, Wi-Fi roaming and LTE dual SIM fail-over for industrial applications. The dual core CPU with 1.6GHz + 256M flash enables the router to multi-task smoothly.

LTE design 4G/3G w/2SIMs for redundancy

With one mobile LTE module (1L model), 2 SIM card slots, TWMR-5004 provides redundant link between two service

providers.

Both GPS and Russian GLONASS systems are supported.

IEEE 802.11ac one band radio up to 1.3GMbps bandwidth

With IEEE 802.11ac capability, TWMR-5004 can operate either 5GHz or 2.4GHz bands, offering the maximum speed of 1.3GMbps bandwidth it is also compatible with 802.11g/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 TWMR-5004 series adapts MIMO technology with smart antenna transmission and reception for 3T3R. With six external detachable antenna SMA/QMA** connectors and optional antennas, TWMR-5004 can have better Wi-Fi & LTE/GPS coverage.

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

TWMR-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 (WMM)

TWMR-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.

Wireless WMM QoS

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

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

TWMR-5004 supports Load Balancing for LTE/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 failback until link loss.
	Priority	Routes connections through preferred WAN link as primary while others follow by. Ex. Wi-Fi client>LTE>others
	Weighted Round-Robin	Evenly distribute the traffic over all working WAN links in circular order according to the specified

		weights.
	Custom Route	Routing through the selected WAN for each specific traffic, ex: TCP/UDP port number and IP address.
Full Package** (incl. basic package)	Sticky Session*	Binding all connections in an application session to particular WAN link to ensure all connections in the session are routed to the same WAN link, that is suitable for security services like online payment etc.
	Smallest Load*	Routes connections through the WAN link with highest free bandwidth ratio. The ratio = 1 - (traffic load / the capability of a WAN link). The traffic load could be defined by downstream, upstream or total traffic
	Fastest*	Routes connections through the WAN link with lowest latency time.

2 port serial connection, Modbus gateway

It builds in 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, TWMR-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 TWMR-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 mode)

The TWMR-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 WIFI & LTE signal strength**

The built-in environmental monitoring can detect router ambient temperature, voltage, current where can send the syslog and email** 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 ports can upload/download configuration and upgrade the 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 TWMR-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 TWMR-5004series is verified with EN50155, EN61373, EN45545 standard with IP67/65/54 housing. It passed tests under extensive Industrial EMI and environmental vibration and shocks standards. With CE & FCC radio certification for LTE and E-marking** certificate, the TWMR-5004 is best for outdoor community, vehicle, power substation, process control automation etc. For more usage flexibilities, TWMR-5004 supports operating temperature from -40°C to 65°C.

FEATURES & BENEFITS

- High Speed Air Connectivity: WLAN interface support 1.3GMbps
- Built-in 4 Gigabit X-coded Ethernet Managed Switch + 2WAN/2LAN ports
- Dual DC input from 16.8V~137.5VDC power input (WV model)
- 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
- EMMC-FLASH storage**8/16/32G
- 6 STANDARD SMA / OPTIONAL QMA type connectors for Wi-Fi & LTE, GPS
- Output power : <24dBm
- 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
- One LTE 4G/3G w/ 2 SIM card design(1L model) for mobile redundancy
- GPS/ GLONASS (built-in LTE module) connection
- 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

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

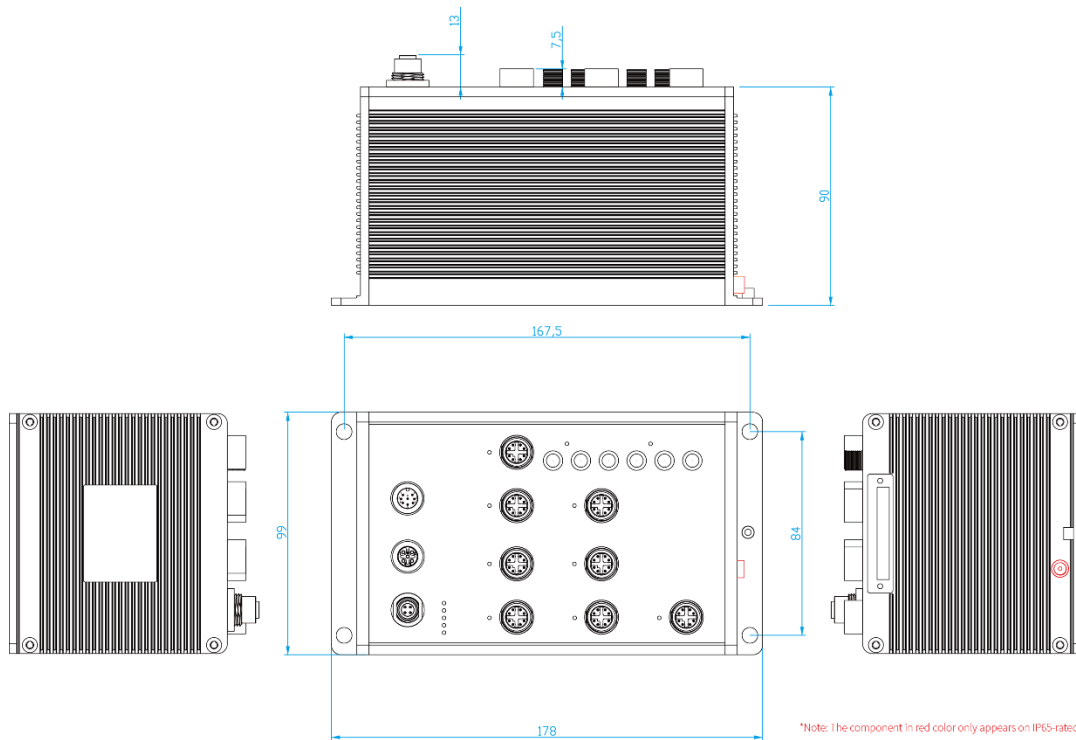
		weights.
	Custom Route	Routing through the selected WAN for each specific traffic, ex: TCP/UDP port number and IP address.
Full Package** (incl. basic package)	Sticky Session*	Binding all connections in an application session to particular WAN link to ensure all connections in the session are routed 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.

- Built-in 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 LTE & 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 configuration by USB dongle
- Dual image firmware*
- IP 67/65/54 housing for water proof environment
- Support editable captive portal login page
- Wall-mount installation
- Visible LED to show the power & port link and activity
- EN45545-2 Fire & Smoke, EN50155 and EN61373 shock/vibration verification
- Operation temperature -40~65C

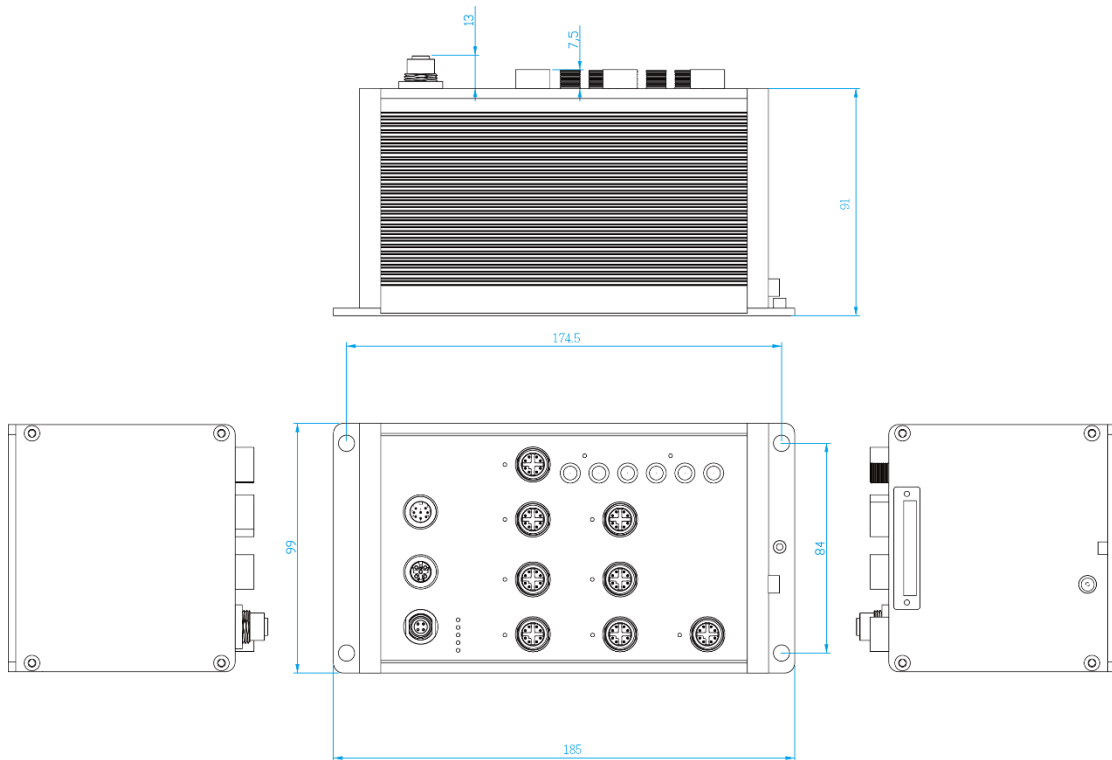
DIMENSIONS (unit=mm)

IP65 & IP54 model



*Note: The component in red color only appears on IP65-rated models.

IP67 model



SPECIFICATION

WLAN Interface	
Radio Frequency Type	DSSS, OFDM
Wireless Standard	IEEE 802.11ac/n/a 5GHz IEEE 802.11b/g/n 2.4GHz
Wireless bandwidth	5GHz: Up to 1300Mbps 2.4GHz: Up to 450Mbps
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)
Operating Frequency	IEEE 802.11 a/b/g/n ISM Band, 2.412GHz~2.472GHz, 5150MHz~5850MHz
Transmission Rate	IEEE802.11ac: up to 1300Mbps IEEE802.11b: 1 / 2 / 5.5 / 11 Mbps IEEE802.11a/g: 6 / 9 / 12 / 18 / 24 / 36 / 48 / 54 Mbps IEEE802.11n: up to 450Mbps
IEEE 802.11b/g/n(2.4Gbps)	Output Power Tx +/- 2dB(per chain) 18dBm @ 1~11Mbps 18dBm @ 6~54Mbps 20/20dBm @ MCS0~MCS7 (HT20/40) Receiver Sensitivity Rx +/- 2dB ≤ -95dBm @ 1~11Mbps ≤ -92dBm @ 6~18Mbps ≤ -88dBm @ 24Mbps ≤ -85dBm @ 36Mbps ≤ -81dBm @ 48Mbps ≤ -80dBm @ 54Mbps ≤ -94dBm @ MCS0 (HT20/40) ≤ -76dBm @ MCS7 (HT20/40)
IEEE 802.11a/n/ac(5Gbps)	Output Power Tx +/- 2dB(per chain) 20dBm @ 6~24Mbps 16dBm @ 36~54Mbps 19/18dBm @ MCS0 (HT20/40) 16/16dBm @ MCS7 (HT20/40)
Encryption Security	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)
Wireless 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, and PEAP
Cellular Interface	SSID broadcast disable
Location Solutions	GPS, Glonass (EU/Americas) GPS, Glonass, Beidou, Galileo (APAC model only)
Band Options	Asia-Pacific (APAC model) LTE = B1, B3, B5, B7, B8, B18, B19, B21, B28, B38 (TDD), B39 (TDD), B40 (TDD), B41 (TDD) DC-HSPA+/ HSPA+/ HSPA/ UMTS = B1, B5, B6, B8, B9, B19 Europe & North America (EUNA model) LTE = B1, B2, B3, B4, B5, B7, B8, B12, B13, B20, B25, B26, B29, B30, B41 (TDD) DC-HSPA+/ HSPA+/ HSPA/ UMTS = B1, B2, B3, B4, B5, B8 World Wide (WW model) LTE = B1, B2, B3, B4, B5, B7, B8, B9, B12, B13, B18, B19, B20, B26, B28, B29, B30, B32, B41

	(TDD), B42 (TDD), B43 (TDD), B46 (TDD), B48 (TDD), B66 WCDMA = B1, B2, B3, B4, B5, B6, B8, B9, B19		DI / DO high / low
Data Rates – LTE	Asia-Pacific (APAC model) Downlink (Cat 6): FDD: 300 Mbps TDD: 222 Mbps Uplink (Cat 6): FDD: 50 Mbps TDD: 26 Mbps Europe & North America (EUNA model) Downlink (Cat 6): FDD: 300 Mbps TDD: 222 Mbps Uplink (Cat 6): FDD: 50 Mbps TDD: 26 Mbps World Wide (WW model) Downlink: Cat 12: 600 Mbps Cat 9: 450 Mbps Uplink: Cat 13: 150 Mbps	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 LTE & 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 configuration 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 SMA/QMA** connector for LTE: 2 (female) SMA/QMA** connector for GPS: 1 (female) RP-SMA/QMA** connector for Wi-Fi: 3 (female) Power Input connector: 1 x M12 4-pole A-coded DI/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
		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
LED Indicators			
		Power & System indicator	Per unit: Power 1 (Green), Power 2 (Green), P-Fail (Red), Ring Master (Green), Serial1/Serial2 (Green), Ready (Green)
		10/100/1000Base-T(X) port indicator	Link/Activity (Green), Speed (Yellow)
		SIM	Green for Link/Act
		GPS	Green for Link/Act
		Fault	Red: Ethernet link down or power down
Fault contact			
		Relay	Relay output to carry capacity of 1A at 24VDC
Power			
		Input power	Dual DC input, 16.8VDC~137.5VDC for (WW model)
		Power consumption (Typ.)	20 Watts
		EMMC Storage**	8/16/32 GB
Physical Characteristic			
		Enclosure	IP 67/65/54 aluminum case
		Dimension	IP65 & IP54 model: 178 (W) x 99 (D) x 103 (H) mm IP67 model: 185 (W) x 99 (D) x 104 (H) mm
		Weight	IP65 & IP54 model: 1000g IP67 model: 1200g
Environmental			
		Storage Temperature	-40°C ~ 85°C (-40°F ~ 185°F)
		Operating Temperature	-40°C ~ 65°C (-40°F ~ 149°F)
		Operating Humidity	5% to 95% Non-condensing
Regulatory approvals			
		EMC	FCC Part 15 Class A, EN55032, EN55024
		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
		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
		Safety	EN60950 (LVD), AS60950 (LVD)
		Roaming	802.11k & v
		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
		Client mode	PMK** Caching and pre-authentication.
		Timer	Built-in Real Time Clock to keep track of time always(RTC)
		Discovery	IEEE 802.1ab Link Layer Discovery Protocol (LLDP)
		SNMP trap	Device cold / warm start Port link up / link down
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 name), VRRP**, DDNS*		
Management	SNMP*v1, v2c, v3/ Web/Telnet/CLI		
Load Balancing	8 schemes for multiple WAN		
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 failure occurs.		
Priority	Routes connections through preferred WAN link while others stand-by. Sequentially activate other links if overflow occurs.		
Weighted Round-Robin	Evenly distribute the traffic over all working WAN links in circular order according to the specified weights		
Custom Route	Routing through the selected WAN for each specific traffic ex: TCP/UDP port number and IP address.		
Full Package** incl. basic package			
Sticky Session*	Binding all connections in an application session to particular WAN link to ensure all connections in the session are routed to the same WAN link, that is suitable for security services like online payment etc.		
Smallest Load*	Routes connections through the WAN link with highest free bandwidth ratio. The ratio = 1 - (traffic load / the capability of a WAN link). The traffic load could be defined by downstream, upstream or total traffic		
Fastest*	Routes connections through the WAN link with lowest latency time.		

Stability Testing	EN61373 (Shock & Vibration)	MTBF	NA
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	Warranty	5 years

*Future Release
**Optional

RF Performance Table

	Data Rate	TX Power (per chain)	TX Power (3 chains)	Tolerance	RX Specifications Sensitivity	Tolerance
2.4GHz 802.11b	1Mbps	20dBm	25dBm	±2dB	-95dBm	±2dB
	2Mbps	20dBm	25dBm	±2dB	-94dBm	±2dB
	5.5Mbps	20dBm	25dBm	±2dB	-92dBm	±2dB
	11Mbps	20dBm	25dBm	±2dB	-90dBm	±2dB
2.4GHz 802.11g	6Mbps	21dBm	26dBm	±2dB	-94dBm	±2dB
	9Mbps	21dBm	26dBm	±2dB	-93dBm	±2dB
	12Mbps	21dBm	26dBm	±2dB	-93dBm	±2dB
	18Mbps	21dBm	26dBm	±2dB	-90dBm	±2dB
	24Mbps	21dBm	26dBm	±2dB	-90dBm	±2dB
	36Mbps	20dBm	25dBm	±2dB	-85dBm	±2dB
	48Mbps	19dBm	24dBm	±2dB	-82dBm	±2dB
	54Mbps	18dBm	23dBm	±2dB	-80dBm	±2dB
2.4GHz 802.11n HT20	MCS 0	21dBm	26dBm	±2dB	-94dBm	±2dB
	MCS 1	21dBm	26dBm	±2dB	-92dBm	±2dB
	MCS 2	21dBm	26dBm	±2dB	-89dBm	±2dB
	MCS 3	20dBm	25dBm	±2dB	-84dBm	±2dB
	MCS 4	20dBm	25dBm	±2dB	-83dBm	±2dB
	MCS 5	20dBm	25dBm	±2dB	-80dBm	±2dB
	MCS 6	18dBm	23dBm	±2dB	-79dBm	±2dB
	MCS 7	16dBm	21dBm	±2dB	-77dBm	±2dB
2.4GHz 802.11n HT40	MCS 0	20dBm	25dBm	±2dB	-93dBm	±2dB
	MCS 1	20dBm	25dBm	±2dB	-91dBm	±2dB
	MCS 2	20dBm	25dBm	±2dB	-89dBm	±2dB
	MCS 3	19dBm	24dBm	±2dB	-84dBm	±2dB
	MCS 4	19dBm	24dBm	±2dB	-82dBm	±2dB
	MCS 5	19dBm	24dBm	±2dB	-80dBm	±2dB
	MCS 6	18dBm	23dBm	±2dB	-79dBm	±2dB
	MCS 7	16dBm	21dBm	±2dB	-75dBm	±2dB

	Data Rate	TX Power (per chain)	TX Power (3 chains)	Tolerance	RX Specifications Sensitivity	Tolerance
5GHz 802.11a	6Mbps	20dBm	25dBm	±2dB	-94dBm	±2dB
	9Mbps	20dBm	25dBm	±2dB	-94dBm	±2dB
	12Mbps	20dBm	25dBm	±2dB	-92dBm	±2dB
	18Mbps	20dBm	25dBm	±2dB	-91dBm	±2dB
	24Mbps	20dBm	25dBm	±2dB	-90dBm	±2dB
	36Mbps	18dBm	23dBm	±2dB	-86dBm	±2dB
	48Mbps	16dBm	21dBm	±2dB	-83dBm	±2dB
	54Mbps	15dBm	20dBm	±2dB	-80dBm	±2dB
5GHz 802.11n/ac VHT20	MCS 0	19dBm	24dBm	±2dB	-93dBm	±2dB
	MCS 1	19dBm	24dBm	±2dB	-90dBm	±2dB
	MCS 2	19dBm	24dBm	±2dB	-87dBm	±2dB
	MCS 3	18dBm	23dBm	±2dB	-83dBm	±2dB
	MCS 4	18dBm	23dBm	±2dB	-80dBm	±2dB
	MCS 5	17dBm	22dBm	±2dB	-77dBm	±2dB
	MCS 6	16dBm	21dBm	±2dB	-74dBm	±2dB
	MCS 7	14dBm	19dBm	±2dB	-73dBm	±2dB
	MCS 8	13dBm	18dBm	±2dB	-71dBm	±2dB
5GHz 802.11n/ac VHT40	MCS 0	18dBm	23dBm	±2dB	-90dBm	±2dB
	MCS 1	18dBm	23dBm	±2dB	-88dBm	±2dB
	MCS 2	18dBm	23dBm	±2dB	-85dBm	±2dB
	MCS 3	17dBm	22dBm	±2dB	-82dBm	±2dB
	MCS 4	17dBm	22dBm	±2dB	-80dBm	±2dB
	MCS 5	16dBm	21dBm	±2dB	-75dBm	±2dB
	MCS 6	15dBm	20dBm	±2dB	-73dBm	±2dB
	MCS 7	14dBm	19dBm	±2dB	-73dBm	±2dB
	MCS 8	13dBm	18dBm	±2dB	-70dBm	±2dB
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.

- **TWMR-5004-1L-1AC-2S-WV-65-EUNA.....P/N: 8640-021**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors + 2 serial ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; EU and US band; dual 16.8V~137.5VDC; IP65; -40~65C
- **TWMR-5004-1L-1AC-2S-WV-65-WW.....P/N: 8640-022**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors + 2 serial RS-232 ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; Worldwide band; dual 16.8V~137.5VDC; IP65; -40~65C
- **TWMR-5004-1L-1AC-2S-WV-65-APAC.....P/N: 8640-023**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors + 2 serial RS-232 ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; APAC band; dual 16.8V~137.5VDC; IP65; -40~65C
- **TWMR-5004-1L-1AC-2SA-WV-65-EUNA.....P/N: 8640-0211**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors + 2 serial RS422 ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; EU and US band; dual 16.8V~137.5VDC; IP65; -40~65C
- **TWMR-5004-1L-1AC-2SA-WV-65-WW.....P/N: 8640-0221**

- EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors + 2 serial RS422 ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; Worldwide band; dual 16.8V~137.5VDC; IP65; -40~65C
- **TWMR-5004-1L-1AC-2SA-WV-65-APAC.....P/N: 8640-0231**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors + 2 serial RS422 ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; APAC band; dual 16.8V~137.5VDC; IP65; -40~65C
 - **TWMR-5004-1L-1AC-2SB-WV-65-EUNA.....P/N: 8640-0212**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors + 2 serial RS485 ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; EU and US band; dual 16.8V~137.5VDC; IP65; -40~65C
 - **TWMR-5004-1L-1AC-2SB-WV-65-WW.....P/N: 8640-0222**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors + 2 serial RS485 ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; Worldwide band; dual 16.8V~137.5VDC; IP65; -40~65C
 - **TWMR-5004-1L-1AC-2SB-WV-65-APAC.....P/N: 8640-0232**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors + 2 serial RS485 ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; APAC band; dual 16.8V~137.5VDC; IP65; -40~65C
 - **WMR-5004-1L-1AC-2S-WV-67-EUNA.....P/N: 8640-051**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors + 2 serial ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; EU and US band; dual 16.8V~137.5VDC; IP67; -40~65C
 - **TWMR-5004-1L-1AC-2S-WV-67-WW.....P/N: 8640-052**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors + 2 serial RS-232 ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; Worldwide band; dual 16.8V~137.5VDC; IP67; -40~65C
 - **TWMR-5004-1L-1AC-2S-WV-67-APAC.....P/N: 8640-053**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors + 2 serial RS-232 ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; APAC band; dual 16.8V~137.5VDC; IP67; -40~65C
 - **TWMR-5004-1L-1AC-2SA-WV-67-EUNA.....P/N: 8640-0511**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors + 2 serial RS422 ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; EU and US band; dual 16.8V~137.5VDC; IP67; -40~65C
 - **TWMR-5004-1L-1AC-2SA-WV-67-WW.....P/N: 8640-0521**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors + 2 serial RS422 ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; Worldwide band; dual 16.8V~137.5VDC; IP67; -40~65C
 - **TWMR-5004-1L-1AC-2SA-WV-67-APAC.....P/N: 8640-0531**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors + 2 serial RS422 ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; APAC band; dual 16.8V~137.5VDC; IP67; -40~65C
 - **TWMR-5004-1L-1AC-2SB-WV-67-EUNA.....P/N: 8640-0512**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors + 2 serial RS485 ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; EU and US band; dual 16.8V~137.5VDC; IP67; -40~65C
 - **TWMR-5004-1L-1AC-2SB-WV-67-WW.....P/N: 8640-0522**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors + 2 serial RS485 ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; Worldwide band; dual 16.8V~137.5VDC; IP67; -40~65C
 - **TWMR-5004-1L-1AC-2SB-WV-67-APAC.....P/N: 8640-0532**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors + 2 serial RS485 ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; APAC band; dual 16.8V~137.5VDC; IP67; -40~65C
 - **TWMR-5004-1L-1AC-2S-WV-54-EUNA.....P/N: 8640-041**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors + 2 serial RS232 ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; EU and US band; dual 16.8V~137.5VDC; IP54; -40~65C
 - **TWMR-5004-1L-1AC-2S-WV-54-WW.....P/N: 8640-042**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors + 2 serial RS232 ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; Worldwide band; dual 16.8V~137.5VDC; IP54; -40~65C
 - **TWMR-5004-1L-1AC-2S-WV-54-APAC.....P/N: 8640-043**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors + 2 serial RS232 ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; APAC band; dual 16.8V~137.5VDC; IP54; -40~65C
 - **TWMR-5004-1L-1AC-2SA-WV-54-EUNA.....P/N: 8640-0411**

EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors + 2 serial RS422 ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; EU and US band; dual 16.8V~137.5VDC; IP54; -40~65C

- **TWMR-5004-1L-1AC-2SA-WV-54-WW.....P/N: 8640-0421**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors+ 2 serial RS422 ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; Worldwide band; dual 16.8V~137.5VDC; IP54 ; -40~65C
- **TWMR-5004-1L-1AC-2SA-WV-54-APAC.....P/N: 8640-0431**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors+ 2 serial RS422 ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; APAC band; dual 16.8V~137.5VDC; IP54 ; -40~65C
- **TWMR-5004-1L-1AC-2SB-WV-54-EUNA.....P/N: 8640-0412**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors + 2 serial RS485 ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; EU and US band; dual 16.8V~137.5VDC; IP54; -40~65C
- **TWMR-5004-1L-1AC-2SB-WV-54-WW.....P/N: 8640-0422**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors+ 2 serial RS485 ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; Worldwide band; dual 16.8V~137.5VDC; IP54 ; -40~65C
- **TWMR-5004-1L-1AC-2SB-WV-54-APAC.....P/N: 8640-0432**
EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors+ 2 serial RS485 ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; APAC band; dual 16.8V~137.5VDC; IP54 ; -40~65C

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

Multifunction Antenna

- **ANT11000091** 5-in-1 omnidirectional antenna – 2G/3G/4G (698-960/1710~2170/2300~2700MHz) MIMO x2 + Wi-Fi 2.4/5GHz MIMO x2 + GPS/GLONASS/GALILEO (1575.42/1602MHz) x1, 3dBi, IP67, cable length: 3M



- **ANT11000092** 6-in-1 omnidirectional antenna – 2G/3G/4G (698-960/1710~2170/2300~2700MHz) MIMO x2 + Wi-Fi 2.4/5GHz MIMO x1 + GPS/GLONASS/GALILEO/BeiDou (1561/1575.42/1602MHz) x1 + AM/FM x1 + DSRC x1, 6dBi, IP67, cable length: 30cm



GPS Antenna

- **ANT12000001** SMA GPS antenna, 28dB, 300m



Cellular Antenna

- **ANT11000044** 2G/3G/4G dipole antenna, 704-960/1710-2690MHz, 1.6dBi, SMA plug, EU



- **ANT11000045** 2G/3G/4G dipole antenna, 698-960/1710-2690MHZ, 3dBi, SMA plug, US



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



- **ADA11000053** Magnetic antenna base for 3G/4G, RP SMA Jack Base, Length : 1M



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