

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**, TWCC**, VPN, Protocol Gateway, Storage**;
WV input

- Built-in 4 Gigabit X-coded Ethernet Managed Switch + 2WAN/2LAN ports
- WIFI radio for 802.11ac/a/b/g/n with 5GHz or 2.4GHz;
- Support WIFI 802.11e traffic prioritization and WMM
- MIMO technology 3T3R up to 6 antenna; Detachable antenna connectors with 6 SMA/QMA** type incl. 3 WIFI + 3 LTE
- Fast roaming **, 802.11r work with Lantech controller
- Supports AP/ BRIDGE/Client modes
- Advanced wireless security WEP64/128bits/ WPA/ WPA-PSK (TKIP*,AES)/ WPA2/ WPA2-PSK (TKIP*,AES)
- Optional TWCC** (Train Wireless Carriage Coupling)for auto wireless coupling
- VPN router for Multi-site VPN, OpenVPN, L2TP, IPsec, PPTP**, L2 over GRE
- Load Balancing** support 8 mechanism
- Optional EMMC Flash storage on-board**
- Support NAT and Firewall
- Support Modbus gateway on serial ports
- Support 2 RS422/485 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 & TX/RX rate display
- Editable login page of captive portal for hot-spot application
- USB port to backup, restore the configuration file and upgrade firmware*; Dual image firmware*
- EN50155/61373/45545 verification for railway application



OVERVIEW

Lantech TWMR-5004 series is a next generation EN50155 multi-function VPN router w/ 1 x 802.3ac 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**, TWCC**, 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.

Optional TWCC** (Train Wireless Carriage Coupling) for auto coupling

TWMR-5004 series supports optional TWCC** (Train Wireless Carriage Coupling) that enables auto wireless coupling to reconnect APs.

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.

Optional 802.11r fast roaming**

TWMR-5004 support fast roaming** in coordination with Lantech Wireless Controller to allow encryption keys to be stored on all of the APs in a network. Client mode supports PMK** Caching and pre-authentication (move to roaming section).

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
Standard	Fixed	Manually route by traffic type through fixed WAN link.
Basic Package	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/ 485 in which RS422/485 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, Open VPN, L2TP, IPsec L2 over GRE, NAT, and PPTP** for various VPN applications.

The built-in Layer-4 firewall includes DoS**, IP address filter / Mac address filter* / TCP/UDP port number.

DIDO for alarm & email notice; Event log; Remote Web/SMS** 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/SMS** control* can help to get router status or remotely reboot by Web/SMS**.

Wide range dual isolated input voltage from 16.8-137.5V (WV model)

The TWMR-5004 is able to work from dual 16.8V ~137.5V DC isolated 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 and TX/RX rate display

The built-in environmental monitoring can detect router ambient temperature, voltage, current where can send the syslog, email** and SMS** 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 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 IP65/54 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 -20°C to 70°C or -40°C to 70°C (-E)

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 isolated power input (WV model)
- Optional TWCC** (Train Wireless Carriage Coupling) for auto wireless coupling
- 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-MD5, 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, IPsec L2 over GRE, and PPTP** for secured network connection

- The built-in Layer-4 firewall includes DoS**, IP address filter / Mac address filter* / TCP/UDP port number.
- Support SNMP*v1/v2c/v3
- Support NAT/DMZ
- One LTE 4G/3G w/ 2 SIM card design(1L model) for mobile redundancy
- GPS/ GLONASS (built-in LTE module) connection
- 802.11r Fast roaming** (Optional) between APs by Wireless Controller
- Load Balancing** supports 8 mechanism between multiple WANs

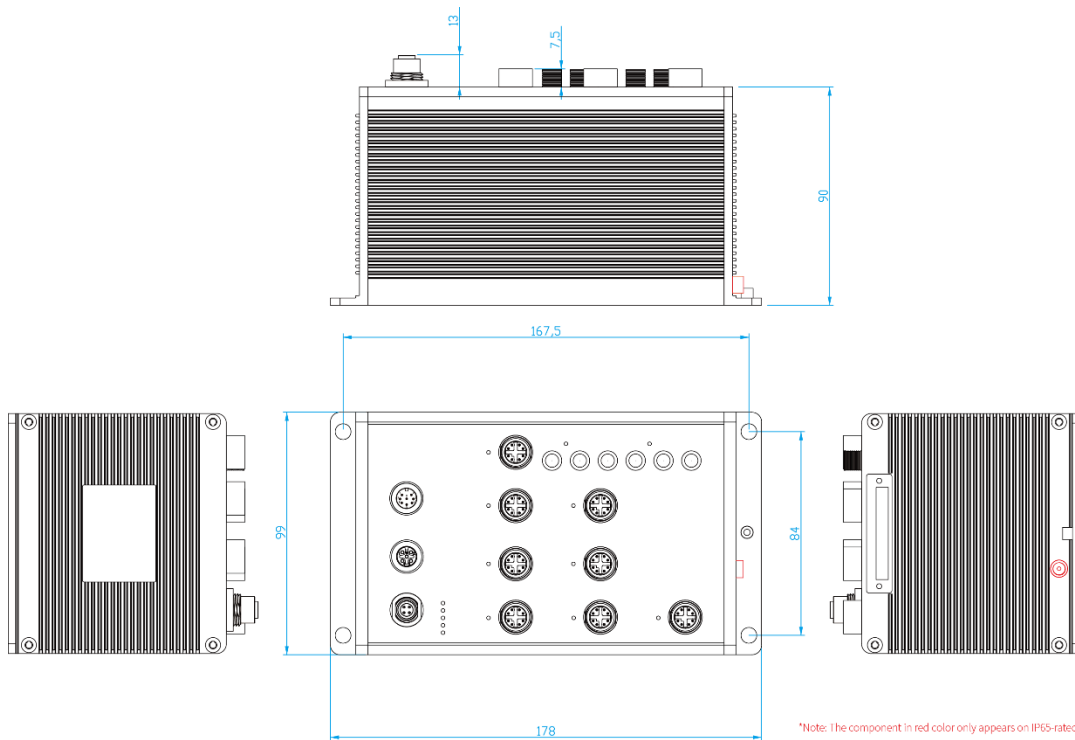
Pack	Algorithm	Description
Standard	Fixed	Manually route by traffic type through fixed WAN link.
Basic Package	Failover	Routes connections through preferred WAN link while others stand-by. Sequentially activate another link if preferred link fail occurs. Once failover will not fallback until link loss.
	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/RS422/485)
- Serial port with 2.5KV isolation on RS422/485
- 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**, SMS** text, Relay ; Permanent local log rotation / Maxi 1K records
- Remote Web/SMS** control to get status or re-boot by Web or SMS**
- Support SNTP to synchronize system clock
- Support LLDP discovery protocol

- Support DHCP Server and Client
- Graphic LTE & WIFI signal strength & TX/RX rate display
- Built-in environmental monitoring for system input voltage, current and ambient temperature; Able to set alert when abnormal
- Firmware upgradeable through TFTP/FTP/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 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 -20~70C or -40~70C (-E)

DIMENSIONS (unit=mm)



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

SPECIFICATION

WLAN Interface		2.4GHz: Up to 450Mbps
Operating Mode	AP/BRIDGE/Client modes	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:
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	

	OFDM (BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM)		FDD: 50 Mbps TDD: 26 Mbps
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		Americas & EMEA (EUNA model) Downlink (Cat 6): FDD: 300 Mbps TDD: 222 Mbps Uplink (Cat 6): FDD: 50 Mbps TDD: 26 Mbps
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)		WorldWide (WW model) Downlink: Cat 12: 600 Mbps Cat 9: 450 Mbps Uplink: Cat 13: 150 Mbps
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)		
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,MD5,EAP,TLS,EAP,TLS,EAP MsCHAPv3 and PEAP **		
Wireless Security	SSID broadcast disable		
Cellular Interface			
Location Solutions	GPS, Glonass (EU/Americas) GPS, Glonass, Beidou, Galileo (APAC model only)		
Band Options	APAC & Australia (APAC model) LTE: 2100/1800/850/2600/900/850/850/1500/700/2600/1900/2300/2500 MHz (B1/B3/B5/B7/B8/B18/B19/B21/B28/B38/B39/B40/B41) EUNA & USA model LTE: 2100/1800/2600/900/800 MHz (B1/B2/B3/B4/B5/B7/B12/B13/B20/B25/B26/B29/B30/B41) WorldWide (WW model) LTE: 2100/1900/1800/1700/850/2600/900/1800/700/700/850/850/800/850/700/2300/1500/2500/3500/3700/5200/3600/1700 (B1/B2/B3/B4/B5/B7/B8/B9/B12/B13/B18/B19/B20/B26/B28/B29/B30/B32/B41/B42/B43/B46/B48/B66)		
Data Rates – LTE	APAC & Australia (APAC model) Downlink (Cat 6): FDD: 300 Mbps TDD: 222 Mbps Uplink (Cat 6):		
		Software	
		IPv6/4	Present
		Login Security	Supports IEEE802.1x** Authentication/RADIUS
		TWCC**	Optional Train Wireless Carriage Coupling for Auto wireless Coupling
		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(DoS**/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
		Fixed	Manually route by traffic type through fixed WAN link.
		Basic Package**	
		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.
		Fast Roaming**	802.11r work with Lantech controller
		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-MD5, 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 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 LTE & Wi-Fi signal strength & TX / RX rate display
		Remote	To reboot or get status of router by Web/SMS**

Web/SMS** control		GPS	Green for Link/Act
Captive portal	Editable captive portal login page	Fault	Red: Ethernet link down or power down
Maintenance	Firmware upgradeable through TFTP/FTP/HTTP	Fault contact	
Configuration backup & restore	Supports text configuration file for quick system installation USB port to upload/download configuration by USB dongle Dual image firmware*	Relay	Relay output to carry capacity of 1A at 24VDC
Physical Ports & System		Power	
Connectors	10/100/1000T: 6x ports M12 8pole X-coded incl. 2WAN/2LAN ports USB/Console connector: 1 x M12 8-pole A-coded STANDARD SMA / OPTIONAL QMA connector : 3 male WIFI + 3 female LTE Power Input connector : 1 x M12 4-pole A-coded DI/DO : 1 x M12 5-pole A-coded	Input power	Dual DC input, isolated 16.8VDC~137.5VDC (for WV model)
Serial Baud Rate	1000Kbps high data rate,250kbps normal for RS232 ; 20Mbps high data rate,250kbps normal for RS422/485	Power consumption (Typ.)	20 Watts
Serial Data Bits	5, 6, 7, 8	EMMC Storage**	8/16/32 GB
Serial Parity	odd, even, none, mark, space	Physical Characteristic	
Serial Stop Bits	1, 1.5, 2	Enclosure	IP 65/54 aluminum case
RS-232	TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND	Dimension	178 (W) x 99 (D) x 103 (H) mm
RS-422	Tx+,Tx-, Rx+, Rx-,GND	Weight	1000g
RS-485 (2-wire)	Data+, Data-,GND	Environmental	
Isolation protection	RS422/485 2.5KV isolation; 8KV contact & 15KV air RS232 8KV contact and 15KV air ESD DIDO 3KV isolation Input power 1.5KVA isolation	Storage Temperature	-40°C ~ 85°C (-40°F ~ 185°F)
DI/DO	2 Digital Input (DI) : Level 0: -30~2V / Level 1: 10~30V Max. input current:8mA 2 Digital Output(DO): Open collector to 40 VDC, 200mA	Operating Temperature	-20°C ~ 70°C (-4°F ~ 158°F)
LED Indicators		Operating Temperature	-40°C ~ 70°C (-40°F ~ 158°F) -E model
Power & System indicator	Per unit: Power 1 (Green), Power 2 (Green), P-Fail (Red) , Ring Master(Green), Serial1/Serial2(Green) ,Ready(Green)	Operating Humidity	5% to 95% Non-condensing
10/100/1000Base-T(X) port indicator	Link/Activity (Green), Speed (Yellow)	Regulatory approvals	
SIM	Green for Link/Act	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)
		Stability Testing	EN61373 (Shock & Vibration)
		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
		MTBF	NA
		Warranty	5 years

*Future Release

**Optional

RF Performance Table

	Data Rate	TX Power (per chain)	TX Power (3 chains)	Tolerance	RX Specifications Sensitivity	Tolerance
2.4GHz 802.11b	1Mbps	20dBm	25dBm	±2dB	-95dBm	±2dB
	2Mbps	20dBm	25dBm	±2dB	-94dBm	±2dB
	5.5Mbps	20dBm	25dBm	±2dB	-92dBm	±2dB
	11Mbps	20dBm	25dBm	±2dB	-90dBm	±2dB
2.4GHz 802.11g	6Mbps	21dBm	26dBm	±2dB	-94dBm	±2dB
	9Mbps	21dBm	26dBm	±2dB	-93dBm	±2dB
	12Mbps	21dBm	26dBm	±2dB	-92dBm	±2dB
	18Mbps	21dBm	26dBm	±2dB	-90dBm	±2dB
	24Mbps	21dBm	26dBm	±2dB	-88dBm	±2dB
	36Mbps	20dBm	25dBm	±2dB	-85dBm	±2dB
	48Mbps	19dBm	24dBm	±2dB	-81dBm	±2dB
	54Mbps	18dBm	23dBm	±2dB	-80dBm	±2dB
2.4GHz 802.11n HT20	MCS 0	21dBm	26dBm	±2dB	-94dBm	±2dB
	MCS 1	21dBm	26dBm	±2dB	-91dBm	±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	-78dBm	±2dB
	MCS 6	18dBm	23dBm	±2dB	-78dBm	±2dB
	MCS 7	16dBm	21dBm	±2dB	-76dBm	±2dB
2.4GHz 802.11n HT40	MCS 0	20dBm	25dBm	±2dB	-92dBm	±2dB
	MCS 1	20dBm	25dBm	±2dB	-89dBm	±2dB
	MCS 2	20dBm	25dBm	±2dB	-87dBm	±2dB
	MCS 3	19dBm	24dBm	±2dB	-82dBm	±2dB
	MCS 4	19dBm	24dBm	±2dB	-80dBm	±2dB
	MCS 5	19dBm	24dBm	±2dB	-78dBm	±2dB
	MCS 6	18dBm	23dBm	±2dB	-77dBm	±2dB
	MCS 7	16dBm	21dBm	±2dB	-73dBm	±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	-90dBm	±2dB
	24Mbps	20dBm	25dBm	±2dB	-86dBm	±2dB
	36Mbps	18dBm	23dBm	±2dB	-84dBm	±2dB
	48Mbps	16dBm	21dBm	±2dB	-81dBm	±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 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

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.

- **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**, TWCC**, VPN, Protocol Gateway; EU and US band; dual isolated 16.8V~137.5VDC; IP65; -20~70C
- **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**, TWCC**, VPN, Protocol Gateway; Worldwide band; dual isolated 16.8V~137.5VDC; IP65; -20~70C
- **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**, TWCC**, VPN, Protocol Gateway; APAC band; dual isolated 16.8V~137.5VDC; IP65; -20~70C
- **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 isolated serial RS422/485 ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing**, TWCC**, VPN, Protocol Gateway; EU and US band; dual isolated 16.8V~137.5VDC; IP65; -20~70C
- **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 isolated serial RS422/485 ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing**, TWCC**, VPN, Protocol Gateway; Worldwide band; dual isolated 16.8V~137.5VDC; IP65; -20~70C

- **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 isolated serial RS422/485 ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing**, TWCC**, VPN, Protocol Gateway; APAC band; dual isolated 16.8V~137.5VDC; IP65; -20~70C
- **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**, TWCC**, VPN, Protocol Gateway; EU and US band; dual isolated 16.8V~137.5VDC; IP54; -20~70C
- **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**, TWCC**, VPN, Protocol Gateway; Worldwide band; dual isolated 16.8V~137.5VDC; IP54; -20~70C
- **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**, TWCC**, VPN, Protocol Gateway; APAC band; dual isolated 16.8V~137.5VDC; IP54; -20~70C
- **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 isolated serial RS422/485 ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing**, TWCC**, VPN, Protocol Gateway; EU and US band; dual isolated 16.8V~137.5VDC; IP54; -20~70C
- **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 isolated serial RS422/485 ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing**, TWCC**, VPN, Protocol Gateway; Worldwide band; dual isolated 16.8V~137.5VDC; IP54 ; -20~70C
- **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 isolated serial RS422/485 ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing**, TWCC**, VPN, Protocol Gateway; APAC band; dual isolated 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 Basic Package.....P/N: 9000-101**
- **LOAD BALANCING Full Package.....P/N: 9000-102**
- **TWCC.....P/N: 9000-103**
- **WIRELESS ROAMING.....P/N: 9000-107**

OPTIONAL ACCESSORIES

LTE Antenna

- **ANT11000041** 791-960/1710~2170/2500~2700MHZ, SMA plug, EU
- **ANT11000042** 704-960/1710~2170MHZ, SMA plug, US

Wireless Connector Adapter

- **ADA11000052** RP SMA Jack Base, Length : 1M

Wireless Antenna

- **ANT11000051** 2.4G&5.8GHz SMA Omni-directional / dipole antenna, 2dBi or 5.8GHz 3dBi

Lantech Communications Global Inc.

www.lantechcom.tw
info@lantechcom.tw

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