

# TMR-5002

EN50155 Multifunction VPN Router + up to 2 LTE 4G + 2 serial ports + 2 Gigabit X-coded Ethernet (incl.1 PD) for Load Balancing VPN, Protocol Gateway, Storage\*\*; WVinput; IP65/54



## OVERVIEW

Lantech TMR-5002 series is a next generation EN50155 multi-function VPN router up to 2x LTE modem + 2x Gigabit Ethernet (incl. 1 PD) + 2 serial ports that supports advanced function of VPN, Load-Balancing, EMMC Flash Storage\*\*, Protocol gateway (Modbus), Storage\*\*, and LTE dual SIM fail-over for on-board / onboard-to-ground applications. The dual core CPU with 1.6GHz + 256M flash enables the router to multi-task smoothly.

### Dual concurrent LTE design 4G/3G for load-balancing

With dual LTE module design (2L model), 4 SIM card slots, TMR-5002 can allow auto-swap, failover & fallback between multiple service providers for real non-stop connection. With concurrent LTE modules, it can also allocate bandwidth by “Load Balancing with 8 schemes between multiple WANs.

### Optional EMMC Flash storage\*\*

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

### Load Balancing with 5 mechanism for multi-WANs

TMR-5002 supports Load Balancing for LTE/WAN connections. There are five schemes with 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.

**2 port serial connection, Modbus gateway**

It builds in 2 port serial connection for RS232 or 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.

**VPN and firewall**

Besides traditional VPN peer to peer tunneling, TMR-5002 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 IWMR-3002 will immediately send email and trap.

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 TMR-5002 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; LTE signal strength**

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

The graphic LTE signal strength shows connection status at a glance.

**USB port for back up, restore configuration and upgrade firmware; Dual image firmware**

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

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

**Editable login page of captive portal**

The TMR-5002 supports editable captive portal function that allows administrator to force end-users redirect to authentication page.

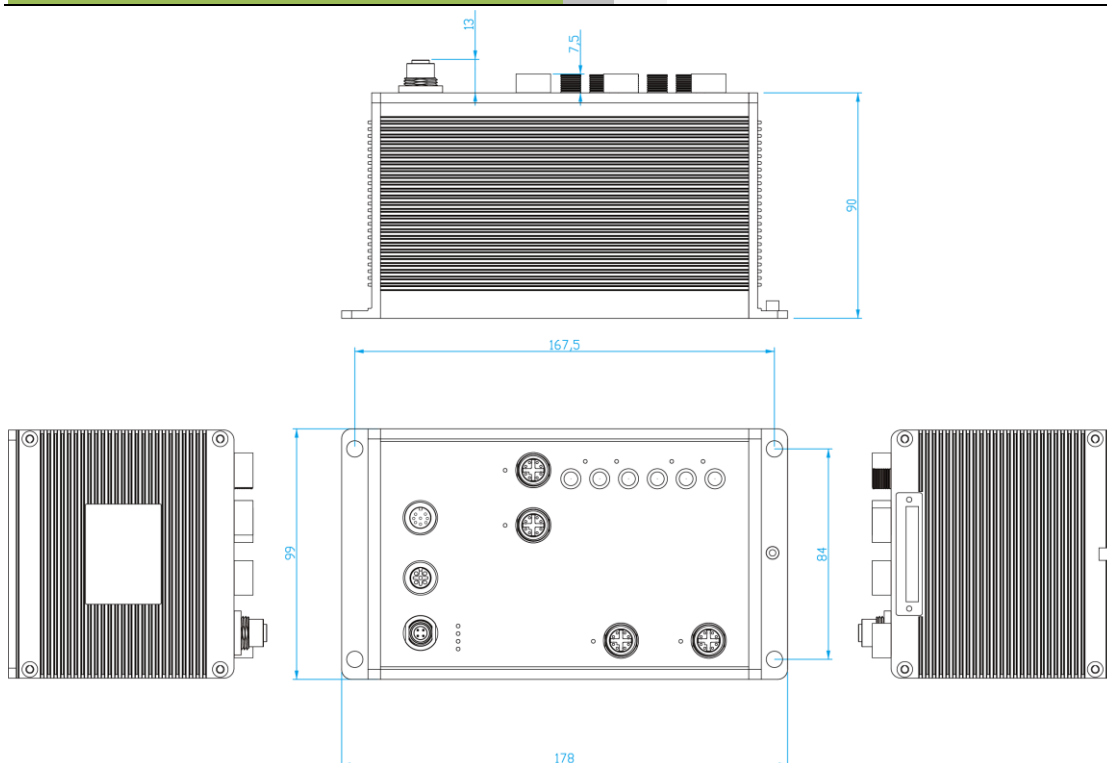
**Optional eSIM\*\***

By replacing physical SIM, optional eSIM chip will allow users to purchase data plans at low prices from local carriers in the world.

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

The TMR-5002series is verified with EN50155,61373,45545 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 TMR-5002 is best for outdoor community, vehicle, power substation, process control automation etc. For more usage flexibilities, TMR-5002 supports operating temperature from -40°C to 65°C.

**DIMENSIONS (unit=mm)**



**SPECIFICATION**

Cellular Interface		Basic	
Location Solutions	GPS, Glonass	Fixed	All traffic will be distributed to a single WAN.
Band Options	<b>Europe &amp; North America (EUNA model)</b> 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	Failover	Routes connections through preferred WAN link while others stand-by. Sequentially activating another link if the preferred link fails.
Data Rates – LTE	<b>Europe &amp; North America (EUNA model)</b> Downlink (Cat 6): FDD: 300 Mbps TDD: 222 Mbps Uplink (Cat 6): FDD: 50 Mbps TDD: 26 Mbps	Priority	Select the active WAN according to priority.
Software		Weighted Round-Robin	Evenly distribute the traffic over all working WAN links in circular order according to the specified weights
IPv6/4	Present	Custom Route	Routing through the selected WAN for each specific traffic ex: TCP/UDP port number and IP address.
Login Security	Supports IEEE802.1x Authentication/RADIUS	Timer	Built-in Real Time Clock to keep track of time always(RTC)
Access Security	Optional Train Wireless Carriage Coupling for Auto wireless Coupling	Discovery	IEEE 802.1ab Link Layer Discovery Protocol (LLDP)
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	SNMP trap	Device cold / warm start Port link up / link down DI / DO high / low
Routing	Static route / RIPv2 / OSPF / BGP / EIGRP	Environmental Monitoring	System status for input voltage, current , ambient temperature to be shown in GUI and sent alerting if any abnormal status
Management	SNMP v1, v2c, v3/ Web/Telnet/CLI	Graphic signal display	Graphic LTE signal strength & TX / RX rate display
Load Balancing	5 schemes for multiple WAN	Remote Web control	To reboot or get status of router by Web
		Maintenance	Firmware upgradeable through TFTP/HTTP
		Configuration backup & restore	Supports text configuration file for quick system installation

	USB port to upload/download configuration and upgrade firmware by USB dongle	<b>Fault contact</b>	Relay	Relay output to carry capacity of 1A at 24VDC
<b>Physical Ports &amp; System</b>		<b>Power</b>		
Connectors	10/100/1000T: 2x ports M12 8-pole X-coded with Auto MDI/MDI-X function (one port PD; 1LAN+1WAN or 2LAN) USB/Console connector: 1 x M12 8-pole A-coded DI/DO : 1 x M12 5-pole A-coded Power Input connector : 1 x M12 4-pole A-coded Serial connector : 2 x M12 8-pole X-coded SIM card slots : 4(2L) or 2(1L) <b>2L model</b> SMA/QMA** connector for LTE: 4 (female) SMA/QMA** connector for GPS: 2 (female) <b>1L model</b> SMA/QMA** connector for LTE: 2 (female) SMA/QMA** connector for GPS: 1 (female)	Input power	Dual DC input, 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/RS485	Power consumption (Typ.)	18 Watts	
Serial Data Bits	5, 6, 7, 8	<b>Physical Characteristic</b>		
Serial Parity	odd, even, none, mark, space	Enclosure	IP 65/54 aluminum case	
Serial Stop Bits	1, 1.5, 2	Dimension	178 (W) x 99 (D) x 103 (H) mm	
RS-232	TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND	Weight	1000g	
RS-422	Tx+, Tx-, Rx+, Rx-, GND	<b>Environmental</b>		
RS-485 (2-wire)	Data+, Data-, GND	Storage Temperature	-40°C ~ 85°C (-40°F ~ 185°F)	
Isolation protection	RS422/RS485 2.5KV isolation; 8KV contact & 15KV air RS232 8KV contact and 15KV air ESD DIDO 2.5KV isolation Input power 1.5KVA isolation	Operating Temperature	-40°C ~ 65°C (-40°F ~ 149°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 80 VDC, 50mA	Operating Humidity	5% to 95% Non-condensing	
EMMC Storage**	8/16/32 GB	<b>Regulatory approvals</b>		
<b>LED Indicators</b>		EMC	FCC Part 15 Class A, EN55032 , EN55024	
Power & system indicator	Per unit: Power 1 (Green), Power 2 (Green), P-Fail (Red) , System Ready(Green), Serial1/2(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	EN 301 489-1, EN 301 489-17, EN 301 489-19, EN 301 489-52, EN 301 908-1※, EN 303 413, EN 62311	
SIM	Green for Link/Act	Safety	EN60950 (LVD), AS60950 (LVD)	
GPS	Green for Link/Act	Stability Testing	EN61373 (Shock & Vibration)	
Fault	Red: Ethernet link down or power down	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	565,049 Hrs (IEC62380 standards)	
		Warranty	5 years	

\*Future Release

\*\*Optional

※Standard test of the following bands are not listed in EN 301 908-1 report: (EUNA not listed bands) LTE = B2, B4, B5, B12, B13, B25, B26, B29, B30, B41  
WCDMA = B2, B3, B4, B5;

## ORDERING INFORMATION

All QMA connector models are with -Q model name.

- **TMR-5002-1L-2S-WV-54-EUNA.....P/N: 8631-021**  
EN50155 Multifunction VPN Router + 1 LTE 4G SMA connectors+ 2 serial RS232 ports + 2 Gigabit X-coded Ethernet (incl. 1PD) for load-Balancing, VPN, Protocol Gateway; EU and US band; dual 16.8V~137.5VDC; -40~65C; IP54 housing
- **TMR-5002-1L-2SA-WV-54-EUNA.....P/N: 8631-0211**  
EN50155 Multifunction VPN Router + 1 LTE 4G SMA connectors+ 2 serial RS422 ports + 2 Gigabit X-coded Ethernet (incl. 1PD) for load-Balancing, VPN, Protocol Gateway; EU and US band; dual 16.8V~137.5VDC; -40~65C; IP54 housing
- **TMR-5002-1L-2SB-WV-54-EUNA.....P/N: 8631-0212**  
EN50155 Multifunction VPN Router + 1 LTE 4G SMA connectors+ 2 serial RS485 ports + 2 Gigabit X-coded Ethernet (incl. 1PD) for load-Balancing, VPN, Protocol Gateway; EU and US band; dual 16.8V~137.5VDC; -40~65C; IP54 housing
- **TMR-5002-1L-2S-WV-65-EUNA.....P/N: 8631-027**  
EN50155 Multifunction VPN Router + 1 LTE 4G SMA connectors+ 2 serial RS232 ports + 2 Gigabit X-coded Ethernet (incl. 1PD) for load-Balancing, VPN, Protocol Gateway; EU and US band; dual 16.8V~137.5VDC; -40~65C; IP65 housing
- **TMR-5002-1L-2SA-WV-65-EUNA.....P/N: 8631-0271**  
EN50155 Multifunction VPN Router + 1 LTE 4G SMA connectors+ 2 serial RS422 ports + 2 Gigabit X-coded Ethernet (incl. 1PD) for load-Balancing, VPN, Protocol Gateway; EU and US band; dual 16.8V~137.5VDC; -40~65C; IP65 housing
- **TMR-5002-1L-2SB-WV-65-EUNA.....P/N: 8631-0272**  
EN50155 Multifunction VPN Router + 1 LTE 4G SMA connectors+ 2 serial RS485 ports + 2 Gigabit X-coded Ethernet (incl. 1PD) for load-Balancing, VPN, Protocol Gateway; EU and US band; dual 16.8V~137.5VDC; -40~65C; IP65 housing
- **TMR-5002-2L-2S-WV-54-EUNA.....P/N: 8631-024**  
EN50155 Multifunction VPN Router + 2 LTE 4G SMA connectors+ 2 serial RS232 ports + 2 Gigabit X-coded Ethernet (incl. 1PD) for load-Balancing, VPN, Protocol Gateway; EU and US band; dual 16.8V~137.5VDC; -40~65C; IP54 housing
- **TMR-5002-2L-2SA-WV-54-EUNA.....P/N: 8631-0241**  
EN50155 Multifunction VPN Router + 2 LTE 4G SMA connectors+ 2 serial RS422 ports + 2 Gigabit X-coded Ethernet (incl. 1PD) for load-Balancing, VPN, Protocol Gateway; EU and US band; dual 16.8V~137.5VDC; -40~65C; IP54 housing

- **TMR-5002-2L-2SB-WV-54-EUNA.....P/N: 8631-0242**  
EN50155 Multifunction VPN Router + 2 LTE 4G SMA connectors+ 2 serial RS485 ports + 2 Gigabit X-coded Ethernet (incl. 1PD) for load-Balancing, VPN, Protocol Gateway; EU and US band; dual 16.8V~137.5VDC; -40~65C; IP54 housing
- **TMR-5002-2L-2S-WV-65-EUNA.....P/N: 8631-030**  
EN50155 Multifunction VPN Router + 2 LTE 4G SMA connectors+ 2 serial RS232 ports + 2 Gigabit X-coded Ethernet (incl. 1PD) for load-Balancing, VPN, Protocol Gateway; EU and US band; dual 16.8V~137.5VDC; -40~65C; IP65 housing
- **TMR-5002-2L-2SA-WV-65-EUNA.....P/N: 8631-0301**  
EN50155 Multifunction VPN Router + 2 LTE 4G SMA connectors+ 2 serial RS422 ports + 2 Gigabit X-coded Ethernet (incl. 1PD) for load-Balancing, VPN, Protocol Gateway; EU and US band; dual 16.8V~137.5VDC; -40~65C; IP65 housing
- **TMR-5002-2L-2SB-WV-65-EUNA.....P/N: 8631-0302**  
EN50155 Multifunction VPN Router + 2 LTE 4G SMA connectors+ 2 serial RS485 ports + 2 Gigabit X-coded Ethernet (incl. 1PD) for load-Balancing, VPN, Protocol Gateway; EU and US band; dual 16.8V~137.5VDC; -40~65C; IP65 housing
  
- 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

### GPS Antenna

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



### Cellular Antenna

- **ANT11000046** LTE hinge rotatable antenna, 698-960MHz, 1710-2690MHz, Diameter 10mm, Length 108mm, SMA Connector



### Antenna Base

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



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