

Industrial Smart LTE/WiFi Router for Easy Smart City and IIoT Applications

WR224 Series

Industrial Compact LTE/WiFi Router

WR224 is a smart solution for smart city and IIoT applications as a LTE/WiFi dual radio router, or simply a single high speed WiFi AP. The router supports LTE to WiFi redundancy and auto offload to guarantee high speed. To safeguard cyber security, security features such as Firewall, OpenVPN, GRE tunnel are supported. The embedded MQTT and RESTful API enables public cloud integration such as AWS or Azure. The private cloud platform ThingsMaster and ThingsMaster OTA can also be setup for instant and secured access to receive data or manage devices remotely.



Features & Benefits

Dual Radio 4G/LTE + Wi-Fi Wireless Network

- LTE Cat.4, 2T2R MIMO provides 150M downlink and 50M uplink
- 4G/3G/2G full cellular network compatibility
- LTE-E:
FDD B1/3/5/7/8/20 (2100/1800/850/2600/900/800MHz)
TDD B38/40/41 (2600/2300/2500MHz)
- LTE-CN:
FDD B1/3/5/8 (2100/1800/850/900MHz)
TDD:B38/39/40/41 (2600/1900/2300/2500MHz)
- IEEE 802.11b/g/n for 2.4G 2T2R MIMO delivers up to 300Mbps throughput

Management Features

- Various configuration paths, including Web GUI, Telnet, LAN Utility (ViewMaster), and NMS (NetMaster)
- Supports cellular to WAN redundancy, dual SIM backup
- Supports Cellular to WLAN auto offload
- 1:1 NAT, port forwarding and NATP for local traffic protection
- Support static routing
- NTP v3 time management
- Built-in Cloud AWS Agent, Azure Agent, ThingsMaster Agent

Enhanced Cyber Security & Redundancy

- Support Firewall for inbound/outbound traffic
- OpenVPN (server/client) for secure remote connection
- Support L2TP with PPP, PAP, CHAP(LCP, IPCP)
- Support GRE tunnel
- HTTPs/SSH secure login
- Support TACACS+ multi-user authentication for privileged user management

Rugged Design for Wayside Surveillance, ITS Application

- Effective heat dissipation design for operating in -40~70°C environments
- CE Marking
- IEC61000-6-2/IEC61000-6-4 heavy industrial EMC compliance



Interfaces

* Antennas are optional accessory and are not included in the package

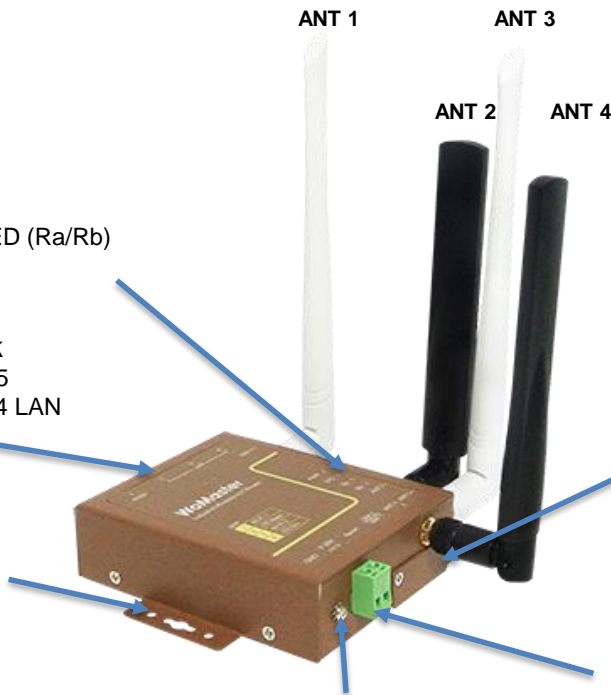
System LED

- 1 x Power
- 1 x System Status
- 2 x Radio Status LED (Ra/Rb)

Ethernet Network

- 4-port 10/100M RJ45
- 1 WAN + 3 LAN, or 4 LAN

Wall/DIN Mounting Clip (Both Sides)



Ground Screw

SIM Card

- 2x SIM for redundancy

Integrated Power Connector

- 1 x 2-pin terminal block for 9~30V power input

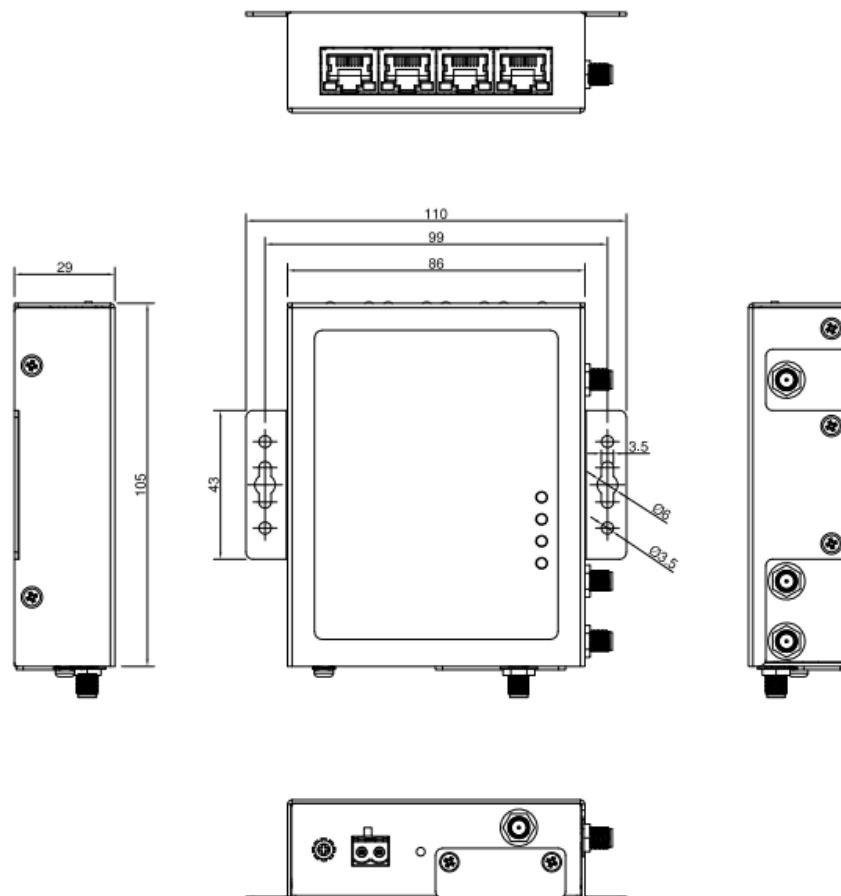
	WR224-WLAN-LTE
ANT 1	Wi-Fi 1
ANT 2	LTE-Main
ANT 3	Wi-Fi 2
ANT 4	LTE-Diversity

*Antenna: Wi-Fi in White; LTE in Black



Dimensions

(mm)



Technology	
Standard	3GPP Release 11 Long Term Evolution (LTE), fallback 3GPP Release 7,8,9 for HSPA/UMTS IEEE 802.11b/g/n for Wireless LAN IEEE 802.11i for Wireless Security IEEE 802.3 10Base-T Ethernet IEEE 802.3u 100Base-TX Fast Ethernet
Interface	
Ethernet Port	4 x 10/100Base-TX RJ45, Auto Negotiation, Auto MDI/MDI-X Router Mode: 1 WAN + 3 LAN, Bridge Mode: 4 LAN
System LED	1 x Power: Green ON 1 x SYS: Ready: Green On, Firmware Updating: Green Blinking 1 x Ra: 4G connection: Green On, 2/3G connection: Green Blinking, disconnected: Off 1 x Rb: AP mode: Green On, Station mode connected: Green Blinking, Station mode/radio disable: Off
Reset	System Reset(2~6 Seconds) / Default Settings Reset(over 7 Seconds)
SMA Socket	Up to 4 x RP-SMA Female (without Nylok) ANT1/3 for Wi-Fi 2T2R, ANT2/4 for LTE 2T2R (Main/Div)
SIM Socket	2 x Nano, SIM1: Main, SIM2: Redundant
Power Input	2-Pin Removable Terminal Block Connector for V+/V-
Cellular Properties	
Standard	GSM/GPRS/EDGE 3GPP Release 6 UMTS/HSPA 3GPP Release 8 LTE 3GPP Release 11
Data Rate	LTE Cat.4: GPRS: DL: Max. 85.6 kbps, UL: Max. 85.6 kbps EDGE: DL: Max. 236.8 kbps, UL: Max. 236.8 kbps HSPA: DL: Max. 42 Mbps, UL: Max. 5.76 Mbps LTE-FDD: DL: Max. 150 Mbps, UL: Max. 50 Mbps, 2x2 DL MIMO LTE-TDD: DL: Max. 130 Mbps, UL: Max. 35 Mbps, 2x2 DL MIMO
Band Information: LTE-E	LTE: FDD B1/B3/B5/B7/B8/B20 (2100/1800/850/2600/900/800MHz) LTE: TDD B38/B40/B41 (2600/2300/2500MHz) WCDMA: FDD B1/B5/B8 (2100/850/900MHz) GSM: B3/B8 (1800/900MHz)
Band Information: LTE-AU	LTE: FDD B1/B2/B3/B4/B5/B7/B8/B28 (2100/1900/1800/1700/850/2600/900/700MHz) LTE: TDD B40 (2300MHz) WCDMA: FDD B1/B2/B5/B8 (2100/1900/850/900MHz) GSM: B2/B3/B5/B8 (1900/1800/850/900MHz)
Band Information: LTE-U	LTE: FDD B2/B4/B12 (1900/1700/700MHz) WCDMA: B2/B4/B5 (1900/1700/850MHz)
Band Information: LTE-CN	LTE FDD: B1/B3/B5/B8 (2100/1800/850/900MHz) LTE TDD: B38/B39/B40/B41 (2600/1900/2300/2500MHz) TD-SCDMA: B34/B39 (2000/1900MHz) WCDMA: B1/B8 (2100/900MHz) CDMA: BC0 GSM: 900/1800MHz
Wi-Fi Properties	
Standard	IEEE 802.11b/g/n, Up to 2T2R MIMO
Data Rate	802.11b: 11Mbps / 802.11g: 54Mbps / 802.11n: MCS0 ~ 15, max. 300Mbps Check detail TX/RX information in User Manual
Frequency	ISM Band, 2.412GHz ~ 2.462GHz (CH1~11), programmable by regional regulation
RSSI	≤20db, compliant with CE request

Power Requirement	
Input Voltage	24V (9~30VDC)
Reverse Polarity Protect	Yes
Input Current	WR224-WLAN+LTE: 0.18A@24V
Power Consumption	WR224-WLAN+LTE: Max 4.32W@24VDC full traffic, suggest to reserve 15% tolerance
Software	
Management Interface	CGI WebGUI, Command Line Interface (CLI), Telnet, SNMP
User Management	Radius client, TACACS+, local database
Time Management	NTPv3, SNTP, Cellular Time
IoT	AWS Agent, Azure Agent, ThingsMaster Agent
Network Management	IPv4, SNMP v1/v2c/v3/Trap, MIB II, Entity MIB, DHCP server/client, DHCP relay, TFTP, ARP response over 802.2 LLC SNAP, Proxy ARP, DNS (client/proxy), private MIB
Traffic Management	1:1 NAT, NAPT(SNAT/DNAT), Port Forwarding
Routing	Static Route
Security	Firewall, DMZ, HTTPs, SSH, IEEE 802.1X/RADIUS
VPN	OpenVPN (server/client), L2TP, GRE
Cellular Configuration	Radio on/off, 2G, 3G and 4G modes configurable, SIM Security, Connection Status, Cellular to Eth-WAN Redundancy, Backup SIM Retry (1-10 times)
WLAN Configuration	WLAN Basic Settings: Radio on/off, AP/client mode, 2.4G 11n Band and Frequency selection, SSID/Multi-SSID configuration, SSID broadcast, Cellular to WLAN Auto Offload and advanced WLAN settings, 802.1X
Utility	ViewMaster, NetMaster, Ping, Traceroute
Wi-Fi Max. Client	Up to 20
Mechanical	
Installation	Wall Mount/DIN Rail (DIN bracket not included)
Enclosure Material	Steel Metal
Dimension	86 x 105 x 29mm(W x D x H) / without mounting Clip
Ingress Protection	IP30
Weight	Around 350g without package/antenna
Environmental	
Operating Temperature & Humidity	-40°C~70°C , 5%~95% Non- Condensing
Storage Temperature	-40°C~85°C
MTBF	>200,000 hours
Warranty	5 years
Approval	
Safety	EN60950-1 Compliance
EMC	EN61000-6-2/EN61000-6-4
EMI	CISPR 22, FCC part 15B Class A
EMS	EN61000-4-2 ESD, EN61000-4-3 RS, EN61000-4-4 EFT, EN61000-4-5, EN61000-4-6 CS, EN61000-4-8 Magnetic Field
Radio	RED Compliance Safety: EN 62368-1 EN 50385/EN62311 MPE assessment EN 301 489-1/17/19, EN 55032/55024 EN 300 328 EN 301 908-1 FCC Part 15B





Model Name	Description
WR214-WLAN	Industrial Wireless IIoT Field Router, 4FE, 802.11b/g/n WLAN (no antennas included)
WR224-WLAN+LTE-E	Industrial Wireless IIoT Field Router, 4FE, 802.11b/g/n WLAN, LTE-E, 2SIM, FDD B1/3/5/7/8/20, TDD B38/40/41 (no antennas included)
	*LTE-AU/LTE-U/LTE-CN Cat.4 by request *GPS support by request
	Package List
	1 x Product Unit
	1 x 2-pin Removable Terminal Connector
	NOTE: Antennas are not included in the package. Please order the antennas from the optional accessories.
	1 x Quick Installation Guide





Ordering Information

A-LTE-2-RSM	LTE Antenna, LTE WW 2dBi, RP-SMA male
A-WLAN-3-RSM	Wi-Fi Antenna, 2.4/5GHz Dual Band Omni-directional 2.5/3dBi, RP-SMA male
A-LTE-3-NM	LTE Antenna, LTE WW 3dBi, N-type male
A-WLAN-6-NM	Wi-Fi Antenna, Wi-Fi 2.4/5GHz dual band Omni-directional 4/6dBi, N-type male
A-GPS-27-RSM-3M	GPS Antenna, GPS 1575MHz 27dBi, RP-SMA male, 3M
C-RF-R-RSF_RSM-1M	RF cable, RP-SMA female to RP-SMA male, 1M
C-RF-C2-NF_RSM-2M	RF cable, N-type female to RP-SMA male, CFD200, 2M


LTE Antenna

	Model	Type	Frequency (MHz)	Gain (dBi)	Connector	Dimension (mm)	Cable (M)	Operating Temp.	Application
	A-LTE-2-RSM	Omni	704~960/1710~2690	2	RP SMA Male	161xΦ13	-	-20°C~ 65°C	Indoor
	A-LTE-3-NM (require RF cable)	Omni	704~960 1710~2700	2 3	N-Type Male	187xΦ20	-	-20°C~ 65°C	Outdoor

Wi-Fi Antenna

	Model	Type	Frequency (MHz)	Gain (dBi)	Connector	Dimension (mm)	Cable (M)	Operating Temp.	Application
	A-WLAN-3-RSM	Omni	2400~2500 4900~5900	2.5 3	RP SMA Male	196xΦ13	-	-40°C~ 65°C	Indoor
	A-WLAN-6-NM (require RF cable)	Omni	2400~2500 5150~5850	4 6	N-Type Male	187xΦ20	-	-20°C~ 65°C	Outdoor

GPS Antenna (optional)

	Model	Type	Frequency (MHz)	Gain (dBi)	Connector	Dimension (mm)	Cable (M)	Operating Temp.	Application
	A-GPS-27-RSM-3M	Omni	1575.42	27	RP SMA Male	36x36x13.9	3	-20°C~ 65°C	Indoor