

LTE or WLAN Wireless Routing (PoE) Switch and IoT Gateway for BUS/Vehicle and Automation

WR319/WR319P/WR319A/WR319PA

LTE or WLAN Wireless 8 (PoE+) Ethernet and 1 GbE WAN Routing Switch for BUS/Vehicle

The cellular LTE or WLAN wireless routing switch WR319 series include **WR319-WLAN** and **WR319-LTE** with 8-Port Ethernet and 1 GbE WAN port, **WR319P-WLAN** and **WR319P-LTE** with 8-port PoE+ boost up to 30W/port for bus/vehicle, **WR319A-WLAN** and **WR319A-LTE** with 1 RS232/422/485 serial port, 3 DIs and 2 DOs for IoT sensors, DIO applications and **WR319PA-WLAN / WR319PA-LTE** for both PoE and IoT features. The security design includes static routing, IPsec VPN, DMZ, and a stateful firewall inspection in order to segregate networks and protect mission-critical data. With support for Network Address Translation (NAT) and port-forwarding, it isolates the threats from the Internet. The USB port for configuration can help mass installation and site support. The embedded MQTT and RESTful API enables public cloud integration such as AWS®, Azure®, or user-defined cloud. The private cloud platform ThingsMaster® by WoMaster can also be set up for an instant and secured access for video surveillance and IoT control over the cloud.



PoE+

VPN

Cyber Security

Lte

GALILEO

5GHz
802.11a/n/ac

2.4GHz
802.11b/g/n

-40~75°C

IEC61000-6-2
IEC61000-6-4

MQTT

Microsoft Azure

amazon web services

NetMaster
ThingsMaster
ThingsMaster OTA

Features & Benefit

Cellular High speed 4G LTE or Wireless LAN

- LTE Cat.4, 2x2 MIMO, 150M downlink and 50M uplink
- LTE Cat.6 with 2CA, 2T2R MIMO provides 300M downlink and 50M uplink
- 4G/3G/2G full cellular network compatibility
- GPS/BDS/GLONASS/Galileo location services
- IEEE 802.11ac compliant & backward compatible with 802.11a/b/g/n
- Selectable 5G/2.4G Wi-Fi for local coverage, up to 866Mbps bandwidth

Ethernet Routing Switch

- 8 Fast Ethernet ports with 100M wire-speed switching
- One Gigabit Ethernet WAN port for uplink or NVR

Industrial IoT Gateway (WR319A, WR319PA)

- One RS232/422/485 with Modbus RTU protocol to connect sensors
- Three Digital Inputs for the sensors or push button
- Two Digital Outputs for alarm
- MQTT protocol for serial, DI and DO data to IIoT cloud

Extreme PoE Capability (WR319P, WR319PA)

- Provides 8-port IEEE 802.3af/at compliance PoE+, up to **30W** per port
- 12/24V to 54VDC Booster PoE
- Up to 120W PoE power budget
- Complete PoE management including per-port Power Budget Control, PoE Scheduling and PoE Status

Rugged Design for Bus, Wayside

Surveillance, ITS Application

- Railway EMC: EN50121-4 compliance
- IEC61000-6-2/IEC61000-6-4 heavy industrial EMC
- Vehicle: E-mark compliance
- Radio RED for CE Marking
- Emission: FCC part 15 B Class A
- Effective heat dissipation design for operating in -40~75°C environments

Enhanced Cyber Security for Critical Application

- Firewall for traffic classification, port forwarding
- NAT, DMZ for LAN protection
- OpenVPN, IPsec, L2TP for secure connection
- Port Security
- HTTPs/SSH secure login

Dynamic Routing with Redundancy Protection

- RIPv1&v2, OSPFv1&v2 for intra-domain routing within an autonomous system
- Efficient unicast/multicast* static routing
- VRRP guarantees sustainable routing in a single point of failure

Industrial IoT LAN & Cloud Management

- Various configuration paths, including CGI WebGUI, CLI, SNMP and RMON*
- WoMaster Software Utilities
 - NetMaster**: Network Management System with VLAN visualization* and ERPS* Ring
 - ViewMaster**: Configuration Management
 - ThingMaster**: Interactive monitoring dashboard by Modbus Tag to collect data from Modbus devices
 - ThingMaster OTA**: Realtime map showing the status, signal strength, location of the remote devices, over-the-air batch device registration, configuration and firmware upgrade*, alerts on critical events to prevent downtime
- Support MQTT protocol, ready to use AWS/Azure and Private Cloud Agent for cloud management
- LLDP* for topology control, auto-topology drawing
- USB for easy field configuration and firmware update
- Diagnostic tool includes Ping, TFTP, SNMP Trap, E-mail Alert and System Log

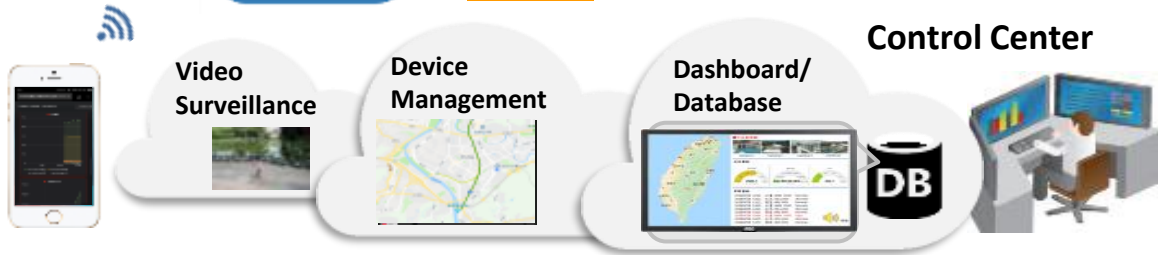


✓ Ready Total Solution for IoT and Smart City

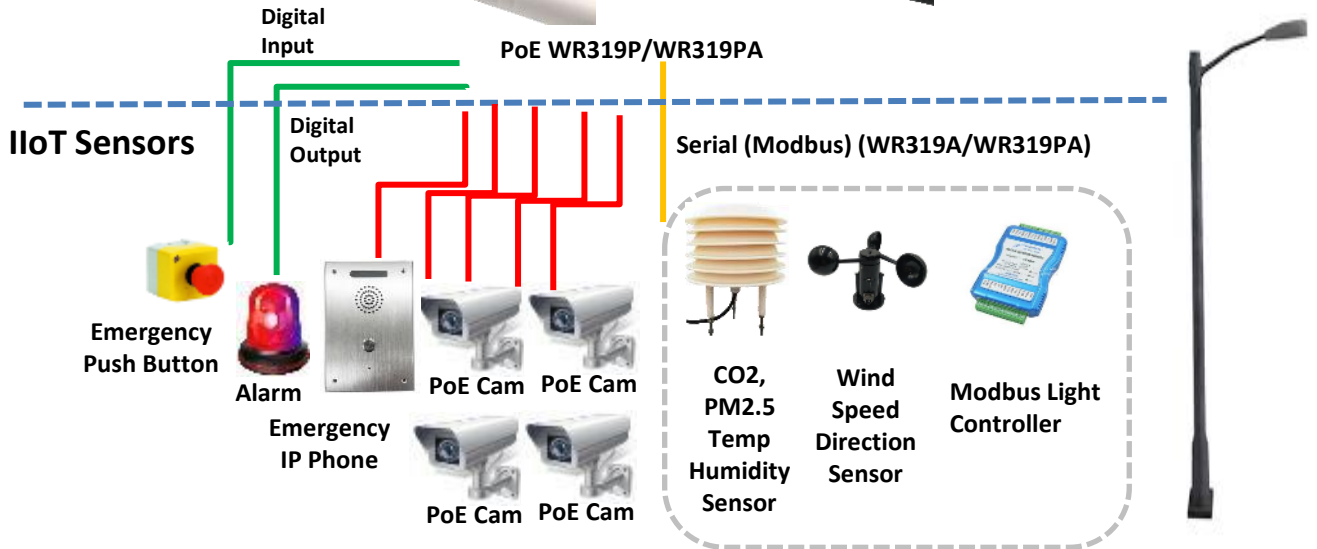
Cloud Service



ThingsMaster
ThingsMaster OTA



LTE or WLAN IoT Router Switch

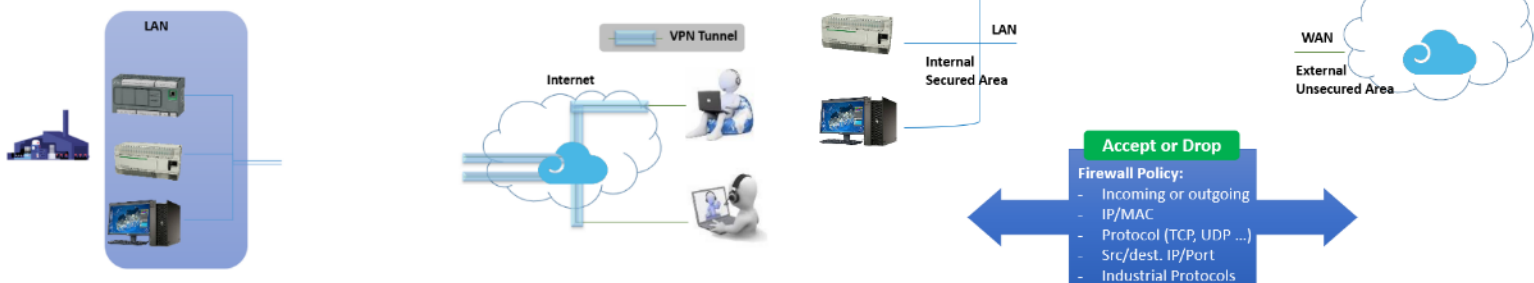


✓ Secured Remote Access by VPN

WR319 can act as VPN server for data encryption and dynamic remote access. Multiple VPN protocols are supported such as IPSec, OpenVPN, GRE, and L2TP. The channels between multiple networks, ex. private/public/hybrid networks are fully secured and with authentication features.

✓ Cyber Security Guard

The stateful firewall can monitor the state of the connection at all time. Multiple industrial fieldbus protocols, ex. Modbus TCP*, EtherNet/IP* are also supported for factory automation applications.



*by request

Secure IoT Modbus Tags

- Tag-based data acquisition with MQTT support
- MQTT client acting as publisher and subscriber
- The latest TLS encryption and X.509 authentication
- Selectable serial port and data type. Sensor alive check and display sensor value.

✓ **Built-in Microsoft Azure and Amazon AWS agent**



Home > IoT > Modbus Device

Modbus Logging

Modbus Logging Enable

Name // Tag Name

Serial

Slave ID // Slave Address

PLC Address

Function // Slave Address

Data Type // Data Address, Register Address

Modbus RTU Slave Tag List

| Select | Name | Serial | Slave ID | Address | Function Code | Data Type | Edit | Alive | Value |
|--------------------------|---------------|--------|----------|---------|---------------|-----------|-------------------------------------|-------|-----------|
| <input type="checkbox"/> | PM1 | 1 | 4 | 1 | 03 | int16 | <input type="button" value="Edit"/> | Yes | 10 |
| <input type="checkbox"/> | PM2_5 | 1 | 4 | 2 | 03 | uint16 | <input type="button" value="Edit"/> | Yes | 13 |
| <input type="checkbox"/> | PM10 | 1 | 4 | 3 | 03 | uint16 | <input type="button" value="Edit"/> | Yes | 13 |
| <input type="checkbox"/> | CO2 | 1 | 1 | 562 | 03 | uint16 | <input type="button" value="Edit"/> | Yes | 1107 |
| <input type="checkbox"/> | Temperature | 1 | 1 | 564 | 03 | int16 | <input type="button" value="Edit"/> | Yes | 255 |
| <input type="checkbox"/> | Humidity | 1 | 1 | 566 | 03 | int16 | <input type="button" value="Edit"/> | Yes | 629 |
| <input type="checkbox"/> | Temperature_f | 1 | 1 | 1 | 03 | float | <input type="button" value="Edit"/> | Yes | 25.490820 |

✓ **GPS/BDS/GLONASS/Galileo Location Service**
Latitude / Longitude / Altitude /Speed

Home > GPS > GPS Status

GPS Status

Status: OK

Date: 140518

UTC: 035331.0

Latitude: 24 58.4485N

Longitude: 121 32.9141E

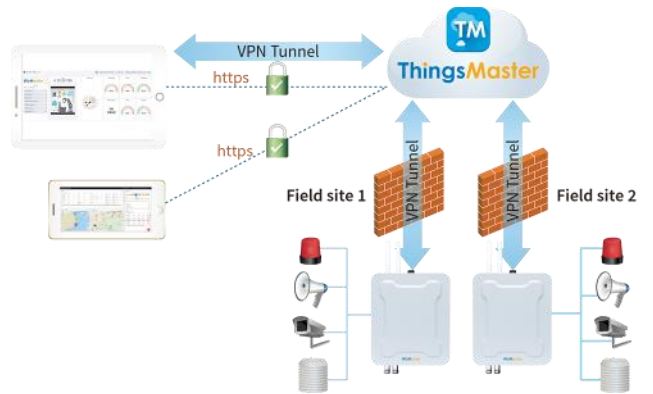
Altitude(m): 110.0

Speed over ground(Km/h): 0.0

Number of satellites: 9

Secured Multi-sites Management

- N to N VPN
- Latest TLS encryption and X.509 authentication



✓ **ThingsMaster OTA (device management over the air)**

The OTA agent embedded in WR319 upgrades device management over the air, anywhere you are and any time you want over your mobile devices. ThingsMaster OTA is a secured local OTA software that can be installed in a private or public server or even QNAP NAS (network attached storage). With OTA, all device information such as location, warning event can be shown in real time. The maintenance such as configuration reload, or device reboot can also be run by group.

Device Management OTA

Devices list table with columns: Empty name, Device ID, Model name, Device Name, IP Address, Status, Action, Split/Join/Play, Split/Join/Play.

Map showing device locations on a globe and a detailed map of Taipei City.

Alerts table with columns: Alarm ID, Alarm Name, Type, Severity, Status.

Real-time data graph showing sensor readings over time.

Batch Configuration and Reboot OTA

Group Selection

Select entities: All, Group 1, Group 2, Group 3, Group 4, Group 5, Group 6, Group 7, Group 8, Group 9, Group 10.

Input device config

Drop a file or click to select a file to upload

Ready To Use Cloud Solution



Smart Energy Solution

-Monitor meter voltage, frequency, power, current, energy consumption, etc.



Industrial 4.0 Solution

Monitor machine downtime, speed, utilization rate, yield rate, productivity, etc.



Smart Farming Solution

Monitor silos weights, silos temperature, silos humidity, etc



Smart Bus Tracking Solution

Monitor bus route, speed, passenger count, fuel etc.



Smart Environment Solution

Monitor PM1/2.5/10, CO2, temperature, humidity, radiation, wind speed, etc.



Smart Metering Solution

Monitor district energy consumed, water consumed, etc.

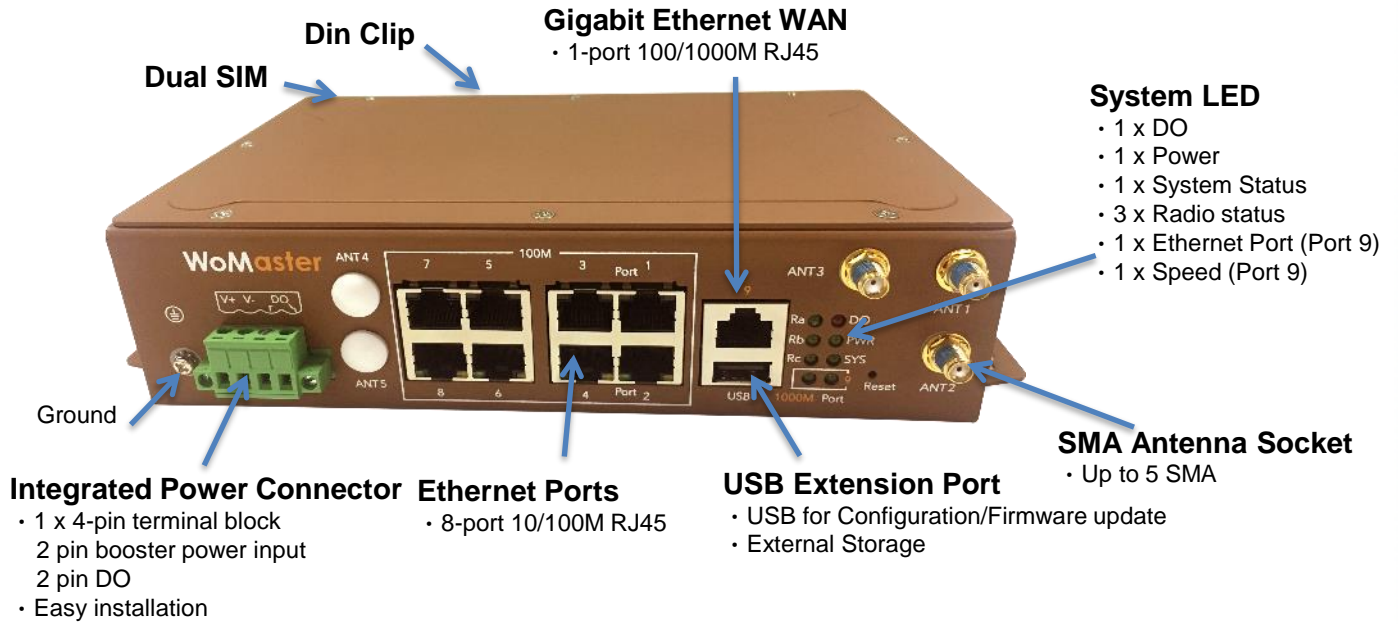




Interfaces

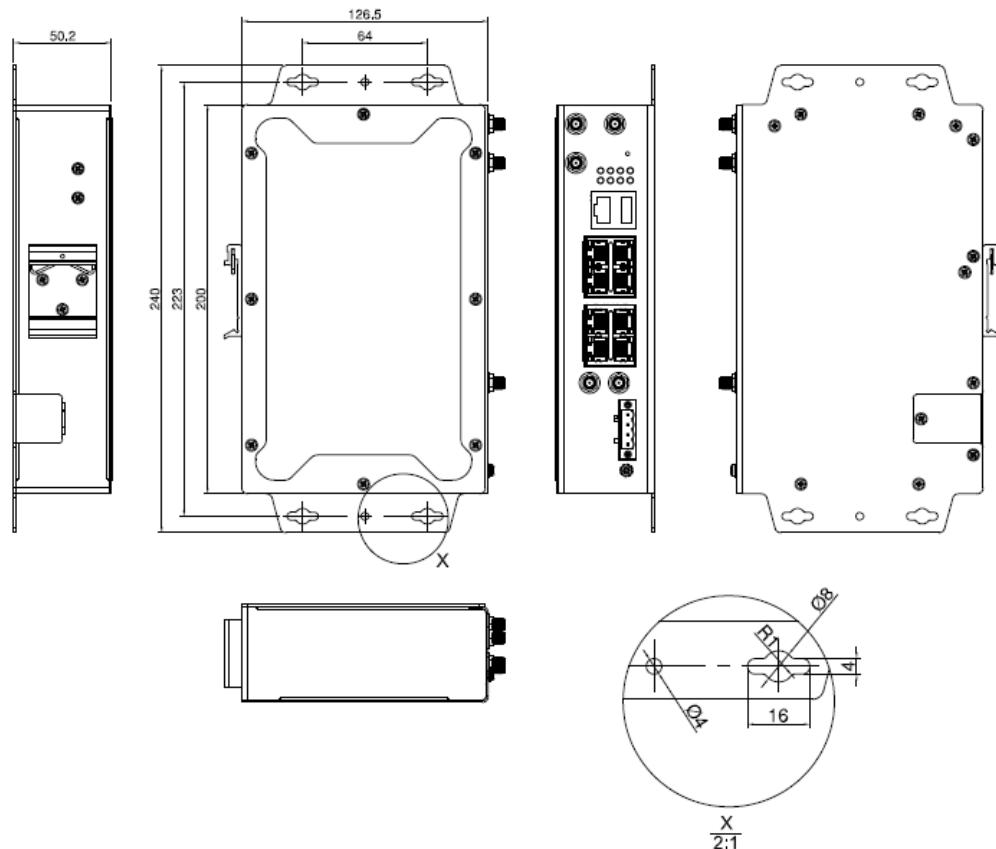
WR319

| | WR319-LTE | WR319-WLAN |
|-------|-----------|------------|
| ANT 1 | LTE-Main | Wi-Fi 1 |
| ANT 2 | LTE-Aux | Wi-Fi 2 |
| ANT 3 | GPS | - |
| ANT 4 | - | - |
| ANT 5 | - | - |



Dimensions

(mm)





Interfaces

WR319P

| | WR319P-LTE | WR319P-WLAN |
|-------|------------|-------------|
| ANT 1 | LTE-Main | Wi-Fi 1 |
| ANT 2 | LTE-Aux | Wi-Fi 2 |
| ANT 3 | GPS | - |
| ANT 4 | - | - |
| ANT 5 | - | - |

Outstanding Heat Sink

- Industrial Fin-Type Design

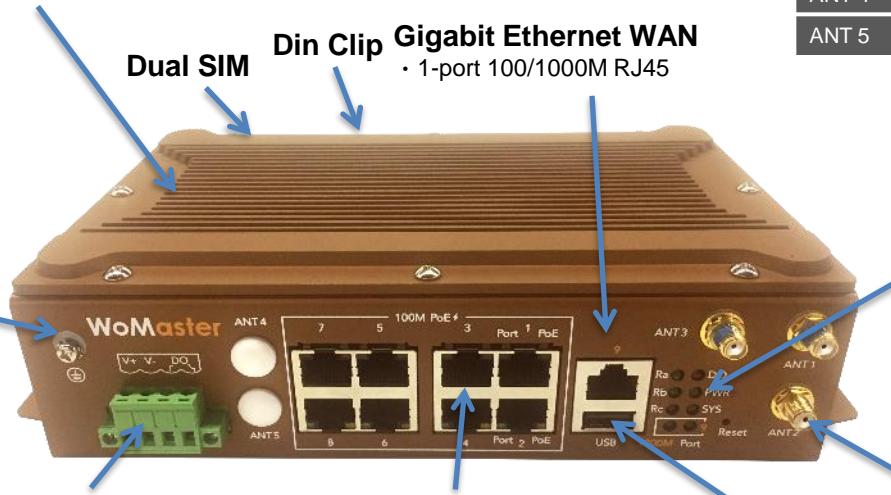
Dual SIM

Din Clip

Gigabit Ethernet WAN

- 1-port 100/1000M RJ45

Ground



System LED

- 1 x DO
- 1 x Power
- 1 x System Status
- 3 x Radio status
- 1 x Ethernet Port (Port 9)
- 1 x Speed (Port 9)

SMA Antenna Socket

- Up to 5 SMA

Integrated Power Connector Ethernet Ports

- 1 x 4-pin terminal block
- 2 pin booster power input
- 2 pin DO
- Easy installation
- 8-port 10/100M RJ45
- IEEE 802.3af/at PoE

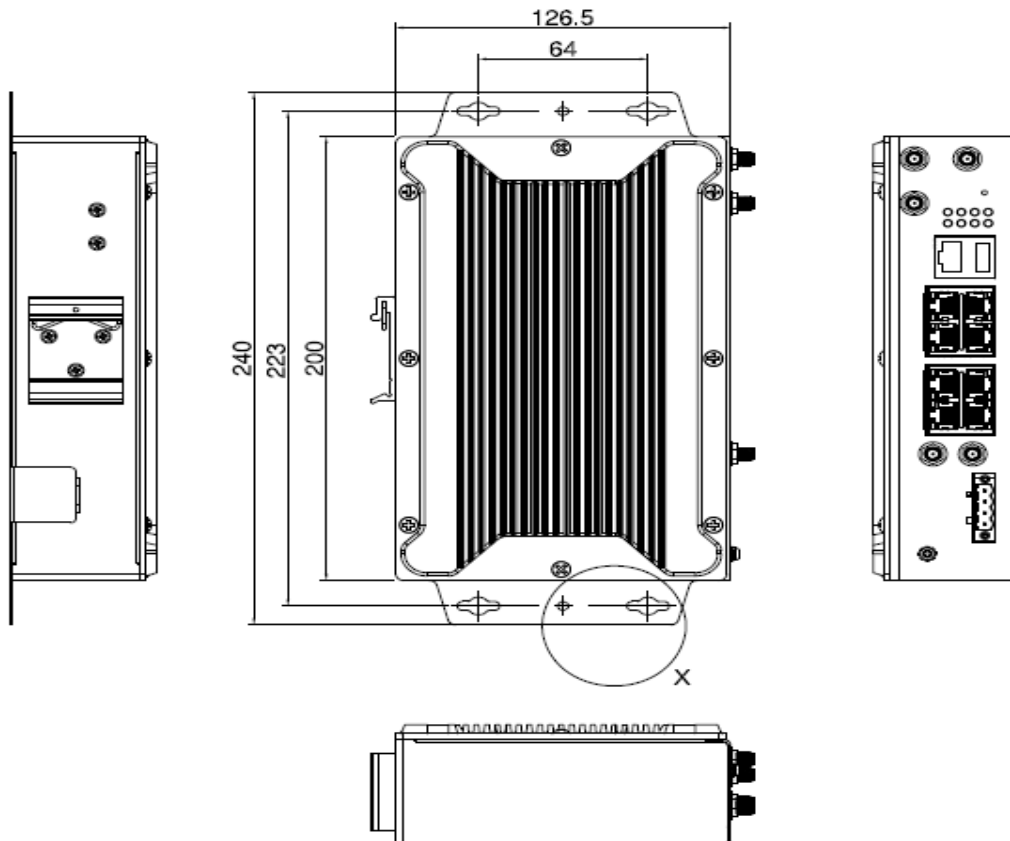
USB Extension Port

- USB for Configuration/Firmware update
- External Storage



Dimensions

(mm)





Interfaces

WR319A

| | WR319A-LTE | WR319A-WLAN |
|-------|------------|-------------|
| ANT 1 | LTE-Main | Wi-Fi 1 |
| ANT 2 | LTE-Aux | Wi-Fi 2 |
| ANT 3 | GPS | - |
| ANT 4 | - | - |
| ANT 5 | - | - |

Integrated Power Connector

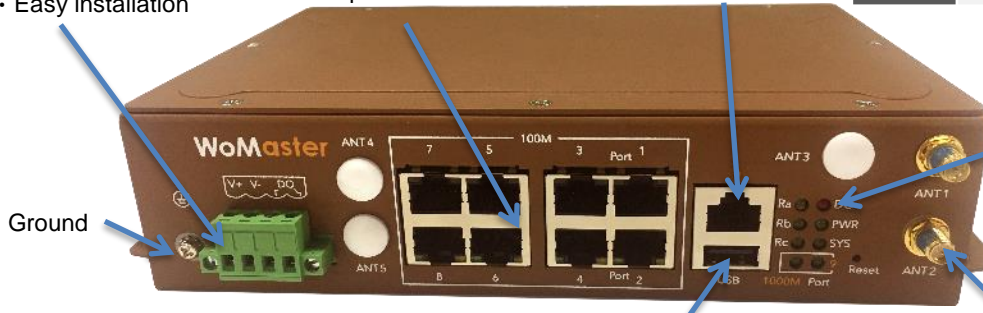
- 1 x 4-pin terminal block
- 2 pin booster power input
- 2 pin DO
- Easy installation

Ethernet Ports

- 8-port 10/100M RJ45

Gigabit Ethernet WAN

- 1-port 100/1000M RJ45



System LED

- 1 x DO
- 1 x Power
- 1 x System Status
- 3 x Radio status
- 1 x Ethernet Port (Port 9)
- 1 x Speed (Port 9)

SMA Antenna Socket

- Up to 5 SMA

USB Extension Port

- USB for Configuration/Firmware update
- External Storage

System LED

- 1 x Serial
- 1 x DO

IIoT Expansion

1x RS232/422/485

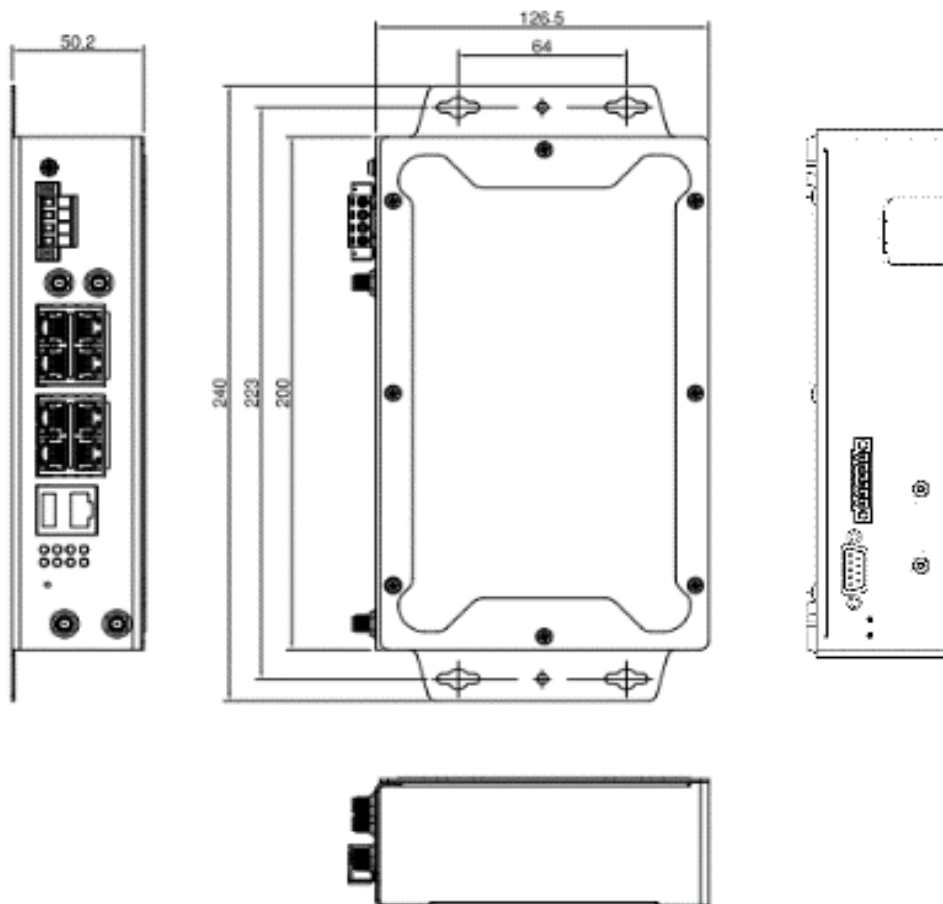
- 3x Digital Inputs
- 1x Digital Outputs

Dual SIM



Dimensions

(mm)





Interfaces

WR319PA

| | WR319PA-LTE | WR319PA-WLAN |
|-------|-------------|--------------|
| ANT 1 | LTE-Main | Wi-Fi 1 |
| ANT 2 | LTE-Aux | Wi-Fi 2 |
| ANT 3 | GPS | - |
| ANT 4 | - | - |
| ANT 5 | - | - |

Outstanding Heat Sink
 • Industrial Fin-Type Design

Gigabit Ethernet WAN
 • 1-port 100/1000M RJ45

Ground



System LED

- 1 x DO
- 1 x Power
- 1 x System Status
- 3 x Radio status
- 1 x Ethernet Port (Port 9)
- 1 x Speed (Port 9)

Integrated Power Connector

- 1 x 4-pin terminal block
- 2 pin booster power input
- 2 pin DO
- Easy installation

Ethernet Ports

- 8-port 10/100M RJ45
- IEEE 802.3af/at PoE

USB Extension Port

- USB for Configuration/Firmware update
- External Storage

SMA Antenna Socket

- Up to 5 SMA

System LED

- 1x Serial
- 1x DO

IIoT Expansion

- 1x RS232/422/485

• 3x Digital Inputs

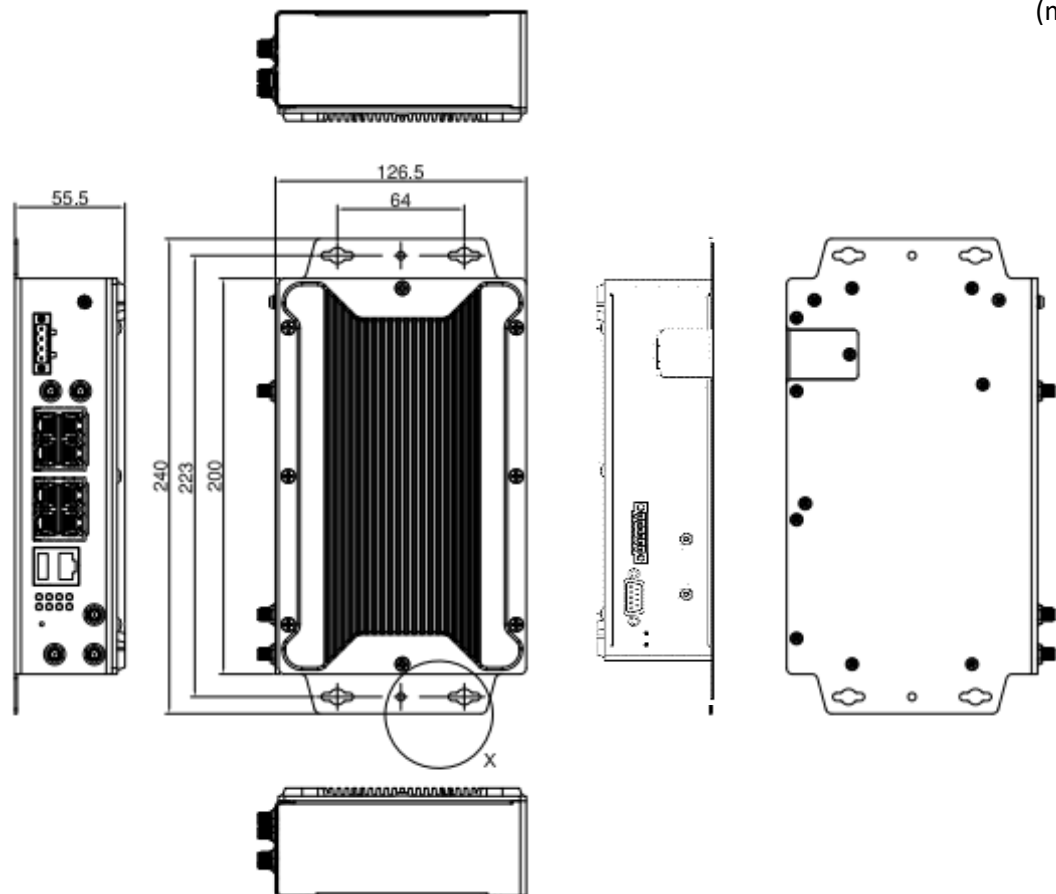
• 1x Digital Outputs


Dual SIM



Dimensions

(mm)



| Technology | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|----------------|----------|----------------|----------|---|-----|-----|-------|---|-----|-----|---|---|-----|-----|-------|---|-----|---|---|---|-----|-----|-----|---|-----|-----|---|---|-----|---|---|---|-----|---|---|---|----|---|---|
| Standard | 3GPP Release 11 Long Term Evolution (LTE), fallback 3GPP Release 7,8,9 for HSPA/UMTS IEEE 802.11ac wireless local area network (WLAN), Backward support 802.11a/b/g/n Wireless LAN IEEE 802.3 10Base-TX Ethernet IEEE 802.3u 100Base-TX Fast Ethernet IEEE 802.3ab 1000Base-T Gigabit Ethernet Copper IEEE 802.3af/at Power-over-Ethernet (WR319P, WR319PA) IEEE 802.1Q for VLAN | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Interface | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ethernet Port | WR319/WR319A LAN: 8 x 10/100Base-TX RJ45, Auto Negotiation, Auto MDI/MDI-X WAN: 1 x 100/1000Base-T RJ45, Auto Negotiation, Auto MDI/MDI-X WR319P/WR319PA LAN: 8 x 10/100Base-TX RJ45, Auto Negotiation, Auto MDI/MDI-X, IEEE 802.3af/at PoE/PoE+ WAN: 1 x 100/1000Base-T RJ45, Auto Negotiation, Auto MDI/MDI-X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| System LED (Front Panel) | 1x DO: Red On 1x Power: Green On 1x SYS: Ready: Green On, Firmware Updating: Green Blinking 1x WAN: Link: Green On, Activity: Green Blinking 1x 1000M: WAN port speed, 1000M: Green On, Not 1000M: Off WR319-WLAN Series Radio (Rc): Radio status Ra: reserved Rb: reserved Rc: AP mode: Green On, Station mode connected: Green Blinking, Station mode/radio disable: Off WR319-LTE series: Radio (Ra, Rb): Radio status Ra: SIM detected: Green On, SIM not inserted: Off Rb: 4G connection: Green On, 2/3G connection: Green blinking, Disconnected: Off Rc: reserved | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ethernet Port LED | Link: Green On, Activity: Green Blinking WR319P/WR319PA PoE power feeding: Amber on, PoE power not feeding: Off | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| USB | 1 USB for Configuration/Firmware Update | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Reset | System Reset(2~6 Seconds) / Default Settings Reset(over 7 Seconds) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SMA Connector | Up to 5 LTE/GPS: SMA Female; Wi-Fi: RP-SMA Female | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SIM Socket | 2 Nano SIM (Cellular Models Only) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Power Input, Digital Output | 4-Pin Removable Terminal Block Connector 2 Pin for Power Input 2 Pin for DO (Relay Alarm) DO: Dry Relay Output with 0.5A/24V DC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| IIoT Expansion (Back Panel) WR319A/ WR319PA | <p>LED: 1x DO: Red On 1x Serial: Green Blinking, Packets transmitting/receiving</p> <p>Serial: 1x RS232/422/485, DB9 female</p> <div style="display: flex; align-items: center;">  <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Pin</th> <th>RS232</th> <th>RS485-4w/RS422</th> <th>RS485-2w</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>DCD</td> <td>TX-</td> <td>Data-</td> </tr> <tr> <td>2</td> <td>TXD</td> <td>RX+</td> <td>-</td> </tr> <tr> <td>3</td> <td>RXD</td> <td>TX+</td> <td>Data+</td> </tr> <tr> <td>4</td> <td>DSR</td> <td>-</td> <td>-</td> </tr> <tr> <td>5</td> <td>GND</td> <td>GND</td> <td>GND</td> </tr> <tr> <td>6</td> <td>DTR</td> <td>RX-</td> <td>-</td> </tr> <tr> <td>7</td> <td>CTS</td> <td>-</td> <td>-</td> </tr> <tr> <td>8</td> <td>RTS</td> <td>-</td> <td>-</td> </tr> <tr> <td>9</td> <td>RI</td> <td>-</td> <td>-</td> </tr> </tbody> </table> </div> <p>Digital Input/Output: 1x 6-Pin Removable Terminal Block Connector 4 pin for 3x Digital Input, High: 2-30V, Low: 0-1V, 2-pin for 1x Digital Output: max. 30V/100mA</p> | Pin | RS232 | RS485-4w/RS422 | RS485-2w | 1 | DCD | TX- | Data- | 2 | TXD | RX+ | - | 3 | RXD | TX+ | Data+ | 4 | DSR | - | - | 5 | GND | GND | GND | 6 | DTR | RX- | - | 7 | CTS | - | - | 8 | RTS | - | - | 9 | RI | - | - |
| Pin | RS232 | RS485-4w/RS422 | RS485-2w | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | DCD | TX- | Data- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | TXD | RX+ | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | RXD | TX+ | Data+ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | DSR | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | GND | GND | GND | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | DTR | RX- | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | CTS | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | RTS | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | RI | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Cellular Properties (LTE Cat. 4) | |
|--|--|
| Standard | GSM/GPRS/EDGE 3GPP Release 6 UMTS/HSPA 3GPP Release 8 LTE 3GPP Release 11 |
| Data Rate | 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 Cat.4: DL: max. 150 Mbps, UL: max. 50 Mbps, 2x2 DL MIMO LTE-TDD Cat.4: DL: max. 130 Mbps, UL: max. 35 Mbps, 2x2 DL MIMO |
| Band Information: LTE-EUX | LTE: FDD B1/B3/B7/B8/B20/B28A LTE: TDD B38/B40/B41 WCDMA: FDD B1/B8, GSM: B3/B8 |
| Band Information: LTE-ECGA | LTE: FDD B1/B3/B7/B8/B20/B28A WCDMA: FDD B1/B8, GSM: B3/B8 |
| Band Information: LTE-AU | LTE: FDD B1/B2*/B3/B4/B5/B7/B8/B28 LTE: TDD B40 WCDMA: FDD B1/B2/B5/B8, GSM: B2/B3/B5/B8 |
| Band Information: LTE-G (By MoQ Request) | LTE: FDD B1/B2/B3/B4/B5/B7/B8/B12/B13/B18/B19/B20/B25/B26/B28 LTE: TDD B38/B39/B40/B41 WCDMA: FDD B1/B2/B4/B5/B6/B8/B19, GSM: B2/B3/B5/B8 |
| Cellular Properties (LTE Cat. 6) | |
| Standard | UMTS/HSPA 3GPP Release 8 LTE 3GPP Release 12 (LTE Cat.6) |
| Data Rate | TD-SCDMA: DL Max 4.2Mbps, UL: Max 2.2Mbps HSPA: DL: Max. 42 Mbps, UL: Max. 5.76 Mbps WCDMA: DL: Max 384Kbps, UL: Max 384Kbps LTE-FDD: DL: Max. 300 Mbps, UL: Max. 50 Mbps, 2x2 DL MIMO LTE-TDD: DL: Max. 226 Mbps, UL: Max. 28 Mbps, 2x2 DL MIMO |
| Band Information: LTE-E | LTE-FDD: B1/B3/B5/B7/B8/B20/B28/B32 (2100/1800/850/2600/900/800/700/1500MHz) LTE-TDD: B38/B40/B41 (2600/2300/2500MHz) WCDMA: B1/B3/B5/B8 (2100/1800/850/900MHz) |
| Band Information: LTE-U | LTE-FDD: B2/B4/B5/B7/B12/B13/B17/B25/B26/B29/B30/B66 (1900/1700/700/2600/700/700/700/1900/850/700/2300/1700MHz) LTE-TDD: B41 (2500MHz) WCDMA: B2/B4/B5 (1900/1700/850MHz) |
| Band Information: LTE-AP | LTE-FDD: B1/B3/B5/B7/B8/B18/B19/B21/B26 (2100/1800/850/2600/900/850/850/1500/850MHz) LTE-TDD: B38/B39/B40/B41 (2600/1900/2300/2500MHz) WCDMA: B1/B5/B6/B8/B9/B19 (2100/850/UMTS only/900/1800/850MHz) TD-SCDMA: B39 (1900MHz) |
| GPS Properties | |
| GNSS | GPS/GLONASS/BeiDou/Galileo |
| Performance | Cold start: 18s, Warm start: 2.2s, Hot start: 1.8s |
| Sensitivity | Cold start: -146dBm, Reacquisition: -157dBm, Tracking: -157dBm |
| Accuracy | <1.5M |
| GNSS Frequency | GPS/Galileo: 1575.42±1.023 MHz GLONASS: 1597.5~1605.8 MHz BeiDou: 1561.098±2.046 MHz |
| Antenna (Optional Accessory-A-GPS-27-RSM-3M) | Frequency range: 1561~1615MHz Polarization: RHCP or linear VSWR: <2 (Typ.) Passive antenna gain: >0dBi |

Wi-Fi Properties

| | |
|------------------|--|
| Standard | IEEE 802.11ac/a/b/g/n (2T2R) 802.11ac: OFDM (BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM) |
| Data Rate | 802.11ac: MCS0 ~ 9, max. 866Mbps 802.11b: 11Mbps / 802.11a/g: 54Mbps / 802.11n: MCS0 ~ 15, max. 300Mbps |
| Frequency | IISM Band, 2.412GHz ~ 2.472GHz, 5.180MHz ~ 5.825MHz(Band 1,4) |
| MIMO | 2T2R, 2xAntennas (Optional Accessory) |
| RSSI | ≤20db, compliant with CE request |

Output Power & Receive Sensitivity

TX/RX Tolerance: ±2dB

| Operating Frequency: 2.412~2.472GHz, Max. MIMO: 2T2R | | | | | Operating Frequency: 5.180G~5.825GHz Max. MIMO: 2T2R | | | | |
|--|-----------|-----------|------------|----------|--|-----------|-----------|------------|----------|
| Standard | Bandwidth | TX (dBm) | | RX (dBm) | Standard | Bandwidth | TX (dBm) | | RX (dBm) |
| | | 1 Channel | 2 Channels | | | | 1 Channel | 2 Channels | |
| 802.11b | 1Mbps | 20 | 23 | -95 | 802.11a | 6Mbps | 20 | 23 | -94 |
| | 11Mbps | 20 | 23 | -90 | | 54Mbps | 15 | 18 | -80 |
| 802.11g | 6Mbps | 21 | 24 | -94 | 802.11an/ac HT20 | MCS0 | 19 | 22 | -93 |
| | 54Mbps | 18 | 21 | -80 | | MCS8 | 13 | 16 | -71 |
| 802.11n HT20 | MCS0 | 21 | 24 | -93 | 802.11an/ac HT40 | MCS0 | 18 | 21 | -90 |
| | MCS7 | 16 | 19 | -76 | | MCS9 | 13 | 16 | -66 |
| 802.11n HT40 | MCS0 | 20 | 23 | -92 | 802.11an/ac HT80 | MCS0 | 18 | 21 | -88 |
| | MCS7 | 16 | 19 | -73 | | MCS9 | 13 | 16 | -65 |

Software

| | |
|--|---|
| Management | CGI WebGUI, Command Line Interface (CLI), IPv4/IPv6*, Telnet, SNMP v1/v2c/v3, DDNS, DHCP server/client, DHCP Relay, TFTP, System Log, SMTP, ARP response over 802.2 LLC SNAP, Proxy ARP, DNS (client/proxy) |
| Traffic Management | Flow Control, Traffic shaping |
| Filter | IEEE802.1Q VLAN |
| Security | IEEE 802.1X/RADIUS, TLS v1.2, HTTPs/SSH, First login password management WLAN AP Security: Share Key, WPA/WPA2-PSK(Pre-Shared Key), WPA/WPA2 Enterprise Encryption: 64/128-bit WEP(Wired Equivalent Privacy), TKIP(WPA-PSK), AES(WPA2-PSK) |
| Advanced Security | TACACS+, Multi-user authentication |
| Time Management | NTP, SNTP, Cellular Time |
| Redundancy Protocol | WAN/LTE Redundancy |
| WAN / Routing / NAT/ Firewall / VPN | Routing: RIPv2, OSPFv2, VRRPv2 NAT: 1-1 NAT, NAPT(SNAT/DNAT), DMZ Firewall: Stateful Inspection firewall, IP/Port Filter, MAC Filter* VPN: IPSec, OpenVPN, L2TP, GRE, PPTP* |
| IIoT Industrial Protocol | Modbus RTU, MQTT, RESTful API |
| Private Cloud | ThingsMaster, ThingMaster OTA |
| Public Cloud | AWS Agent, Azure Agent |
| Location | Google map, Baidu map |
| MIB | MIB-II, Entity MIB, WoMaster Private MIB |
| Utility | ViewMaster, NetMaster, Ping, Traceroute |
| Serial communication (WR319A/ WR319PA) | TCP Server/TCP Client/UDP mode, TCP Alive check, Force TX Delimiter/Timeout/interval/length, Long Distance Termination |
| Cellular Configuration (By Optional module) | Radio on/off, 4G LTE/3G HSPA Configuration, SIM Security, Connection Status, Cellular to Eth-WAN Redundancy, GPS positioning, Backup SIM Retry (1-10 times) |
| WLAN Configuration (By Optional module) | WLAN Basic Settings: Radio on/off, 2.4G 11n/5G 11ac Band and Frequency selection, SSID/Multi-SSID configuration, SSID broadcast, Cellular to WLAN Auto Offload and advanced WLAN settings, 802.1X |

PoE(WR319P,WR319PA)

| | |
|------------------------------|--|
| Power forwarding mode | Alternative A |
| PoE Power Budget | System: Max. 120W @70°C/12VDC, Max.60W @70°C/8VDC Per Port: Max. 30W |
| PoE Standard | IEEE 802.3af/at |
| Management | PoE Enable/Disable, System/Port Power Budget Control, PoE Scheduling, PoE Status |

*by request

Power Requirement

| | |
|---------------------------------|--|
| Input Voltage | WR319P/WR319PA: 12/24VDC (8~54VDC with booster to 54V) min. 8V low-peak auxiliary voltage WR319/WR319A: 12/24VDC (8~32VDC) |
| Reverse Polarity Protect | Yes |
| Input Current | WR319: 0.2A@24VDC, 0.58A@8VDC WR319A: 0.21A@24VDC, 0.6A@8VDC WR319P/319PA: 5.67A@24VDC with 120W PD Loading, 10.76A@8VDC with 60W PD loading |
| Power Consumption | WR319: Max. 4.8W@24VDC full traffic, suggest to reserve 15% tolerance. WR319A: Max. 5W@24VDC full traffic, suggest to reserve 15% tolerance. WR319P/WR319PA: Max. 138.08W@24VDC with 120W PD loading, Max. 86.08W@8VDC with 60W PD loading, suggest to reserve 15% tolerance. |

Mechanical

| | |
|---------------------------|--|
| Installation | Wall mount / DIN Rail kit |
| Enclosure Material | Steel Metal with Aluminum |
| Dimension | WR319P/WR319PA 200x 55 x 126 (W x H x D) / without Mounting Clip WR319/WR319A 200x 51 x 126 (W x H x D) / without Mounting Clip |
| Ingress Protection | IP30 |
| Weight | ~1350g without package |

Environmental

| | |
|---|-------------------------------------|
| Operating Temperature & Humidity | -40°C~70°C , 5%~95% Non- Condensing |
| Storage Temperature | -40°C~85°C |
| MTBF | >200,000 hours |
| Warranty | 3 years |

Approval

| | |
|----------------|---|
| Safety | EN60950-1 Compliance |
| EMC | EN61000-6-2/EN61000-6-4 |
| EMI | CISPR 22, FCC part 15B Class A |
| Radio | RED Compliance Safety: EN 62368-1 EN 50385/EN62311 MPE assessment EN 301 489-1/17/19/52, EN 55032/55024 EN 300 328/EN 301 893 EN 301 908-1 FCC Part 15B |
| Railway | EN50121-4 Compliance |

Product Selection Guide

| Model Name | Radio 1 | Eth-WAN | Eth-LAN | Serial | USB | SIM | eSIM (Optional) | GPS | Power Input | Dimension (W x H x D) |
|--------------|----------|---------|----------|--------|-----|-----|-----------------|-----|-------------|-----------------------|
| WR319-WLAN | 802.11ac | 1xGbE | 8xFE | - | 1 | 2 | 1 | Yes | 8-54V | 200x 51 x 126 |
| WR319A-WLAN | 802.11ac | 1xGbE | 8xFE | 1 | 1 | 2 | 1 | Yes | 8-54V | 200x 51 x 126 |
| WR319P-WLAN | 802.11ac | 1xGbE | 8xFE PoE | - | 1 | 2 | 1 | Yes | 8-54V | 200x 55 x 126 |
| WR319PA-WLAN | 802.11ac | 1xGbE | 8xFE PoE | 1 | 1 | 2 | 1 | Yes | 8-54V | 200x 55 x 126 |
| WR319-LTE | LTE | 1xGbE | 8xFE | - | 1 | 2 | 1 | Yes | 8-54V | 200x 51 x 126 |
| WR319A-LTE | LTE | 1xGbE | 8xFE | 1 | 1 | 2 | 1 | Yes | 8-54V | 200x 51 x 126 |
| WR319P-LTE | LTE | 1xGbE | 8xFE PoE | - | 1 | 2 | 1 | Yes | 8-54V | 200x 55 x 126 |
| WR319PA-LTE | LTE | 1xGbE | 8xFE PoE | 1 | 1 | 2 | 1 | Yes | 8-54V | 200x 55 x 126 |

| Model Name | Description |
|-----------------------------|--|
| WR319-WLAN | Industrial 8+1G port Wireless AP/Client, USB, 802.11ac/n WLAN |
| WR319A-WLAN | Industrial 8+1G port Wireless AP/Client, USB, 1xSerial+3DI+2DO, 802.11ac/n WLAN |
| WR319P-WLAN | Industrial 8+1G port PoE Wireless AP/Client, USB, 802.11ac/n WLAN |
| WR319PA-WLAN | Industrial 8+1G port PoE Wireless AP/Client, USB, 1xSerial+3DI+2DO, 802.11ac/n WLAN |
| WR319-LTE-(Region) | Industrial 8+1G port Cellular Ethernet Routing Switch, USB, LTE, 2SIM, GPS |
| WR319A-LTE-(Region) | Industrial 8+1G port Cellular Ethernet Routing Switch, USB, 1xSerial+3DI+2DO, LTE, 2SIM, GPS |
| WR319P-LTE-(Region) | Industrial 8+1G port Cellular PoE Routing Switch, USB, LTE-E, 2SIM, GPS |
| WR319PA-LTE-(Region) | Industrial 8+1G port Cellular PoE Routing Switch, USB, 1xSerial+3DI+2DO LTE, 2SIM, GPS |

| | |
|---|---|
| Band Information: LTE-EUX | LTE: FDD B1/B3/B7/B8/B20/B28A LTE: TDD B38/B40/B41 WCDMA: FDD B1/B8, GSM: B3/B8 |
| Band Information: LTE-ECGA | LTE: FDD B1/B3/B7/B8/B20/B28A WCDMA: FDD B1/B8, GSM: B3/B8 |
| Band Information: LTE-AU | LTE: FDD B1/B2*/B3/B4/B5/B7/B8/B28 LTE: TDD B40 WCDMA: FDD B1/B2/B5/B8, GSM: B2/B3/B5/B8 |
| Band Information: LTE-G (By MoQ Request) | LTE: FDD B1/B2/B3/B4/B5/B7/B8/B12/B13/B18/B19/B20/B25/B26/B28 LTE: TDD B38/B39/B40/B41 WCDMA: FDD B1/B2/B4/B5/B6/B8/B19, GSM: B2/B3/B5/B8 |

Package List

| |
|--|
| 1 x Product Unit |
| 1 x 4-pin Removable Terminal Block Connector |
| 1 x 6-pin Removable Terminal Block Connector (WR319A/ WR319PA) |
| 1 x Quick Installation Guide |
| 1 x Din Clip |
| Default Enclosed Antennas: WR319,WR319A,WR319P,WR319PA- WLAN : 2x Wi-Fi Antennas, White WR319,WR319A,WR319P,WR319PA- LTE : 2 x LTE Antennas, Black |





Outdoor WLAN Directional Antennas

- 2.4Ghz / 5.8Ghz Wireless Access Point to Point
- High Gain, Long Distance Coverage
- Vertical Polarization, 50Ω **Input Impedance**
- IP65 Protection Enclosure and Prevention of Rust
- -40°C ~ +60°C operation temperature
- 190 * 190*30 mm (L x W x H)
- N Type Female Connector
- Two 1-meter RF Cables (C-RF-LMR200-NM_NM-1M)






| Model | Frequency | Transmission | Gain | Max. Distance | Beam |
|----------------------------|-----------|--------------|-------|---------------|---|
| A-D1T1R-2.4GHZ-14DB-6KM-NF | 2.4 GHz | 1T1R | 14dBi | 6KM | 30° for Horizontal Plane and 28° Vertical |
| A-D1T1R-5GHZ-12DB-5KM-NF | 5.8Ghz | 1T1R | 12dBi | 5KM | 40° for Horizontal Plane and 38° Vertical |
| A-D2T2R-5GHZ-15DB-6KM-NF | 5.8Ghz | 2T2R | 15dBi | 6KM | 35° for Horizontal Plane and 16° Vertical |
| A-D2T2R-5GHZ-19DB-8KM-NF | 5.8Ghz | 2T2R | 19dBi | 8KM | 90° for Horizontal Plane and 4° Vertical |

Outdoor Omni Antennas

| Model | | Frequency | Gain | Enclosure | Dimension | RF Cable |
|-----------------------|---|------------------------------|-------|-----------|------------|--|
| A-2.4/5GHZ-2-RSM-2Mx2 |  | 2400-2500/5150~5850 | 2dBi | IP67 | Φ80×15mm | Two 2-meter RG174 cables RP SMA male connector |
| A-LTE-2-SM-2M |  | 700~960/1710~2690 /2900~3600 | 2dBi | IP67 | Φ80×15mm | Two 2-meter RG174 cables SMA male connector |
| A-GPS-38-SM-3M |  | GPS 1575 | 38dBi | outdoor | 50×38×17mm | 3M RG174 cable SMA male |
| A-LORA433-7-SM-3M |  | 433 | 7dBi | outdoor | Φ30×175mm | 3M RG174 cable SMA male |
| A-LORA850-925-7-SM-3M | | 850~925 | 7dBi | outdoor | Φ30×290mm | 3M RG174 cable SMA male |

Outdoor Combo Antennas

| Model | | Frequency (MHz) | Gain (dBi) | Connector | Dimension (mm) | Cable (M) |
|-------------------------|---|--|--------------|---|----------------|-----------|
| A-LTE_WLAN_G-4_4-RSM-2M |  | LTE: 698~960/1710~2690/2900~3600 WLAN: 2400~2483.5/4900~5825 GNSS: 1561.1~1610 (GPS/GLONASS/GALILEO/BEIDOU) | 4 4 28 | 3x SMA Male (LTE/GPS) 2x RP-SMA Male (Wi-Fi) | 189x182x107 | 2 |
| A-LTE_WLAN_G-3_2-RSM-2M |  | LTE: 698~960/1710~2690 WLAN: 2400~2483.5/4900~5825 GNSS: 1575.42~1610 (GPS/GLONASS) | 3 2 28 | 3x SMA Male (LTE/GPS) 2x RP-SMA Male (Wi-Fi) | 110x110x80 | 2 |
| A-LTE_WLAN_G-5_5-RSM-1M |  | LTE: 700~2700 WLAN: 2400~2500 GNSS: 1575.42 | 5 5 28 | 2x SMA Male (LTE/GPS) 1x RP-SMA Male (Wi-Fi) | 70x70x15 | 1 |