

Industrial Wireless Routing Switch

Routing (PoE) Switch and IoT Gateway for BUS/Vehicle and Automation

WR309P/WR309A/WR309/WR309PA

EN50155

NetMaster

ThingsMaster

ThingsMaster OTA



-40~75°C



IEC61000-6-2
IEC61000-6-4

PoE+



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

The routing switches WR309 series include WR309 with 8-Port Ethernet and 1 GbE WAN port WR309P-with 8-port PoE+ boost up to 30W/port for bus/vehicle, WR309A with 1 RS232/422/485 serial port, 3 DIs and 2 DOs for IoT sensors, DIO applications and WR309PA 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.



Features & Benefits

Ethernet Routing Switch

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

Industrial IoT Gateway (WR309A, WR309PA)

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

Extreme PoE Capability (WR309P, WR309PA)

- Provides 8-port IEEE 802.3af/at compliance PoE+, up to 30W per port
- 12/24V to 54VDC Booster PoE, 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
- 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, HTTPS/SSH for secure connection/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

*by request



Features & Benefits

Cloud Service



ThingsMaster
ThingsMaster OTA



Video
Surveillance



Device
Management



Dashboard/
Database



Control Center



IoT Router Switch



WAN

Digital
Input

PoE WR309P/WR309PA

IIoT Sensors

Digital
Output

Serial (Modbus) (WR309A/WR309PA)

Emergency
Push Button



Alarm



Emergency
IP Phone

PoE Cam



PoE Cam



PoE Cam



PoE Cam



CO₂,
PM_{2.5}
Temp
Humidity
Sensor



Wind
Speed
Direction
Sensor



Modbus Light
Controller



Smart Bus Tracking Solution
Monitor bus route, speed, passenger count, fuel, etc.



Built-in Microsoft Azure and Amazon AWS agent

AZURE

Home > IoT > Azure IoT

Azure IoT | Azure IoT | World IoT | Modbus Device

Azure IoT

Enable ☒

IoT Hub

Port

Client ID

SA Token

Root CA

AWS

Home > IoT > AWS IoT

AWS IoT | Azure IoT | World IoT | Modbus Device

AWS IoT

Enable ☒

Target Host

Port

Client ID

My Thing Name

AWS Root CA

AWS Certificate File

AWS Private Key File

Technology	
Standard	IEEE 802.3 10Base-TX Ethernet IEEE 802.3u 100Base-TX Fast IEEE 802.3ab IEEE 802.3af/at Power-over-Ethernet (WR309P, WR309PA) IEEE 802.1Q for VLAN
Interface	
Ethernet Port	WR309/WR309A 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 WR309P/WR309PA LAN: 8 x 10/100Base-TX RJ45, Auto-Negotiation, Auto MDI/MDI-X, IEEE 802.3af/at WAN: 1 x 100/1000Base-T RJ45, Auto-Negotiation,
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
Ethernet Port LED	Link: Green On, Activity: Green Blinking WR309P/WR309PA PoE power feeding: Amber on, PoE power not feeding: Off
USB	USB for Configuration/Firmware Update
Reset	System Reset (2~6 Seconds) / Default Settings Reset (over 7 Seconds)
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) WR309A/ WR309PA	LED: 1x DO: Red On 1x Serial: Green Blinking, Packets transmitting/receiving Serial: 1x RS232/422/485, DB9 female 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
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 Encryption: 64/128-bit WEP (Wired Equivalent Privacy), TKIP(WPA-PSK), AES(WPA2-PSK), TACACS+, Multi-user authentication
Time Management	NTP, SNMP
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/Public Cloud	ThingsMaster, ThingMaster OTA / AWS Agent, Azure Agent
Location	Google Map, Baidu Map
MIB	MIB-II, Entity MIB, WoMaster Private MIB
Utility Tools	ViewMaster, NetMaster, Ping, TraceRoute
Serial communication (WR309A/ WR309PA)	TCP Server/TCP Client/UDP mode, TCP Alive check, Force TX Delimiter/Timeout/interval/length, Long Distance Termination

PoE (WR309P, WR309PA)

Power Forwarding Mode	Alternative A
PoE Power Budget	System: Max. 12W Per Port: Max. 30W@70°C/12VDC, Max. 60W@70°C/8VDC
PoE Standard	IEEE 802.3af/at

Power Requirement

Input Voltage	WR309P/WR309PA: 12/24VDC (8~54VDC with booster to 54V) min. 8V low-peak auxiliary voltage WR309/WR309A: 12/24VDC (8~32VDC)
Reverse Polarity Protect	Yes
Input Current	WR309: 0.2A@24VDC, 0.58A@8VDC WR309A: 0.21A@24VDC, 0.6A@8VDC WR309P/309PA: 5.67A@24VDC with 120W PD Loading, 10.76A@8VDC with 60W PD loading
Power Consumption	WR309: 4.8W@24VDC full traffic, suggest to reserve 15% tolerance. WR309A: 5W@24VDC full traffic, suggest to reserve 15% tolerance. WR309P/WR309PA: 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	Sheet Metal with Aluminum
Dimensions	WR309P/WR309PA: 200x 55 x 126 (W x H x D) / without Mounting Clip WR309/WR309A: 200x 51 x 126 (W x H x D) / without Mounting Clip
Ingress Protection	IP30
Weight	~1350g without package materials

Environmental

Operating Temp. & Humidity	-40°C~70°C, 5%~95% non-Condensing
Storage Temp.	-40°C~85°C
MTBF	>200,000 hours
Warranty	5 Years

Approvals

Safety	EN60950-1 Compliance
EMC/EMI	EN61000-6-2/EN61000-6-4, 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	EN50155 / EN61373



Ordering Information

Model Name

WR309	Industrial 8+1G port Routing Switch, USB
WR309A	Industrial 8+1G port Routing Switch, USB, 1xSerial+3DI+2DO
WR309P	Industrial 8+1G port PoE Routing Switch, USB
WR309PA	Industrial 8+1G port PoE Routing Switch, USB, 1xSerial+3DI+2DO

Package List

1 x Product Unit
1 x 4-pin Removable Terminal Block Connector
1 x 6-pin Removable Terminal Block Connector (WR309A/ WR309PA)
1 x Quick Installation Guide
1 x Din Clip