



# Industrial Wireless Products

# ABOUT ANTAIRA

Antaira Technologies is a leading global developer and manufacturer of high-quality industrial networking and communication product solutions. Since 2005, Antaira has offered a full spectrum of product lines that feature reliable Ethernet infrastructures, extended temperature tolerance, and rugged enclosure designs. Our product lines range from industrial Ethernet switches, industrial wireless devices, Ethernet media converters, and industrial serial communication connectivity. Our vast professional experience has allowed us to deploy a wide array of products worldwide in mission-critical applications across various markets, such as automation, transportation, security, water/wastewater, power/utility, oil and gas, and medical. Antaira's factory is ISO 27001 and ISO 9001 certified.

# OUR COMMITMENT

## ▶ Product Warranty

All Antaira products are backed with a warranty of up to 5 years. We warrant products against defects in material and workmanship for up to 5 years from the date of purchase. This means that Antaira will happily repair or replace the defective products within warranty, provided the products were installed and used within specification. Antaira is committed and will stand behind all of its products assuring customers will receive the highest quality and most reliable products possible.

## ▶ Customer Service & Tech Support

Antaira's dedicated and competent team takes pride in delivering high-quality and prompt service to our customers. We go one step further when it comes to service. All incoming calls are routed to a live representative who can answer all inquiries quickly, whether it be pre-sales, post-sales or technical services. Antaira's technical support and RMA team have elite industry knowledge to ensure all issues are professionally and thoroughly resolved.

## ▶ Satisfaction Guarantee

Here at Antaira, every sale is backed by our 45-Day Satisfaction Guarantee. Within 45 days of your purchase date, if for any reason you are dissatisfied with your experience or your expectations were not met, Antaira will promptly exchange or replace your product, or provide a full refund. We are available 12 hours a day to help clarify any questions, comments, or concerns regarding all transactions.

## ▶ RoHS Directive

Antaira recognizes its environmental responsibility as a manufacturer and is dedicated to preserving the environment for future generations. We make it a priority to ensure that all our products are environmentally friendly. At Antaira, we not only make sure that our products are RoHS 2.0 compliant, but also all of our packing materials used to ship our products are compliant as well.



# Wireless Overview

Wireless networking technology is what virtually everyone relies on for day-in and day-out communications. This is a network that does not rely on cables to communicate but sends a data signal through the air. It is the preferred communication pathway when cable infrastructures are too expensive to run, rapid deployment is needed or the application will only work wirelessly.



## IEEE 802.11 Standard

### IEEE 802.11 Standard

IEEE 802.11 is a family of specifications that articulate communication of wireless LANs (WLANs). WLANs use high-frequency radio waves instead of cables for connecting devices to a local area network (LAN).

The 802.11 family consists of a series of half-duplex over-the-air modulation techniques that use the same basic protocol. IEEE 802.11 employs carrier-sense multiple access with collision avoidance whereby equipment listens to a channel for other users (including non 802.11 users) before transmitting each packet. 802.11b was the first widely accepted IEEE standard, followed by 802.11a, 802.11g, 802.11n, and 802.11ac.

### Frequencies - 2.4GHz vs 5GHz

All wireless communication operates using channels to transmit and receive data at various speeds and frequencies. Each channel has a specified width (measured in megahertz) which determines the speed at which data can be sent and received. Two of the most common frequencies or bandwidths that data travel on are 2.4GHz and 5 GHz.

IEEE 802.11b and 802.11g use the 2.4 GHz industrial, scientific and medical (ISM) band. Because of this choice of the frequency band, 802.11b/g/n equipment may occasionally suffer interference in the 2.4 GHz band from microwave ovens, cordless telephones, and Bluetooth devices, etc. The 802.11b and 802.11g standards control their interference and susceptibility to interference by using direct-sequence spread spectrum (DSSS) and orthogonal frequency-division multiplexing (OFDM) signaling methods, respectively.

IEEE 802.11a uses the 5 GHz U-NII band, which, for much of the world, offers at least 23 non-overlapping 20 MHz-wide channels rather than the 2.4 GHz ISM frequency band offering only three non-overlapping 20 MHz-wide channels. The 802.11n standard can use either the 2.4 GHz or 5 GHz band, whereas the 802.11ac uses only the 5 GHz band.

	802.11 (Legacy)	802.11b (Legacy)	802.11a (Legacy)	802.11g (Legacy)	802.11n (HT)	802.11ac (VHT)	802.11ax (HE)
Year Ratified	1997	1999	1999	2003	2009	2014	2021
Operating Band	2.4GHz/IR	2.4GHz	5GHz	2.4ghz	2.4/5GHz	5GHz	2.4/5GHz
Channel BW	20MHz	20MHz	20MHz	20MHz	20/40MHz	20/40/80/160MHz	20/40/80/160MHz
Peak PHY Rate	2Mbps	11Mbps	54Mbps	54Mbps	600Mbps	6.8Mbps	10Mbps
Link Spectral Efficiency	0.1bps/Hz	55bps/Hz	2.7bps/Hz	2.7bps/Hz	15bps/Hz	42.5bps/Hz	62.5bps/Hz
Max# SU Streams	1	1	1	1	1	1	1
Max# MU Streams	NA	NA	NA	NA	NA	4 (DL Only)	8 (UL and DL)
Modulation	DSSS, FHSS	DSSS,CCK	OFDM	OFDM	OFDM	OFDM	OFDM, OFDMA
Max Constellation/ Code Rate	DQPSK	CCK	64-QAM, 3/4	64-QAM, 3/4	64-QAM, 5/6	256-QAM, 5/6	1024-QAM, 5/6
Max# OFDM Tones	NA	NA	64	64	128	512	2048
Subcarrier Spacing	NA	NA	312.5 kHz	312.5 kHz	312.5 kHz	312.5 kHz	78.125 kHz



# Wireless Modes

All Antaira wireless devices support multiple modes of operation. The access point mode allows Wi-Fi devices to connect to a wired network. In this mode, multiple wireless devices can be supported on a single-wired local area network. Client mode allows the router to connect to other access points as a client. This turns the Wireless Local Area Network (WLAN) portion of your router into the Wide Area Network (WAN). In this mode, the router will no longer function as an access point (does not allow clients) therefore, you will need to be wired to make configurations. Client Bridge Mode is much like Client Mode, except the WLAN and LAN are on the same subnet. Consequently, Network Address Translation (NAT) is no longer used and services such as Dynamic Host Configuration Protocol (DHCP) will be able to work on the bridged network. Just as in client mode, the router will not accept wireless clients. Ad Hoc Mode allows the router to connect to other wireless devices that are also in ad hoc configuration. Think of this mode as a Client Mode that does not connect to infrastructure networks, but rather to other ad hoc configured devices. Ad hoc networks lack the central management that is typical of infrastructure-type networks.

In addition to these basic configurations, the Antaira routers offer other advanced features.

# Advanced Security Features

Network security has never been more important and there isn't a single feature that will create a secure network, it takes layers of secure protocols and best practices. When communicating wirelessly, it is important to understand the encryption options and implement them wisely to create the best configuration for your application.

## Encryption Security

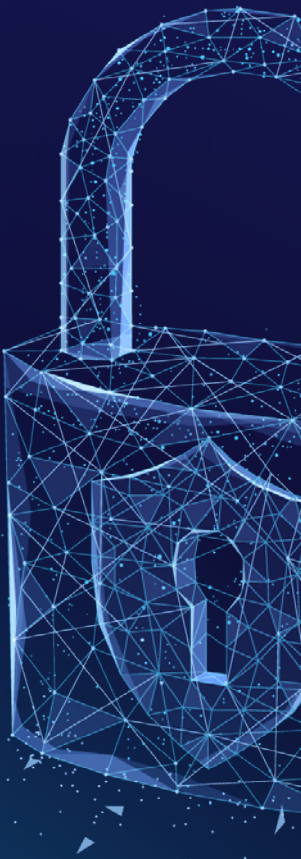
Antaira's wireless routers are equipped with all four types of network authentications – Wired Equivalent Privacy (WEP), Wi-Fi Protected Access (WPA), Wi-Fi Protected Access II (WPA2), and Wi-Fi Protected Access III (WPA3). It is best to use these authentications and WPA algorithms when applicable wireless network communications can be made secure.

**WEP** was the first of these protocols created in 1997. While not being the best choice for security, it is the most universal protocol because it is found on even the oldest wireless devices. If security is not a priority, but making sure old Wi-Fi equipment can connect, this may be the protocol of choice.

**WPA** was created to address some of the security flaws found in WEP. One of the most pronounced new features is the use of Temporal Key Integrity Protocol (TKIP). This is a 128-bit key that makes it much harder to crack when using the WPA, compared to the static key used in the WEP's connection. On top of the more sophisticated key, this protocol was the first to have a Message Integrity Check (MIC). This feature scanned for messages that may have been maliciously altered.

**WPA2** is the replacement of WPA. The Counter Mode Cipher Block Chaining Message Authentication Code Protocol (CCMP) replaced the TKIP, and increased the security of the connection by enhancing the encryption of data. This was introduced in 2004 but remains the best option for many applications.

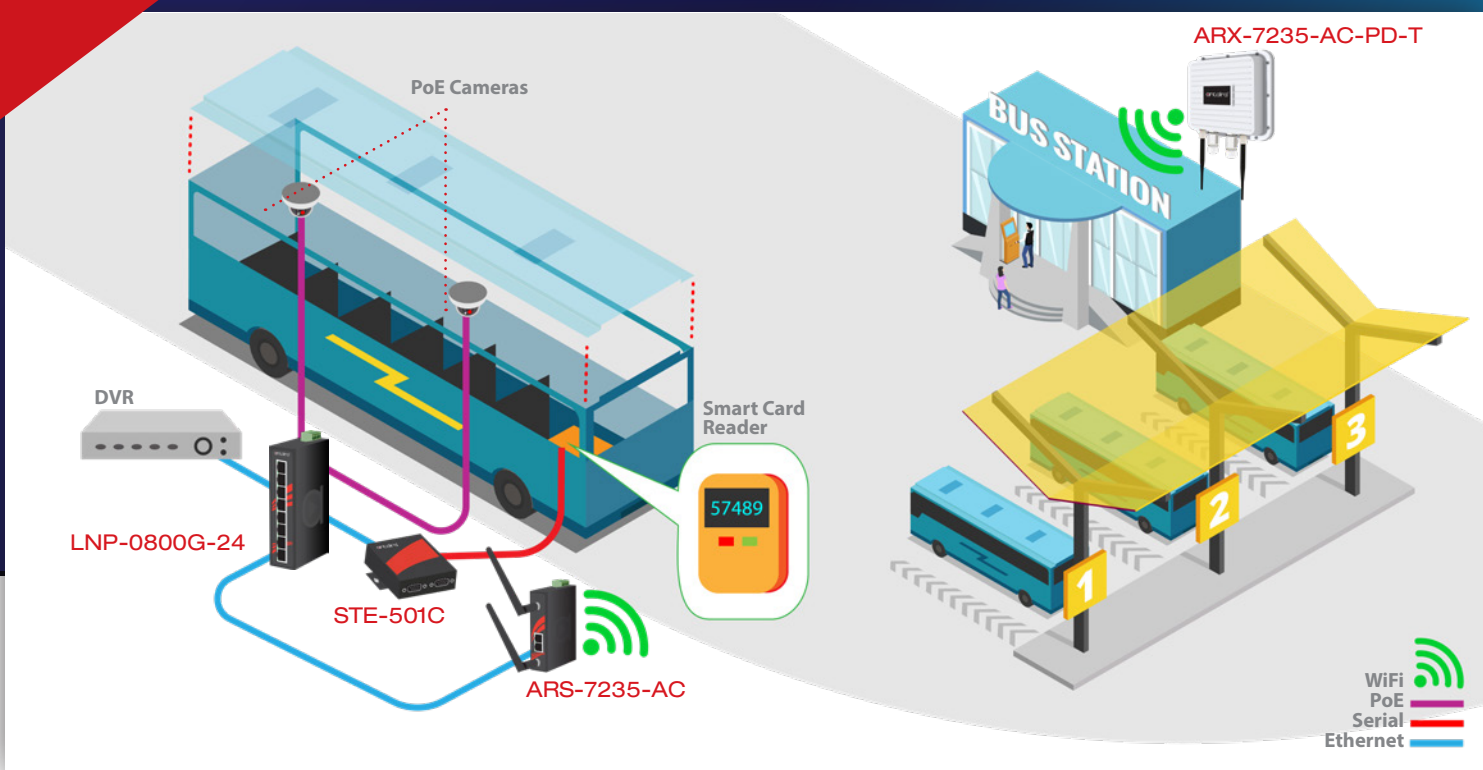
**WPA3** is the successor of WPA2 and is the newest of the protocols introduced in 2019. The drawback of using this protocol is that many devices already in the field do not support it. As hackers become more sophisticated, so do the protocols that protect the data. WPA3 targets the protection of information about the connected devices as well as the data being transmitted. This makes it much harder for hackers to discover and clone users in a wireless connection.





# Surveillance

## Public Bus



# Warehouse

## Autonomous Forklift



### Application

More and more municipal transit agencies are upgrading their fleets with modern technology such as IP cameras for better security and with automated fare collection systems. The security aspect typically involves installing a number of IP cameras along with a DVR for storage, while the fare collection system will often require various types of card or token readers to log each rider. All of this equipment requires networking by a ruggedized PoE switch that can power from 12VDC or 24VDC.

### Application Requirements

- ▶ Minimum 8 port Gigabit PoE switch to power cameras and network entire system together
- ▶ Serial device server to allow card reader to communicate via IP network
- ▶ 802.11AC Wifi client to allow for fast downloads when the bus comes back into the depot
- ▶ All equipment must be able to withstand shock and vibration and power from 12VDC

### Solutions

- ▶ **LNP-0800G-24:** PoE switch capable of powering the IP cameras and has enough ports to also network the other devices on the bus.
- ▶ **STE-501C:** Serial to Ethernet device server that can allow the card reader to communicate over an IP network.
- ▶ **ARS-7235-AC:** High-speed 802.11AC radio that will automatically connect to the depot's wireless network once the bus comes within range.
- ▶ **ARX-7235-AC-PD-T:** IP67 metal housing, 802.11 AC access point that can act as the high speed wireless network for the depot.

### Key Products



**LNP-0800G-24**  
8-Port Industrial Gigabit PoE+ Unmanaged Ethernet Switch, w/8\*10/100/1000Tx (30W/Port), 9~55VDC Power Input



**STE-501C**  
1-Port RS-232/422/485 To Ethernet Device Server



**ARS-7235-AC**  
Industrial Dual Radio IEEE 802.11a/b/g/n/ac Wireless Access Point/Client/Bridge/Repeater/Router



**ARX-7235-AC-PD-T**  
Industrial Outdoor IP67 Metal Housing IEEE 802.11a/b/g/n/ac Wireless Access Point/Client/Bridge/Repeater/Router with PoE PD; EOT: -40°C to 70°C

### Application

Online purchases are rapidly increasing which has led to warehouses being utilized to house products of all sizes more than ever. Reducing warehouse labor costs and increasing operating efficiencies has never been more important. Automated warehouses have become required to keep costs down. With automated technology in place, it has allowed for faster and efficient delivery services.

### Application Requirements

- ▶ Efficient, reliable networking connectivity between the forklifts and core communication components
- ▶ A power-efficient wireless device with a low power usage so that power is available for other needs
- ▶ Small network switch to interconnect positioning sensors, wireless communications, and industrial computers
- ▶ Equipment must be able to hold up to vibration created by the moving forklift

### Solutions

- ▶ **AMS-2111:** A compact, cost-effective, energy efficient and reliable connection from the forklift to the wireless access point. This connectivity permits instructions to be sent to the forklift detailing what and where to pick up parts in addition to relaying status information regarding the health of the forklift.
- ▶ **LNX-500A:** Provides Ethernet connectivity within the forklift allowing the industrial PC, geolocation hardware and the wireless router to exchange information.

### Key Products



**AMS-2111**  
Industrial IEEE 802.11b/g/n Wireless (Wi-Fi) LAN Access Point/Bridge/Client/Repeater

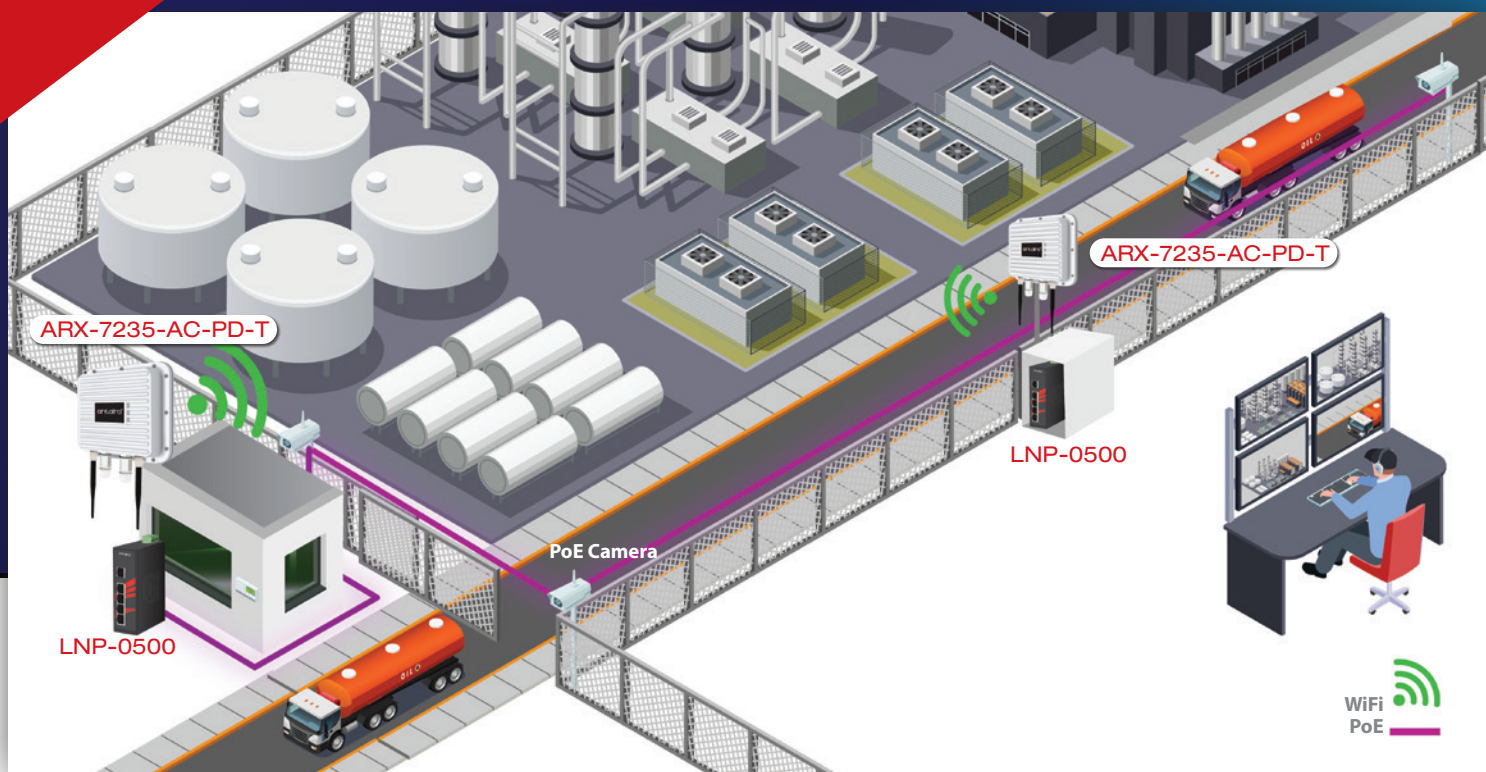


**LNX-500A**  
5-Port 10/100TX Slim Industrial Unmanaged Ethernet Switch



# Surveillance

## Security Gate



### Application

Most secured facilities provide limited access to the general public, along with providing 24/7 facility monitoring of the perimeter. In order to improve surveillance, security equipment, such as PoE cameras are used to allow security personnel the ability to monitor all areas of the plant or facility. Wireless communication equipment is the most efficient way to network devices from the main building's control room to the security gate.

### Application Requirements

- ▶ Minimum 5-port industrial PoE switch to power cameras and access points
- ▶ IP67 rated IEEE 802.11AC wireless access points to transmit video
- ▶ All communication equipment needs to be able to withstand temperature extremes

### Key Products



**ARX-7235-AC-PD-T**  
Industrial IP67 Metal Housing IEEE 802.11a/b/g/n/ac Wireless AP/Client/Bridge/Repeater/Router with PoE PD; EOT: -40°C to 70°C



**LNP-0500**  
8-Port Industrial PoE+ 5-Port Industrial PoE+ Unmanaged Ethernet Switch

### Solutions

**ARX-7235-AC-PD-T:** Outdoor-rated 802.11AC access point that can power from PoE and acts as the wireless connection between the cameras.

**LNP-0500:** Industrial PoE switch able to power cameras and access points and withstand extreme temperature operation.

# Automation

## Robotic/Material Handling



### Application

Implementing material handling robots is one of the easiest ways to add automation on a factory floor. Automated robots allow for metrics to be collected efficiently and accurately from one location of a machine to another. Networking communication is required and wireless is a quick and easy way to set up for ever-changing technological environments.

### Application Requirements

- ▶ High-density Ethernet switch that is DIN rail mounted and runs on 24 volts DC
- ▶ Wireless radio to work on 2.4 or 5 GHz frequencies
- ▶ Low-cost wireless radio to transmit information from the factory floor to an off-site database
- ▶ IP67 rated access point that is dust proof for the factory floor

### Key Products



**ARS-7235-AC**  
Industrial Dual Radio IEEE 802.11a/b/g/n/ac Wireless Access Point/Client/Bridge/Repeater/Router



**ARY-7235-AC-PD**  
Industrial Outdoor IP67 Plastic Housing IEEE 802.11a/b/g/n/ac Wireless Access Point/Client/Bridge/Repeater/Router with PoE PD



**LNX-1600**  
16-Port Industrial Unmanaged Ethernet Switch

### Solutions

**ARS-7235-AC:** Acts as a wireless client connecting to the ARY-7235-AC-PD providing either a 2.4 or 5 GHz connection.

**ARY-7235-AC-PD:** This is a wireless access point that protects from dust without having to pay for a costly exterior-grade product.

**LNX-1600:** Ethernet switch with 16 ports connects all the manufacturing devices contained in the machines with the wireless radio at an economical price.



# Wireless

Routers | Repeaters | Access Points | Bridges | Clients



**ARX-7235-AC-PD-T**  
Industrial Outdoor IP67 Metal Housing  
IEEE 802.11a/b/g/n/ac Wireless Access  
Point/Client/Bridge/Repeater/Router  
with PoE PD; EOT: -40°C to 70°C



**ARY-7235-AC-PD**  
Industrial Outdoor IP67 Plastic Housing  
IEEE 802.11a/b/g/n/ac Wireless Access  
Point/Client/Bridge/Repeater/Router  
with PoE PD



**AMS-2111(-T)**  
Industrial IEEE 802.11b/g/n Wireless  
(Wi-Fi) LAN Access Point/Bridge/  
Client/Repeater



**AMS-7131(-T)**  
Industrial 802.11a/b/g/n WiFi  
Access Point/Client/Bridge/  
Repeater



**ARS-7131(-T)**  
Industrial 802.11a/b/g/n WiFi  
Access Point/Client/Bridge/  
Repeater/Router



**ARS-7235-AC(-T)**  
Industrial IEEE 802.11a/b/g/n/  
ac Wireless Access Point/Client/  
Bridge/Repeater/Router

# Wireless

Routers | Repeaters | Access Points | Bridges | Clients

# Serial-to-Wireless Devices



## ARS-7235-5E-AC(-T)

Industrial 5-Port Gigabit Ethernet with Dual Radio IEEE 802.11a/b/g/n/ac Wireless Access Point/Client/Bridge/ Repeater/Router



## ARS-7235-PSE-AC(-T)

Industrial Dual Radio IEEE 802.11a/b/g/n/ac Wireless Access Point/Client/ Bridge/Repeater/Router with PoE+/ PSE Port (30W)



## STW-602C

2-Port Industrial RS-232/422/485 To Wi-Fi Device Server (EOT -20°C ~ 70°C)



## STW-611C

2-Port (RS232/422/485) Industrial IEEE 802.11b/g/n Wireless Serial Device Server, w/Bridge Mode



## ARS-7235-PD-AC(-T)

Industrial Dual Radio IEEE 802.11a/b/g/n/ac Wireless Access Point/Client/Bridge/ Repeater/Router with PoE/PD Port



## STW-612C

2-Port (RS232/422/485) Industrial IEEE 802.11b/g/n Wireless Serial Device Server, w/Bridge Mode



## AGS-7230-AC-T-US

Industrial Dual Radio 802.11a/b/g/n/ac WiFi Access Point/Client/Bridge/Repeater with Router and Modbus Gateway Capabilities, EOT : -30° C ~ 70° C for US applications

## Industrial IoT Gateway



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