

# Enabling Uninterrupted Wireless Connectivity for AS/RS and AGV Systems

## Application Overview

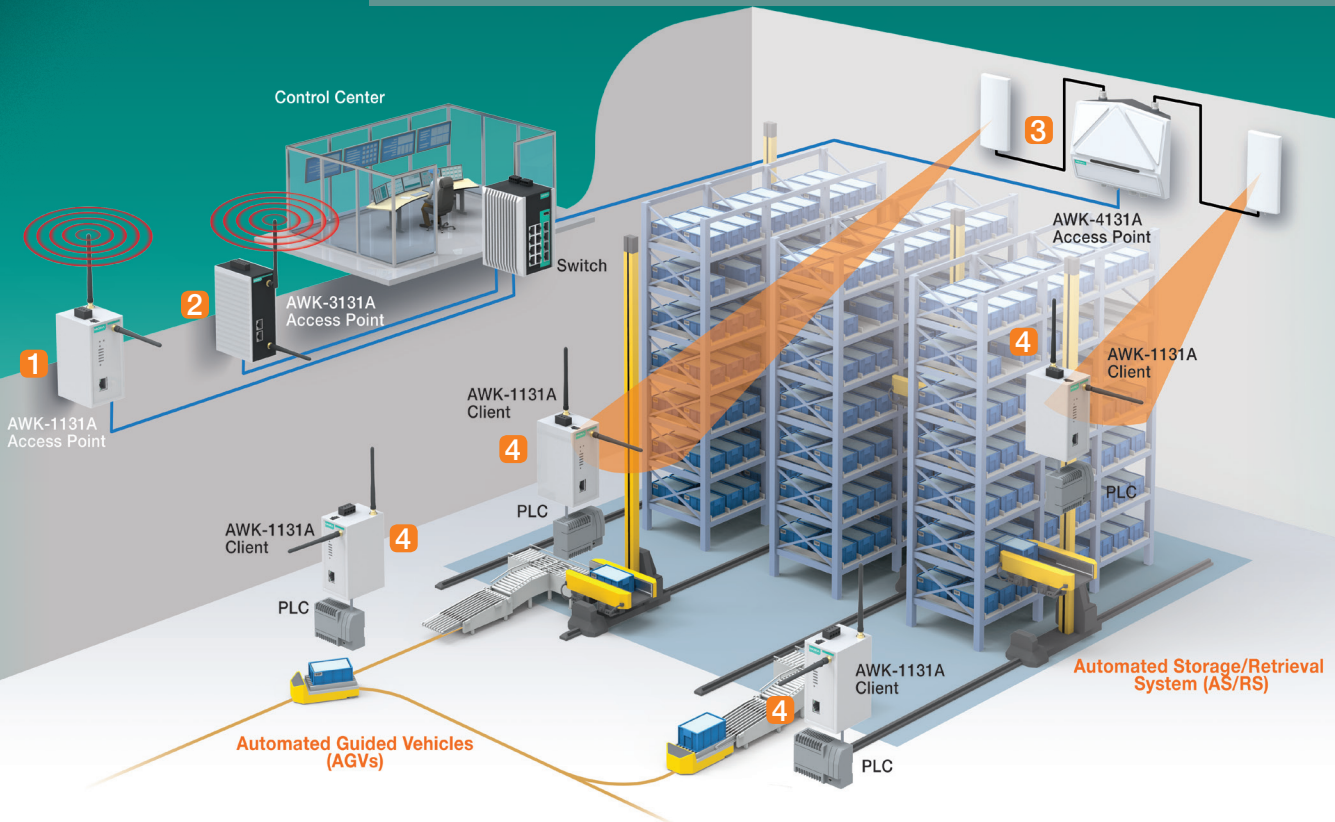
By deploying Automated Storage and Retrieval Systems (AS/RS) and Automated Guided Vehicle (AGV) systems, factory owners can enhance operational efficiency and increase productivity. However, system stability can be a key concern. The nature of AS/RS and AGV systems is high mobility, which means that the stability of the wireless network and devices is a key factor when deploying reliable AS/RS and AGV systems. With several years of experience deploying AGV and AS/RS solutions, Moxa is in a position to offer solutions that can attain uninterrupted wireless connectivity for high-mobility equipment on your network.

## Access Point Requirements

- Provide higher processing capability to allow access points to reliably service more clients
- Protect against electrical interference generated by factory equipment
- Ensure wide signal coverage for wireless connection to clients
- Keep systems up and running even in extreme temperatures

### Moxa Solution

| 1 AWK-1131A  | 2 AWK-3131A                               | 3 AWK-4131A                               |
|--|---|---|
| Up to 30 clients supported on a single AP  | Up to 60 clients supported on a single AP | Up to 60 clients supported on a single AP |
| IP30-rated housing   | IP30-rated housing                        | IP68-rated waterproofing and dustproofing |
| <ul style="list-style-type: none"> <li>• Level-4 ESD protection for the antenna ports</li> <li>• 2 x 2 MIMO technology to ensure wide signal coverage</li> <li>• Wide -40 to 75°C operating temperature range</li> </ul> |   |   |



## AS/RS and AGV System Requirements for Clients

- Reliable roaming performance for devices mounted on moving equipment
- Protection against inrush current generated by onboard motors
- Endure frequent vibrations when on the move
- Keep systems up and running in extreme temperatures

### Moxa Solution

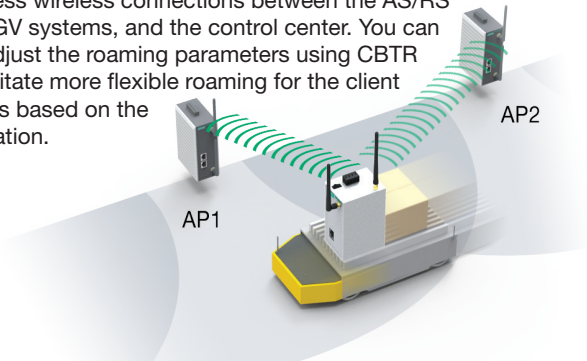
#### 4 AWK-1131A Client for AS/RS and AGV Systems

- Millisecond-level Turbo Roaming
- 500-volt insulation for power input
- Designed to endure vibration as specified by the IEC 60068-2-6 standards
- Wide -40 to 75°C operating temperature range

# Moxa Wireless Solutions for AS/RS and AGV Systems

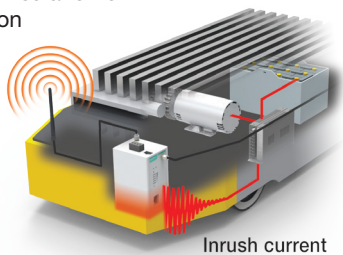
## Stable Communications for Applications on the Move—Turbo-Roaming Technology

Ensuring reliable communications while on the move is a key concern for systems like AS/RS and AGV. Moxa Client-Based Turbo Roaming (CBTR) technology features millisecond-level handoffs by predefining AP channels and avoiding time spent on channel-hopping while roaming, making it possible to build seamless wireless connections between the AS/RS and AGV systems, and the control center. You can also adjust the roaming parameters using CBTR to facilitate more flexible roaming for the client devices based on the application.



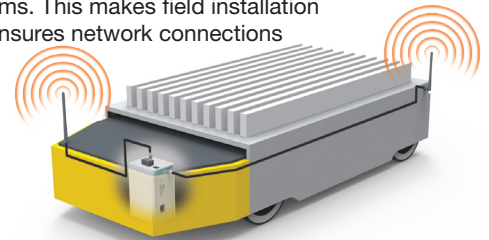
## Stable System Operation—Dual Isolation: Power and RF

In some real world cases, the AGV's onboard motor shares the same power source as the wireless devices deployed on the vehicle. Sharing the same power source between the devices and the onboard motor is a good way to reduce the space utilized on the AGV; however, the onboard motors might generate inrush current that can seriously damage wireless devices on the same circuit, causing device downtime. The antennas and their extensions are usually mounted on the metal case of the AGV or the AS/RS to achieve better signal strength, which leads to potential device short circuits. Moxa Dual Isolation technology featuring 500-volt insulation on power ports and level-4 ESD on antenna ports not only protects devices against electrical interference, but also eliminates the need for additional accessories.



## Stable Wi-Fi Availability—2 x 2 MIMO Technology

Applications using single-antenna clients on the AGV can sometimes cause network blind spots. Such applications will require installation of additional APs to ensure continuous Wi-Fi access in every corner of the warehouse network. Alternatively, you can increase Wi-Fi network availability by using 2 x 2 MIMO technology that utilizes two antennas to optimize the Wi-Fi network availability onboard your AS/RS and AGV systems. This makes field installation much easier and ensures network connections with wider Wi-Fi coverage.



## Rugged Device—Wide Operating Temperatures

Some warehouses operate under extreme temperatures. For example, the operating temperature for cold-storage warehouses can reach sub-zero temperatures. Such warehouses might also require AS/RS systems that can endure sub-zero temperatures without any impact on their efficiency. Moxa's AWK-A series wireless products can withstand temperatures in the -40 to 75°C range, making them ideal for installation in temperature-sensitive warehouses.



## Continuous Operation—Anti-Vibration Protection



Wireless devices deployed in applications such as AS/RS and AGV systems can easily get disconnected due to the constant vibration of the vehicles or structures that they are mounted on. Moxa's AWK-A series

wireless products are designed to endure high levels of vibration. Extensive tests based on the IEC 60068-2-6 standards ensure that AWK-A wireless devices can maintain good-quality wireless connections when they are installed on moving equipment.

## Featured Products



**AWK-4131A Series**  
IP68-rated industrial IEEE 802.11a/b/g/n wireless AP/bridge/client



**AWK-3131A Series**  
industrial IEEE 802.11 a/b/g/n wireless AP/bridge/client



**AWK-1131A Series**  
entry-level industrial IEEE 802.11a/b/g/n wireless AP/client