



Location: **Japan**

Smart Wireless Sends Warehouses Into Smart Territory

Application:

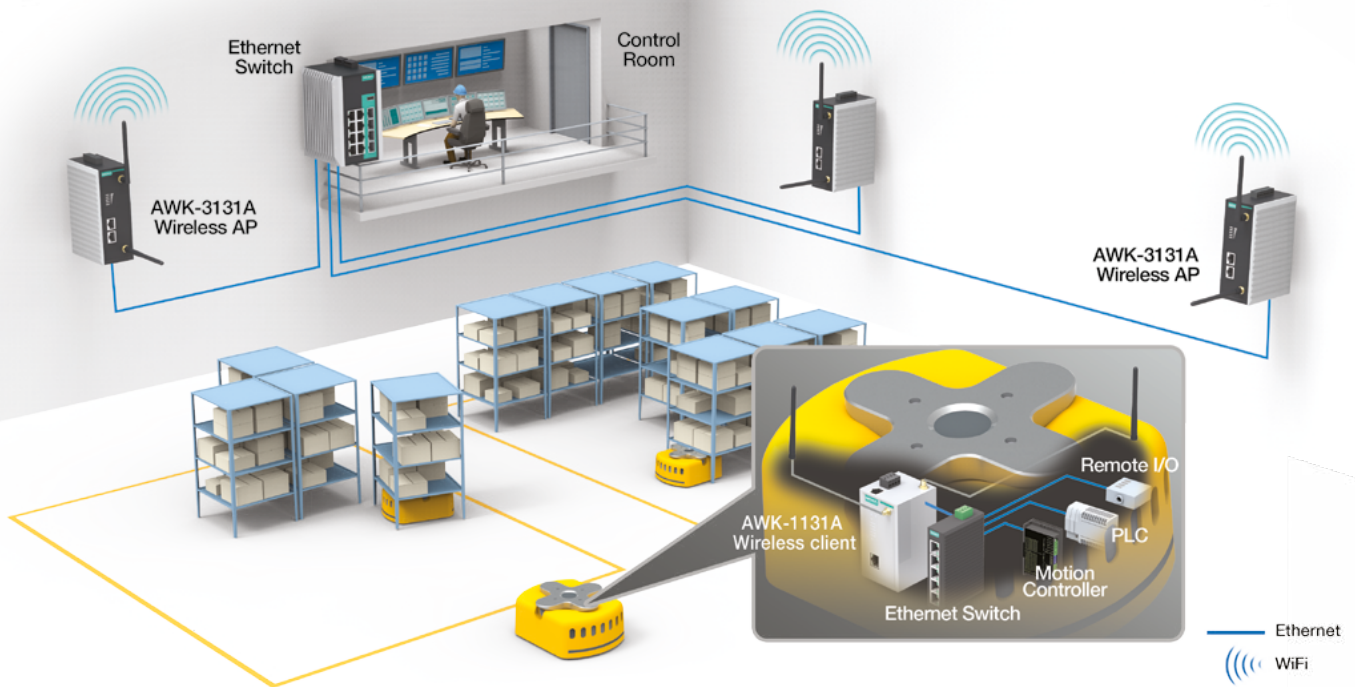
Automated Guided Vehicles

Customer Needs

- Fast roaming time under 200 milliseconds
- The ability to configure roaming sensitivity to adapt the same solution in different-sized factories
- Industrial-grade design to withstand harsh environments

Moxa's Advantages

- Turbo Roaming supports 150 ms roaming time
- The ability to adjust roaming parameters to fulfill different roaming requirements
- Dual isolation protects power and RF ports from inrush current interference



Project Background

Many Automated Materials Handling (AMH) systems have been implemented in factories to increase productivity. AGV systems are a common AMH system used in factory logistics to enhance operational accuracy and efficiency. One of our customers in Asia, who provides logistics services, wanted to deploy AGV systems in warehouses. Their aim was to provide real-time goods delivery so that their customers could achieve zero inventories in retail stores.

These AGV systems rely on wireless networks to communicate with a control center. Any single point of device failure interrupts wireless connections, which leads to goods delivery delays and increased operation costs. To take advantage of AGV systems, the wireless device must be reliable and rugged enough to provide seamless wireless communication while AGVs are on the move.

System Requirements

- Seamless roaming ability is a must to ensure wireless connections between different access points (APs) when AGV systems move around inside warehouses
- The ability to allow users to adjust the roaming parameter to adapt to the requirements of different deployment venues
- Isolation design to protect wireless devices from inrush current interference generated by motors on AGV systems
- Anti-vibration design to ensure continuous wireless device operation under constantly moving conditions

Moxa's Solution

Reliable wireless networks are required to enable AGV systems in warehouses. Different requirements from APs and clients (devices) determine the formation of a reliable wireless network. In this case, AWK-3131A wireless devices have been used as APs to provide Wi-Fi coverage. The AWK-3131A supports 802.11n with 2x2 MIMO antenna output, allowing a wider coverage of Wi-Fi communication. Furthermore, it provides sufficient bandwidth with a 300 Mbps data rate, keeping your options wide open for possible future system expansions. With 5 GHz channel support, AGV systems can operate in a cleaner environment than under the over-saturated 2.4 GHz frequency. As the ideal wireless client in an AGV system, the AWK-1131A wireless device offers three benefits: compactness, ruggedness, and mobility.

Moxa's small-sized AWK-1131A is the perfect solution for space-limited vehicle systems that need compact wireless devices to fit easily into an AGV system. The AWK-1131A has a rugged design that can endure harsh, onboard conditions, and it provides both power and antenna port isolation to prevent unexpected electrical interference. For example, when a wireless device shares the same power source with motors, wireless communication can easily be interrupted due to inrush current generated by the motors. With 500-volt insulation on power ports and level-4 ESD on antenna ports, a wireless device can isolate any unwanted electrical charges.

More importantly, optimized device mobility is the major concern for AGV systems. The AWK-1131A supports client-based Turbo Roaming technology that provides 150 ms handoff times between APs to enable seamless mobile operations for warehouses.

Benefits

- Turbo Roaming's millisecond-level handoff times ensure seamless AGV system operation while on the move
- A configurable roaming threshold to ensure reliable roaming performance in different-sized venues
- With 500-volt insulation on power ports and level-4 ESD on antenna ports, AGV systems can withstand electrical interference, for worry-free integration
- A throughput rate of up to 300 Mbps and 2x2 MIMO technology to maximize Wi-Fi coverage for shuttle systems
- Anti-vibration design meets the IEC 60068-2-6 standard, protecting wireless communications under constant motion



Related Products



AWK-3131A
Industrial IEEE
802.11a/b/g/n wireless AP

<http://www.moxa.com/product/AWK-3131A.htm>




AWK-1131A
Entry-level industrial
IEEE 802.11a/b/g/n
wireless client

http://www.moxa.com/product/AWK-1131A_Series.htm

Learn more

White Paper
Five Critical Elements of Uninterrupted Wireless Connectivity for AS/RS and AGV Systems



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