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Reliable Industrial Wireless LAN Solution

The demand for wireless connections in industrial networks has been rapidly increasing and it's the extension from the LAN to WLAN, which makes it suitable for field applications requiring nonimmediate reaction or synchronization such as monitoring devices, sensing devices, electric boards and those device move around the environment.

Advantech connectivity solution

For factory/field environments, industrial wireless network products must provide greater reliability and low disturbance from other devices. Advantech is the market leader in providing connectivity including wireless network connectivity.

The EKI-6332GN & EKI-6331AN are feature-rich wireless Aps & CPEs which provide reliable wireless connectivity for commercial and industrial environments. Both models support a transfer rate of up to 300Mbps under MIMO 2 x 2 technology. Its working frequencies are 2.4GHZ on EKI-6332GN, and 5GHz on EKI-6331AN.

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Advantech wireless solution

EKI-6332GN/ EKI-6331AN Key Features:

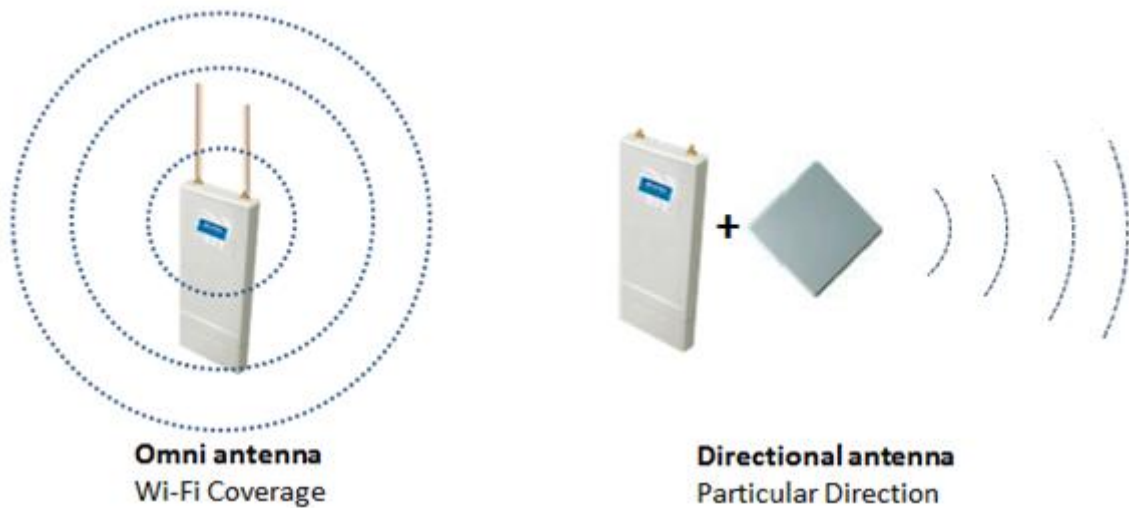
- IP55 waterproof certification
- High output power
- MIMO 2 x 2 11n
- WPA/WPA2-Enterprise /IEEE 802.1 x encryption for a highly secure wireless network
- Spanning Tree and IGMP snooping protocol support

1. Application Overview

Wireless LAN industrial applications are widespread. Applications such as AGVs (Automated Guide Vehicles) within the plant, remote status reporting, wireless PLC connection, POS networking, CNC processing, etc. can be easily integrated into a control platform, so operators and managers can easily manage the automation of the site through the LAN and WLAN.

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The EKI-6332GN and EKI-6331AN are equipped with external optional antenna to provide a good choice for different application such as remote video transmission, remote monitoring and Wi-Fi hotspots at short range. The default 5dBi Omni antenna gives a wide Wi-Fi coverage, and long distance communication can be achieved through directional antenna with higher gain. Read the following application story for more information.



2.1 Factory automation

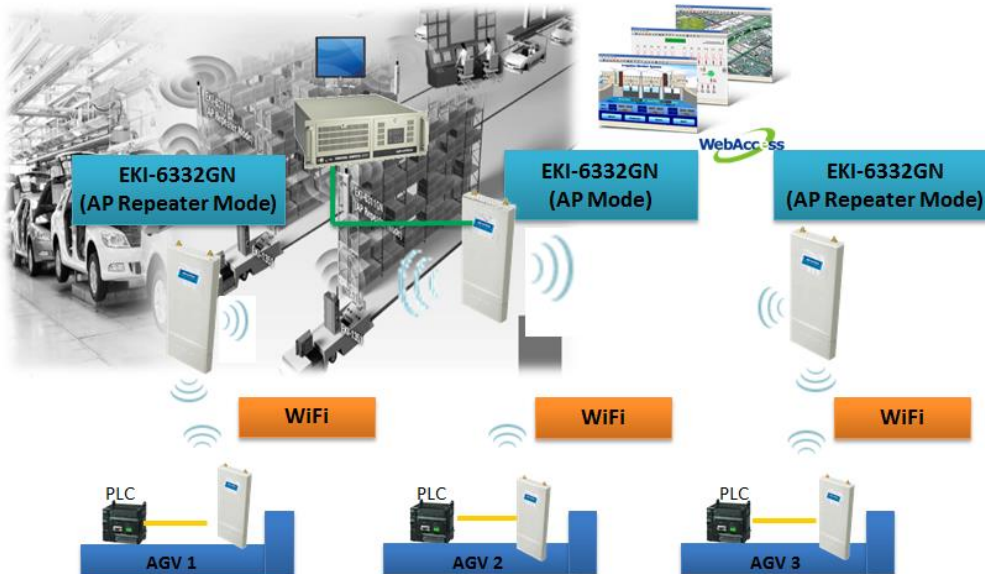
Factories are moving towards an Internet of Things (IOT) infrastructure for machine control and remote monitoring. Regardless of the amount of cables, it's more convenient and better to transmit and control the data wirelessly. Not only does it reduce the cable costs but also the labor cost. To realize factory automation, wireless connection takes advantages of mobile features.

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Increasingly AGVs are being operated in factories, and by installing wireless devices on them, it enhances the efficiency of automated warehouses and mobile assembly lines, especially in industrial environments where hazardous materials on the product line can harm the human body. Therefore building Wi-Fi networks improves productivity and creates a smart access point for remote control.



Automated storage/retrieval

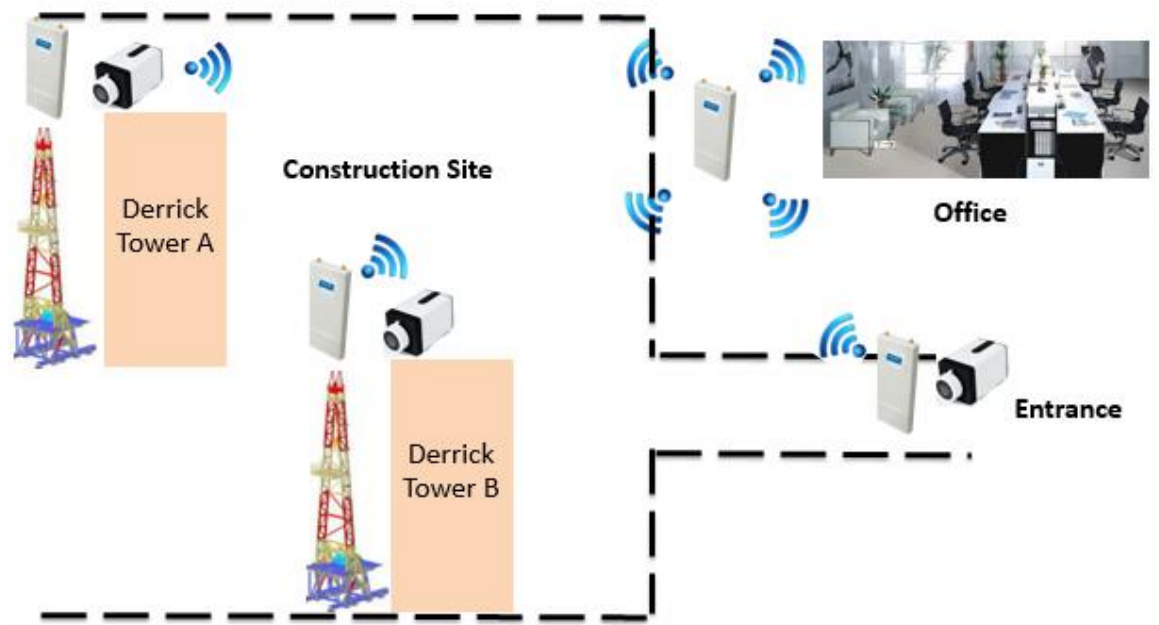


Automated production line

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2.2 Wireless Surveillance

The cabling limitations of traditional monitoring systems are unable to meet the needs of places where cable runs are not feasible e.g. construction sites and moving vehicles. A wireless network provides video surveillance under MIMO technology and also eliminates the need of static positioning as long as the wireless client has a good connection with the wireless AP.



Wireless Surveillance on RIG floor

2.3 Harbor/ Construction sites – Logistics management

Cabling restrictions in outdoor areas such as a harbor, limit the ability of logistical management. Wireless networks eliminate the need for cumbersome cable installation which shortens the construction period and costs. It enhances the feasibility of remote control and real-time data collection from remote sites in distributed locations.

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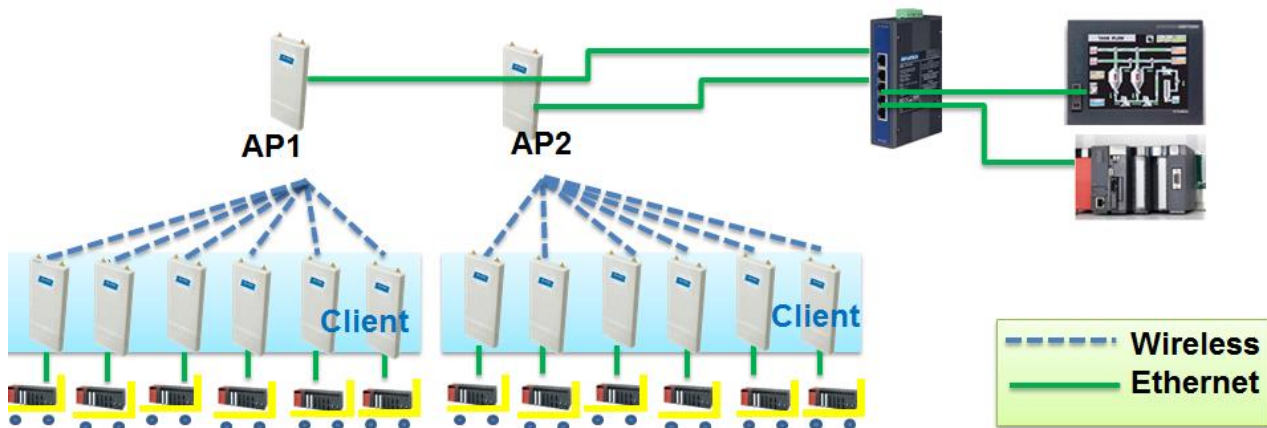
**Logistic control on the harbor**

2. Wireless Operation

As well as the point-to-point network architecture, the EKI-6332GN and EKI-6331AN also support multipoint bridging, Wi-Fi hotspots, gateways and other operating modes to meet the needs of field sites.

2.1. AP-Client mode

General AP – Client operation works as the bridge between wired and wireless networks. Mobile wireless signals are converted to an entity network through the wireless AP.



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AP-client mode for factory automation

2.2. WDS Bridge mode

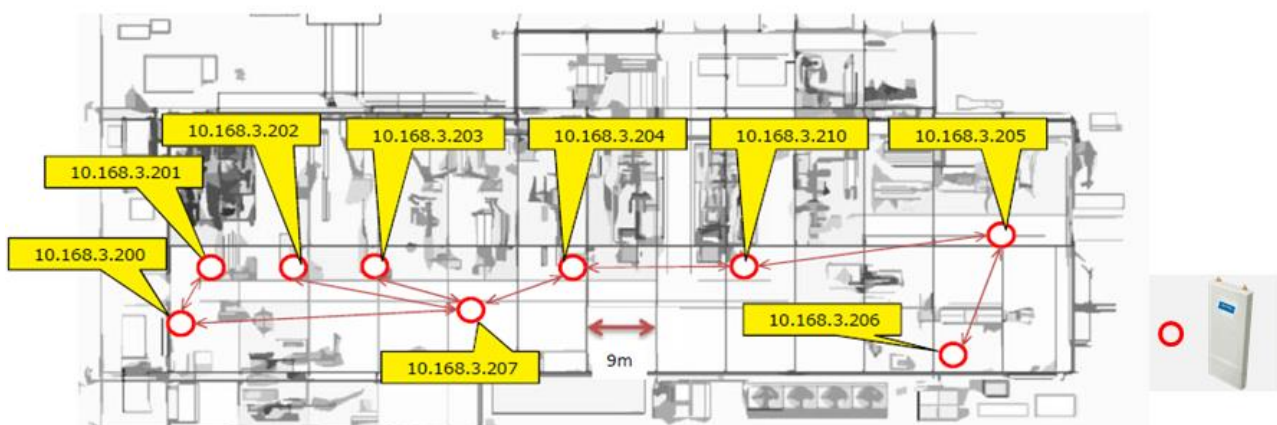
For two or more wireless units to bridge each other when the wired connection isn't possible an additional WDS setting (MAC) is required to connect to each other. The connection can't be setup if the wireless units can't recognize each other's MAC addresses.



Bridge mode for transmission between 2 buildings

2.3. AP Repeater mode

To avoid the issue of blind Wi-Fi spots, repeater mode extends the original wireless signal coverage and lets the transmission occur through everywhere. It effectively eliminates weak signals and improves signal strength.

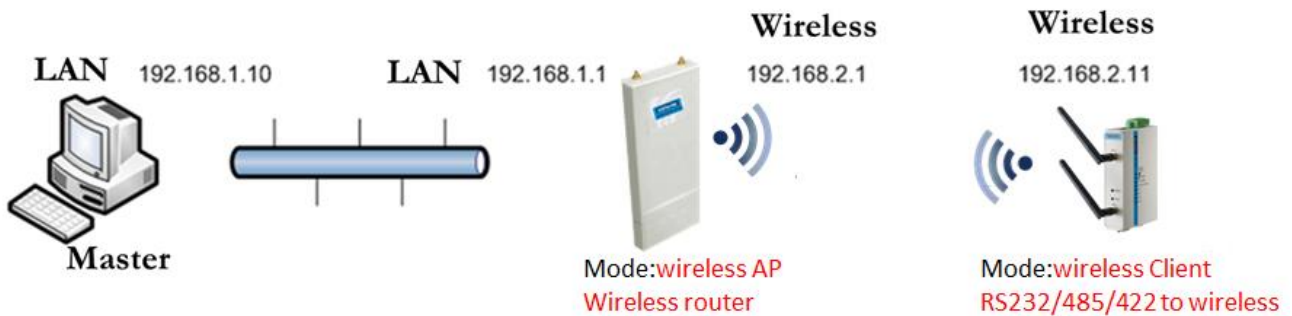


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AP repeater mode for factory patrolling

2.4. Router mode

When there is no gateway device, router mode is used to build a firewall between the WAN and LAN. It can also work as a wireless base station to serve other wireless devices in the LAN. For a WAN, it's feasible to connect to the Internet for network sharing.



3. Installation Hint

3.1 Stable wireless connection

To avoid unstable connections, take wireless and physical interference into account at the installation phase.

In the live network, when there are lots of mobile devices communicating via Wi-Fi, carry out a site-survey to pick a clearer frequency on 2.4GHz/5GHz for settling the devices. For other real world cases, undesirable power interruptions like a power surge are fed into the wireless device since they share the same power source between devices and the power supply. Check the power supply has an additional arrestor and suppression core if the wireless device or antenna is exposed to unstable

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voltage input. For outdoor cases, although it supports IP55, it's better to provide additional shelter to keep the rain and other weather off.

Advantech, as a global leader in industrial measurement and automation applications, leverages the latest industry technology trends and understands what developers' need. To help you build an IOT network, Advantech's wireless LAN solution, has been designed to guarantee performance and efficiency. Users no longer need to put as much effort into cabling/labor costs during their installment.