



Easy-to-deploy wireless system increases warehouse uptime

Highlights

- After years of using communications cables for its automated cranes, ES3 found that vibration and normal wear were causing reliability issues.
- The team upgraded the communication to a wireless solution from Phoenix Contact.
- Engineers at ES3 were able to quickly program, install, and deploy these devices.

Customer profile

ES3 was founded on the principle that there was a better way to deliver products. Today, ES3's flagship facility in York, Pennsylvania, supports storage of 400,000 pallets, shipping of more than 300 million cases annually, and management of more than 20,000 items. ES3 operates five facilities across the US.

Challenge: Older cabling system was ready for upgrade

ES3 needed to upgrade the automated cranes that pick up and store pallets of grocery items. The original system used flex chain DeviceNet communications cables for controlling the vertical lift. The cables periodically broke and had to be replaced, which added repair and downtime costs to the system. In addition to the vertical lift, the horizontal axis of the crane used infrared (IR) for communication. This system required a very precise path.

Over the years, vibration and normal wear caused the IR signal to be lost and required recalibration that is time consuming and not always reliable. The maintenance team at ES3 wanted to upgrade to a wireless communications system that would improve reliability, increase uptime, and resolve the issues it had experienced with DeviceNet and the IR communication system.

Solution: Industrial wireless improves reliability

ES3 selected a combination of the FL WLAN 1101 and FL WLAN 5111 wireless modules from Phoenix Contact. A pair of FL WLAN 1101s were used to communicate with the vertical axis of the crane. A combination of the FL WLAN 5111 and FL WLAN 1101 was used for the horizontal axis of the crane.

The vertical axis had limited space in the current enclosure, so the FL WLAN 1101's IP housing and flexible mounting options made installation easier. For the horizontal solution, the control cabinet had limited space, but the narrow FL WLAN 5111 fit the requirements.



Figure 1A/1B: The FL WLAN 1101 and 5111 both offer high-performance wireless Ethernet, but the different packaging styles make them suitable for different installations. The FL WLAN 1101 has IP housings for easy mounting outside of control cabinets, while the FL WLAN 5111 is designed for easy DIN rail installation.

Results: Easy deployment and installation

The engineers at ES3 were able to quickly program, install, and deploy these devices. They were able to replicate the configuration on each aisle. To reduce interference, they just needed to change the channel each system was using. The ability to save configuration files and upload them to new systems with minor changes made the implementation process significantly easier. They are still adding and upgrading systems, with 38 complete systems to date. With close to 200 devices installed in proximity, the easy channel assignment and separation has proven that the devices can be isolated from each with reliable communication.



Figure 2: The vertical axis had limited space in the current enclosure, so the FL WLAN 1101's IP housing and flexible mounting options made installation easier.

“The engineers at ES3 were able to quickly program, install, and deploy these devices.”



Figure 3A/3B: Although the control cabinet used in the horizontal crane had limited space, the narrow FL WLAN 5111 fit the requirements.

