



Application Solution | US

Train Detection for Yards, Ports, and Industrial Facilities with the Frauscher Track Vacancy System FTVS

Using axle counters in difficult environments and tight spaces

Every rail operator, whether freight, transit, intermodal or industrial must maintain areas such as yards that represent integral parts of their daily operations. Several factors in these yards and other difficult-to-maintain areas can create barriers to incorporating reliable and necessary train detection.

Challenges

- Conditions in yards, ports, and industrial facilities are not ideal for train detection
- Water, snow, and deteriorated track and ballast can affect reliability of many train detection systems
- Tight trackside areas around switches make installation of legacy train detection equipment difficult or impossible
- Harsh conditions increase the amount of maintenance required to keep system running well
- Limited space in wayside enclosures is frequently an issue at these facilities
- Reliability and safety may be compromised due to the limitations in these areas

Requirements to improve operations

- A robust train detection system that remains reliable regardless of conditions, weather, or temperature
- A system that by design allows for integration of train detection equipment in tight trackside areas such as around switches
- An ideal system would require minimal space in wayside enclosures to accommodate limitations in these structures
- Easy installation and minimal maintenance requirements
- Functionalities that improve operations and safety such as storage track occupancy information, end of track warning systems, establishing precise fouling points and elimination of signaling dead sections

The Wheel Sensor RSR110

In the years since its introduction in 2016, the RSR110 has seen a significant increase in use for various non-vital applications. In combination with the Wheel Signal Converter WSC, it is widely used for a variety of non-safety critical solutions such as triggering AEI readers, Hot Box Detectors, and vision monitoring systems. The RSR110 has also been deployed in various yard applications such as switch point protection. Robust and reliable in all adverse conditions, its widespread use and operator confidence sparked the idea of incorporating the RSR110 into a non-vital axle counting system.

Solution

Although Frauscher’s product portfolio already included solutions that could meet these needs, discussions with customers revealed a “missing piece” among our current offerings for yards, ports, and industrial sites. The type of solution these customers sought would fall somewhere between simple train detection and vital axle counting. It was determined that the way to meet the requirements for non-vital applications described earlier would be to develop an axle counting system based on the Frauscher Wheel Sensor RSR110.

A new axle counting system is designed

The resulting Frauscher Track Vacancy System FTVS offers all benefits of the robust RSR110 / WSC combination, while adding axle counting capabilities that expand the list of solutions it can provide.

Figure 1 depicts the general layout of the FTVS. Wheel Sensors (WS) are quickly clamped to the rail using the Frauscher Rail Claw. Cables connect each sensor to its own junction box (JB), with a four-conductor signaling cable used to connect to the wayside equipment.

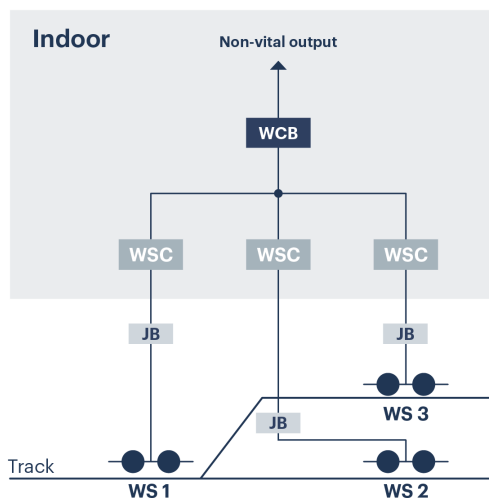


Figure 1

Figure 2 diagrams the wayside equipment, housed in a signal controller on a DIN rail mount that requires a small footprint (for typical applications 2½” x 4¼” x 4¼”). This wayside equipment consists of one Frauscher Wheel Signal Converter WSC per wheel sensor, with each WSC connecting to the Frauscher Wheel Counting Board WCB that outputs the clear/occupied status of the track section. The WSC outputs wired to the WCB inputs provide digital pulses for every wheel passing. The non-vital clear/occupied indication is generated using the discrete dry contact output of the WCB.

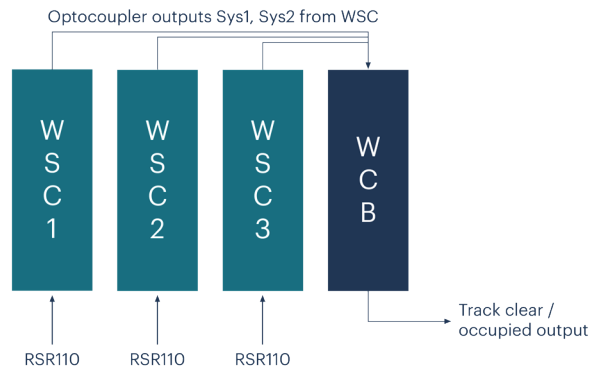


Figure 2

Applications

In addition to triggering trackside equipment and other capabilities of the RSR110 / WSC, the FTVS can also accommodate the following applications:

- Protection of switch points
- As part of an end of track warning system
- Provide vacancy information for storage tracks
- Establish precise fouling points
- No dead sections or electrical isolation required



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