



# FRAUSCHER

## Distribution of Input-Output Data for Railway Solutions

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In modern railway operations, the exchange of data plays an essential role.

Modern axle counters make it possible to exchange both vital and non-vital data between different stations and higher-ranking systems. In this way, they constitute an optimal solution that ensures both flexibility and efficiency of rail operations.

### Axle Counting Solution with Data Transmission Capabilities

Axle counters are vital components in modern railway systems, responsible for accurate train detection and the provision of essential data for various railway operations. Modern axle counter solutions provide highly available and flexible data transmission capabilities at the same time. This enables the efficient exchange of digital input-output data for a wide range of railway applications.

By enabling the exchange of both vital and non-vital information, axle counting solutions with data transmission capabilities are suitable for SIL 1 to 4 in railway operations. Vital information comprises the status of signals, point positions, level crossing barrier positions, occupancy information, and relay status. Non-vital information includes status of power supply, temperature alarms and door alarms.

### Utilisation of Established Technology

Due to their advanced technology and robust design, axle counters can serve as a highly reliable solution for data transmission requirements. This ensures a constant exchange of data and reduces the risk of interruptions or downtime in railway operations. In addition, axle counters designed with modular components enable customisation according to individual needs for different railway applications. Built with flexibility and durability in mind, axle counters integrate seamlessly into existing infrastructure

Vital information	Non-vital information
Status of Signals	Status of power supply
Point position	Temperature alarms
Level crossing barrier positions	Door alarms
Occupancy information	
Relay status	

Table 1: Overview vital and non-vital information

and minimise the need for frequent replacements or repairs. Incorporating axle counters for data transmission requirements brings long-term benefits with reductions in lifecycle costs.

## FAdC® for Data Transmission

With the FAdC®, Frauscher Sensor Technology offers a flexible solution that is suitable for use in both axle counting and data transmission. The data transmission capabilities thereby either support the axle counting functionalities or function as a stand-alone solution. The latter implies that the FAdC® can be used to exchange vital and non-vital data either between two stations or between a station and a higher-ranking system such as an interlocking. In this way, information can be read in and out in a bidirectional manner. This functionality is made possible by an integrated IO-EXB card that enables data to be received and transmitted without the need for any additional equipment or cables.

### Example Use Case: Retrofitting

FAdC® for Data Transmission is applicable to both new and existing infrastructure. An example of this is the use case retrofitting. With existing trackside

equipment, communication to networks is often not possible. The FAdC® with data transmission offers an approach to bridge the missing network connectivity. This capability makes it possible for operators to maintain the existing system with only few additional components and at the same time benefit from the advantages of digitalisation. For retrofitting, the FAdC® for Data Transmission thus represents an efficient and environmentally friendly solution.

## Conclusion

The data transmission capabilities of modern axle counters play a crucial role in terms of the digitalisation of railway systems. Due to the scalable and modular design of FAdC®, there are numerous possibilities when it comes to their implementation in railway systems. By exchanging vital and non-vital information in a reliable way, the solution enables the retrofitting of existing trackside infrastructure by an efficient integration into digital interlockings. With these digital capabilities that conform to industry-leading standards, Frauscher's innovative solutions are well-poised to address the emerging challenges in the railway industry.

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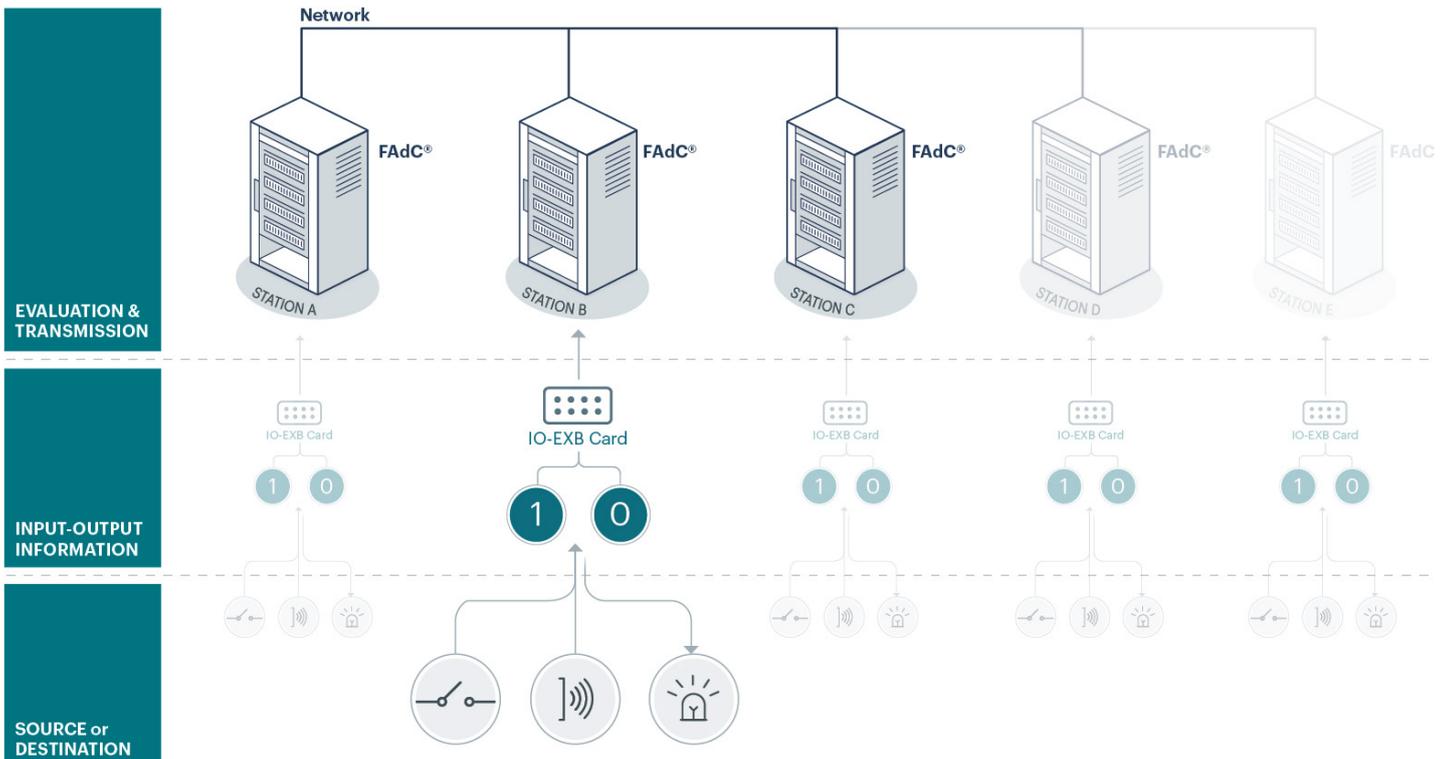


Figure 1: Data transmission architecture

# FAdC<sup>®</sup> for Data Transmission

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for railway solutions

## Benefits

- highly available and robust solution
- suitability for SIL1 - SIL4 applications
- simple and flexible configuration without programming
- low life cycle costs and reduced maintenance

