

Rail Weigh-In-Motion system

Automated train and infrastructure monitoring

Type 9192B...

The Rail Weigh In Motion (WIM) system 9192B... monitors the rail traffic on an open rail track at regular speed. It helps to ensure safety and to verify the correct declaration of wagon weights. It collects valuable data about the frequency and intensity of the use of the rail infra-structure. The measured data is available in real time, allowing for immediate intervention in case of critical observations.

- Excellent system accuracy at operational speed, based on piezo-electric force measurement
- Outstanding long term and temperature stability
- Additional functionality like flat spot detection
- Simple and fast installation
- Site assessment and adaptive system layout to reduce influence of vehicle dynamics
- Comprehensive train report generation and flexible data protocols
- Neglectable ageing effects and hence minimal system maintenance required

Description

The Kistler Rail WIM System 9192B... is built up of six pairs of sensors to be installed in the web of both rails. All sensors are connected to a wayside data acquisition unit in a cabinet or cab-in. Sensors and cables are protected by rail compliant covers and conduits, with sensors being electrically insulated from the rails. Each sensor captures all wheel loads of every passing train. The recorded data is processed by an in-built algorithm based on physical modeling. As a result, reliable measurements of the static wagon weight are obtained even at high speeds. The measured data is processed with regards to all relevant types of information: wheel, axle, bogie, vehicle and train weight are reported. On top of that, weight distribution, speed, axle distances, and axles parallelism provide additional information on operational safety. All resulting data is available via web interface and also accessible via REST API or FTP train telegram with a robust attachment to the accelerometer. The cable has an industry standard 4-pin connector termination. All executions provide reliable measurements and long-term stability, especially at higher operating temperatures.



Applications

The Kistler Rail WIM System 9192B... covers the following applications:

- Safety in rail operation (derailment prevention, verification of train weight, spacing between trains, speed monitoring, bridge protection, etc.)
- Preventive Maintenance (infrastructure wear and tear, rolling stock condition monitoring)
- Compliance (Overload, wheel defects, incorrect weight declaration, incorrect train length)

Technical data

Type 9192B...

Measuring range of wheel load	tons	2 ... 25
Vehicle weight accuracy	-	±2% (for 100% of passages)*
Speed range	km/h	5 ... 200
Temperature range	°C	-40 ... 60
Speed deviation		<0,2%
System length on the rail	m	≈21
Sensor diameter	mm	25,0

*can be more for bad track conditions

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Functions

- Measurement of wheel, axle, bogie, vehicle and train weight
- Vehicle identification, classification and statistics
- Accurate speed measurement
- Detecting unbalanced loading of vehicles
- Detection of axles parallelism
- Condition monitoring of wheel and bogie (flat spots, spring defects, axle/wheel distance)
- Self-monitoring with frequent and known vehicles

Calibration, verification

Kistler offers three levels of system calibration and verification:

- Initial and recalibration: using a reference train in a calibration campaign with different weights and speeds
- Periodical verification: system accuracy check with reference vehicles (in co-operation with system operator)
- Statistics: self-monitoring of system stability with frequent vehicles of known weight

Included accessories

- 12 rail WIM sensors
- UIC reader camera
- Train presence detector
- 12 sensor cables
- 12 sensor covers
- Conduits for sensor cable protection
- DAQ back panel (DAQ unit, industrial PC, internet connection device, power supply)
- Basic System software
- Installation consumables (drill bits, special grease, etc.)

Maintenance

Although the system needs no active maintenance, it is recommended to check the performance and the system condition on site once a year. This periodical check comprises the following tasks:

- Visible inspection of the sensors, sensor protection and conduits on the rail
- Insulation test of the sensors and sensor cables
- Cleaning of camera lens
- Software update and data backup



Optional accessory

Sensor installation toolkit Type 1308A

Ordering Key

Rail WIM System Type 9192B...