

## PHOENIX<sup>MDS</sup> WDD/WIM WHEEL IMPACT LOAD DETECTION



### Diagnosis of Wheel Defects and Vehicle Weights

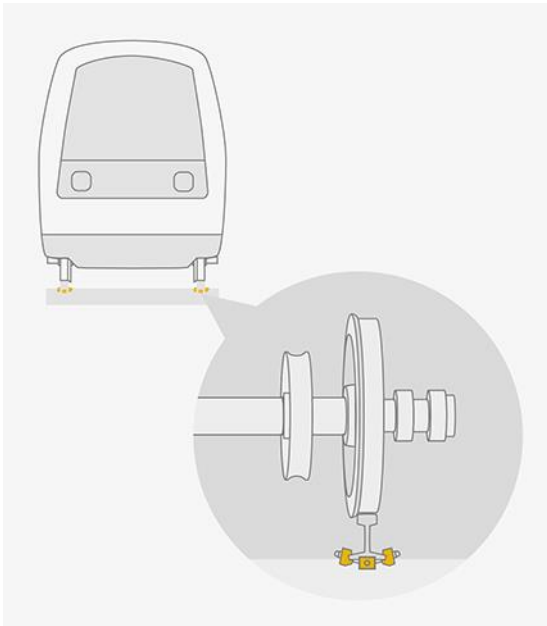
Growing rail traffic worldwide requests higher safety standards and lower maintenance costs at the same time. An essential aspect is a continuous, trustworthy monitoring of wheel-rail interaction forces.

Wheels of rail vehicles are exposed to high wear and tear. This may result in geometric wheel defects. The functions PHOENIX<sup>MDS</sup> WDD/WIM measure on a continuous basis every wheel of the fleet and check for any deviating force levels during normal train operation.

Besides detecting wheel defects the functions are used as a dynamic rail scale at the same time; vehicle weight and load distribution are monitored during every passage and an unbalance or overload can be recognized in time. Assistance for optimal payload usage is available as well.

### Key Features

- » Coverage of the complete circumference of the wheel
- » Unparalleled ease of installation
- » Clamp-on sensors: no drilling/welding/gluing required
- » 100% electromagnetic compatible in any railway environment
- » No electromagnetic interference
- » Self-calibration, self-diagnostic and health monitoring
- » No influence on regular track maintenance
- » Applied in various climate zones, in tunnel environment and on high speed tracks
- » Energy efficient module in compact design
- » Flexibility to add sensors



## FIBER OPTIC SENSING TECHNOLOGY

Forces exerted by the wheel on the rail are captured by optical sensors clamped under the rail. At a high scanning rate the deformation of the rail is measured. Every wheel is identified during a train passage and data reports on weights and defects are generated accordingly. Alarms are displayed in real-time and defective wheels are identified together with their exact positions in the train and under the vehicle. The system software differentiates between various

types of wheel defects like wheel flats, out of roundness and polygonization.

Installation and maintenance of the sensors are unparalleled. The small, light-weight and energy efficient design of the module allows for easy co-location with other diagnostic functions in a cost effective way. Applying fiber optic technology in the sensor design guarantees electromagnetic compatibility in any railway system.

### Technical Specifications

Train speed:	5 to 500km/h
Train length:	up to 5000m
WDD coverage:	~3x wheel circumference
Axle distance:	0.7 to 30m
Wheel diameter:	200 to 1600mm
Quasi-static axle load:	3 to 40t
Accuracy of vehicle weighing:	up to ±3%
IP class optical sensors:	IP68
Environment:	-40 to +50°C

### Options and Variants



Train Talker



Tunnel



Solar