

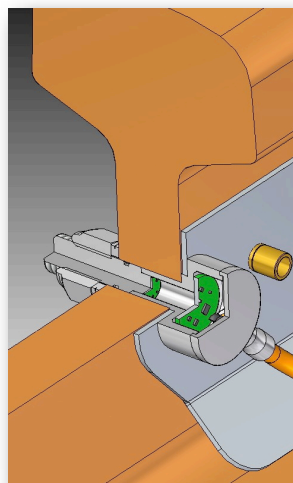
Multi-Sensor

Multi-Parameter Sensor for Monitoring Stress in Railways

Conventional track-based monitoring systems face many challenges; physical bulk, unfriendly connection systems, poor mounting techniques and fragility are the main problem areas. The Vortok Multi-Sensor integrates three measuring technologies into a single compact, rugged device. Inserted into a single 10mm diameter hole in the rail web, the Multi-Sensor measures rail force in a vertical or horizontal plane, rail acceleration both vertically and laterally as well as rail core temperature.

The Multi-Sensor is ideally suited for monitoring axle weights and wheel damage as well as rail tension and temperature.

- ✓ Rail SFT
- ✓ Train Weighing
- ✓ Axle Detection
- ✓ Train Speed
- ✓ Direction
- ✓ Bogie Hunting
- ✓ Wheel Impact Detection
- ✓ Rail Core Temperature

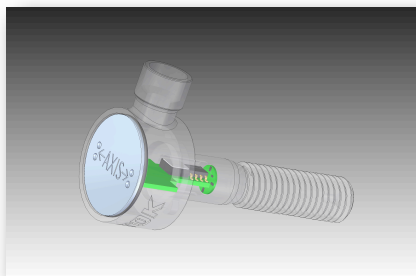


The accelerometer is complementary to the strain sensor and indexable at 45 degree increments in the sensor body so that it can still be positioned in a vertical plane when the sensor body is oriented to measure horizontal strain. Two different variants are available. The lid of the sensor indicates the primary accelerometer axis.

- ✓ Rapid Installation
- ✓ Simple Interfacing
- ✓ Long life
- ✓ Compact
- ✓ Rugged
- ✓ Easy disconnection

The secondary axis provides rail lateral measurements for bogie hunting indication.

The multi-sensor is very easy and quick to install into the rail and because it features amplified outputs, can be provided with a connector close to the sensor to assist maintenance operations



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Applications

Axle Counter - The Multi-Sensor can be used to produce improved axle-counters for modern railways where train detection at both high and low speeds is essential at very high standards of reliability. The Multi-sensor based axle counter will operate from zero speed, right up to 400km/h and will be able to deliver other valuable information through the signalling system to assist in traffic management and vehicle condition monitoring.

Rail Strain Monitor - By orienting the sensor body at 45 degrees from horizontal it can measure horizontal tension and compression in rail. Using Vortok's rail strain logger, regular values of rail strain and temperature can be transmitted wirelessly, to the user along with rail core temperature and axle counts.



Specification

Amplifier	x100G instrumentation amplifier
Temperature	Solid state precision sensor +/- 1 degree
Acceleration	2 axis MEMS +/- 70g (4000g overload capability)
	Aligned at 45 degree intervals
Strain	RWL 350 Ohm
Load Range	+/- 40 Tonnes
Sensor Body	Cast Stainless Steel
Sensor barrel	10mm
Weight	50g
Supply Voltage	5v dc
Temperature Range	-40 to +85 degrees
Installation	drill - ream - insert H7 interference fit less than 10 minutes per sensor

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