Tekscan™

High Speed TireScan™ System

Capture & Analyze Tire Behavior at High Speeds

Tekscan's High Speed TireScan™ system captures the impact of speed, motion, and inertial forces on a tire at speeds up to 265 km/h (165 mph). The robust array of pressure sensing elements scans as fast as 20 kHz as the tire rolls across it. The software displays the tire patch and pressure distribution while in motion.

Key Features & Benefits

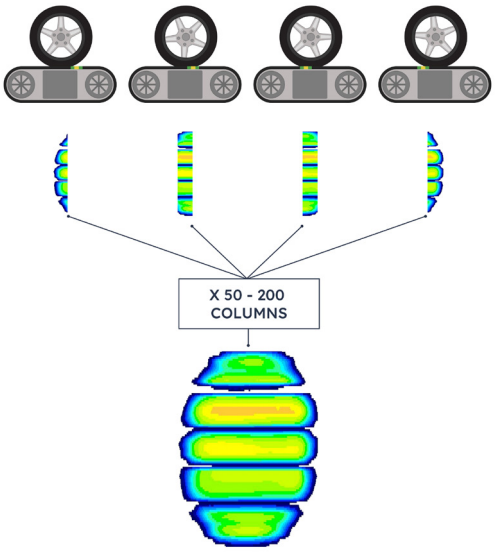
- Capture repeatable tire patch at velocities of up to 265 kmh
- Data collection procedure streamlines with test plan
- Lightweight wireless electrons & sensor can be retrofit to Flat Track or drum
- Wireless system control and data transfer
- Data can be analyzed in software or exported to ASCII
- Lightweight electronics are adhered to belt surface with mounting sleeve

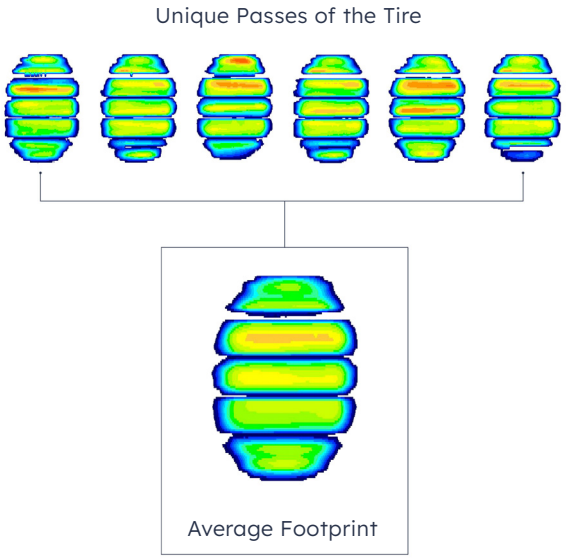
Applications

- Characterize tire contact patch behavior at high speeds
- Illustrate tire wear
- Improve patch representation in model formulas
- Evaluate rolling resistance
- Validate existing Finite Element Analysis (FEA) models
- Optimize tire selection for vehicle design

How High Speed TireScan™ Works

As shown in the flat-track test illustration below, High Speed TireScan™ system captures multiple linear arrays across the width of the tire as it rolls across a single-sensing column. Multiple passes of the tire are averaged together. Each pass of the tire is a unique frame in the recording.

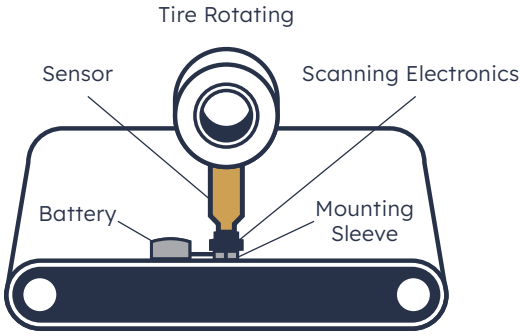




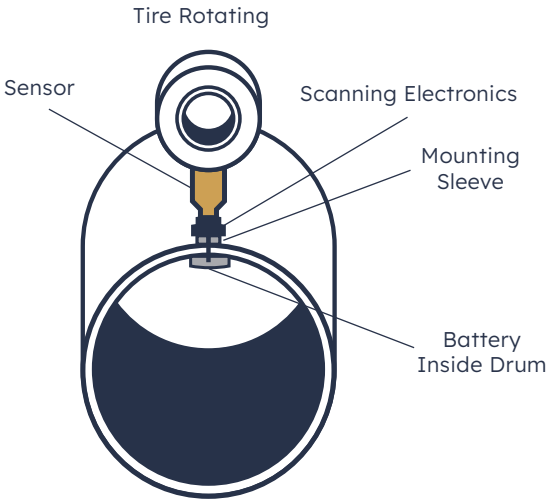
Testing Configurations

The system can measure tire patch on flat track and drum tests

Flat Track Data Collection



Rotary Drum Data Collection



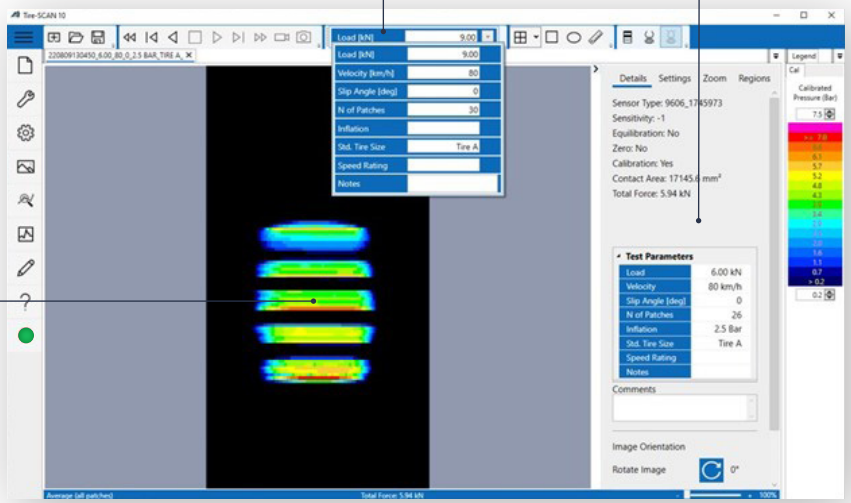
Software Analysis

High-Speed TireScan™ software is designed to streamline the data collection process for efficient analysis.

Testing Parameters toolbar for quick Input of test plan

Key parameters & customized fields embedded in data

Analysis tools efficiently merges multiple passes



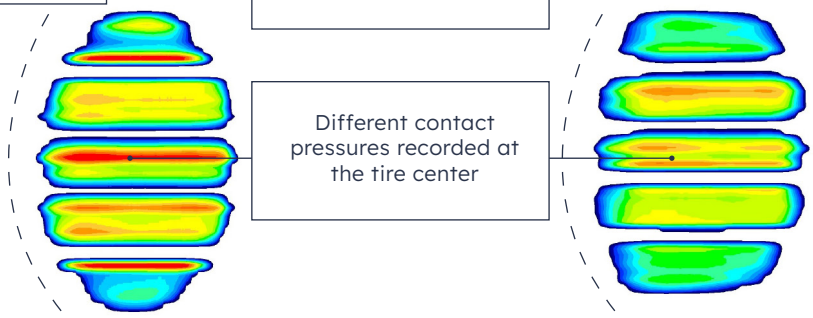
Key Insights from High Speed Analysis

High Speed TireScan™ captures key tire shape changes that can occur from centrifugal forces at different speeds. This example shows how one tire design was affected when tested at 48 km/h (30 mph), and again at 193 km/h (120 mph).

Change in tire shape

Shoulder length increased by ~20% on the faster tire

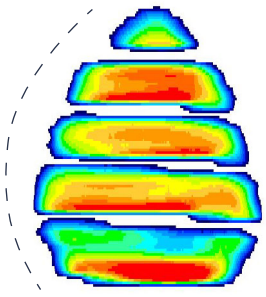
Different contact pressures recorded at the tire center



Tire Footprint Captured at 48 km/h (30 mph)

Same Tire Captured at 193 km/h (120 mph)

Cornering with Velocity



Same Tire in a 3.5° Slip Angle Test, Catured at 48 km/h (30 mph)

The robust High Speed TireScan™ sensor can withstand aggressive forces of slip angle tests without a protective cover.

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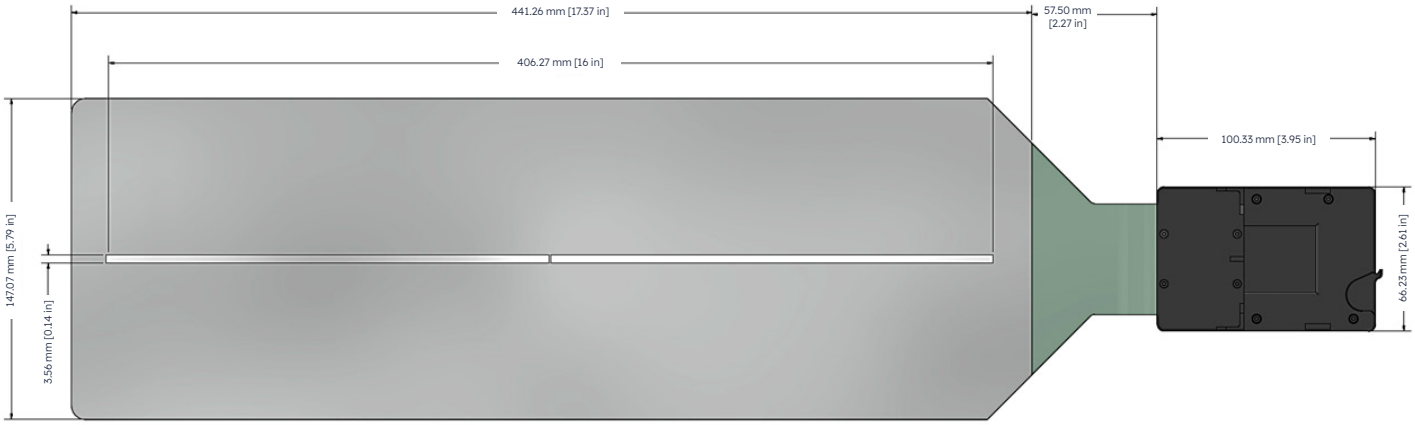
Tekscan Data Acquisition Electronics

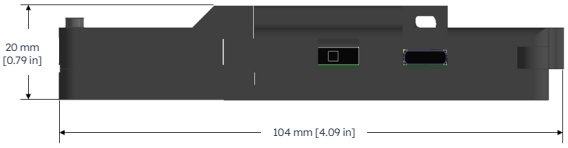
TekDAQ 210

- Can be configured and triggered wirelessly
- Save data to local memory/upload to PC wirelessly or via SD card
- Powered by external battery which can continuously collect data for 3 hours
- Lightweight electronics are secured to belt surface with mounting sleeve

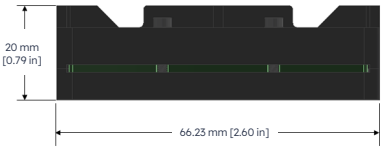
Full System View from Top



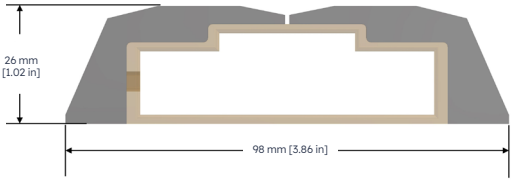
Front View



Side View



Mounting Sleeve



Data Acquisition Electronics Specifications	
Housing Material	ABS-Like Black Glossy Finish
Weight	**TekDAQ 210:** 90g (3.17 oz)
Power Source	**Input**: USB-C 5V 2 A **External Battery:** • Dimensions: 92.88 mm (3.65 inches) x 62.5 mm (2.46 inches) x 16.24 mm (0.64 inches) • Power: 3.7Vdc 5000 mAh • Weight: 133 grams (0.29 lbs)
Cable Length	**TekDAQ 210 to battery:** 31 cm (12.2 ft)
Communication to PC	Wireless - Wifi / USB-C

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Sensor Configurations

The thin sensor is durable and robust enough to handle the aggressive conditions of tire testing. For example, the sensor can:

- **survive thousands of tests**
- **withstand aggressive cornering & braking**
- **be mounted under sandpaper to maintain coefficient of friction**

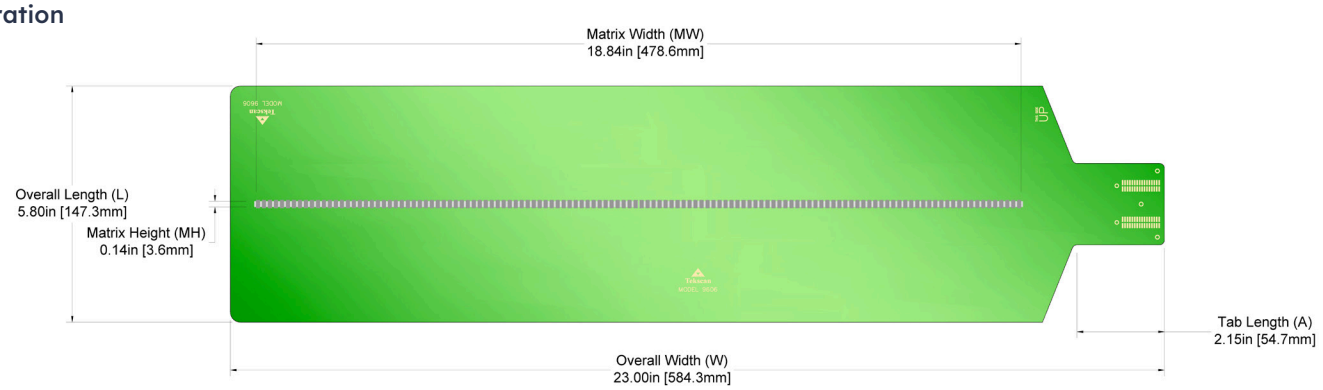
General Sensor Specifications	
Sensor Technology	Resistive
Accuracy	± 5%
Pressure Ranges	10-600 PSI
Thickness	0.2 mm (0.008 in.) Not compressible
Scanning Speed	10-20 kHz

9606

Sensor Configuration

This larger sensor is ideal for the following types of tires:

- **truck**
- **aircraft**
- **bus**
- **racing**



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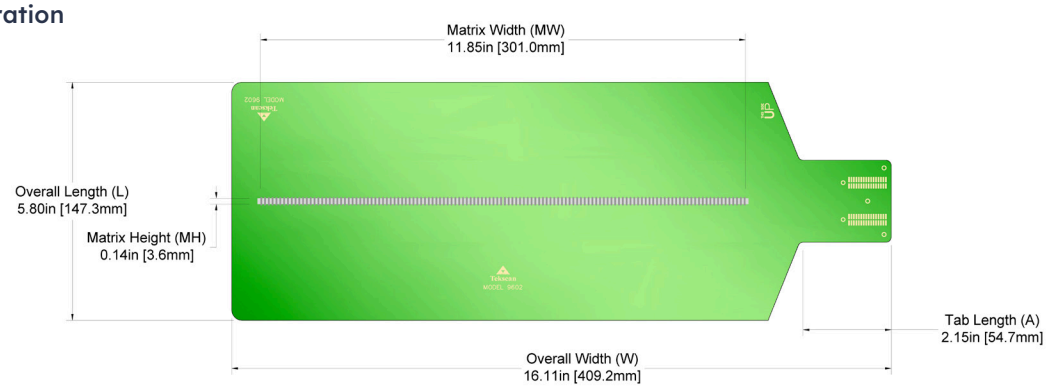
Sensor Configuration

This smaller sensor is idea for the following types of tires:

- **passenger vehicles**
- **motorcycles**
- **off-the-road vehicles**



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Scan for more information

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