

Titanium Wheel Force Transducer, 6-Axis

Model LW12.8-T

- 8,000 lb (35.0 kN) radial load capacity
- **As light as standard aluminum rim**
- Measures 3 forces and 3 moments
- Measures X & Z accelerations*
- Simple assembly & test set-up
- Available in slip ring or telemetry versions
- Adapts to 13" and larger wheels
- Strong & lightweight titanium material
- Weatherproof system



Description

The *Lightweight LW12.8-T Wheel Force Transducer (WFT) System* is capable of measuring all of the wheel forces and moments on passenger cars and SUVs. **When the LW12.8-T is fully assembled with a titanium hub adapter, 8x18" solid machined aluminum rim adapter, amplifier, slip ring, and titanium bolts, the system weight is 12.3 kg (27.1 lb) which is less than most standard aluminum rims.** It is important in durability testing and simulation to match the unsprung mass of the test vehicle to the unsprung mass of the production vehicle, so that relative damage from durability testing is an accurate representation of the production vehicle.

The *Lightweight Telemetry version Wheel Force Transducer, LW12.8-T-TEL*, when fully assembled with a titanium hub adapter, 8x18" solid machined rim adapter, and titanium bolts, weighs 12.7 kg (28.0 lb) which is also less than many standard aluminum rims.

Both slip ring and telemetry versions are completely weatherproof, making them ideal for on-road and off-road measurements in all conditions. They can also be used to monitor and control laboratory simulator tests.

The *CT2 Transducer Interface Box* performs real-time coordinate transformation and cross-talk compensation, and outputs analog, CAN, and Ethernet signals. An embedded web page allows the user to configure the WFT system.

Specifications

Maximum Force Capacity, [Fx, Fz] Radial	8,000 lb (35.0 kN)
[Fy] Lateral at Tire Patch	4,000 lb (18.0 kN)
Maximum Torque Capacity [Mx, My, Mz]	3,700 lb-ft (5,000 N-m)
Accelerometer range	+ 55g
Sensor	4 arm strain gage bridges
Transducer Weight	5.8 lb (2.7 kg)
Assembly Weight (8x18" rim)	27.1 lb (12.3 kg)
Nonlinearity	<0.5% of full scale output
Hysteresis	<0.5% of full scale output
Cross Axis Sensitivity after correction	<0.5% of full scale output
Temperature Range, Operating	-40°F to 257°F (-40°C to 125°C)
Radial Fatigue Rating [Fx, Fz]	10 ⁸ cycles at 35 kN
Overturning Moment Fatigue Rating [Mx, Mz]	10 ⁵ cycles at 4.5 kN-m

* Internal accelerometers only available in the slip ring version

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10/21/14

Rev. B



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Titanium Wheel Force Transducer, 6-Axis

CT2 Transducer Interface Box

- Performs real-time coordinate transformation and cross-talk compensation
- Easy to use zero, shunt calibration, and bridge power off functions
- Simultaneous analog, CAN, & ethernet signal outputs
- Embedded web page enables user to:
 - Change set-up options
 - Move WFT measurement origin
 - View transducer static values
 - Create .dbc file



Slip Ring Version

- Amplifier contains internal X & Z accelerometers
- High resolution encoder for position & speed measurement
- Internal smart chip contains all calibration, zero, & shunt values
- Rotating Amplifier provides signal conditioning & amplification to the transducer and digitizes transducer, encoder, & accelerometer signals
- Quick & simple assembly & test set-up
- Assembled system weight of 8x18" system is 12.3 kg (27.1 lb)

Telemetry Version

- Rotating telemetry electronics are embedded into the transducer
- Telemetry stator receives and decodes the telemetry signal from the transducer
- Provides high resolution speed & position signals
- Stator mounts inboard of the transducer
- Assembled system weight of 8x18" system is 12.7 kg (28.0 lb)

LW12.8 slip ring version



LW12.8-TEL telemetry version



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