

# Titanium Wheel Force Transducer, 6-Axis

## Model LW12.8-20

- 4,500 lbf (20 kN) radial load capacity
- Measures 3 forces and 3 moments
- Measures X and Z accelerations<sup>1</sup>
- Simple assembly and test set-up
- Available in slip ring or telemetry versions
- Adapts to 12 in and larger wheels
- Strong and lightweight titanium material
- Weatherproof system



## Description

The lightweight *LW12.8-20 Wheel Force Transducer (WFT)* is capable of measuring all of the wheel forces and moments on medium and small cars. When the *LW12.8-20* is fully assembled, with all adapters, the system weight is similar to 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.

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 crosstalk compensation, and outputs analog, CAN, and ethernet signals. An embedded webpage allows the user to configure the *WFT* system.

## Specifications

Maximum Force Capacity [Fx, Fz] Radial	4,500 lbf (20 kN)
Maximum Force Capacity [Fy] Lateral at Tire Patch	3,400 lbf (15.1 kN)
Maximum Torque Capacity [Mx, My, Mz]	3,000 lbf · ft (4.0 kN · m)
Accelerometer Range	± 55 g
Sensor	4 arm strain gauge bridges
Transducer Weight	6.3 lb (2.8 kg)
Assembly Weight (6 in x 16 in rim) with Slip Ring	24.7 lb (11.2 kg)
Assembly Weight (6 in x 16 in rim) with Telemetry	25.9 lb (11.7 kg)
Nonlinearity [Fx, Fz, My]	≤ 0.25 % of full scale output
Nonlinearity [Fy]	≤ 0.6 % of full scale output
Nonlinearity [Mx, Mz]	≤ 0.75 % of full scale output
Hysteresis [Fx, Fz, Fy, My]	< 0.5 % of full scale output
Hysteresis [Mx, Mz]	< 1.00 % of full scale output
Crosstalk after Correction	< 0.5 % of full scale output
Temperature Range, Operating	-40 °F to 257 °F (-40 °C to 125 °C)

<sup>1</sup> Internal accelerometers only available in the slip ring version.

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# Titanium Wheel Force Transducer, 6-Axis

## CT2 Transducer Interface Box

- Performs real-time coordinate transformation and crosstalk compensation
- Easy to use Zero, Shunt Calibration, and Bridge Power Off functions
- Simultaneous analog, CAN, and ethernet signal outputs
- Embedded webpage enables user to:
  - Change set-up options
  - Move WFT measurement origin
  - View Transducer static values
  - Create .dbc file



## Slip Ring Package

- Amplifier contains internal X and Z accelerometers
- High resolution encoder for position and speed measurement
- Internal smart chip contains all calibration, zero, and shunt values
- Rotating amplifier provides signal conditioning and amplification to the transducer and digitizes transducer, encoder, and accelerometer signals

## Telemetry Package

- Rotating telemetry electronics are embedded into the transducer
- Telemetry stator receives and decodes the telemetry signal from the transducer
- Provides high resolution speed and position signals
- Stator mounts inboard of the transducer

LW12.8-20 Slip Ring Version



LW12.8-20-TEL Telemetry Version



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