

Titanium Wheel Force Transducer, 6-Axis

Model LW12.8-30

- 6,750 lbf (30 kN) radial load capacity
- Measures 3 forces and 3 moments
- Measures X and Z accelerations¹
- 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 *LW12.8-30 Wheel Force Transducer (WFT)* is capable of measuring all of the wheel forces and moments on medium and small cars. When the *LW12.8-30* 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.

When using an outboard slip ring, the amplifier package easily mounts onto the transducer. It amplifies and digitizes the transducer signals before they pass through the slip ring. Michigan Scientific Slip Ring Assemblies are known worldwide for their signal quality and robust design.

The *CT3 User Interface Box* performs real-time coordinate transformation and crosstalk correction, and provides CAN FD, CAN2.0, and Ethernet signal outputs. EtherCAT and analog signal outputs are also available with optional modules. A front display indicates important information and prompts the user with instructions.

Specifications

Maximum Force Capacity [Fx, Fz] Radial	6,750 lbf (30 kN)
Maximum Force Capacity [Fy] Lateral at Tire Patch	3,350 lbf (15 kN)
Maximum Torque Capacity [Mx, My, Mz]	3,000 lbf · ft (4 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)

¹ Internal accelerometers only available in the slip ring version.

8500 Ance Road
Charlevoix, MI 49720
Tel: 231-547-5511
Fax: 231-547-7070
03-11-24
Rev. A

MICHIGAN SCIENTIFIC
corporation

<http://www.michsci.com>
Email: mscinfo@michsci.com

321 East Huron Street
Milford, MI 48381
Tel: 248-685-3939
Fax: 248-685-5406

Titanium Wheel Force Transducer, 6-Axis

CT3 User Interface Box

- Performs real-time coordinate transformation and crosstalk correction, offset correction, and polarity correction
- Simple Zero, Shunt Calibration Check, and Zero Angle set-up functions
- CAN FD, CAN 2.0, analog, Ethernet, and EtherCAT signal outputs available
- Front display which prompts the user with instructions
- Embedded webpage enables user to:
 - Change set-up options
 - Move WFT measurement origin
 - View transducer static values
 - Correct file type creation



Amplifier & Slip Ring Package

- Internal ± 100 g X, Y, and Z accelerometers
- High resolution optical encoder for position and speed measurement
- Removable smart chip contains all calibration, zero, and shunt values
- Provides signal conditioning, amplification, and digitization to the transducer strain gauge signals



Telemetry Package

- Non-contact signal transmission
- High resolution magnetic encoder for position and speed measurement
- Telemetry Package can be mounted inboard for passenger cars, SUVs, and light trucks
- Telemetry Stator gets mounted in proximity to Rotating Telemetry Ring and contains the Telemetry Receiver, Encoder pick-ups, and Induction primary coil
- An Induction Module contains the WFT smart chip and provides Induction Power



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