

Multi-Axis Wheel Force Transducer



PCB Piezotronics, Inc. is Uniquely positioned in the sensor industry to satisfy a wide range of research, test, measurement, monitoring and control applications.

PCB Piezotronics, Inc. Specializes in the development, application and support of piezoelectric & strain gauge force sensors, load cells and torque sensors. Strain gage technology is utilized for Load cells and Torque sensors, while Piezoelectric quartz sensing technology forms the sensing principle for Strain and Dynamic force sensors. PCB provides a wide range of sensors to address the needs of those involved with the measurement of Load, Torque, Strain and Dynamic Force.

Structural Solutions Private Limited exclusively represents PCB Piezotronics, Inc., U.S.A in India. Structural Solutions Private Limited is a professional engineering company engaged in offering high end technology intensive products.

PCB® Series 5400 Wheel Force Transducers are designed as rugged one-piece sensors that mount between the vehicle hub and the wheel rim, delivering highly accurate road load data measurement and superior performance in a durable waterresistant package. Possessing superior temperature compensation properties and integral overload stops, these sensors provide a high level of confidence in dataacquired during aggressive road events, including heavy braking tests.

Highlights

- One-piece sensor
- Up to 8x faster and easier to mount, setup, align, and calibrate compared to other transducers in the market.
- Maximum operating temperature of +302 °F (+150 °C) with superior temperature compensation of 0.003% FS/°F (0.005% FS/°C)
- Exclusive application of fastener technology to achieve robust clamp load and assembly
- Cost-effective universal hub adapter option for alternating between European, USA, and military wheels
- Integral stops for 150% FS overload, simultaneously in all axes
- Superior sealing for water and dust ingress protection



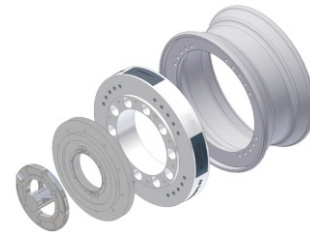
Applications



- Road Load Data Acquisition (RLDA)
- Calibrate and adjust wheel test machines
- Drive-file development for full vehicle and module test systems up to 6 DOF
- Development of:
 1. Stability control
 2. Brake systems
 3. Suspension
 4. Tires

Wheel Force Transducer	
Series 5400 Common Specifications	
Nonlinearity	± 0.5%
Non-repeatability	± 0.25%
Hysteresis	± 0.5%
Crosstalk	± 1% typical ± 3% full scale, maximum
Excitation	± 15 VDC
Output (all axes)	5 VDC (± 0.2%, nominal)
Temperature Range	-13 to +302 °F -25 to +150 °C
Temperature Effect on Output (Maximum)	0.003% FS/°F 0.005% FS/°C
Angle Encoder	Sine/cosine resolver
Coordinates	SAE Standard
Bridge Resistance	Fx, Fy, Fz & My 2800 Ohm, Mx & Mz 1400 Ohm, nominal
Isolation Resistance	2000 MOhm
Overload Capacity (all axes)	150% FS overload capacity, simultaneously
Natural Frequency	< 300 Hz
Shock Tolerance	50 G's
Environmental	Dust-tight, water resistant, short-term submersible, corrosion resistant

Model Number	Unit	5410-02A Passenger Car AL	5410-03A Light Truck AL	5410-04A Light Truck XL	5410-05A Medium Truck XL	5410-06A Heavy Truck USA	5410-07A Heavy Truck EURO	5410-08A Heavy Truck SSU	5410-09A Heavy Vehicle SS
Fx	lb N	6700 30k	9000 40k	9900 44k	13.5k 60k	31.5k 140k	31.5k 140k	31.5k 140k	45k 200k
Fz	lb N	6700 30k	9000 40k	9900 44k	13.5k 60k	31.5k 140k	31.5k 140k	31.5k 140k	45k 200k
Fy	lb N	3375 15k	4500 20k	4900 22k	6700 30k	15.4k 70k	15.4k 70k	15.4k 70k	22.5k 100k
Mx	in-lb N-m	36k 4000	45k 5000	75k 8500	88k 10k	265k 30k	265k 30k	265k 30k	398k 45k
Mz	in-lb N-m	36k 4000	45k 5000	75k 8500	88k 10k	265k 30k	265k 30k	265k 30k	398k 45k
My	in-lb N-m	50k 5600	60k 6500	75k 8500	88k 10k	265k 30k	265k 30k	265k 30k	398k 45k

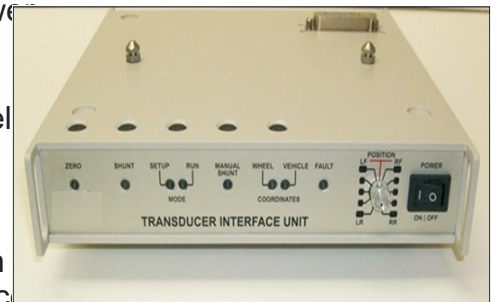


Recommended signal conditioner for Wheel Force Transducers

• PCB® Model 8175-01A Transducer Interface Unit (TIU) consists of power supply & signal conditioning electronics required to convert the six force and moment signals from rotating to stationary coordinates referenced to the wheel axes. Each TIU provides power and signal conditioning for 1 Wheel Force Transducer.

• TIU provides signal conditioning required to convert wheel force transducer outputs into DC voltages proportional to the instantaneous forces and moments measured.

• TIU Remote Module permits communications between multiple stacked TIUs when more than one Wheel Force Transducer is used.



➡ For further product & application details please contact:

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