

Vehicle Sensors

77016 Series

MULTI-AXIS WHEEL FORCE SENSOR

The multi-axis wheel force sensor is used to measure all dynamic forces and moments on the wheel with reference to the vehicle coordinate system. The 77016 series consists of three primary components: The wheel sensor, which measures all six forces and moments; the rotating electronics package which measures angular position and converts the force and torque vectors into a non-rotating frame of reference; and the stationary electronics package which “unpacks” the data from the sensor into individual analog signals.

FEATURES

- High level analog outputs for each force and moment.
- All 6 forces and moments are measured with reference to the stationary vehicle coordinate system in real time. No post processing of the data required.
- High sample rate.
- Digital transmission of signal data. No signal degradation, no slip rings or brush blocks to maintain.
- All forces and moments are overload protected to 150% of fullscale.
- Direct mating of sensor to the customer rim or wheel.
- Custom configurations are available.

SPECIFICATIONS

Full scale capacities available for passenger vehicles and light trucks. Typical ranges include:.....

F_x & $F_z = \pm 25\text{kN} / \pm 36\text{kN}$

$F_y = \pm 20\text{kN} / \pm 28\text{kN}$

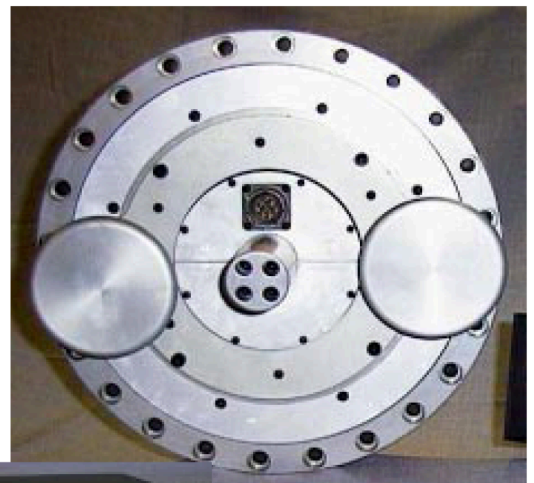
M_x & $M_z = \pm 4.5\text{kN-m} / \pm 8\text{kN-m}$

$M_y = \pm 7.5\text{kN-m} / \pm 13\text{kN-m}$

Output at fullscale loads $\pm 5\text{Vdc}$
Hysteresis 0.5% of full scale
Non-Linearity 0.5% of full scale
Maximum speed 2500RPM
Encoder 1500 pulse per revolution
Tach Generator $\pm 5\text{Vdc}$
Bridge output filter frequency 1000Hz
Sample Rate 10240Hz/channel
A/D convertor resolution 14 bit
Filters, 2-pole Butterworth 1000Hz
Useable temperature (sensor only) -65° F to $+250^\circ\text{ F}$
Cross-talk $<2\%$ full scale
Wheel sizes 15"-17"



Wheel Sensor w/ Tire



System Components