During the development of motor vehicles, 6-component wheel force transducers (WFT) are used, to determine and record the forces and torques at the wheels during test drives – each 3 forces (Fx, Fy, Fz) and 3 torques (Mx, My, Mz).

The measurement results generate the fundament for simulation calculation and input parameter for test rig drives.

CAEMAX presents with the WFT-Cx for the first time a generation of completely new wheel force transducers, that are not only completely waterproof and further more provides a higher thermal and mechanical load to perform even extreme off road tests (SUV) at any weather conditions.

The completely revised mechanical design and the new integrated compact amplifier allow precisions that were previously not feasible.

All signal processing is designed for minimum disruption and accurate recording of the measured data. This has, among other things, realized by extremely short cable runs, an optimized arrangement of the DMS and the digitization directly at the measuring point. The fully differential amplifier inputs of all amplifiers, including the bridge excitation ensures a maximum of noise suppression. A total of 16 in the wheel distributed thermal sensors provide also the optimal temperature compensation.

Together with the high incremental angular resolution of 8,192 discrete measurement points on the perimeter guarantees the best possible accuracy.
The intelligent amplifiers also take over the self-diagnostic of all measurement points and automatically detect, for example, a broken wire to the sensor.

The new Wheel Force Transducers WFT-CX can be used from small cars (minimum wheel size: 14 inches) up to large sedans, but also especially on SUVs and light trucks (maximum hub diameter: 5.5 inches). In addition to the waterproofed design, the shock resistance up to 50 g is the decisive factor allowing for the first time testing with speed bumps. The cooling technique optimized structure, in conjunction with the good thermal conductivity of the aluminum gauging member, avoids an excessive heat even during hard braking. The entire signal processing is designed for a temperature range of -40°C to +105°C. All this results in a much wider range of applications than before, which now also includes braking-, comfort- and tire test with the same Wheel Force Transducer configuration.

Due to the mechanically induced nonlinearities, accurate calibration for each wheel on a special designed test rig is essential. The in-house at CAEMAX calibration test rig has been extended to be able to offer an optimal calibration of the new Wheel Force Transducer category.

Each Wheel Force Transducer gets processed with the determined values his electronic "profile" with all for the accurate online calculation necessary calibration and correction data.

RemusLAB offers beside the comfortable setting of the WFT channels also the possibility to display the measurement data online in physical units and to store them with other measurement data synchronously.