Dˣ-BrakeTemp

Measuring Temperatures on the Brake Disc

The Dˣ-BrakeTemp is a high-precision tool for measuring temperatures on the wheels of road vehicles. All measurement signals, such as the temperatures at the brake disc, are **DIGITIZED DIRECTLY AT THE WHEELS** and transmitted telemetrically via vehicle mirror antennas to the receiver unit inside the vehicle. With its robust design, the system is also well-suited for harsh environments and road driving.

Dˣ-BrakeTemp Details

Accuracy	±1 K
Temperature range	-40 °C to 60 °C
Sensor inputs	3 or 6 thermocouples type J or K per wheel
Sampling rate	Up to 200Hz per channel with 3 channels per wheel
Measurement range	Typ K: to 1300 °C Typ J: to 1200 °C
Resolution	16 bit
Dimensions	Height: 50 mm Diameter: 100 mm
Mounting on the wheel	Collets on the wheel bolts
Power Supply	Rechargeable battery (up to 80 h)

Dˣ-Speed

Wireless Wheel Speed Acquisition without reference point

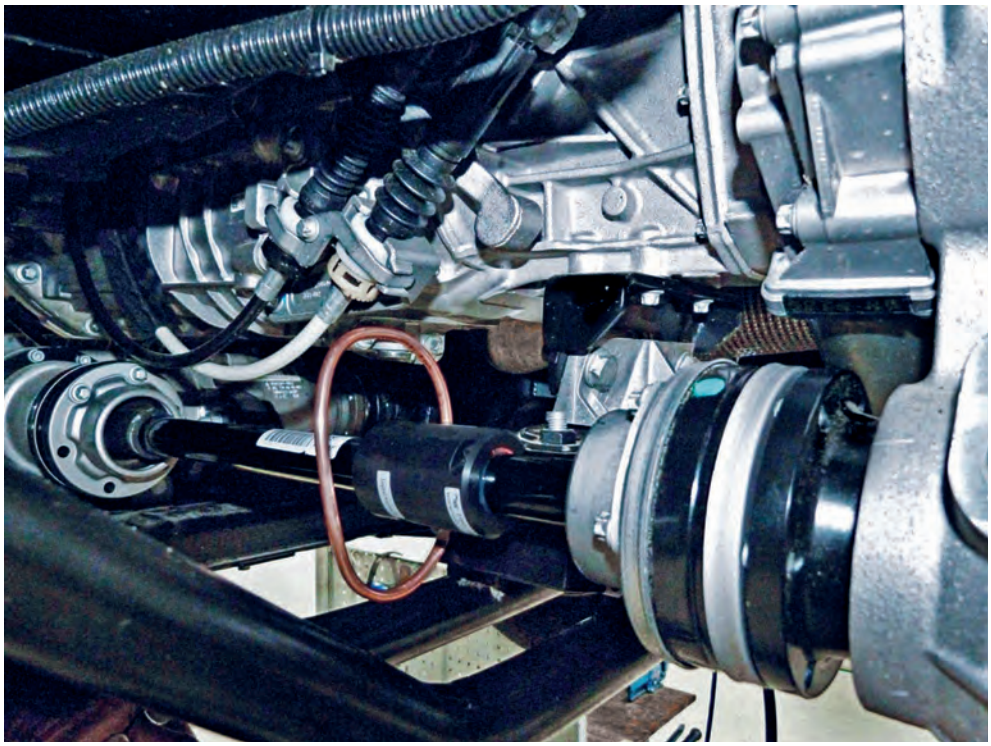
The Dˣ-Speed system conveniently acquires the wheel speed directly on vehicle wheels. The system does not require a stator or additional reference point and delivers measurement results – both on the test bench and outdoors – even in **HARSH CONDITIONS** such as mud, snow and dust. The accouracy ist typically better than 0.5%. Impacts against the axle also will not affect the results. This means that even driving on rough roads is possible!

Dˣ-Speed Details

Maximum RPM	±7200 1/min
Accuracy	< 0.5 % at 10 °C to 50 °C
Temperature range	-40 °C to 60 °C
Weight	400 g
Dimensions	Height: 36 mm Diameter: 140 mm
Mounting on the wheel	Collets on the wheel bolts
Power Supply	Rechargeable battery (up to 80 h)

Dˣ-Power

Mechanical power measurements



Dˣ-Power in operation with ring stator for inductive supply

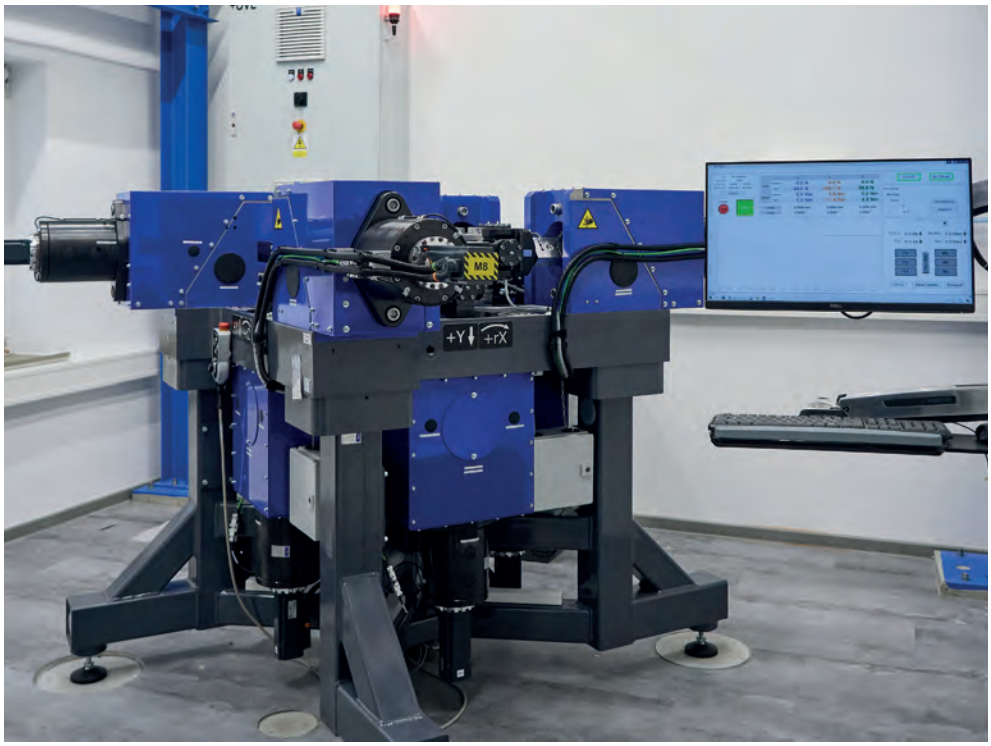
The Dˣ-Power system allows making mechanical power measurements as easy as child's play. The transmitter unit (Dˣ-SCT) is **MOUNTED DIRECTLY ON THE VEHICLE AXLE** by means of a half-shell housing. There it acquires the torque (via strain gauges) as well as the speed via an integrated rpm sensor. The measured data is transmitted telemetrically to the Dˣ-receiver unit (RCI) inside the vehicle. This receiver unit calculates the synchronous values of the two signals in real time according to the formula, power = torque x rpm, and displays all values as physical variables.

Dˣ-Power Details

Maximum RPM	±7200 1/min
Accuracy	< 0.5 % at 10 °C to 50 °C
Temperature range	-40 °C to 85 °C (105 °C)
Torque measurement	Strain gauge
Power Supply	Rechargeable battery or inductive

Services for Telemetry & Sensors

Automotive Sensor Services



imc offers comprehensive services around its telemetry and sensor systems. We support you with the set-up of measurements, help with short processing times for calibrations and provide practical training. In addition, we offer our customers our in-depth know-how even in challenging applications.

You need a wheel force transducer, but only for a short period of time? Or do you simply want to get to know the WFT-C^{X} and experience its capabilities in practice? imc can provide you a **RENTAL OPPORTUNITY** for the appropriate device. In addition, our specialists will be happy to assist you if required.

Calibration

imc calibrates each WFT-C^{x} on its own specifically developed test bench. Each force and torque is measured separately. Interactions (crosstalk) between the measured variables can thus be detected and compensated for. This results in an unprecedented precision of the measured values (crosstalk, non-linearity, hysteresis: all below 0.2 %).

WFT-C^{X}

Wheel Force Transducer

saves time: 1 h set-up time for four wheels no re-calibration necessary after assembly

Angular resolution 0.072°

operates in all weathers and performs all off-road testing

Precise over a wide temperature range, even at high temperatures as with brake testing

Crosstalk, hysteresis, non-linearity < 0.2 %

Whether vehicle dynamic tests, brake tests or determination of load spectra - the 6-component **WHEEL FORCE TRANSDUCER** WFT-C^{x} acquires all forces and torques acting on the vehicle with high precision. The robust housing reliably protects against dirt, water and snow and allows applications in any weather.

APPLICATION

Ideal for road testing and test stands

precise • robust • quick setup

one sensor for most vehicles and test benches

protection rating: IP67
100 g shock resistance

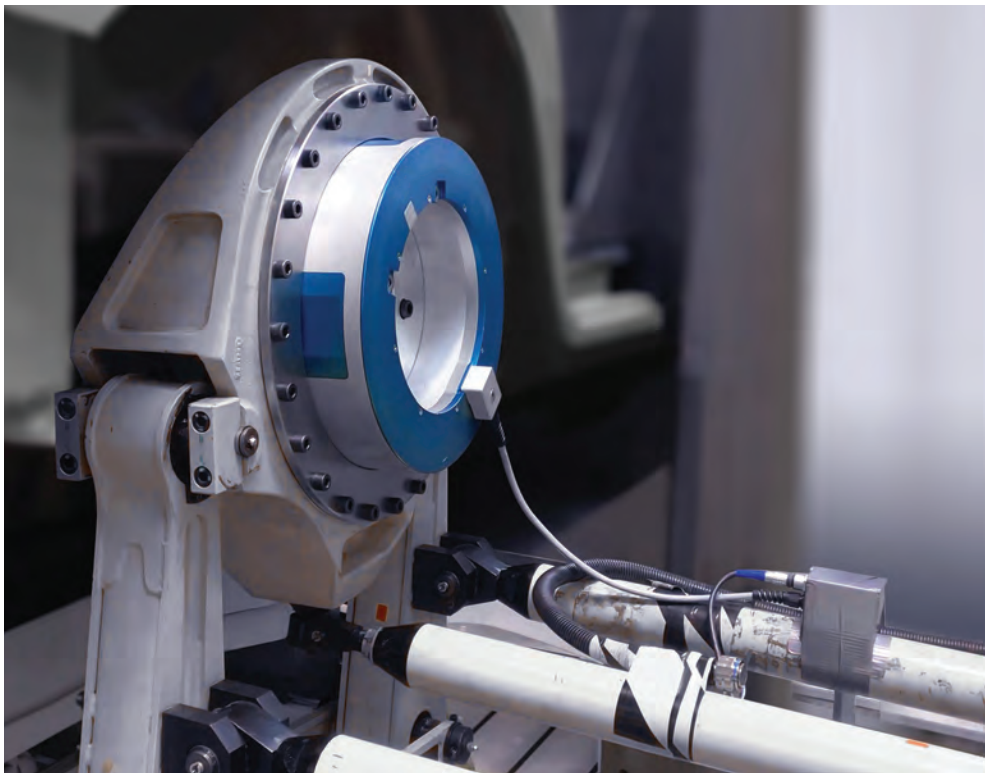
Synchronous acquisition of all wheel sensors

With the flexible adapter system, the WFT-C^{x} can be used with minimal effort on a variety of vehicle types - **FROM COMPACT CARS TO SUVS** and light trucks - even on the test bench. A quick system setup and convenient software functions, such as zero calibration, allow the system to be test-ready within a very short time

WFT-C^{X}

Wheel Force Transducer

Our Wheel Force Transducers are built to withstand challenging environmental conditions. With a wide temperature range of -40°C to +105°C and a waterproof design, they excel in adverse weather conditions, including ice, snow, and meltwater. The robust construction and impact resistance of up to 100 g make them ideal for testing on rough terrains.



A WFT for component lifetime **TESTING ON THE TEST STAND** must be durable. Especially for these applications, imc offers WFT sensors made of titanium or steel. If a rotating measurement is carried out on a chassis dyno or on a road test, the wired signal transmission to the control unit is simply replaced by a stator. Since all of the WFT sensor housing types have the same dimensions, existing adapters can be used for all types.

APPLICATION

Ideal for road testing and test stands

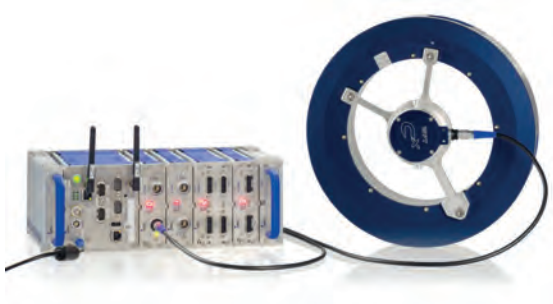
precise • robust • quick setup

WFT-C^{x} wheel force transducer

Parameter	Value			
		WFT-C^{x}		WFT-C^{xs}
Material	Aluminium	Titanium	Steel PH17-4	Aluminium
Measurement principle	temperature compensated strain gauge application			
Measurement range: forces	Fx, Fz = ± 45 kN Fy = ± 25 kN	Fx, Fz = ± 60 kN Fy = ± 30 kN	Fx, Fz = ± 60 kN Fy = ± 30 kN	Fx, Fz = ± 25 kN Fy = ± 20 kN
Measurement range: torques	Mx, My, Mz = ± 8,75 kNm	Mx, My, Mz = ± 10 kNm	Mx, My, Mz = ± 10 kNm	Mx, My, Mz = ± 6 kNm
Protection rating	IP66, IP67			
Sampling rate per channel	up to 5 kHz			
Angular resolution with 5000 increments	0,072 °			
Linearity	< 0.2 % FS			
Hysteresis	< 0.2 % FS			
Crosstalk	< 0.2 % FS			
Low pass filter	6-pol Butterworth filter, cut-off frequency 1200 Hz			
Weight without adapter (ca.)	7.5 kg	10.5 kg	17.5 kg	5.9 kg
Rim diameter	min. 14" (356 mm), 13" upon request			
Hub diameter with adapter	max. 5.5"			
Operating temperature sensor	- 40 °C to + 150 °C			
Operating temperature electronics	- 40 °C to + 105 °C			
Mechanical load	Stress analysis according to BMW QV 36026			
Shock proof	max. 100 g			
Rotational speed	3000 rpm			
Safety	mechanical breakage protection			
Dimensions:				
- Outer diameter (w/o adapter)	317.5 mm			
- Inner diameter (w/o adapter)	203 mm			
- Height	76 mm			61.5 mm
Temperature drift	0.005 % / °C			
Mounting bolts	32 Pieces			
Adaption	customer-specific adaption for any vehicle possible			

Synchronized Data Acquisition with imc CRONOS*flex*

Facilitate seamless data aquisition from two WFT-C^{x} wheel force transducers through the WFT-2 Module. It is simply clicked on an imc CRONOS*flex* system and is automatically synchronized with all other connected sensors, field buses, GPS systems, etc. Configuration, calibration and zeroing is effortless with the imc STUDIO software. A CRONOS*flex* supports up to three WFT-2 modules, accommodating a total of six wheel force transducers. This modular setup provides a compact, comprehensive solution for diverse vehicle applications.



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imc Test & Measurement

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The portfolio of sensors, data acquisition systems, and software - along with fully integrated solutions - enables users to validate prototypes, optimize products, monitor processes, and extract valuable insights from measurement data in both mobile and stationary applications.

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