caemax
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D^x-Power

integrated • flexible • interference-free

Wireless mechanical power measurements on shafts

imc imc-italy

è una divisione di
Instrumentation Devices Srl
tel.+39 031 525 391
info@imc-italy.com - www.imc-italy.com

Instrumentation Devices

Instrumentation Devices Srl
Via Acquanera 29 - 22100 COMO (Italy)
tel.+39 031 525 391
info@instrumentation.it - www.instrumentation.it

RPM acquisition

Mechanical power measurements

messtec + sensor masters award

At the messtec + sensor masters 2018 trade show, the D^x-Power system took first place in the sensor category and won the coveted messtec + sensor masters award. It was recognized as an innovative system for non-contact power measurements on vehicles that does not require any additional mechanical connection for rotation angle detection.

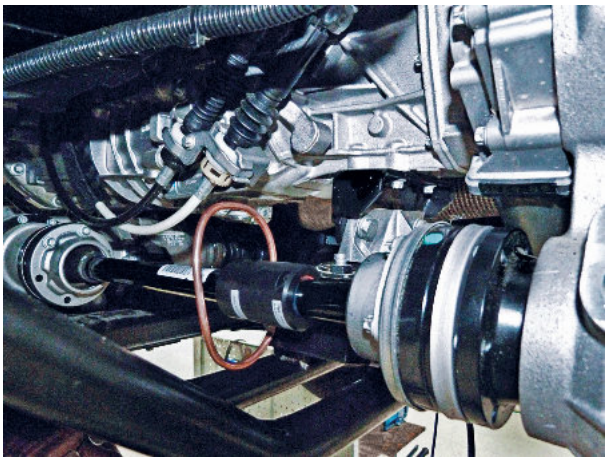
Mechanical power measurements made easy

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-Receiver Unit (RCI)

Synchronous measurement of four axles

With four Dˣ-Power transmitters, the Dˣ-telemetry system synchronously captures the measured values from all four drive wheels or cardan shafts! The data appear in real time and can be collected and processed via CAN, Ethernet or analog.


Dˣ in operation with ring stator for inductive supply

Original shaft is retained

CAEMAX equips the system with half-shell housings which are individually attached to the shafts. The housings are also available in a waterproof version and contain all the necessary elements: sensors, the Dˣ transmitter unit and a secondary winding for the inductive power supply. The design preserves the original shaft and does not require shortening, adjustment or replacement. This results in more reliable results.

Interaction with other sensors

The Dx-Power system can be supplemented with additional sensors as required. The underlying Dˣ-telemetry system is specially designed to synchronously acquire values from different sensors. Thus, new systems can always be cascaded in, just as required.

Easy to integrate

Due to the modular design of the CAEMAX products, the Dˣ-Power sensor can be easily integrated into an existing Dˣ-System. If, for example, a torque measurement system with protective housing, inductive power supply and Dˣ-telemetry receiver unit is already available, CAEMAX can easily add the "rpm" speed module. Its data are then transmitted synchronously to the torque sensor via the existing system and displayed in real time.

Short set-up times

CAEMAX offers different housings for the sensors: Half-shell housings or, if required, completely individual solutions. Due to the technology used, set-up times are very short.

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Specifications

Dˣ-Power	
Maximum RPM	±7200 1/min
Accuracy	< 0,5 % at 0 °C to 50 °C
Signal frequency	16 Hz (others on request)
Temperature range	-20 °C to +65 °C
Torque measurement	Strain gauge

Dˣ-Telemetry Transmitter Unit (SCT)	
Transmission frequency	Dˣ: 13 frequencies in the 868-MHz-Band Dˣ-HT: 17 frequencies in the 2.4-GHz-Band
Sampling rate	Max. 4.6/5.0 kHz per channel (868-MHz-/2.4-GHz-Band)
Resolution	16 bit
Synchronized measurements	Up to 4 Dx-Power transmitters (4 shafts)
Ingress protection rating	IP 68
Power voltage	Battery
Transmission power	Max. 10 dBm

Dˣ-Telemetry Receiver Unit (RCI)	
Antenna inputs	2 independent receivers in diversity mode
Display	2.83 inch color display, 320 x 240 px
Auto-zero	Remote controllable
CAN interface	CAN 2.0b acc. to ISO 11898, max. 1 MBaud
Analog output	6 BNC sockets
Configuration	Up to 4 Dˣ-Power
Power voltage	9-36 Volt DC
Temperature range	-20 °C to +65 °C
Dimensions	Approx. 170 x 130 x 53 mm (without antenna)
Weight	Approx. 0.8 kg

CAEMAX Technologie GmbH

Bunzlauer Platz 1
D-80992 Munich Germany
Tel.: +49 - (0)89 - 613 049 - 0
Fax: +49 - (0)89 - 613 049 - 57
E-Mail: info@caemax.de
www.caemax.de

imc Test & Measurement GmbH

Voltastraße 5
D-13355 Berlin Germany
Tel.: +49 (0)30 - 46 70 90-0
Fax: +49 (0)30 - 463 15 76
hotline@imc-tm.de
www.imc-tm.de

imc imc-italy

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