

Tech Focus

Volume 3, Issue 1

Focusing on the advancement of dynamic measurement technology

RV-4 Wheel Vector Sensor offers enhanced accuracy, easier set-up

Provides simultaneous measurement of all wheel positions and orientations in 5 axes

The new CORRSYS-DATRON RV-4 Wheel Vector Transducer measures dynamic wheel position with respect to the vehicle body. Building on the proven success of the CORRSYS-DATRON RV-3 Wheel Vector Sensor, the RV-4 Sensor offers enhanced performance and increased functionality, making it an outstanding new option for the measurement of wheel position and movement.

Among the most significant improvements to the RV-4 Sensor is a major increase in measurement accuracy. Using a new 16-bit transducer, the system now provides accuracy to 0.1°, as compared to the still respectable 0.33° accuracy provided by the RV-3's potentiometer. The RV-4 also offers a substantially improved measurement range – 60° of movement, as compared to the 45° range offered by the original RV-3 System.

Weight reduction has also been a primary consideration in the development of the RV-4 Sensor. The RV-4 weighs just 3,350 g, as compared to 5,000 g for the RV-3. The sensor mounting system has also been redesigned, providing greater mechanical reliability and lower weight.

The new mounting system is also easier to set-up. In comparison tests, the complete RV-4 Sensor System can now be ready for testing in approximately half the time required to configure the RV-3. The RV-4 hood-mounting system is also lower in profile to reduce obstruction of the driver's field of view.

Further improvements include a fifth angular transducer that does not incorporate a positive stop mechanism. This eliminates the potential for damage in the event that the sensor is mounted improperly and the vertical range of travel is exceeded.

Sensor set-up is also simplified by simple, software-based electronic zero-point setting, which requires no mechanical adjustment. An integrated absolute value transducer allows the user to align the sensor system visually, with a higher tolerance for imprecision in the vertical mounting axis.

Contact your CORRSYS-DATRON representative today to arrange a demonstration of the new RV-4 Wheel Vector Sensor



RV-4 Measurement Applications

- Weight shift when braking
- Wheel travel when braking
- Changes in camber angle e.g., when cornering
- Changes in wheel position e.g., when braking or accelerating
- Rear-wheel tracking
- Dynamic self-steering behavior
- Tire strain
- Recording of test and race tracks for simulators

The results of the above tests provide the basis for tasks such as:

- Wheel well clearance measurement and design
- Chassis development and refinement
- Spring and shock absorber development
- Toe-in and camber angle adjustment
- Tire development
- Testing of driver assistance systems

Available options:

- Sensor mounting system for slip angle measurement with CORREVIT® SF Sensors
- Incremental wheel pulse transducer mounting system for acquisition of high-resolution rotational speed measurement using the CORRSYS-DATRON WPT Wheel Pulse Transducer

Improved operating specifications, lighter weight, easier set-up

	RV-4	RV-3
Moving mass	2,500 g	2,900 g
Total mass	3,350 g	5,000 g
Measurement range	60°	45°
Angle accuracy	0.1°	0.33°
Max. vertical travel	200 mm	150 mm
Set-up time	15-20 minutes	30-40 minutes



Laptop Mounting System enables safe, secure mounting during vehicle dynamics testing

The new CORRSYS-DATRON LMS In-Vehicle Laptop Mounting System is designed as a safe, stable mounting platform for all laptop computers. Lightweight and easy-to-use, the LMS is ideal for in-vehicle data acquisition with your laptop and TurbolabPRO data acquisition software.

Once secured to the LMS, the laptop is firmly fixed, and cannot move until intentionally released. Shock absorbing design reduces the transmission of vibration, protecting the computer hard drive even under demanding driving maneuvers. The LMS also secures the laptop screen, holding it in the desired position for convenient viewing of measurement parameters during the test drive. Additionally, by holding the screen firmly in place, the LMS prevents wear to the screen hinge that can result from extended exposure to vibration.

The LMS is available with two different base configurations: spring-loaded or bolt-on. The spring-loaded configuration

expands between the door sill board and the center tunnel to hold the unit firmly in place. The bolt-on configuration is intended for vehicles that do not have a sill board (i.e. SUVs, vans etc.), and is mounted using the bolts that secure the fronts of the seat rails.

A mounting area beneath the plate that holds the laptop can be used to secure a DC/DC converter to power the laptop from the vehicle's battery.

The CORRSYS-DATRON LMS In-Vehicle Laptop Mounting System, shown at right.



The spring-loaded configuration expands between the door sill board and the center tunnel to hold the unit firmly in place.



The bolt-on configuration is mounted using the bolts that secure the fronts of the seat rails.

Tech Focus

Tech Focus
is published by
CORRSYS-DATRON

International Headquarters
P.O. Box 1349 • 35523 Wetzlar
Phone: +49-6441-9282-0
Fax: +49-6441-9282-17
e-mail: sales@corrsys-datron.com

American Headquarters
21654 Melrose Avenue • Southfield, MI 48075
Phone: 248-204-0850 • Toll-free: 800-832-0732
Fax: 248-204-0864
e-mail: usa-sales@corrsys-datron.com



All contents ©2006

See our complete range
of solutions for
dynamic vehicle testing
on the web at
www.corrsys-datron.com

CORRSYS-DATRON introduces the new DAS-3 Ultra-Compact, In-Vehicle Data Acquisition and Evaluation System

The DAS-3 Ultra-Compact, In-Vehicle Data Acquisition and Evaluation System represents the next logical step in the evolution of the proven CORRSYS-DATRON DAS-2A Compact Data Acquisition System. Like the DAS-2A Unit, the new DAS-3 System consists of a base data acquisition module and a control and display unit. The base module incorporates two primary components: an acquisition module and a processor module.

In viewing the DAS-3 System, the most noticeable difference in appearance – as compared to the DAS-2A – is the new modular design concept. This new design enables simple, cost-effective expansion of the unit's functionality. Optional extension modules can be easily connected to the base module, which includes analog inputs, counter inputs, switch inputs and outputs, and a CAN interface.

The base module also includes Ethernet, USB, COM and connections for additional displays (e.g., the CORRSYS-DATRON LED Display).



The DAS-2A Data Acquisition System with the DAS Control and Display Unit.

Operation, parameterization and online data display are achieved via the proven DAS-2 display. System parameters also can be set up using a connected PC running CORRSYS-DATRON CeCalWin DAS Software. Used with TurboLab Analysis software, it is a powerful and easy-to-use tool for professional data acquisition and evaluation. Pre-configured settings allow the user to start measurements with only a minimum of preparation.

Expansion Modules

The DAS-3 base module is easily extended via its modular system architecture. Additional modules simply plug into the base unit. These include analog and digital input modules, as well as two additional switch inputs.

Additional extension modules will be available soon, to make the basic module a high-power, customized measurement system. Among these will be modules for the measurement of pressure, temperature, and strain gauges (DMS). External CAN-based modules may also be connected to the DAS-3 for additional inputs of various types.



The new DAS-3 Compact, In-Vehicle Data Acquisition System incorporates a modular design concept, enabling easy expansion and adaptation to a wide range of measurement applications.

DAS-3 is equipped with the following features:

- **6 frequency channels**
 - Switchable between frequency measurement, counter, cycle duration measurement, pulse duration
 - Expansion with additional modules
 - Cutoff frequency min 100kHz
 - TTL or RS485
 - Overvoltage protection up to 60V
- **8 differential analog channels**
 - Extensible by a second module
 - 16 bit resolution
 - Input voltage range -10 ... 10V
 - Adjustable gain with factors: bipolar
 - Maximum sampling rate 2KHz per channel
 - Accuracy 0.1% of the end value
- **2 switch inputs**
 - Galvanically isolated, max. input voltage 60V
- **Upgradeable measurement data memory**
 - (up to 10 GB storage capacity)
- **CAN Bus 2.0B**, baud rate 125kBaud, 250kBaud, 500kBaud, 1Mbaud
- **Power supply 9 ... 36 V**, with reverse polarity protection, reversible fuse and control LED
- **Connectors are compatible with existing sensors**
- **Power input < 1,5A at 12V**
 - (without supply of connected sensors)
- **Weight < 2kg**
- **Protection class min IP 21**
- **Operating temperature: -20 ... 60 °C**
- **Storage temperature: -20 ... 80°C**

L-400 Brake System: precision brake testing simplified

The CORREVIT® L-400 Brake Test System is a complete, integrated measurement system that functions as a highly accurate, self-contained solution for brake testing applications.

This affordable, easy-to-use measurement system is based on the proven CORREVIT® L-400 Sensor and is designed for acquisition of measurement parameters such as MFDD, average acceleration, brake time ($t_{80\%}$... $t_{100\%}$), brake path ($s_{80\%}$... $s_{100\%}$), brake time (total), and brake path (total).

Hardware and software triggers are acquired and evaluated with a signal processor.

Big performance and a small sensor add up to total value in brake testing

- New filter technology provides a fixed delay value that is internally compensated to assure the accuracy of the System
- User-selectable speed range settings make the L-400 Brake System a versatile measurement tool for a multitude of applications.
- Measurement is effected via CAN Bus



The CORREVIT® L-400 Brake Sensor is a complete, highly affordable solution for brake testing applications

The L-400 Brake Sensor uses CeCalWin Software to set following parameters

- Pair values (two limit values, upper and lower value). The initial value is multiplied by a user-selectable percentage.
- Stop value, calculated from the start value multiplied by a user-selectable percentage.
- Limit values are pre-configured and optimized for ABS testing:

First value pair:	upper limit	45 km/h
	lower limit	20 km/h
Second value pair:	upper limit	45 km/h
	lower limit	15 km/h
- Upon completion of the testing the Δt between both values (lower and upper limit) is displayed. The measurement is started with a hardware trigger, i.e. brake switch. This point of time is "v start".
- "v start" is used to calculate the following values:
 - Brake distance between start and stop value
 - Time between start and stop value
 - Time between the two limits
 - Acceleration in the three formulas
 - Start value hardware trigger
 - Start value - calculated
 - Stop value - calculated
 - MFDD

The complete L-400 Brake Test System includes:

- CORREVIT® L-400 Brake Sensor
- Suction holder side/rear
- Display and data storage
- Power Cables

Technical Data

Speed range:	0.5 ... 250 km/h
Distance resolution:	1.9 mm
Uncertainty of measurement:	< ±0.1%
Optimum mounting height:	400 mm
Working range:	±130 mm
Inputs/Outputs	
USB:	V1.1
CAN:	2.0B
Light barrier/brake switch input:	(PNP/NPN)

CORRSYS-DATRON Stand-Alone Display finds new application in acceleration and brake tests

The CORRSYS-DATRON Stand-Alone Display was initially designed for fuel consumption measurement. Soon, however, journalists at several major automotive publications discovered that this compact, "smart" display provided a lightweight, easy-to-use solution for acceleration and braking applications.

In the realm of vehicle testing and development, the CORRSYS-DATRON Stand-Alone Display is used with all speed sensors to provide the driver a clear, readable display of time, speed and distance data, with data simultaneously logged by data acquisition system.



The CORRSYS-DATRON Stand-Alone Display can be used with all speed sensors to provide the driver a clear, readable display of time, speed and distance data

Applications that do not require measurements to be stored in high time resolution are ideal for the CORRSYS-DATRON Stand-Alone Display. The Stand-Alone Display can be used with any CORRSYS-DATRON CORREVIT® Sensor and/or

CDS-DFL Fuel Consumption Sensor. This compact display uses the digital outputs from the sensor(s) and displays up to 3 user-selectable parameters in easy-to-read, bright red LED displays.

Contact CORRSYS-DATRON today for more information about these and many other outstanding dynamic measurement solutions:
www.corrsys-datron.com