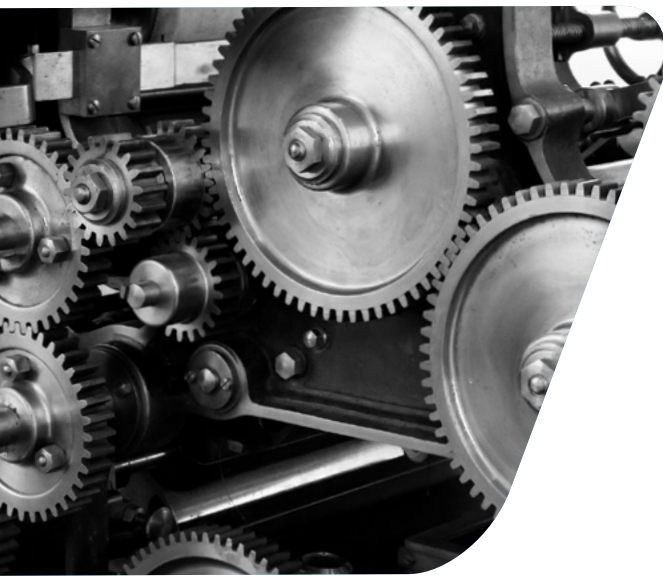CAS DATALOGGERS

Real-Time Machine Condition Monitoring of Rotating Parts

Data Acquisition Systems for Machine Test Stands

Automotive test bench applications require real-time test and measurement for quality requirements and to lower recall rates. To achieve this, the use of data acquisition and control systems is especially common in test stand setups and machine condition monitoring. In particular, product quality technicians and test system integrators who need to view accurate data from rotating/spinning parts in motors, car engines, etc. are often concerned with the precise angular location of the moving part.

ADwin data acquisition systems feature an Event input for use with an encoder to capture these high-precision measurements. ADwin is well-suited to CANbus applications, executing commands whenever the real-time system is instructed to on the bus. ADwin measurement systems also give users a competitive advantage due to their sub-nanosecond reaction time and high sampling rates. At every angular step, the ADwin measures the analog inputs and the output of the sensors correlated to the part.

At CAS DataLoggers we provide these German-manufactured systems for automotive test stand and other CANbus applications that require machine condition monitoring. We specialize in systems integration, custom programming, free on-call tech support and more.

Monitoring Rotating Machines and Parts

In many automotive test stand applications, users need to collect and analyze data taken at specific angles of rotation. For example, every time a rotating part is at a 30° angle, users can use an ADwin automation system's Event input along with an encoder to accurately monitor or detect a certain measurement value such as Temperature, Speed, RPM, and more.

Unique ADwin Features:

- Sample rate of 2 MHz aggregate, to 50 MHz per channel; response time of 1 usecond or less
- Tightly-coupled, integrated Analog and Digital I/O
- Counter/timer channels and Event input
- Extremely low-latency operation
- Test bench control capability

Standalone Solution

The compact ADwin-Light-16 Real-Time Data Acquisition & Control System is suitable for low-channel automotive test applications that require sampling up to 100kHz. Multiple form factors are available including PCI plug-in boards, Encased stand-alone systems, and Modular rack-mounted systems.

The Light-16 is an intelligent real-time system complete with analog/digital I/O and counters. ADwin offers the benefits of direct software connection with Windows without the risk of OS lockups and crashes, with an Onboard DSP operating independently of the operating system. The on-board SHARC DSP processor with its own local memory handles system management, data acquisition, online processing and control of outputs. Processing of each measurement can occur immediately after acquisition.

An available boot option allows for stand-alone operation independent of a PC or external computer. Meanwhile, application development freedom is provided with a full set of available drivers allowing full integration with other applications and programming languages..

Monitoring Multiple Test Benches

The ADwin-Gold is a standalone, external system suitable for monitoring data from one or two test stands. The system features a Ethernet interface for data retrieval or connection to PC based operator interfaces.

For high-channel test bench applications, users can also use the ADwin-PRO ll system. PRO ll systems use ADwin's powerful T-12 processor module to provide the highest real-time computing power for machine monitoring applications.

ADwin offers a variety of communications options including:

- Ethernet
- USB
- CAN-bus
- Profibus
- INTERBUS

Visualization and Compiling

The ADwin software environment can be used under all versions of Windows (including 10) and Linux, or as a stand-alone data acquisition system. ADwin has an interface library for all of the most common GUI and development packages including Visual Basic, Visual C/C++, LabVIEW/LabWindows, TestPoint and others. Test visualization is typically performed by LabView, C#, Kalliste' (bundled with ADwin), or DASYlab. ADwin has MATlab and Simulink drivers with tight integration for direct implementation of Simulink models in the ADwin hardware.

The ADbasic control language allows users to program mathematical operations and functions which are executed immediately after each sampling step.

For test engineering applications, the ADwin's fast compiling time–measured in seconds–is ideal, especially when programming the application. This high-speed compiling ensures quick application development.

Real-Time System Benefits

ADwin systems offer test engineers and test bench integrators a competitive advantage by way of their extreme speed; not only fast sampling rates but also compiling times. Users can select their preferred channel count, form factor, communications, and more. Stand-alone operation prevents OS lockups and crashes.

For more information on ADwin Data Acquisition Systems, machine condition monitoring or to find the ideal solution for your application-specific needs, contact a CAS DataLogger Application Specialist at **(800) 956-4437** or www.DataLoggerInc.com.