

UEI Application Notes:

Data Logging in Heavy, Off-road Trucks

App Note #019



***United
Electronic
Industries***

Data Logging in Heavy, Off-road Trucks — Application:

A major manufacturer of industrial trucks needed to build a data logger into each vehicle in order to monitor a wide variety of systems within the vehicles. The application requires a compact, rugged, DC powered logger that could not only monitor the analog and digital inputs normally associated with data logging, but could also monitor and log information from CAN-bus devices, RS-232 interfaces and GPS position and velocity data. The logger also needs to be easily configured with different I/O configurations as many vehicles have unique I/O requirements.

The UEILogger is the perfect solution. Not only does it provide the environmental (tested: -40° to +85°C), and physical ruggedness (50 g shock, 5 g vibration) required, the ability to select the I/O configuration from the wide variety of analog, digital, counter/timer, Serial, CAN and GPS interfaces ensures the logger can be configured to exactly match the requirement of the particular vehicle.

Another advantage of the UEILogger is its intuitive, easy-to-learn Windows based configuration application. As each application is somewhat different from the others, each system requires a semi-custom data logging configuration. The ease of use of the UEILogger software dramatically reduces the time required to train the installing technicians.

Once the data logging application is completed, data may be downloaded in two ways, depending on the usage of the truck. Data from trucks that return to main garage is obtained by simply removing the SD card from the logger, and copying the data into a PC for further analysis and archiving. Trucks that remain in the field represented a different problem as it was prohibitively expensive to retrieve the physical SD card after each session. These vehicles

were outfitted with CDMA-based high speed Cell Network interfaces. At the end of the session, the data can be downloaded by any host computer with access to the internet.

The UEILogger components used in the various systems include:

Product	Description / Usage
UEILogger 600	6 slot, UEILogger Cube
DNA-AI-207	18-bit analog input boards are used for temperature and general voltage measurements
DNA-CAN-503	4-port CAN-bus interface to log data from various vehicle sensors and controllers.
DNA-CT-601	8-channel counter timer boards are used as counters to monitor the quadrature encoder input signals.
DNA-SL-501	4-port RS-232/422/485 to interface to a variety of RS-232 devices installed in the cab as well as the DNA-GPS.
DNA-GPS	High performance GPS receiver device providing < 3 meter position accuracy (using WAAS) and 0.1 mph velocity data
DNA-DIO-401	24 point digital input boards are used to monitor limit switches and relay contact states.

Data Logging in Heavy, Off-road Trucks — UEI Products Used:



UEILogger 600

The UEILogger™ is a powerful, flexible and easy-to-use data logger/ recorder suitable for use in a wide variety of industrial, aerospace and laboratory applications. The Logger contains the controller, network and SD card interface, power supply and either 3 or 6 I/O slots (UEILogger 300 or 600 respectively).



DNA-AI-207:

18-bit analog input boards are used for temperature and general voltage measurements



DNA-SL-501:

4-channel quadrature encoder input boards are used to monitor various rotational aspects.



DNA-CAN-503:

4-port CAN-bus interface to log data from various vehicle sensors and controllers.



DNA-GPS:

High performance GPS receiver device providing < 3 meter position accuracy (using WAAS) and 0.1 mph velocity data



DNA-CT-601:

8-channel counter timer boards are used as counters to monitor the quadrature encoder input



DNA-DIO-401:

24 point digital input boards are used to monitor limit switches and relay contact states.

About UEI:

Founded in 1990, UEI is a leader in the computer based data acquisition and control industry. Serving customers world-wide, UEI products based upon PCI, PXI, ISA and Ethernet interfaces offer unequaled performance as well as flexibility. We are committed to providing the highest quality hardware, software and services, enabling engineers and scientists to interface data-acquisition and control hardware to the real world. Through our state-of-the-art technologies we serve the needs of individual researchers and developers as well as OEMs.



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