

UEI Application Notes:

Aircraft Flight Test

App Note #018



***United
Electronic
Industries***

Aircraft Flight Test — Application:

A new entrant in the field of VLJ (Very Light Jets) and an established market leader in the design and manufacture of business jets have very similar requirements. Both needed to build a data logger into their aircraft that will monitor a wide variety of systems within the vehicles. The application requires a compact, rugged, 24 VDC powered logger that not only monitors the analog and digital inputs normally associated with data logging. The logger also must monitor and log information from the ARINC-429 avionics bus, RS-232 devices and provide a GPS receiver to log position and velocity data. The logger also needs to be easily configured with different I/O configurations as each different model of aircraft has unique I/O requirements.

The UEILogger is the perfect solution. Not only does it provide the environmental (tested: -40° to +85°C and to 70,000 feet), 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 jet.

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, either by downloading it to a host PC over the Cube's Ethernet port, or by simply removing the SD card and reading it with any standard SD card reader.

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-ARINC-512	12-channel ARINC-429 interface to log data from the on-board Avionics.
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.

Aircraft Flight Test — 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



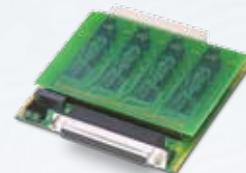
DNA-ARINC-512:

12-channel ARINC-429 interface to log data from the on-board Avionics



DNA-CT-601:

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



DNA-SL-501:

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



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.

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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27 Renmar Avenue
Walpole, MA 02081
Phone: (508) 921-4600
Fax: (508) 668-2350
www.UEIDAQ.com