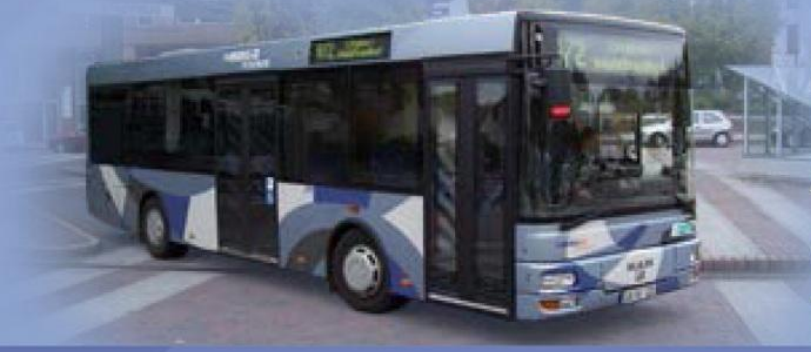
RELIABLE, FLEXIBLE & RUGGED AUTOMOTIVE APPLICATIONS SOLU TIONS



UNITED ELECTRONIC INDUSTRIES SUCCESS STORIES

Dynamometer/Emissions Test System

A leading US manufacturer of dynamometer based emissions test systems has standardized on UEI's PowerDNx RACK ™ and Cube as the primary control elements of both the dynamometer test stand and as a replacement for an older, obsolete I/O family. The system requires a wide array of I/O, including; speed / RPM, voltage measurement, thermocouple input, logic-level and higher voltage digital I/O and relay outputs, all in a small, rugged package. The new UEI based system meets or exceeds all world-wide regulatory requirements and has been selected as the standard emissions test system by one of Detroit's big three auto makers. UEI was an ideal solution, due to the system's high density and ruggedness, while UEI's 10-year availability guarantees the company can continue production without issue for many years into the future. Key I/O boards in this application include the: DNx-AI-207 general purpose A/D board, DNx-CT-601 counter/timer board, DNx-AO-308 analog output board and the DNx-DIO-452 relay board.

Piston Engine Test Systems

A major US research institute has standardized on UEI for the control and monitoring of their many engine test stands. Though the company performs many tests, this group's primary expertise is in testing the effectiveness and life of various engine lubricants. One of the more challenging aspects of this test system is that the tester needs to provide both high speed, fairly short term data as well as relatively slow, but long-term data. The A/D system needs to be fast enough and synchronized tightly enough that it can detect the effectiveness of the lubricant over the course of a single compression cycle, including tracking torque and RPM, at specific piston locations. In the meanwhile, a variety of longer term tests determine how the lubricant performs over the oil's lifetime. Key I/O boards in this application include the: DNx-AI-205 high speed A/D board, DNx-CAN-503 CAN-bus interface, and DNx-CT-601 high speed counter-timer board.

Automotive Health Monitoring

UEI has a number of customers using its Cube chassis in wireless IoT health monitoring systems on buses. The systems are based on the UEIPAC Cube, embedded controller with A/D, Digital input and CAN interfaces. The Linux application running on the Cube acquires the desired data, performs a variety of checks, and logs data to the on-board SD card for post-acquisition analysis. In addition to logging the data, the application software also monitors a number of key parameters and notes alarm conditions. These alarms are either transmitted back to the primary maintenance host computer via WIFI (once the bus is back at its home base), or an IoT application in real-time via Cell/GSM network. Key I/O boards in this application include the: DNx-CAN-503 CAN-bus interface, DNx-CAR-550 GSM/WIFI Wireless interface, and DNx-DIO-404 Digital I/O interface.

Wind Tunnel/Dynamometer Control System

A motorcar racing team selected UEI's Cube based I/O system as the primary monitoring and control system for their wind tunnel based dynamometer. The Cube was an ideal solution, as it was small and rugged enough to be mounted in the wind tunnel itself without any additional protective housing. In addition to controlling the wind tunnel and dyno, the system also provided a CAN interface that was used to monitor various parameters in the vehicle under test itself. Key I/O boards in this application include the: DNx-CAN-503 CAN-bus interface, DNx-AI-201-100 analog input board, DNx-DIO-401 digital I/O board, and DNx-QUAD-604 quadrature encoder board.

Test Track Monitoring

The easily distributed nature of UEI's Cube chassis has led more than one test to use UEI as their primary DAQ interface, connecting sensors on the test track itself back to the host data collection PC. Knowing the precise conditions of the track allows the test engineers to correlate track conditions to various system performances, and especially to how various tires behave under different road conditions. Key I/O boards in this application include the: DNx-AI-212 thermocouple input board, DNx-AI-207 general purpose input board and DNx-AI-204 4-20 mA input board.

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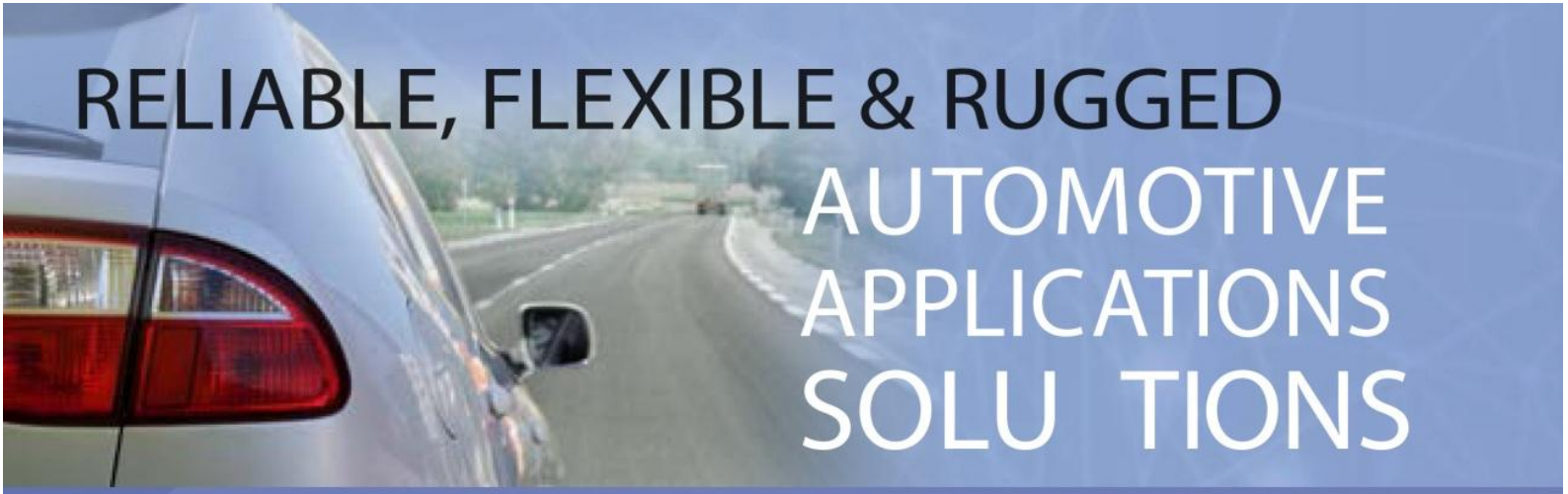

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Crash and Explosion Testing

A major US automotive test system has used UEI's rugged Cube platform in both crash and post-crash explosion testing. Other than the obvious risk of damage caused by a post-crash explosion, most explosions also generate enormous electromagnetic pulses that will easily damage most test electronics and any PCs that may be connected. The customer took advantage of UEI's DNA-FPPC series Cubes with fiber interfaces to provide the requisite isolation to protect the controlling PC's, which are located hundreds of meters from the actual crash/explosion site. Standard Ethernet intefaces are limited to 100m, and provide no protection from the EMP generated by a explosion. The fiber interface allows the host PC to be located up to 20 km from the host and provides virtually infinite isolation. Key I/O boards in this application include the: DNx-AI-205 high speed A/D board, DNx-AI-224 high speed strain gauge input board and DNx-AI-211 ICP/IEPE input board.

Driving Simulation

UEI has become the industry standard I/O system in the flight simulator world, but the same factors that make us ideal for flight trainers also makes us ideal for automotive/truck/bus simulators. UEI provides the I/O for one of the largest automotive driving simulators in the world, which allows researchers to safely test everything from drug use impairment to the effect of new cataract lenses on night vision. UEI is also popular on a great many smaller simulators/trainers which allow drivers of trucks, buses, fire engines or other emergency vehicles to practice driving in the most difficult conditions in complete safety. Key I/O boards in this application include the: DNx-AI-217 high speed A/D board, DNx-AI-211 ICP/IEPE accelerometer input board and DNx-DIO-406 digital I/O board.

NVH Monitoring

UEI's UEIPAC and UEILogger have been very popular worldwide in the study of automobile NVH. The rugged Cube chassis are DC powered and are tough enough to be placed directly in the vehicle's engine compartment. The DNx-AI-211 ICP/IEPE based accelerometer interface board is one of the most high performance and versatile ICP/IEPE interfaces in the world, ensuring accurate and repeatable data from the various vibrational and acoustic sensors used in NVH applications. In addition, to match the vibration measurements with the automobiles driving profile, the DNx-CAN-503 CAN interface is used to obtain performance information (e.g. speed, RPM) from the vehicle.

Unmanned Vehicle Control

UEI's Cube systems have been used in the control and monitoring of unmanned vehicles in underwater, land-based and airborne applications. The Cube's high density, low power, and rugged environmental specifications make it an ideal I/O platform for a very diverse set of unmanned vehicles. Key I/O boards in this application include the: DNx-IRIG-650 timer/GPS board, DNx-AI-217 high speed A/D board, DNx-DIO-432 digital output board and DNx-CAN-503 CAN-bus input board.

Brake Testing

Not every dynamometer is designed to test engine performance. UEI's Cubes are used in a variety of brake testing systems as well. Somewhat unlike engine testing, brakes need to be tested in a wide assortment of environmental conditions. These need to be tracked along with the dyno data to build the correct profile of a particular brake system's performance. Environmental parameters that are tracked include: temperature, humidity, and visible moisture (fog or rain), which need to be tracked over the range of brake system temperatures, from very cold to extremely hot. Key I/O boards in this application include the: DNx-AI-201-100 high speed A/D board, DNx-QUAD-604 quadrature encoder interface, DNx-AO-308 analog output board and DNx-DIO-403 digital I/O board.

United Electronic Industries