

Dedicated Systems' News

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UEI - Ethernet connected Data Acquisition

Inside this issue:

Page 2:

- UEI Cubes: Extremely Rugged, Extremely Compact
- UEIPAC Programmable Automation Controllers

Page 3:

- RACKtangle: Quick and easy configured, rugged and high density
- UEISIM : Simulink / RTW Target
- UEI Data Logger

Page 4:

- FM680 Virtex-6™ XMC & PMC
- FMC: FPGA Mezzanine Cards
- FC6301: 3U CPCI Virtex-6™ with FMC Port

UEI is a leader in the PC/Ethernet data acquisition and control, Data Logger/Recorder and Programmable Automation Controller (PAC) and Modbus TCP markets. Their revolutionary "Cube" form factor provides a compact, rugged platform, ideal for applications in the automotive, aerospace, petroleum/refining, simulation, semiconductor manufacturing, medical, HVAC, power generation and more.

For example the "Cube" is uniquely flexible, capable of being deployed as an Ethernet I/O slave, a standalone data logger, a standalone Linux-based PAC or a Modbus Slave. The "Cube" also offers incredible I/O flexibility, accommodating up to 6 I/O boards from a selection of over 25. This allows you to precisely match the I/O configuration to your application. With I/O interfaces for analog I/O, digital I/O, counter/timer, ARINC-429, quadrature encoder, CAN-bus, serial I/O, vibration sensors and more, they have the interface you need.

UEI also offers an extensive array of PCI and PXI data acquisition and control boards. With the world's widest selection of simultaneously sampling A/D boards and the world's most dense analog output boards (up to 96 channels per slot!)

UEI supports all popular Windows, Vista, Linux and Real-time operating systems and programming languages. They also offer complete and seamless support of all major application packages, including LabVIEW, MATLAB and DASyLab.



UEI guarantees the availability of all RACKtangle/Cube series products (including DNA, DNR, UEIPAC, UEISIM, UEILogger and UEIModbus chassis and compatible I/O boards) for a minimum of 10 years. Unless you are specifically notified at the time of purchase, all DNA/DNR series products purchased

will be available for purchase for at least 10 years. We understand the investment you make by using our products and we ensure long-term product availability. **More on pages 2 and 3.**

4DSP®

Innovative DSP Solutions

4DSP, LLC is a US corporation dedicated to the development and manufacturing of Commercial Off The Shelf (COTS) digital signal processing (DSP) board-level electronics, FPGA Intellectual Property (IP Core) and system level products. 4DSP develops rugged high-performance DSP solutions for the specific requirements of the Military, Aerospace, Biomedical and Chemical Science applications. Customer from these market segment demand DSP solutions that are high performance, light weight, compact, low in heat dissipation and power consumption.

Solutions products are available in board-level as well as at the system-level, for applications such as Image Processing, Software Defined Radio (SDR), RADAR, SONAR, Airborne Surveillance, Medical Imaging, and others.

4DSP's hardware products are complimented with 4DSP Engineering Services, providing custom development of customer specific FPGA Intellectual Property (IP) Cores and custom DSP board level assemblies as well as turn-key solutions requiring high-speed embedded FPGA based DSP. **More on page 4.**

PowerDNA - Ethernet connected Data Acquisition. UEI Cubes: Extremely Rugged, Extremely Compact

PowerDNA– 100base FX ,100baseT or GBit Cubes

- 5-8 layer, Data Acquisition and Control Cube with PowerPC CPU
- Slots for 3 or 6 I/O boards
- Over 25 I/O boards available
- Fiber or Copper Ethernet Interface
- Two USB 2.0 ports (one controller & one slave) on GBit Cubes
- Operates up to 2 km from host
- Inter-Cube sync interface
- Compact: 4" x 4.1" x 4" or 4" x 4.1" x 5.8"
- Rugged: up to -40 to +85 °C, 5g vibration, 50g shock
- Real-time: 1000 I/O scans in < 1 millisecond
- Complete Windows, Vista, Linux and RT OS support
- LabVIEW™, MATLAB®, DASyLab&trade, Simulink® support and more
- Standalone deployment as UEIPAC, UEISim

I/O Cards for UEI Cubes and UEI Racks

- Analog Input
 - Thermocouple Input
 - Strain Gage Input
 - Simultaneous Sampling
 - ICP/IEPE Input
- Analog Output
- Digital I/O
 - Counter/Timer/PWM/Quadrature
 - LVDT/RVDT/Synchro/Resolver
 - CAN Bus
 - ARINC 429
 - MIL-STD-1553
 - Serial Communication
 - Power Conversion



UEIDAQ Framework—Software for UEI Cubes and Racks

UEIDAQ Framework library uses the same API to access any devices from the PowerDNA and PowerDNR Distributed Ethernet I/O families. Using UEIDAQ Framework library dramatically cuts the amount of code needed to perform data-acquisition and control tasks. And it is free of charge.

The UEIDAQ Framework library comes with bindings for all major programming languages and data acquisition / test programming environments including C, C++, C#, VB.NET as well as Excel, OPC, MATLAB, DASyLab , TestPoint, Agilent VEE, LabVIEW for Windows and LabWindows/CVI.

UEIPAC—Programmable Automation Controllers



- Available as Cube, GigE Cube and RACKtangle chassis!
- Up to 150 analog or 288 digital I/O per CUBE, 300 analog or 576 per RACKtangle
- Uses standard Linux kernel
- Xenomai real-time support
- Program in standard C
- Eclipse IDE support
- Develop on Linux PC or Windows PC in the Cygwin environment
- SD card and/or USB based disk (GigE Cubes and RACKs Only)
- Open source, no royalties
- Rugged: CUBEs tested -40 to +85°C, 5g Vibration, 50g shock
- Ideal for Hardware-in-the-loop applications
- Ideal for single and multiple loop controllers
- Run 8 PID loops >20 kHz
- AC, DC or battery powered

PowerDNR - Ethernet connected Data Acquisition. RACKtangle: Quick and easy configured, rugged and high density

PowerDNR RACKtangle and HalfRACK

- 3U Gigabit Ethernet Data Acquisition and control rack.
- Allows the installation of up to 12 I/O boards
- Over 25 different I/O boards available
- Front-loading I/O boards for rapid reconfiguration
- Two independent Gigabit Ethernet Interfaces with independent IP addresses
- Dual USB 2.0 ports (one controller and one slave)
- Inter RACK Sync Interface
- Up to 300 A/D, 576 DIO, 384 D/A, 144 ARINC-429 channels per rack
- Rugged: 3 g Vibration, 50 g Shock, -40 to +70 °C
- Real-time: 1000 I/O scans in < 1 millisecond
- Complete Windows, Linux and RT OS support
- LabVIEW™, MATLAB®, DASyLab™ support and more



UEISIM—Simulink / RTW Target

The UEISIM offers Simulink users a new, powerful and flexible I/O target. Models built in Simulink are deployed directly on the UEISIM using Real-Time Workshop. The UEISIM is rugged, flexible and expandable enough that it is not only a great solution while in your development cycle, it's also the ideal solution for your production hardware.

To use the UEISIM simply: a) Build your Simulink application. b) Open MATLAB, and select Simulink/Embedded target for UEISIM. c) Convert your model to use the UEISIM I/O blocks (if you had not used them in your original model). d) Create an executable via RTW. e) Connect the UEISIM in "external mode" (if you wish to remotely monitor the application while running on the UEISIM). f) Start your simulation. Six easy steps and your simulation is running live on real hardware.

UEI Data Logger

The UEIlogger™ is a powerful, rugged, flexible and easy-to-use stand-alone data logger suitable for use in a wide variety of applications. It uses the DNA series I/O boards. Each Data Logger Cube contains the Logger "engine" as well as either 3 (UEIlogger 300) or 6 (UEIlogger 600) I/O slots. Configure your data logger by selecting the I/O boards required to match your application. With over 20 different I/O boards available, there's sure to be a configuration to meet your needs.

The UEIlogger supports sample rates up to 1000 samples per second on each I/O channel or port. Data is logged onto standard SD Cards and may be retrieved via the unit's Ethernet port or the directly from the SD Card using a standard SD Card reader. A 2 GB SD Card included will hold over 500 million 16-bit A/D readings.

The intuitive, free of charge Windows-based software provided configures the data logger and extracts the data from the SD Card. There is absolutely no programming required. The software allows you to set input and output ranges, sample/update rates, signal conditioning, etc. all from simple pull down menus. The data logging "program" may be downloaded via the unit's standard Ethernet port or stored on the SD Card.

Logging applications may be started and stopped Via Ethernet command, On power up, Start/Stop button, Real-time clock/calendar, Sync connector input, or based upon an analog input. The UEIlogger cube may be placed on a desk or table or may be mounted to a wall, DIN Rail or in a standard 19" rack. The UEIlogger may be AC, DC or battery powered.





FM680 Virtex-6™ XMC & PMC with User Definable Memory & I/O

The very versatile FM680 is a high performance Xilinx Virtex-6™ based XMC & PMC module. The FM680 has been designed to be a multi-function high-performance digital signal processor. The Virtex-6™ FPGA device available on board is user programmable and can be used for the implementation of high end signal processing algorithms. Based on customer requirements, front panel I/O modules may be added to enable the FM680 to perform data acquisition and waveform generation, high-speed communication, image processing and many complex DSP applications. Additionally, customer may configure the FM680 select from a variety of memory options such as QDRII SRAM, DDR2 SDRAM and DDR3 SDRAM. Optionally, the user configurable BLAST™ mounting sites may also be populated with JPEG2000 CODECs, solid-state flash drives or even a customer's specific logic devices or circuit designs.

- Virtex-6 LX240T, LX365T, LX550T, SX315T, SX475T
- Virtex-5 Local I/O Controller
- High density Memory Options (DDR3 SDRAM, QDR2 SRAM, NAND Flash)
- Onboard 128Mbit Flash ROM
- XMC PCIe 4-lane
- PMC 32/64-bit 33/66/133MHz Bus Interface
- Front Panel I/O Daughter Cards for A/D, D/A
- Configure the FM680 board to meet your requirements with BLAST™ & Daughter Card Options



FMC—FPGA Mezzanine Cards

4DSP offers a huge range of FMC Cards:

FMC150

Dual 14-bit 250Msps A/D
Dual 16-bit 800Msps D/A

FMC204

Quad Channel 16-bit D/A @ 1 GSPS

FMC103

4-Channel 210 MSPS @ 12-bit A / D

FMC104

4-Channel 250 MSPS @ 14-bit A / D

FMC107

8-Channel 65 MSPS @ 12-bit A / D

FMC108

8-Channel 250MSPS @ 14-bit A / D

FMC110

Dual Channel 12-bit A/D @ 1 GSPS
Dual Channel 16-bit D/A @ 1 GSPS

FMC122

1-Channel 2.50 GSPS @ 8-bit A / D
2-Channel 1.25 GSPS @ 8-bit A / D

FMC125

Multi-Channel Multi-Mode 8-bit ADC
1.25 Gsps / 2.5 Gsps / 5.0 Gsps

FMC126

Multi-Channel Multi-Mode 10-bit ADC
1.25 Gsps / 2.5 Gsps / 5.0 Gsps

FC6301—3U CPCI Virtex-6™ with FMC Port

- Virtex-6 LX240T, LX365T, LX550T, SX315T, SX315T, SX475T
- High density Memory Options using BLAST sites: DDR2 and DDR3 SDRAM, QDR2 SRAM, NAND FLASH.
- Onboard user defined 128Mbit Flash ROM
- PCI 32-bit, 33/66MHz
- Front Panel FMC Mezzanine Cards
- Mini USB x2 (optional)
- Gbit Ethernet x2 (optional)

