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NEW PRODUCT ANNOUNCEMENT

Of interest to: Electronics, Embedded Computer, Design,
Motor control, Motion Control, Process Control, Robotics,
Sensors and Software Editors

Plug-a-Pod™
PLUG IN CONTROLLER POWERS USER'S DESIGN

Dallas, TX -- 26 January 2004 -- The new Plug-a-Pod™, a tiny 1.5" x 1.3" controller board, ships this month from New Micros, Inc. The Plug-a-Pod™ is a complete microcontroller system with a built in high-level-language and parallel processing operating system, IsoMax™.

While the Plug-a-Pod™ can be used stand-alone or in a protoboard, this is the first board from New Micros, Inc. intended by design to be plugged into a user-designed carrier board. The expected use will be as a controller module, which will reduce total system cost.

Two-layer boards have become inexpensive, and many board shops offer free CAD software to design them. However, complex multilayer boards, by comparison, remain prohibitively expensive in prototyping and small production quantities.

The connections on Plug-a-Pod™ are carefully positioned for easy routing on a simple two-layer board with the user's additional circuits. For instance, opto-isolation, communications drivers, high and low-side drivers, H-bridges, etc., and the just right kinds of connectors needed, can be put on a 2 layer board, and the complex, SMT, high density, thin trace, multi-layer requirements can be bypassed by adding connections for the Plug-a-Pod™.

The Plug-a-Pod™ fits in less than 2 square inches (the board is 1.5" x 1.3"). All connectors have .1" spacing. The pins plug into two dual row sockets, 0.2" x 1.2", with 24 pins each. It can also be soldered directly to the carrier board, where high vibration or high reliability dictate.

Hardware features on this new processor include all the signals found on the similar family device, the new TiniPod™, on one dual row set of pins: 16 General Purpose Digital I/O lines, 1 RS-232 serial channel. The first GPIO

lines share functions with a 4 wire SPI Interface, 6 General Purpose Timers, 6 Pulse Width Modulation (PWM) outputs.

On the other dual row pins additional pins unique to the Plug-a-Pod™ include: 8-Ch 12-Bit A/D and an additional 8 GPIO.

The PWM outputs are hardware based and can be used to control 6 R/C Servos control, or grouped to control a 3-phase Brushless DC motors, 6 PMDC motors, or complementary drive for the H-bridge for 3 PMDC motors.

The multimode Timers can be used as 3 channels of Quadrature Decoders, or 3 channels Step and Direction counters. Individually they can also measure pulse width, time ultrasonic ranging pulses, or generate pulses, drive IR 40 KHz transmitters etc. They too can generate PWM outputs to drive another 6 R/C Servos.

Since the PWM and Timer modules are supported in set-and-forget hardware modules, the processor is free to perform higher level functions, such as acceleration-limited, velocity-profiled control of the moves of up to 12 RC Servos at the same time, and still have time left over for other tasks.

Similarly, using the Timer modules as Quadrature decoder inputs, the processor can implement PID and acceleration-limited, velocity-profiled control of the moves of 3 axes of motion control at the same time, and do other tasks such as data collection on the A/D and individual GPIO management.

The CANBus opens the possibility of distributed processing networks, particularly in automotive and industrial applications, so parallel hardware can be combined with parallel software.

The Plug-a-Pod™ can be programmed in a number of languages, C (third party), Small C (included), Forth or the resident IsoMax™ (included).

IsoMax™, is based on state machine programming concepts. Programming real time tasks amounts to describing virtual machines that will sense conditions, take actions, and move to new states. The machine construction is very English readable. Development is interactive through the RS-232 and will typically be done on a PC, laptop, PDA, or any serial device, even dynamically by another microprocessor. Programming in IsoMax™ means interactively creating new

processor tasks, each being a state machine or thread, and then testing that code.

Virtually Parallel Machine Architecture (VPMA) is a new programming paradigm possible with IsoMax™. VPMA allows more than one of these machines to be installed into background process. All these installed machines run independently in a virtually parallel fashion. All the tasks are handled on the same level, each running like its own separate little machine. VPMA on the Plug-a-Pod™ can be compared to running dozens of stamp-like microcomputers in parallel.

When the programmer is satisfied with performance of a new machine, he installs it into a chain of machines. The machines installed in the machine chain become background features of the Plug-a-Pod™ until removed or replaced.

The IsoMax™ language is inherently "multitasking" without the overhead or complexity of a multitasking operating system. A useful single state machine can be written with as little as three lines of code. The interactive foreground remains always available for further interactive development, and interactive checking on the running machines.

The combination of IsoMax™ software, VPMA structure, and diverse hardware makes Plug-a-Pod™ very versatile. Plug-a-Pod™ is ideal for dedicated control of DC motors, BDCM, stepper motors, solenoids, and motion and control applications in general. The fast A/D works well for data collection, and the CANBus greatly enhances networked control applications.

The Plug-a-Pod™ brings an amazing amount of computing and control function to a very small space in a user's design, allowing fabrication at a fraction of the cost of a large multiplayer version. A single unit is \$89 with linear regulators installed. Other regulator options are available.

About New Micros, Inc.

New Micros, Inc. of Dallas, TX, has designed and manufactured chips, Single Board Computers, peripherals, and custom electronics, for over 20 years. New Micros, Inc. products have been used in a wide range of projects: in space shots, such as ignition and separation control on the first Pegasus Rocket, the HF radio controller on the ARRIANE rocket, to deep ocean probes such as Alice, to robot arms

and displays. In 1987 New Micros, Inc. became the first company ever to offer a stand-alone single chip computer with a High Level Language built inside. New Micros, Inc. continues this trend today with this development of high-level-language "intelligent" embedded controllers.

High-resolution digital photos are available.

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Plug-a-Pod™ picture 1:
http://www.newmicros.com/store/product_pictures/Plugapod000.jpg

Plug-a-Pod™ picture 2:
http://www.newmicros.com/store/product_pictures/PlugaPod04A.jpg

Plug-a-Pod™ manual (TBD):
http://www.newmicros.com/store/product_manual/Plugapod.zip