RoweBots

Software Data Sheet

DSPnano Real Time Operating System

for Renesas – M16C®

Features

- M16C support
- Complete integrated development environment
- Seamless integration of target components
- osix Nano Kernel
    - Very Very Tiny
    - Very Fast
    - Static Object Location
- Networking
- Serial I/O
- Digital Signal Processing Libraries
- Tiny footprint software components
- Off the shelf QSK26A and QSK62P support
- Integrated Compiler, Assembler, Linker, Librarian based on GCC
- Integrated GDB support with ForUSB integration
- Single click install
- Complete documentation including:
    - Index and Release Notes
    - Tutorial manual for DSPnano including chapter for QSK26A and QSK62P using ForUSB
    - Programmer's Guide for DSPnano with M16C chapter for specifics
    - Reference Guide for DSPnano
    - DSP Library manual with extensions for specific applications
    - Integrated Development Environment manual including
        - Compiler, Assembler, Linker and Librarian
        - GDB
        - C/C++ Editor

Overview

DSPnano© OS is a DSP Operating System intended for efficiently developing and delivering embedded digital signal processing solutions for a broad set of applications on very small digital signal processors. Its main strengths are: simplicity and standards, DSP library integration, DSP optimized design, very very tiny size and integrated DSP development environments.

DSP applications are daunting for many engineers but they need not be. If the implementation libraries are tried and proven, the design patterns are well known, accepted standards are used, and good tools are available, implementation can be fast and simple.

Overview

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With DSP libraries as part of the implementation package, users seldom have to develop optimized libraries themselves. Fast and low risk implementation is the end result. In addition, by completely integrating DSP libraries into the environment, users will benefit from seamless use of the libraries and eliminate many issues associated with context switching, I/O and DSP library interaction.

By maximizing the utility of the operating system for DSP systems, design patterns change and the system becomes more efficient. For example, a producer consumer model with fixed size buffers and a message queue is an ideal subcomponent of a pipelined signal processor design. Both the inter thread communication using message queues and fixed size buffer pools with buffer management are required to be fast and simple for easy implementation. DSPnano has these features.

Great tools also benefit the developers of DSP systems. The Eclipse environment is unequalled today and offers developers the best of all worlds for M16C development. Integration of the ForUSB solution with GCC tool chains with this front end make debugging tiny M16C processors easier than its ever been.

With an integrated IDE based on Eclipse including an integrated compiler, assembler, linker, librarian, and jtag debugging, users can develop systems much more quickly with far fewer support questions.

Using common development boards to get users up to speed provides an error free environment. The QSK26A and QSK62P are both supported out of the box. Special University pricing is available.

Integrated software components with complete I/O can save significant time in OEM application development. Today, all systems are networked in some way and the integration of various networking support, serial support, PWM and A/D – D/A allows users to build whatever they need quickly.

Integration of the kernel libraries on the host will support debugging without hardware on the host workstation, speeding development by elimination of development road blocks.

With a single click install on any host operating system, DSPnano is always simple to deploy and get people started without questions or early difficulties.

With extensive documentation which walks the user through the system from conceptual understanding of the system through to actual hands on operation on standard hardware, users come up to speed quickly and develop confidence with the system before encountering more challenging problems.

Supported Hosts	• Windows XP™ • Windows Vista™ • Linux • Solaris™
Supported Processors	• M16C 26A and 62P with all I/O • M16C family support
Software Version	• DSPnano V2
Availability	• Beta • September 1, 2007

DSPnano Operating System Architecture