Model 4994A

Pentek ReadyFlow - Board Support Package for Linux™

General Information

Users of high-performance data acquisition and signal processing boards often find themselves frustrated by the fact that when their new devices are delivered, they are unable to put them to immediate use.

Because these boards are largely software controlled and offer a flexible range of functionality, a certain amount of programming is generally necessary to put the new cards through their paces. Then, if something does not go as planned, there is no way of knowing for sure whether the problem lies with the new code, or with the hardware itself.

To address this issue, Pentek has developed the **ReadyFlow**® BSPs (Board Support Packages) for all its board-level products. These packages:

- Provide a path for quick start-up through application completion
- Allow programming at high, intermediate and low levels to meet various needs
- Are illustrated with numerous examples
- Include complete documentation and definitions of all functions
- Include library and example source code

What's Included in the Package

In general, functions appropriate to the board-level product, such as:

- A "How to" section
  - Build object libraries
  - Compile and link application programs
- C-callable functions
  - Initialization and test
  - Data movement and communications
  - Backplane I/O
  - Mezzanine peripheral I/O
  - Control of board resources
- Utilities
  - Flash memory program loaders

The package contains C-language examples that can be used to demonstrate the capabilities of Pentek products. The examples included provide the answers to most of the questions that occur with first-time users of Pentek products.

These programming examples will also help you get an immediate start on writing your own application without having to reinvent the wheel. They provide sample code that is known to work, giving you, the new user, a means of verifying that your board set is operational.

ReadyFlow Board Support Packages are designed to reduce development time not only during the initial stages, but any time new hardware is added to the system. All packages are built with a consistent style and function-naming convention. Similar parameters on different boards have similar function calls, thereby allowing immediate familiarity with new hardware as it's added further shortening the learning curve.

Command Line Interface

The Command Line Interface provides access to precompiled executable examples that operate the hardware right out of the box, without the need to write any code.

Board-specific hardware operating arguments can be entered in the command line to control the following parameters: number of channels to enable, sample clock frequency, data transfer size, data rate divider, interpolation factor, reference clock frequency, reference clock source, number of iterations to run the program, etc.

Below is an example command line for D/A capable hardware that enables the channel one output, transfers 32,768 data bytes, executes 100,000 times, divides the data rate by 2, and interpolates the data by 4:

```
C:> dacmode -chan 1 -xfersize 32768
   -loop 100000 -ratediv 2
   -interpolate 4
```

The Command Line Interface can be used to call an example application from within a larger user application to control the hardware, and parameter arguments are passed to the application for execution. Functions that control data acquisition, automatically save captured data to a pre-named host file or are routed to the Signal Analyzer example function for display. ➤

For the latest list of boards supported with ReadyFlow, visit our website at:
www.pentek.com/readyflow

PENTEK
Pentek, Inc. One Park Way ◆ Upper Saddle River ◆ New Jersey 07458
Tel: 201·818·5900 ◆ Fax: 201·818·5904 ◆ Email: info@pentek.com
www.pentek.com

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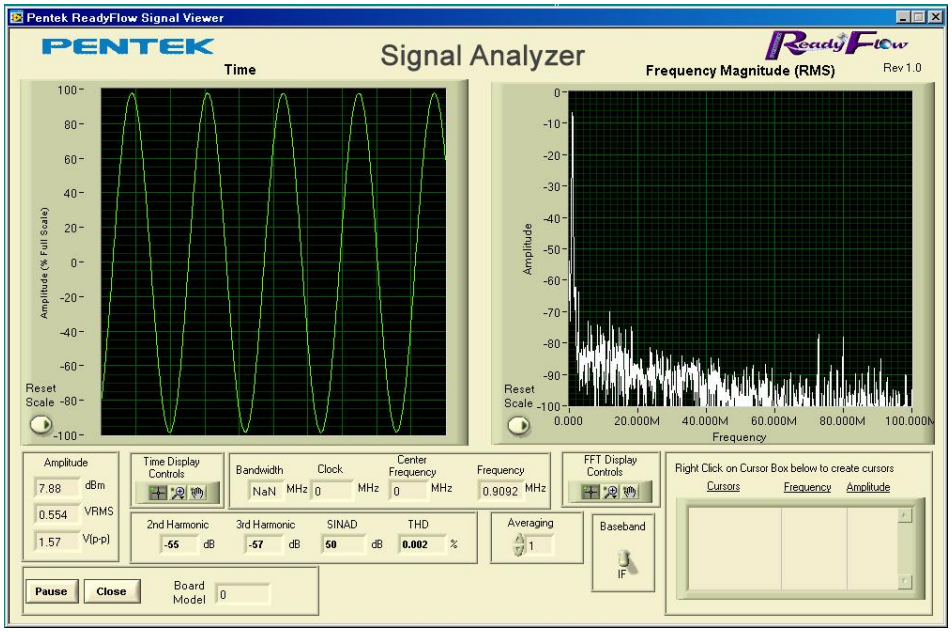

Signal Analyzer*

When used with the Command Line Interface, the Signal Analyzer allows users to immediately start acquiring and displaying A/D data. A full-featured analysis tool, the Signal Analyzer displays data in time and frequency domains. Built-in measurement functions display 2nd and 3rd harmonics, THD (total harmonic distortion), and SINAD (signal to noise and distortion). Interactive cursors allow users to mark data points and instantly calculate amplitude and frequency of displayed signals

Example, Model 71620

As an example of XMC module support, the BSP for the Cobalt® Model 71620 Transceiver with three 200 MHz A/Ds, DUC (Digital Upconverter), and two 800 MHz D/As includes data structures and routines to support the following:

- PCIe Bus interface and DMA controller
- Board control registers
- Timing bus control and clock selection
- Triggering, gate enable and polarity
- Data input device management for the 200 MHz A/D
- Data output device management for the DUC and the 800 MHz D/A
- Built-in A/D Data Acquisition IP Modules
- Built-in D/A Waveform Playback IP Modules
- Built-in test waveform generator
- Interrupt generation and handling
- FPGA configuration
- Test modes and hardware revision codes
- Hardware voltage and temperature monitor

Ordering Information

Model Description

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Pentek, Inc. One Park Way ◆ Upper Saddle River ◆ New Jersey 07458 www.pentek.com
Tel: 201·818·5900 ◆ Fax: 201·818·5904 ◆ Email: info@pentek.com