Part Number: HSWN2500

C Source Code Generator

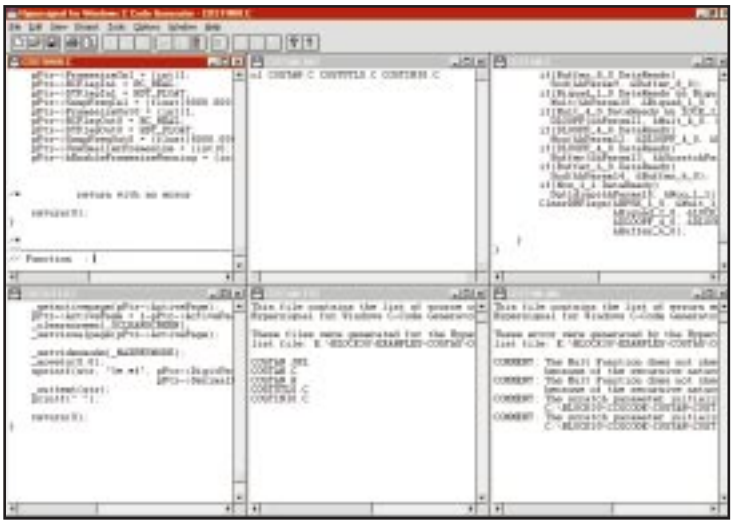
Automatically generate ANSI C source code from your visual designs!

Q. Do I need the C Source Code Generator for my application?

A. You may find that the C Code Generator is a very useful product for your application. However, not all users require the C Code Generator because they may only be using Block Diagram for simulation, RIDE for rapid prototyping and real-time algorithm verification, or RIDE's unique application export capability to export designs directly to a DSP COFF executable file. The C Code Generator is useful to generate the application's complete source code for porting to another platform such as UNIX or VME that requires a cross-compilation from source. Many customers use the C Code Generator to create the bulk of their application's code, and they modify it accordingly or add assembly routines to improve performance as needed. The C Code Generator is also useful for gaining access to the block's source code for various reasons such as modification and re-entry into the visual environment. The C Code Generator can drastically reduce design cycle times since it can produce a structured DSP application with access to a large library of DSP functions. In most cases, the price of the C Code Generator which is on the order of two or three weeks of a DSP engineer's labor rate, is a very cost-effective tool to minimize technical risk and overall project expenditures.

Q. What are the benefits?

A. Benefits of the C Source Code Generator are many; the man-time savings for a single typical project will pay for the cost of our entire tool set. The maintainability of the generated source code will also save considerable engineering resources over time, which allows the design engineer to spend more time improving aspects of the overall design. One of the most important reasons to consider the C Source Code Generator is the overall speed of development of a project or product, which translate into an overall decrease in time-to-market for a particular product. In today's fast-paced area of high-tech engineering design, most companies will be relying on tools such as this one to improve their time-to-market.



The Automatic ANSI C Source Code Generator saves valuable time during the course of many DSP design and development efforts

Overview

The ANSI C Source Code Generator is an extremely useful option for Hypersignal® Block Diagram/RIDE. In addition to the simulation capabilities provided by Block Diagram (or the real-time capabilities provided by RIDE), this software development tool automatically creates ANSI C source code which represents the algorithm designed visually with Block Diagram or RIDE.

This high-level source code may then be used in a variety of ways. For example, the portability of the C language permits the resulting source code to be transferred to alternative platforms such as UNIX-based systems and high-end workstations. In addition, for real-time applications, the C source code may be cross-compiled for a particular DSP chip, using one of many available C cross compilers for the various DSP chips. User-written assembly (and C) routines may also be interfaced to the C source code for improved performance in demanding real-time applications.

Most major DSP chip vendors have spent considerable time in developing their respective C cross compilers, and have also been increasing the overall performance of their DSP chips. These trends, combined with the new concept of co-developing the DSP chip architecture jointly with the engineering team responsible for the C cross compiler enable products such as the C Source Code Generator to be used in many new application areas, as well as traditional markets, with the possibility of dramatically reducing overall software design time for a given project.

Technical Description

The C Source Code Generator works in conjunction with Hypersignal Block Diagram/RIDE to produce source code in the high-level C language. First, a simulation or real-time worksheet is created in Block Diagram/RIDE which represents the engineer's algorithm. This visual design is then saved in a file which contains the information relating to the algorithm components and data flow, and the information relating to the specific parameters of the design. This file is then used by the C Source Code Generator to create source files representing the initialization of the system, the utility functions and the algorithm source code, and the main controlling executive for the system. A combination of a limited expert-based system, in conjunction with an automatic rule-based decision methodology allow for the creation of efficient, well-written source code.

Hyperception

The Leader in DSP