
SH7216

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Rev.1.00

IwIP Ethernet Demonstration

August 31, 2011

Introduction

Renesas Starter Kits (RSK) are supplied as complete development systems for the selected microcontroller. The kit includes an evaluation board, portable On Chip Debugger and a set of peripheral sample code.

Renesas has several devices that are capable of supporting Ethernet and other peripheral functions. There are many solutions for supporting these devices using various operating systems and schedulers. Renesas is aware that each of these solutions come at a cost and therefore has provided a royalty free scheduler and a 3rd party Ethernet Stack operating as a single system.

The demonstration project provides an example of Ethernet connectivity and a sample Web server application that controls LEDs on the Renesas RSK+ board. Monitoring of other peripheral functions can also be shown by simply writing functions that are called from the output processor when a tag is encountered in the transmitted html data.

In addition to this a passive telnet server is included for demonstration of remote management via a command line.

Support for the Ethernet stack is provided via the use of the open source lwip stack that is subject to license conditions. It is the user's responsibility to ensure that the open source license conditions are met if this code is re-used. The relevant files are clearly identified by the license header at the top of the file.

This stack is written to use highly commented code and a standard ANSI IO library interface to provide the easiest possible interface to the user applications. While no support is provided for this demonstration we hope that this document and the commenting in the code together with the accompanying User Documentation will provide the user all the necessary information to use this stack in their own application using a Renesas Microcontroller.

This IwIP Ethernet Stack is supplied as an installer providing a Hi-performance Embedded Workshop (HEW) Project Generator plus full User Documentation.

Target Device

SH7216

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1. Installation

The lwIP Ethernet Demonstration is supplied as an installer providing a Hi-performance Embedded Workshop (HEW) Project Generator plus full User Documentation.



Note: Please ensure that HEW plus the SH toolchain are already installed on your PC. Evaluation versions of the SH toolchain including the HEW IDE are readily available from the Renesas website.

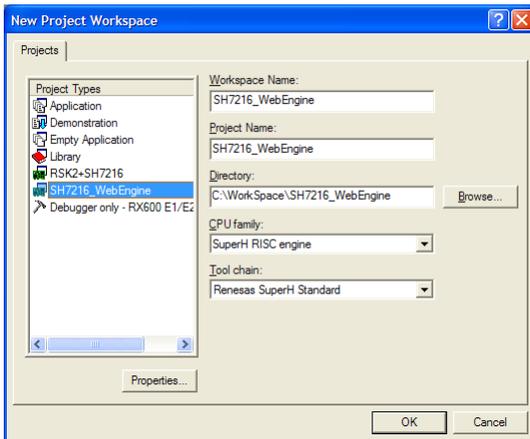
Locate the downloaded installer package, for example rsksh7216lwip100000752.exe and double click to run it. Follow the installation instructions.

Once installed the documentation is available using the Renesas Manual Navigator. From the Windows Start button select All Programs | Renesas | Hi-performance Embedded Workshop | Manual Navigator. Expand the Renesas WebEngine Documentation branch and double click on the manual title to open the document.

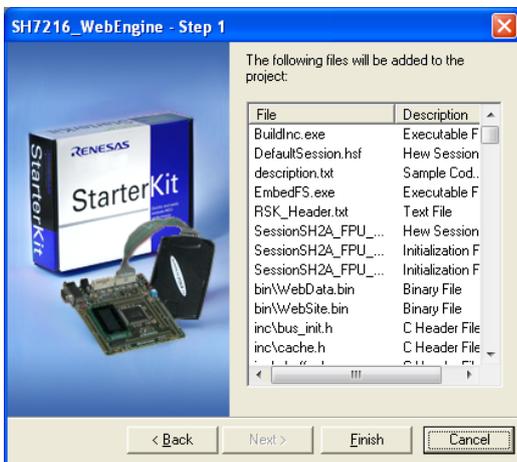
The Project Generator can be run from within HEW from the File | New Workspace menu item.

2. Creating the lwIP Ethernet Demonstration Workspace

In the New Project Workspace dialog select SH7216_WebEngine project type and assign a Workspace Name before clicking Ok.

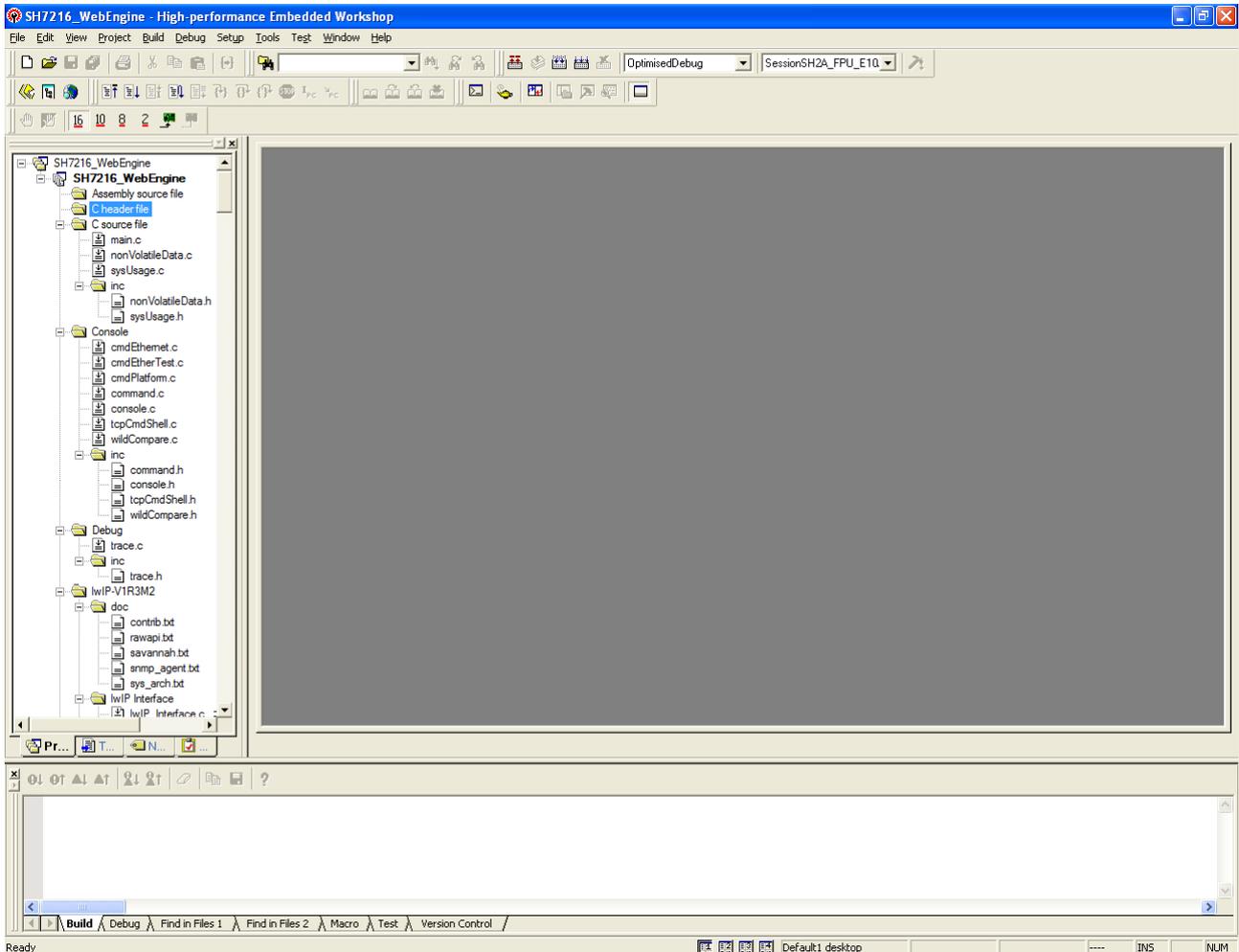


Select New SH7216_WebEngine Project and complete the New Project Workspace Wizard.



3. Opening sample code source files

Once the workspace and project is loaded the source code and all dependant files can be opened in the editor by double clicking the file in the workspace window.



Example

4. Source code functionality

The source code project is specifically written to run on the appropriate RSK. However this source code can be useful as an example even without the RSK.

The project will contain a C source file 'main.c'. This source file will include the C function main().

5. Website and Support

Renesas Electronics Website

<http://www.renesas.com/>

Inquiries

<http://www.renesas.com/inquiry>

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6. Revision Record

Rev.	Date	Description	
		Page	Summary
1.00	Aug 31, 2011	—	First edition issued

General Precautions in the Handling of MPU/MCU Products

The following usage notes are applicable to all MPU/MCU products from Renesas. For detailed usage notes on the products covered by this manual, refer to the relevant sections of the manual. If the descriptions under General Precautions in the Handling of MPU/MCU Products and in the body of the manual differ from each other, the description in the body of the manual takes precedence.

1. Handling of Unused Pins

Handle unused pins in accord with the directions given under Handling of Unused Pins in the manual.

- The input pins of CMOS products are generally in the high-impedance state. In operation with an unused pin in the open-circuit state, extra electromagnetic noise is induced in the vicinity of LSI, an associated shoot-through current flows internally, and malfunctions occur due to the false recognition of the pin state as an input signal become possible. Unused pins should be handled as described under Handling of Unused Pins in the manual.

2. Processing at Power-on

The state of the product is undefined at the moment when power is supplied.

- The states of internal circuits in the LSI are indeterminate and the states of register settings and pins are undefined at the moment when power is supplied.

In a finished product where the reset signal is applied to the external reset pin, the states of pins are not guaranteed from the moment when power is supplied until the reset process is completed.

In a similar way, the states of pins in a product that is reset by an on-chip power-on reset function are not guaranteed from the moment when power is supplied until the power reaches the level at which resetting has been specified.

3. Prohibition of Access to Reserved Addresses

Access to reserved addresses is prohibited.

- The reserved addresses are provided for the possible future expansion of functions. Do not access these addresses; the correct operation of LSI is not guaranteed if they are accessed.

4. Clock Signals

After applying a reset, only release the reset line after the operating clock signal has become stable.

When switching the clock signal during program execution, wait until the target clock signal has stabilized.

- When the clock signal is generated with an external resonator (or from an external oscillator) during a reset, ensure that the reset line is only released after full stabilization of the clock signal. Moreover, when switching to a clock signal produced with an external resonator (or by an external oscillator) while program execution is in progress, wait until the target clock signal is stable.

5. Differences between Products

Before changing from one product to another, i.e. to one with a different type number, confirm that the change will not lead to problems.

- The characteristics of MPU/MCU in the same group but having different type numbers may differ because of the differences in internal memory capacity and layout pattern. When changing to products of different type numbers, implement a system-evaluation test for each of the products.

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