

RH850/R1L

R01AN4328ED0300

Getting Started

Rev.3.0

Introduction

This document provides an overview about all available support items, related to the RH850/R1L devices, such as

- latest device documentation, i.e. Hardware and Software User's Manuals, Data Sheets, Operating Precautions
- latest tools for software development
- latest information about hardware tools for application development
- software examples to get started

The latest version of this document can be downloaded via following web link:

[Current "Getting Started" document version](#)

Target Device

RH850/R1L.

MyPages Registration

Most of the documentation, software and other tools packages are distributed via Renesas' MyPages web service. For creating your MyPages account please register yourself via

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Open MyPages Downloads

Besides the material, that is only available for registered users, the MyPages web services provides unrestricted access to a lot of other material related to Renesas' microcontrollers software, documentation, evaluation tools, etc.

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1. Reference Documents

An overview of all reference documents for the RH850/R1L are summarized in the “RH850/R1L Manual Package”.

The Manual Packages are provided to registered users for download via Renesas’ MyPages web service (refer to *MyPages Registration* on page 1).

2. Software Tools

2.1 Development Tools – supported by Renesas

This section contains only information about development tools directly supported by Renesas Electronics.

2.1.1 Green Hills Multi

The demo software in this application note, refer to 5. *Startup Software*, require a properly installed GHS compiler version V6.1.4/2013.5.5 or later.

EXEC & 850eserv

To support the RH850/R1L devices, the EXEC and 850eserv versions of the default GHS installation need to be replaced.

The EXEC and 850eserv software packages can be downloaded via the following link:

[Renesas software packages for GHS \(Ordercode: Y-GHS-MULTI-V800-FULL\)](#)

2.1.2 Renesas IDE and C Compiler

Renesas provides a RH850/R1L devices tool set, comprising

- Eclipse based Integrated Development Environment IDE e² studio
- C Compiler Package for RH850 Family

For further information refer to

[Renesas e² studio IDE](#)

[Renesas RH850 C Compiler.](#)

2.1.3 IAR Embedded Workbench for RH850

IAR offers their Embedded Workbench also for the RH850/R1L devices.

For further information concerning IAR Embedded Workbenches for Renesas’ RH850 MCUs refer to

[IAR Renesas RH850 Embedded Workbenches.](#)

2.2 Development Tools – supported by Tool Partners

Following development tools are not directly supported by Renesas Electronics:

- iSYSTEM WinIDEA, refer to [iSYSTEM Development Tools](#)
- Lauterbach Trace32, refer to [Lauterbach Development Tools](#)
- PLS Universal Debug Engine UDE, refer to [PLS Development Tools](#)
- Tasking IDE and Compiler, refer to [Tasking Renesas RH850 Software Development Tools](#)
- WindRiver Compiler, refer to [Wind River Development Tools](#)

Please contact the related tool supplier in case of any support demand.

3. Device Files Packages

The device file package comprises following content:

- Device Files (*.dvf)
- c-Header files (*.h) of device related registers
- Debugger information files (*.grd)
- Linker files (*.ld)
- Startup files (*.850)

3.1 Device File Packages for GHS MULTI

A GHS device file package for RH850/R1L can be downloaded from the Renesas web site:

[Device file packages for GHS \(Ordercode: DF-RH850-GHS\)](#)

The device file can be placed in any directory of the user's PC installation. Still, the chosen path must be supplied to the GHS environment upon start of a debug session. See 5. *Startup Software* for further details.

The header-, linker- and other files are usually placed within the directory structure of a software project. See the supplied demo project for reference.

3.2 Device File Packages for IAR Embedded Workbench

Usually device files for the RH850/R1L are included in the IAR tool package.

In case you miss the device file for your particular device in the IAR package, please check on Renesas' MyPages web service for the device file package (refer to *Open MyPages Downloads* on page 1 for the link).

4. Hardware Tools

Please note that this chapter only contains information about tools directly supported by Renesas Electronics.

Note: The RH850/R1L and RH850/F1L devices share the same hardware development tools. Thus utilize the RH850/F1L tools also for the RH850/R1L devices.

4.1 Flash Programmer PG-FP6 (RTE0T00001FWREA000R)

The programming GUI for the PG-FP6 Flash Programmer can be downloaded via following links:

- PG-FP6 GUI and USB Driver:
 - [Renesas PG-FP6 Flash Programmer Software Packages \(Ordercode: RTE0T00001FWREA000R\)](#)
 - [Renesas PG-FP6 Flash Programmer Documentation \(Ordercode: RTE0T00001FWREA000R\)](#)
- Device Parameter Files are included in the PG-FP6 GUI package.

4.2 Flash Programmer PG-FP5

The PG-FP5 is already end of life and replaced by PG-FP6.

The firmware and programming GUI for the PG-FP5 Flash Programmer can be downloaded via following links:

- PG-FP5 GUI and Firmware:
 - Renesas PG-FP5 Flash Programmer Software Packages (Ordercode: PG-FP5-EE)
 - Renesas PG-FP5 Flash Programmer Documentation (Ordercode: PG-FP5-EE)
- Device Parameter (PR5) files:
 - [Renesas PG-FP5 Flash Programmer Software Packages \(Ordercode: PG-FP5-EE_RH850\)](#)

4.3 Flash Programmer RFP

RH850/R1L is supported by Renesas Flash Programmer RFP V3.00.xx.

The RFP software and documentation can be downloaded via the following links:

[Renesas Flash Programmer \(RFP\) Software Packages \(Ordercode: RFP-EE\)](#)

[Renesas Flash Programmer \(RFP\) Documentation \(Ordercode: RFP-EE\)](#)

4.4 E1 and E2 Emulators

No dedicated actions or updates are required to use the E1 or E2 Emulator with the RH850/R1L devices.

Still, related information about the E1 Emulator is available via the following link:

[Renesas E1 Emulator Documentation \(Ordercode: R0E000010KCE00\)](#)

Renesas' Emulator E2 additional documentation and USB drivers:

[Renesas E2 Emulator Software Packages \(Ordercode: RTE0T00020KCE00000R\)](#)

[Renesas E2 Emulator Documentation \(Ordercode: RTE0T00020KCE00000R\)](#)

4.4.1 Emulator connection to the RH850/R1L

Special documents detail the connection of the Emulator to the target system.

The documents can be downloaded via the above-mentioned Emulator Documentation links:

- RH850/F1L, shared with RH850/R1L:
 - Title: E1/E20 and E2 Emulator Additional Document for User's Manual (Notes on Connection of RH850/F1L)
 - Document: [R20UT2452EJxxxx](#) (xxx = revision number)

4.5 RH850/R1L Evaluation boards

The RH850/R1L evaluation board system comprises

- the RH850/X1x Evaluation Main Board
- a RH850/R1L specific PiggyBack board

4.5.1 RH850/X1x Main Board

The latest version of the User's Manuals for the RH850/X1x MainBoards can be found at this location:

[Renesas RH850/X1x MainBoard documentation \(Ordercode: Y-RH850-X1X-MB-T1-V1\)](#)

[Renesas RH850/X1x Network MainBoard documentation \(Ordercode: Y-RH850-X1X-MB-T2-V1\)](#)

4.5.2 RH850/R1L PiggyBack Boards

Following table provides links to the latest versions of the User's Manuals for the RH850/R1L PiggyBack Boards:

Table 4.1 PiggyBack Boards User's Manuals

Device	Package	PiggyBack Ordercode	User's Manual document number ¹
R1L	80 pin LQFP	Y-RH850-F1X-080PIN-PB-T1-V1	R20CS0004EDxxxx
R1L	100 pin LQFP	Y-RH850-F1X-100PIN-PB-T1-V1 ²	R20ZZ0048EDxxxx
		Y-RH850-F1X-100PIN-PB-T1-V2 ²	R20UT3005EDxxxx
		Y-RH850-F1X-100PIN-PB-T1-V3	R20UT3959EDxxxx
R1L	144 pin LQFP	Y-RH850-F1X-144PIN-PB-T1-V1 ²	R20UT2501EDxxxx
		Y-RH850-F1X-144PIN-PB-T1-V2 ²	R20UT3036EDxxxx
		Y-RH850-F1X-144PIN-PB-T1-V3	R20UT4129EDxxxx

Notes: ¹ "xxxx" in the document number stands for the current document version number. Download the current version via the given link.

² These PiggyBack Boards are replaced by their next version. Thus, they are not delivered anymore, though their User's Manuals are still available.

5. Startup Software

Note: The startup sample software is intended as generic example which shows basic initialization and setup. The software is provided for reference only.

The startup sample software is included in the device file package described in *3.1 Device File Packages for GHS MULTI*.

Additional sample software can be provided for the Piggyback Boards described in *4.5.2 RH850/R1L PiggyBack Boards*.

For detailed information about the functions of additional sample software refer to the description included in the package.

Website and Support

Renesas Electronics Website

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

Inquiries

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

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Revision History

Rev.	Date	Description	
		Page	Summary
V1.0	2013-07-12	–	Initial release
V1.1	2013-07-19	–	Update of SW directory names.
V1.2	2013-08-08	2	Update of UM information
		7	Update of PiggyBack board information
		–	Update of SW
V1.3	2013-11-06	2	Update of OPC information
		4	Update of compiler information (compiler dictionary and EXEC)
		4-5	Update of Device Files
		–	Update of Example SW
		–	Update of Tools
V1.4	2013-11-19	2	Update of UM information
		4-5	Update of Device Files
V1.5	2013-12-06	4	Update of EXEC & ESERV
V1.6	2014-01-09	–	Update of Flash Programmer RFP
V1.7	2014-02-24	2-3	Update of UM, Data Sheet and OPC information
		4-5	Update of Device Files
		–	Update of Example SW
V1.8	2014-04-24	–	Update of Flash Tools PF-FP5 and RFP package
V1.9	2014-07-25	4-5	Update of Device Files
		6	Add RH850/F1L 144-pin Piggy Board
		–	Update of Example SW
V2.0	2014-12-19	2-3	Update of Reference Documents
V3.0	2018-10-26	–	General update of document content

General Precautions in the Handling of Microprocessing Unit and Microcontroller Unit Products

The following usage notes are applicable to all Microprocessing unit and Microcontroller unit products from Renesas. For detailed usage notes on the products covered by this document, refer to the relevant sections of the document as well as any technical updates that have been issued for the products.

1. Handling of Unused Pins

Handle unused pins in accordance 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 a product with a different part number, confirm that the change will not lead to problems.

- The characteristics of Microprocessing unit or Microcontroller unit products in the same group but having a different part number may differ in terms of the internal memory capacity, layout pattern, and other factors, which can affect the ranges of electrical characteristics, such as characteristic values, operating margins, immunity to noise, and amount of radiated noise. When changing to a product with a different part number, implement a system-evaluation test for the given product.

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