

RH850/F1x

R01AN4325ED0200

Getting Started

Rev.2.0

Introduction

This document provides an overview about all available support items, related to the RH850/F1x 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/F1x. In this document F1x refers to the F1L, F1M and F1H devices.

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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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/F1x are summarized in the “RH850/F1x 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/F1x 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/F1x 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/F1x 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 (*.dvh)
- 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/F1x 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/F1x 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.

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/F1x 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/F1x 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/F1x

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:
 - Title: E1/E20 and E2 Emulator Additional Document for User's Manual (Notes on Connection of RH850/F1L)
 - Document: R20UT2452EJxxxx (xxx = revision number)
- RH850/F1HL, RH850/F1M:
 - Title: E1/E20 and E2 Emulator Additional Document for User's Manual (Notes on Connection of RH850/F1H and RH850/F1M)
 - Document: R20UT3116EJxxxx (xxx = revision number)

4.5 RH850/F1x Evaluation boards

The RH850/F1x evaluation board system comprises

- the RH850/X1x Evaluation Main Board
- a RH850/F1x 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/F1x PiggyBack Boards

Following table provides links to the latest versions of the User's Manuals for the RH850/F1x PiggyBack Boards:

Table 4.1 PiggyBack Boards User's Manuals

| Device | Package | PiggyBack Ordercode | User's Manual document number ¹ |
|-----------------------------|--------------|--|--|
| F1L | 48 pin LQFP | Y-RH850-F1X-048PIN-PB-T1-V1 | R20UT3016EDxxxx |
| | 64 pin LQFP | Y-RH850-F1X-064PIN-PB-T1-V1 | R20UT2767EDxxxx |
| | 80 pin LQFP | Y-RH850-F1X-080PIN-PB-T1-V1 | R20CS0004EDxxxx |
| | 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 | |
| F1H PREMIUM | | Y-RH850-F1X-100PIN-PB-T2-V1 | R20UT3802EDxxxx |
| F1L | 144 pin LQFP | Y-RH850-F1X-144PIN-PB-T1-V1 ² | R20UT2501EDxxxx |
| F1L, F1M | | Y-RH850-F1X-144PIN-PB-T1-V2 ² | R20UT3036EDxxxx |
| | | Y-RH850-F1X-144PIN-PB-T1-V3 | R20UT4129EDxxxx |
| F1L | 176 pin LQFP | Y-RH850-F1X-176PIN-PB-T1-V1 ² | R20UT2209xxxx |
| F1L, F1H | | Y-RH850-F1X-176PIN-PB-T1-V2 ² | R20UT2884EDxxxx |
| F1L, F1M, F1H | | Y-RH850-F1X-176PIN-PB-T1-V3 ² | R20UT3931EDxxxx |
| | | Y-RH850-F1X-176PIN-PB-T1-V4 | R20UT4148EDxxxx |
| F1H | 233 pin BGA | Y-RH850-F1X-233PIN-PB-T1-V1 | R20UT3227EDxxxx |
| F1H | 272 pin BGA | Y-RH850-F1X-272PIN-PB-T1-V1 | R20UT3004EDxxxx |

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.

4.6 F1M and F1H Emulation Adapter

For the F1M and F1H devices an Emulation Adapter is available. Related documentation can be found at this location:

[F1H Emulation Adapter \(Ordercode: Y-RH850-F1H-EMU-ADAPTER\)](#)

The connection of the Emulation Adapter to the target board requires additional mechanical adapters and connectors.

Refer to the Emulation Adapter's User's Manual for further information.

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/F1x 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

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Revision History

| Rev. | Date | Description | |
|------|------------|-------------|---|
| | | Page | Summary |
| V1.0 | 2016-05-13 | – | Initial release |
| V1.1 | 2015-07-10 | | Updated references to devices' reference manuals Updated information about GHS version Updated information about EXEC version Updated information about device files Updated information about PiggyBack boards and MainBoard documentation Updated F1H software example |
| V2.0 | 2018-10-19 | – | 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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