RL78 FAMILY
FLASH MEMORY
REPROGRAMMING
SOFTWARE INTRODUCTION

20TH, AUG. 2024   R20CD0026EJ0100 REV.1.00

FLASH TECHNOLOGY SECTION

SYSTEM SOLUTION DEPARTMENT 3

SOFTWARE DEVELOPMENT DIVISION UNIT

SOFTWARE & DIGITALIZATION GROUP

RENESAS ELECTRONICS CORPORATION

RENESAS

FLASH MEMORY REPROGRAMMING SOFTWARE FOR RL78 FAMILY

This document introduce the flash memory reprogramming software available for each MCU group.

The flash memory reprogramming software provided for RL78 family depends on MCU group used.

- **RL78/G2x Group, RL78/F23 and RL78/F24 Group:** **Flash Driver**

- **RL78/G15 and RL78/G16 Group:** **Sample Program**

- **RL78/x1x Group*:** **Self Programming Library**

For information on the flash memory reprogramming software products available for each MCU group, refer to "LIST OF FLASH REPROGRAMMING SOFTWARE BY GROUP" on next page and beyond.
For details of flash memory reprogramming software, please refer to the respective user's manual.

Note. The "Renesas Flash Driver" may be abbreviated as "RFD" and the "EEPROM Emulation Software" may be abbreviated as "EES".

* The MCUs belonging to the RL78/x1x group are listed in the "MCU Group" column on the "RL78 Family Self RAM list of Flash Self Programming Library".

RENESAS

LIST OF FLASH REPROGRAMMING SOFTWARE BY GROUP (1)

RL78/G2x Group

Family	Group	Series Name	Software Name (Flash Driver)	Page (Link)
RL78	G22	R7F102Gxx	• Renesas Flash Driver RL78 Type 01 (Simple version)	
	G23	R7F100Gxx	• Renesas Flash Driver RL78 Type 01 (SC version)	Page 08
	G24	R7F101Gxx	• EEPROM Emulation Software RL78 Type 01	

RL78/F23 and RL78/F24 Group

Family	Group	Series Name	Software Name (Flash Driver)	Page (Link)
RL78	F23	R7F123FxG	• Renesas Flash Driver RL78 Type 02 (Simple version)	
	F24	R7F124FxJ	• Renesas Flash Driver RL78 Type 02 (SC version)	Page 11
			• EEPROM Emulation Software RL78 Type 02	

RENESAS

LIST OF FLASH REPROGRAMMING SOFTWARE BY GROUP (2)

RL78/G15 and RL78/G16 Group

Family	Group	Series Name	Software Name (Sample Program)	Page (Link)
RL78	G15	R5F120xx	• Renesas Flash Sample Program Type 01 (Simple version) • Renesas Flash Sample Program Type 01 (SC version)	Page 14
	G16	R5F121xx		

RENESAS

LIST OF FLASH REPROGRAMMING SOFTWARE BY GROUP (3)

RL78/ x1x Group (Japanese Release)

Target Region: Mainland China/ Hong Kong/ Singapore/ South & Southeast Asia/ Oceania/ India/ South Korea/ Taiwan/ Japan

Family	Group	Software Name (Self Programming Library)	Page (Link)
RL78	x1x	- Flash Self Programming Library Type01 for RL78 Family - Data Flash Library Type04 for RL78 Family - EEPROM Emulation Library Pack02 for RL78 Family - EEPROM Emulation Library Pack01 for RL78 Family	Page 16

Note. The products of RL78/x1x group are eligible for the flash memory reprogramming software listed in the table, but it may not be available depending on the size of the ROM, RAM and data flash memory installed.
Please check the "RL78 Family Self RAM list of Flash Self Programming Library" for available flash reprogramming software for the MCU to be used.

RENESAS

LIST OF FLASH REPROGRAMMING SOFTWARE BY GROUP (3)

RL78/ x1x Group (European Release)

Target Region: Americas/ Brazil/ Europe/ Middle East/ Africa

Family	Group	Software Name (Self Programming Library)	Page (Link)
RL78	x1x	- Flash Self Programming Library Type01 for RL78 Family - Data Flash Library Type04 for RL78 Family - EEPROM Emulation Library Pack02 for RL78 Family - EEPROM Emulation Library Pack01 for RL78 Family	Page 19

Note. The products of RL78/x1x group are eligible for the flash memory reprogramming software listed in the table, but it may not be available depending on the size of the ROM, RAM and data flash memory installed.
Please check the "RL78 Family Self RAM list of Flash Self Programming Library" for available flash reprogramming software for the MCU to be used.

RENESAS

CONTENTS

RENESAS

RL78/G2x GROUP SUPPORTED
FLASH MEMORY REPROGRAMMING SOFTWARE 1/3

Flash Driver Products:

Target IDE: CS+, e^2 studio, IAR Embedded Workbench

Target Compiler: CC-RL, IAR, LLVM

- **Renesas Flash Driver RL78 Type 01 for RL78/G2x**

The Renesas Flash Driver RL78 Type 01 for RL78/G2x is available in a "Simple version" and a "Smart Configurator version (SC version)" and the following areas can be reprogramming.

Code Flash Memory, Data Flash Memory,
Extra Area (Reprogramming of flash memory security, boot swap function, etc.).

  - **Renesas Flash Driver RL78 Type 01 for RL78/G2x Simple version**
    The simple version package includes the process of reprogramming "Code flash memory", "Data flash memory" and "Extra area".

  - **Renesas Flash Driver RL78 Type 01 for RL78/G2x Smart Configurator version (SC version)**
    The SC version is the RFD RL78 Type 01 linked to the frequency setting of the Smart Configurator. The component is separated into a "Code Flash memory", a "Data Flash memory" and an "Extra area". Start the Smart Configurator from development environment and download and use the target component. The "Flash Common" is required to reprogramming the "Code flash memory", "Data flash memory" and "Extra area".

- **EEPROM Emulation Software RL78 Type 01 for RL78/G2x**

The EES is sample software for executing the EEPROM emulation mechanism from user program.

RENESAS

RL78/G2x GROUP SUPPORTED FLASH MEMORY REPROGRAMMING SOFTWARE 2/3

Flash Driver Products:

Target IDE: CS+, e^2 studio, IAR Embedded Workbench

Target Compiler: CC-RL, IAR, LLVM

- **Renesas Flash Driver RL78 Type 01 for RL78/G2x Simple version**

    – **Renesas Flash Driver RL78 Type 01 for RL78/G2x**

    – **Renesas Flash Driver RL78 Type 01 User's Manual for RL78/G2x**

- **Renesas Flash Driver RL78 Type 01 for RL78/G2x Smart Configurator version (SC version)**

    The procedure for downloading using the Smart Configurator is described in the Application Note (.pdf).

    Please click on the link below to download and check.

    – **RL78 Family Renesas Flash Driver RL78 Type 01 SC version (Code Flash) Application Note**

    – **RL78 Family Renesas Flash Driver RL78 Type 01 SC version (Data Flash) Application Note**

    – **RL78 Family Renesas Flash Driver RL78 Type 01 SC version (Extra Area) Application Note**

    – **RL78 Family Renesas Flash Driver RL78 Type 01 SC version (Flash Common) Application Note**

RENESAS

RL78/G2x GROUP SUPPORTED FLASH MEMORY REPROGRAMMING SOFTWARE 3/3

Flash Driver Products:

Target IDE: CS+, e^2 studio, IAR Embedded Workbench

Target Compiler: CC-RL, IAR, LLVM

- **EEPROM Emulation Software RL78 Type 01 for RL78/G2x**

  – **EEPROM Emulation Software RL78 Type 01 for RL78/G2x**

  – **EEPROM Emulation Software RL78 Type 01 User's Manual for RL78/G2x**

  Note. This software uses the Renesas Flash Driver RL78 Type 01 (Simple version) as a built-in driver.
  Please also download the Renesas Flash Driver RL78 Type 01 (Simple version) together.

RENESAS

RL78/F23 AND RL78/F24 GROUP SUPPORTED FLASH MEMORY REPROGRAMMING SOFTWARE 1/3

Flash Driver Products:

Target IDE: CS+, e^2 studio, IAR Embedded Workbench

Target Compiler: CC-RL, IAR

- **Renesas Flash Driver RL78 Type 02 for RL78/F23 and RL78/F24 Group**

The Renesas Flash Driver RL78 Type 02 for RL78/F23 and RL78/F24 is available in a "Simple version" and a "Smart Configurator version (SC version)" and the following areas can be reprogramming.

Code Flash Memory, Data Flash Memory,
Extra Area (Reprogramming of flash memory security, boot swap function, etc.)

- – **Renesas Flash Driver RL78 Type 02 for RL78/F23 and RL78/F24 Group Simple version**
  The simple version package includes the process of reprogramming "Code flash memory", "Data flash memory" and "Extra area".

- – **Renesas Flash Driver RL78 Type 02 for RL78/F23 and RL78/F24 Group Smart Configurator version (SC version)**
  The SC version is the RFD RL78 Type 02 linked to the frequency setting of the Smart Configurator. The component is separated into a "Code Flash memory", a "Data Flash memory" and an "Extra area". Start the Smart Configurator from development environment and download and use the target component. The "Flash Common" is required to reprogramming the "Code flash memory", "Data flash memory" and "Extra area".

- **EEPROM Emulation Software RL78 Type 02 for RL78/F23 and RL78/F24**

The EES is sample software for executing the EEPROM emulation mechanism from user program.

RENESAS

RL78/F23 AND RL78/F24 GROUP SUPPORTED FLASH MEMORY REPROGRAMMING SOFTWARE 2/3

Flash Driver Products:

Target IDE: CS+, e^2 studio, IAR Embedded Workbench

Target Compiler: CC-RL, IAR

- **Renesas Flash Driver RL78 Type 02 for RL78/F23 and RL78/F24 Group Simple version**
  - **Renesas Flash Driver RL78 Type 02 for RL78/F23 and RL78/F24**
  - **Renesas Flash Driver RL78 Type 02 User's Manual for RL78/F23 and RL78/F24**

- **Renesas Flash Driver RL78 Type 02 for RL78/F23 and RL78/F24 Group Smart Configurator version (SC Version)**

  The procedure for downloading using the Smart Configurator is described in the Application Note (.pdf).

  Please click on the link below to download and check.

  - **RL78 Family Renesas Flash Driver RL78 Type 02 SC version (Code Flash)**
  - **RL78 Family Renesas Flash Driver RL78 Type 02 SC version (Data Flash)**
  - **RL78 Family Renesas Flash Driver RL78 Type 02 SC version (Extra Area)**
  - **RL78 Family Renesas Flash Driver RL78 Type 02 SC version (Flash Common)**

RENESAS

RL78/F23 AND RL78/F24 GROUP SUPPORTED FLASH MEMORY REPROGRAMMING SOFTWARE 3/3

Flash Driver Products:

Target IDE: CS+, e^2 studio, IAR Embedded Workbench

Target Compiler: CC-RL, IAR

- **EEPROM Emulation Software RL78 Type 02 for RL78/F23 and RL78/F24 Group**

  – **EEPROM Emulation Software RL78 Type 02 for RL78/F23 and RL78/F24**

  – **EEPROM Emulation Software RL78 Type 02 User's Manual for RL78/F23 and RL78/F24**

  Note. This software uses the Renesas Flash Driver RL78 Type 02 (Simple version) as a built-in driver. Please also download the Renesas Flash Driver RL78 Type 02 (Simple version) together.

RENESAS

RL78/G15 AND RL78/G16 GROUP SUPPORTED FLASH MEMORY REPROGRAMMING SOFTWARE 1/2

Sample Program Products:

Target IDE: CS+, e^2 studio, IAR Embedded Workbench

Target Compiler: CC-RL, IAR, LLVM

- **RL78/G15 Group and RL78/G16 Group Renesas Flash Sample Program Type 01**

  The RL78/G15 Group and RL78/G16 Group Renesas Flash Sample Program Type 01 is available in a "Simple version" and a "Smart Configurator version (SC version)" and the following areas can be reprogramming.

  Code Flash Memory, Data Flash Memory.

  - **RL78/G15 Group and RL78/G16 Group Renesas Flash Sample Program Type 01 Simple version**

    The simple version package includes the process of reprogramming "Code flash memory" and "Data flash memory".

  - **RL78/G15 Group and RL78/G16 Group Renesas Flash Sample Program Type 01 Smart Configurator version (SC version)**

    The SC version is the Renesas Flash Sample Program Type 01 linked to the frequency setting of the Smart Configurator. The component is separated into a "Code Flash memory" and a "Data Flash memory". Start the Smart Configurator from development environment and download and use the target component. The "Flash Common" is required to reprogramming the "Code flash memory" and "Data flash memory".

  Note. RL78/G15 group and RL78/G16 group products cannot use the flash memory reprogramming software for the RL78/x1x group.

RENESAS

RL78/G15 AND RL78/G16 GROUP SUPPORTED FLASH MEMORY REPROGRAMMING SOFTWARE 2/2

Sample Program Products:

Target IDE: CS+, e^2 studio, IAR Embedded Workbench

Target Compiler: CC-RL, IAR, LLVM

- **RL78/G15 Group and RL78/G16 Group Renesas Flash Sample Program Type 01 Simple version**

  - **RL78/G15 Group and RL78/G16 Group Renesas Flash Sample Program Type 01**

  - **RL78/G15 Group and RL78/G16 Group Renesas Flash Sample Program Type 01 Application Note**

- **RL78/G15 Group and RL78/G16 Group Renesas Flash Sample Program Type 01 Smart Configurator version (SC version)**

  The procedure for downloading using the Smart Configurator is described in the Application Note (.pdf).

  Please click on the link below to download and check.

  - **RL78/G15 Group and RL78/G16 Group Renesas Flash Sample Program Type 01 SC Version (Code Flash)**

  - **RL78/G15 Group and RL78/G16 Group Renesas Flash Sample Program Type 01 SC Version (Data Flash)**

  - **RL78/G15 Group and RL78/G16 Group Renesas Flash Sample Program Type 01 SC Version (Flash Common)**

RENESAS

RL78/x1x GROUP SUPPORTED FLASH MEMORY REPROGRAMMING SOFTWARE JAPANESE RELEASE 1/3

Self Programming Library Products:

Target Region: Mainland China/ Hong Kong/ Singapore/ South & Southeast Asia/ Oceania/ India/ South Korea/ Taiwan/ Japan

Target IDE: CS+, e^2 studio

Target Compiler: CA78K0R, CC-RL, LLVM

- **Flash Self Programming Library Type01 for RL78 Family**

  Reprogramming code flash memory.

  - **Flash Self Programming Library Type01 for RL78 Family**
  - **RL78 Family Flash Self Programming Library Type01 User's Manual in Japan and Other Asian Countries (Japanese Release)**

- **Data Flash Library Type04 for RL78 Family**

  Reprogramming data flash memory.

  - **Data Flash Library Type04 for RL78 Family**
  - **RL78 Family Data Flash Library Type04 User's Manual in Japan and Other Asian Countries (Japanese Release)**

Note. Please check the "RL78 Family Self RAM list of Flash Self Programming Library" for available flash reprogramming software for the MCU to be used.

RENESAS

RL78/x1x GROUP SUPPORTED FLASH MEMORY REPROGRAMMING SOFTWARE JAPANESE RELEASE 2/3

Self Programming Library Products:

Target Region: Mainland China/ Hong Kong/ Singapore/ South & Southeast Asia/ Oceania/ India/ South Korea/ Taiwan/ Japan

Target IDE: CS+, e^2 studio

Target Compiler: CA78K0R, CC-RL, LLVM

▪ **EEPROM Emulation Library Pack02 for RL78 Family**

The EEPROM emulation library is a software library used to execute EEPROM emulation from a user-created program.

– **EEPROM Emulation Library Pack02 for RL78 Family**

– **RL78 Family EEPROM Emulation Library Pack02 User's manual in Japan and Other Asian Countries (Japanese Release)**

Note. Please check the "RL78 Family Self RAM list of Flash Self Programming Library" for available flash reprogramming software for the MCU to be used.

RENESAS

RL78/x1x GROUP SUPPORTED FLASH MEMORY REPROGRAMMING SOFTWARE JAPANESE RELEASE 3/3

Self Programming Library Products:

Target Region: Mainland China/ Hong Kong/ Singapore/ South & Southeast Asia/ Oceania/ India/ South Korea/ Taiwan/ Japan

Target IDE: CS+

Target Compiler: CA78K0R

- **EEPROM Emulation Library Pack01 for RL78 Family**

The EEPROM emulation library is a software library used to execute EEPROM emulation from a user-created program.

– **EEPROM Emulation Library Pack01 for RL78 Family**

– **RL78 Family EEPROM Emulation Library Pack01 Japanese Release user's manual**

Notes 1. Only CA78K0R compiler is supported. There are no plans to support CC-RL and LLVM compilers.

2. Please check the "RL78 Family Self RAM list of Flash Self Programming Library" for available flash reprogramming software for the MCU to be used.

RENESAS

RL78/x1x GROUP SUPPORTED FLASH MEMORY REPROGRAMMING SOFTWARE EUROPEAN RELEASE 1/3

Self Programming Library Products:

Target Region: Americas/ Brazil/ Europe/ Middle East/ Africa

Target IDE: CS+, e^2 studio, IAR Embedded Workbench

Target Compiler: CA78K0R, GNU, CC-RL, IAR, LLVM

- **Flash Self Programming Library Type01 for RL78 Family**

  Reprogramming code flash memory.

  - **Flash Self Programming Library Type01 for RL78 Family**
  - **Flash Self-programming Library Type T01, European Release User's Manual**

- **Data Flash Library Type04 for RL78 Family**

  Reprogramming data flash memory.

  - **Data Flash Library Type04 for RL78 Family**
  - **Data Flash Access Library Type T04 (Pico), European Release User's Manual**

Note. Please check the "RL78 Family Self RAM list of Flash Self Programming Library" for available flash reprogramming software for the MCU to be used.

RENESAS

RL78/x1x GROUP SUPPORTED FLASH MEMORY REPROGRAMMING SOFTWARE EUROPEAN RELEASE 2/3

Self Programming Library Products:

Target Region: Americas/ Brazil/ Europe/ Middle East/ Africa

Target IDE: CS+, e^2 studio, IAR Embedded Workbench

Target Compiler: CA78K0R, GNU, CC-RL, IAR, LLVM

- **EEPROM Emulation Library Pack02 for RL78 Family**

The EEPROM emulation library is a software library used to execute EEPROM emulation from a user-created program.

The package includes EEL Type T02(Tiny) and FDL Type T02(Tiny).

- **EEPROM Emulation Library Pack02 for RL78 Family**

- **EEPROM Emulation Library Type T02 (Tiny), European Release User's Manual**

- **Data Flash Access Library Type T02 (Tiny), European Release User's Manual**

Note. Please check the "RL78 Family Self RAM list of Flash Self Programming Library" for available flash reprogramming software for the MCU to be used.

RENESAS

RL78/x1x GROUP SUPPORTED FLASH MEMORY REPROGRAMMING SOFTWARE EUROPEAN RELEASE 3/3

Self Programming Library Products:

Target Region: Americas/ Brazil/ Europe/ Middle East/ Africa

Target IDE: CS+, IAR Embedded Workbench

Target Compiler: CA78K0R, IAR

▪ **EEPROM Emulation Library Pack01 for RL78 Family**

The EEPROM emulation library is a software library used to execute EEPROM emulation from a user-created program.

The package includes EEL Type T01 and FDL Type T01.

– **EEPROM Emulation Library Pack01 for RL78 Family**

– **EEPROM Emulation Library Type T01, European Release User's Manual**

– **Data Flash Access Library FDL-T01 RL78 Series, European Release User's Manual**

Notes 1. There are no plans to support CC-RL, GNU and LLVM compilers.

2. Please check the "RL78 Family Self RAM list of Flash Self Programming Library" for available flash reprogramming software for the MCU to be used.

RENESAS

RELATED DOCUMENTS

- **Related documents for the Renesas Flash Driver and EEPROM Emulation Software products**

  - **Renesas Flash Driver and EEPROM Emulation Software for RL78 Target MCU List - General-Purpose**

  - **Renesas Flash Driver and EEPROM Emulation Software Target MCU List for RL78 – Automotive**

- **Related document for the Self Programming library products**

  - **RL78 Family Self RAM list of Flash Self Programming Library**

RENESAS

VIDEO INTRODUCTION

Here is a video on flash memory reprogramming

- **Re-programming the flash memory build-in the microcomputer** [Time 5:00]

  This video explains how to re-program the flash memory. This focus on the mechanism of re-programming the flash memory built-in the microcomputer.

- **Flash Library and Flash Driver Products** [Time 4:10]

  This video will introduce some flash libraries and flash drivers provided by Renesas Electronics.

- **EEPROM Emulation Software for RL78** [Time 4:08]

  This video introduces the EEPROM Emulation software, one of Renesas Electronics' self-programming software products for the RL78 microcontroller.

- **How to use Renesas Flash Driver RL78 Type 01 SC Version on e² studio** [Time 4:51]

  This video introduces how to reprogram the RL78/G2x data flash memory using the Renesas Flash Driver RL78 Type 01 Smart Configurator Version on e² studio.

RENESAS

Renesas.com

RENESAS