

RZ/A1LU Group

RZ/A1LU Software Package V3.20 Release Note

Introduction

This Software Package has best solution for Human Machine Interface (hereinafter referred to as HMI) application development.

The Software Package shows how easy it is to create a professional, user-friendly and platform-independent user interface for your product. The entire application source code is included in the workspace enabling the Software Package to be ported to the platform of your choice.

Following sample applications are available.

GUI sample application:

Example for interoperation between RZ/A1LU peripherals/StreamIt! on-board peripherals with the C++ HMI Framework "Guiliani" by TES Electronics Solutions. "Guiliani" and RZ/A1LU Software Package allows rapid implementations of smooth, intuitive and high-performance GUIs that can interact with RZ/A1LU extensive peripherals free-of-charge.

For details on Guiliani, please refer to

<https://www.renesas.com/us/en/products/microcontrollers-microprocessors/rz-arm-based-high-end-32-64-bit-mpus/tes-guiliani>

SDK for Camera sample application:

Supports camera input, LCD output, and easily image adjustment. Only if you use e2 studio as IDE, this sample program can be linked with the development support tool QE for Display/Camera. QE for Display/Camera is a plugin of the integrated development environment e2 studio and it can adjust the timing of the LCD panel/Camera, image correction and set Camera module very easy with GUI.

- Product page

<https://www.renesas.com/qe-display>

<https://www.renesas.com/qe-camera>

Touch Panel sample application:

Supports detection the touch event and gets touch coordinates. After detection, this sample application will draw a large arrow at the coordinates of the event. Also when a large arrow is drawn, JPEG codec processing is done using JPEG Codec Unit(JCU).

This Software Package has a touch abstraction layer which is Touch Panel Utility. User can implement each touch panel driver easily without modifying the application interface.

USB Mass Storage sample application:

Access Control sample of FAT formatted Mass Storage Devices (USB Memory Stick, hard drive, etc.)

Web Server sample application:

The Web Engine Demonstration provides an example of Ethernet connectivity and a sample web server application that can control peripherals on Target board. C functions may be called from the web server output processor, allowing dynamic data to be displayed in web pages.

Other sample applications:

This package includes other sample programs as follows.

Sound / USER Switch / ADC / PMOD (use RSPI) / USBH HID / USBH CDC / USBF HID / USBF CDC / Watchdog timer / RTC

Target Device

Target Device: RZ/A1LU

Target Board: Stream it! RZ V2.3 (YSTREAM-IT-RZ-V2.3)

Contents

1. Package Contents4

1.1 Software4

1.2 Documents4

2. Folder Structure.....4

3. Related Documents5

4. How to use this package.....5

5. Restrictions.....5

6. Known Issues5

7. Precautions6

Revision History7

1. Package Contents

1.1 Software

This package contains the following software.

Table 1. Software of this package

No	Name	File
1	RZ/A1LU Group RZ/A1LU Software Package V3.20 (iccarm version)	iccarm.zip
2	RZ/A1LU Group RZ/A1LU Software Package V3.20 (gcc version)	gcc.zip

1.2 Documents

This package contains the following documents.

Table 2. Documents of this package

No	Title	Document Number
1	RZ/A1LU Group RZ/A1LU Software Package Release Note	R01AN4310 (This document)
2	RZ/A1LU Group RZ/A1LU Software Package Quick Start Guide	R01QS0024
3	RZ/A1LU Group SDK for Camera Sample Program Application Note	R01AN4312
4	RZ/A1LU Group Video Utility Application Note	R01AN4313
5	RZ/A1LU Group Touch Panel Utility Application Note	R01AN4314
6	RZ/A1LU Group GUI Sample Program Application Note	R01AN4413
7	Driver documents generated by Doxygen. RZA1_SoftwarePackage\RZA1LU_Sample\doc\drivers\index.html	-

2. Folder Structure

Folder structure of this package and outline of contents are shown as follow.

Table 3. Folder Structure

TOP	: top folder
├── iccarm.zip	: RZ/A1LU Software Package (iccarm version)
├── gcc.zip	: RZ/A1LU Software Package (gcc version)
└── r01an4310ej0320-rza1.pdf	: RZ/A1LU Group RZ/A1LU (This document)

3. Related Documents

Summaries of the related documents are shown as follow.

- RZ/A1L Group, RZ/A1LU Group, RZ/A1LU Group User's Manual: Hardware (R01UH0437)
This document describes the hardware specifications for RZ/A1LU.
- RZ/A1LU Group RZ stream it! Kit User's Manual For e2studio (R20UT3823)
This document describes the development kit of Stream it! RZ V2.3.

4. How to use this package

Regarding how to use, refer to "RZ/A1LU Group RZ/A1LU Software Package Quick Start Guide (R01QS0024)".

5. Restrictions

The Stream-it board contains two QSPI devices supporting a total of 128MBytes of flash storage. The Boot loader (an-r11an0084eg) provided supports directly accessing the first 64MB of this flash storage. Accessing the second block cannot be completed while running code from the QSPI devices. If the additional bank needs to be used please ensure the swap is completed by code running from a different memory area such as RAM. A future sample may be provided to demonstrate accessing the second bank of flash. Please check the web site for updates.

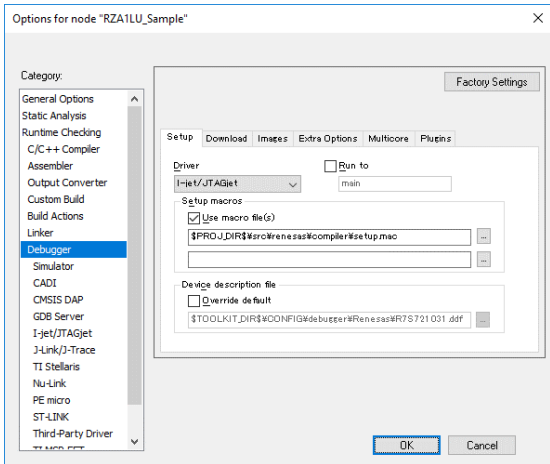
6. Known Issues

Nothing.

7. Precautions

The Precautions of V3.20 are shown as follow.

Table 4. Precautions

No.	Type	Description
1	Developing environment	<p>In the case IAR Embedded Workbench ARM is used, you can change the emulator to I-Jet from IAR by changing following settings:</p> <ol style="list-style-type: none"> 1. Select "Project" menu -> "Options". 2. Select "Debugger" category. 3. Select "Setup" tag. 4. Change "Driver" to "I-jet/JTAGjet". 5. Press "OK".  <p>When flash download is finished, "There were 1 error and 4 warnings during the initialization of the debugging session." will be issued. But you can debug with this setting, because of following reasons:</p> <p>Error:</p> <ul style="list-style-type: none"> • Verification error at 0x18080000: mem = 0x04, file = 0x18 This error issued because the verification is done by reading QSPI flash with single QSPI flash mode but flash downloading was done with dual QSPI flash mode. <p>Warning:</p> <ul style="list-style-type: none"> • Download completed but verification failed. This warning notices that an error was issued. • The downloaded program doesn't seem to match the expected memory layout of the target system: • There are linked memory segments outside known memory areas or with incompatible memory attributes. • Memory is specified as follows: These 3 warnings show that the attribute of GUI resource is RW but the memory attribute allocated to GUI resource is Read Only. You can ignore this warning because GUI library never use write access to the GUI resource area.
2	Application (USBF-CDC)	<p>The disconnect interrupt occurrence will take around 1 minute after disconnecting the USB cable connected with PC since the USB connector (CN2) of the Stream it! board is designed for USB Host.</p>

Revision History

Rev.	Date	Revised Contents			
		No	Type	Description	Remark
3.20	Jul. 20, 2022	-	-	Change library related build options	-
3.10	Oct. 11, 2021	1	Driver	Fix Bug using lwIP to transfer large throughput package.	-
		2	Sample Program/ Driver	Fix Bug using USB in CDC function mode sending variable data packets larger than 100 bytes.	-
		3	Environment	Fix Bug in ISR handler which can potentially create an invalid memory access.	-
		4	Document	Updated i2c documentation.	Doxygen update
		5	Section 1.1	Update References	-
		6	Section 2	Update References	-
		All	Template	New template applied	-
3.00	Nov. 29, 2019	1	Application	Modified memory map to use cached area.	-
		2	Driver	Replace the DMA driver to the latest version.	-
		3	Driver	Added cache control driver.	-
		4	Application	Implemented ARM Errata 801120 and 733075 to IRQ handler.	-
		5	Middleware	Disabled long file name of Filesystem.	-
		6	Driver	Fixed a minor bug of INTC driver.	-
		7	Driver	Fixed an issue that USB Host Driver fails to recover the STALL error with some USB media.	-
		8	Driver	Fixed a known issue which was written in section 7 of this document and removed this issue from section 7. The issue was that sometime PC cannot detect the "Stream it!" board as USB CDC device.	-
		9	Driver	Fixed an issue that PC still recognize the "Stream it!" board as unknown device after closing USB Function CDC driver.	-
		10	Application	Fixed an issue that USB Function CDC application cannot recovery without user operation on console after disconnecting and re-connecting the USB cable while the program running.	-
		11	Application	Fixed an issue that the web server sample application detects only first USB device when attaching multiple USB devices.	-

Rev.	Date	Revised Contents			
		No	Type	Description	Remark
		12	Application	Fixed an issue that the web server sample application cannot set Date information when pressing the "Set" button on web without any other entries.	-
		13	Bootloader	Updated the bootloader binary to allow to enable 32 bit addressing instead of 24 bit.	-
2.10	Oct. 31, 2018	1	Application	Fixed Sound application restriction. The restriction was as following. If the play command is run from the console and the user presses a key during playback to abort, the next play command will fail.	-
		2	Sample Program	Added "RZA1LU_BlinkySample" project for user development startup.	This project is for user development startup and it has only LED blink application. User can startup user's own project with this project easily.
		3	Driver	Supported USBF CDC for GCC toolchain.	-
		4	Driver	Changed ADC driver I/F to support whole channels and any configurations.	-
		5	Driver	Fixed an issue that sometimes the USB Host (MSC) driver fail to read/write big data.	-
2.00	Jun. 29, 2018	1	Development environment	Supported "IAR Embedded Workbench for Arm".	-
		2	Sample Program	Added sample programs as follows. GUI / Web Server / Sound / USER Switch / ADC / PMOD(use RSPI) / USBH HID / USBH CDC / USBF HID / USBF CDC	-
		3	Development environment	Supported "QE for Camera" & "QE for Display"	-
		4	Bootloader	Uploaded bootloader https://www.renesas.com/en-eu/solutions/key-technology/human-interface/rz-stream-it.html	-
1.00	Apr. 6, 2018	-		First Edition issued	-

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. Precaution against Electrostatic Discharge (ESD)

A strong electrical field, when exposed to a CMOS device, can cause destruction of the gate oxide and ultimately degrade the device operation. Steps must be taken to stop the generation of static electricity as much as possible, and quickly dissipate it when it occurs. Environmental control must be adequate. When it is dry, a humidifier should be used. This is recommended to avoid using insulators that can easily build up static electricity.

Semiconductor devices must be stored and transported in an anti-static container, static shielding bag or conductive material. All test and measurement tools including work benches and floors must be grounded. The operator must also be grounded using a wrist strap. Semiconductor devices must not be touched with bare hands. Similar precautions must be taken for printed circuit boards with mounted semiconductor devices.

2. Processing at power-on

The state of the product is undefined at the time 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 time 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 time 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 time when power is supplied until the power reaches the level at which resetting is specified.

3. Input of signal during power-off state

Do not input signals or an I/O pull-up power supply while the device is powered off. The current injection that results from input of such a signal or I/O pull-up power supply may cause malfunction and the abnormal current that passes in the device at this time may cause degradation of internal elements. Follow the guideline for input signal during power-off state as described in your product documentation.

4. 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 the 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.

5. Clock signals

After applying a reset, only release the reset line after the operating clock signal becomes stable. When switching the clock signal during program execution, wait until the target clock signal is 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. Additionally, 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.

6. Voltage application waveform at input pin

Waveform distortion due to input noise or a reflected wave may cause malfunction. If the input of the CMOS device stays in the area between V_{IL} (Max.) and V_{IH} (Min.) due to noise, for example, the device may malfunction. Take care to prevent chattering noise from entering the device when the input level is fixed, and also in the transition period when the input level passes through the area between V_{IL} (Max.) and V_{IH} (Min.).

7. Prohibition of access to reserved addresses

Access to reserved addresses is prohibited. The reserved addresses are provided for possible future expansion of functions. Do not access these addresses as the correct operation of the LSI is not guaranteed.

8. Differences between products

Before changing from one product to another, for example to a product with a different part number, confirm that the change will not lead to problems. The characteristics of a microprocessing unit or microcontroller unit products in the same group but having a different part number might differ in terms of 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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