

RZ/A1x Series Serial Flash Memory Instructions Manual

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1 Introduction

This is a brief manual for writing to serial flash memory of RZ/A1x Series.

For details of ICE operating instructions, see the Startup Guide, microVIEW-PLUS User's Manual (Common Edition) and microVIEW-PLUS User's Manual (MPU-Specific Edition).

2 Supported Install Kit CD Versions

Device Model	Supported Versions		
	H2X600IK	SLX600	SLX621
RZ/A1H	1.02 or later	3.00 or later	3.00 or later
RZ/A1M			
RZ/A1L			

3 Supported Serial Flash Memory Models

Serial flash memories on the following table are supported.

Soc	Supported Serial Flash Memory Models	
	Manufacturer	Model
RZ/A1H RZ/A1M RZ/A1L	Spansion	S25FL032P S25FL064P S25FL512S
RZ/A1H RZ/A1M RZ/A1L	Macronix	MX25L1633E MX25L6435E

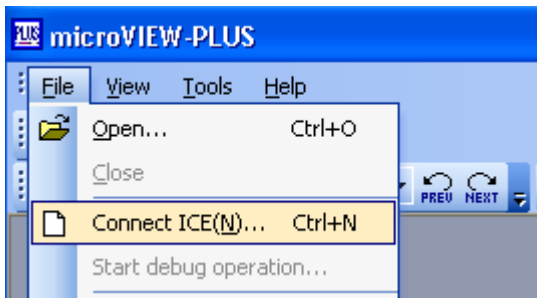
* Programming to serial flash memory by using SPI multi I/O bus controller of RZ/A1x is supported.

Programming using other peripheral is not supported.

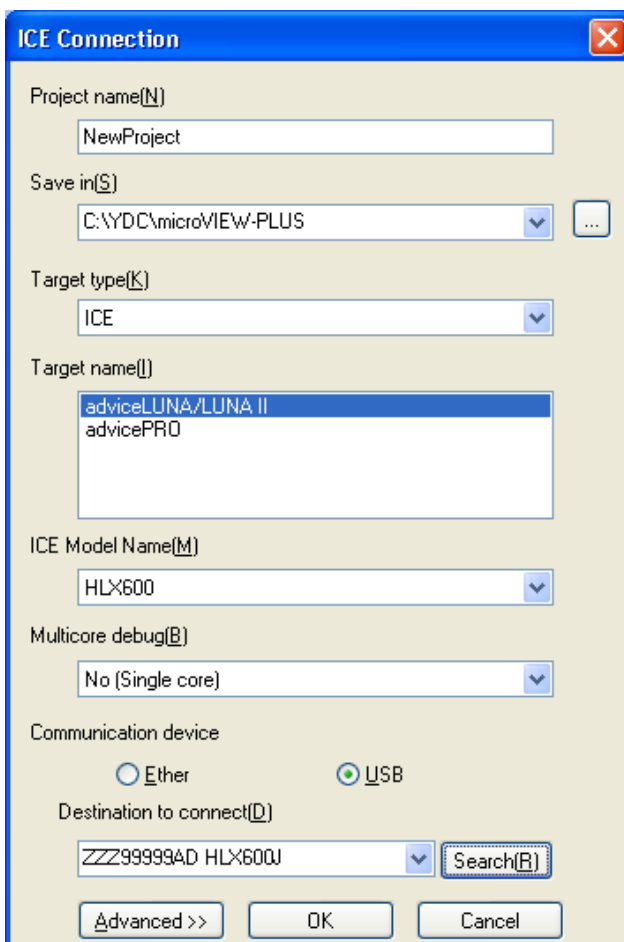
4 Advance Preparation

4.1 Create a Project

1. Select **Connect ICE** from the menu bar.

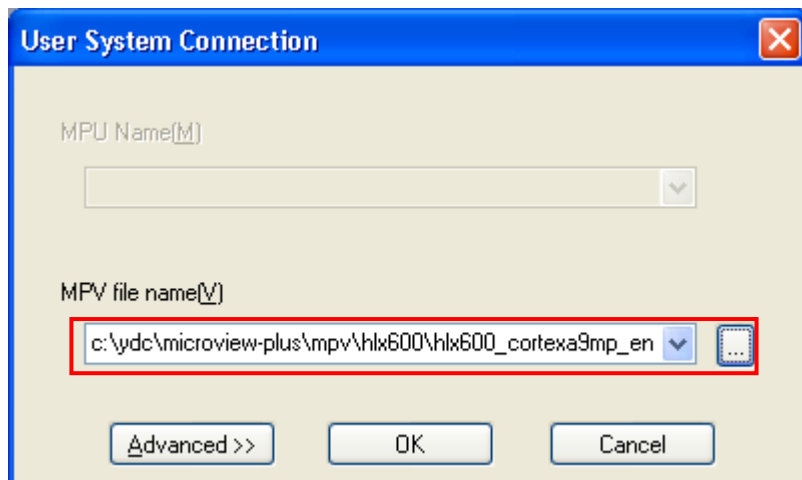


2. Configure how to connect ICE, and then click **OK** button.



3. Select the user system

Select MPV file for cortexa9mp. *1



*1 Notice when selecting MPV file

MPV file to be selected varies depending on the product you use.

The following table shows combination of the install kit and MPV file.

Install kit	MPV file
SLX600	Folder installed microVIEW-PLUS\mpv\HLX600\hlx600_cortexa9mp_eng
SLX621	Folder installed microVIEW-PLUS\mpv\HLX621\hlx621_cortexa9mp_eng
H2X600IK	Folder installed microVIEW-PLUS\mpv\H2X600\h2x600_cortexa9mp_eng

microVIEW-PLUS is installed in C:\YDC\microVIEW-PLUS by default.

MPU-Specific Settings Window

Select **nSRST assert** check box.

In the **L2C type list**, click **none**.

If you want to generate a break by reset vector, click **Set** in the **Reset Vector Break**.

MPU-Specific Settings

MPU Type: Cortex-A9MP

VFP: Enable Disable

Break Settings after Reset Command

at Reset Vector: Break

Assert nSRST
Break timing after: 100ms

Assert nTRST
Break timing after: 300ms

Set L2C

L2C Type: none

Trace-ID: 0x1

OK Cancel

4.2 Execute the Initializing Script

You need to execute the initializing script when downloading to the flash memory.

Script file will be installed in the same place where MPV file is installed.

(Example: C:\YDC\micro-VIEW-PLUS\mpv\HLX600)

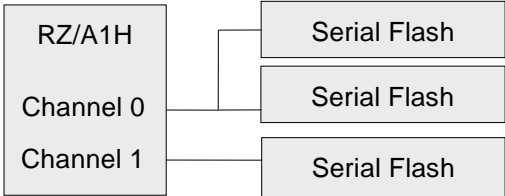
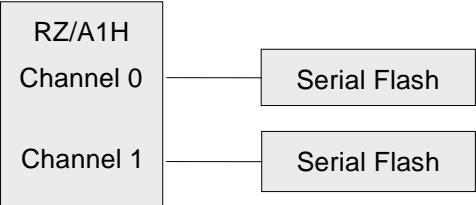
This script is optimized for writing serial flash of adviceLUNA.

Do not use it for other purpose.

This script is for reference.

Please make necessary changes when using it. □

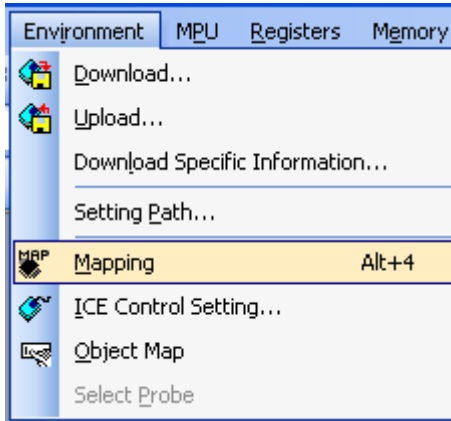
There are two kinds of scripts in accordance with the number of connection of channel 0.

Example of circuit diagram when using RZ/A1H	Name of script for reference
<p>Channel 0: Connect one serial flash Channel 1: Connect one serial flash</p> 	<p>RZ_A1H_Init_Serial_ch0_1flash.mvw RZ_A1M_Init_Serial_ch0_1flash.mvw RZ_A1L_Init_Serial_ch0_1flash.mvw * RZ/A1L is a setting only for channel 0.</p>
<p>Channel 0: Connect two serial flashes Channel 1: Connect one serial flash</p> 	<p>RZ_A1H_Init_Serial_ch0_2flash.mvw RZ_A1M_Init_Serial_ch0_2flash.mvw RZ_A1L_Init_Serial_ch0_2flash.mvw * RZ/A1L is a setting only for channel 0.</p>

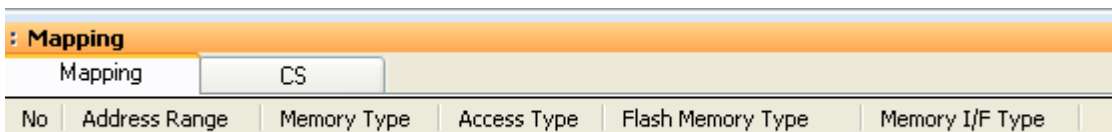
4.3 Setting the Memory Mapping

4.3.1 Setting up Flash Memory Mapping

Open the memory mapping window by clicking **Environments – Memory mapping**.



Following memory map window is opened.



Set the mapping.

Right-click on the memory mapping window, and then select **Add**.



Configure the setting as the example below.

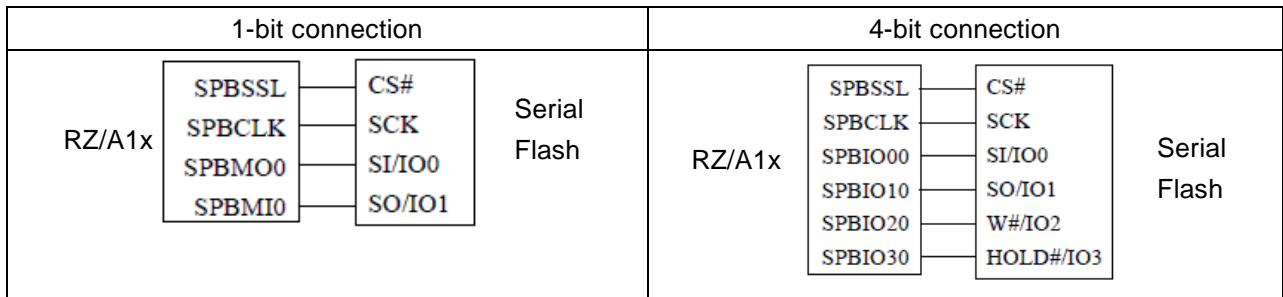
Channel	Start address
0	0x18000000
	0x58000000 (Mirror)
1	0x1C000000
	0x5C000000 (Mirror)

*1

*1: Select the flash memory definition file (.frd) in accordance with the connection data width and the number of the connection of serial flash.

Connection data width of serial flash

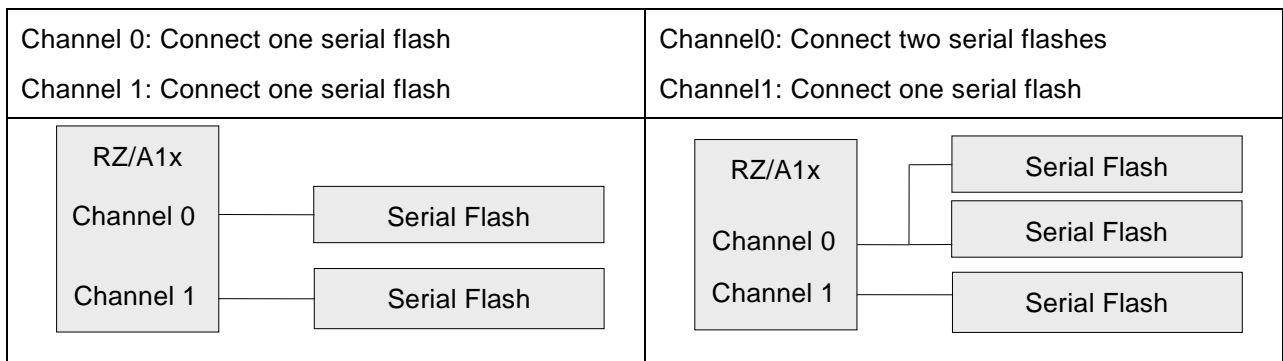
Connection between SoC and serial flash can do by data width 1 bit, 2bit, or 4bit.



If you do not know the connection between SoC and serial flash, use 1 bit data width.

The number of connection of serial flash

You can connect two serial flash memories to one channel.



Following table describes the setting example. (Please use a file in accordance with the model of serial flash.)

Channel	Start address	Connection data width	Number of connection of serial flash	Flash memory type (Example)
0	0x18000000 0x58000000(Mirror)	1 bit	1	RZ_A1x_0_S25FL512S_S.frd
			2	RZ_A1x_0_S25FL512S_S_2flash.frd
		4 bit	1	RZ_A1x_0_S25FL512S_Q.frd
			2	RZ_A1x_0_S25FL512S_Q_2flash.frd
1	0x1C000000 0x5C000000(Mirror)	1 bit	1	RZ_A1x_1_S25FL512S_S.frd
		4 bit		RZ_A1x_1_S25FL512S_Q.frd

* Name of flash memory definition file is an example of when using S25FL512S

4.4 Setting up User RAM for ICE

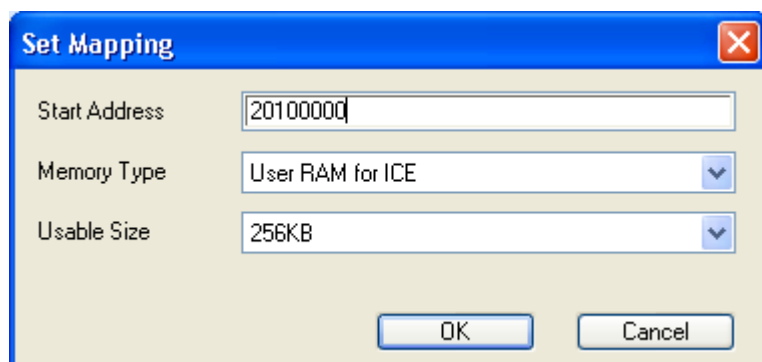
You can increase a download speed for serial flash by mapping a user RAM for ICE.

* For a binary provided with this product, make sure to follow the steps described on this section. Download is not available if you do not set this setting.

For User RAM for ICE, specify an area where ICE can occupy.

The following example is for when setting 256KB from 0x20100000.

For the actual settings, refer to the Soc memory map of yours.



5 Download to Flash Memory

For details of other operations, see the microVIEW-PLUS User's Manual (MPU-Specific Edition).

Details of memory mapping settings are described on this manual. Please refer to the microVIEW-PLUS User's Manual (MPU-Specific Edition) for other contents.

5.1 Protection function of Serial Flash

You can erase or download the data in serial flash even if the serial flash is in the state of **Block Protection** or **Status Register Write Disable**.

Protection state will be restored to its former state after the erase or download.

6 Memory Dump on the Serial Flash Memory

In the same way as other memories (such as RAM), you can do memory dump by specifying the serial flash area mapped on Soc.

Note that you have to set the mode of Soc to **Read external address space** in advance.

(It is set to **Read external address space mode** right after resetting the SoC.)

For details of settings, see a chapter titled as “SPI Multi I/O Bus Controller” of RZ/A1x Group User’s Manual for Hardware.

*** If it is not set to Read external address space mode, 0 will be shown for all serial flash space.**

6.1 Serial Flash whose size is more than 16MB

If you use the serial flash whose size is more than 16MB, space over 16MB may not be dumped correctly because the way of reading (command of serial flash) is not the same.

You can dump the memory by setting the read register or serial flash correctly.

Example: Setting when connecting S25FL512S (Spansion) to channel 0

Operation by microVIEW-PLUS

```
# Set the read command for 4Byte address [0x13] to the data read command setting register (DRCMR).  
mem I #0x3FEFA010 = 0x00130000  
# Set the setting to send the address in 4 byte in the data read enable setting register.  
mem I #0x3FEFA01C = 0x00004F00
```

For detailed settings, see a chapter titled as “About Register” of RZ/A1x Group User’s Manual For Hardware, and a manual for serial flash.

7 Cautions and Restrictions

7.1 Download

7.1.1 Read Mode of External Address Space

If SoC is not set in the read mode of external address space, an area which is not the downloading target within the sector in serial flash is displayed as ALL0, instead of the past downloaded data.

7.1.2 Initializing Script

Initializing script is optimized for the downloading.

Reset it after the downloading, and continue the debug operation.

7.2 Software Break to Flash Memory

Not Supported.

7.3 If You Connect the 64MB or more Flash to one Channel

You can connect only 8G byte or less serial flash to one channel due to the specification of SoC. However the address to be mapped within the Soc is only 26 bit. Therefore memory dump can be done by 64MB at once.

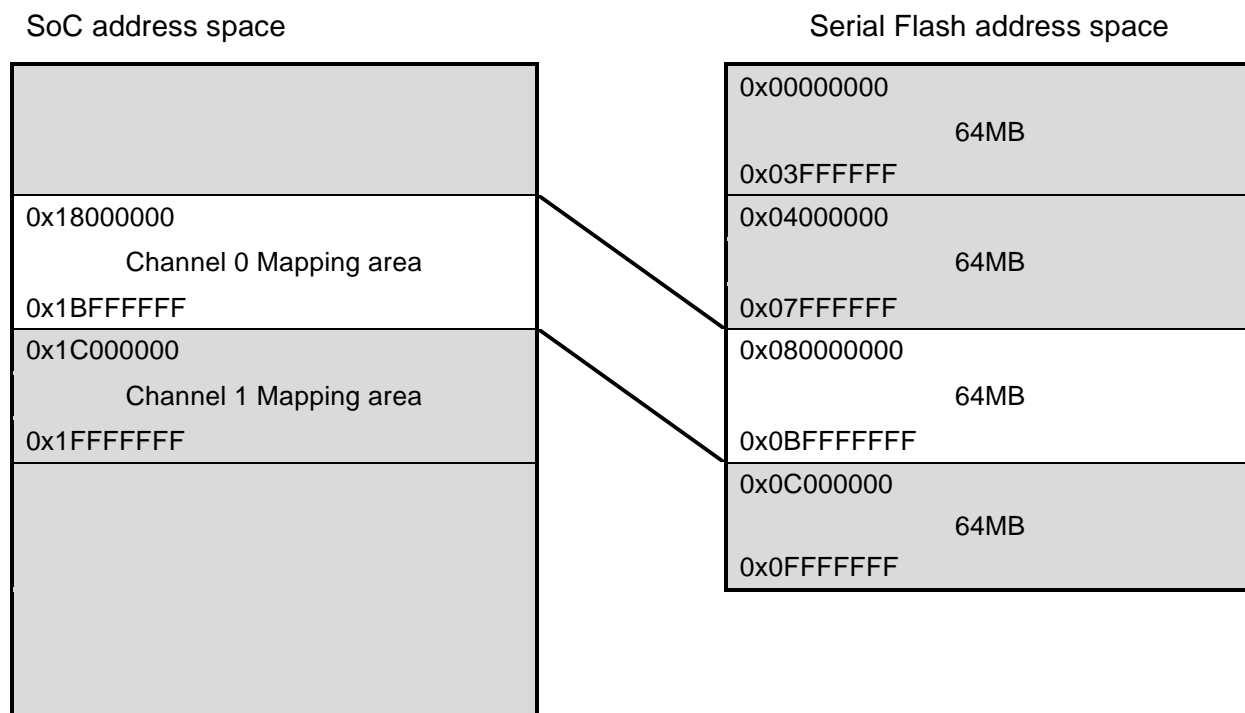
If you want to change the space to be dumped, set the register by following the steps below.

- Set the effective area of the Data Read Extended Address Register (DREAR) (Bit 3.0).
- Set the fixed value of 32bit extended upper address (Bit 26:16) of the effective area of the Data Read Extended Address Register (DREAR).

* For detailed settings, see chapters titled as “Data Read Extended Address Register” and “Serial Flash 32bit Address” of RZ/A1x Group User’s Manual for Hardware, and a manual for serial flash.

Following figure shows when connecting 256M byte serial flash to channel 0 as an example.

Example: Image of when dumping address 0x0800 0000 to 0x0BFF FFFF of 256 MB serial flash.



In this example, Data Read Extended Address Register (DREAR) is set to = **0x0004 0001**.

Operation by microVIEW-PLUS

```
mem l #0x3FEFA014 = 0x00040001
mdump #0x18000000,,0x30 l
```

* It is dumped after setting the register.

7.3.1 Downloading the Area whose size is more than 64MB

Downloading of the area mapped on the memory map of SoC can be done with the same way as memory dump.

If you want to download the area over the mapped area, you have to download the area by dividing it.

Example: Command for when downloading all area of 128M byte serial flash.

```
# Download 0x00000000 to 0x03FFFFFF of serial flash
# Set the upper 7 bit for EAV[7:1] of Data Read Extended Address Register (DREAR).
mem I #0x3FEFA014 = 0x00000001
download "test_bin_64M_page0.bin" #0x18000000

# Download 0x04000000 to 0x07FFFFFF of serial flash
# Set the upper 7 bit for EAV[7:1] of Data Read Extended Address Register (DREAR).
mem I #0x3FEFA014 = 0x00020001
download "test_bin_64M_page1.bin" #0x18000000
```