

MKLXXxx Internal Flash Memory Instructions Manual

DTS INSIGHT CORPORATION

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1 Introduction

This is a brief manual for writing to on-chip flash memory.

For details of ICE operating instructions, see the 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	
	SLX600	H2X600IK
MKL26Z64V	3.01	1.04

3 Advance Preparation

3.1 When Flash Security is valid

The ICE cannot be connected if flash security is valid. In case the following error occurred, see Section 9.1 “Flowchart of Action on Error”.

“ICE Error No.fe6: Flash Security is valid. The ICE cannot be connected.
In such cases, release the break setting, and then erase the symbol registration. After that turning on the Forced unsecured/unprotection on the MPU-specific setting [RESET] dialog box, and then reset the system.

* Please be aware that all data in the internal flash memory is cleared by forced-release.

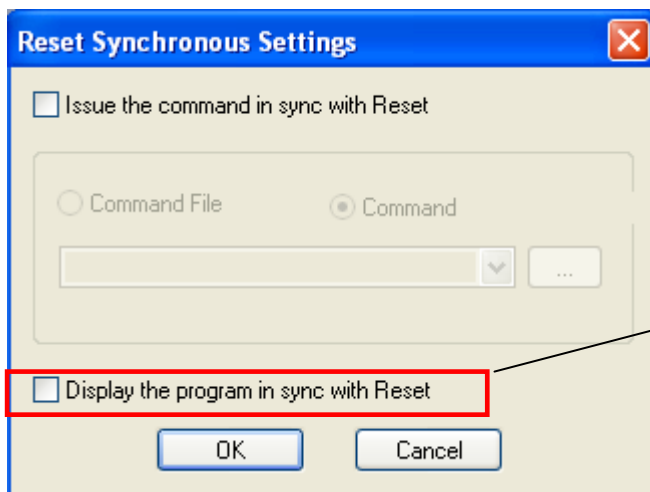
3.2 When Correct Address is not set in the Vector Table

microVIEW-PLUS dumps a reset vector area to display a program (disassemble display) after connecting by reset commands.

If the vector table is in erase (0xFFFFFFFF), 0xFFFFFFFFE will be dumped and “ICE Error No.f58: Sticky error” may occur.

[Provision]

Right-click the Reset button on the toolbar, and then open the Reset Synchronous Settings dialog box.



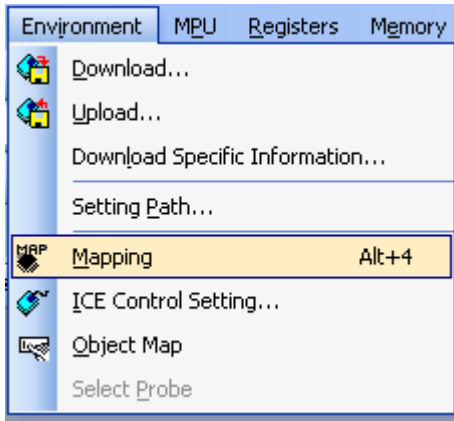
Clear the “Display the program in sync with Reset” check box.
(= does not dump by the reset command)

After downloading the program to the internal flash memory (correct vector table values are written), select this check box again.

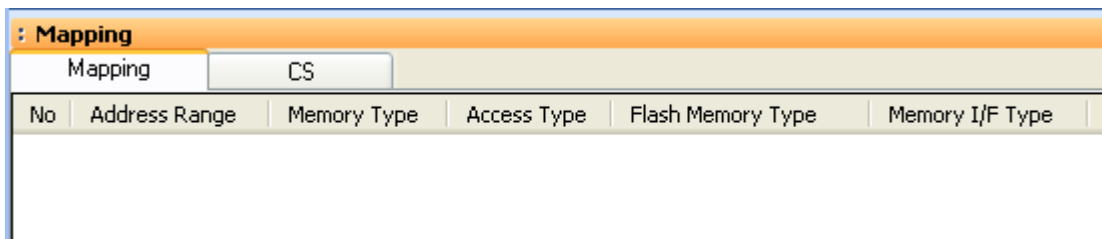
4 Setting the Memory Mapping

4.1 Setting up Flash Memory Mapping

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

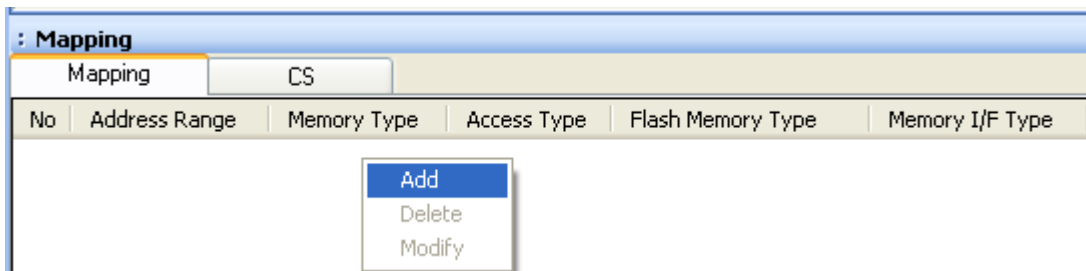


Memory map window as below is opened.

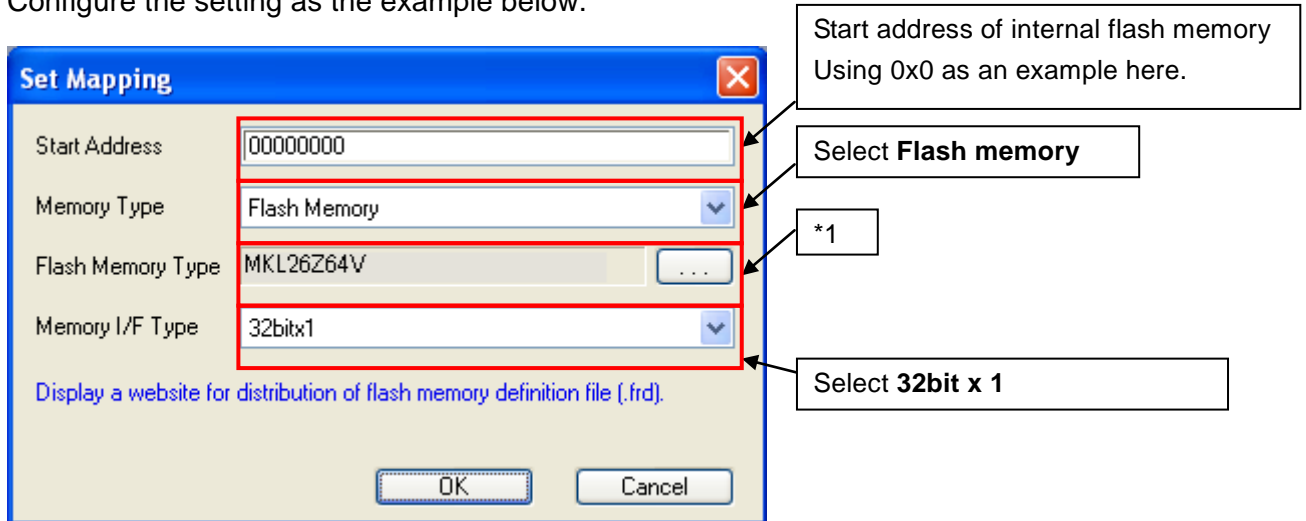


Set the mapping.

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



Configure the setting as the example below.



* Select the flash memory definition file (.frd) in accordance with your flash memory.

4.2 Setting up User RAM for ICE

User RAM for ICE of the Memory type in the Mapping settings is not supported. Please do not set.

5 Erase the Flash Memory

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

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

Note:

The flash security becomes secure. The connection with ICE is disabled if you reset the system with this condition.

If you cannot connect the ICE, see Section 9.1 "Flowchart of Action on Error".

6 Download to Flash Memory

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

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

Note:

- (1) Please be aware of the followings if you download data to the flash configuration field (0x400 to 0x40F).
 1. If you download data that secures the flash security, the connection between ICE and user system becomes disconnected when you reset the system.
If you cannot connect the ICE, see Section 9.1 "Flowchart of Action on Error".
 2. Make sure to download MEEN bit (bit[5:4]) of flash security by switching it to b'11 (value which enables mass erase).

If you set the b'10, you can not connect because it is not possible to security release from ICE.
 3. Make sure to download RESET_PIN_CFG bit (bit[3]) of flash option by switching it to b'1.

If you choose to Secure the Flash Security by setting the b'0, you can not connect because it is not possible to security release from ICE.
- (2) In case the "ICE Message No.1e41: Flash memory device protection error" occurred, see Section 9.3 "Flash Protection".
- (3) If the following abnormal end occurs, please download data without setting the user RAM for ICE or execute the reset command right before the download.
 - Detection of reset by the watchdog timer reset
 - Errors other than erase error or verify error
- (4) If you need to download data without setting the user RAM for ICE, execute the reset command right before the download.

7 Software Break in Flash Memory

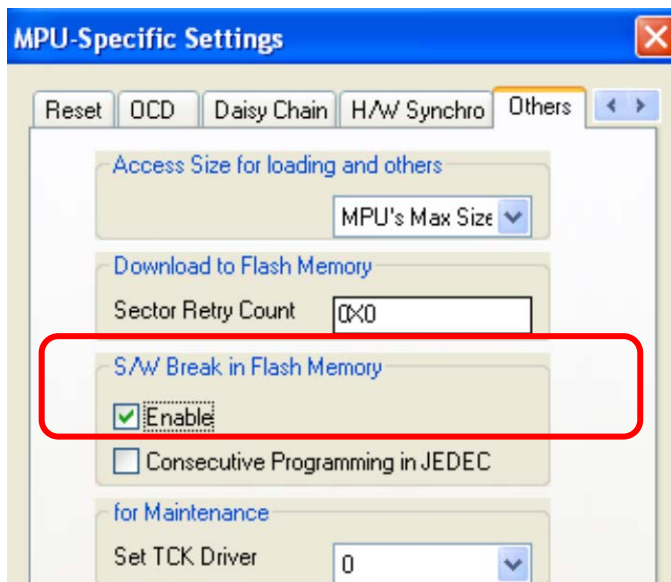
For details, see the microVIEW-PLUS User's Manual (MPU-Specific Edition).

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

You are not allowed to set up software break in the flash memory in the initial state. In case you try to set up software break in the flash memory with the disabled status, it results in the following error.

"ICE Error No. 8c4: Set Software Break Verify Error".

To enable software break setting for flash memory, select the **Enable** check box of S/W Break in Flash Memory on the Others tab of the MPU-Specific Settings dialog box.



Note:

- (1) Software break to the flash configuration field (0x400 to 0x40F) is not allowed. If you set it, the following error occurs:

"ICE Error No.f2d: Not the program area. Software break cannot be set."

- (2) If "ICE Message No.1e41: Flash memory device protection error" occurred, see Section 9.3 "Flash Protection".

8 MPU-Specific Settings

This chapter explains about MPU-specific settings for internal flash memory. For details on other MPU-specific settings, see the microVIEW-PLUS User's Manual (MPU-specific Edition).

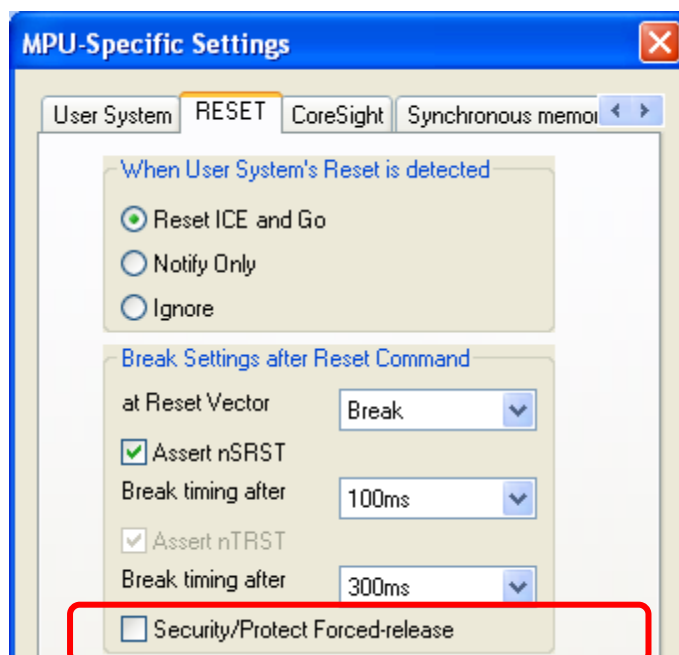
To set up MPU-specific settings, click on MPU menu, and then click the MPU-specific settings. Then, the MPU-specific settings window will be opened.

8.1 RESET

Security/Protect Forced-release

For Kinetis products family, you can disable the debug port or protect to not write or erase the memory by using the setting of flash security byte and flash protection byte within the internal flash memory.

By using this setting, you can control whether to forcibly release the security or protection by reset command. Make sure to execute the reset command after the setting.



Uncheck the check box	ICE cannot be connected if a secured device is detected. (Default)
Select the check box (*1)	<p>Forcibly releases the security or protection when executing the reset command.</p> <p>The selection is automatically cleared after the completion of reset command.</p> <p>It does mass erase (erase all data within internal flash) when releasing. Delete the symbol registration by releasing all break settings before executing the reset command.</p>

*1: Make sure to connect nSRST signal to ICE connection connector on the user system, because nSRST is involved with mass erase (deleting all data in the internal flash) which is operated when releasing the security. For details about connection, see the adviceLUNA User's Manual (MPU-Specific Edition). If you clear the nSRST assert checkbox, Flash Security may not be released.

9 Notes & Points

9.1 Flowchart of Action on Error

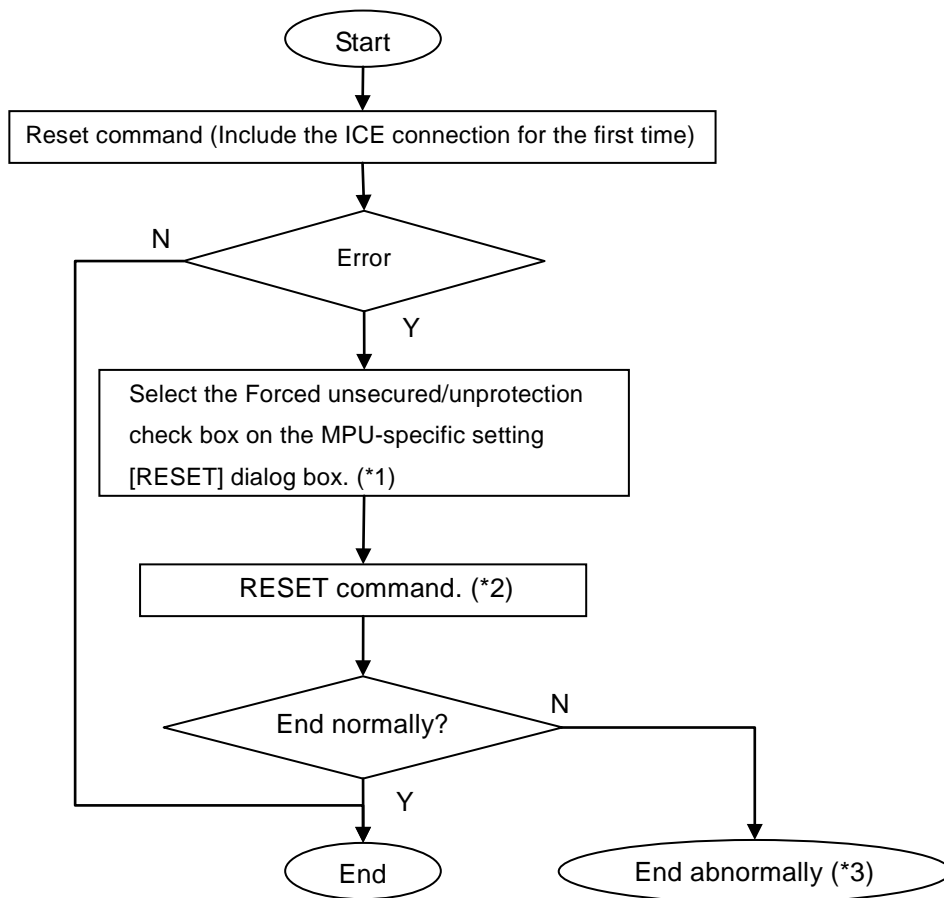
9.1.1 Security Error

The ICE cannot be connected if flash security is secured. In case the following error occurred, the flash security may be secured. See the flowchart below and take an action for error.

“ICE Error No.fe6: Flash Security is valid. The ICE cannot be connected.
In such cases, release the break setting, and then erase the symbol registration. After that turning on the Forced unsecured/unprotection on the MPU-specific setting [RESET] dialog box, and then reset the system.

* Please be aware that all data in the internal flash memory is cleared by forced-release.

Make sure to connect nSRST signal to ICE connection connector on the user system, because nSRST is involved with mass erase (deleting all data in the internal flash) which is operated when releasing the security. For details about connection, see the adviceLUNA User’s Manual (MPU-Specific Edition).



Flowchart of Action on Error

*1 If you select this check box and execute the reset command, regardless of the security/protection state at that time, ICE does mass-erase (deleting all data in the internal flash) of internal flash memory.

*2 It does mass erase (deleting all data in the internal flash) when releasing. Delete the symbol registration by releasing all break settings before executing the reset command.

*3 The following error occurs:

“ICE Error No.fe7: Mass erase is disabled, and flash security is secured.
The device with this state cannot be connected because the security cannot be released by ICE. Please contact a dealer of the device or board.

9.2 Watchdog Timer (WDT)

You can write in the flash memory even if WDT (Watchdog Timer) is enabled.

WDT is temporarily disabled by an internal process of ICE while the flash memory is written. (After the writing, it is automatically restored.) Do not enable the WDT on the debug mode.

9.3 Flash Protection

You cannot set the erase, download or software-break in the flash area protected by flash protection.

*ICE Error No.1e41: Flash memory device protection error occurs.

If the flash configuration field (0x400 to 0x40F) is protected, turn on the Forced unsecured/unprotection on the MPU-specific setting [RESET] dialog box to release the protection. After that, reset the system.

9.4 Software Break in the Internal Flash Memory

Software break to the flash configuration field (0x400 to 0x40F) is not allowed. If you set it, the following error occurs:

"ICE Error No. fd2: Not the program area. Software break cannot be set."
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