Universal Probe

IDE Connection Manual

MDK-ARM Edition

Table of Contents

NOTES

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Universal Probe IDE Connection Manual - MDK-ARM Edition

Operating Precautions

> ⚠️ **Failure to observe the following precautions may lead to human death or severe injury.**

Icon	Description
Do	Avoid supplying voltage out of the range specified in the specifications of this product. Supplying the voltage out of the range may cause damage or fire.
Do	When using the target equipped with the ground terminal, ensure that the ground terminals of the target and peripheral equipment are connected. Failure to do so may cause an equipment failure or electric shock. Avoid connecting the ground terminal to the gas pipe. This causes a fire or explosion.
Don't	Do not transport this product with equipment connected. In particular, hold the plug when removing or inserting the cable. Failure to do so may damage the cable, causing a fire or electric shock.
Don't	Observe the following points when handling the cable. Do not damage, process, forcibly bend, twist, pull, putting any object on or heat the cable, moving the cable close to the heating device, or touch the cable with a wet hand. Failure to observe these precautions may cause a fire or electric shock. If the cable is damaged, stop using it.
Don't	When you hear thunders, do not touch the power plug. This causes an electric shock. If the product seems to be damaged by lightning strike, stop using it.
Don't	Do not let a staple, clip or other metal items enter into the product. This may cause a fire or failure.
Don't	Do not use or leave the product in direct sunlight, near heating devices, in an extremely hot or cold environment, under hard vibrations, in dusty area with a large amount of metal dust or oily dust, or noisy area full of spike noise. Do not apply a strong shock to the product.
Do not disassemble	Do not disassemble, alter or repair the product. This may cause a fire or electric shock.
No wetting	Do not use the product at a place where there is liquid or at a humid place such as bathroom or in vicinity to glasses. This may cause an electric shock. If liquid enters into this product, immediately turn it off and stop using it.
Caution	Touching the energized product for a long time may cause low-temperature burns. Do not use this product covering with comforter or other cloth.
Pull out the plug.	Immediately turn the power off if unusual smell, noise, smoke or fire is detected or if the product is or may be damaged due to a fall or strong shock. Continuing to use it may lead to a serious accident. Stop using the product.

Universal Probe IDE Connection Manual - MDK-ARM Edition

Abbreviations, Terms and Conventions

This section describes the abbreviations, terms and conventions used in this document.

- About numeric values ... All the numeric values are positive unless otherwise specified.
- K (capital letter) ... Represents 2^{10}=1024. (Example: 16 K=16384)
- k (small letter) ... Represents 1000. (Example: 1 kHz=1000 Hz)
- [xxxxx] ... Represents the window title, xxxxx.
- <xxxxx> ... Represents the item named xxxxx in the window.

The annotations and notes used in this document are as shown in Figure 1.

→ Information reference.

(i INFO) Supplementary information.

(!) Caution. Be sure to read this.
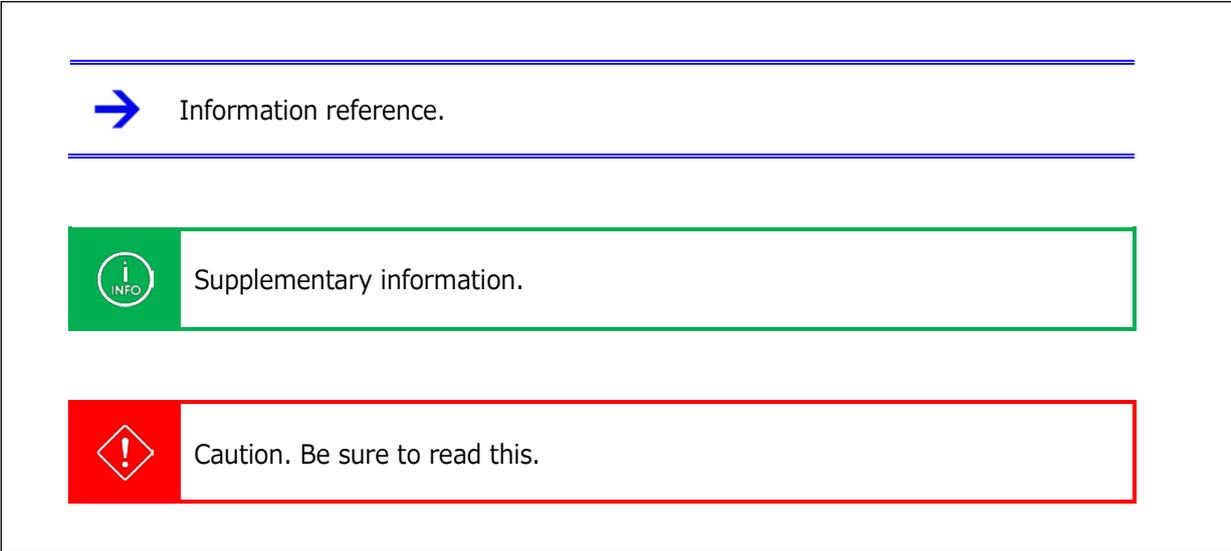
Figure 1

The abbreviations and terms are as shown in Table 1.

Table 1

Abbreviations and terms	Description
This product	Universal Probe including accessories.
Probe	Universal Probe itself.

Universal Probe IDE Connection Manual - MDK-ARM Edition

1. Preparation

> ℹ️ The software versions and download URLs are as of the preparation of this document.
> We do not guarantee that software version, download URLs, compatibility, and screen configurations will remain unchanged at the time that the user creates an environment.

1.1. System Requirements and Software Installation

For the system requirements and the software installation method, refer to the MDK-ARM website or relevant manual.

1.2. Starting up MDK-ARM

Click the Keil uVision icon in the Start menu or on the desktop to start up the software.
When the software has started up, the screen as shown below is displayed.
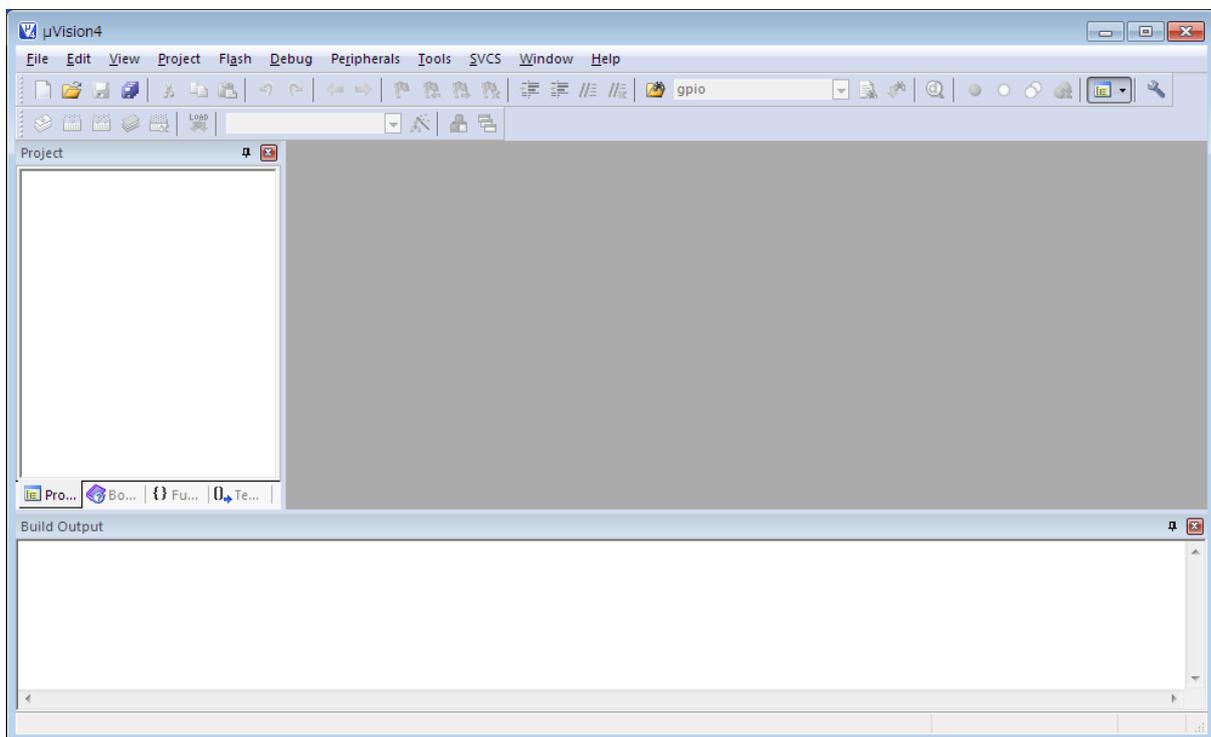
Figure 2

1.3. Connecting Probe

After starting up MDK-ARM, connect the probe to the PC.
Then, connect the probe to the target using the flat cable that comes with the probe.
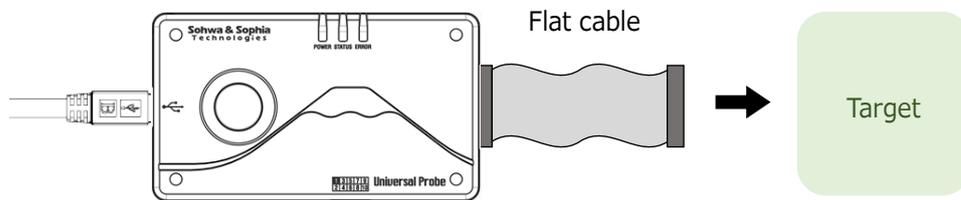
Figure 3

For details of the use of the probe, refer to "Universal Probe Hardware Users Manual."

2. Debugging Procedures

> ⚠ To perform debugging using MDK-ARM, you need to rewrite the firmware for the probe with "CMSIS-DAP Firmware" by using the "Firmware Selector" in advance.
> For details, refer to "Universal Probe Software Users Manual - Firmware Selector."

2.1. Open a Project

Open an existing workspace or create a new workspace.

- Select "Project" → "Open Project" from the menu to open a project.
- Select "Project" → "New uVision Project" from the menu to create a new project.

2.2. Performing Programming and Build

Write a program and execute Build to create a binary file.
For settings of the target CPU and other information, refer to the MDK-ARM website or relevant manual.
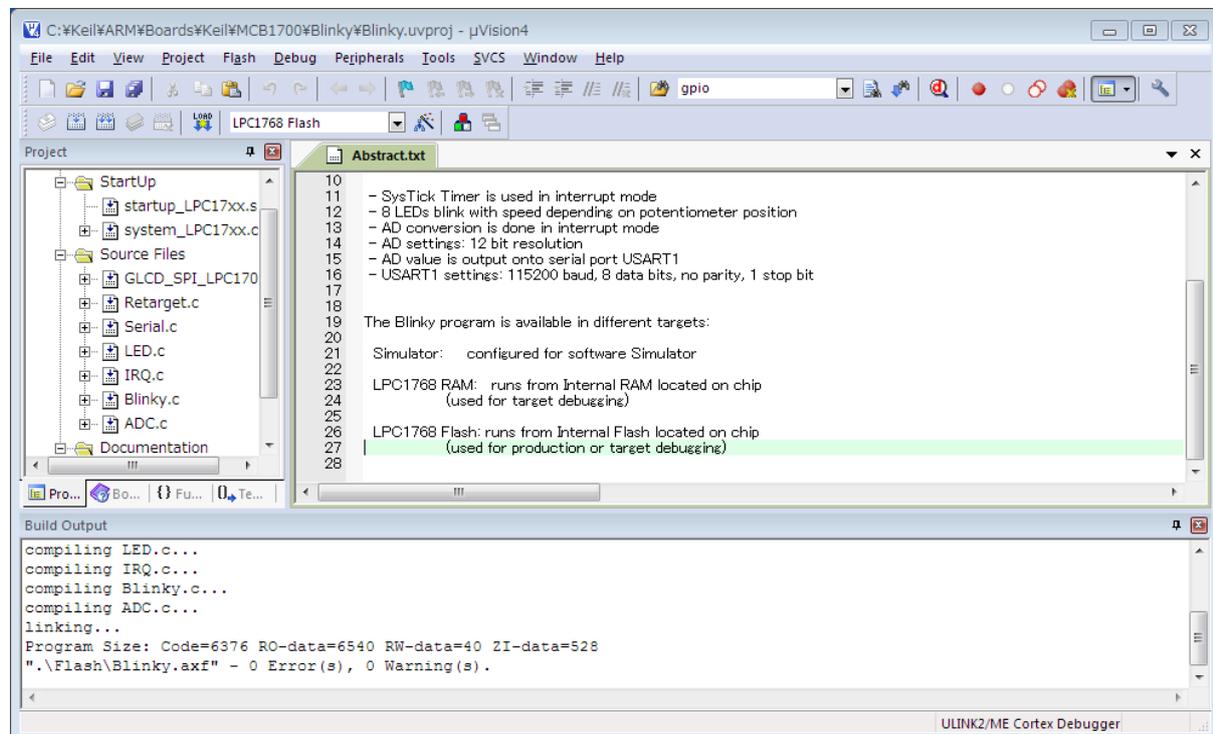
Figure 4

2.3. Setting Debug Adapter

1) Press the "A" button as shown below on the tool bar.
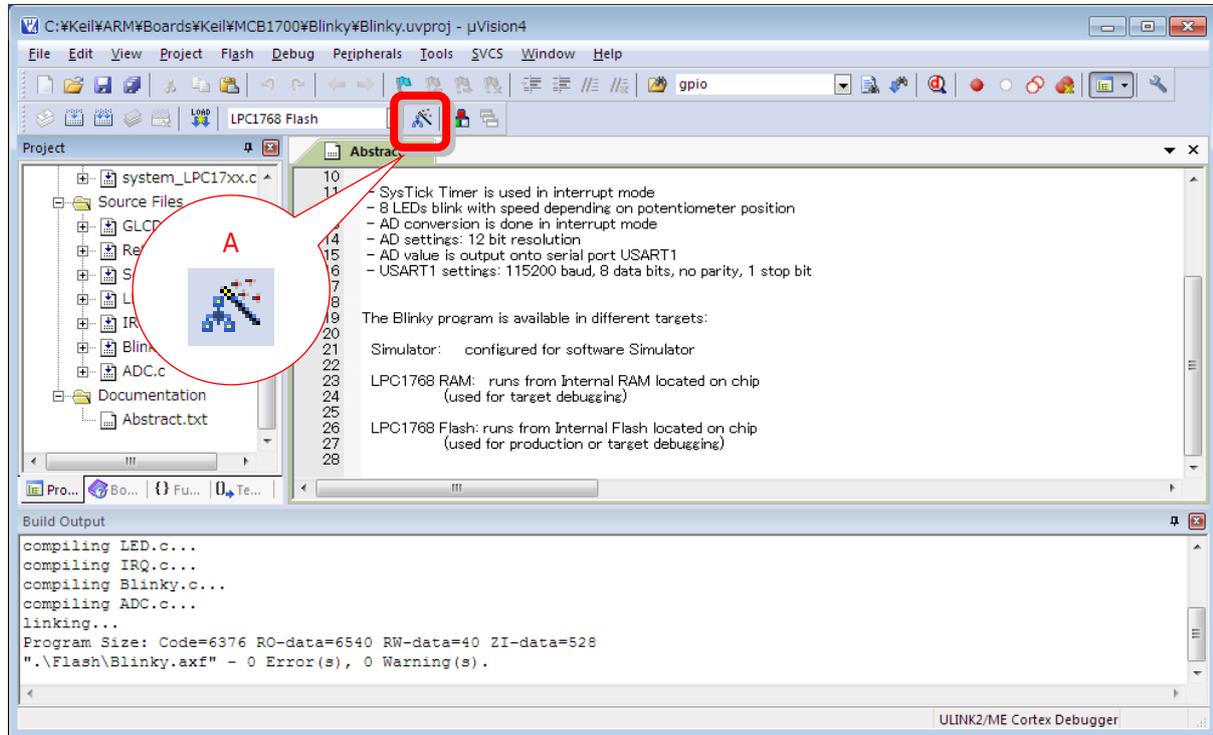
Figure 5

2) Select the Debug tab on the [Options for Target 'XXXX'] window, check the "A" radio button as shown below, and select "CMSIS-DAP Debugger" from the drop-down menu.
After selecting "CMSIS-DAP Debugger," press the Settings button.

Figure 6

Universal Probe IDE Connection Manual - MDK-ARM Edition
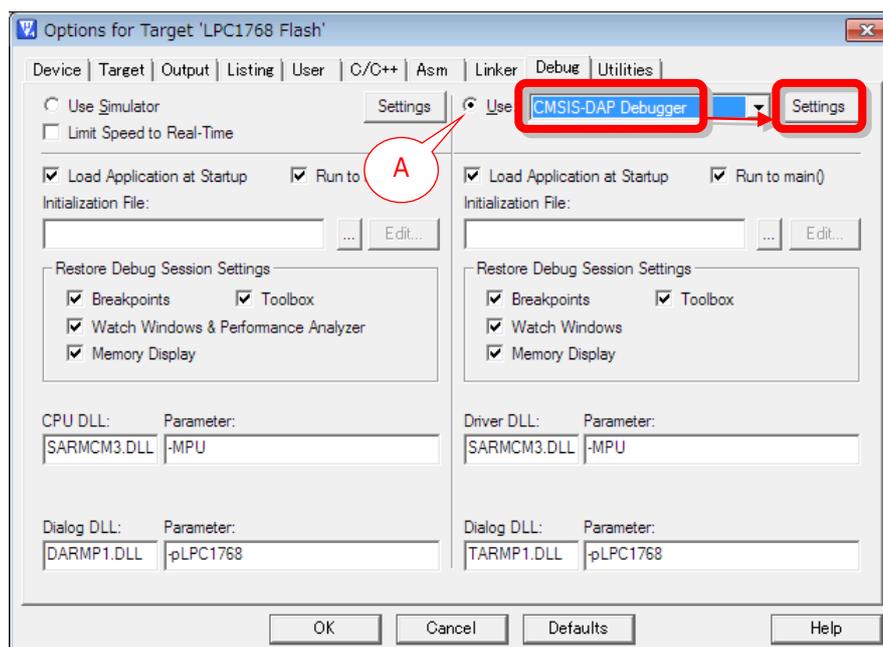
3) Confirm that the [XXXX Target Driver Setup] window is displayed as shown below or specify these settings, and the press the [OK] button.

- (A) ... "Universal Probe for CMSIS-DAP" is displayed.
- (B) ... Checkbox is checked.
- (C) ... A device is displayed.

For other settings, refer to the MDK-ARM website or relevant manual.
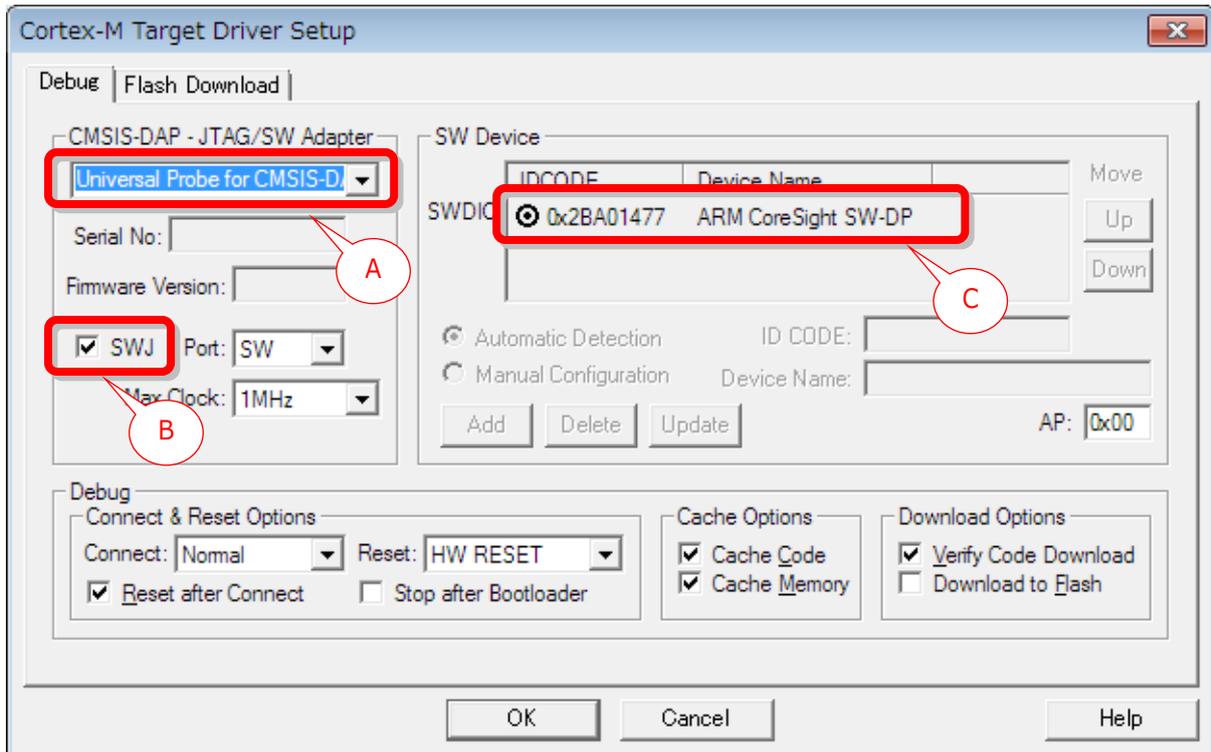
Figure 7

⚠	If no device is found, the "C" portion is displayed as follows.

4) Next, select the Utilities tab, select "CMSIS-DAP Debugger" from the <Use Target Driver for Flash Programming> drop-down menu, and press the OK button.
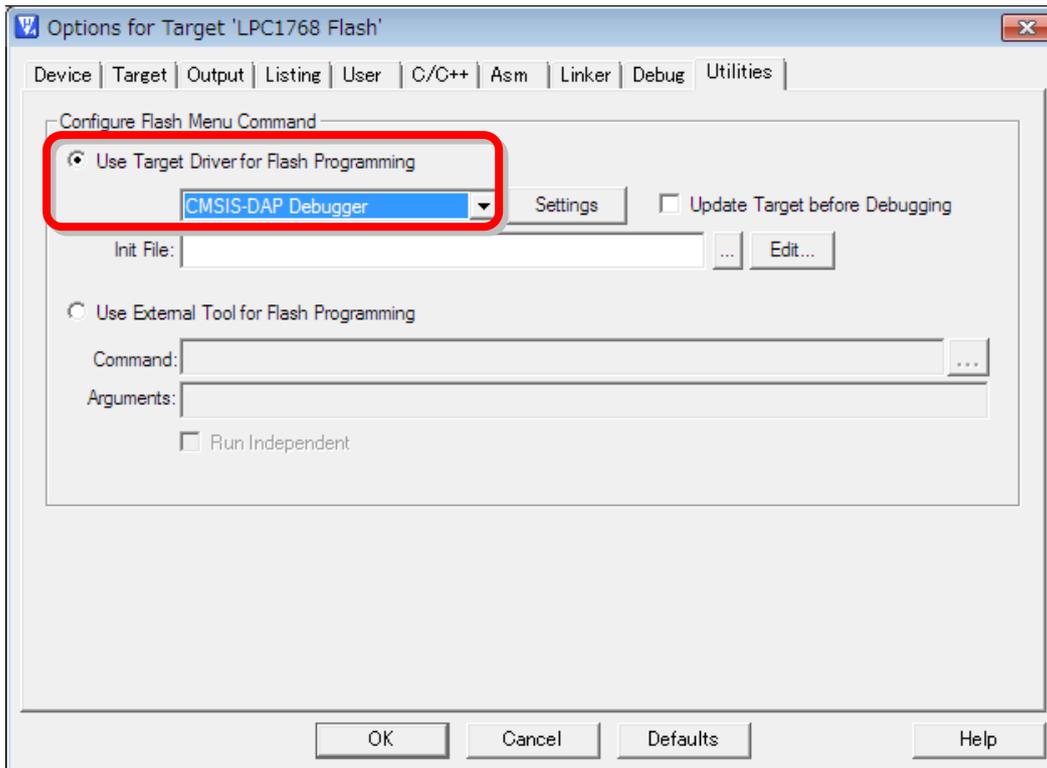
Figure 8

- If you do not reset at the start of debugging→ Refer to (3) in "3. Hot Plug Debugging."
- If you do not download binary data→ Refer to (2) and (4) in "3. Hot Plug Debugging."

2.4. Debugging

Pressing the "A" button as shown in Figure 9 starts download of a binary file and a debugging session.

Figure 9

Universal Probe IDE Connection Manual - MDK-ARM Edition
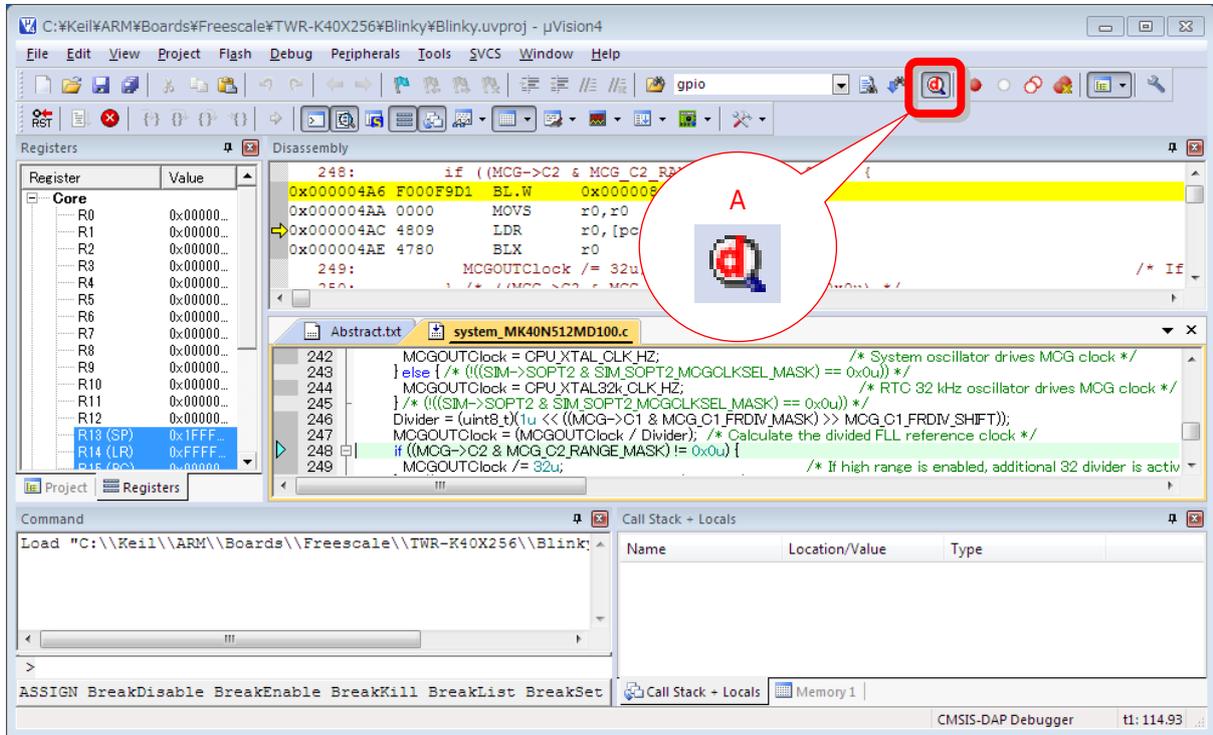
3. Hot Plug Debugging

To connect a probe while the target is operating (hot plugging), specify settings by following the procedures below.
When performing hot plugging, as the binary data are not downloaded and debug symbol information not read at the start of a debugging session, you need to connect to the target by executing "Connect Target" → "Read Symbol Information."

> ⚠️ A probe cannot always be connected to an operating target.
> Check by yourself whether hot plugging is possible.

1) After opening a project, press the "A" button shown below.
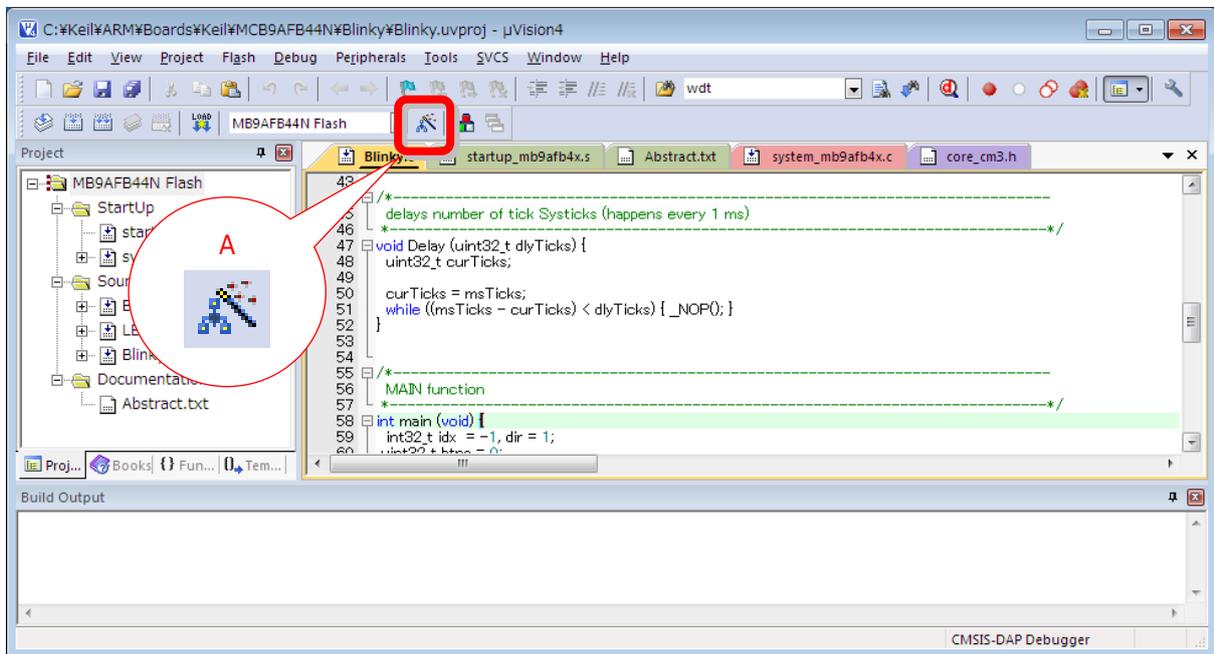
Figure 10

2) Select the "Debug" tab.
    Uncheck the <Load Application at Startup> checkbox ("A") so as **not to download binary data and symbol information**.

Figure 11

Universal Probe IDE Connection Manual - MDK-ARM Edition
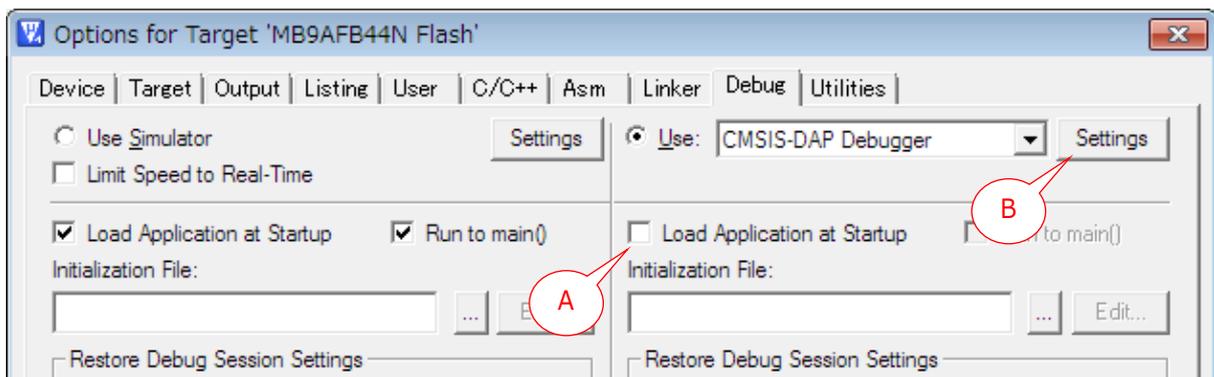
3) Press the [Settings] "B" button as shown in Figure 11 to open the [XXXX Target Driver Setup] window.
Uncheck the <Reset after Connect> and <Verify Code Download> checkboxes so as **not to
perform reset immediately after the start of a debugging session**.
After unchecking the checkboxes, press the [OK] button.
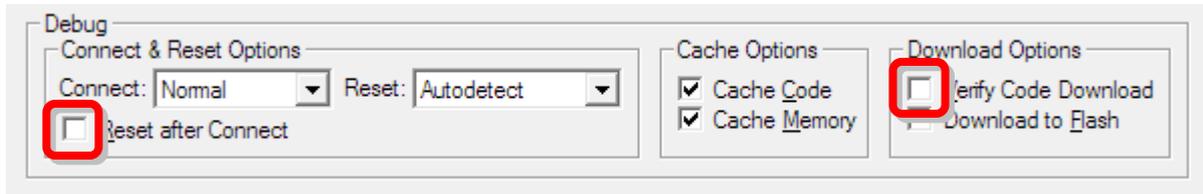
Figure 12

4) Select the "Utilities" tab and uncheck the <Update Target before Debugging> checkbox so as **not to
automatically download the latest binary data**.
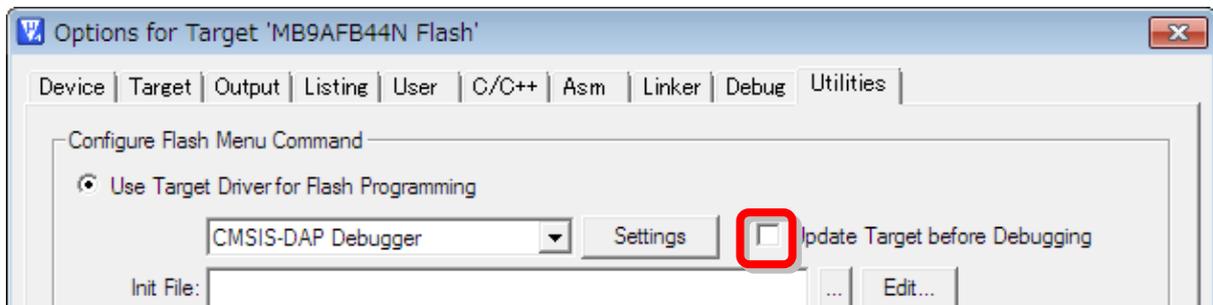
Figure 13

5) Press the "A" button as shown in Figure 9 to start a debugging session.

> **i** Immediately after the start of a debugging session, the target falls into the break (= stopped)
> state in most cases.

6) After the debugging session is started, select the "Command" tab as shown in Figure 14 and enter the following command to read the symbol information.

```
> load %L nocode incremental
```
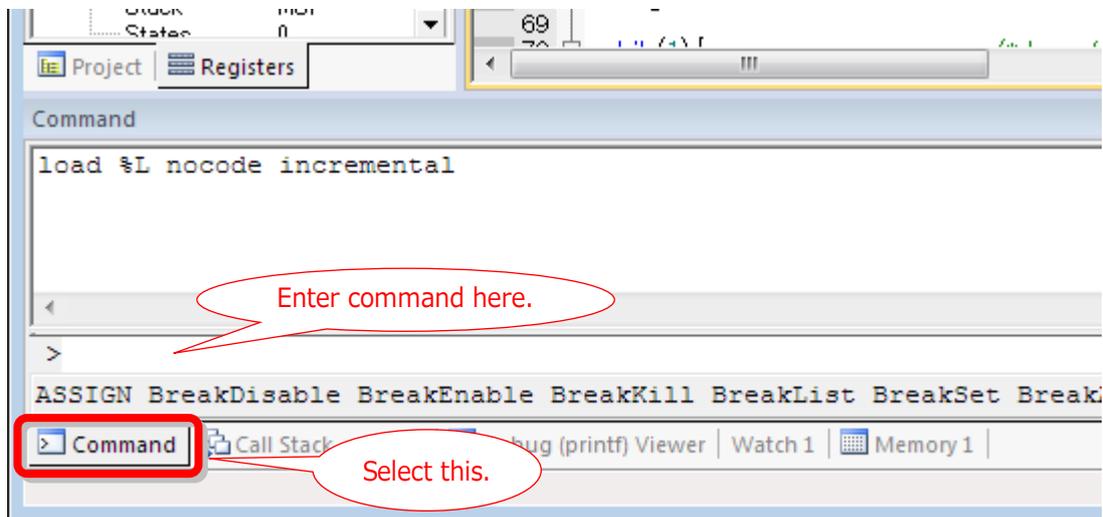

Figure 14

7) A source code is displayed on the Disassembly window. Now debugging using symbols is possible.
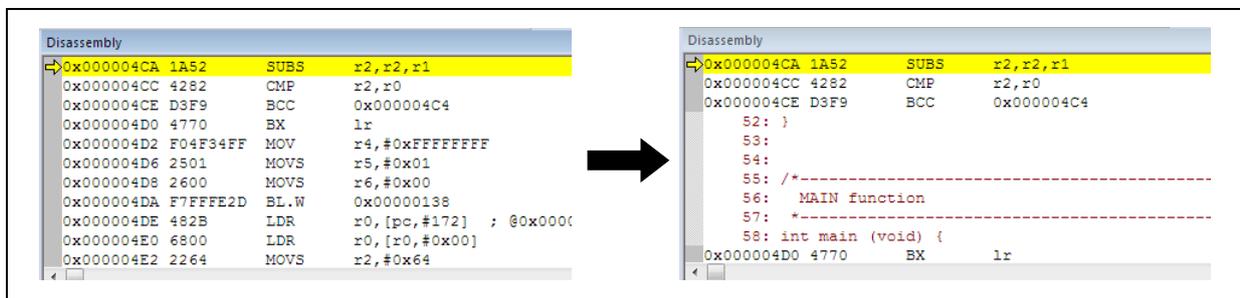
Figure 15

> **INFO** If the source code is not displayed, click the Disassembly window.

Revision History

Ver. No.	Revision date	Contents of revision
01	09/21/2014	Initial Release.
02	11/17/2014	Correction of typographical errors.
03	03/31/2017	Update company information.

Universal Probe IDE Connection Manual - MDK-ARM Edition

Manufacturer Information

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