Introduction

This guide is intended to help you to get started quickly when using the EDK7145. It will cover how to:
1. Install the software tools
2. Build an executable file
3. Program the FLASH
4. Connect to the EDK and debug the file in HEW

① Software Installation

Insert the EDK Software Tools CDROM in your drive, it should automatically run the menu program. If it does not:
- Open "**My Computer**" from your desktop
- Locate and open the CDROM drive
- Double-click the "**autorun.exe**" icon to run the program.

Once the menu program is running:
- Select SH/7145 from the drop down list.
- The buttons suffixed with the '»' symbol will display a popup menu when clicked. The content above the separator in these menus changes dynamically, depending on the selected EDK device.
- If you do not have full versions of the Hitachi tools already installed, you should install the trial versions by clicking the "**Install Tools »**" button and complete the installations in the following order for:
  1) HEW2.1
  2) HEW 2.1 Service Pack 1
  3) FDT2.2
  4) HEW2.1 HMON Debug Component
- Click the "**Add EDK Support**" to install the HEW project generator.
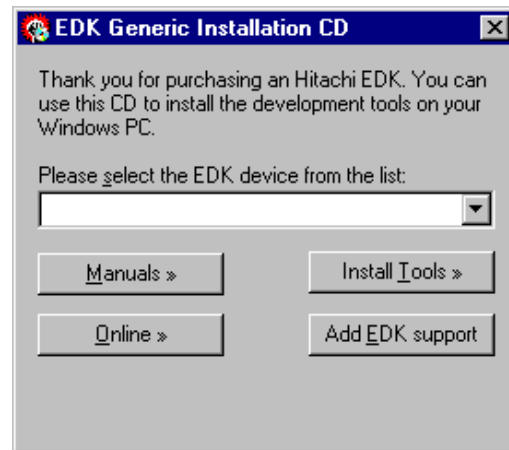
Documentation

The CD's menu program will automatically detect if you need to install the Acrobat Reader when you first select a PDF document from the Manuals popup menu. Alternatively, you may install Acrobat Reader manually from the CD's menu program by selecting "**Manuals »**", "**Acrobat Reader**".

②   Generating a Test Project

Once you have installed the required software you can quit the menu program and start Hitachi Embedded Workshop (HEW).

- Start HEW2.1 by using the Start Menu to navigate to and select "**Hitachi Embedded Workshop**".
- In the "**Welcome**" dialog box, select "**Create a new project workspace**" and click "**OK**".
- In the "**New Project Workspace**" dialog box, change the directory to a suitable location.
- Enter the Workspace Name, "**EDK7145** ".
- Enter the Project Name, "**EDK7145** ".
- Select the CPU Family for the EDK: "**SuperH RISC engine**".
- Select the Toolchain: "**Hitachi SuperH Standard**".
- Select the Project Type "**EDK7145**" for your EDK.
- Click "**OK**".
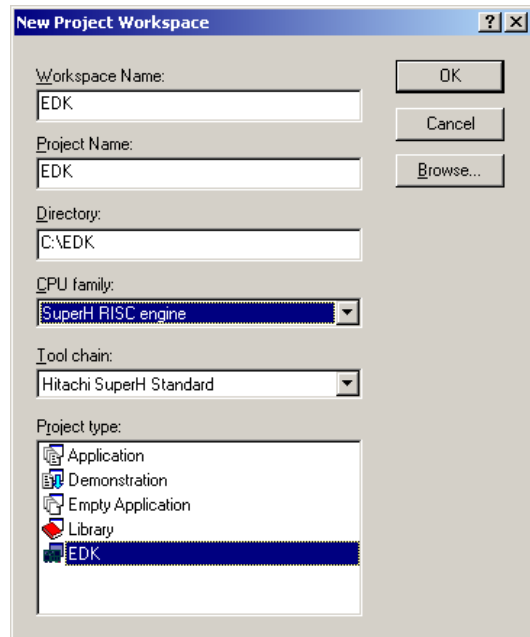
This will start the EDK Project Generator wizard, which will set up the correct environment for your EDK.

- When asked "**What type of project do you want to generate?**", select "**Tutorial**" and click "**Next >**".
- The list of project files to be included is displayed. Click "**Finish**".
- In the "**Project generator information**" dialog box, click "**OK**".

You will see a list of project files appear in the Workspace window, showing that the Project Generator has created the project for you.

Now build the tutorial program and integrated HMON monitor:

- Ensure that the project workspace is set to the following:

Debug_with_HMON	DefaultSession

- Select the "**Build**", "**Build All**" menu item to build the program.
- When the build is complete, proceed to the next section to program your EDK with the project.

Before applying power to the board, please ensure that the jumpers fitted to CJ4 and CJ5 are set as follows *(Pin 1 is indicated by an arrow on the silk-screen):*

	PIN CONNECTIONS			
CJ4 (User Configuration)	2 – 3	5 – 6	8 – 9	11 – 12
CJ5 (Mode Configuration)	1 – 2	4 – 5	7 – 8	10 – 11
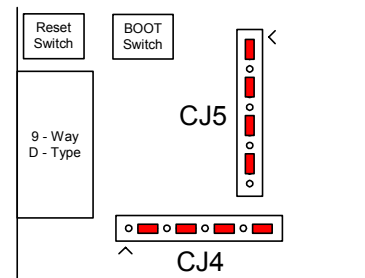
Please refer to section 5 in the EDK User Manual for more information.

③ Programming the Board

1) Ensure that the EDK is connected to COM1, and power is applied.
2) Change to the debug session by choosing "**SessionSH2_hmon**" from the drop down session menu.

> Debug_with_HMON ▼ | SessionSH2_hmon ▼

3) If prompted to save session, click "**No**".
4) If the magic wand is greyed out in the FLASH control bar, FDT is configured. Go to step 7.

5) If the FLASH control bar is greyed out in this mode, with only the magic wand visible, then the FDT settings for the board need to be set up. The FDT configuration wizard will appear. Follow steps below to setup FDT.

    a. Click on the wand to start the wizard. (It may start automatically)
    b. Select your device from the drop down menu.
    c. Click on the Kernels for your EDK. These are denoted by a .EDK after the version.
    d. Click the "**Next**" button. | Next > |.

Protocol	B
Compiler	Hitachi 4.0A
Kernel Path	C:\Program Files\Hitachi\F
Kernel Version	1_0_00.EDK

    e. Select COM1 to connect to your EDK, and click "**Next**".
    f. The CPU Crystal Frequency of the EDK should be preset to the default value, click "**Next**" to accept the settings.
    g. Click "**Next**" again to accept the default settings of Boot Mode and Direct Connection.
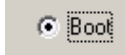   h. Click "**Finish**" to accept the default settings of Automatic Protection and Standard Messaging.

FDM
FDM
COM1
COM2
COM3
COM4
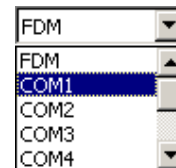
FDT is now configured for use with the EDK.

6) Choose "**Save Session**", from the "**File**" menu.
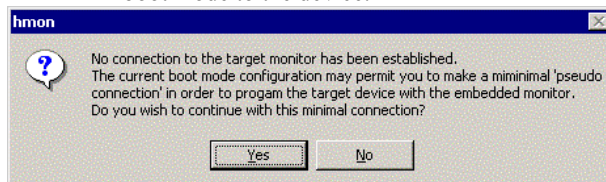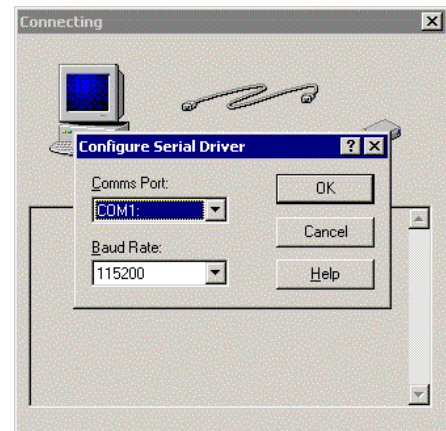
7) Click on the "**HMON FLASH Download Settings**" button.

8) Click on the "**Boot**" radio button, ⦿ Boot and click "**OK**".
9) Choose "**Save Session**", from the "**File**" menu.
10) From the "**Build**" drop down menu, select "**Debug**", then "**Connect**".
    a. If prompted for the "**Target Configuration**", select the file from the list matching your EDK, and click "**OK**".
    b. If presented with the "**Configure Serial Driver**" menu (right), click on "**Cancel**". There is no monitor on the board for HEW to connect to. Choose "**Yes**" to proceed with the minimal connection. This will allow you to download the file in boot mode to the device.

Connecting

Configure Serial Driver ? X
Comms Port:
COM1: ▼
Baud Rate:
115200 ▼
OK
Cancel
Help

hmon X
? No connection to the target monitor has been established. The current boot mode configuration may permit you to make a miminimal 'pseudo connection' in order to progam the target device with the embedded monitor. Do you wish to continue with this minimal connection?
Yes | No

11) Right click on the "**.abs**" file in the "**Download Module**" section, and choose "**Download Module**".
12) When the "**Please ensure that the device is in Boot mode**", (right), dialogue prompts you, push the BOOT mode button on the EDK, and click "**OK**" in the dialogue.
13) Following completion of programming a dialogue will pop-up prompting you to reset the EDK. Press the **RESET** button on the EDK. The BOOT Mode LED will go OFF, and Click "**OK**" on the dialogue.
14) Choose "**Disconnect**" from the "**Debug**" menu.

hmon X
ℹ Please ensure that the device is in Boot mode
OK

④ Running the Debugger

The following procedure explains how to connect to the EDK7145 and debug the project in HEW.
Disconnect power from the board.
Move the User Program Mode jumper, marked **UPM** in **CJ4** on the silkscreen on the board, to position (**4 – 5**), as shown.

	PIN CONNECTIONS			
CJ4 (User Configuration)	2 – 3	4 – 5	8 – 9	11 – 12
CJ5 (Mode Configuration)	1 – 2	4 – 5	7 – 8	10 – 11
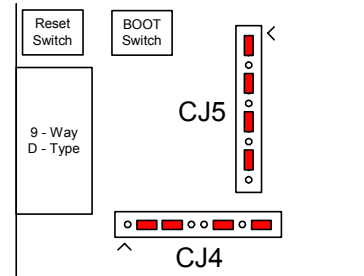
The EDK uses HMON to connect to HEW and debugging is carried out in User Programming Mode. Re-apply power to the EDK.

- Click on the HMON FLASH Download Setting button.
- Click on the **USER** radio button.
- Ensure that the "**uKernel Address**" is set to **H'1000**, and that the "**Referenced Value**" box is not checked. Ensure that the "**Return Address**" is set to **H'0**, and that the "**Referenced Value**" box is checked, and click "**OK**"
- Click "**Save Session**", from the "**File**" menu.
- Click "**Build**", "**Debug**", "**Connect**".
- The console window will report that the EDK has connected.
- Right click on the "**.abs**" file in the "**Download Module**" section, and choose "**Download Module**".
- Double-click on the resetprg.c file in the HEW Project workspace window, under the "**C Source File**" folder.
- The C code listing will appear with a margin at the left showing the areas in memory where the code has been loaded.
- Click on the "**ResetCPU**" button, .

The Program Counter will go to the program start address, denoted by a yellow arrow.

```
0  ⇨ void PowerON_Reset_PC(void)
      {
2         _INITSCT();
8         HardwareSetup();
```

To run the program:
- Select the **"Debug"**, **"Reset Go"** menu item.
- A User LED on the EDK will start flashing,

Congratulations! You have installed the software; programmed the EDK and run your first program with the debugger. To continue learning about the tools and the board please read the supporting User Manuals

Technical Support

The EDK is a tool for evaluation purposes only. Technical support is limited to that which is provided on the Hitachi Micro Systems website at: http://www.hmse.com/products/edk/support/index.htm