

# **Installation Guide**

## **Keil Titanium Simulator**



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**Notice**

At the time of publication this document reflects the latest information on the Installation of the Keil Theseus Simulator.

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# 1. Introduction

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## 1.1 Overview

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The purpose of this document is to provide a guide for Users of the Keil Theseus®<sup>1</sup> Simulator.

**Note:** This document is intended as a complement to the Keil uVision3 book (Getting started with uVision3).

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<sup>1</sup> Theseus is a registered trademark of Silicon Storage Technology, Inc.

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## 2. Installation

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### 2.1 Overview

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This section of the document outlines the installation of the Keil Theseus simulator.

### 2.2 Supplied files

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The Supplied Keil Theseus Simulator zip package contains a complete set of files needed to run Theseus simulator inside Keil uVision3 IDE.

The following zip files can be found inside package:

**BIN.zip:** *Contains Keil Theseus Simulator driver as well as the dummy firmware*

**Emosyn.zip:** *Contains SST/Emosyn device database file*

**Emosyn\_Generic\_Theseus\_C\_code.zip:** *Contains example C/ASM 8051 application*

### 2.3 Installing the Simulator

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The installation of the Keil Theseus Simulator includes several steps, we will introduce it in the following steps.

#### 2.3.1 Keil uVision3 installation

The first step is the installation of Keil uVision3 software required C compiler version 8.05 or newer. For more details on Keil installation and licenses' management, refer to Keil documentation.

**Note**        The latest C compiler version 8.09a in Keil website has some problems. We suggest that Users do not install this version at present. Any questions need to be confirmed with Keil technical support.

#### 2.3.2 Keil Theseus Simulator driver

Extract the contents of BIN.zip into the \Keil\C51\BIN folder. This file contains the Keil Theseus simulator driver as well as the dummy firmware.

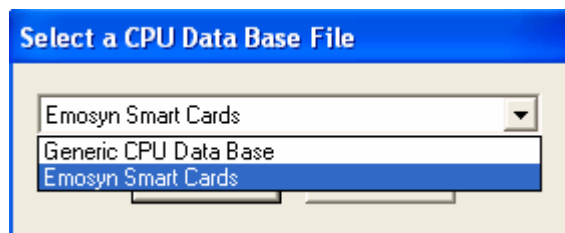
### 2.3.3 Installation of Device database

1. Extract Emosyn<sup>2</sup>.CDB from Emosyn.zip and place in the \Keil\UV3 folder, this file is SST/Emosyn device database file.
2. In \Keil\TOOLS.INI file, insert the following line in the [UV2] section:
  - CDB0=UV3\emosyn.cdb("Emosyn Smart Cards")

See <http://www.keil.com/support/docs/1645.htm> (UVISION: ADDING A USER-SPECIFIC DEVICE DATABASE (CDB FILE)) if you have further questions.

How you can tell it is installed correctly:

1. Open a project in Keil uVision3.
2. Select **File -> Device Database** under the File Menu Item.
3. Select the Device tab and make sure you see two databases in the Database Selection Field as shown in Figure 1:
  - The "Generic CPU DataBase", associated with the uv3.cdb
  - The "Emosyn Smart Cards", associated with the file Emosyn.CDB



**Figure 1: Database selection**

Now the installation of the Keil Theseus simulator is finished.

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<sup>2</sup> Emosyn is a registered trademark of Silicon Storage Technology, Inc.



## 3. Generic Example Code for Theseus product

### 3.1 Overview

We provide generic example code for Theseus application simulation, you can extract the contents of Emosyn\_Generic\_Theseus\_C\_code.zip into an appropriate folder e.g., \Keil\C51\Examples\SST.

### 3.2 What needs to be noted

In order to simulate the Theseus application code correctly in Keil Theseus simulator, the following points need to be noted.

1. Ensure that the appropriate SST/Emosyn chip is selected in the “**Device**” tab under “**Options for Target**” as shown in Figure 2.

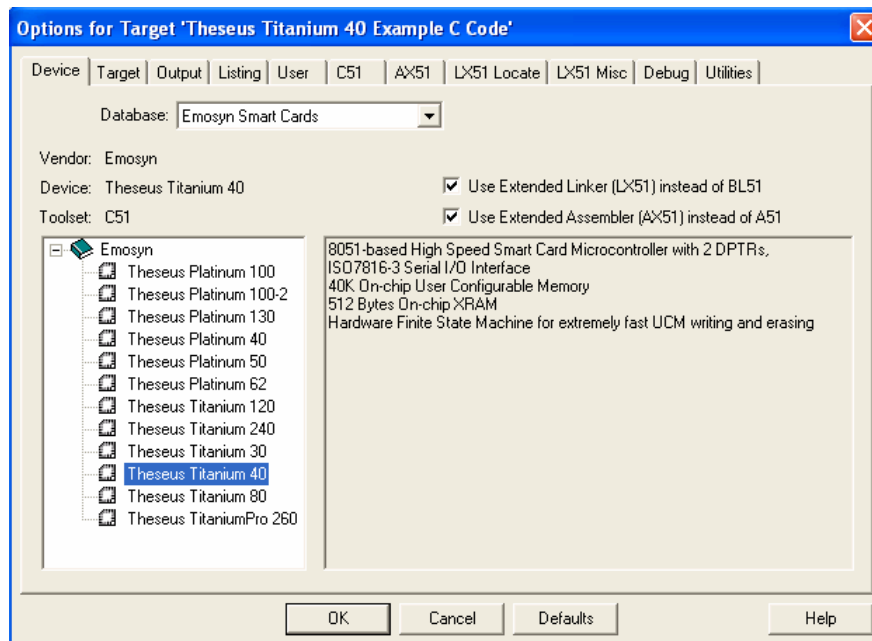
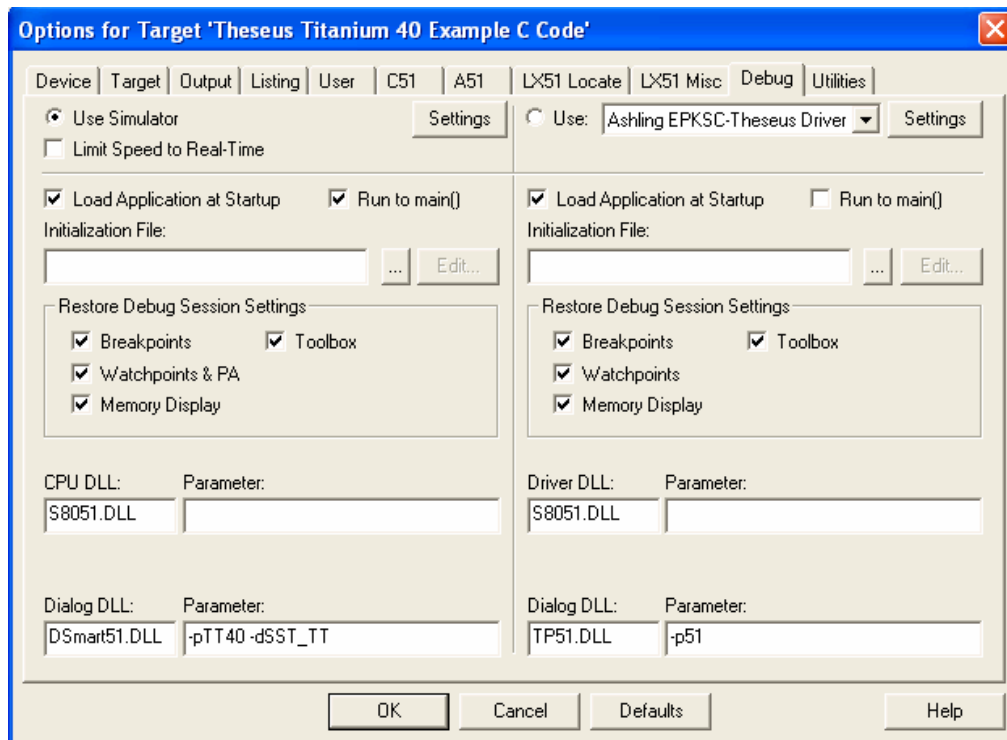


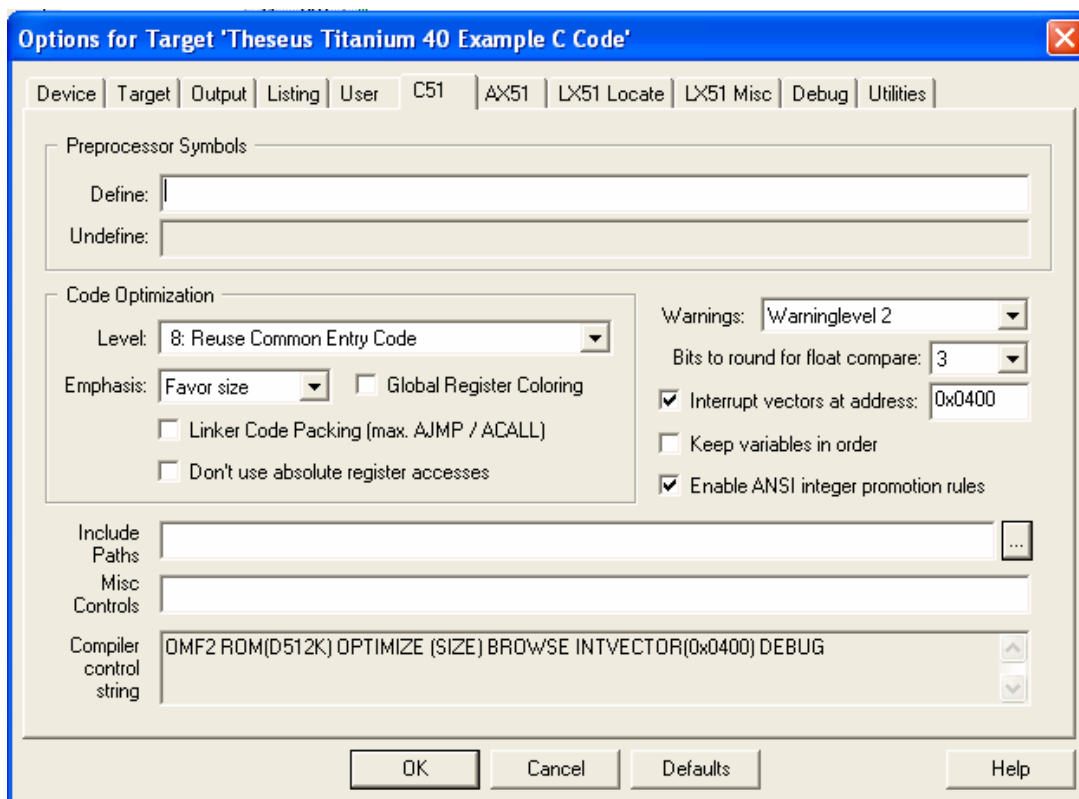
Figure 2: Chip selection

In order to check the device selection, you can see if the Dialog DLL is “DAmart.DLL” and the Parameter is “-pTT40 -dSST\_TT” in the “**Debug**” tab under “**Options for Target**” as shown in Figure 3.



**Figure 3: DLL selection**

2. Make sure to check the “Use Extended Linker (LX51) instead of BL51” and “Use Extended Assembler (AX51) instead of A51” boxes in the “**Device**” tab under “**Options for Target**” as shown in Figure 4.
3. Select “Use Simulator” in the “**Debug**” tab under “**Options for Target**” as shown in Figure 4 for software simulation. If you intend to use hardware debug device in the Keil uVision3, you should check the box on the right.
4. Check if the interrupt vectors address of “Interrupt vectors at address” box in the “**C51**” tab under “**Options for Target**” is correct as shown in Figure 4, you can refer to the SST/Emosyn Theseus products Reference Guide for it.

**Figure 4: Interrupt vectors**

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## 4. Paddle board Simulation

### 4.1 Overview

If you have purchased our SwiftSIM<sup>3</sup> card reader and Keil SC-Card Adapter, you can refer to this chapter.

**Note:** We also call Keil SC-Card Adapter a paddle board.

In this mode of operation, the PC simulates the execution of the target code but any output or input is via the paddle board connected to a SwiftSIM. The paddle board is inserted into any third party smartcard reader or SwiftSIM, the Paddle board behaves as a smartcard.

### 4.2 Paddle board simulation

#### 4.2.1 Paddle board introduction

The Keil paddle board is shown in Figure 5. It interfaces the PC COM port to ISO7816 pads. It provides the connection of the simulator with a SmartCard reader hardware. The paddle board is compatible with 3.3V and 5V readers.

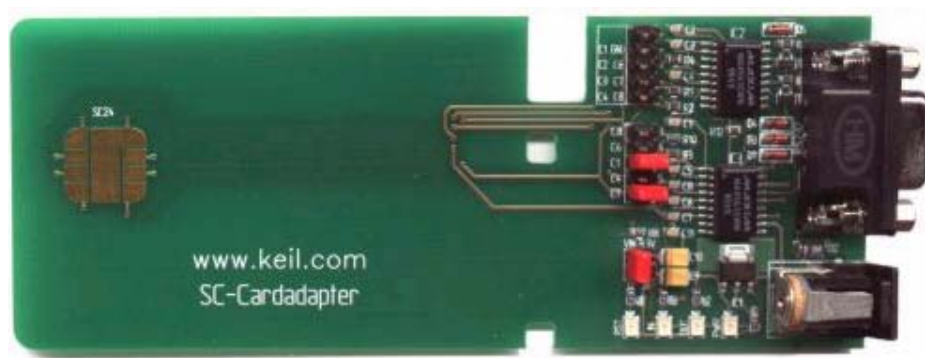


Figure 5: Paddle board

<sup>3</sup> SwiftSIM is a registered trademark of Silicon storage Technology Inc.

### 4.2.2 Hardware connection

See Figure 6 for the Hardware connections.

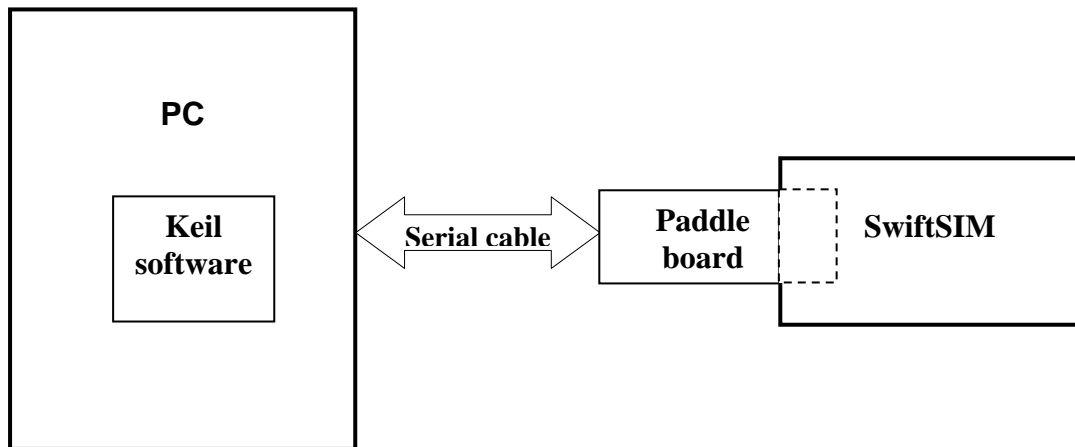


Figure 6: Hardware connection

### 4.2.3 Paddle board simulation

1. Connect the hardware according to Figure 6.
2. Open a project file in Emosyn\_Generic\_Theseus\_C\_code.
3. Build and then start debug session.
4. Configure paddle board simulation in **Peripherals -> ISO/COM Config** under the Peripherals Menu Item as shown in Figure 7.

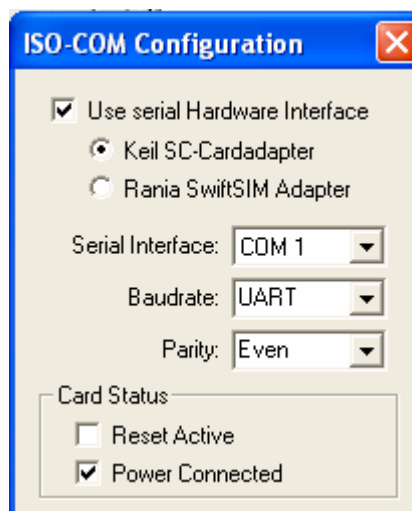


Figure 7: Configuration

Then you can go on paddle board simulation.

## 5. Document Control

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This section details the current document control/version number:

Version Number	Date	Name	Comment
0.1	18 Oct 2007	Lisa Li	Initial Document Creation