

TD1208 AN0004 HARDWARE AND SOFTWARE EFM32 MODIFICATIONS



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1 Overview

This document provides instructions for modifying the hardware and software of the EFM32 Tiny Gecko starter kit in order to be able to debug the Telecom Design TD1208 module.

1.1 Organization

Each section in this document covers a separate topic, organized as follow:

- Section 1 is this overview
- Section 2 contains the instructions allowing to modify the hardware of the EFM32 Tiny Gecko Starter Kit
- Section 3 contains the instructions allowing to modify the software of the EFM32 Tiny Gecko Starter Kit in order to print the power consumption of the Telecom Design TD1208 module on the LCD

1.2 Relevant Documents

Additional information on the TD1208 module, on its dedicated evaluation board and on the EFM32 Tiny Gecko starter kit can be found in:

- *TD1208 Datasheet*
- *TD1208 Reference Manual*
- *Tiny Gecko Starter Kit User Manual*

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2 Hardware modifications

In order to provide energy to the Telecom Design TD1208 module directly from the EFM32 Tiny Gecko Starter Kit, and use the built-in Advanced Energy Monitoring capability, you may need to perform the following hardware modifications on the board:

- Place a jumper between the 2 bottom row breakout pins “VMCU” and “3V3”
- Place a wire between the slider switch bottom-right pin and the 2x10 0.1” pitch shrouded header top right pin as shown on the picture below

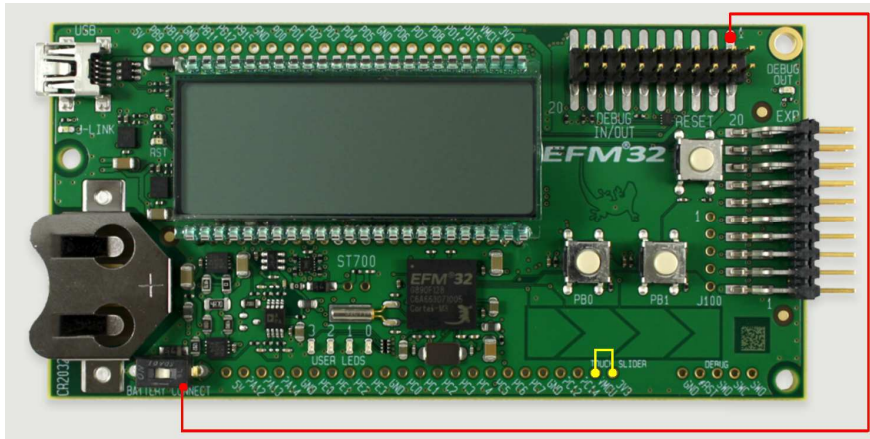


Figure 1: Picture of the hardware modifications

The jumper between the 2 “VMCU” and “3V3” pins is set to redirect the energy from one 3.3V regulator to the MCU.

The wire from the slider switch bottom-right pin redirects the current probe to the VTARGET pin providing power to supply the plugged-in board.

With the jumper and the switch on the left side (close to the 3V Lithium Battery), the Advanced Energy monitoring system will be able to monitor the external TD1208 device instead of the built-in EFM32 CPU.

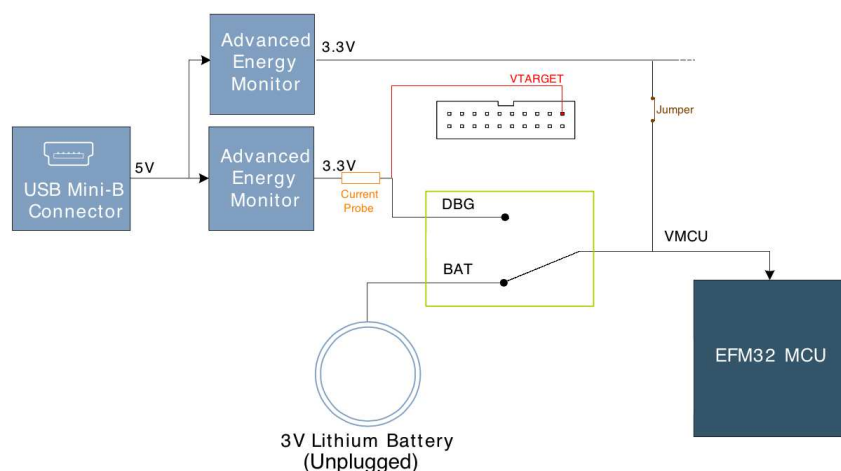


Figure 22: Hardware modifications schematic

3 Current measurement display

You can easily display the current measurement on the LCD by flashing a new firmware into the EFM32. It will provide several measurement modes such as the highest, lowest or the average current consumption.

3.1 How to flash the binary file

In order to print the real time current consumption on the LCD, you have to flash a binary file using energyAware Commander.

First launch the energyAware Commander software program. Connect your EFM32 Tiny Gecko board to your computer and click on the “**Connect**” button on the top-left corner of the main window.

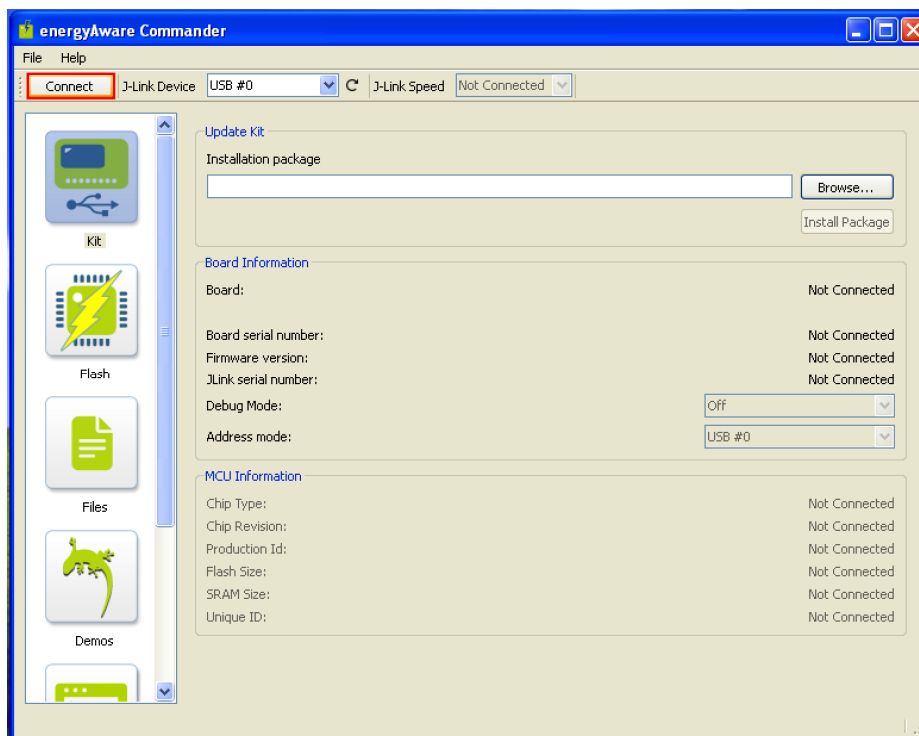


Figure 2: Connect to the board

On the left panel, choose “**Kit**”, change **Debug Mode** to **MCU**, and then change “**Address mode**” to match the J-Link Device next to the “**Connect**” button.

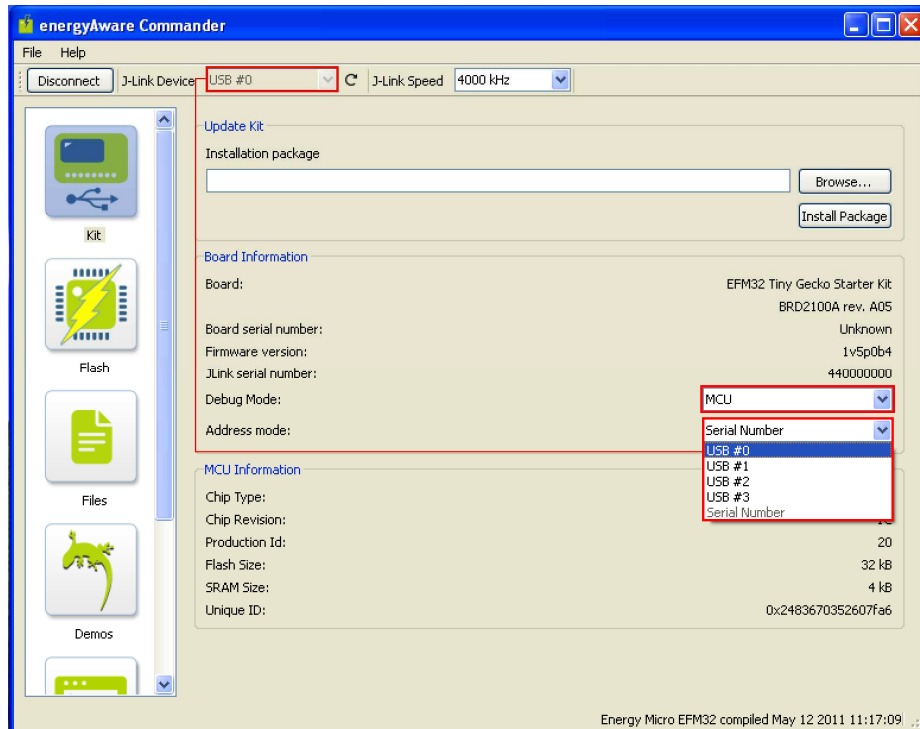


Figure 3: Pre-Flash Settings

On the left panel, choose **“Flash”**, and click on the **“Browse”** button in order to find the **“SOFT1503.bin”** binary file you are willing to flash. Once it is chosen, you can flash it by clicking on the **“Flash EFM32”** button.

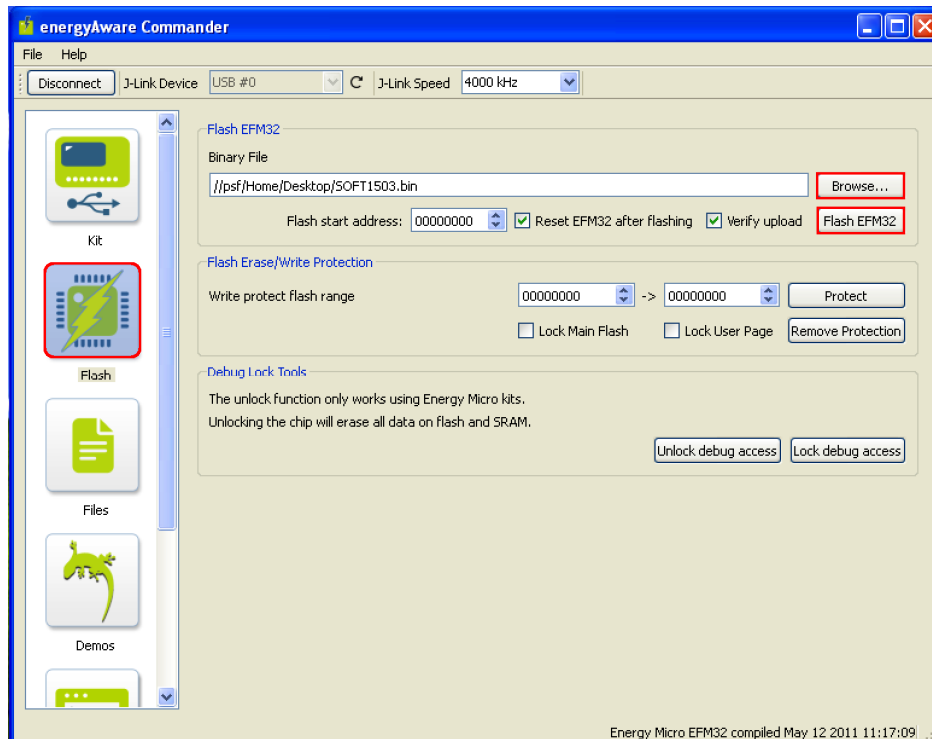


Figure 4: Choose the binary file and flash it

3.2 How to use the real-time power consumption software

There are 4 different modes you can display on the LCD:

Displayed on the top-right corner of the LCD	Description
Hi	Provides the highest power consumption since the last reset
Lo	Provides the lowest power consumption since the last reset
00:00	Provides the average power consumption since the last reset
Real-time power consumption	

Note: You can switch from one mode to another by clicking on the **PB0** button on the board or reset the values by clicking on the **PB1** button.

3.3 Follow the real-time consumption on your computer

You might also want to follow the real-time consumption directly on your computer. To do so, connect the Telecom Design TD1208 module to your computer and launch the Energy Micro energyAware Profiler software program. Click on the triangle button on the top-left corner to start.

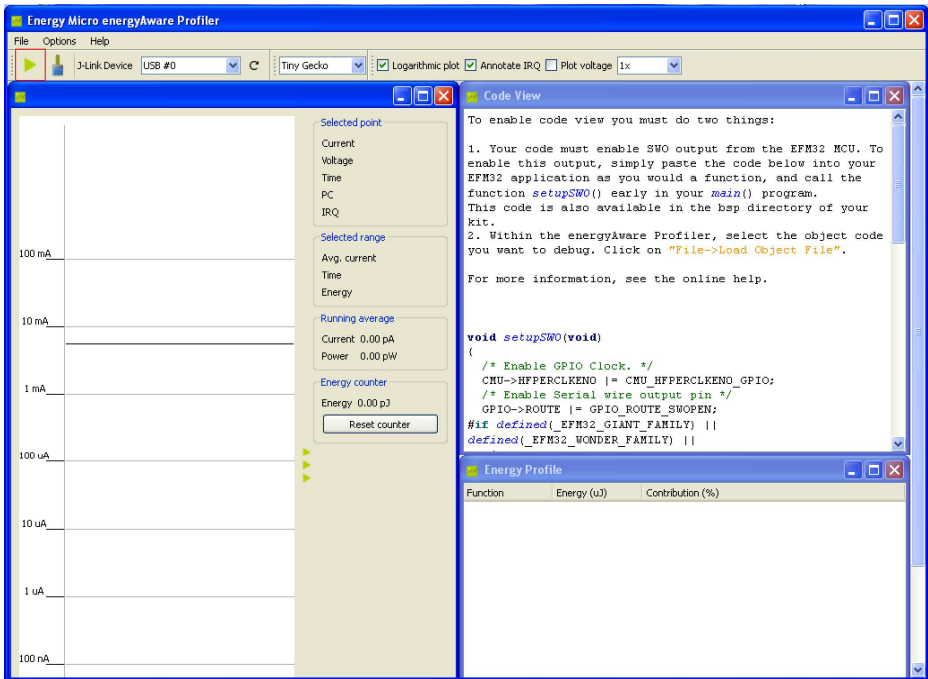


Figure 5: Profiler

Note: Unfortunately, the required SWO EFM32 pin is not available on the Telecom Design TDRF modules, therefore, the Profiler feature that allows you to trace the time spent in each sub function from the SW0 pin is unavailable. However, you can still get the real-time power consumption profile:



Figure 6: Power consumption during the boot phase

DOCUMENT CHANGE LIST

Revision 1.0

- First Release

NOTES:

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