EK-TM4C1294XL-BOOSTXL-BATTPACK Firmware Development Package

USER'S GUIDE

SW-EK-TM4C1294XL-BOOSTXL-BATTPACK-UG-2.1.0.12573

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1 Introduction

The Texas Instruments® Tiva™ EK-TM4C1294XL-BOOSTXL-BATTPACK evaluation board (Tiva C Series TM4C1294 Connected LaunchPad) is a low cost platform that can be used for software development and prototyping a hardware design. A variety of BoosterPacks are available to quickly extend the LaunchPad's features.

The EK-TM4C1294XL-BOOSTXL-BATTPACK includes a Tiva ARM® Cortex™-M4-based microcontroller and the following features:

- Tiva™ TM4C1294NCPDT microcontroller
- Ethernet connector
- USB OTG connector
- 2 user buttons
- 4 User LEDs
- 2 booster pack connectors
- On-board In-Circuit Debug Interface (ICDI)
- Power supply option from USB ICDI connection, USB OTG connection or external power connection
- Shunt jumper for microcontroller current consumption measurement

This document describes the example applications that are provided for the EK-TM4C1294XL when paired with the BOOSTXL-BATTPACK BoosterPack. This BoosterPack provides a lithium polymer battery that can power the LaunchPad for several hours. The BoosterPack features multiple Texas Instruments devices including two TP6300 series buck-boost converters, a BQ24210 battery charger and a BQ27510 battery gas gauge.

2 Example Applications

The example applications show how to utilize features of the EK-TM4C1294XL development board. Examples are included to show how to use many of the general features of the Tiva microcontroller, as well as the feature that are unique to this development board.

A number of drivers are provided to make it easier to use the features of the EK-TM4C1294XL. These drivers also contain low-level code that make use of the TivaWare peripheral driver library and utilities.

There is an IAR workspace file (`ek-tm4c1294xl-boostxl-battpack.eww`) that contains the peripheral driver library project, along with all of the board example projects, in a single, easy-to-use workspace for use with Embedded Workbench

There is a Keil multi-project workspace file (`ek-tm4c1294xl-boostxl-battpack.mpw`) that contains the peripheral driver library project, along with all of the board example projects, in a single, easy-to-use workspace for use with uVision.

All of these examples reside in the `examples/boards/ek-tm4c1294xl-boostxl-battpack` subdirectory of the firmware development package source distribution.

2.1 Fuel Tank BoosterPack Measurement Example Application (boostxl_battpack)

This example demonstrates the basic use of the Sensor Library, TM4C1294XL LaunchPad and the Fuel Tank BoosterPack to obtain state-of-charge, battery voltage, temperature, and several other supported measurements via the BQ27510G3 gas gauge sensor on the Fuel tank boosterpack.

The LEDs on the LaunchPad will blink while the application is running.

The Fuel Tank BoosterPack (BOOSTXL-BATTPACK) defaults to be installed on the BoosterPack 2 interface headers.

Instructions for use of Fuel Tank on BoosterPack 1 headers are in the code comments.

If you would like to observe how the application affects the voltage or current readings from the battery, please ensure the POWER_SELECT (JP1) jumper on the EK-TM4C1294XL LaunchPad is configured for "BoosterPack".

Connect a serial terminal program to the LaunchPad's ICDI virtual serial port at 115,200 baud. Use eight bits per byte, no parity and one stop bit. The raw sensor measurements are printed to the terminal.

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