




TivaWare™ for C Series Release Notes

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Revision Information

This is version 1.1 of this document, last updated on July 02, 2013.

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1.1 Summary

This version of TivaWare for C Series adds support for the DK-TM4C123G development kit.

Tool Chains Used

- IAR EW-ARM 6.60.1
- Keil RV-MDK 4.72
- Mentor CodeBench 2011.07-52
- Texas Instruments CCS 5.40

1.2 New Features in TivaWare Boot Loader

1.2.1 CRC checking option added to boot_loader

A new feature has been added to the boot loader that allows an image's embedded CRC32 to be verified on each system reset. When CHECK_CRC is defined in bl_config.h, the boot loader only transfers control to a main application image if it can find a header structure above the application vector table and if the CRC32 value embedded in that header matches the value calculated for the image by the boot loader. Please refer to the Boot Loader Users' Guide for more details.

A new tool, binpack, has been added to the tools directory of the release that allows CRC32 values to be calculated and embedded into application images. This tool is described in greater detail in the tools user's guide.

1.3 New Features in TivaWare Peripheral Driver Library

1.3.1 Software CRC module moved into DriverLib

The software CRC module has been moved from the utils directory into the Peripheral Driver Library.

1.4 Bug Fixes in TivaWare Peripheral Driver Library

1.4.1 SysCtlClockGet() returns an incorrect value in some configurations.

The SysCtlClockGet() function was not properly breaking out of the internal oscillator cases and returned the incorrect processor speed in some configurations. The two failing configurations occurred when SysCtlClockSet() is called with either the SYSCTL_RCC_OSCSRC_INT or SYSCTL_RCC_OSCSRC_INT4 parameter selected for the system clock.

1.4.2 Incorrect ASSERT in HibernateClockConfig()

The ASSERT in HibernateClockConfig was incorrectly causing a debug assert when valid values were passed in to the function. The values HIBERNATE_OSC_HIGHDRIVE and HIBERNATE_OSC_LOWDRIVE were also defined incorrectly and have been changed to match the correct hardware definitions.

1.5 New Features in TivaWare Sensor Library

1.5.1 Added driver for the L3GD20H

Added a driver for the ST L3GD20H gyroscope.

1.5.2 Added driver for the LSM303DLHC

Added a driver for the ST LSM303DLHC accelerometer/magnetometer.

1.5.3 Added driver for the KXTI9

Added a driver for the Kionix KXTI9 accelerometer.

1.5.4 Added driver for the LSM303D

Added a driver for the ST LSM303D accelerometer/magnetometer.

1.5.5 Added utility functions for working with quaternions.

Added functions for generating a quaternion from a set of Euler angles, calculating the inverse and magnitude of a quaternion, for multiplying two quaternions, and for finding the angle between two quaternions.

1.6 Bug Fixes in TivaWare Sensor Library

1.6.1 Fixed soft reset sequence for MPU6050/MPU9150

The soft reset sequence in the MPU6050 and MPU9150 drivers have been made more robust.

1.6.2 Added error resiliency to CompDCM

The update function for the complementary DCM algorithm now checks for NaN (not a number) values in the resulting matrix and replaces the entire matrix with the unity matrix in this case. While the resulting attitude is momentarily incorrect, it recovers proper attitude estimation after a period of time. Previously, the NaN values would stick and the attitude estimation was forever invalid.

1.6.3 Corrected error handling in I2C driver

The error handling in the I2C driver has been adjusted to be more robust and better handle the various error conditions that can occur during an I2C transaction.

1.6.4 Corrected conversion factors for ST L3GD20H gyro

The conversion of raw angular velocity into radians per second was incorrect yielding angular velocities that were orders of magnitude too small. The effect of reporting incorrectly (small) rotations is a long settling time as the complimentary filter fusion algorithm corrects the device orientation with the accelerometer (assuming the gyro is weighted much heavier than the accelerometer).

1.7 New Features in TivaWare Host Tools

1.7.1 Tool, binpack, added to embed CRC32 values inside application binaries

A new utility, binpack, has been added to the tools directory of the TivaWare release. This tool can be used to embed CRC32 values into application images that are intended for use with CRC-enabled boot loaders.

1.7.2 Added tools document

A document has been added that describes the contents of the tools directory within TivaWare. Previously, this content had been provided in the individual board documents.

1.8 Bug Fixes in TivaWare Host Tools

1.8.1 Cell width error in ftrasterize corrected

The ftrasterize tool has been updated to fix a problem that could cause the font cell width to be reported as smaller than the widest character in the font. Because this change causes the reported dimensions of some fonts to change, a new switch, -x, has been added to revert to the old behavior. This new switch may be used by existing applications that rely upon the incorrectly reported sizes.

In addition, the -m option has been updated to allow monospaced fonts to be created in all supported output formats. Previously this option was limited to basic ASCII fonts created without the -r or -u switches.

1.8.2 Memory leak in lmusbdll fixed.

In previous versions of lmusbdll, calls to OpenDevice() or OpenDeviceByIndex() contained a memory leak which would occur if no compatible device was connected. This has been corrected.

1.9 New Features in TivaWare USB Library

1.9.1 USB HID vendor-specific usage macros added

Two new macros, UsageVendor() and UsagePageVendor(), have been added to usbdhid.h. These macros allow vendor-specific usages and usage pages to be easily included in a HID device's report descriptor.

1.10 Bug Fixes in TivaWare USB Library

1.10.1 Report disconnect events in device mode

Fixed an issue in the device mode code that prevented delivery of disconnect events.

1.11 New Features in TivaWare Utility Library

1.11.1 Added utils document

An API document has been added that describes the contents of the utils directory within TivaWare. Previously, this content had been provided in the individual board documents.

1.12 New Features in DK-TM4C123G Firmware Package

1.12.1 Added support for DK-TM4C123G

Support has been added for the DK-TM4C123G development kit.

1.13 New Features in TivaWare Firmware Development Package

1.13.1 Updated FatFS to version 0.09

FatFS in third_party/fatfs has been updated to version 0.09.

2 Release Notes for Version 1.0 (April 11, 2013)

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2.1 Summary

This is the initial version of TivaWare for C Series.

Tool Chains Used

- IAR EW-ARM 6.40.1
- Keil RV-MDK 4.54
- Mentor CodeBench 2011.07-52
- Texas Instruments CCS 5.30

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