StarterWare 02.01.01.12 Release Notes

StarterWare Version 02.01.01.12

Date: 23rd September 2019

Introduction

StarterWare provides no-OS platform support for TI AM437x GP, StarerKit and IDK EVM which are based on TI AM437x SOC and TI AM335x GP EVM, EVM-SK, ICE, BeagleBone and BeagleBone Black which are based on TI AM335x SOC. StarterWare provides Device Abstraction Layer, libraries, peripheral/board level sample/demo examples that demonstrate the capabilities of the peripherals of AM437x, AM335x and AMIC110. StarterWare comes with pre-compiled binaries for bootloader and example applications which can be run from an SD card.

This version of StarterWare mainly includes few bug fixes as listed in the IR list below.

Features

Device Abstraction Layer and Example Applications for the peripherals on AM437x and AM335x are listed in the table below.

Features	Description	TI AM437x GP EVM	TI AM437x IDK	TI AM437x StarterKit	TI AM335x GP EVM	TI AM335x EVM-SK	TI AM335x BeagleBone White	TI AM335x BeagleBone Black	TI AM335x ICE v2.1	TI AM335x ICE v1.0	TI AMIC110 ICE
Cache/MMU	• Cache: Invalidate, clean, lock and SRAM memory are demonstrated • MMU: Mapping memories with different properties	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
QSPI	• QSPI Flash Read/Write in Polling mode • QSPI Flash Writer to flash images to QSPI flash at required offsets.	No	Yes	Yes	No	No	No	No	No	No	No

UART	• Echo Application in Interrupt Mode	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
I2C	• EEPROM Read in Polling Mode	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Multi-channel SPI	• SPI Flash R/W in Interrupt Mode	No	No	No	Yes	No	No	No	Yes	Yes	No
DMTimer	• ISR Counting	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Watchdog Timer	• WDT Demonstration	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
GPIO	• LED Blink • Audio Buzzer	Yes	No	Yes	No	No	No	No	No	No	No
Real-Time Clock (RTC)	• Time Set and Get	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
DSS	• Raster Display	Yes	No	No	No	No	No	No	No	No	No
LCDC	• Raster Display	No	No	No	Yes	No	No	No	No	No	No
VPFE	• Capture and Display	Yes	No	No	No	No	No	No	No	No	No
TSC-ADC	• Voltage Read	Yes	No	No	Yes	Yes	No	No	Yes	Yes	No
Cap TSC	• Capacitive Touchscreen calibration	Yes	No	No	No	No	No	No	No	No	No
EPWM	• Rotation of Haptics Motor	Yes	No	No	Yes	No	No	No	No	No	No
ECAP	• DAL implementationis • present Application is currently not provided	No	No	No	No	No	No	No	No	No	No
GPMC	• NAND Page Read/Write Application	Yes	No	No	Yes	No	No	No	No	No	No
MMCSD	• FAT file system shell interface	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Ethernet	• HTTP Server Application • TCP Echo Application	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No
Bootloader	• MMCSD Boot • UART Boot • QSPI Boot • Nand Boot	MMCSD, UART	MMCSD, QSPI	MMCSD	MMCSD NAND UART MCSPI	MMCSD UART	MMCSD UART	MMCSD UART	MMCSD MCSPI	MCSPI	MCSPI

Libraries provided are listed in the table below.

- MMC/SD library

- QSPI library
- NAND library
- fatfs library
- xmodem library

Utils and other modules are listed below

Features	TI AM437x EVM
Console utils	• The console type can be set to either UART or debugger. This provides applications with an easy-to-use console interface. • Provides UART based console features (printf, scanf etc.) • Provides semi-hosting console features to make the features available over debugger
I2C Utils	• I2C is a key peripheral that is used to control on-board devices such as EEPROM, different sensors, and other such devices. • I2C utils provide a simple SoC and board-independent interface to initialize, read and write any I2C based device.
DMA utils	• Provides interface to configure DMA for memory-to-memory and memory-to-peripheral data transfers.
FS Shell Utils	• Provides console interface for FAT file system operations.
Display utils	• Display utilities will provide a set of APIs, which can be used by the application, to display the input image on the LCD.
SoC	• ChipDB: Indicate if the specified instance number of the module (peripheral) exists on the SoC. • ChipDB: Provide base address of specified module (peripheral) ID for the specified instance number • Interrupt configuration • Cache/MMU configuration • PRCM configuration APIs
Board	• Auto-detect the board ID and revision • Provide information about on-board devices available on the board and their connection information (e.g. I2C slave address etc.) • Indicate whether specified device is available on the board • Pinmux configuration APIs
Device	• Provides a list of IDs for supported on-board devices • Provides additional information about on-board devices

Compatibility with last release

- This release is compatible with previous StarterWare releases.

Dependencies

Refer to Host Platform Requirements of the User Guide

Device Support

SOCs Supported:

- AM437X
- AM335X
- AMIC110

EVMs Supported:

- TI AM437x GPEVM Rev 1.5A
- TI AM437x IDKEVM Rev 1.3A
- TI AM437x StarterKit Beta Version
- TI AM335x EVM Rev 1.5B
- TI AM335x SK Rev 1.2C
- TI AM335x Beaglebone White Rev A6
- TI AM335x Beaglebone Black Rev
- TI AM335x ICE Rev 2.1A
- TI AMIC110 ICE

What is Not Supported

Performance Benchmarking: Bench marking for Cortex A8 and CortexA9 and peripherals

Routing of interrupts to FIQ (Not supported in AM43xx and AM335x devices)

Security Extention Features (Not supported in AM43xx and AM335x devices)

Applications using standard malloc/calloc

StarterWare Startup Code neither call any library nor initializes heap. Hence does not perform initializations required for malloc/calloc.

StarterWare does not support CCS project setup for building libraries and examples. Makefile setup need to be used for the build

Known Issues

Known issues have been listed below:

Module/Example	Description
MMCSD/FS Shell	• Application fails on card re-insert.

Resolved Incident Reports (IR)

IR Parent/ Child Number	Severity Level	IR Description
PRSDK-2203	Minor	Set AM437X GP DDR3L supply voltage to 1.35V
PRSDK-5522	Minor	Extended PWMSS control API to support all instances
PRSDK-5332	Minor	AM335x NAND ECC issue in Starterware library
PRSDK-5592	Minor	Missing parenthesis in AM335x Starterware EDMA marco
PRSDK-5811	Major	K2K: top level parallel make fails due to package interdependency

Technical Support

For further information or to report any problems raise a query in StarterWare e2e forum [1].

References

[1] http://e2e.ti.com/support/embedded/starterware/f/790.aspx