ADSP BF561 EZ KIT Lite® Board Support Package (BSP) v1.0.0 Release Notes

Thank you for installing the BF561 EZ-KIT Lite® Board Support Package (BSP). The BSP provides example which demonstrate the drivers and services provided along with CCES 1.0.1

The BF561 EZ-KIT Lite® designed for use with CrossCore® Embedded Studio (CCES) for Analog Devices Processors software development tools. The CCES development environment aids advanced application code development and debug, such as:

- Create, compile, assemble, and link application programs written in C++, C, and assembly
- Load, run, step, halt, and set breakpoints in application programs
- Read and write data and program memory
- Read and write core and peripheral registers
- Plot memory

For more details on CCES, please visit www.analog.com/cces. For more on the ADSP-BF561 EZ-KIT Lite® , please visit http://www.analog.com/en/processors-dsp/blackfin/adsp-bf561/products/BF561-EZLITE/eb.html.

The BF561 EZ-KIT Lite® BSP provides comprehensive examples which demonstrate support for services , drivers, examples and code sketches are included for for the following components:

- AD1836 Stereo Audio DAC.
- AD1836 Stereo Audio ADC.
- ADV7183 Video decoder
- ADV7179 Video Encoder
- Video class driver support for Video encoder(ADV717x) and Video decoder (ADV7183)

The BSP also provides comprehensive examples which demonstrates the on-chip drivers and services.

The CCES Help environment provides complete hardware and software documentation.

License Checking

There are no license requirements for the ADSP-BF561 EZ-KIT Lite® BSP.

Installation Logging

The installer does not create a log file by default. If you encounter installation issues, you can generate an installation log file by running the installer from the command prompt.

Change to the directory containing downloaded installer executable and run the following from the command prompt:

ADI_ADSP-BF561_EZKIT-Rel1.0.0.exe /v"/l*v c:\installer.log"

Support and Assistance

- Submit your questions online at:
  - http://www.analog.com/support

- E-mail your Processor and DSP software and development tools questions from within CrossCore Embedded Studio:
  - processor.tools.support@analog.com
- E-mail your Processors and DSP applications and processor questions to:
  - processor.support@analog.com OR
  - processor.china@analog.com (Greater China support)
- Post your questions in the Processors and DSP online technical support community in Engineer Zone at:
  - http://ez.analog.com/community/dsp

Software Requirements

To build the projects included in the BF561 EZ-KIT Lite® BSP, CrossCore Embedded Studio version 1.0.1 or later is required.

Test Configurations

The software versions used to test are:

CrossCore® Embedded Studio version 1.0.1 with ADSP-BF561 EZ-KIT Lite® BSP version 1.0.0.

At the time of release, the tested hardware revision is:

- ADSP-BF561 EZ-KIT Lite® PCB Revision 2.3, BOM Revision 3.3, Silicon Revision 0.5.

Getting Started

Adding a Driver to a Project

When adding an ADSP-BF561 Driver to your project, the IDE will add the sources for the driver to the CCES Project folders, starting at "system". There will be a folder specific to the driver(s) or service(s) you have added under this folder.

Creating a project which includes a ADSP-BF561 driver/service

In order to create a project you should follow the instructions provided in the CrossCore Embedded Studio help. As part of the project creation, the page "Add-in selection" contains a list of all the available add-ins for the project that you are creating based on the installed products and the project's chosen processor and type. You can see the drivers in support of the ADSP-BF561 EZ-KIT Lite® under the "Device Drivers and System Services" category. Within this catgeory you will see "ADSP-BF561 EZ-KIT Lite" which contains the drivers for the on-board peripherals (AD1836a, ADV7179 and ADV7183 and video class driver). The on-chip peripheral drivers will be listed in "On-chip peripheral drivers" folder and the system services are listed in the "System Services" folder.

The ADSP-BF561 EZ-KIT Lite® add-in generates a call to adi_initComponents(). For more information on adi_initComponents(), please refer to the CCES help section:

CrossCore® Embedded Studio 1.0.1 > Graphical Development Environment > System Configuration

Adding a ADSP-BF561 driver to an existing project

Every CrossCore Embedded Studio project contains a System Configuration file called `system.svc` which is located in the root of the project. The file is the IDE's interface for managing the various pre-written software components used in the "system" implemented by a project. Double-clicking any `system.svc` file in a navigation view opens that file in the System Configuration Utility which allows you to see the add-ins that you currently have in your project. Click on "Add..." and select the ADSP-BF561 EZ-KIT Lite Drivers add-in which is under the "Device Drivers and System Services" for the on-board ADV7183,ADV7179,AD1836a driver. For adding on-chip peripherals drivers select the "On-chip peripheral drivers" and for the system services select the "System Services".

Interrupts

CrossCore Embedded Studio provides a coherent interrupt management mechanism which allows for the same interface to be used in RTOS and non-RTOS applications. This means that interrupt service routines in all applications must be written in C and use the adi_int interface. Any thread-safety requirements or interactions with tasks are handled by the adi_int interface. For more information on the adi_int API, in CrossCore Embedded Studio go to Help > Search and enter adi_int.

Examples of the usage of this interrupt management mechanism are the System Services and Device Drivers provided with Crosscore Embedded Studio. By using the adi_int interface, the same services and drivers can be used in all applications regardless of whether an operating system is used.

Sketches and Examples

Sketches

CrossCore Embedded Studio provides a mechanism by which small code fragments, called sketches, can be generated with parameterized input provided by the user. The resulting code can then be copied and pasted to a project. BF561 EZ-KIT Lite® BSP related sketches are provided. To locate the sketches specific to the BF561 EZ-KIT Lite® BSP, open up the example browser (Help -> Browse Examples) and then select the appropriate product name in the "Product:" pulldown.

Examples

Parallel flash programmer interface application used with the device programmer to access the M29W640FT parallel flash device on the ADSP-BF561 EZ-KIT Lite ®

EXAMPLES FOR DRIVERS:

1. SSLDD example to demonstrate character echo using UART
2. SSLDD example for using SPI

EXAMPLES FOR OFF-CHIP DEVICE DRIVERS:

1. SSLDD example for Audio loop back using AD1836a in TDM mode.
2. SSLDD example for Audio loop back using AD1836a in I2S mode.
3. Video loopback to demonstrate the video capturing using ADV7183 and Display it on TV using ADV717x
4. Video loopback to demonstrate the video capturing using ADV7183 video class driver and Display it on TV using ADV717x using Video class driver.

EXAMPLES FOR SERVICES:

1. SSLDD example using GPIO
2. SSLDD example using mcapi

3. SSLDD example for using power management
4. SSLDD example for using stdio service.
5. SSLDD example for using timer
6. SSLDD example to demonstrate the following kind of data transfers using Memory DMA(MDMA)
    1. memory copy from a memory mapped location or a single buffer to multiple destination
    2. 2D memory copy in One-Shot mode using Memory DMA Manager
    3. 1D memory copy in One-Shot mode using Memory DMA Manager
    4. memory copy in DMA List mode using Memory DMA Manager.
    5. memory copy in DMA Array mode using Memory DMA Manager.

Location

In order to locate BF561 EZ-KIT Lite® BSP examples and sketches, you can use the following:

- Open CrossCore Embedded Studio's Example Browser which can be found in CrossCore Embedded Studio under Help. Select in the Product section BF561_EZ-Kit_Lite for a full list of examples and sketches.
- Import projects located in your BF561 EZ-KIT Lite® BSP installation folder under the example directory in product installation BF561_EZ-Kit_Lite`\Blackfin\Examples)`.

Documentation

General information on the driver model can be found in CCES help under

CrossCore® Embedded Studio 1.0.1 > BF561 EZ-KIT Lite Board Support Package 1.0.0 > System Services and Device Drivers

MISRA-C Support

MISRA C is a software development standard for the C programming language developed by the Motor Industry Software Reliability Association (MISRA). Its aims are to facilitate code safety, portability, and reliability in the context of embedded systems, specifically those systems programmed in ANSI C. The compiler detects violations of the MISRA rules at compile-time, link-time, and run-time.

As of release 1.0.1 All system services and device drivers are MISRA-C compliant (the specific suppressions are listed in the header files).

System Services and Device Driver Thread Safety

All system services and device drivers (SSDD) use mutexes and semaphores to ensure thread-safety. If an RTOS is present then the SSDD will use the RTOS mutex and semaphores. If an RTOS is not present then the SSDD will use a non-RTOS implementation of mutexes and semaphores (spin locks).

Known issues with BF561 EZ-KIT Lite® Board Support Package (BSP)

None