

ADSP-BF706 EZ-KIT Mini™ Board Support Package v1.1.0 Release Notes

Thank you for installing the ADSP-BF706 EZ-KIT Mini™ Board Support Package (BSP). The BSP provides software and documentation in support of the ADSP-BF706 EZ-KIT Mini.

The ADSP-BF706 EZ-KIT Mini is 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.

The ADSP-BF706 EZ-KIT Mini BSP provides comprehensive software support for the ADSP-BF706 EZ-KIT Mini. Specifically, drivers, examples and code sketches are included for the following components:

- ADAU1761 low power, stereo audio codec with integrated digital audio processing driver.

The CCES Help environment provides complete hardware and software documentation.

Release Dependencies

Requires CCES version 1.1.1

Release Testing

The BSP has been tested with the ADSP-BF706 EZ-KIT Mini version 1.1, BOM 2.0 (silicon rev 1.0)

License Checking

There are no license requirements for the ADSP-BF706 EZ-KIT Mini 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-BF706_EZKIT_MINI-Rel1.1.0.exe /v"/l*v c:\temp\installer.log"
```

Software Requirements

- To build the example projects included in the ADSP-BF706 EZ-KIT Mini™ BSP, CrossCore Embedded Studio version 1.1.1 or later is required.
- [SigmaStudio™](#) is used to generate program, parameter and register data for the [ADAU1761](#) SigmaDSP®

Getting Started

Adding a Driver to a Project

When adding an ADSP-BF706 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-BF706 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-BF706 EZ-Kit™ MINI under the "Device Drivers and System Services" category. Within this category you will see "ADSP-BF706 EZ-KIT Mini Drivers" which contains the drivers for the on-board peripherals (ADAU1761). 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-BF706 EZ-KIT Mini add-in generates a call to `adi_initComponents()`. For more information on `adi_initComponents()`, please refer to the CCES help

Adding a ADSP-BF706 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 Overview which allows you to see the add-ins that you currently have in your project. Click on "Add..." and select the ADSP-BF706 EZ-KIT Mini Off-Chip Peripheral Drivers add-in which is under the "Device Drivers and System Services" for the off-chip ADAU1761 driver. For adding on-chip peripherals drivers select the "On-chip peripheral drivers" and for the system services select the "System Services".

Notes:

- If the IDE detects that `adi_initComponents()` is not yet present in `main()`, it prompts you to add it and offers to insert it for you.

Configuration

There are no ADSP-BF706 EZ-KIT Mini driver configuration options available in the IDE.

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.

Examples and Sketches

In order to locate the ADSP-BF706 EZ-KIT Mini BSP examples and sketches, open the CrossCore Embedded Studio's "Browse Examples" which can be found in CrossCore Embedded Studio under Help. Select in the Product section "ADSP-BF706 EZ-KIT Mini v1.1.0" for a full list of examples and sketches

Power_On_Self_Test:

This example allows the user to test the many peripherals of the EZ-KIT. This example is also pre-programmed into the on-board flash memory. By following the directions in the `readme.html` you can also program this example (or one of your own) into the EZ-KIT flash. This POST was designed so that you can use the EZ-Board push buttons to select a specific test to run.

Device_Programmer

This example allows the user to program the flash device on the ADSP-BF706 EZ-KIT Mini in conjunction with the Device Programmer Command-line tool. This code only serves as an example of how to program the flash and may not be optimized for the fastest programming speed. A pre-built binary exists so that users can just program the flash device without having to build the example.

Driver Examples:

1. Audio Filter Callback - Demonstrates the ADAU1761 device driver using non-blocking callback mode.
2. Audio Talkthrough - Demonstrates the ADAU1761 device driver using blocking mode.
3. SigmaStudio Audio - Demonstrates loading SigmaStudio exported data using the ADAU1761 device driver.

Documentation

API documentation for the drivers included in the ADSP-BF706 EZ-KIT Mini BSP can be found in CCES Help.

Reference

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

CrossCore® Embedded Studio 1.1.0 > System Run-Time Documentation > System Services and Device Drivers > Device Drivers User Guide

API documentation for the off-chip drivers (controllers populated on the EZ-Kit, ADAU1761) can be found under

ADSP-BF706 Board Support Package 1.1.0 > ADSP-BF706 EZ-KIT Mini™ API Reference

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.

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).

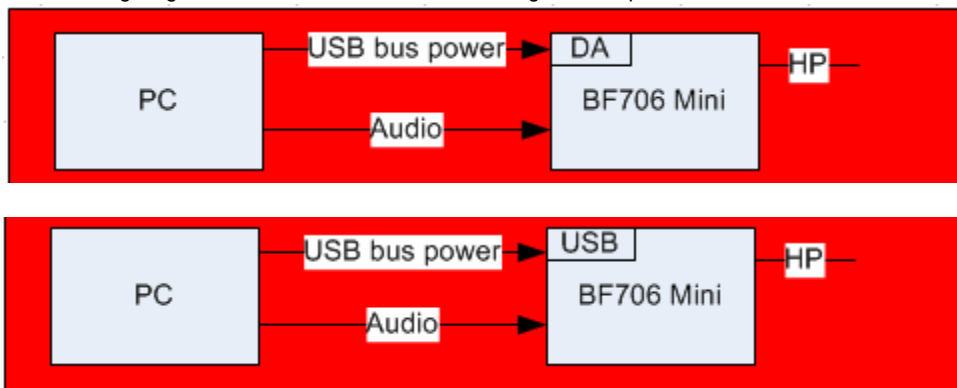
Support and Assistance

- 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>

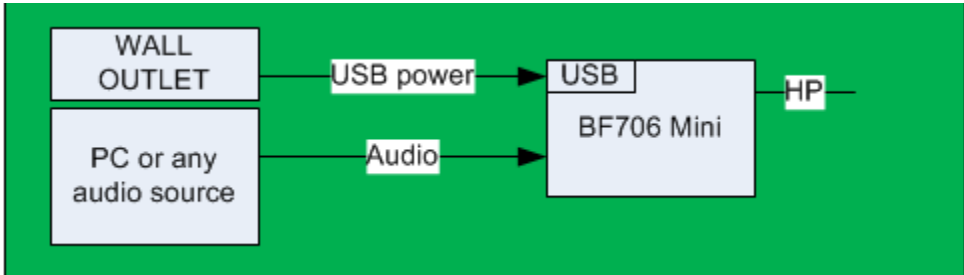
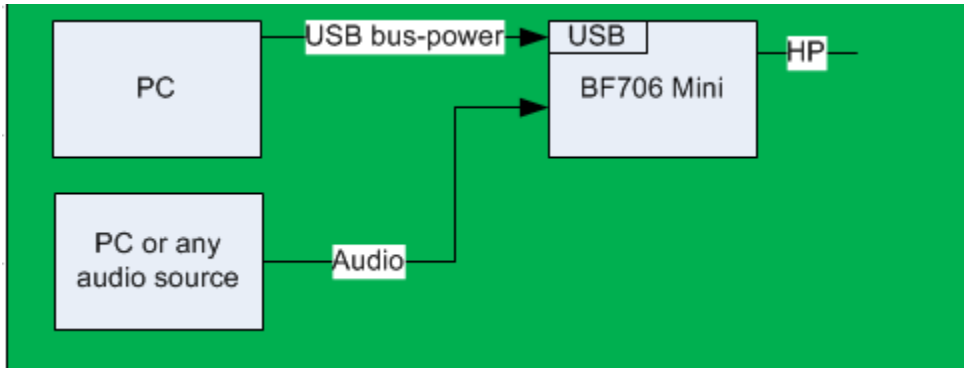
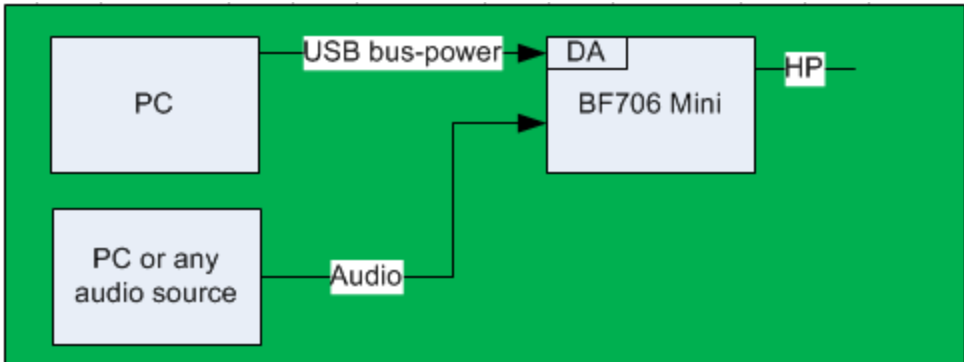
Known issues with the ADSP-BF706 EZ-KIT Mini Board Support Package (BSP)

- There is a known ground loop issue when the ADSP-BF706 EZ-KIT Mini is receiving power and audio signal from the same PC or laptop. The easiest way to reproduce the ground loop issue is to use the audio talkthrough example. Connect USB cable to the Mini, audio output of the PC to the line in connector (J1) and headphones to the J2 connector. With the audio source turned off, a muffled sound is audible.

The following diagrams show scenarios that exhibit the ground loop noise.



The following diagrams show scenarios that **do not** exhibit the ground loop noise.



- Reloading an application may cause a CPLB exception. The ADSP-BF706 EZ-KIT Mini must be reset using the reset button on the board before loading the application.