

Video Encoder EI3 Extender Board Support Package (BSP) v1.1.0 Release Notes

These release notes subsume the release notes for previous updates. Release notes for previous updates can be found at the end of this document.

Release Dependencies

Release 1.1.0 requires CrossCore Embedded Studio (CCES) Release version 1.1.0. The download link can be found in the "Product Downloads" section at www.analog.com/cces.

This release was tested with:

- ADSP-BF707 EZ-Board Rev 0.1 BOM Rev 1.2.
- ADSP-BF609 EZ-Board Rev 1.0 BOM Rev 1.4
- Video Encoder EI3 Extender Rev 1.0 BOM Rev 1.0

New features and examples in this release

No new examples have been added to this BSP, however additional projects have been added to support the ADSP-BF707 EZ-Board.

Documentation

The following APIs have been added:

1. `adi_adv734x_SetPpiDmaFinish`
2. `adi_adv7511_SetPpiDmaFinish`

The new API documentation can be found in CCES Help under:

Video Encoder EI3 Extender Board Support Package 1.1.0

The Video Class Driver APIs are documented in CrossCore Embedded Studio in the following help section:

CrossCore® Embedded Studio 1.1.0 > System Run-Time Documentation > System Services and Device Drivers > Audio and Video Class Driver API Reference > Video Device Class

Software issues addressed in this release

The following software anomalies have been addressed in this release:.

Upgrading Projects to use New Version of the Add-Ins

Projects that currently use version 1.0.1 of the add-ins need to be upgraded to use version 1.1.0. In CCES Project Explorer window, select the project and click on 'system.svc'. In the 'Overview' tab, review all add-ins and click on the 'Upgrade' button. For dual-core projects, system.svc must be reviewed for each core.

Known issues

None

Video Encoder EI3 Extender Board Support Package (BSP) v1.0.1 Release Notes

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Release Dependencies

Release 1.0.1 requires CrossCore Embedded Studio (CCES) Patch Release version 1.0.1.1. The download link can be found in the "Product Downloads" section at www.analog.com/cces.

This release was tested with:

- ADSP-BF609 EZ-Board Rev 1.0 BOM Rev 1.2
- Video Encoder EI3 Extender Rev 1.0 BOM Rev 1.0

New features and examples in this release

Video Class Driver support for the ADV7511 and ADV734x video encoders has been added. The Video Class Driver APIs are documented in CrossCore Embedded Studio in the following help section:

CrossCore® Embedded Studio 1.0.1 > System Run-Time Documentation > System Services and Device Drivers > Device Drivers User Guide > 6 High-Level Class Drivers > 6.2 Video Codec Class Drivers

Two new examples have been added to demonstrate the video class driver for the ADV7511 and ADV734x:

Example: VideoEncoderHDMI_ClassDriver

This example demonstrates how to output a YUV422 video data buffer via the ADV7511 video encoder in various video modes using class driver for ADV7511 video encoder. The example cycles through several operational video modes. A static image for each mode is displayed for several seconds before proceeding to the next mode. The ADV7511 video encoder is located on the Video Encoder EI3 Extender Board.

Example:VideoEncoder_ClassDriver

This example demonstrates how to output a YUV422 video data buffer via the ADV734x video encoder in various video modes using the class driver for ADV734x video encoder. The example cycles through several operational video modes. A static image for each mode is displayed for several seconds before proceeding to the next mode. The ADV734x video encoder is located on the Video Encoder EI3 Extender Board.

Documentation

New APIs were added to both the ADV7511 and ADV734x drivers. The new API documentation can be found in CCES Help under:

Video Encoder EI3 Extender Board Support Package 1.0.1

Specifically, the following APIs have been added:

1. `adi_adv734x_SetPpiDmaTransferSize`
2. `adi_adv7511_SetPpiDmaTransferSize`
3. `adi_adv7511_SetHotPlugDetectMode`

Software issues addressed in this release

The following software anomalies have been addressed in this release in this release:

- In release 1.0.0 the ADV7511 and ADV734x video encoder drivers only support 32 bit DMA transfers. In release 1.0.1 a new API has been added to these drivers to allow DMA transfers of 32, 64, 128 or 256 bits.
- In release 1.0.0 of the ADV7511 video encoder driver certain monitors were not detected when connected over HDMI. This has been rectified in release 1.0.1
- Release 1.0.1 now supports NTSC D1 requirement of 487 lines of active video and PAL with 576 lines.

Upgrading Projects to use New Version of the Add-Ins

Projects that currently use version 1.0.0 of the add-ins need to be upgraded to use version 1.0.1. In CCES Project Explorer window, select the project and click on 'system.svc'. In the 'Overview' tab, review all add-ins and click on the 'Upgrade' button. For dual-core projects, system.svc must be reviewed for each core.

Known issues

- [TAR-49994](#): IDE should offer to upgrade add-ins when opening examples
- TAR-50126: If an add-in (either the ADV734x driver or the ADV7511 driver) is removed from a project that includes both add-ins, the project will not build any more with an error such as:

line 24: cc0005: catastrophic error: could not open source file
"drivers/encoder/adv7511/adi_adv_7511.h"

Workaround: Remove the remaining add-in and then add it to the project again.

Video Encoder EI3 Extender Board Support Package (BSP) v1.0.0 Release Notes

Thank you for installing the Video Encoder EI3 Extender Board Support Package (BSP). The BSP provides software and documentation in support of the Video Encoder EI3 Extender Board.

The Video Encoder EI3 Extender Board connects to an Analog Devices EZ-Board by means of the Expansion Interface 3 (EI3). The EZ-Board 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. For more on the ADSP-BF609 EZ-Board, please visit www.analog.com/BF609EZBoard.

The Video Encoder EI3 Extender BSP provides comprehensive software support for the Video Encoder EI3 Extender Board. Specifically, drivers, examples and code sketches are included for the following components:

- ADV734x Multi-format Video Encoder, six 12-bit noise shaped video DACS.
- ADV7511 High Performance HDMI Transmitter with ARC.

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_Video_Encoder_EI3_Extender_Board-Rel1.0.0.exe /v"/1*v  
c:\temp\installer.log"
```

Support and Assistance

There are several options for contacting support:

- 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:

Go to "Help->E-mail Support...". This will create a new e-mail addressed to processor.tools.support@analog.com, and will automatically attach your CrossCore Embedded Studio version information (ProductInfo.html).

- 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>

Supported Processors

Although the Video Encoder EI3 Extender Board is designed to work with any EZ-Board that supports the Extender Interface 3, this release of the BSP supports only the ADSP-BF60x family of Blackfin processors.

Software Requirements

To build the projects included in the Video Encoder EI3 Extender BSP, CrossCore Embedded Studio version 1.0.0 or later is required.

Getting Started with a Project that Uses the RTOS

Adding a Driver to a Project

When adding a Video Encoder EI3 Extender Board driver to your project, the IDE will add the sources for the driver to the CCES Project folders, starting at "system/Video_Encoder_EI3". There will be a folder specific to the driver(s) you have added under this folder.

Creating a project which includes a Video Encoder EI3 Extender Board driver

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 Video Encoder EI3 Extender Board under the "Device Drivers and System Services" category. Within this category you will see "Video Encoder EI3 Extender Board Drivers".

The Video Encoder EI3 Extender Board add-in generates a call to `adi_initComponents()`. For more information on `adi_initComponents()`, please refer to the CCES help section:

CrossCore® Embedded Studio 1.0.0 > Graphical Development Environment > System Configuration

Adding a Video Encoder EI3 Extender Board 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. Clicking on "Add" and selecting the driver(s) you wish to add from the Video Encoder EI3 Extender Board Drivers add-in (which is under the "Device Drivers and System Services" category) adds the selected driver source to your project.

Note:

- 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 Video Encoder EI3 Extender Board 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.

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. Video Encoder EI3 Extender BSP related sketches are provided. To locate the sketches specific to the Video Encoder EI3 Extender BSP, open up the example browser (Help -> Browse Examples) and then select the appropriate product name in the "Product:" pull-down.

Examples

In addition to the code sketches, the Video Encoder EI3 Extender BSP provides examples which show how to use each of the drivers included in the BSP.

The following examples are available in this release: (For more information on the examples see the README file.)

1. VideoEncoder Example
2. VideoEncoderHDMI Example

Note:

- Double-clicking on an example from the example browser or the system overview page opens the project in the installation folder without copying it to your workspace. If you want to modify the example in any way, it is recommended that you copy it to your workspace.

Location

In order to locate Video Encoder EI3 Extender 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 "Video Encoder EI3 Extender Board v1.0.0 [1.0.0]" for a full list of examples and sketches.
- Import projects located in your Video Encoder EI3 Extender BSP installation folder under the `example` directory in product installation
(`<installation_root>\Blackfin\Examples\ADSP-BF609`).

Documentation

API documentation for the drivers included in the Video Encoder EI3 Extender BSP can be found in CCES help under:

1. Video Encoder EI3 Extender Board Support Package 1.0.0 > Video Encoder EI3 Extender Board API Reference
2. Video Encoder EI3 Extender Board Support Package 1.0.0 > Video Encoder EI3 Extender Board Manual

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

CrossCore ® Embedded Studio 1.0.0 > System Runtime Documentation > System Services and Device Drivers

Integration with CrossCore Embedded Studio

System View

CrossCore Embedded Studio provides the System View which is used by the Video Encoder EI3 Extender BSP. Use the System Configuration Overview tab to add Video Encoder EI3 Extender BSP driver sources into a CrossCore Embedded Studio project.

To access the System Configuration Overview tab, do one of the following:

- In a navigation view, double-click the `system.svc` file of a project. The System Configuration utility appears with the overview tab selected.
- If the utility is already open, select the Overview tab.

As well as being able to add, remove and upgrade add-ins from this window, you will also be provided a list of examples and sketches associated with the selected add-in.

For more information about the System Configuration utility, see the CrossCore Embedded Studio help.

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 1.0.0 the header files for Video Encoder EI3 Extender BSP 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 Video Encoder EI3 Extender Board Support Package (BSP)

1. When importing the VideoEncoder or VideoEncoderHDMI projects with the "Copy project into workspace" option checked, CrossCore® Embedded Studio 1.0.0 does not copy over files not contained within immediate the project hierarchy and the project will not build.
2. Any reference to VGA or RGB888, in associated Video Encoder EI3 Extender Board hardware documentation, should be ignored when using this BSP, as both VGA and RGB888 are not supported.
3. Standard definition 480I mode produces distorted artifacts on the Composite and S-Video interface when connected to some models of Dell computer monitors.

4. Documentation for the Video Encoder EI3 Driver APIs was mistakenly included in CCES Help under the following topic help topic:

CrossCore® Embedded Studio 1.0.0 > System Runtime Documentation > System Services and Device Drivers >EI3 Video Encoder API Reference.

This documentation does not reflect the released APIs and should not be used. The correct documentation can be found at the following location

Video Encoder EI3 Extender Board Support Package 1.0.0 > Video Encoder EI3 Extender Board API Reference