

WVGA/LCD 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

- Requires Cross Core 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 the following hardware:

- ADSP-BF707 EZ-Board Rev 1.0 BOM Rev 1.4. More information on this hardware can be found at <http://www.analog.com/en/processors-dsp/blackfin/ADSP-BF707/products/EVAL-BF707/eb.html>
- ADSP-BF609 EZ-Board Rev 1.0 BOM Rev 1.4. More information on this hardware can be found at www.analog.com/BF609EZBoard
- WVGA/LCD EI3 Extender Rev 1.1 BOM Rev 1.3 More information on this hardware can be found at www.analog.com/en/evaluation/eval-bfext-lcdei3/eb.html

New features and examples in this release

- ADSP-BF707 EZ-Board support added.
- As of release 1.1.0 the header files and source code for WVGA/LCD EI3 Extender BSP drivers are MISRA-C compliant.

Software issues addressed in this release

- None

Documentation

Fixed some formatting issues found in the previous release.

Opening the Example/Code Sketch

Examples can be opened through the example browser (help->Browse Examples). To open an example/Code Sketch:

- Click on help->Browse Examples
- Filter the examples by selecting the following values for the fields:

1. Type : Example Project or Code Sketch
2. Product : WVGA/LCD EI3 Extender Board

Rest of the fields as necessary.

- Click on the required Example/Code Sketch in the search results.
- Click on the "Open Example" button which is on the bottom right hand corner. (Also Example/Code Sketch can be opened by double clicking on the chosen Example/Code Sketch.)

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.

WVGA/LCD EI3 Extender Board Support Package (BSP) v1.0.1 Release Notes

Thank you for installing the WVGA/LCD EI3 Extender Board Support Package (BSP). The BSP provides software and documentation support for Analog Devices' WVGA/LCD EI3 Extender Board, an EZ-Extender® product.

The WVGA/LCD EI3 Extender Board connects to an Analog Devices EZ-Board by means of the Expansion Interface 3 (EI3) interface. The EZ-Board supports an embedded Analog Devices processor and is designed for use with CrossCore® Embedded Studio (CCES) for Analog Devices Processors software development tools. The CCES development environment facilitates advanced application code development and debug, including:

- 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 WVGA/LCD EI3 Extender BSP provides comprehensive software support for the WVGA/LCD EI3 Extender Board. Specifically, drivers, examples and code sketches are included for the following components:

- AD7879 Touch Screen Controller
- AD7147A-1 Capacitive Touch Controller
- ADXL345 Accelerometer

- NL8048HL11-01B LCD

The CCES Help environment provides complete hardware and software documentation.

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_WVGA_LCD_EI3_Extender_Board-Rel1.0.1.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 WVGA/LCD EI3 Extender Board is designed to work with any EZ-Board that supports the Expansion 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 WVGA/LCD EI3 Extender BSP, CrossCore Embedded Studio version 1.0.0 or later is required..

Getting Started with a Project that Uses the WVGA/LCD EI3 Extender BSP

Adding a Driver to a Project

When adding a WVGA/LCD EI3 Extender Board driver to your project, the IDE will add the sources for the driver to the CCES Project folders, starting at "system/WVGA_LCD_EI3". There will be a folder specific to the driver(s) you have added under this folder.

Creating a project which includes a WVGA/LCD 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 WVGA/LCD EI3 Extender Board under the "Device Drivers and System Services" category. Within this category you will see "WVGA/LCD EI3 Extender Board Drivers".

The WVGA/LCD 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 > Integrated Development Environment > System Configuration

Adding a WVGA/LCD 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 WVGA LCD 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 WVGA/LCD 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. WVGA/LCD EI3 Extender BSP related sketches are provided. To locate the sketches specific to the WVGA/LCD EI3 Extender BSP, open up the example browser (Help -> Browse Examples) and then select the appropriate product name in the "Product:" pulldown.

Examples

In addition to the code sketches, the WVGA/LCD 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. AD7147 CapTouch Example
2. AD7879 TouchScreen XY Measurement Example
3. ADXL345 Accelerometer Example
4. LCD ColorBar Example
5. SketchPad 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 WVGA/LCD 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 "WVGA/LCD EI3 Extender Board v1.0.1 [1.0.1]" for a full list of examples and sketches.
- Import projects located in your WVGA/LCD EI3 Extender BSP installation folder under the example directory in product installation (<installation_root>\Blackfin\Examples\ADSP-BF609).

Documentation

The hardware manual and the API documentation for the drivers included in the WVGA/LCD EI3 Extender BSP can be found in CCES help under:

WVGA/LCD EI3 Extender Board Support Package 1.0.1 > WVGA/LCD EI3 Extender Board Manual

WVGA/LCD EI3 Extender Board Support Package 1.0.1 > WVGA/LCD EI3 Extender Board API Reference

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 WVGA/LCD EI3 Extender BSP. Use the System Configuration Overview tab to add WVGA/LCD 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 1.0.1 the source and header files for WVGA/LCD EI3 Extender BSP drivers are MISRA-C compliant (the specific suppressions are listed in the 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 WVGA/LCD EI3 Extender Board Support Package (BSP)

None.

Noteworthy Update Changes

- The required driver memory size was increased due to changes in the dependent drivers.
- The driver source files are now MISRA-C compliant.

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.