Regulatory Compliance

The Blackfin EZ-Extender is designed to be used solely in a laboratory environment. The board is not intended for use as a consumer end product or as a portion of a consumer end product. The board is an open system design which does not include a shielded enclosure and therefore may cause interference to other electrical devices in close proximity. This board should not be used in or near any medical equipment or RF devices.

The Blackfin EZ-Extender has been certified to comply with the essential requirements of the European EMC directive 89/336/EEC (inclusive 93/68/EEC) and, therefore, carries the “CE” mark.

The Blackfin EZ-Extender has been appended to Analog Devices, Inc. EMC Technical File (EMC TF) referenced “DSPTOOLS1” dated December 21, 1997 and was declared CE compliant by an appointed Notified Body (No.0673) as listed below.

Notified Body Statement of Compliance: Z600ANA1.017

Issued by: Technology International (Europe) Limited
56 Shrivenham Hundred Business Park
Shrivenham, Swindon, SN6 8TY, UK

The Blackfin EZ-Extender contains ESD (electrostatic discharge) sensitive devices. Electrostatic charges readily accumulate on the human body and equipment and can discharge without detection. Permanent damage may occur on devices subjected to high-energy discharges. Proper ESD precautions are recommended to avoid performance degradation or loss of functionality. Store unused extender boards in the protective shipping package.
CONTENTS

PREFACE

Product Overview ................................................................. viii
Purpose of This Manual ........................................................... ix
Intended Audience ................................................................. ix
Manual Contents ................................................................. x
What’s New in This Manual ....................................................... x
Technical Support ................................................................. xi
Supported Products ............................................................... xii
Product Information ............................................................. xii
  Analog Devices Web Site ..................................................... xii
  EngineerZone ................................................................. xiii
Related Documents ............................................................. xiv

EZ-EXTENDER INTERFACES

ADC and Mixed-Signal HSC Interface ...................................... 1-1
DAC HSC Interface ............................................................... 1-2
Camera Interface ................................................................. 1-3
LCD Interface ................................................................ 1-4
Thank you for purchasing the Blackfin EZ-Extender®, Analog Devices (ADI) extender board to the EZ-KIT Lite® evaluation system for ADSP-BF533 and ADSP-BF561 Blackfin® processors.

The Blackfin processors are embedded processors that support a Media Instruction Set Computing (MISC) architecture. This architecture is the natural merging of RISC, media functions, and digital signal processing (DSP) characteristics towards delivering signal processing performance in a microprocessor-like environment.

The Blackfin EZ-Extender is designed to be used in conjunction with the CrossCore® Embedded Studio (CCES) and VisualDSP++® software development environments. The development environment facilitates advanced application code development and debug, such as:

- Create, compile, assemble, and link application programs written in C++, C, and Blackfin EZ-Extender 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

To learn more about Analog Devices development software, go to http://www.analog.com/processors/tools.

Example programs are available to demonstrate the capabilities of the Blackfin EZ-Extender board.
Product Overview

The Blackfin EZ-Extender is a separately sold assembly that plugs onto the expansion interface of the ADSP-BF533/BF561 EZ-KIT Lite evaluation system.

The board extends the capabilities of the evaluation system by providing a connection between the parallel peripheral interface (PPI) of the ADSP-BF533 processor (the PPI0 and PPI1 interfaces of the ADSP-BF561 processor), an Analog Devices high-speed converter (HSC) evaluation board, a camera evaluation board, and an LCD display device. Moreover, the extender broadens the range of the EZ-KIT Lite applications by providing surface mounted (SMT) footprints for breadboard capabilities and access to all of the pins on the EZ-KIT Lite’s expansion interface.

Please visit www.analog.com/EX1-Extender for additional information, including CCES support.

The extender features:

- High-speed converter (HSC) evaluation board interface
  - 40-pin, right angle, 0.1 in. spacing, female socket to connect to analog-to-digital converter (ADC) boards
  - 40-pin straight, 0.1 in. spacing header to connect to digital-to-analog converter (DAC) boards
  - Switches for routing and direction selection
  - RJ-45 with serial peripheral interconnect (SPI) to configure converter registers
• Camera interface
  • Connection to OmniVision OV6630AA evaluation boards (This part is no longer available.)
  • 32-pin, right angle, 0.1 in. spacing, female socket
• LCD interface
  • 32-pin, right angle FLZ-type connector to connect to LCD displays
• SMT footprint area
  • 1206 and 805 footprints
  • SOIC24 and SOIC20 footprints
• Dimensions
  • 5 in (H) x 5 in (W)

Purpose of This Manual

The Blackfin EZ-Extender Manual describes the operation and configuration of the components on the board. A schematic and a bill of materials are provided as a reference for future ADSP-BF533 and ADSP-BF561 Blackfin processor board designs.

Intended Audience

This manual is a user’s guide and reference to the Blackfin EZ-Extender. Programmers who are familiar with the Analog Devices Blackfin processor architecture, operation, and development tools are the primary audience for this manual.
Programmers who are unfamiliar with Analog Devices processors can use this manual but should supplement it with other texts that describe your target architecture. For the locations of these documents, see “Related Documents”.

Programmers who are unfamiliar with CCES or VisualDSP++ should refer to the online help and user’s manuals.

**Manual Contents**

The manual consists of:

- Chapter 1, “EZ-Extender Interfaces” on page 1-1
  Provides basic board information.

- Chapter 2, “EZ-Extender Hardware Reference” on page 2-1
  Provides information on the hardware aspects of the board.

- Appendix A, “EZ-Extender Bill Of Materials” on page A-1
  Provides a list of components used to manufacture the Blackfin EZ-Extender board.

- Appendix B, “EZ-Extender Schematic” on page B-1
  Provides the resources to allow extender board-level debugging or to use as a reference design. Appendix B is part of the online help.

**What’s New in This Manual**

This is revision 4.1 of the Blackfin EZ-Extender Manual. The manual has been updated to include CCES information. In addition, modifications and corrections based on errata reports against the previous manual revision have been made.

For the latest version of this manual, please refer to the Analog Devices Web site.
Technical Support

You can reach Analog Devices processors and DSP technical support in the following ways:

- Post your questions in the processors and DSP support community at EngineerZone®:
  http://ez.analog.com/community/dsp

- Submit your questions to technical support directly at:
  http://www.analog.com/support

- E-mail your questions about processors, DSPs, and tools development software from CrossCore Embedded Studio or VisualDSP++:
  Choose Help > Email Support. This creates an e-mail to
  processor.tools.support@analog.com and automatically attaches your CrossCore Embedded Studio or VisualDSP++ version information and license.dat file.

- E-mail your questions about processors and processor applications to:
  processor.support@analog.com or
  processor.china@analog.com (Greater China support)

- In the USA only, call 1-800-ANALOGD (1-800-262-5643)

- Contact your Analog Devices sales office or authorized distributor. Locate one at:
  www.analog.com/adi-sales
Supported Products

- Send questions by mail to:
  Processors and DSP Technical Support
  Analog Devices, Inc.
  Three Technology Way
  P.O. Box 9106
  Norwood, MA 02062-9106
  USA

Supported Products

The Blackfin EZ-Extender is an extender board to the ADSP-BF533 and ADSP-BF561 EZ-KIT Lite evaluation systems.

Product Information

Product information can be obtained from the Analog Devices Web site and the online help.

Analog Devices Web Site


To access a complete technical library for each processor family, go to http://www.analog.com/processors/technical_library. The manuals selection opens a list of current manuals related to the product as well as a link to the previous revisions of the manuals. When locating your manual title, note a possible errata check mark next to the title that leads to the current correction report against the manual.

Also note, MyAnalog is a free feature of the Analog Devices Web site that allows customization of a Web page to display only the latest information
about products you are interested in. You can choose to receive weekly e-mail notifications containing updates to the Web pages that meet your interests, including documentation errata against all manuals. MyAnalog provides access to books, application notes, data sheets, code examples, and more.

Visit MyAnalog to sign up. If you are a registered user, just log on. Your user name is your e-mail address.

**EngineerZone**

EngineerZone is a technical support forum from Analog Devices. It allows you direct access to ADI technical support engineers. You can search FAQs and technical information to get quick answers to your embedded processing and DSP design questions.

Use EngineerZone to connect with other DSP developers who face similar design challenges. You can also use this open forum to share knowledge and collaborate with the ADI support team and your peers. Visit http://ez.analog.com to sign up.
Related Documents

For additional information about the product, refer to the following publications.

Table 1. Related Processor Publications

<table>
<thead>
<tr>
<th>Title</th>
<th>Description</th>
</tr>
</thead>
</table>
| • ADSP-BF531/ADSP-BF532/ADSP-BF533 Blackfin Embedded Processor Data Sheet  
  • ADSP-BF561 Blackfin Embedded Symmetric Multiprocessor Data Sheet | General functional description, pinout, and timing of the processor          |
| • ADSP-BF533 Blackfin Processor Hardware Reference          | Description of the internal processor architecture and all register functions |
| • ADSP-BF561 Blackfin Processor Hardware Reference          |                                                                            |
| Blackfin Processor Programming Reference                    | Description of all allowed processor assembly instructions                  |

If you plan to use the EZ-KIT Lite board in conjunction with a JTAG emulator, also refer to the documentation that accompanies the emulator.
1 EZ-EXTENDER INTERFACES

The Blackfin EZ-Extender board offers the following interfaces.

- “ADC and Mixed-Signal HSC Interface” on page 1-1
- “DAC HSC Interface” on page 1-2
- “Camera Interface” on page 1-3
- “LCD Interface” on page 1-4

The following sections describe each extender interface.

ADC and Mixed-Signal HSC Interface

The Blackfin EZ-Extender can connect to an analog-to-digital converter (ADCs) and a mixed-signal HSC evaluation board via the ADC/mixed-signal HSC interface. The ADC/mixed-signal HSC interface consists of a 40-pin female header, which contains all of the control and data signals necessary to transfer data between the processor’s parallel peripheral interface (PPI) and the HSC evaluation board. Additionally, the extender provides a RJ-45 connector, which contains all of the serial peripheral interconnect (SPI) signals necessary to configure the control registers of capable HSC converters. For a block diagram of this interface, see Figure 2-1 on page 2-2.

Before using the Blackfin EZ-Extender, familiarize yourself with the documentation and schematics of the target board and the EZ-KIT Lite. For example, on the EZ-KIT Lite, it may be necessary to disable other devices on the PPI, route the PPI clocks, and disable the push buttons.
To configure the Blackfin EZ-Extender to connect to an ADC or mixed-signal HSC evaluation board, first determine the source of the PPI clock. To learn about possible clock settings, refer to “Clock Routing Switch (SW2)” on page 2-5. It is also necessary to determine the direction of the data and frame synchronization signals. The direction is dependent upon the type of the board to which you connect. With ADC boards, it is necessary to set up the data driver on the extender as a receiver. With mixed-signal boards, the data direction can change and a programmable flag is used to change the direction in real time. The frame sync signals are dependent on the external user interface; thus, the functionality of the interface must be taken into consideration. For more information, refer to “System Architecture” on page 2-1 and “DIP Switches and Jumpers” on page 2-4.

Refer to the Analog Devices Web site at www.analog.com/EX1-Extender for more information about the daughter card. To learn more about Analog Devices data converters, go to www.analog.com.

**DAC HSC Interface**

The Blackfin EZ-Extender can connect to digital-to-analog converter HSC evaluation boards via the DAC HSC interface. The DAC HSC interface consists of a 40-pin male header, which contains all of the control and data signals necessary to transfer data from the processor’s PPI to the DAC evaluation board. Your extender kit includes the cable used to make a connection. For more information about this interface, see Figure 2-1 on page 2-2.

Before using the Blackfin EZ-Extender, familiarize yourself with the documentation and schematics of the target board and the EZ-KIT Lite. For example, on the EZ-KIT Lite, it may be necessary to disable other devices on the PPI, route the PPI clocks, and disable the push buttons.

To configure the Blackfin EZ-Extender to connect to a DAC evaluation board, first determine the source of the PPI clock. To learn about possible
clock settings, refer to “Clock Routing Switch (SW2)” on page 2-5. It is also necessary to determine the direction and source of the data and frame synchronization signals. If your processor holds more than one PPI, the DAC interface allows you to communicate with either PPI0 or PPI1 of the processor. The direction of the frame sync signals is dependent on the target; thus, the functionality of the interface must be taken into consideration. For more information, refer to “System Architecture” on page 2-1 and “DIP Switches and Jumpers” on page 2-4.

Example programs can be found in the software installation directory. To learn more about Analog Devices data converters, go to www.analog.com.

Camera Interface

The Blackfin EZ-Extender camera interface is a right-angle 32-pin connector with control signals compatible to the ITU-R BT.656 camera interface specification. Specifically, the extender’s camera interface is directly compatible with camera interface boards, such as the Omnivision OV6630AA evaluation module (this part is no longer available). To learn more about the OV6630AA evaluation module, go to http://www.ovt.com. For a block diagram of the camera interface, see Figure 2-1 on page 2-2.

Before using the Blackfin EZ-Extender, familiarize yourself with the documentation and schematics of the target board and the EZ-KIT Lite. For example, on the EZ-KIT Lite, it may be necessary to disable other devices on the PPI, route the PPI clocks, and disable the push buttons.

To configure the Blackfin EZ-Extender to connect to a camera, first determine the source of the PPI clock. To learn about possible clock settings, refer to “Clock Routing Switch (SW2)” on page 2-5. It is also necessary to set the direction of the data and the frame sync signals. The direction of frame synchronization signals depends on the camera’s configuration.
LCD Interface

The data must be set as an input to the PPI port. For more information, refer to “System Architecture” on page 2-1 and “DIP Switches and Jumpers” on page 2-4.

LCD Interface

The LCD interface is intended to drive an LCD display device. A 32-pin, right-angle FLZ-type connector is provided to connect the data and control lines of commercially available LCD panels. For a block diagram of this interface, see Figure 2-1 on page 2-2.

A timing and functional analysis is required to determine if a specific LCD can connect to the Blackfin EZ-Extender. An example of a display which does connect to the extender is the Sharp LQ058T5DRQ1 display (this display is no longer available).

Please note that the power for the backlight feature of the LCD must be provided by the customer. Information on the backlight inverter module (part number LXM1614-14-11) needed to connect to the LCD panel is available at http://www.microsemi.com/en/sites/default/files/LXM1614-14-11.pdf. The part number of the connector on the EZ-Extender is JST32FLZ-SM1-R-TB. The cable connecting the JST part to the data port on the LCD is available from Parlex Corporation (part number 050-32-76B).

Before using the Blackfin EZ-Extender, familiarize yourself with the documentation and schematics of the target board and the EZ-KIT Lite. For example, on the EZ-KIT Lite, it may be necessary to disable other devices on the PPI, route the PPI clocks, and disable the push buttons.

To configure the EZ-Extender to connect to the LCD interface, first determine the source of the PPI clock and the source and direction of the data and frame sync signals. If your target processor holds more than one PPI, the LCD interface allows you to communicate with either PPI0 or
PPI1 of the processor. For more information, refer to “System Architecture” on page 2-1 and “DIP Switches and Jumpers” on page 2-4.

Example programs can be found in the installation directory. To learn more about Analog Devices LCD drivers, go to www.analog.com.
LCD Interface
This chapter describes the hardware design of the Blackfin EZ-Extender. The following topics are covered.

- “System Architecture” on page 2-1
  Describes the configuration of the extender and explains how the board components interface with the processor and EZ-KIT Lite.

- “DIP Switches and Jumpers” on page 2-4
  Describes the function of the configuration DIP switches.

System Architecture

A detailed block diagram of the Blackfin EZ-Extender is shown in Figure 2-1. Note that the arrow in the bidirectional driver symbols denotes the direction of the driver when in transmit mode. The bidirectional driver is in transmit mode when the direction pin is pulled high. Use the diagram in conjunction with information in “DIP Switches and Jumpers” section of this manual to configure your Blackfin EZ-Extender.

Before using the EZ-Extender, familiarize yourself with the documentation and schematics of the target board and the EZ-KIT Lite. For example, on the EZ-KIT Lite, it may be necessary to disable other devices on the PPI, route the PPI clocks, and disable the push buttons.

The block diagram in Figure 2-1 shows that all of the interfaces have clock signals, frame sync signals, data signals and, possibly, general-purpose signals. Each signal’s configuration depends on how your interface operates.
Figure 2-1. Blackfin EZ-Extender Block Diagram
The EZ-Extender holds two clock signals, \texttt{TX_CLK} and \texttt{RX_CLK}. The \texttt{TX_CLK} signal is used as an output to the interface you are using. The \texttt{TX_CLK} signal can be generated in three ways: applying a signal via an SMA connector, populating a socket with an oscillator, or using a 27 MHz signal provided by the EZ-KIT Lite. Only one of these sources can be used at a time, the other sources must be disabled. For how to disable the \texttt{TX_CLK} sources, see “SMA Connector Clock Disconnect Jumper (P10)” on page 2-9 and “External Clock Disable Jumper (P37)” on page 2-11. The \texttt{RX_CLK} signal is generated by the target board. Both the \texttt{TX_CLK} and \texttt{RX_CLK} can connect to the \texttt{PPI_CLK} signal as an input to the processor. See “Clock Routing Switch (SW2)” on page 2-5 for more information.

The ADC/mixed-signal HSC interface and camera interface have two frame sync signals, \texttt{FSYNC1} and \texttt{FSYNC2}. For information on how to set the direction and the source of these signals, refer to “Direction Control Switch (SW1)” on page 2-4 and “General Frame Sync Routing Switch (SW3)” on page 2-7.

The LCD interface has two frame sync signals, \texttt{FSYNC1_LCD} and \texttt{FSYNC2_LCD}. These signals are always outputs, but it is possible set the source of the signals. For more information see, “LCD Frame Sync Routing Switch (SW4)” on page 2-8.

The ADC/mixed-signal HSC interface and camera interface connect to the \texttt{DATA_A[15:0]} parallel bus. The DAC HSC interface and the LCD interface connect to the \texttt{DATA_B[15:0]} parallel bus. The \texttt{DATA_A} bus is attached to only the \texttt{PPI0} bus, while \texttt{DATA_B[15:0]} can connect to either \texttt{PPI0} or \texttt{PPI1} busses. This allows access to all of the interfaces with a single PPI port or access to two separate interfaces with two PPI ports. For more information about the routing of the PPI data signals see, “PPI Data Routing Jumper (P36)” on page 2-10. To configure the direction of the \texttt{DATA_A} signals, see “Direction Control Switch (SW1)” on page 2-4.
DIP Switches and Jumpers

The following section describes the function of all of the jumpers and switches on the EZ-Extender. Before connecting the extender, make sure you understand each possible settings effect on your application.

**Direction Control Switch (SW1)**

The PPI interface is bidirectional and half-duplex. A designated DIP switch, SW1, provides an independent direction control for the DATA_A bus and the sync signals (FSYNC1 and FSYNC2) going to the camera interface and ADC/mixed-signal HSC interface, as illustrated in Figure 2-1 on page 2-2. Each of the signals can be hardwired to be either transmit or receive, or can be changed in real time using the PF0 processor programmable flag pin.

If the PF0 programmable flag is intended for direction control, ensure the flag is not used for other purposes on the EZ-KIT Lite board (the motherboard).

When the switch connects a direction control signal to ground (GND), the corresponding signal (or signals) being controlled is an input.

The SW1 DIP switch settings are summarized in Table 2-1 through Table 2-3.

### Table 2-1. SW1 Data Direction Control Positions 1 and 2

<table>
<thead>
<tr>
<th>SW1 Position 1</th>
<th>SW1 Position 2</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>OFF</td>
<td>EZ-KIT Lite is transmitter</td>
</tr>
</tbody>
</table>
| ON             | OFF            | PF0 sets the direction:  
|                |                | 0 = EZ-KIT Lite is receiver  
|                |                | 1 = EZ-KIT Lite is transmitter |
| OFF            | ON             | EZ-KIT Lite is receiver |
| ON             | ON             | Do not use |
Clock Routing Switch (SW2)

The source of the clock input signals PPI0_CLK and PPI1_CLK are configured through the SW2 DIP switch settings, as illustrated in Figure 2-1 on page 2-2. The SW2 settings are summarized in Table 2-4 and Table 2-5.

Table 2-4. PPI0_CLK Source Settings

<table>
<thead>
<tr>
<th>SW2 Position 1 RX_CLK</th>
<th>SW2 Position 2 TX_CLK</th>
<th>PPI0_CLK Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>OFF</td>
<td>The PPI0_CLK signal is not generated by the EZ-Extender</td>
</tr>
<tr>
<td>OFF</td>
<td>ON</td>
<td>TX_CLK; this signal must be generated by one of the user-configured PPI clock sources</td>
</tr>
</tbody>
</table>
Possible user-configured PPI clock sources are:

- 27 MHz clock signal from the EZ-KIT Lite (not available on ADSP-BF533 EZ-KIT Lite). See “External Clock Disable Jumper (P37)” on page 2-11.
- A local oscillator, by populating the oscillator socket (U10).
- An external clock source using the SMA connector (J5). See “SMA Connector Clock Disconnect Jumper (P10)” on page 2-9.

Only one of these sources can be used at a time — ensure that all of the other sources are disabled.
General Frame Sync Routing Switch (SW3)

Frame synchronization signals FSYNC1 and FSYNC2 get configured through the SW3 DIP switch settings, as illustrated in Figure 2-1 on page 2-2.

The FSYNC1 signal can be set by either the PF2 programmable flag or the processor’s PPI0_SYNC1 signal. The FSYNC2 signal can be set by either the PF3 programmable flag or the PPI0_SYNC2 signal. Table 2-6 and Table 2-7 depict the available options. Note that the source of the PPI0_SYNC1 and PPI0_SYNC2 signals is dependent on the EZ-KIT Lite to which you connect.

If the PF2 or PF3 programmable flags are used, ensure the flags are not used for other purposes on the EZ-KIT Lite board (the mother board).

Table 2-6. FSYNC1 Source Settings

<table>
<thead>
<tr>
<th>SW3 Position 1 RX_CLK</th>
<th>SW3 Position 2 TX_CLK</th>
<th>FSYNC1 Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>OFF</td>
<td>FSYNC1 signal is used</td>
</tr>
<tr>
<td>OFF</td>
<td>ON</td>
<td>FSYNC1 signal is not used</td>
</tr>
<tr>
<td>ON</td>
<td>OFF</td>
<td>FSYNC1 = PF2</td>
</tr>
<tr>
<td>–</td>
<td>–</td>
<td>All others, do not use</td>
</tr>
</tbody>
</table>

Table 2-7. FSYNC2 Source Settings

<table>
<thead>
<tr>
<th>SW3 Position 3 RX_CLK</th>
<th>SW3 Position 4 TX_CLK</th>
<th>FSYNC2 Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>OFF</td>
<td>FSYNC2 signal is used</td>
</tr>
<tr>
<td>OFF</td>
<td>ON</td>
<td>FSYNC2 signal is not used</td>
</tr>
<tr>
<td>ON</td>
<td>OFF</td>
<td>FSYNC2 = PF3</td>
</tr>
<tr>
<td>–</td>
<td>–</td>
<td>All others, do not use</td>
</tr>
</tbody>
</table>
LCD Frame Sync Routing Switch (SW4)

Frame synchronization signals \( \text{FSYNC1}_{\text{LCD}} \) and \( \text{FSYNC2}_{\text{LCD}} \) get configured through the SW4 DIP switch settings, as illustrated in Figure 2-1 on page 2-2.

The \( \text{FSYNC1}_{\text{LCD}} \) signal can be set by the PF2 programmable flag, PPI0_SYNC1, or PPI1_SYNC1 signal. The \( \text{FSYNC2}_{\text{LCD}} \) signal can be set by the PF3 programmable flag, PPI0_SYNC2, or PPI1_SYNC2 signal. Table 2-8 and Table 2-9 depict the available options.

If the PF2 or PF3 programmable flag is used, ensure the flag is not used for other purposes on the EZ-KIT Lite board (the motherboard).

Table 2-8. FSYNC1_LCD Source Settings

<table>
<thead>
<tr>
<th>SW4 Position 1 PF2</th>
<th>SW4 Position 2 PPI0_SYNC1</th>
<th>SW4 Position 3 PPI1_SYNC1</th>
<th>FSYNC1_LCD Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>FSYNC1_LCD signal is used</td>
</tr>
<tr>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
<td>FSYNC1_LCD = PPI0_SYNC1</td>
</tr>
<tr>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>FSYNC1_LCD = PPI1_SYNC1</td>
</tr>
<tr>
<td>ON</td>
<td>OFF</td>
<td>ON</td>
<td>FSYNC1_LCD = PF2</td>
</tr>
<tr>
<td>–</td>
<td>–</td>
<td>–</td>
<td>All other configurations should not be used</td>
</tr>
</tbody>
</table>
Table 2-9. FSYNC2_LCD Source Settings

<table>
<thead>
<tr>
<th>SW4 Position 4 PF2</th>
<th>SW4 Position 5 PPI0_SYNC2</th>
<th>SW4 Position 6 PPI1_SYNC2</th>
<th>FSYNC2_LCD Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>FSYNC2_LCD signal is used</td>
</tr>
<tr>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
<td>FSYNC2_LCD = PPI0_SYNC2</td>
</tr>
<tr>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>FSYNC2_LCD = PPI1_SYNC2</td>
</tr>
<tr>
<td>ON</td>
<td>OFF</td>
<td>ON</td>
<td>FSYNC2_LCD = PF3</td>
</tr>
<tr>
<td>–</td>
<td>–</td>
<td>–</td>
<td>All other configurations should not be used</td>
</tr>
</tbody>
</table>

**MISO Disconnect Jumper (P7)**

The S0 signal of the SPI connector (J1) is driven by a buffer to the processor’s MISO signal, as illustrated in Figure 2-1 on page 2-2. When the SPI connector is not in use, remove the jumper to prevent any interfering with other devices on the SPI bus.

**SMA Connector Clock Disconnect Jumper (P10)**

The SMA connector (J5) provides the ability to input a clock from a signal generator or other clock source. This signal is first put though a buffer, as illustrated in Figure 2-1 on page 2-2. When the SMA connector is not in use, remove the jumper to prevent any interfering with other devices on the net.
DIP Switches and Jumpers

**PPI Data Routing Jumper (P36)**

The flexibility of the EZ-Extender used with the Blackfin processor’s single and double PPI requires the PPI data signals to be routed accordingly. Figure 2-2 and Figure 2-3 show the data flow when P36 is installed and when it is not installed.

When connecting to the OV6630AA evaluation module, ensure that the P36 jumper is not installed. The signals attached to PPI1 are used as input by the camera.

![Figure 2-2. P36 Not Installed Data Flow](image1)

![Figure 2-3. P36 Installed Data Flow](image2)
External Clock Disable Jumper (P37)

The EZ-KIT Lite provides a 27 MHz clock, which can be used as a transmit clock for all of the interfaces as illustrated in Figure 2-1 on page 2-2. When the 27 MHz clock is not being used, remove the jumper to prevent the TX_CLK signal from being driven. For information about other transmit clock sources, see “Clock Routing Switch (SW2)” on page 2-5.
DIP Switches and Jumpers
The bill of materials corresponds to “EZ-Extender Schematic” on page B-1.

<table>
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</table>
BLACKFIN EZ-EXTENDER
SCHEMATIC
INDEX

A
ADC (analog-to-digital converter)
interface, 1-1
ADC/mixed-signal HSC interface, 2-3, 2-4
ADSP-BF533/561 processors
MISO signal, 2-9
programmable flags, 2-4, 2-7, 2-8
architecture, of this EZ-Extender, 2-1

B
bidirectional drivers, 2-1
bill of materials, A-1
block diagram, of this EZ-Extender, 2-1
board schematic, B-1
breadboard capabilities, viii

camera
See also OmniVision
interface, 2-3, 2-4
clock
disconnect jumper (P10), 2-9
routing switch (SW2), 2-5
signals, 2-1, 2-3, 2-5

data
directing, 1-2, 1-3, 1-4, 2-4
signals, See PPI0, PPI1
transfer (PPI/HSC), 1-1
DATA_A net, 2-3, 2-4
DATA_B net, 2-3
dimensions, of this EZ-Extender, ix
DIP switches, See SWx
direction control switch (SW1), 2-4

E
expansion interface, viii
external clock disable jumper (P37), 2-11

F
features, of this EZ-Extender, viii
FLZ-type connector, 1-4
frame sync signals, 1-2, 1-3, 1-4, 2-1
FSYNC1-2 (ADC/HCS) frame sync signals, 2-3, 2-4, 2-7
FSYNC1-2 (LCD) frame sync signals, 2-3, 2-8
Index

G
general frame sync routing switch (SW3), 2-7
general-purpose signals, 2-1

H
HSC (high-speed converter), viii, 1-1, 1-2

I
interfaces
   ADC and mixed-signal HSC, 1-1
camera, 1-3
   DAC high-speed converter (HSC), 1-2
   LCD display, 1-4

J
jumpers, See Px

L
LCD
   backlight inverters, 1-4
   frame sync routing switch (SW4), 2-8
   interface, 1-4, 2-3

M
MISO
   disconnect jumper (P7), 2-9
   signal, 2-9
   mixed-signal HSC interface, 1-1

O
OmniVision OV6630AA module, 1-3, 2-10
   See also camera
   oscillator socket (U10), 2-3, 2-6

P
P10 (SMA connector clock disconnect) jumper, 2-9
P36 (PPI data routing) jumper, 2-10
P37 (ext clock disable) jumper, 2-11
P7 (MISO disconnect) jumper, 2-9
parallel peripheral interfaces
   See also PPI0, PPI1
      clocks, 1-1, 1-2, 1-3, 1-4
      clock sources, 2-6
PF0 programmable flag, 2-4
PF2-3 programmable flags, 2-7, 2-8
PPI0_CLK signal, 2-3, 2-5
PPI0 net, 2-3
PPI0_SYNC1-2 signals, 2-7, 2-8
PPI1_CLK signal, 2-3, 2-5
PPI1 net, 2-3
PPI1_SYNC1-2 signals, 2-8
programmable flags, See PFx

R
RJ-45 connector, viii, 1-1
RX_CLK signal, 2-3, 2-6

S
schematic, B-1
serial peripheral interconnect, See SPI
SMA connector (J5), 2-3, 2-6, 2-9
SO signal, 2-9
SPI
   connector (J1)
   signals, 1-1
surface mounted (SMT) footprints, viii
SW1 (direction control) switch, 2-4
SW2 (clock routing) switch, 2-5
SW3 (gen frame sync routing) switch, 2-7
SW4 (LCD frame sync routing) switch, 2-8
T

technical support, xi
transmit
  clock, 2-11
  mode, 2-1
TX_CLK signal, 2-3, 2-5, 2-11