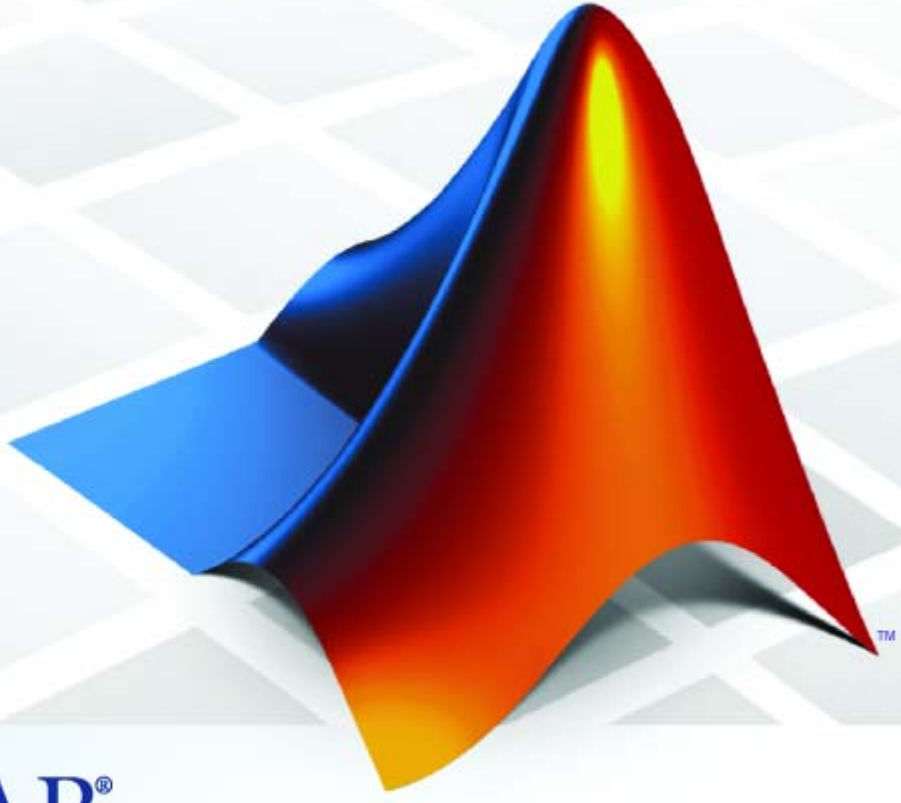
Target Support Package™ 4
Reference Guide

For Use with Analog Devices™ Blackfin®



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Target Support Package™ Reference Guide

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Revision History

September 2009	Online only	New for Version 4.0 (Release 2009b)
March 2010	Online only	Revised for Version 4.1 (Release 2010a)

Contents

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Getting Started

System Requirements

For detailed information about the software and hardware required to use Target Support Package™ software, refer to the Target Support Package system requirements areas on the MathWorks Web site:

- Requirements for Target Support Package: www.mathworks.com/products/target-package/requirements.html
- Requirements for use with Analog Devices™Blackfin®: www.mathworks.com/products/target-package/adi-adaptor/

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Block Reference

ADSP-BF537 EZ-KIT Lite (bf537ezkitlite)

Blackfin537 bf537_adc	Configure ADC to collect data from analog jacks and output digital data
Blackfin537 bf537_dac	Convert a stream of digital data to an analog signal and send it to the output jack
Blackfin537 bf537_uart_config	Configure UART transceiver to capture data from UART port
Blackfin537 bf537_uart_rx	Receive data stream from UART port
Blackfin537 bf537_uart_tx	Transmit data stream from UART port

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Blocks — Alphabetical List

Blackfin537 bf537_adc

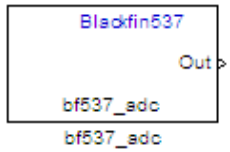
Purpose

Configure ADC to collect data from analog jacks and output digital data

Library

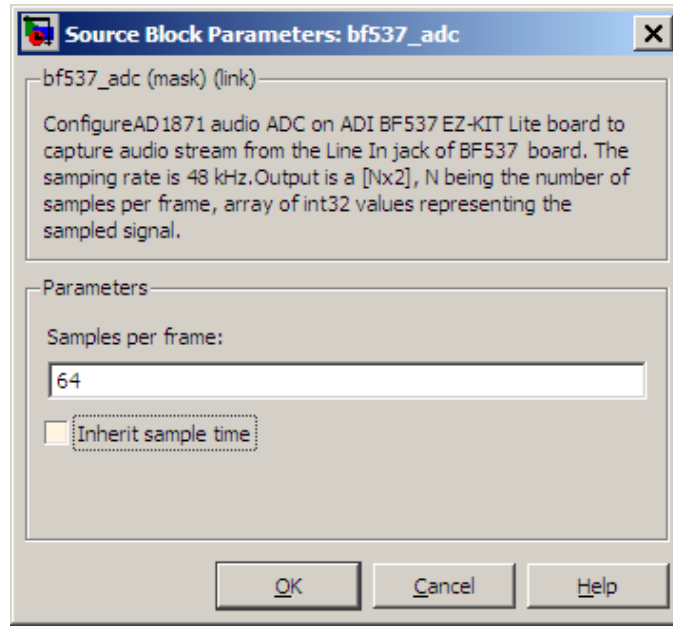
ADSP-BF537 EZ-KIT Lite

Description



Configure AD1871 audio ADC on ADI BF537 EZ-KIT Lite board to capture audio stream from the Line In jack of BF537 board. This block uses a sampling rate of 48 kHz. It outputs the sampled signal as [Nx2], where N indicates number of samples per frame in an array of int32 values.

Dialog Box



Samples per frame

Set the number of samples the ADC buffers internally before it sends the digitized signals, as a frame vector, to the next block in the model. This value defaults to 64 samples per frame. The

frame rate depends on the sample rate and frame size. The sample rate of the ADI BF537 EZ-KIT Lite board is 48 kHz. If you set **Samples per frame** to 64, the resulting frame rate is 750 frames per second (48000/64 = 750).

Inherit sample time

Select whether the block inherits the sample time from the model base rate or from the Simulink base rate. You can locate the Simulink base rate in the Solver options in Configuration Parameters. Selecting **Inherit sample time** directs the block to use the specified rate in model configuration. Entering `-1` configures the block to accept the sample rate from the upstream Interrupt, Task, or Triggered Task blocks.

References

ADSP-BF537 EZ-KIT Lite® Evaluation System Manual, Part Number 82-000865-01, available from the Analog Devices Web site.

See Also

Blackfin537 bf537_dac

Blackfin537 bf537_dac

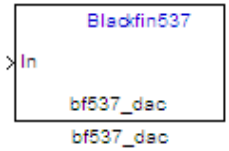
Purpose

Convert a stream of digital data to an analog signal and send it to the output jack

Library

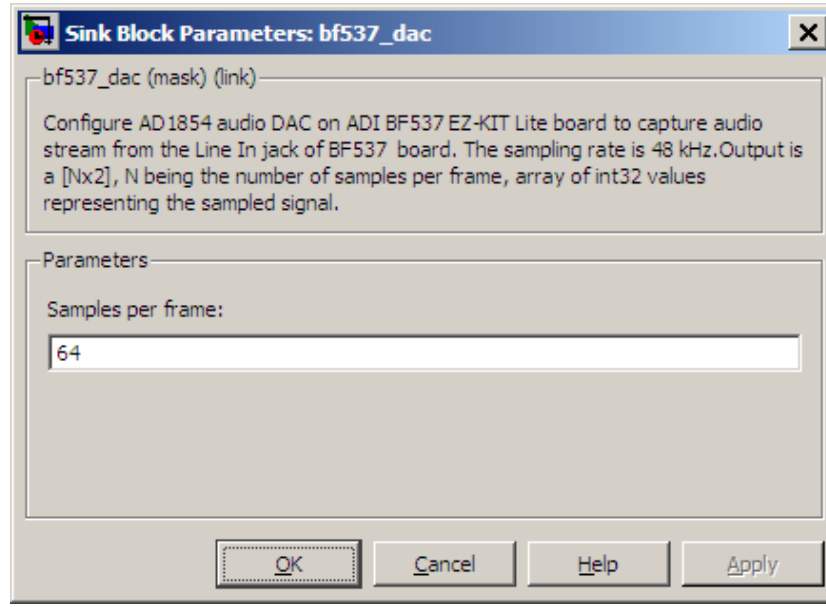
ADSP-BF537 EZ-KIT Lite

Description



Configure AD1854 audio DAC on ADI BF537 EZ-KIT Lite board to capture audio stream from the Line In jack of BF537 board. This block uses a sampling rate of 48 kHz. It outputs the sampled signal as [Nx2], where N indicates number of samples per frame in an array of int32 values.

Dialog Box



Samples per frame

Set the number of samples per data input frame. Match this value with the value of the block creating the data frames. This value defaults to 64 samples per frame.

References

ADSP-BF537 EZ-KIT Lite® Evaluation System Manual, Part Number 82-000865-01, available from the Analog Devices Web site.

See Also

Blackfin537 bf537_adc

Blackfin537 bf537_uart_config

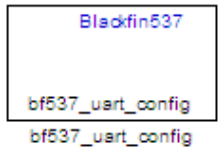
Purpose

Configure UART transceiver to capture data from UART port

Library

ADSP-BF537 EZ-KIT Lite

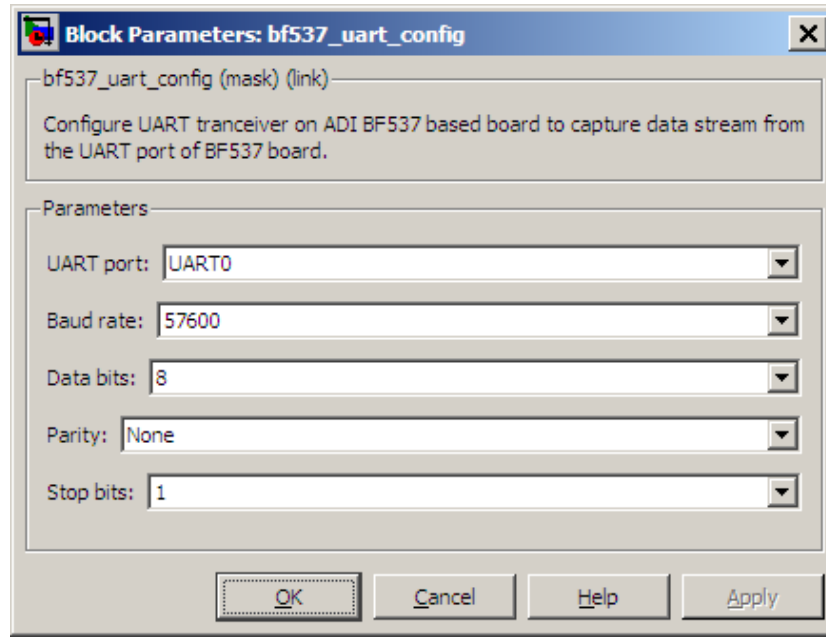
Description



bf537_uart_config

Configure UART transceiver on ADI BF537 based board to capture data stream from the UART port of BF537 board. Your model can only contain one configuration block per UART port.

Dialog Box



UART port

Select which UART port this block configures. UART0 uses processor pins PF0 (UART0 transmit) and PF1 (UART0 receive). UART1 uses processor pins PF2 (Push button SW13) and PF3

(Push button SW12). These pins have multiple GPIO functions that depend on the configuration of the processor. For more information, see the "Programmable Flags (PFs)" section of the *ADSP-BF537 EZ-KIT Lite® Evaluation System Manual*.

Baud rate

Configure the rate at which the UART transfers bits per second. The bits include the start bit, the data bits, the parity bit (if enabled), and the stop bits. Configure both the sending and receiving devices to the same baud rate.

Data bits

Set the number of data bits per data frame to 5, 6, 7, or 8. The UART transmits the least significant bit sent first. Use the default value, 8 bits, unless your system requires a lower value. Configure both the sending and receiving devices to the same data bit value.

Parity

Set type of parity checking to be `none`, `even`, or `odd`. When you set **Parity** to `none`, the UART does not perform parity checking and does not transmit a parity bit. When you set **Parity** to `even`, the UART sets the parity bit to 1 to obtain an even number of ones in the data word. When you set **Parity** to `odd`, the UART sets the parity bit to 1 to obtain an odd number of ones in the data word. Parity checking can detect errors of 1 bit only. An error in 2 bits can cause the data to have a seemingly valid parity. Configure both the sending and receiving devices to the same parity value.

Stop bits

Set the number of bits used to indicate the end of a byte. When you set **Stop bits** to `1`, the UART transmits 1 bit to signal the end of a transmission. When you set **Stop bits** to `1.5`, the UART extends the length of time it transmits the 1-bit stop bit by half. Configure both the sending and receiving devices to the same stop bit value.

References

ADSP-BF537 EZ-KIT Lite® Evaluation System Manual, Part Number 82-000865-01, available from the Analog Devices Web site.

See Also Blackfin537 bf537_uart_rx, Blackfin537 bf537_uart_tx

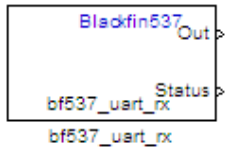
Purpose

Receive data stream from UART port

Library

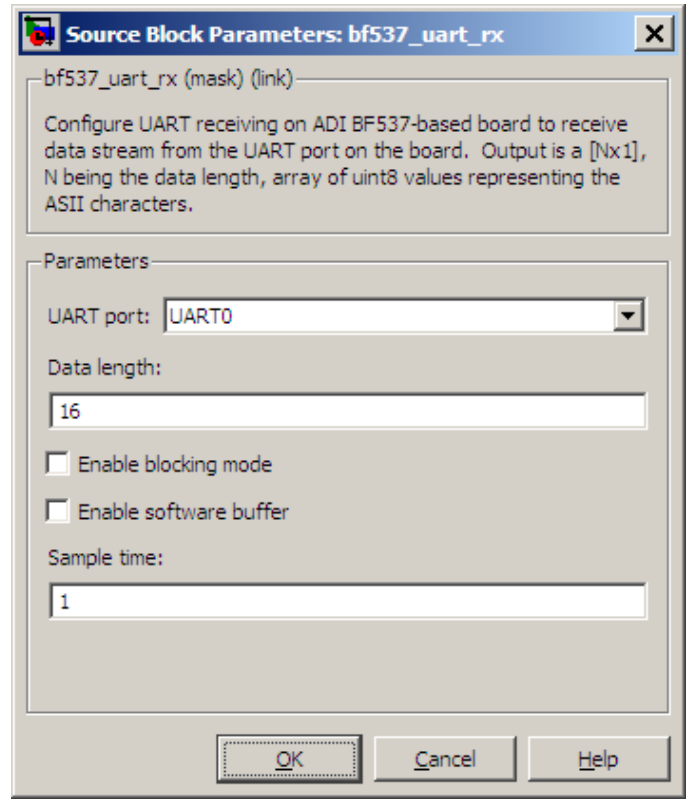
ADSP-BF537 EZ-KIT Lite

Description



Configure UART receiving on ADI BF537-based board to receive data stream from the UART port on the board. This block outputs [Nx1], where N indicates the data length in an array of uint8 values representing the ASCII characters. Your model can only contain one receive block per UART port.

Dialog Box



UART port
Select which UART port from which this block receives data.

Data length
Set the data length, in bytes, of the **Out** port. This block always outputs the number of bytes the **Data length** parameter specifies.

Enable blocking mode
When you enable blocking mode, this block waits until it receives enough data before writing the data to the **Out** port.

When you disable blocking mode:

- If the receive buffer contains the number of bytes specified by **Data length**, the block writes the data to the **Out** port and also sends a positive number on the **Status** port. This positive number indicates valid data on the **Out** port.
- If the receive buffer does not contain the number of bytes specified by **Data length**, the block does not write the data to the **Out** port and instead sends a 0 to the **Status** port. This 0 indicates invalid data on the out port.

Enable software buffer
Use a software-managed buffer, in addition to hardware FIFO, to handle incoming data.

Software buffer size factor
If you enable the software buffer, set the size of **Software buffer size factor** to handle expected bursts in the incoming data.

Sample time
Specify the time interval between samples. To inherit sample time from the upstream block, set this parameter to -1.

References

ADSP-BF537 EZ-KIT Lite® Evaluation System Manual, Part Number 82-000865-01, available from the Analog Devices Web site.

See Also

Blackfin537 bf537_uart_config, Blackfin537 bf537_uart_tx

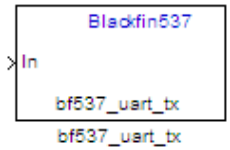
Purpose

Transmit data stream from UART port

Library

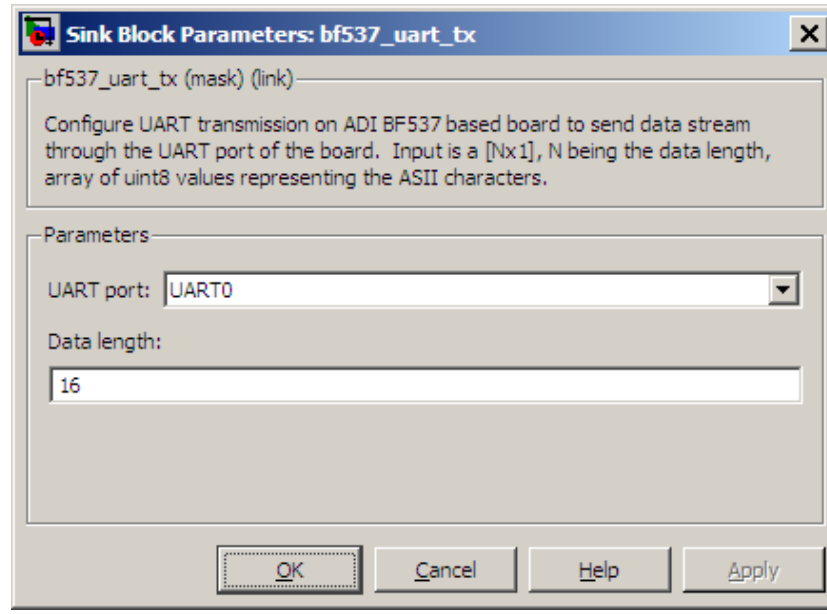
ADSP-BF537 EZ-KIT Lite

Description



Configure UART transmission on ADI BF537 based board to send data stream through the UART port of the board. The block requires an input of [Nx1], where N indicates the data length, in an array of uint8 values representing the ASCII characters. Your model can only contain one transmit block per UART port.

Dialog Box



UART port

Select the UART port the transmit block uses to send data.

Data length

Set the data length, in data words, of each transmission. Match this value to the data size on the **In** port.

References

ADSP-BF537 EZ-KIT Lite® Evaluation System Manual, Part Number 82-000865-01, available from the Analog Devices Web site.

See Also

Blackfin537 bf537_uart_config, Blackfin537 bf537_uart_rx

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