XMOS Audio Interface - Quick Start Guide

Version 1v0

XMOS

Publication Date: 2009/12/17

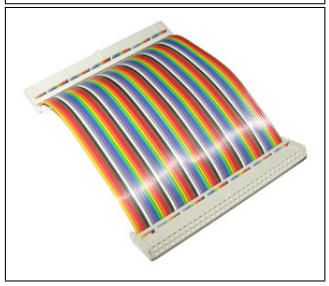
1 XMOS Audio Interface

The XMOS Audio Interface provides a complete multi-channel digital audio interface for XMOS Development Kits including the XS1-G Development Kit (XDK). The board provides six analog channels in and eight analog channels out with additional stereo S/PDIF, MIDI, instrument, microphone and headphone sockets.

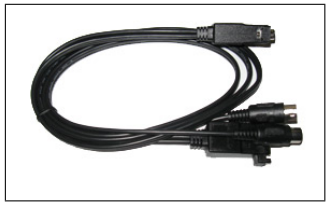
The analog channels are provided by an I2S CODEC. MIDI and S/PDIF are controlled directly from an attached XMOS device.

The XAI Kit includes:

XAI Audio Interface Board



64-way IDC Connector



MIDI Expansion Cable

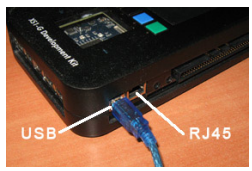
Requirements: You require an XMOS development kit to use the XAI. Example software is available from XMOS providing a full reference design for your audio solutions.

2 Getting Started

Download and install the demonstration software from the XMOS website, according to your license agreement.

To use a USB or AVB input, remove the back of the XDK and set DIP switches as required—see Figure 3.

Replace the back cover.



Connect your USB or AVB input device to the XDK. If you are using a USB device connect it to the USB port on the right-hand side of the XDK. If you are using an AVB device connect it to the Ethernet RJ45 socket to the right—see Figure 2

Connect the XAI to the XDK using the 64-way IDC cable supplied.

Connect additional audio input and output devices to the XAI—see Figure 1 for details of input and output connectors.

Plug-in the XDK using the 12V power supplies provided with the Kit.

Switch on the XDK and wait for the LEDs to flash to indicate that the devices is initialised.

The kit is now ready for use.

3 XAI Connectors

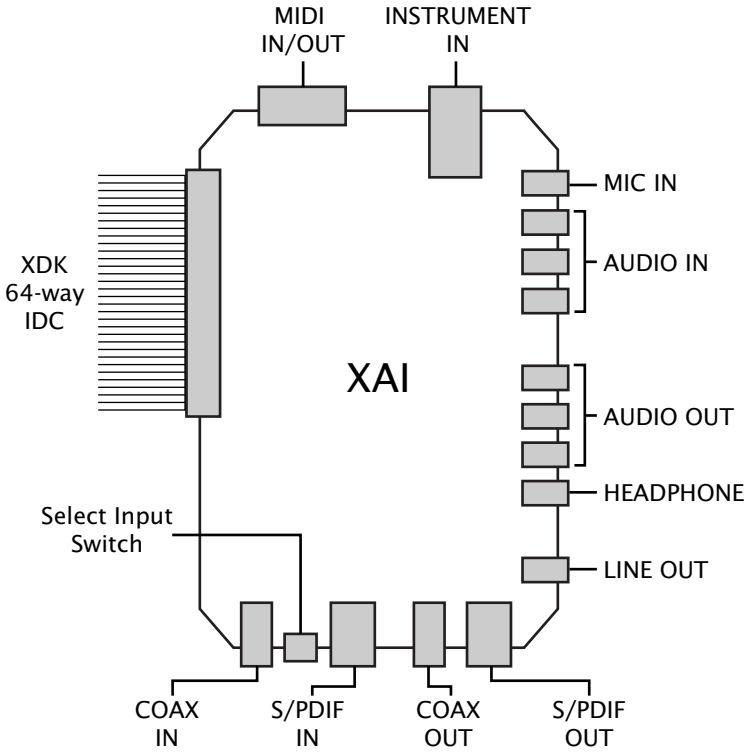


Figure 1: XAI Connectors

If you are using the Coax or S/PDIF input connector, you must use the *Select Input Switch* to select the input device—left for Coax and right for S/PDIF. The Coax and S/PDIF output connectors are permanently enabled.

4 XDK Connectors

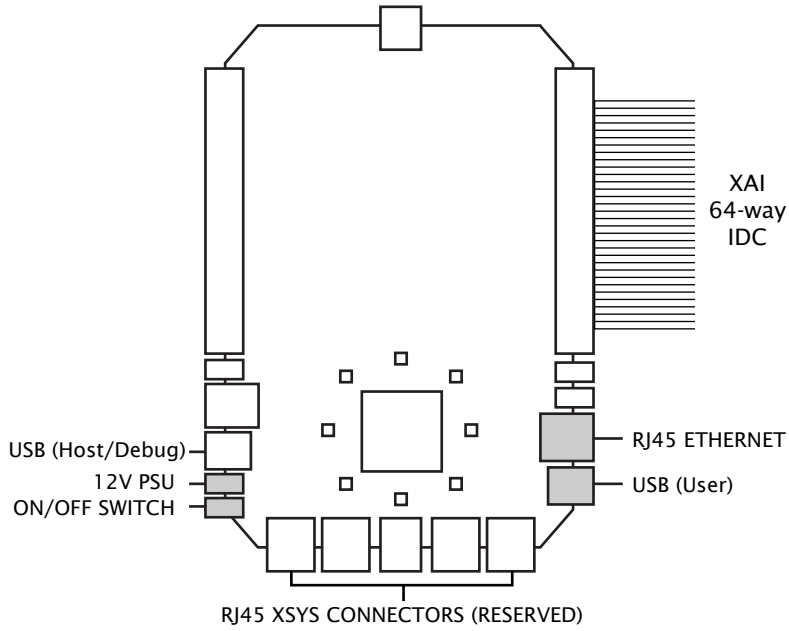


Figure 2: XDK Connectors

5 XDK DIP Switches

To use an USB or AVB input to the XDK, the DIP switches on the back of the XDK motherboard must be set as follows:

USB	
Off	On
Bank 0	
	✓
	✓
	✓
	✓
Bank 1	
	✓
✓	
✓	
	✓
Bank 2	
✓	
	✓
	✓
	✓
Bank 3	
	✓
✓	
✓	
✓	
Bank 4	
✓	
	✓
✓	
	✓
Bank 5	
✓	
	✓
	✓
	✓

AVB	
Off	On
Bank 0	
	✓
	✓
	✓
	✓
Bank 1	
	✓
✓	
✓	
	✓
Bank 2	
✓	
	✓
	✓
	✓
Bank 3	
	✓
✓	
✓	
✓	
Bank 4	
	✓
	✓
✓	
	✓
Bank 5	
✓	
	✓
	✓
	✓

Figure 3: XDK DIP Switches

6 Port map

The table below provides a full description of the port-to-pin mappings used on the XAI board:

Pin	Port				Processor
	1b	4b	8b	16b	2
X*n*D0	P1A0				SCLK (Serial Clock or Bit Clock)
X*n*D1	P1B0				LRCK (Left/Right Clock or Word Clock)
X*n*D2		P4A0	P8A0	P16A0	SDA (I2C)
X*n*D3		P4A1	P8A1	P16A1	
X*n*D4		P4B0	P8A2	P16A2	SCL (I2C)
X*n*D5		P4B1	P8A3	P16A3	
X*n*D6		P4B2	P8A4	P16A4	
X*n*D7		P4B3	P8A5	P16A5	
X*n*D8		P4A2	P8A6	P16A6	
X*n*D9		P4A3	P8A7	P16A7	
X*n*D10	P1C0				DAC_SD1
X*n*D11	P1D0				DAC_SD2
X*n*D12	P1E0				DAC_SD3
X*n*D13	P1F0				DAC_SD4
X*n*D14		P4C0	P8B0	P16A8	RST_N (Reset to CODEC)
X*n*D15		P4C1	P8B1	P16A9	Low Cost DAC Frequency Select
X*n*D16		P4D0	P8B2	P16A10	INT (Interrupt from CODEC)
X*n*D17		P4D1	P8B3	P16A11	
X*n*D18		P4D2	P8B4	P16A12	
X*n*D19		P4D3	P8B5	P16A13	
X*n*D20		P4C2	P8B6	P16A14	
X*n*D21		P4C3	P8B7	P16A15	
X*n*D22	P1G0				ADC_SD1
X*n*D23	P1H0				ADC_SD2
X*n*D24	P1I0				ADC_SD3
X*n*D25	P1J0				Low Cost DAC LRCK
X*n*D26		P4E0	P8C0	P16B0	MIDI OUT
X*n*D27		P4E1	P8C1	P16B1	
X*n*D28		P4F0	P8C2	P16B2	MIDI IN
X*n*D29		P4F1	P8C3	P16B3	
X*n*D30		P4F2	P8C4	P16B4	
X*n*D31		P4F3	P8C5	P16B5	
X*n*D32		P4E2	P8C6	P16B6	
X*n*D33		P4E3	P8C7	P16B7	
X*n*D34	P1K0				SPDIF_TX
X*n*D35	P1L0				SPDIF_RX
X*n*D36	P1M0		P8D0	P16B8	CLK_OUT (From Clock Synchronisation Chip)
X*n*D37	P1N0		P8D1	P16B9	CLK_IN (To Clock Synchronisation Chip)
X*n*D38	P1O0		P8D2	P16B10	Low Cost DAC DATA
X*n*D39	P1P0		P8D3	P16B11	Low Cost DAC SCLK
X*n*D40			P8D4	P16B12	
X*n*D41			P8D5	P16B13	
X*n*D42			P8D6	P16B14	
X*n*D43			P8D7	P16B15	

7 Further Information

Further information on the XAI (including the hardware manual, schematics and board design files) is available at: www.xmos.com/xai.

8 Document History

Date	Release	Comment
2009-12-17	1v0	First release

Disclaimer