U16 MULTI-CHANNEL AUDIO REFERENCE DESIGN

Multi-channel analog and digital USB Audio Class 2 reference design

The Multi-Channel Audio Reference Design is a complete USB audio device reference design for multi-channel audio applications.

The reference design uses the XS1-U16 multicore microcontroller; an XMOS xCORE-USB™ device with an integrated High Speed USB 2.0 PHY and 16 logical cores delivering 1000MIPS of deterministic and responsive processing power.

Exploiting the flexible programmability of the xCORE™ architecture, the reference design supports USB audio streaming of up to 20 channels at 192kHz, and includes 18in/8out audio mixing functionality.

The guaranteed Hardware-Response™ times of xCORE technology always ensure low latency (round trip as low as 3ms), bit perfect audio streaming to and from the USB host.

Delivered as source code, the reference software provides a fully featured production ready solution, including support for: Full- and High-Speed USB operation, USB Audio Class 2.0 & 1.0, MIDI, HID and DFU classes.

The XMOS xTIMEcomposer™ Studio development suite and tools then allow for quick and easy software development and customization to add additional application specific features.

FEATURES

- Complete hardware and software USB audio reference design
  - 8 channel analog input and output
  - S/PDIF or ADAT input and output
  - MIDI input and output
  - 18in/8out digital audio mixer

- USB compliant device
  - High-Speed USB device
    - Optional Full-Speed fall-back
  - USB Audio Class 2.0 device
    - Optional Audio Class 1.0 fall-back
  - Self- or bus-powered

- Bit perfect USB audio transfer
  - Asynchronous Isochronous from host
  - Adaptive Isochronous to host
  - PCM ≤192kHz at 16, 24 or 32bits
  - Local crystal audio clocking
  - PLL recovery of digital audio clock

- Multiple OS support
  - Windows
  - Mac OS X
  - Android
  - Apple iOS

- Royalty free software stack
  - Provided as source code
### Feature

- **High-speed USB 2.0 device**
  - Plug-and-play operation
  - Bus- or self-powered

- **USB Audio Class 2.0 compliant**
  - Driverless operation with Mac OS X and Apple iOS
  - Multiple vendor support for Windows and Android

- **Multi-channel audio input and output**
  - Digital and analogue audio formats
  - Multi-channel audio mixing
  - Functionality ideally suited for Mac/PC/Apple/Android

- **Local clocking**
  - Low jitter, high-quality audio capture and playback

- **Powered by xCORE-USB multicore microcontroller**
  - Flexible, deterministic and responsive processing power

- **Flexible hardware & software platform**
  - Predefined feature set reference design
  - Easily customisable to meet specific product requirements

- **xTIMEcomposer**
  - Source code reference software
  - Integrated development tools suite
  - Rapid development and code reuse
  - Royalty-free deployment
  - Fast time to market

---

**ORDERING INFORMATION**

For a list of XMOS distributors, please visit [www.xmos.com/support/distributors](http://www.xmos.com/support/distributors).

---

© 2014 XMOS LTD

Third party trademarks are hereby acknowledged.

This is a preliminary product brief, contents are subject to change.

XM-005283-P8