

Automotive Audio Bus A²B Transceiver

AD2401/AD2402/AD2403/AD2410

A2B BUS FEATURES

Line topology

Single master, multiple slave Up to 10 m between nodes and up to 40 m overall cable length Communication over distance Synchronous data Multichannel I²S/TDM to I²S/TDM Clock synchronous, phase aligned in all nodes Control and status Information I²C to I²C Phantom power or local power slave nodes Configurable with SigmaStudio[™] graphical software tool Qualified for automotive applications

ADDITIONAL TRANSCEIVER FEATURES

Configurable as A²B bus master or slave (AD2403/AD2410) I²C interface 8-bit to 32-bit multichannel I²S/TDM interface Up to 32 upstream channels or combination with up to 32 downstream channels I²S/TDM or PDM microphone inputs

APPLICATIONS

Automotive audio communication link

- **Communication network for:**
- Microphones/speakers
- Sensor/actuator
- I²C peripherals

GENERAL DESCRIPTION

The Automotive Audio Bus (A^2B^{\circledast}) provides a multichannel, I²S/TDM link over distances of up to 10 m between nodes. It embeds bidirectional synchronous data (for example digital audio), clock, and synchronization signals onto a single differential wire pair. A^2B supports a direct point to point connection and allows multiple, daisy-chained nodes at different locations to contribute or consume time division multiplexed channel content. A^2B is a single-master, multiple-slave system where the transceiver chip at the host controller is the master. It generates clock, synchronization, and framing for all slave nodes. The master A^2B chip is programmable over a control bus (I²C) for configuration and read back. An extension of this control bus is embedded in the A^2B data stream allowing direct access of registers and status information on slave transceivers as well as I²C to I²C communication over distance.

Complete technical specifications are available for the A²B transceiver. Contact your nearest Analog Devices sales office to complete the nondisclosure agreement (NDA) required to receive additional product information.

Table 1. Product Comparison Guide

| Feature | AD2401 | AD2402 | AD2403 | AD2410 |
|-----------------------------------|--------|--------|--------|--------|
| Master capable | No | No | Yes | Yes |
| Functional TRX blocks | A only | A + B | A + B | A + B |
| I ² S/TDM support | No | No | Yes | Yes |
| PDM microphone inputs | 4 Mics | 4 Mics | None | 4 Mics |
| Maximum node to node cable length | 10 m | 10 m | 1 m | 10 m |

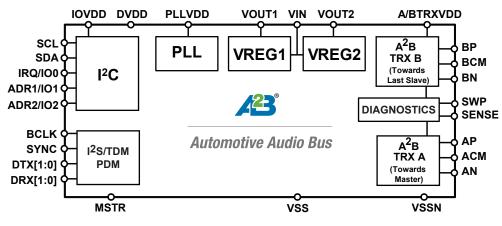


Figure 1. Functional Block Diagram

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AD2401/AD2402/AD2403/AD2410

I²C refers to a communications protocol originally developed by Philips Semiconductors (now NXP Semiconductors).

ANALOG DEVICES

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