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

APPLICATIONS

- Automotive audio communication link
- Communication network for:
  - Microphones/speakers
  - Sensor/actuator
  - I²C peripherals

GENERAL DESCRIPTION

The Automotive Audio Bus (A2B®) 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. A2B 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. A2B 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 A2B chip is programmable over a control bus (I²C) for configuration and read back. An extension of this control bus is embedded in the A2B 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

<table>
<thead>
<tr>
<th>Feature</th>
<th>AD2401</th>
<th>AD2402</th>
<th>AD2403</th>
<th>AD2410</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master capable</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Functional TRX blocks</td>
<td>A only</td>
<td>A+B</td>
<td>A+B</td>
<td>A+B</td>
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<tr>
<td>I²S/TDM support</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>PDM microphone inputs</td>
<td>4 Mics</td>
<td>4 Mics</td>
<td>None</td>
<td>4 Mics</td>
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<tr>
<td>Maximum node to node cable length</td>
<td>10 m</td>
<td>10 m</td>
<td>1 m</td>
<td>10 m</td>
</tr>
</tbody>
</table>

Figure 1. Functional Block Diagram

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$i^2C$ refers to a communications protocol originally developed by Philips Semiconductors (now NXP Semiconductors).