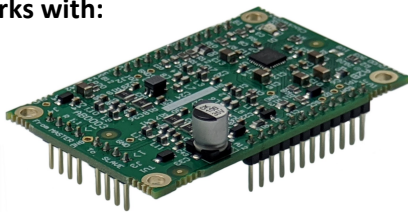


**HOLDS FOUR CLOCK-
WORKS A²B[®] MODULES
AND PROVIDES ACCESS TO
ALL SIGNALS**

Works with:



AB0003 OEM A²B module



AB0001 A²B module

CLOCKWORKS

Signal Processing

QUAD A²B MODULE CARRIER

SIMPLIFIES EMULATION OF HIGH NODE COUNT SYSTEMS

Summary

The AB0109 quad carrier board, when used with Clockworks AB0003 OEM A²B modules, provides an easy and efficient way to have a large number of nodes for development compared to stringing together standalone development boards.

Each position features:

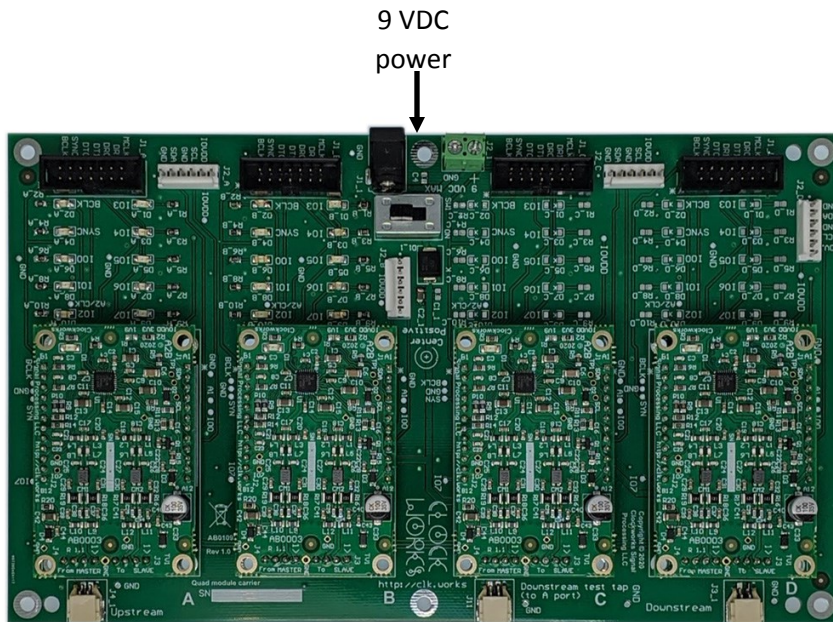
- Full access to all AD2428 signals via two connectors and/or test points
- 10 LEDs for quick visual monitoring
- 32Kx8 EEPROM for emulating auto configuration

The board includes the A²B daisy chain between slots, so only one up-stream and one downstream cable is needed. There is an additional A²B connector between nodes 2 and 3 to allow just two slots to be used or for passive monitoring of the A²B bus.

Introduction

Analog Devices' A²B system allows up to thirty two 24 bit 48 kHz data (audio) channels to be carried bidirectionally over twisted pair wire between multiple nodes. Supporting up to 15 meters of cable between nodes it provides a low cost way to expand audio and signal processing systems.

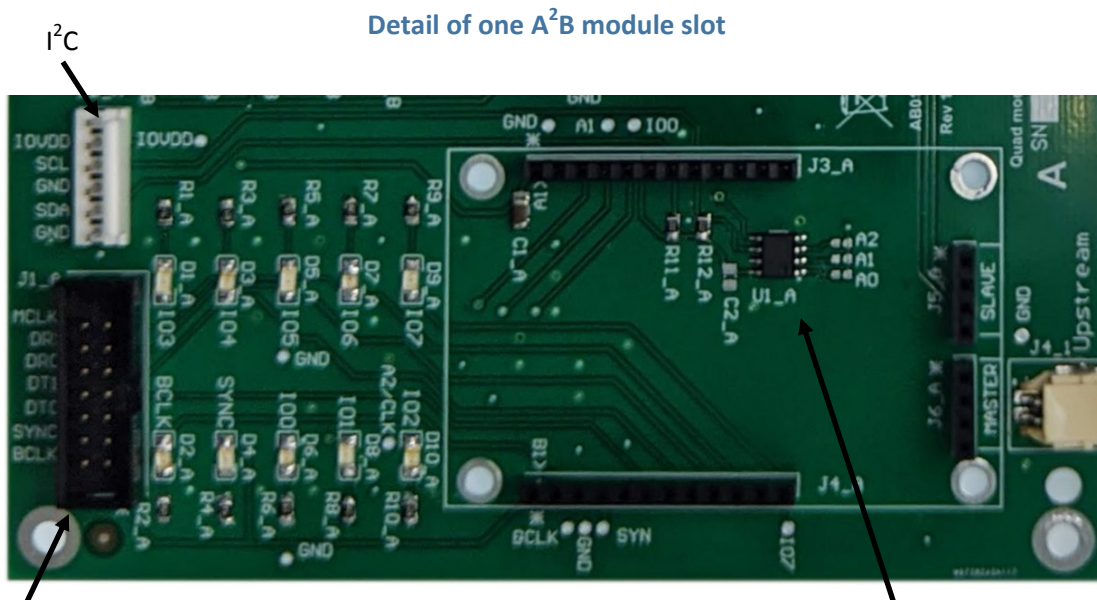
Clockwork's A²B modules provides an off the shelf solution to developers and OEMs needing a way to develop and ship products that include A²B but don't want to delay their projects working out their own A²B designs.



Carrier with four A²B modules installed.

Towards root
(master) node

From downstream
client (slave) node



Detail of one A²B module slot

I²S - 14 pin
.1" (2.54mm)
connector

GPIO0-7, SYNC,
BCLK LEDs

32kx8 EEPROM

Carrier details

The board is powered by a 9V source via either a 2.1mm center positive barrel connector or terminal block. The board includes a 9VDC 500 mA DC supply.

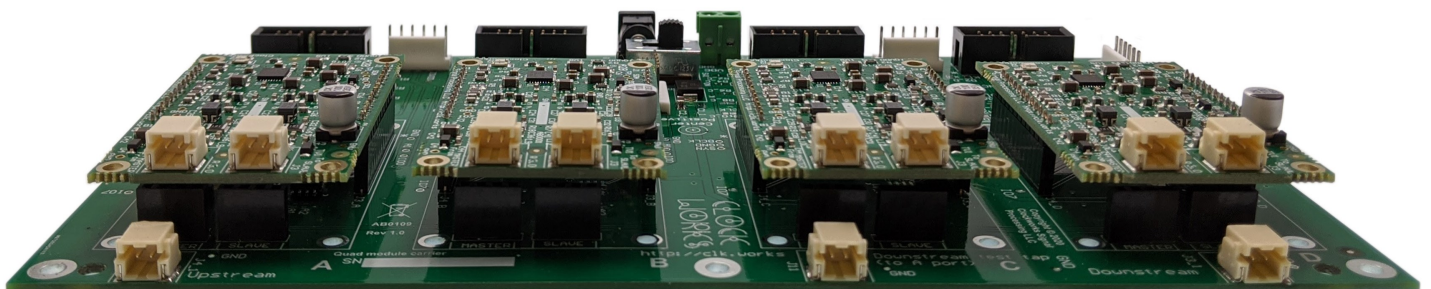
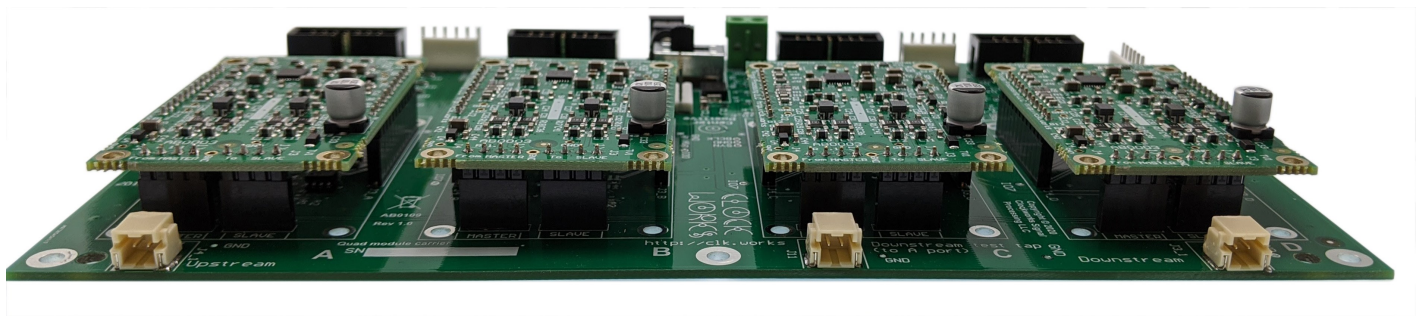
The 10 LEDs are split between green and red color and are connected to the AD2428's I/O pins and ground so that a 1 on a pin turns the LED on. They are set for low current, < 2 mA vs. the 20 mA drive capability of the AD2428.

There is no additional signal buffering on the carrier. The modules do series terminate the I²S outputs (which is something to keep in mind if used for GPIO) but using a long length of ribbon cable to connect the I²S connector to your own target hardware could be problematic. If connections can not be kept short it is suggested to add a small board at the mating connector to buffer all signals.

The I²C lines are pulled up with 2.2 kohm resistors. The EEPROM is at address 0x50 but three trace jumpers/pads can be cut to change the address if needed. Further details about the carrier are better described by examining the schematic.

Modules should be set of 3.3V IO operation but 1.8V IO will also work, the LEDs will be dim (particularly the green). Any attached hardware should match the modules VIO selection.

Front view of carrier with AB0003 modules (top picture) and AB0001 modules (bottom picture).



Use

The basics of using this board are simple enough that there's no separate user manual. The design package includes a basic SigmaStudio diagram for the board with four modules attached to an ADI 'WDZ board as the root.

The steps are:

- Plug in 2 or 4 A²B modules.
- Attach the upstream A²B cable.
- Attach the downstream cable if there are more nodes in the system.
- Connect the 9VDC supply.
- Turn on the board via the power switch.
- You can now load an A²B network configuration from you root (master) node.

Please note that while A²B connections can be hot plugged (though the software has to handle that) modules should not be un/plugged when power is supplied to the board.

The board does not include ESD protection on the connector signals. It should always be handled and used with appropriate ESD precautions. There is also no EMI/RFI mitigation on the carrier for the I²S lines, which can radiate in all sorts of wondrous ways. But you already knew both of these things from looking at the schematic.

Ordering information

The board is supplied with a 9V wall wart. Design information includes schematic (pdf, Altium), layout (Altium), BOM and gerbers for download. SigmaStudio examples are included for demonstrating operation.

SigmaStudio is available directly from Analog Devices at no charge, along with the A²B software add-ons.

Order codes:

AB0109-NA	Four module carrier with 9V supply with universal AC input supply (NEMA 1-15 blade), documentation package.
AB0109-INT	As above but with universal AC input supply multi-blade kit (NA, EU, UK, AUS, CN)

Modules and A²B cables sold separately.
If using AB0001 modules cables will be needed to connect each module together.