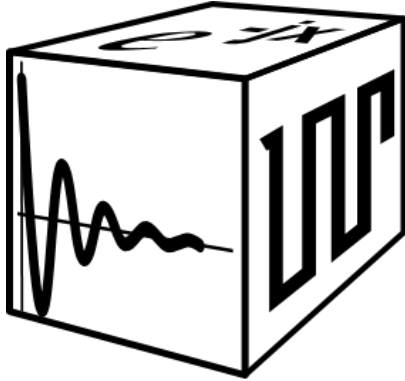


**SIGNALBLOX®**



CLOCKWORKS

## Signal Processing

**8 CHANNEL  
DAC  
MODULE**

### Summary

The DA1100 module is based on AKM's AK4438 DAC. The AK4438 is a mid-level performance ADC and as such represents a good tradeoff in cost, complexity, and performance.

The DAC provides a single ended output at 1 VRMS (0 dBV, 2.2 dBu). Clockworks AnalogBlox modules can be used to provide balanced outputs or add adjustable level with the volume control board to provide a greater dynamic range across a wide range of output levels.

Like the corresponding ADC module, this module allows creation of high channel count systems when used the Clockworks carrier board.

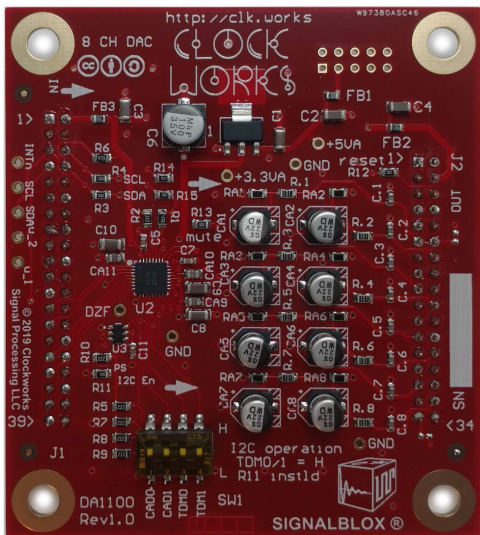
The DAC is controlled via I<sup>2</sup>C and examples for initializing this from SigmaStudio are included. The board can be modified to operate in a standalone mode for applications outside of a SignalBlox system.

### Introduction

Clockworks SignalBlox product series provide a module system of off the shelf hardware for developing signal processing applications. Modules handle 8 channels each, and carriers provide a simple way to parallel modules for channel counts up to 256.

The DigitalBlox products consist of mixed signal modules (ADC, DAC) and DSP modules and/or A<sup>2</sup>B interface for signal processing. These can be combined with AnalogBlox modules; they have 8 balanced input and outputs. Standard functions from Clockworks include volume control, switching, and single ended/balanced conversion.

All SignalBlox hardware design documentation is released under a Creative Commons CC BY-SA 4.0 license, allowing you to modify the designs to your own needs.



**DigitalBlox®**

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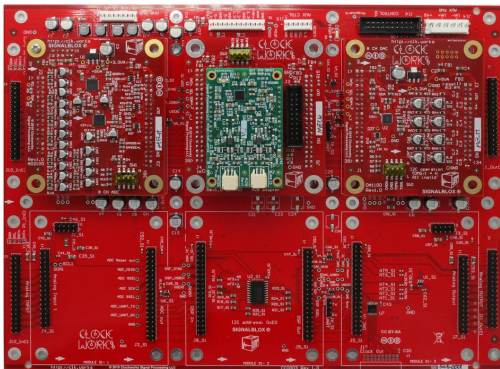
## DA2100 specifications

- Connectors (bottom side .1" centered sockets)
  - 40 pin (digital - from 4 to 1 data lines supported) input
  - 34 pin (analog - 8 SE channels) output
  - 10 pin secondary power (right top)
- Size:
  - 75 x 85mm overall and uses 11 mm M3 standoffs (4 layer PCB)
  - 4 mounting holes spaced at 63 x 73 mm (6 mm from each edge).
- Power input:
  - 3.3V digital via primary connectors
  - 5V analog from secondary power plug, local 3.3V LDO for AK4438
- Power draw:
  - < 300 mW typical from all supplies
- Control:
  - I<sup>2</sup>C bus with two switches for address selection, default is 0x20

## Ordering information

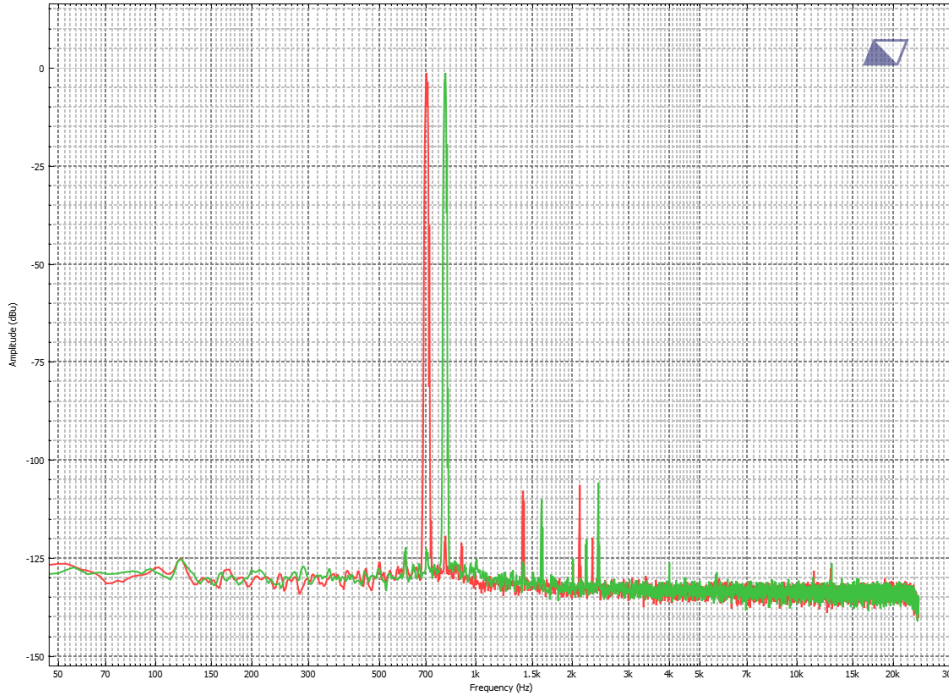
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DA1100	8 channel DAC module based on AK4438
CC0003	Carrier only: 3 x 2 DigitalBlox module carrier. Does not include mounting hardware for this board nor the modules.
SYS05	Complete system for A <sup>2</sup> B: 8 input, 8 output system with CC0003 carrier, AD2100 ADC, DD3100 adapter with A2B Module, DA1100 DAC, input and output connector modules, 7 output power supply (+3.3, +5, +/-15V +/- 5V), ribbon , power, and A2B cables, and mounting hardware for modules. (please see separate datasheet for details)



DAC1100 installed on CC0003 carrier along with A<sup>2</sup>B interface and DAC. Provides 8 input and output channels in an A<sup>2</sup>B based system.

## Typical performance



-3 dBFS (-4 dBV at output) 700 Hz and 800 Hz tone FFT plot (16K point).  
Largest peak is -108 dBV (4  $\mu$ V RMS)

48 kHz Fs.

Channel 7 red, channel 8 green.

Note: Output noise floor, unweighted, 22 kHz BW, is -105 dBV (6  $\mu$ V RMS), and A-weighted is -109 dBV (4  $\mu$ V RMS).