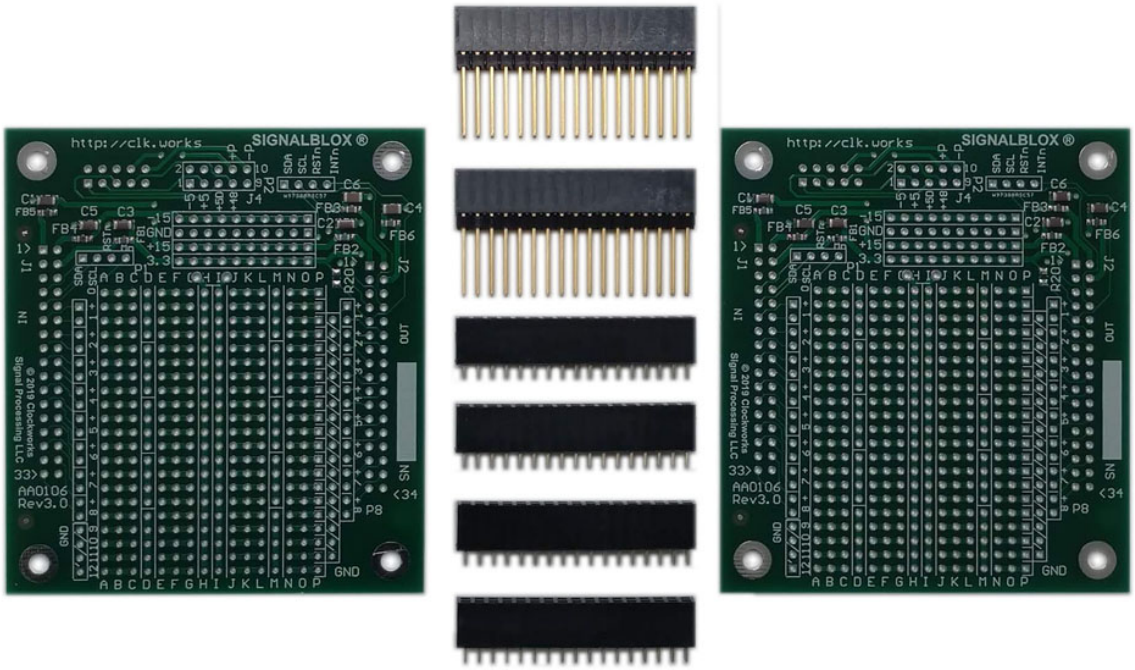
ANALOGBLOX™
PROTOTYPING MODULE
AA0106



For Revision 3 hardware

Rev 2.0

15-Jun-2019

Clockworks
Signal Processing

http://clk.works/

1. TABLE OF CONTENTS

Attachment: Schematic.

1 INTRODUCTION

The Clockworks AA0106 prototyping module allows developers to quickly construct small circuits for use in the AnalogBlox portion of a SignalBlox system. It is generic enough that it can be used in any general prototyping application where through hole parts on 0.1" centers are used.

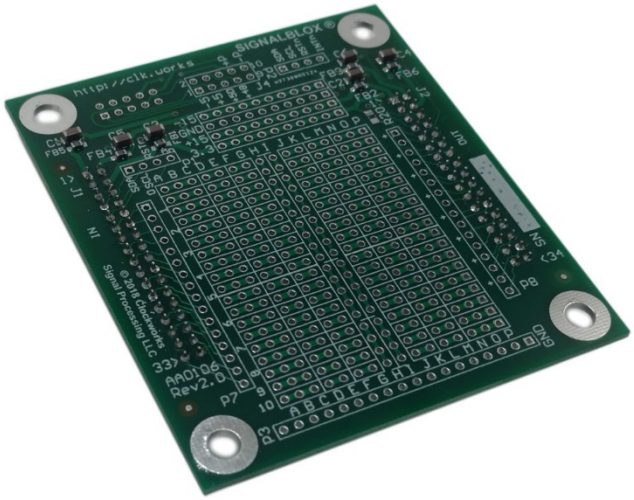


Figure 1 AA0106 module

1.1 MODULE DESCRIPTION

The AA0106 module is a standard size 75mm x 85 mm module with two 34 pin IDC sockets on the bottom side. Mechanically and electrically it conforms to the AnalogBlox Analog in to Analog out (AA) specification described in the SignalBlox System Configuration Guide.

It provides a 21 x 16 .1" (2.54mm) grid of holes vertically and horizontally connected in short segments. Access to the 8 balanced input and 8 balanced output pins are provided, along with a number of pins for power and ground connection. Access to the primary 3.3V and +/-15V supplies is provided, along with the secondary 5V digital, +/-5V analog, +48V, and the uncommitted +/- high power pins.

Ferrite beads and 4.7 uF decoupling caps are provided on the primary supplies.

The PCB is a two sided board, with the back side being ground plane. Traces for interconnecting the grid of holes are on the top side. The board has a RoHS compatible HASL finish.

For full details please see the schematic (at the end of this document) and associated layout files (available from the Clockworks website).

1.2 HOW SUPPLIED

The AA0106 kit comes with the following:

- Two AA0106 PCBs with ferrite beads and decoupling caps on the 3.3 and +/- 15V power rails
- Two 34 pin .1" (2.54mm) sockets with long tails for creating stacked boards
- Four 34 pin .1" (2.54mm) sockets with standard solder tails

The sockets are not soldered to the board so that you can chose what combination of sockets will work best for your application. Instead of the supplied sockets you could also use header strips to create different connector gender combinations for use outside of a AnalogBlox carrier.

1.2.1 NOT INCLUDED

The kit does not include sockets for the auxiliary power connector (10 pin socket, dual row, .1" (2.54m) pitch).

1.3 SOFTWARE SUPPORT

The AA0106 module does not perform any hardware functions and therefor does not come with any example software.

2 GETTING STARTED WITH THE MODULE

To assist with planning circuitry that might be placed on the module the next two diagrams provide a simplified view of the layout (one with the traces in blue, the other a greyscale view. These can be printed and your design drawn on top of them.

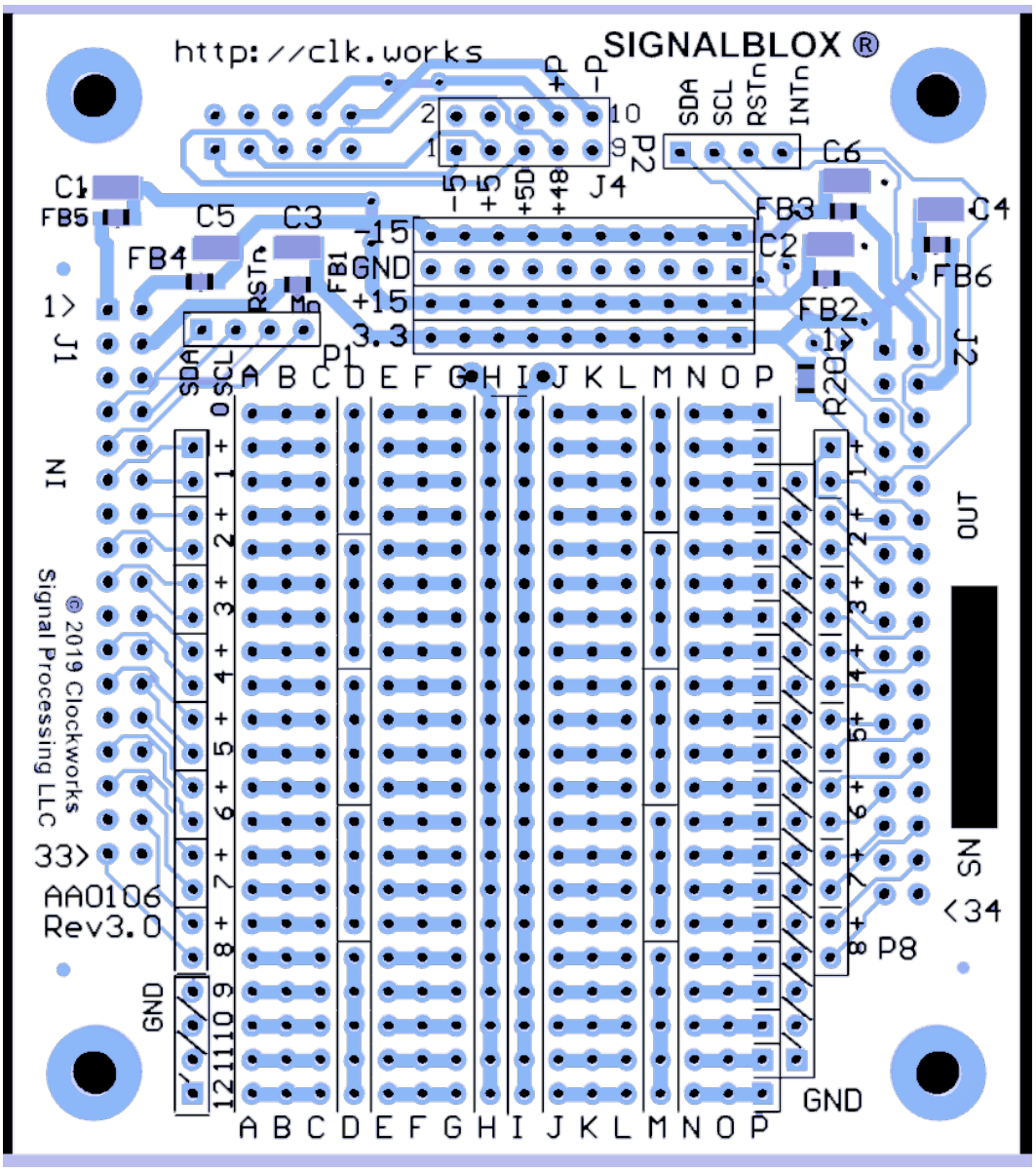


Figure 2 PCB view, color

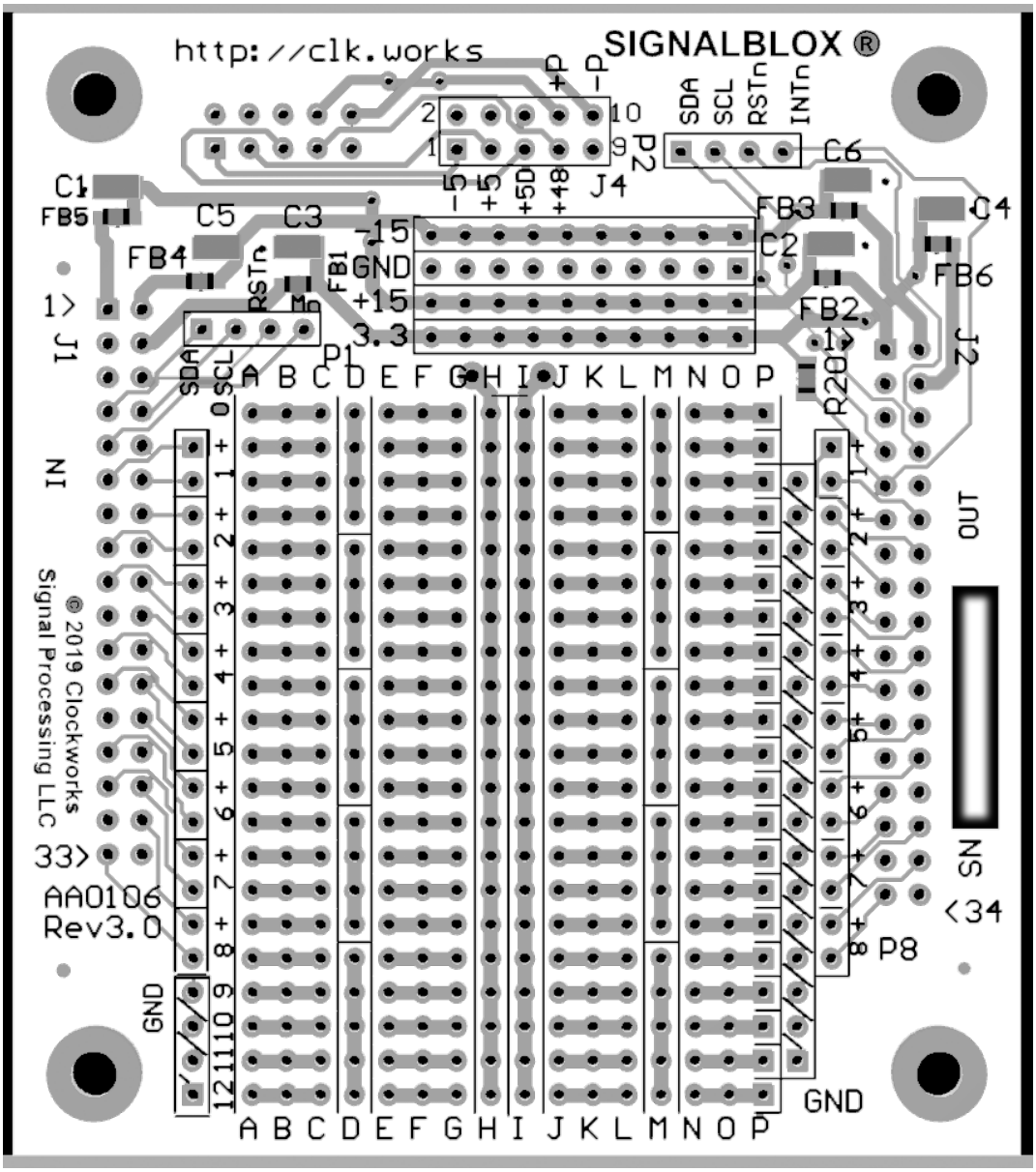


Figure 3 PCB view, greyscale

2.1 ASSEMBLING A TWO BOARD STACK

The long tailed sockets can be used to pass the input signals to two boards, and likewise collect up different output signals from each board.

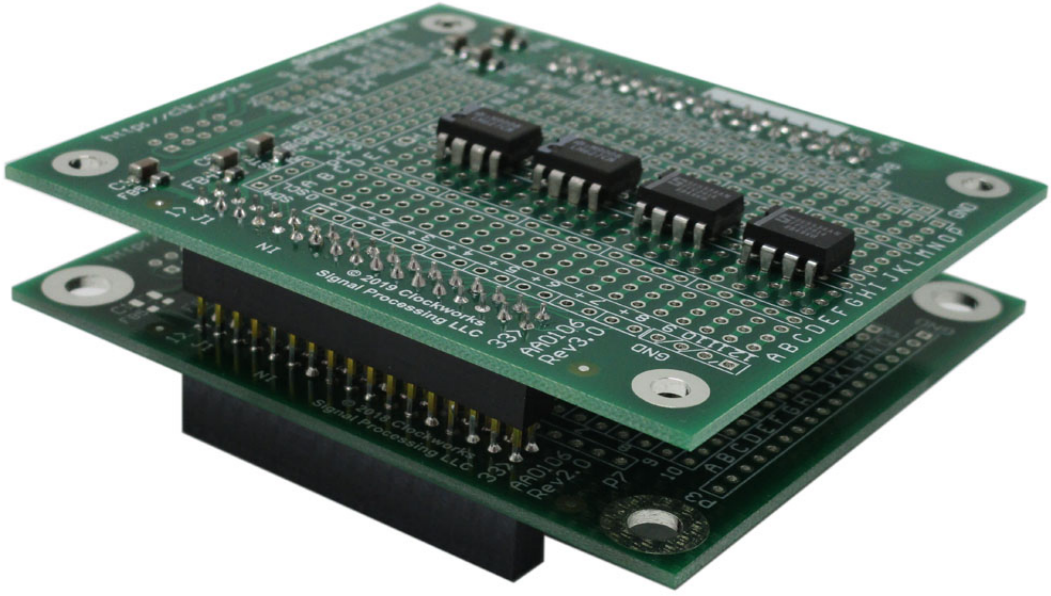


Figure 4 Stacked board example

The long tailed sockets are installed on the bottom board, with the socket side down, as show in Figure 5. The upper board has a standard tail socket soldered on to its bottom side. When soldering the long tailed sockets care should be taken to not get solder on the pins that would interfere with mating.

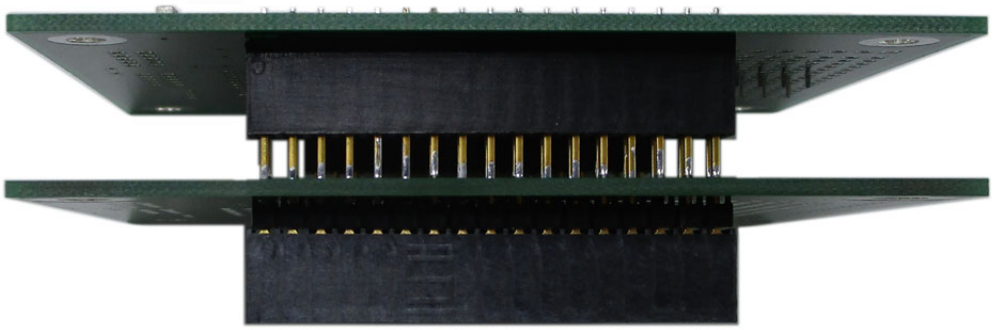


Figure 5 Side view of stacked boards

3 EXAMPLES

SignalBlox systems normally process 8 channels per module location. Using through hole components two boards would normally be stacked to provide enough space for circuitry.

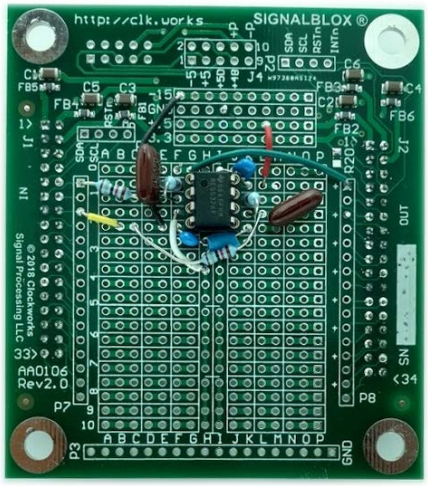
Four 8 pin opamps will fit, and if using the modules in a single ended mode would provide the capability for basic buffer and filtering circuits on a single board.

Limiting the design to 2 channels for a proof of concept would of course allow for more flexibility in accommodating more complex circuit functions on a single board.

3.1 OP-AMP TESTING

This circuit uses a socket to allow op-amp testing in a simple inverting configuration, the intent was to measure supply noise impact on an actual part to see how it compares with the PSRR data for the op-amp. While more op-amps can be installed to allow comparison most analyzers provide just two channels of measurement. Of course an AA0101 relay switching module could be added to the system to provide further capability.

Here's a picture of a circuit used for this purpose (note this photo is a rev 2 board):



All FB# ferrite beads on this page are the same

VA-15V VD+3V3 FB4 FB1 VP+48V VD+5V VA+5V VA-5V J3 VA+PWR VA-PWR

VA+15V FB5 BLM21PG221SN1D J1 SSW-117-01-F-D

SDA_In MUTEn RESETn_In SCL_In

1P 2N 3P 4N 5P 6N 7P 8N

1P_IN 2P_IN 3N_IN 4P_IN 5N_IN 6P_IN 7N_IN 8P_IN 1N_IN

2N_IN 3P_IN 4N_IN 5P_IN 6N_IN 7P_IN 8N_IN

AnalogIn: 1P_IN 1N_IN 2P_IN 2N_IN 3P_IN 3N_IN 4P_IN 4N_IN 5P_IN 5N_IN 6P_IN 6N_IN 7P_IN 7N_IN 8P_IN 8N_IN

Ain Aout

AnalogOut: 1P_OUT 1N_OUT 2P_OUT 2N_OUT 3P_OUT 3N_OUT 4P_OUT 4N_OUT 5P_OUT 5N_OUT 6P_OUT 6N_OUT 7P_OUT 7N_OUT 8P_OUT 8N_OUT

J3: 1 2 3 4 5 6 7 8 9 10 — 68683-305LF

GND

VA+15V FB2 BLM21PG221SN1D VA-15V FB3 BLM21PG221SN1D VD+3V3 FB6 J2 SSW-117-01-F-D

SDA_Out INTn RESETn_Out SCL_Out

1P_OUT 2N_OUT 3P_OUT 4N_OUT 5P_OUT 6N_OUT 7P_OUT 8N_OUT 1N_OUT 2P_OUT 3N_OUT 4P_OUT 5N_OUT 6P_OUT 7N_OUT 8P_OUT

VA+15V C1 4.7uF 25V C2 4.7uF 25V GND

VA-15V C5 4.7uF 25V C6 4.7uF 25V GND

VD+3V3 C3 4.7uF 25V C4 4.7uF 25V GND

MH1 MH2 MH3 MH4 GND

FD4 FD5 FD6

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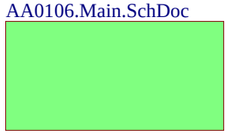
The AA0106 module is a generic breadboard module for analog in to analog out.

Realistically it will be difficult to fit 8 channels worth of through hole parts in the provided space; a better is perhaps just to prototype a channel or two and then design the actual PCB with SMT parts to fit 8 channels.

Rev 3.0:
revise prewired hole sets to be more usefule for opamp ckts

Replace all parts with latest parts libraries, including 3mm mounting holes

SCHEMATIC
AA0106.Main.SchDoc



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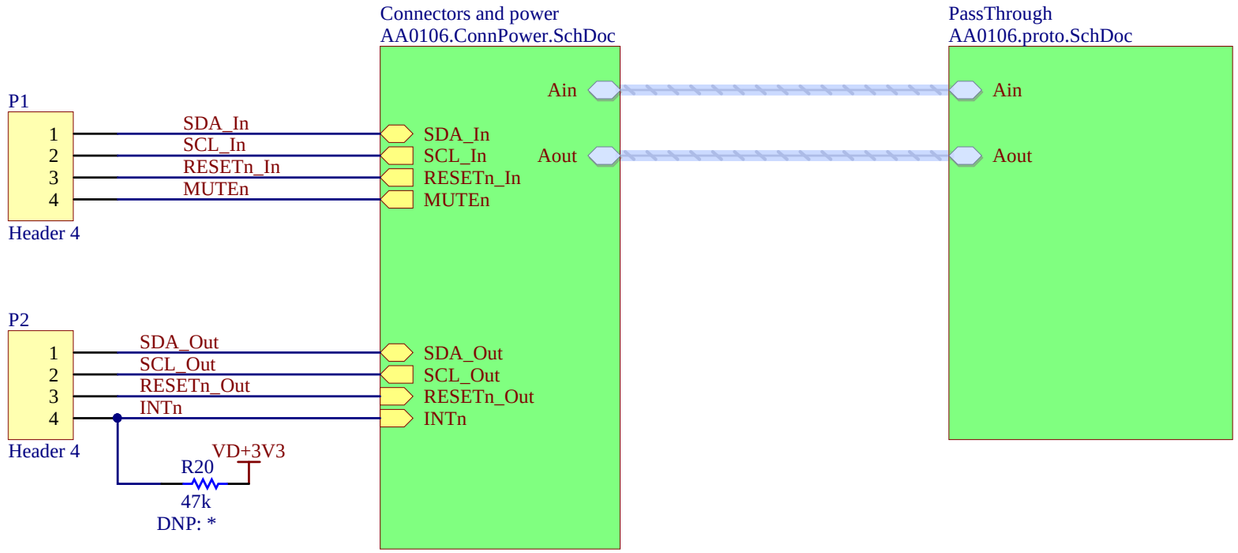

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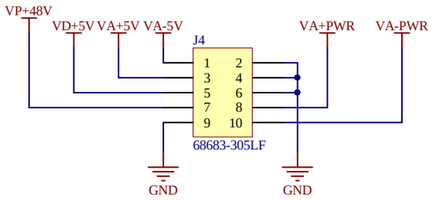

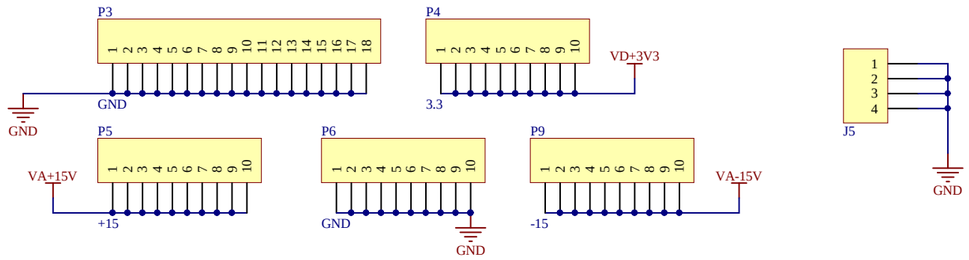

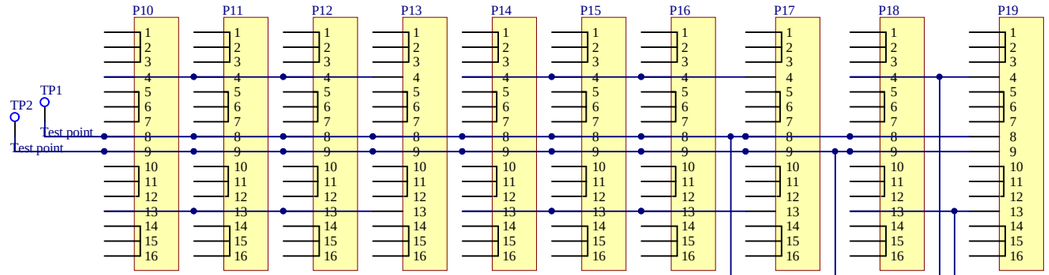

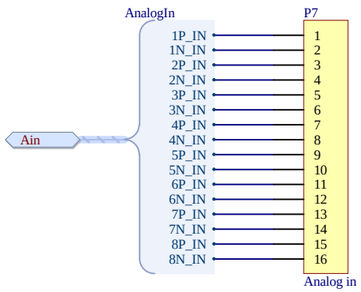

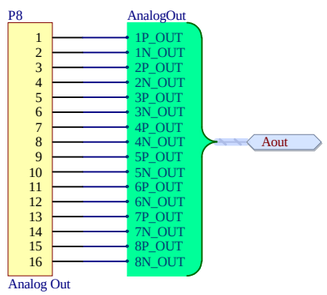

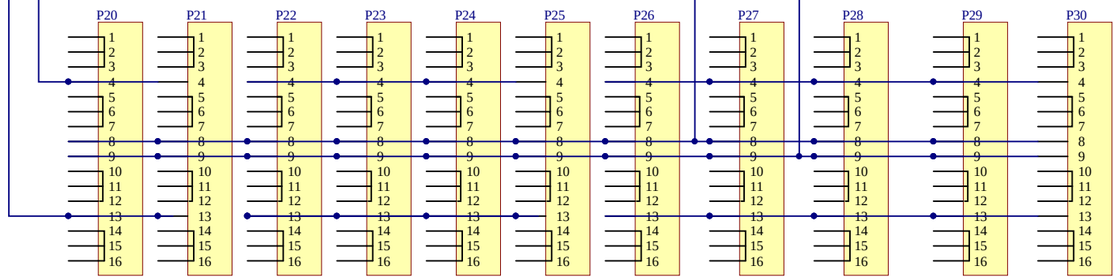

The connectors on this page are used to form the prototyping area and are not actual components that get installed.

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