

khs

instruments

analog::blocks

Base Board

User Manual

Rev. 1.0

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1) General Description

The analog::blocks Base Board provides the common interconnection platform for analog::blocks Prototype Boards and Function Modules.

Ten standard module positions provide access to the common power rails, analog signal connections and SPI/I²C control interfaces.

Analog signal paths can be interconnected between module positions or accessed externally through the SMA connectors. The digital control interfaces are galvanically isolated from the analog system.

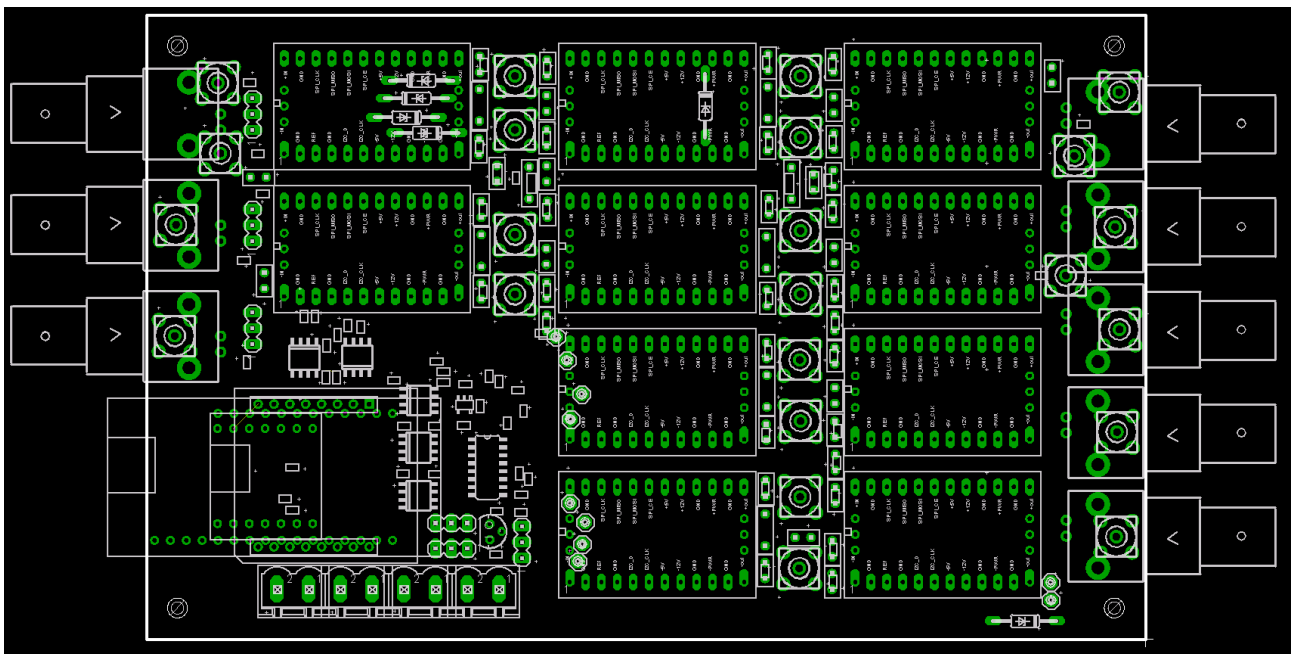


Figure 1. analog::blocks Base Board

2) Basic Structure

The Base Board uses a two-dimensional module arrangement. Power and digital control buses are distributed across the module positions, while the analog signal connections can be routed independently between adjacent modules or to external connectors.

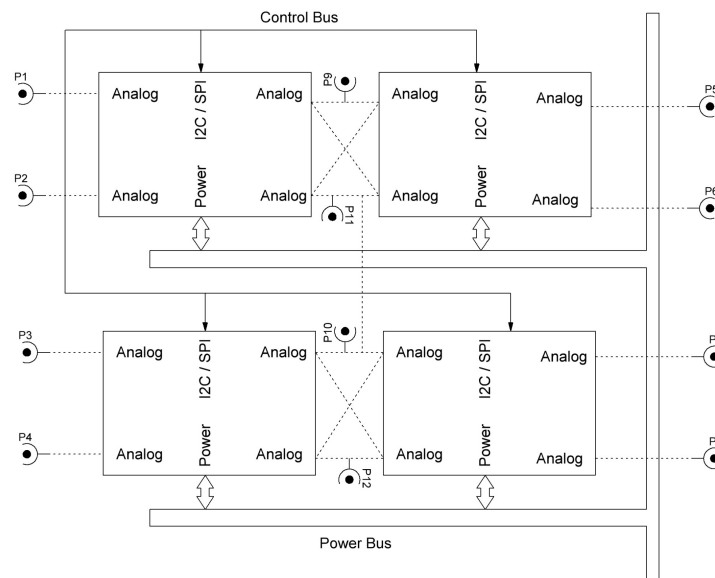


Figure 2. Basic Architecture

The analog interconnections between adjacent module positions can be opened or connected as required, allowing signals to be routed through the Base Board or accessed externally.

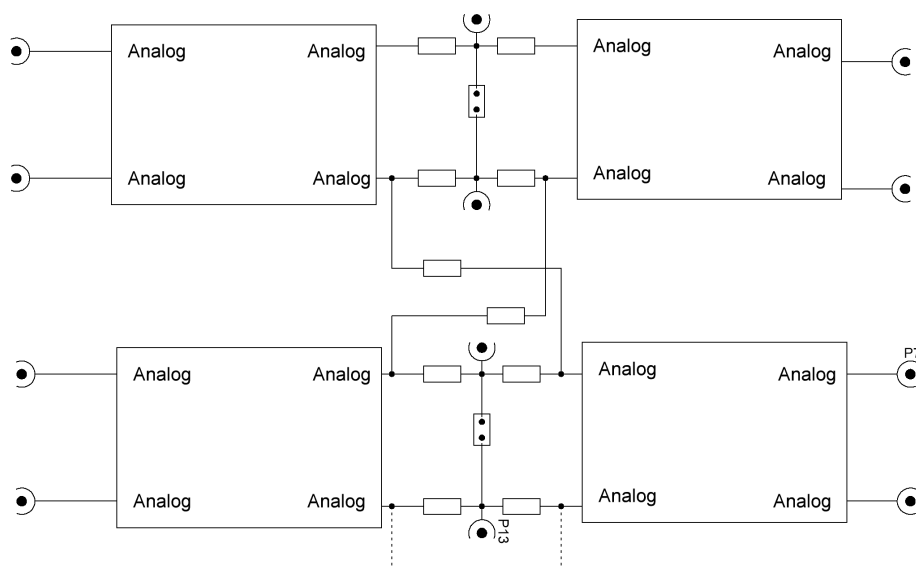


Figure 3. Module Interconnect

3) Control Bus

SPI MOSI, MISO and CLOCK are shared between the module positions. An addressable chip-select multiplexer provides individual chip-select signals for up to eight SPI devices. This allows multiple SPI modules to share the control bus without requiring a separate chip-select line from the host for each module.

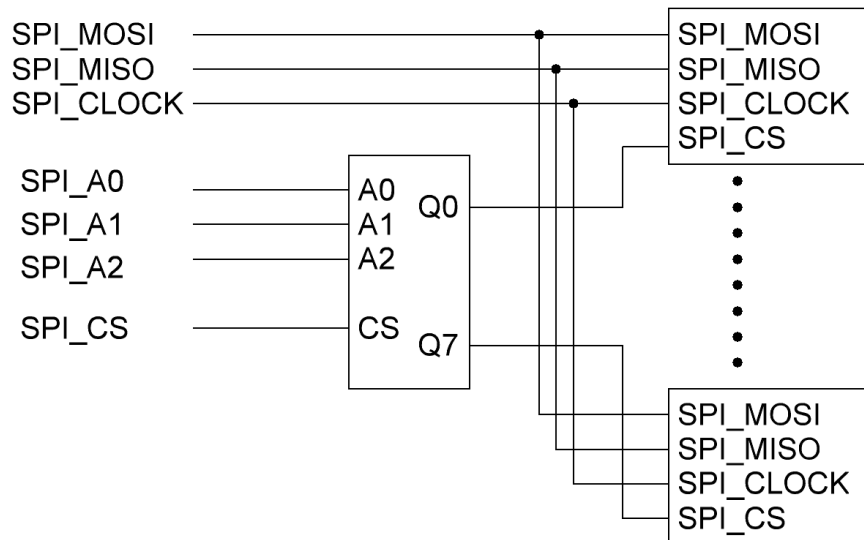


Figure 4. SPI Module Select

3.1) Control Bus Isolation

The microcontroller control interfaces for SPI Module Select and I²C are galvanically isolated from the analog system by the ISO devices. This reduces ground-loop interference and allows the analog ground potential to be defined independently from the host interface.

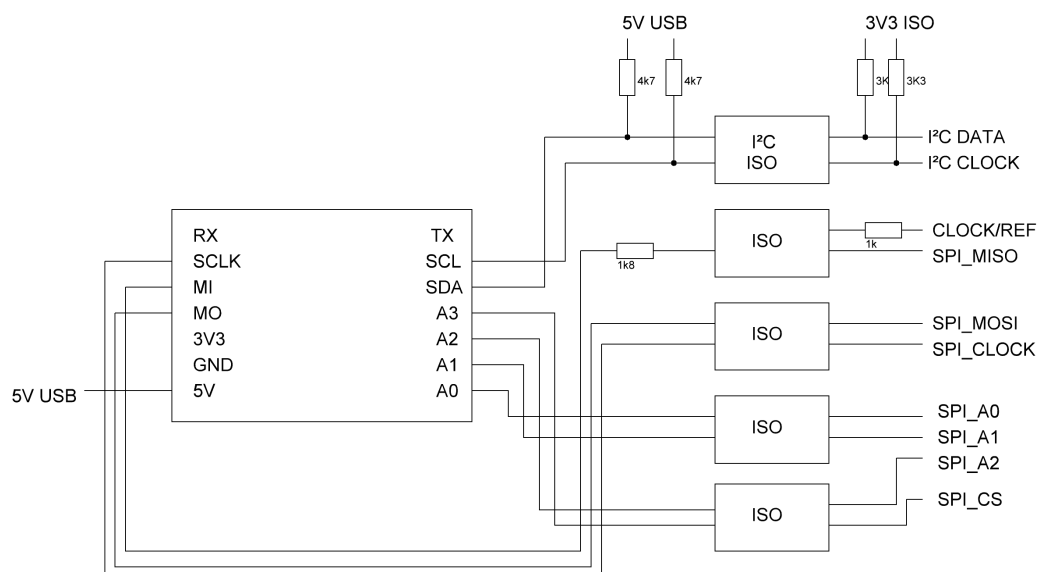


Figure 5. CPU Interface and Isolation

4) Base Board

4.1) Unpopulated Base Board

The unpopulated Base Board provides the complete pre-routed analog::blocks interconnection structure for custom applications. The galvanically isolated SPI and I²C interface circuitry is pre-routed but not populated.

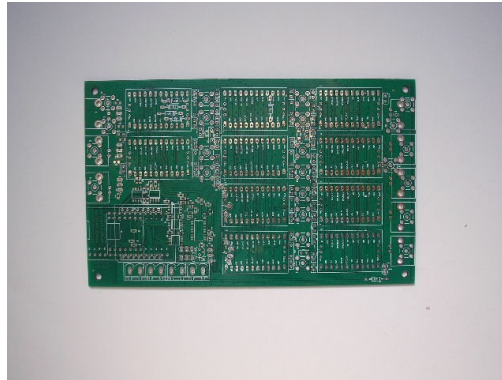


Figure 6. Unpopulated Base Board

Ordering Information: ABL-M-P-34-10-SI

Note: The current revision 2.0 of the unpopulated Base Board requires minor modifications when used with the QT Py controller interface. Refer to the corresponding Application Note for details.

4.2) Populated Base Board

The populated Base Board provides a ready-to-use platform for analog::blocks development and evaluation. Four SMA connectors provide external access to the analog signal paths. The galvanically isolated SPI and I²C interfaces provide communication with digitally controlled modules. Up to eight SPI devices can be individually selected.

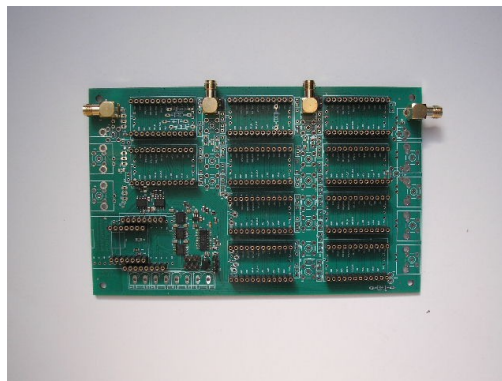


Figure 7. Populated Base Board

Ordering Information: ABL-M-B-34-10-SI-SMA4

5) Module Interface and Pin Assignment

The module interface consists of 24 contacts. The four corner contacts are the principal analog signal connections. The signal names IN and OUT describe their usual purpose; an individual module may use these analog contacts in the opposite direction.

Pinout

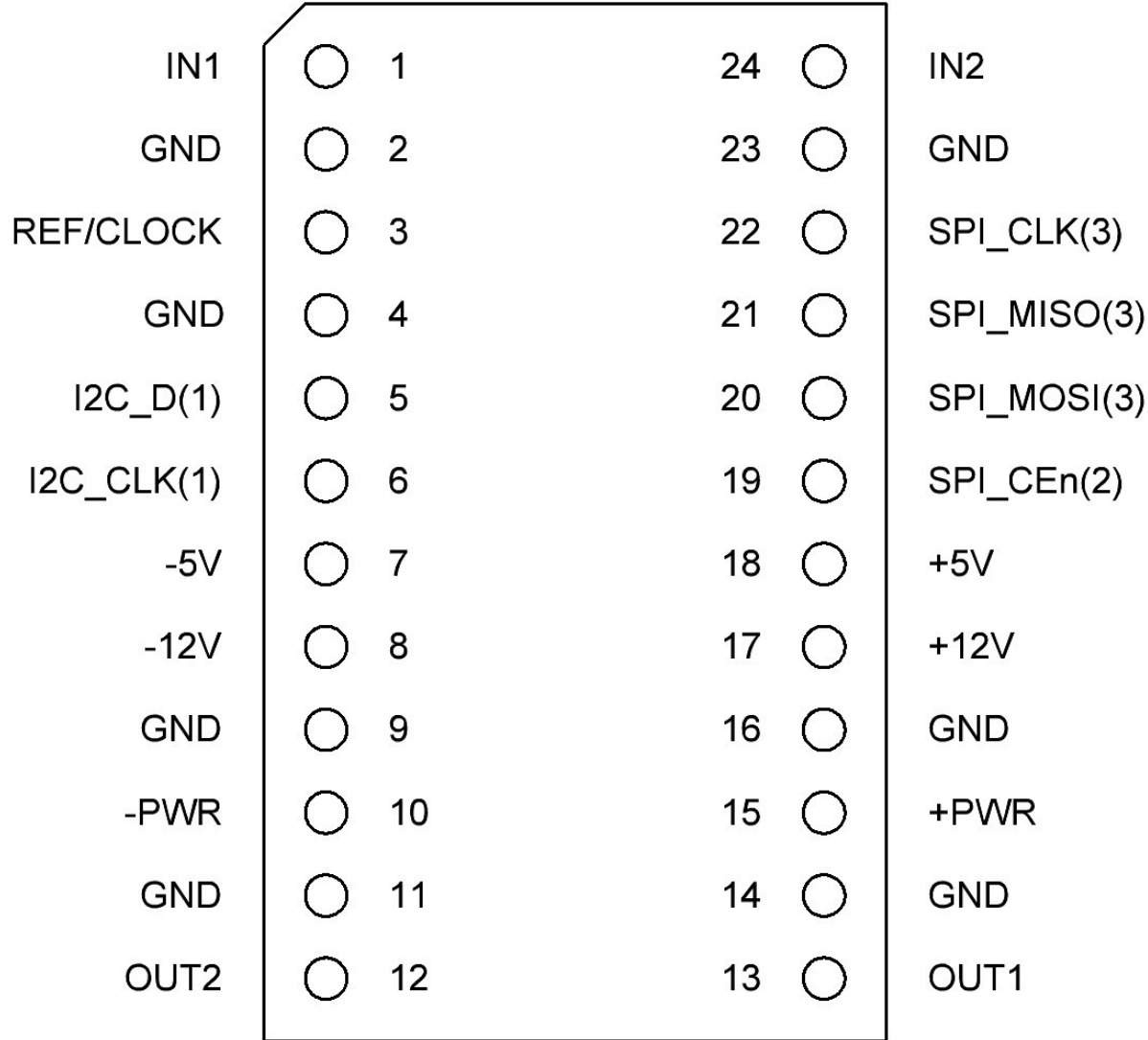


Figure 8: 24-pin analog::blocks module interface, top view.

History:

Revision	date yy/mm/dd	Changes
1.0	26/09/29	Initial.