

SPI Mainframe + C1b Control Module for Current / Voltage Sources | 19" Rack Mounted

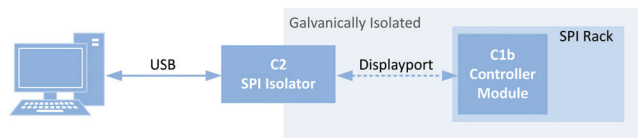
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Description

The SPI Rack chassis houses the S4g DC current and D5a DC voltage source modules, and connects the modules to the integrated backplane which provides the power, digital communication and certain analog signals to each module.

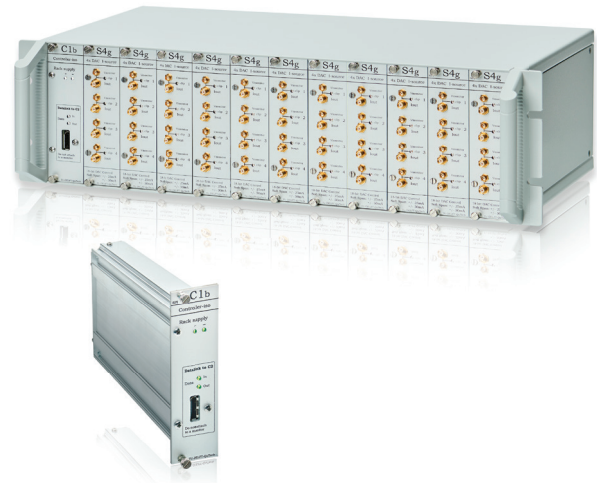
The SPI mainframe incorporates an advanced scheme to enable the best noise performance. The signals, power and grounding from the PC are not connected to the SPI Rack directly, but through the isolated controller that consists of the C1b controller module and the C2 SPI Isolator box.

The signals from the PC is connected to the C2 Isolator box which is galvanically isolated to block interference from the mains power.



This box contains the ARM microcontroller to interpret the incoming USB data and transmits as SPI data towards the C1b controller module. The C2 is the only clocked element in the system, and is separated from the mainframe to avoid noise injection.

The SPI C1b control module is designed for controlling up to 11 DC Current or DC Voltage source modules per rack. It receives the data signals from C2b and distributes it over the backplane.



C1b Control Module

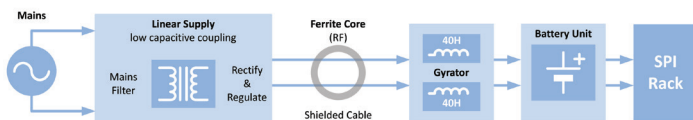
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Features

- 3 U rack mainframe to host up to 12 modules
- Host up to 44 current source channels or 176 voltage source channels
- Designed for ultra-stable current and voltage sources
- C1b control module for signal distribution over all channels.
- C2 Isolator box galvanically isolates the system from the mains
- Gyrator circuitry prevents ~50 Hz interference and ground loops

Filtered Power Supply

A filtered power supply is key to avoid ground loops and interference. The integrated gyrator circuitry mimics a very large inductor (40 Henry) on every power lead to prevent interference (~50 Hz) from getting to the SPI Rack.



Gyrator

The Gyrator also avoids ground loops since there are no physical connections between the mains ground and the SPI rack. Furthermore, the backup battery prevents sample damage in case of a power outage.



Specifications

Connection to host pc	USB
Power Supply	230 V, 50 Hz (others available on request)
	Gyrator filtered
Power usage SPI rack	0.03 W (empty rack)
Main Frame Controller	C1b (included in slot 1)
Available module slots	11
Max. Current Source channels (11 x S4g)	4-44 ch. (19" rack)

Max. Voltage Source channels (11 x D5a)	16-176 ch. (19" rack)
Driver/API	Python / QCoDeS
Mounting Type	19" Rack mount
Height	3 U
Dimensions	436 x 390 x 133 mm ³
Weight	5.7 kg (empty rack)