CAMPBELL SCIENTIFIC
WHEN MEASUREMENTS MATTER

Spectrum

Spectral Analysis and High-Speed Analog Input Module

Maximize YourHigh-Speed Dynamic Applications

Designed for analog measurements

Overview

The Spectrum Spectral Analysis and High-Speed Input Module—available in three-channel or nine-channel variants—offers high-speed synchronous sampling for analog inputs, with dedicated analog input hardware that includes amplifiers, filters, and analog-to-digital converters (ADC).

Note: The Spectrum 109 version with nine channels will be coming soon.

Benefits and Features

- Synchronization across multiple modules
- Ideal for three-axis accelerometers and strain gages
- Connection to data logger via EPI and CPI
- Streamlined creation of basic programs
- Sample rate up to 10 kHz

Detailed Description

The Spectrum 103 (three channels) and 109 (nine channels) share the same design, offering a variety of selectable input ranges on each channel.

Synchronization

Channels are digitized using a 32-bit ADC and offer channel-to-channel sampling synchronization within approximately ±10 ns.

When using the EPI bus for synchronization across multiple modules, module-to-module synchronization is achieved within approximately ±100 ns.

Three-Axis

Each Spectrum channel offers selectable input ranges: ±200 mV, ±1 V, ±5 V, and ±10 V. The Spectrum 103 and 109, providing three or nine input channels respectively, make them ideal for three-axis accelerometers and strain gages.

Connection via EPI and CPI

Spectrum modules connect to data loggers via EPI or CPI networks using standard Ethernet cables (CAT5e, CAT6, or higher). EPI networks are ideal for Spectrum applications. For smaller channel count setups, a single Spectrum is connected to a traditional CPI-enabled data logger, such as the CR6 or CR1000X.

Basic Programming

Short Cut software streamlines basic program creation for reading multiple Spectrum modules. It generates a wiring diagram and a CRBasic program for your data logger. For

advanced processing or data management, you can further customize the CRBasic program.

Sample Rate

Program an anti-aliasing filter for sample rates up to 10 kHz and bandwidths up to 5 kHz.

Specifications

Operating Temperature Range	-40° to +70°C
Storage Temperature	-55° to +85°C
IP Rating	IP20
Humidity	0 to 99% (non-condensing)
Number of Channels	❱ Three differential (Spectrum 103) ❱ Nine differential (Spectrum 109)
Input Range	±10000 mV, ±5000 mV, ±1000 mV, and ±200 mV
Common-Mode Input Voltage	±15 Vdc
Absolute Maximum Input Voltage	±16 Vdc
A/D Converters	32-bit SAR ADCs
Measurement Accuracy @ 20°C	±(0.04% of reading ±130 µV) Note: The accuracy specification does not include sensor error or measurement noise.
Input Resistance	80 MΩ
Input Time Constant	230 ns
Input Offset Current	5 nA typical, maximum @ 50°C
Processor	Digital signal processor 32-bit with floating point units
Processor Speed	400 MHz
Memory	128 MB SRAM
Power Requirements	10 to 30 Vdc voltage
Dimensions	21.6 x 13.7 x 7.6 cm (8.5 x 5.4 x 3.0 in.); additional clearance required for cables and wires
Weight	1.6 kg (3.53 lb)

For comprehensive details, visit: www.campbellsci.com.au/spectrum

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