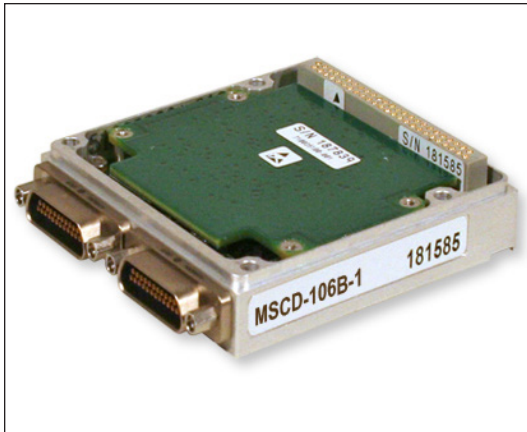


6-Channel Signal Conditioning Module - Auto-Balancing, Voltage Excitation, Digital Filtering, & Simultaneous Sampling



Applications

- Flight test instrumentation
- Factory automation and process control
- Strain gages, load cells, pressure transducers
- Research measurements and experiments

Description

The MSCD-106B-1 is a 6-channel plug-in signal conditioning module for use in TTC's miniature stackable data acquisition products. The module is intended for applications that require high channel density and significant signal conditioning flexibility and/or simultaneous sampling capability. The module provides constant voltage excitation, programmable presample filtering, calibration, auto-balance, and user programmable gain and offset. Multiple FIR or IIR digital presample filtering choices may be selected on a per channel basis.

Features

- 6 Channels per module
- Compatible with TTC's miniature, stackable data acquisition products
- Programmable Auto-Balance function (per-channel basis)
- Simultaneous Sampling capability
- Divided Simultaneous Sampling Capability (Thinning)
- Programmable digital FIR or IIR presample filtering
- Multiple Finite-Impulse-Response (FIR) filters, 120, 90, 60, and 40 taps
- 120 tap FIR filter response comparable to 12-pole Butterworth filter
 - Multiple Infinite-Impulse-Response (IIR) filters, 6 and 8-Pole Butterworth, 6-Pole Bessel and 6-Pole Chebyshev responses available
 - Automatic adaptive filter -3dB frequency based on format sample rate or direct selection of filter -3dB frequency (6-pole Butterworth filters only)
 - 5-pole analog anti-aliasing filter eliminates possibility of signal aliasing
- Programmable voltage excitation, +5 or +10 volts, $\pm 0.3\%$ accuracy
- Programmable gain and offset, >10,000 gain settings from 1 to 2000
- Auto-zero offset correction on power up and ZCAL
- Zero and voltage substitution calibration
- 1 G Ω input impedance (power on); 2 M Ω (power off)
- $\pm 0.25\%$ system accuracy (auto-zero or auto-balance enabled)
- $\pm 0.5\%$ system accuracy (auto-zero and auto-balance disabled)
- $\pm 35\text{VDC}$ overvoltage protection
- Programmed with Included Windows Based Software

Description (continued)

Digital sampling of each channel is phase locked to the channel format sample rate to maintain time correlation between the input signal and the PCM output. The Each channel can be set for 3, 4, 5, 6, 8 or 10 times oversampling (the filter -3dB point will be automatically set to the format sampling rate divided by the oversampling value). Alternatively, a filter with a user specified -3dB frequency that falls within limits calculated by TTCware may be selected. The conditioned analog signal is digitized at up to 16-bit resolution for transmission in the system PCM output format.

The auto-balance function on the MSCD-106B-1 module allows the user to remove DC offsets resulting from bridge transducer imbalances, parasitic offset voltages and other offset sources that may be present at the amplifier inputs. A precision current is injected into the leg of the transducer that is connected to the channel's positive (non-inverting) input pin that is capable of balancing the channel to zero volts, $\pm 0.2\%$ of full scale range. An imbalance of up to $\pm 20\text{ mV}$ on a 350Ω bridge powered from 5 VDC or $\pm 40\text{ mV}$ on a 350Ω bridge powered from +10 VDC, may be corrected. The auto-balance correction persists through power cycling.

Revision 01/10/2017

MSCD-106B-1 Datasheet

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Specifications subject to change without notice.

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CAIS
Compatible



Management
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