



SCM5B48

Accelerometer Input Module

Description

The SCM5B48 provides excitation to piezoelectric sensors with built-in microelectronic amplifiers, commonly known as ICP®* or IEPE* or LIVM* sensors. The module provides a constant current excitation to the sensor, then isolates, filters, and amplifies the sensor output, yielding a high-level analog voltage output (Figure 1). The excitation current, signal gain, and filter high-pass and low-pass cutoff frequencies are field-configurable through a set of slide switches.

Six poles of signal filtering in the SCM5B48 module result in greater than 100dB of normal-mode rejection for signal frequencies above the cutoff frequency. One pole of filtering is on the field side of the isolation barrier for anti-aliasing purposes and the remaining five-pole programmable Bessel filter is located on the system side. High-pass filtering is achieved through a second order passive filter, located on the field side. If desired, the output switch can be turned on continuously by simply connecting pin 22, the Read-Enable pin, to I/O Common, pin 19.

The SCM5B48 offers the option of setting the constant current source for sensor excitation to common values of 4mA or 9mA with a compliance voltage of 24VDC. Programmable gains of 1, 10 and 100 are selectable and the module offers a ±10V output. The required supply level is +5VDC, ±5%.

To ensure protection of expensive data acquisition equipment, the SCM5B48 module signal inputs and sensor excitation outputs are protected against accidental connection of voltages up to 240Vrms.

*ICP is a registered trademark of PCB Group Inc.

*IEPE is Integrated Electronic Piezo-Electric

*LIVM is Low Impedance Voltage Mode

► Features

- Interfaces to ICP®* or IEPE* or LIVM* Sensors
- ±5V or ±10V Output Range
- 1500Vrms Transformer Isolation
- ANSI/IEEE C37.90.1 Transient Protection
- Input Protection to 240Vrms Continuous
- 1, 10, and 100 Programmable Gain
- 2.5, 5, 10, and 20kHz Programmable LP Filter
- 0.2 and 10Hz Programmable HP Filter
- 4mA or 9mA Programmable Current Excitation
- 100dB CMR
- ±0.2% Accuracy
- ±0.01% Linearity
- Low Drift with Ambient Temperature
- -40°C to +85°C Operating Temperature Range
- CSA C/US Certified
- CE Compliant
- ATEX Compliance Pending
- Mix and Match SCM5B Types on Backpanel

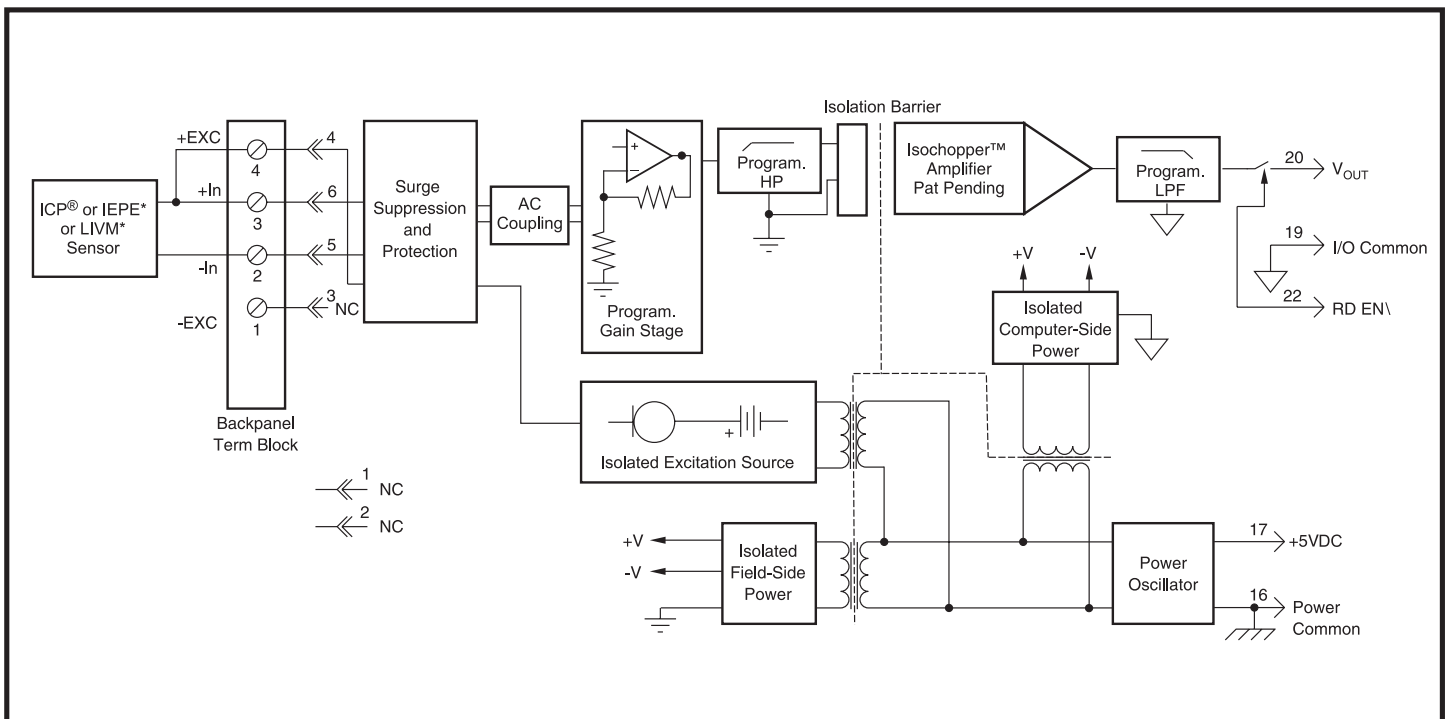


Figure 1: SCM5B48 Block Diagram

Specifications Typical* at T_A=+25°C and +5VDC power

| Module | SCM5B48 |
|--|---|
| Input Type Range ⁽¹⁾ Protection Continuous Transient | Accelerometer ±10V 240Vrms max ANSI/IEEE C37.90.1 |
| Excitation Constant Current ⁽²⁾ Compliance Voltage Protection Continuous Transient | 4mA or 9mA, ±10% 24V ±10% 240Vrms max ANSI/IEEE C37.90.1 |
| Output Range Resistance Protection | See Ordering Information 50Ω Continuous Short to Ground |
| Gain Programmable ⁽²⁾ | 1, 10, 100 |
| CMR (50/60Hz) Accuracy ⁽³⁾ Linearity Stability Offset Gain Output Noise, Gain=1, BW=20kHz Low Pass Filter Type Programmable ⁽²⁾ High Pass Filter Programmable ⁽²⁾ CMV (Input to Output) Continuous Transient NMR | 100dB ±0.2% Span ±0.01% Span ±25ppm/°C ±100ppm/°C 200μVrms Bessel 2.5kHz, 5kHz, 10kHz, 20kHz DC, 0.2Hz, 10Hz 1500Vrms max ANSI/IEEE C37.90.1 100db per Decade above cutoff frequency |
| Supply Voltage Current | +5VDC ±5% 110mA typical (9mA excitation) 70mA typical (4mA excitation) |
| Mechanical Dimensions (h)(w)(d) | 2.28" x 2.26" x 0.6" (58mm x 57mm x 15mm) |
| Environmental Operating Temperature Range Storage Temperature Range | -40°C to +85°C -40°C to +85°C |

NOTES:

* Contact factory or your local Dataforth sales office for maximum values.

(1) AC peak for AC coupling. For DC coupling input range (AC + DC): 0 to +10V.

(2) Programmable using slide switches on the bottom of the module.

(3) Includes linearity, repeatability and hysteresis.

Ordering Information

| Model | Input Range ⁽¹⁾ | Output Range | Bandwidth |
|------------|----------------------------|--------------|--------------------------------|
| SCM5B48-01 | -10V to +10V | -10V to +10V | 2.5kHz to 20kHz ⁽²⁾ |
| SCM5B48-02 | -10V to +10V | -5V to +5V | 2.5kHz to 20kHz ⁽²⁾ |

SCM5B

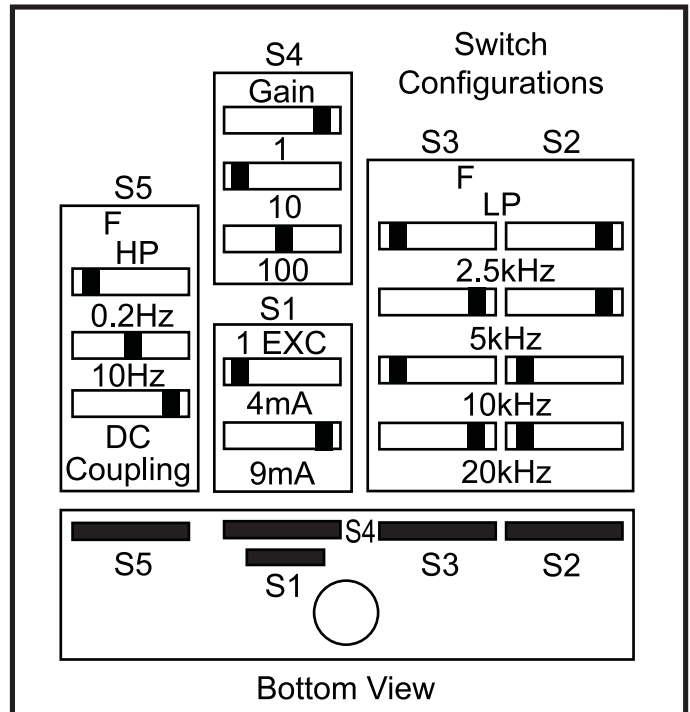


Figure 2: SCM5B48 Side Label