



SCM5B32

Analog Current Input Modules

Description

Each SCM5B32 current input module provides a single channel of analog input which is filtered, isolated, amplified, and converted to a high-level analog voltage output (Figure 1). This voltage output is logic switch controlled, which allows these modules to share a common analog bus without the requirement of external multiplexers.

The SCM5B modules are designed with a completely isolated computer side circuit which can be floated to $\pm 50V$ from Power Common, pin 16. This complete isolation means that no connection is required between I/O Common and Power Common for proper operation of the output switch. 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.

A precision 20Ω current conversion resistor is supplied with the SCM5B32 module. Sockets are provided on the SCMPB01/02/03/04/05/06/07 backpanels to allow installation of this resistor. Extra resistors are available under part number SCMXR1.

Signal filtering is accomplished with a six-pole filter which provides 95dB of normal-mode rejection at 60Hz and 90dB at 50Hz. Two poles of this filter are on the field side of the isolation barrier, and the other four are on the computer side.

After the initial field-side filtering, the input signal is chopped by a proprietary chopper circuit. Isolation is provided by transformer coupling, again using a proprietary technique to suppress transmission of common mode spikes or surges. The module is powered from +5VDC, $\pm 5\%$.

A special input circuit on the SCM5B32 modules provides protection against accidental connection of power-line voltages up to 240VAC.

► Features

- Accepts Milliamp Level Signals
- High-Level Voltage Outputs
- 1500Vrms Transformer Isolation
- ANSI/IEEE C37.90.1 Transient Protection
- Input Protected to 240VAC Continuous
- 160dB CMR
- 95dB NMR at 60Hz, 90dB at 50Hz
- $\pm 0.03\%$ Accuracy
- $\pm 0.005\%$ Linearity
- CSA C/US Certified
- CE and ATEX Compliant
- Mix and Match SCM5B Types on Backpanel

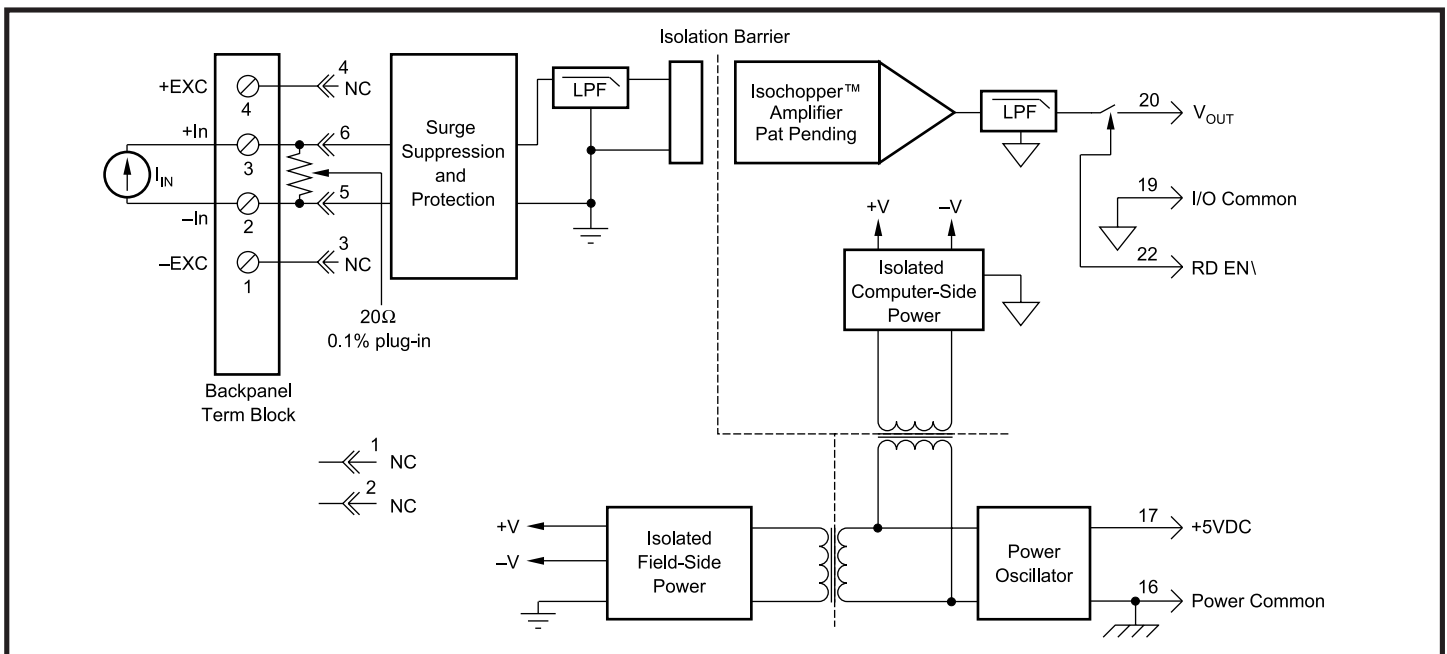


Figure 1: SCM5B32 Block Diagram

Specifications Typical* at $T_A=+25^{\circ}\text{C}$ and +5VDC power

| Module | SCM5B32 |
|---|--|
| Input Range | 0mA to 20mA or 4mA to 20mA |
| Input Resistor Value | 20.00 Ω |
| Accuracy | $\pm 0.1\%$ |
| Stability | $\pm 10\text{ppm}/^{\circ}\text{C}$ |
| Input Protection | |
| Continuous | 240Vrms max |
| Transient | ANSI/IEEE C37.90.1 |
| CMV, Input to Output | |
| Continuous | 1500Vrms max |
| Transient | ANSI/IEEE C37.90.1 |
| CMR (50Hz or 60Hz) | 160dB |
| NMR | 95dB at 60Hz, 90dB at 50Hz |
| Accuracy ⁽¹⁾ | $\pm 0.03\%$ Span |
| Linearity | $\pm 0.005\%$ Span |
| Stability | |
| Input Offset | $\pm 50\text{nA}/^{\circ}\text{C}$ |
| Output Offset | $\pm 20\mu\text{V}/^{\circ}\text{C}$ |
| Gain | $\pm 25\text{ppm}/^{\circ}\text{C}$ |
| Noise | |
| Input, 0.1Hz to 10Hz | 10nArms |
| Output, 100kHz | 200 μV rms |
| Bandwidth, -3dB | 4Hz |
| Response Time, 90% Span | 0.2s |
| Output Range | See Ordering Information |
| Output Resistance | 50 Ω |
| Output Protection | Continuous Short to Ground |
| Output Selection Time (to $\pm 1\text{mV}$ of V_{OUT}) | 6 μs at $C_{load} = 0$ to 2000pF |
| Output Current Limit | +8mA |
| Output Enable Control | |
| Max Logic "0" | +0.8V |
| Min Logic "1" | +2.4V |
| Max Logic "1" | +36V |
| Input Current "0,1" | 0.5 μA |
| Power Supply Voltage | +5VDC $\pm 5\%$ |
| Power Supply Current | 30mA |
| Power Supply Sensitivity | $\pm 20\mu\text{V}/\%$ RTI ⁽²⁾ |
| Mechanical Dimensions (h)(w)(d) | 2.28" x 2.26" x 0.60" (58mm x 57mm x 15mm) |
| Environmental | |
| Operating Temperature Range | -40 $^{\circ}\text{C}$ to +85 $^{\circ}\text{C}$ |
| Storage Temperature Range | -40 $^{\circ}\text{C}$ to +85 $^{\circ}\text{C}$ |
| Relative Humidity | 0 to 95% Noncondensing |
| Emissions EN61000-6-4 | ISM, Group 1 |
| Radiated, Conducted | Class A |
| Immunity EN61000-6-2 | ISM, Group 1 |
| RF | Performance A $\pm 0.5\%$ Span Error |
| ESD, EFT | Performance B |

NOTES:

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

(1) Includes linearity, hysteresis and repeatability. Does not include SCMXR1 accuracy.

(2) RTI = Referenced to input.

Ordering Information

| Model | Input Range | Output Range [†] |
|------------|-------------|---------------------------|
| SCM5B32-01 | 4mA to 20mA | 3, 4 |
| SCM5B32-02 | 0mA to 20mA | 3, 4 |

Refer to SCM5B392 specifications, p. 27, for additional current input models.

[†]Output Ranges Available

| Output Range | Part No. Suffix | Example |
|---------------|-----------------|-------------|
| 3. 0V to +5V | NONE | SCM5B32-01 |
| 4. 0V to +10V | D | SCM5B32-01D |