

# 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  $20\Omega$  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 C37.90.1-1989 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 Certified, FM Approved, CE Compliant
- Mix and Match SCM5B Types on Backpanel

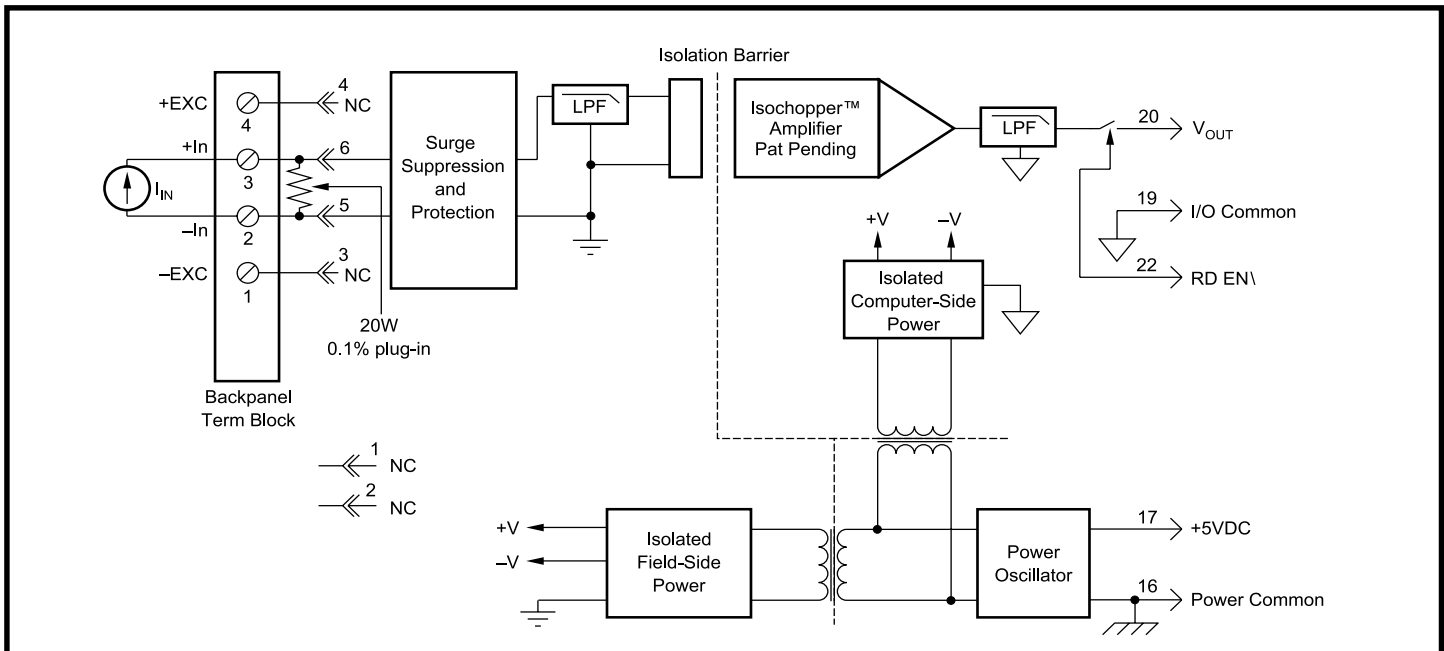


Figure 1: SCM5B32 Block Diagram

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

Module	SCM5B32
Input Range	0mA to 20mA or 4mA to 20mA
Input Resistor	
Value	20.00 $\Omega$
Accuracy	$\pm 0.1\%$
Stability	$\pm 10\text{ppm}/^\circ\text{C}$
Input Protection	
Continuous	240Vrms max
Transient	ANSI/IEEE C37.90.1-1989
CMV, Input to Output	
Continuous	1500Vrms max
Transient	ANSI/IEEE C37.90.1-1989
CMR (50Hz or 60Hz)	160dB
NMR	95dB at 60Hz, 90dB at 50Hz
Accuracy <sup>(1)</sup>	$\pm 0.03\%$ Span
Nonlinearity	$\pm 0.005\%$ 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 $\mu\text{V}$ rms
Bandwidth, -3dB	4Hz
Response Time, 90% Span	0.2s
Output Range	0 to +5V
Output Resistance	50 $\Omega$
Output Protection	Continuous Short to Ground
Output Selection Time (to $\pm 1\text{mV}$ of $V_{\text{OUT}}$ )	6 $\mu\text{s}$ at $C_{\text{load}} = 0$ 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 $\mu\text{A}$
Power Supply Voltage	+5VDC $\pm 5\%$
Power Supply Current	30mA
Power Supply Sensitivity	$\pm 20\mu\text{V}/\%$ RTI <sup>(2)</sup>
Mechanical Dimensions (h)(w)(d)	2.28" x 2.26" x 0.60" (58mm x 57mm x 15mm)
Environmental	
Operating Temp. Range	-40 $^\circ\text{C}$ to +85 $^\circ\text{C}$
Storage Temp. Range	-40 $^\circ\text{C}$ to +85 $^\circ\text{C}$
Relative Humidity	0 to 95% Noncondensing
Emissions	EN50081-1, ISM Group 1, Class A (Radiated, Conducted)
Immunity	EN50082-1, ISM Group 1, Class A (ESD, RF, EFT)

## NOTES:

(1) Includes nonlinearity, hysteresis and repeatability.

(2) RTI = Referenced to input.

**Ordering Information**

Model	Input Range	Output Range	Bandwidth
SCM5B32-01	4mA to 20mA	0V to +5V	4Hz
SCM5B32-02	0mA to 20mA	0V to +5V	4Hz

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