

SCM5B32

Analog Current Input Modules

FEATURES

- ACCEPTS MILLIAMPERE 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
- $\pm 0.05\%$ ACCURACY
- $\pm 0.02\%$ LINEARITY
- CSA CERTIFIED, FM APPROVED, CE COMPLIANT
- MIX AND MATCH SCM5B TYPES ON BACKPANELS

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 backpanels to allow installation of this resistor. Extra resistors are available under part number SCMR1.

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.

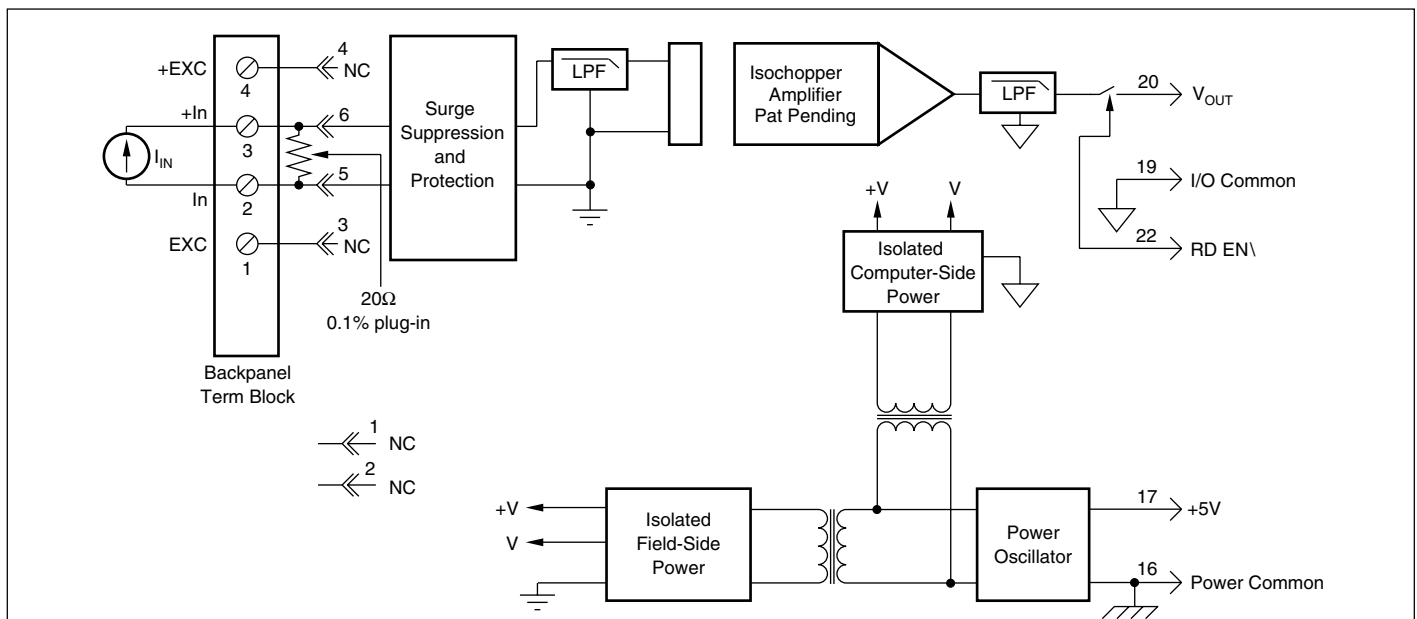


FIGURE 1. SCM5B32 Block Diagram.

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

Module	SCM5B32
Input Range Input Resistor Value Accuracy Stability Input Protection Continuous Transient	0mA to 20mA or 4mA to 20mA 20.00 Ω $\pm 0.1\%$ $\pm 10\text{ppm}/^\circ\text{C}$ 240Vrms max ANSI/IEEE C37.90.1-1989
CMV, Input to Output Continuous Transient CMR (50Hz or 60Hz) NMR	1500Vrms max ANSI/IEEE C37.90.1-1989 160dB 95dB at 60Hz, 90dB at 50Hz
Accuracy ⁽¹⁾ Nonlinearity Stability Input Offset Output Offset Gain Noise Input, 0.1Hz to 10Hz Output, 100kHz Bandwidth, -3dB Response Time, 90% Span	$\pm 0.05\%$ span $\pm 0.05\%$ (I_z ⁽²⁾) $\pm 0.02\%$ Span $\pm 50\text{nA}/^\circ\text{C}$ $\pm 20\mu\text{V}/^\circ\text{C}$ $\pm 25\text{ppm}/^\circ\text{C}$ 10nArms 200 μVrms 4Hz 0.2s
Output Range Output Resistance Output Protection Output Selection Time (to $\pm 1\text{mV}$ of V_{OUT}) Output Current Limit	0 to +5V 50 Ω Continuous Short to Gnd $6\mu\text{s}$ at $C_{load} = 0$ to 2000pF +8mA
Output Enable Control Max Logic "0" Min Logic "1" Max Logic "1" Input Current, "0,1"	+0.8V +2.4V +36V 0.5 μA
Power Supply Voltage Power Supply Current Power Supply Sensitivity	+5VDC $\pm 5\%$ 30mA $\pm 20\mu\text{V}/\%$ RTI ⁽³⁾
Mechanical Dimensions	2.28" x 2.26" x 0.60" (58mm x 57mm x 15mm)
Environmental Operating Temp. Range Storage Temp. Range Relative Humidity Emissions Immunity	-40 $^\circ\text{C}$ to +85 $^\circ\text{C}$ -40 $^\circ\text{C}$ to +85 $^\circ\text{C}$ 0 to 95% Noncondensing EN50081-1, ISM Group 1, Class A (Radiated, Conducted) EN50082-1, ISM Group 1, Class A (ESD, RF, EFT)

NOTE: (1) Includes nonlinearity, hysteresis and repeatability. (2) I_z is the input current that results in 0V output. (3) 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. 65, for additional current input models.