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 ±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, ±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
- ±0.03% Accuracy
- ±0.005% Linearity
- CSA C/US Certified
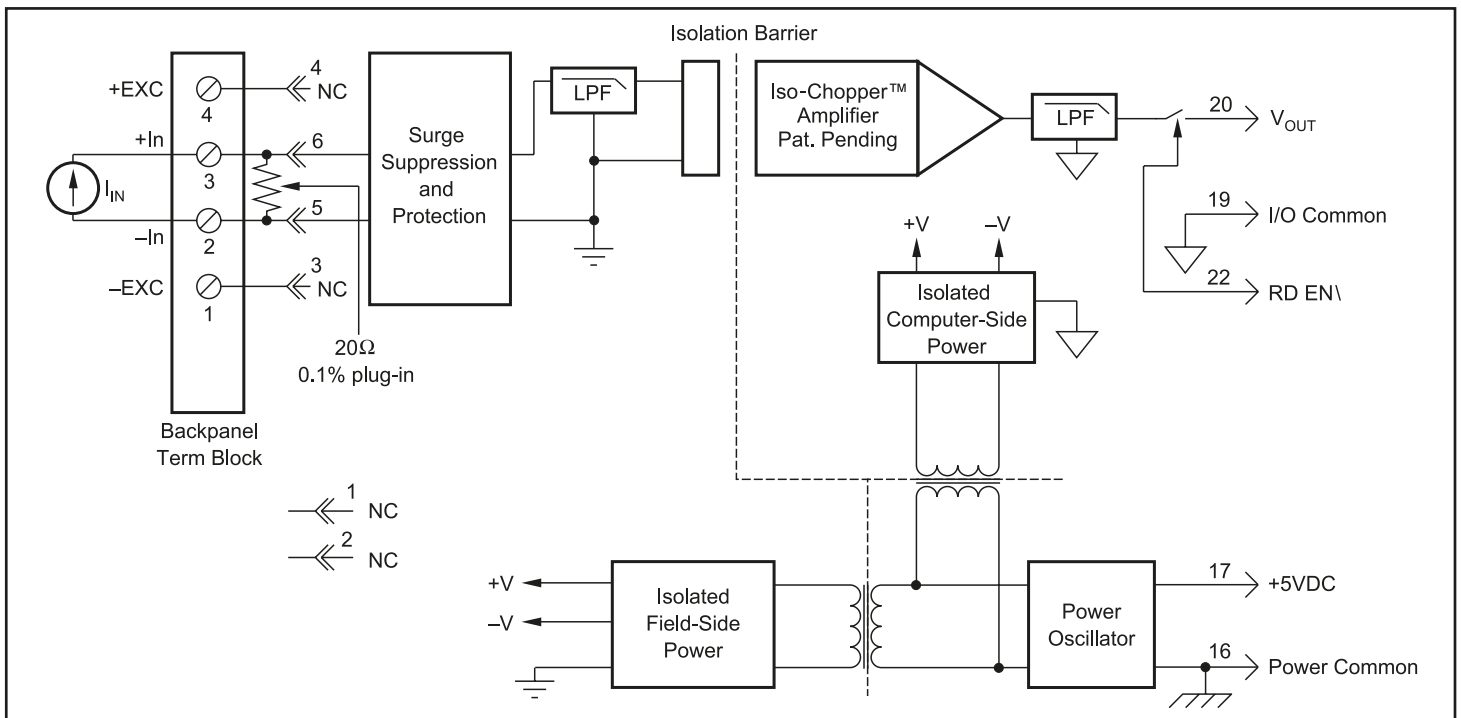- CE and ATEX Compliant
- Mix and Match SCM5B Types on Backpanel

Figure 1: SCM5B32 Block Diagram

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

Module	SCM5B32
Input Range	0mA to 20mA or 4mA to 20mA
Input Resistor	
Value	20.00Ω
Accuracy	±0.1%
Stability	±10ppm/°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]	±0.03% Span
Linearity	±0.005% Span
Stability	
Input Offset	±50nA/°C
Output Offset	±20µV/°C
Gain	±25ppm/°C
Noise	
Input, 0.1Hz to 10Hz	10nArms
Output, 100kHz	200µVrms
Bandwidth, –3dB	4Hz
Response Time, 90% Span	0.2s
Output Range	See Ordering Information
Output Resistance	50Ω
Output Protection	Continuous Short to Ground
Output Selection Time	6µs at C_{load} = 0 to 2000pF
(to ±1mV of V_{OUT})	
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"	0.5µA
Power Supply Voltage	+5VDC ±5%
Power Supply Current	30mA
Power Supply Sensitivity	±1µA/% RTI[2]
Mechanical Dimensions	2.28" x 2.26" x 0.60"
(h)(w)(d)	(58mm x 57mm x 15mm)
Environmental	
Operating Temperature Range	–40°C to +85°C
Storage Temperature Range	–40°C to +85°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 ±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