SCM5B40/41









Description

Each SCM5B40 and SCM5B41 wide bandwidth voltage input module provides a single channel of analog input which is amplified, isolated, and converted to a high level analog voltage output (Figure 1). This voltage output is logic-switch controlled, allowing these modules to share a common analog bus without the requirement of external multiplexers.

Analog Voltage Input Modules, Wide Bandwidth

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.

The input signal is processed through a pre-amplifier on the field side of the isolation barrier. This pre-amplifier has a gain-bandwidth product of 5MHz and is bandwidth limited to 10kHz. After amplification, 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 SCM5B40 and SCM5B41 modules provides protection against accidental connection of power-line voltages up to 240VAC.

Features

- · Accepts Millivolt and Voltage Level Signals
- · High Level Voltage Outputs
- 1500Vrms Transformer Isolation
- ANSI/IEEE C37.90.1 Transient Protection
- Input Protected to 240VAC Continuous
- 100dB CMR
- · 10kHz Signal Bandwidth
- ±0.03% Accuracy
- ±0.01% Linearity
- ±1µV/°C Drift
- · CSA Certified, FM Approved, CE and ATEX Compliant
- Mix and Match SCM5B Types on Backpanel

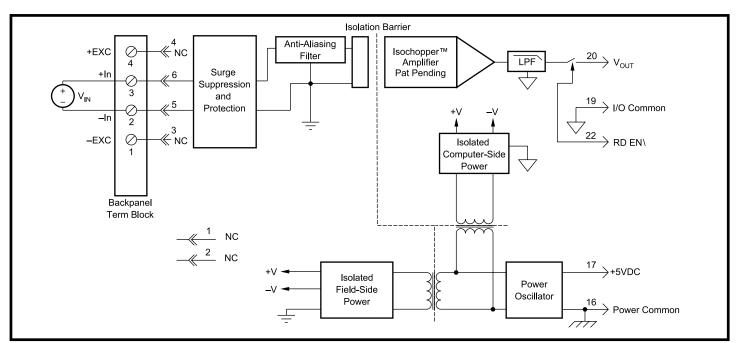


Figure 1: SCM5B40/41 Block Diagram



$\textbf{Specifications} \ \ \textit{Typical at T}_{A} \texttt{=+25}°C \ \textit{and +5V power}$

Module	SCM5B40	SCM5B41
Input Range Input Bias Current Input Resistance	±10mV to ±100mV ±0.5nA	±1V to ±40V ±0.05nA
Normal Power Off Overload Input Protection	200MΩ 40kΩ 40kΩ	650kΩ (minimum) $650kΩ$ (minimum) $650kΩ$ (minimum)
Continuous Transient	240Vrms max ANSI/IEEE C37.90.1	*
CMV, Input to Output Continuous Transient CMR (50Hz or 60Hz) NMR (-3dB at 10kHz)	1500Vrms max ANSI/IEEE C37.90.1 100dB 120dB per Decade above 10kHz	* * *
Accuracy ⁽¹⁾ Nonlinearity Stability	±0.03% Span ±0.01% Span	*
Input Offset Output Offset	±1µV/°C ±40µV/°C	±20µV/°C
Gain Noise Input, 0.1 to 10Hz	±25ppm/°C 0.4µVrms	±50ppm/°C 2µVrms
Output, 100kHz Bandwidth, –3dB	10mVp-p 10kHz	* *
Rise Time, 10 to 90% Span Settling Time, to 0.1%	35μs 250μs	*
Output Range Output Resistance Output Protection Output Selection Time (to ±1mV of Vour)	See Ordering Information 50Ω Continuous Short to Ground $6\mu s$ at $C_{load} = 0$ to 2000pF	* * *
Output Current Limit Output Enable Control	±8mA	
Max Logic "0" Min Logic "1" Max Logic "1" Input Current "0,1"	+0.8V +2.4V +36V 0.5µA	* *
Power Supply Voltage Power Supply Current Power Supply Sensitivity	+5VDC ±5% 30mA ±2µV/% RTI ⁽²⁾	* * ±200µV/% RTI ⁽²⁾
Mechanical Dimensions (h)(w)(d)	2.28" x 2.26" x 0.60" (58mm x 57mm x 15mm)	*
Environmental Operating Temp. Range ATEX Group II, Cat. 3 Storage Temp. Range	-40°C to +85°C -20°C to +40°C -40°C to +85°C	* * *
Relative Humidity Emissions EN61000-6-4	0 to 95% Noncondensing ISM, Group 1	*
Radiated, Conducted Immunity EN61000-6-2	Class A ISM, Group 1	*
R F ESD,EFT,Surge,Voltage Dips NOTES:	Performance A ±0.5% Span Error Performance B	*

Ordering Information

Model	Input Range	Output Range [†]
SCM5B40-01	-10mV to +10mV	1, 2
SCM5B40-02	-50mV to +50mV	1, 2
SCM5B40-03	-100mV to +100mV	1, 2
SCM5B40-04	-10mV to +10mV	3, 4
SCM5B40-05	-50mV to +50mV	3, 4
SCM5B40-06	-100mV to +100mV	3, 4
SCM5B40-07 ⁽³⁾	-1V to +1V	1, 2
SCM5B41-01	-1V to +1V	1, 2
SCM5B41-02	-5V to +5V	1, 2
SCM5B41-03	-10V to +10V	1, 2
SCM5B41-04	-1V to +1V	3, 4
SCM5B41-05	-5V to +5V	3, 4
SCM5B41-06	-10V to +10V	3, 4
SCM5B41-07	-20V to +20V	1, 2
SCM5B41-08	-20V to +20V	3, 4
SCM5B41-09	-40V to +40V	1, 2
SCM5B41-10	-40V to +40V	3, 4

†Output Ranges Available

Output Range	Part No. Suffix	Example
15V to +5V	NONE	SCM5B40-01
210V to +10V	D	SCM5B40-01D
3. 0V to +5V	NONE	SCM5B40-04
4. 0V to +10V	D	SCM5B40-04D

^{*} Same specification as SCM5B40.

⁽¹⁾ Includes nonlinearity, hysteresis and repeatability. (2) RTI = Referenced to input. (3) Same as SCM5B41-01 with $50M\Omega$ input resistance.