

SCM5B45









Frequency Input Modules

Description

Each SCM5B45 frequency input module provides a single channel of frequency input which is isolated and converted to a high level analog voltage output. This voltage output is logic switch controlled, which allows these modules to share a common analog bus without the requirement of external multiplexers (Figure 1).

The frequency input signal can be a TTL level signal or a zero-crossing signal. Terminal 3 on the field-side terminal block is the "common" or ground connection for input signals. A TTL signal is connected from terminal 2 to terminal 3, while a zero-crossing signal is connected from terminal 4 to terminal 3. Input circuitry for each of the signal types has hysteresis built in. An input signal must cross entirely through the hysteresis region in order to trigger the threshold comparator.

A 5.1V excitation is available for use with magnetic pick-up or contact-closure type sensors. The excitation is available on pin 1 and the excitation common is pin 3.

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 special circuit in the input stage of the module provides protection against accidental connection of power-line voltages up to 240VAC.

Features

- Accepts Frequency Inputs of 0 to 100kHz
- · Provides High Level Voltage Outputs
- · TTL Level Inputs
- 1500 Vrms Transformer Isolation
- ANSI/IEEE C37.90.1 Transient Protection
- · Input Protected to 240VAC Continuous
- ±0.05% Accuracy
- · CSA Certified, FM Approved, CE and ATEX Compliant
- Mix and Match SCM5B Types on Backpanel

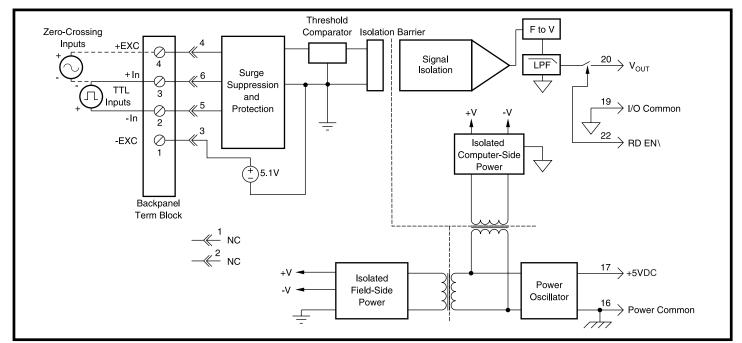


Figure 1: SCM5B45 Block Diagram



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

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Module	SCM5B45			
Input Range Input Threshold Minimum Input Maximum Input Minimum Pulse Width TTL Input Low TTL Input High Input Hysteresis Zero Crossing TTL Input Resistance Normal Power Off Overload Input Protection Continuous Transient	0 Hz to 100 kHz Zero Crossing 60 mVp-p 350 Vp-p 4 μs 0.8 V max 2.4 V min ± 20 mV (± 400 mV on -2 x models) 1.5 V 100 k Ω 100 k Ω 100 k Ω 240 Vrms max ANSI/IEEE C37.90.1			
Excitation	+5.1V at 8mA max			
CMV, Input to Output Continuous Transient CMR (50 or 60Hz)	1500Vrms max ANSI/IEEE C37.90.1 120dB			
Accuracy ⁽¹⁾ Nonlinearity Stability	±0.05% Span ±0.02% Span			
Offset Gain	±8ppm/°C ±40ppm/°C			
Noise Output Ripple Response Time (0 to 90%)	<10mVp-p at Input >2% span			
SCM5B45-01, -02 SCM5B45-03 SCM5B45-04, -05 SCM5B45-06, -07, -08	300ms 170ms 90ms 20ms			
Output Range Output Resistance Output Protection Output Selection Time (to ±1mV of V _{OUT}) Output Current Limit	See Ordering Information 50Ω Continuous Short to Ground $6\mu s$ 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 0.5µA			
Power Supply Voltage Power Supply Current Power Supply Sensitivity	+5VDC ±5% 110mA ±150μV/% RTO ⁽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 Relative Humidity Emissions EN61000-6-4 Radiated, Conducted Immunity EN61000-6-2 RF ESD,EFT,Surge,Voltage Dips NOTES:	-40°C to +85°C -20°C to +40°C -40°C to +85°C 0 to 95% Noncondensing ISM, Group 1 Class A ISM, Group 1 Performance A ±0.5% Span Error Performance B			

Ordering Information

Model	Input Range	Output Range [†]	Zero Crossing Hysterisis
SCM5B45-01	0Hz to 500Hz	3, 4	±20mV
SCM5B45-02	0Hz to 1kHz	3, 4	±20mV
SCM5B45-03	0Hz to 3kHz	3, 4	±20mV
SCM5B45-04	0Hz to 5kHz	3, 4	±20mV
SCM5B45-05	0Hz to 10kHz	3, 4	±20mV
SCM5B45-06	0Hz to 25kHz	3, 4	±20mV
SCM5B45-07	0Hz to 50kHz	3, 4	±20mV
SCM5B45-08	0Hz to 100kHz	3, 4	±20mV
SCM5B45-21	0Hz to 500Hz	3, 4	±400mV
SCM5B45-22	0Hz to 1kHz	3, 4	±400mV
SCM5B45-23	0Hz to 3kHz	3, 4	±400mV
SCM5B45-24	0Hz to 5kHz	3, 4	±400mV
SCM5B45-25	0Hz to 10kHz	3, 4	±400mV
SCM5B45-26	0Hz to 25kHz	3, 4	±400mV
SCM5B45-27	0Hz to 50kHz	3, 4	±400mV
SCM5B45-28	0Hz to 100kHz	3, 4	±400mV
SCM5B45-27	0Hz to 50kHz	3, 4 3, 4	±400mV ±400mV

†Output Ranges Available

Output Range		Part No. Suffix	Example
3.	0V to +5V	NONE	SCM5B45-01
4.	0V to +10V	D	SCM5B45-01D

⁽¹⁾ Includes nonlinearity, hysteresis and repeatability. (2) RTO = Referenced to Output.