

SCIM5B45

Frequency Input Modules

Description

SCIM5B45 frequency input module provides a single channel of frequency input which is isolated and converted to a standard level analog voltage output. This signal output is controlled by a logic-switch which enables these modules to share a common analog bus. No external multiplexers are required.

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.

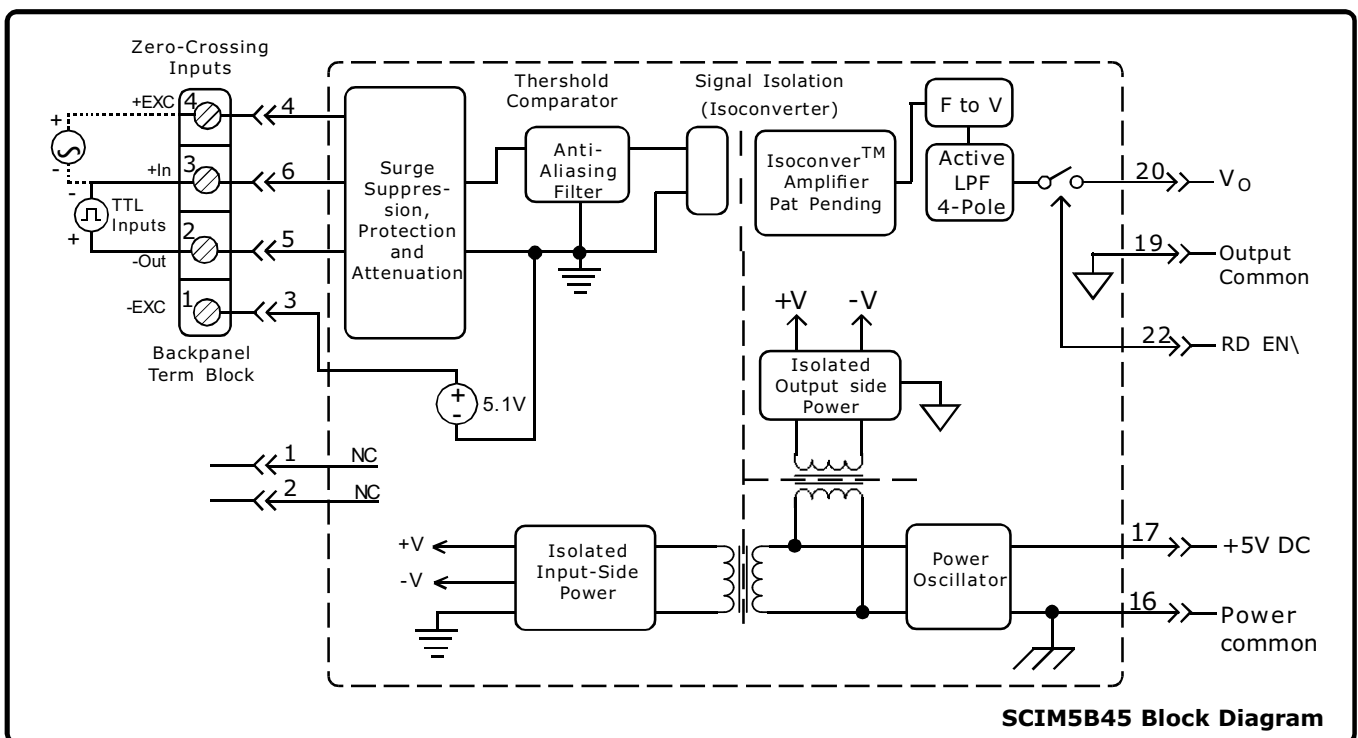
A 5.1V excitation is provided for use with magnetic pick-up or contact closure type sensors. The excitation is available on pin 1 and the excitation return common is pin 3.

The SCIM5B modules are designed with a completely isolated output side circuitry which can be floated to more than $\pm 50V$ from Power Common, pin 16. No connection is required between I/O Common and Power Common for proper operation of the output switch. The output switch can be turned on continuously by simply shorting pins 22, 19.

A special input protection circuit on the SCIM5B30 and SCIM5B31 modules protects against accidental high-line voltages up to 250VAC.

Features

- Accepts Frequency Inputs of 0 to 100KHz.
- Standard Output of either 0 to 10V/±10V, 0 to 5V/±5V, 1 to 5V
- TTL level Inputs
- 1.5KV Isolation
- ANSI/IEEE C37.90.1 Transient Protection
- 250V AC Continuous Protected on Input
- 120dB CMR
- ±0.05% Accuracy
- CSA, FM, CE and ATEX Compliant
- Mixes and Matches with all SCIM5B Types on Backpanel



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

Module	SCIM5B45
Input	
Range	0Hz to 100KHz
Threshold	Zero Crossing
Minimum Input	60mV p-p
Maximum Input	350V p-p
Minimum Pulse width	4 μs
TTL Input low	0.8V max
TTL Input high	2.4V min
Hysteresis	
Zero crossing	$\pm 20\text{mV}$ ($\pm 400\text{mV}$ on -2x modules)
TTL	1.5V
Resistance	
Normal	100K Ω
Power off	100K Ω
Overload	100K Ω
Protection	
continuous	250V rms max
Transient	ANSI/IEEE C37.90.1
Excitation	+5.1V at 8mA max
CMV, Input to Output	
Continuous	1500V rms max
Transient	ANSI/IEEE C37.90.1
CMR (50 or 60Hz)	120dB
Accuracy (1)	$\pm 0.05\%$ Span
Nonlinearity	$\pm 0.02\%$ Span
Stability	
Offset	$\pm 8\text{ppm}/^{\circ}\text{C}$
Gain	$\pm 40\text{ppm}/^{\circ}\text{C}$
Noise	
Output, Ripple	<10mV pk-pk at input >2% span
Response Time (0 to 90%)	
SCIM5B45-01,-02	300ms
SCIM5B45-03	170ms
SCIM5B45-04,-05	90ms
SCIM5B45-06,-07,-08	20ms
Output	
Range	See ordering information
Resistance	50 Ω
Protection	Continuous Short to Ground
Selection Time	6 μs at $C_{\text{LOAD}}=0$ to 2000pF
(to $\pm 1\text{mV}$ of V_{OUT})	
Current Limit	$\pm 8\text{mA}$
Output Enable Control	
Max Logic "0"	+0.8V
Min Logic "1"	+2.4V
Max Logic "1"	+36V
Input Current "0.1"	0.5 μA
Power supply voltage	+5V DC $\pm 5\%$
Power supply Current	110mA
Power supply Sensitivity	$\pm 150\mu\text{V}/\%$ RTO ⁽²⁾
Mechanical Dimensions	2.28" x 2.26" x 0.60"
(H) (W) (D)	(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 EN61000-6-4	ISM, Group 1
Radiated, Conducted	Class A
Immunity EN61000-6-2	ISM, Group 1
RF	Performance A $\pm 0.5\%$ Span Error
ESD,EFT,Surge,VoltageDips	Performance B

Note:

- 1). Includes nonlinearity, hysteresis and repeatability.
- 2). RTO = Referenced to output.

Ordering Information

Model	Input Range	Output Range	Zero Crossing Hysteresis
SCIM5B45-01	0Hz to 500Hz.	1,2,3,4,8	$\pm 20\text{mV}$
SCIM5B45-02	0Hz to 1KHz.	1,2,3,4,8	$\pm 20\text{mV}$
SCIM5B45-03	0Hz to 3KHz.	1,2,3,4,8	$\pm 20\text{mV}$
SCIM5B45-04	0Hz to 5KHz.	1,2,3,4,8	$\pm 20\text{mV}$
SCIM5B45-05	0Hz to 10KHz.	1,2,3,4,8	$\pm 20\text{mV}$
SCIM5B45-06	0Hz to 25KHz.	1,2,3,4,8	$\pm 20\text{mV}$
SCIM5B45-07	0Hz to 50KHz.	1,2,3,4,8	$\pm 20\text{mV}$
SCIM5B45-08	0Hz to 100KHz.	1,2,3,4,8	$\pm 20\text{mV}$
SCIM5B45-21	0Hz to 500Hz.	1,2,3,4,8	$\pm 400\text{mV}$
SCIM5B45-22	0Hz to 1KHz.	1,2,3,4,8	$\pm 400\text{mV}$
SCIM5B45-23	0Hz to 3KHz.	1,2,3,4,8	$\pm 400\text{mV}$
SCIM5B45-24	0Hz to 5KHz.	1,2,3,4,8	$\pm 400\text{mV}$
SCIM5B45-25	0Hz to 10KHz.	1,2,3,4,8	$\pm 400\text{mV}$
SCIM5B45-26	0Hz to 25KHz.	1,2,3,4,8	$\pm 400\text{mV}$
SCIM5B45-27	0Hz to 50KHz.	1,2,3,4,8	$\pm 400\text{mV}$
SCIM5B45-28	0Hz to 100KHz.	1,2,3,4,8	$\pm 400\text{mV}$

Output Ranges Available

Output Range	Part No. Suffix	Example
1. -5V to +5V	Z	SCIM5B45-01Z
2. -10V to +10V	X	SCIM5B45-01X
3. 0V to +5V	NONE	SCIM5B45-01
4. 0V to +10V	D	SCIM5B45-01D
8. 1V to +5V	Y	SCIM5B45-01Y