

SCIM5B33

Isolated True RMS Input Modules

Description

SCIM5B33 RMS input module accepts a single AC input signal which is converted to True RMS DC value then filtered, isolated and converted to a standard level voltage current output (Figure 1). 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 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.

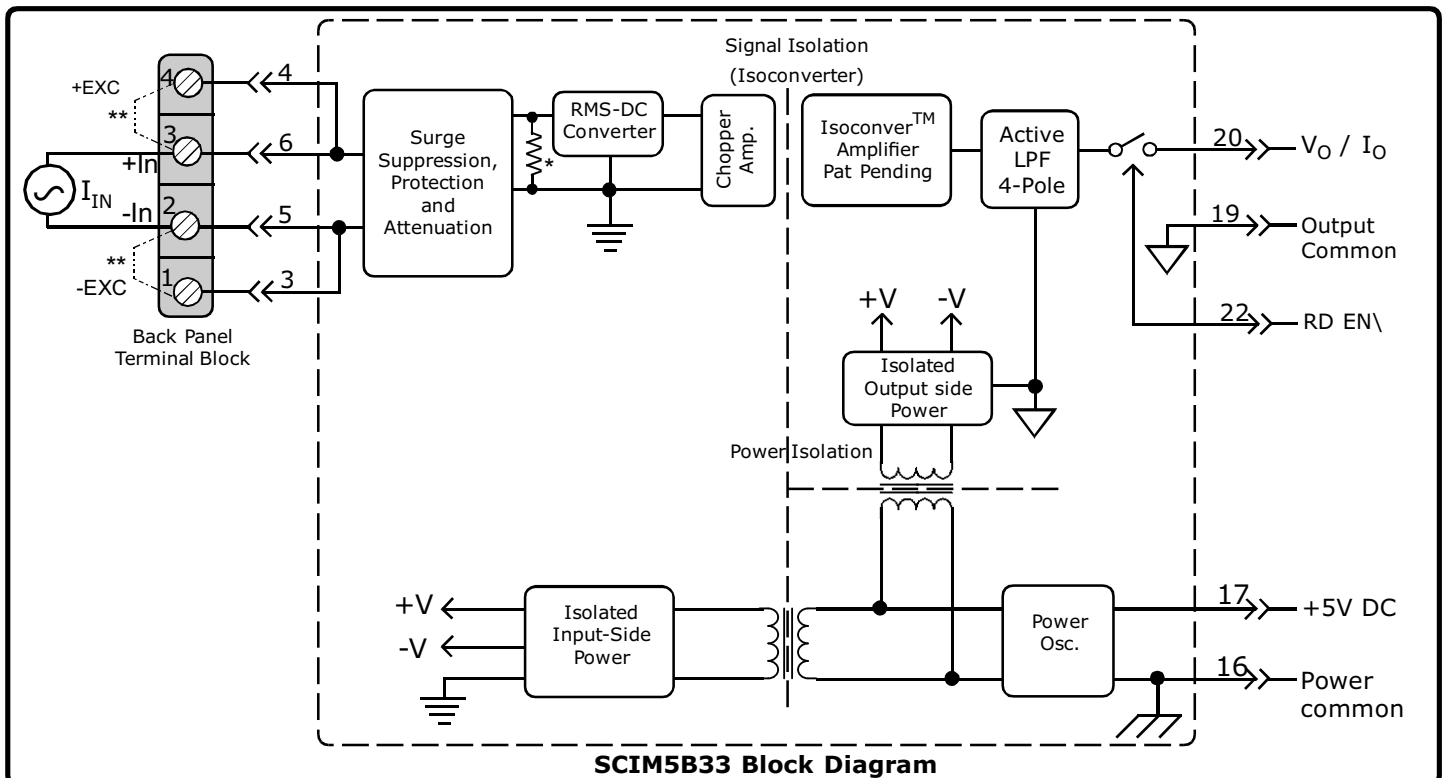
The RMS voltage or current signal passes thru a Attenuator, preamplifier and True RMS to DC converter on the input side of the module. The converted signal is chopped by a proprietary converter circuit, isolation is provided by transformer coupling which eliminates common mode spikes and surges. The output side of the module filters and converts to required standard level output. The module is powered from +5VDC, $\pm 5\%$.

A specially designed input circuitry on the SCIM5B33 modules handles overloads of voltage and current signals efficiently.

For current output models external output loop supply of 4.2 to 26 V is required. The external loop supply shall be connected in series with the load, in between Pins 20(+) and 19(-).

Features

- Interfaces RMS input voltage (0-300V) or RMS Current (0 - 5A)
- Standard Output of either 0 to 10V/ $\pm 10V$, 0 to 5V, 1 to 5V.
- 1.5KV Isolation
- ANSI/IEEE C37.90.1 Transient Protection
- Protected to 480V(peak AC & DC) or 10 A RMS continuous Input
- 100dB CMR
- $\leq \pm 0.25\%$ Accuracy(Accuracy Class 0.2)
- CSA , CE and ATEX Compliant
- Mixes and Matches with all SCIM5B Types on Backpanel



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

Module	SCIM5B33
Input	
Range	100 mV to 300 Vrms, 0 to 5 Arms
Standard Frequency Range	45Hz to 1KHz
Extended Frequency Range	1KHz to 20KHz.
Impedance	1MΩ ±1%, Shunted to 100pf. (01 thru 05) 0.10W (06), 0.025Ω (-07)
Coupling	AC
Protection(1)	
Continuous (01 thru 05)	300V rms.
Continuous (06 thru 07)	10A rms.
Transient (01 thru 05)	ANSI/IEEE C37.90.1
Transient (06 thru 07)	See Note2.
Isolation	
CMV, Input to Output Continuous	1500Vrms max
Transient	ANSI/IEEE C37.90.1
Output to Power Continuous	50V DC max.
Accuracy (3) (4)	
Sinusoid	
50 / 60Hz	±0.25% Span
45 to 1KHz	±0.25% Reading Additional Factor
1KHz to 20KHz	±0.75% Reading Additional Factor
Non-Sinusoid	
Crest Factor = 1 to 2	±0.05% Reading Additional Error
Crest Factor = 2 to 3	±0.15% Reading Additional Error
Crest Factor = 3 to 4	±0.30% Reading Additional Error
Crest Factor = 4 to 5	±0.40% Reading Additional Error
Temperature Effect	±100ppm / °C
Output	
Signal Range	0-5V or 0-10V or 0-1mA or 0-20mA or 4-20mA
Current Limit	1.4mA (0-1mA models), 30mA (0/4-20mA models), 8mA (0-5, 0-10V models)
Voltage Limit	+18V (0-5, 0-10V models)
Resistance	50Ω (0-5, 0-10 models)
Protection	Continuous Short to Ground
Ripple and Noise (100KHz)	0.025% Span rms
Rejection (50 - 60Hz Common Mode)	100dB
Response Time (0 to 99%)	<400ms
Output Enable Control	
Selection Time	6μs at C _{load} = 0 to 2000pF
Voltage	
Max Logic "0"	+0.8V
Min/Max Logic "1"	+2.4V/+36V
Current "0,1"	0.5uA
Loop Voltage	+4.2V DC min to +26V DC max, -40°C to +85°C
Load Resistance (maximum)	(Loop Voltage - 4.2) / (Loop Current)
Power supply voltage	+5V DC ±5%
Power supply Current	120mA
Power supply Sensitivity	±200ppm/%
Mechanical Dimensions (H) (W) (D)	2.28" x 2.26" x 0.60" (58mm x 57mm x 15mm)
Environmental	
Operating Temp. Range	-40°C to +85°C
ATEX Group II, Cat, 3	-20°C to +40°C
Storage Temp. 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 Susceptability	Performance A ±0.5% Span Error
ESD,EFT,Surge,Voltage Dipp	Performance B

Note:

- (1). SCIM5B33 and SCIMPB01,02,03,04,05,06,07 XEV rating only.
- (2). For 1 to 25 seconds the max allowable transient current rating is $\sqrt{I_{2500T}^2 \times \text{event time}}$. For less than 1 second, ANSI/IEEE C-37.90.1 applies with a 0.05W load. For Greater than 25 seconds, the 10A rms continuous rating applies.
- (3). At standard 50Hz factory calibration. Consult factory for calibration at other frequencies.
- (4). For 10-100% rated span. Add. 0.25% accuracy error (-02 thru -07) or 1.00% accuracy error (-01) for 0-10% Span measurements. Accuracy includes nonlinearity hysteresis and repeatability but not source or external shunt inaccuracy (if used)

Ordering Information

Model	Input Range (rms)	Output Range (DC)
SCIM5B33-01	0-100mV	0-5V
SCIM5B33-02	0-1V	0-5V
SCIM5B33-03	0-10V	0-5V
SCIM5B33-04	0-150V	0-5V
SCIM5B33-05	0-300V	0-5V
SCIM5B33-06	0-1A	0-5V
SCIM5B33-07	0-5A	0-5V
SCIM5B33-01B	0-100mV	0-1mA
SCIM5B33-02B	0-1V	0-1mA
SCIM5B33-03B	0-10V	0-1mA
SCIM5B33-04B	0-150V	0-1mA
SCIM5B33-05B	0-300V	0-1mA
SCIM5B33-06B	0-1A	0-1mA
SCIM5B33-07B	0-5A	0-1mA
SCIM5B33-01C	0-100mV	4-20mA
SCIM5B33-02C	0-1V	4-20mA
SCIM5B33-03C	0-10V	4-20mA
SCIM5B33-04C	0-150V	4-20mA
SCIM5B33-05C	0-300V	4-20mA
SCIM5B33-06C	0-1A	4-20mA
SCIM5B33-07C	0-5A	4-20mA
SCIM5B33-01D	0-100mV	0-10V
SCIM5B33-02D	0-1V	0-10V
SCIM5B33-03D	0-10V	0-10V
SCIM5B33-04D	0-150V	0-10V
SCIM5B33-05D	0-300V	0-10V
SCIM5B33-06D	0-1A	0-10V
SCIM5B33-07D	0-5A	0-10V
SCIM5B33-01E	0-100mV	0-20mA
SCIM5B33-02E	0-1V	0-20mA
SCIM5B33-03E	0-10V	0-20mA
SCIM5B33-04E	0-150V	0-20mA
SCIM5B33-05E	0-300V	0-20mA
SCIM5B33-06E	0-1A	0-20mA
SCIM5B33-07E	0-5A	0-20mA

Modules can be ordered with other input/output ranges. Consult factory for ordering details and specifications

Output Ranges Available

Output Range	Part No. Suffix	Example
3. 0V to +5V	NONE	SCIM5B33-01
4. 0V to +10V	D	SCIM5B33-01D
5. 4mA to 20mA	C	SCIM5B33-01C
6. 0mA to 20mA	E	SCIM5B33-01E
7. 0mA to 1mA	B	SCIM5B33-01B