

8B33



Isolated True RMS Input Modules

Description

Each 8B33 True RMS input module provides a single channel of AC input which is converted to its True RMS DC value, filtered, isolated, amplified, and converted to a standard process voltage or current output (Figure 1).

The field voltage or current input signal is processed through a pre-amplifier and RMS converter on the field side of the isolation barrier. The converted DC signal is then chopped by a proprietary chopper circuit and transferred across the transformer isolation barrier, suppressing transmission of common mode spikes and surges. The computer side circuitry reconstructs, filters, and converts the signal to an industry standard output of 0 to 5VDC.

Special input circuits provide protection against accidental connection of power line voltages up to 350VAC and against transient events defined by ANSI/IEEE C37.90.1.

► Features

- Interfaces to RMS Voltage (0-300V) or RMS Current (0-1A)
- Designed for Standard Operation with Frequencies of 45Hz to 1000Hz (Extended Range to 10kHz)
- Compatible with Standard Current and Potential Transformers
- Industry Standard Output of 0 to 5VDC
- ±0.25% Factory Calibrated Accuracy
- 1500Vrms Transformer Isolation
- Input Overload Protected to 350Vrms Max (Peak AC & DC) or 2Arms Continuous
- ANSI/IEEE C37.90.1 Transient Protection
- CE Compliant
- Hazardous Location Certifications Pending

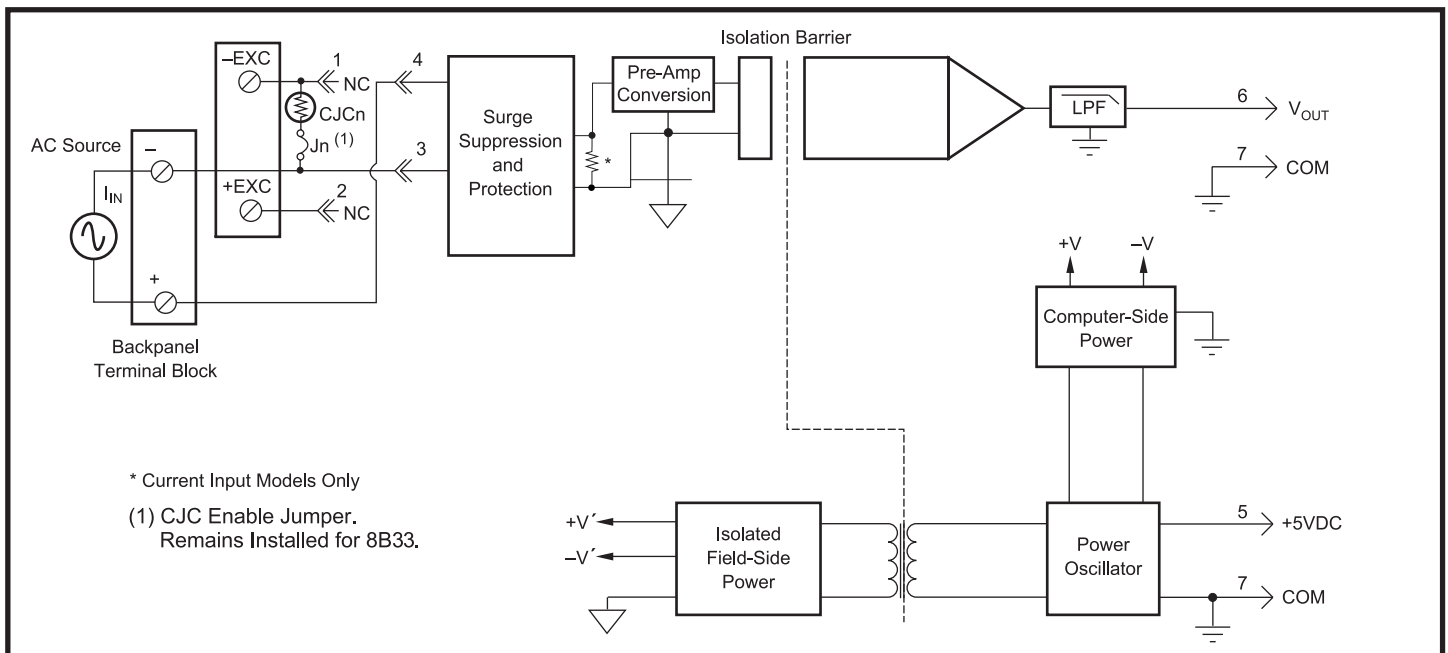


Figure 1: 8B33 Block Diagram

* Current Input Models Only
 (1) CJC Enable Jumper.
 Remains Installed for 8B33.

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

Module	8B33
Input Signal Range Standard Frequency Range Extended Frequency Range Impedance Coupling Protection ⁽¹⁾ Continuous (-01 thru -05) Continuous (-06) Transient (-01 thru -05) Transient (-06)	100mV to 300Vrms, 0 to 1Arms 45Hz to 1000Hz 1kHz to 10kHz 499K Ω (-01, -02) 1M Ω (-03, -04, -05) .05 Ω (-06) AC 350Vrms 2Arms ANSI/IEEE C37.90.1 See note 2
Output Signal Range Voltage Limit Protection Ripple and Noise	0V to 5V $\pm 9\text{V}$ Continuous Short to Ground 0.0375% Span rms
Accuracy (10-100% Span) ^{(3) (4)} Sinusoid 50/60Hz 45Hz to 1kHz 1kHz to 10kHz Non-Sinusoid Crest Factor = 1 Crest Factor = 2 Crest Factor = 3 Crest Factor = 4 Vs. Temperature	$\pm 0.25\%$ Span $\pm 0.625\%$ Span $\pm 1.375\%$ Span, $\pm 3.25\%$ Span(-06) $\pm 0.25\%$ Span $\pm 0.325\%$ Span $\pm 0.475\%$ Span $\pm 0.7\%$ Span $\pm 100\text{ppm}/^\circ\text{C}$
Isolation (Common Mode) Input to Output, Input to Power Continuous Transient	1500Vrms max ANSI/IEEE C37.90.1
CMR (50Hz to 60Hz) NMR	120dB 70dB at 60Hz
Response Time, 90% Span	$< 120\text{mS}$
Supply Voltage Current Sensitivity	+5VDC $\pm 5\%$ 30mA $\pm 200\text{ppm}/\%$
Environmental Operating Temperature Range Storage Temperature Range Relative Humidity Emissions EN61000-6-4 Radiated, Conducted Immunity EN61000-6-2 RF ESD, EFT, Surge, Voltage Dips Dimensions	-40°C to $+85^\circ\text{C}$ -40°C to $+85^\circ\text{C}$ 0 to 90% Noncondensing ISM, Group 1 Class A ISM, Group 1 Performance A $\pm 0.5\%$ Span Error Performance B 1.11" x 1.65" x 0.40" (28.1mm x 41.9mm x 10.2mm)

Ordering Information

Model	Input Range	Output Range
8B33-01	0mV to 100mV	0V to +5V
8B33-02	0V to 1V	0V to +5V
8B33-03	0V to 10V	0V to +5V
8B33-04	0V to 100V	0V to +5V
8B33-05	0V to 300V	0V to +5V
8B33-06	0A to 1A	0V to +5V

NOTES:

- (1) 8B33 and 8BP01, 8BP02, 8BP04, 8BP08, 8BP16, XEV rating only. Backpanels obtained from other sources may have lower ratings.
- (2) For 1 to 25 seconds the max allowable transient current rating is $\sqrt{2500/(\text{event time})}$. For less than 1 second, ANSI/IEEE C37.90.1 applies with a 0.05 Ω load. For greater than 25 seconds, the 2 Arms continuous rating applies.
- (3) At standard 60Hz factory calibration. Consult factory for calibration at other frequencies.
- (4) For 0-10% Span measurements, add 0.25% accuracy error (-02 through -07) or 1.00% accuracy error (-01). Accuracy includes linearity, hysteresis and repeatability but not source or external shunt inaccuracy (if used).