

DI-8B33 True RMS Input Modules

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
- $\pm 0.25\%$ factory calibrated accuracy
- 1500Vrms transformer isolation
- Input overload protection to 350Vrms max (peak AC and DC) or 2Arms continuous
- CE certified
- Hazardous location certifications pending
- Mix and Match Module Types

DESCRIPTION

Each DI-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.

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 5 VDC.

Special input circuits provide protection against accidental connection of power line voltages up to 300VAC and against transient events defined by ANSI/IEEE C37.90.1

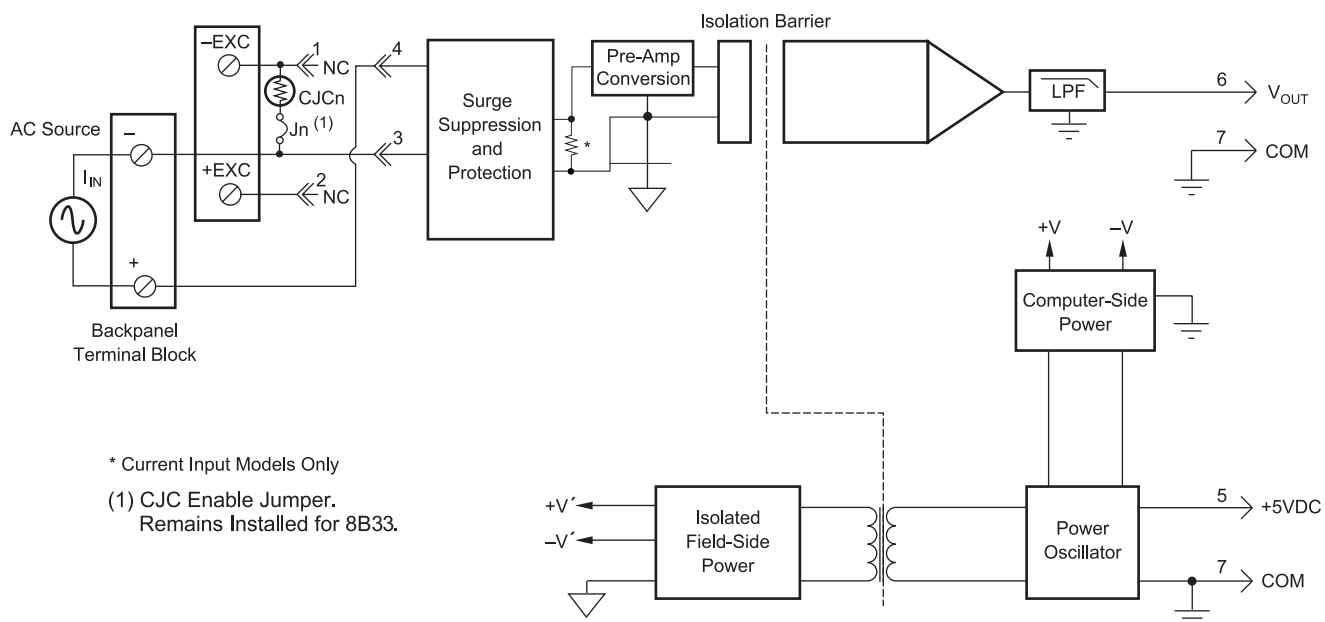
SPECIFICATIONS

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

| | | DI-8B33 |
|--|---------------|---|
| Input Range | | 100mV to 300Vrms, 0 to 1 Arms |
| Input Frequency Range | Normal | 45Hz to 1KHz |
| | Extended | 1KHz to 10KHz |
| Impedance | -01, -02 | 499 K Ω \pm 1 |
| | -03, -04, -05 | 1 M Ω \pm 1% |
| | -06 | .05 Ω |
| | | |
| Input Protection | | 350Vrms 2Arms ANSI/IEEE C37.90.1 ** |
| CMV, Input to Output, Input to Power | | 1500Vrms max |
| Transient, Input to Output, Input to Power | | ANSI/IEEE C37.90.1 |
| CMR (50Hz or 60Hz) NMR | | 120dB 70dB at 60Hz |
| Accuracy (5-100% span)* | | |
| Sinusoid 50/60Hz 45Hz to 1KHz 1KHz to 10KHz | | $\pm 0.25\%$ Span $\pm 0.625\%$ Span $\pm 1.375\%$ Span, $\pm 3.25\%$ Span (-06) |
| Non-Sinusoid Crest Factor = 1 Crest Factor = 2 Crest Factor = 3 Crest Factor = 4 | | $\pm 0.25\%$ Span $\pm 0.325\%$ Span $\pm 0.475\%$ Span $\pm 0.7\%$ Span $\pm 100\text{ppm}/^\circ\text{C}$ |
| Vs. Temperature | | |
| Response Time, 90% Span | | <120ms |
| Output Range | | 0 to +5V |
| Output Voltage Limit | | $\pm 9\text{V}$ |
| Output Ripple and Noise | | 0.0375% Span rms |
| Output Protection | | Continuous Short to Ground ANSI/IEEE C37.90.1 |
| Transient | | |
| Power Supply Voltage | | +5VDC $\pm 5\%$ |
| Power Supply Current | | 30mA |
| Power Supply Sensitivity | | $\pm 200\text{ppm}/\%$ |
| Mechanical Dimensions | | 1.11" \times 1.65" \times 0.40" (28.1mm \times 41.9mm \times 10.2mm) |
| Environmental | | |
| Operating Temperature | | -40 $^\circ\text{C}$ to +85 $^\circ\text{C}$ |
| Storage Temperature | | -40 $^\circ\text{C}$ to +85 $^\circ\text{C}$ |
| Relative Humidity | | 0 to 90% Noncondensing |
| *Includes nonlinearity, hysteresis and repeatability but not source or external shunt accuracy.. At standard 60Hz factory calibration. For 0-5% span measurements add 1% accuracy error. (-02, -03, -04, -05) or 1.5% accuracy error (-01, -06). | | |
| **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. | | |

DI-8B33 True RMS Input Modules

Block Diagram



Ordering Information

| Model Number | Input Range | Output Range |
|--------------|--------------|--------------|
| DI-8B33-01 | 0mV to 100mV | 0V to +5V |
| DI-8B33-02 | 0V to 1V | 0V to +5V |
| DI-8B33-03 | 0V to 10V | 0V to +5V |
| DI-8B33-04 | 0V to 150V | 0V to +5V |
| DI-8B33-05 | 0V to 300V | 0V to +5V |



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