

DSCIA33

Isolated True RMS Input Signal Conditioners

Description

DSCIA33 Isolated true RMS input module is single channel analog AC input, which is converted to its True RMS DC value, filtered, isolated, amplified, and converted to standard output. A six pole filter is provided with signal filtering which provides up to 85dB NMR at 60Hz and 80dB 50Hz. The input signal is chopped by a proprietary converter circuit. After initial filter stage isolation is provided by transformer coupling which eliminates common mode spikes and surges.

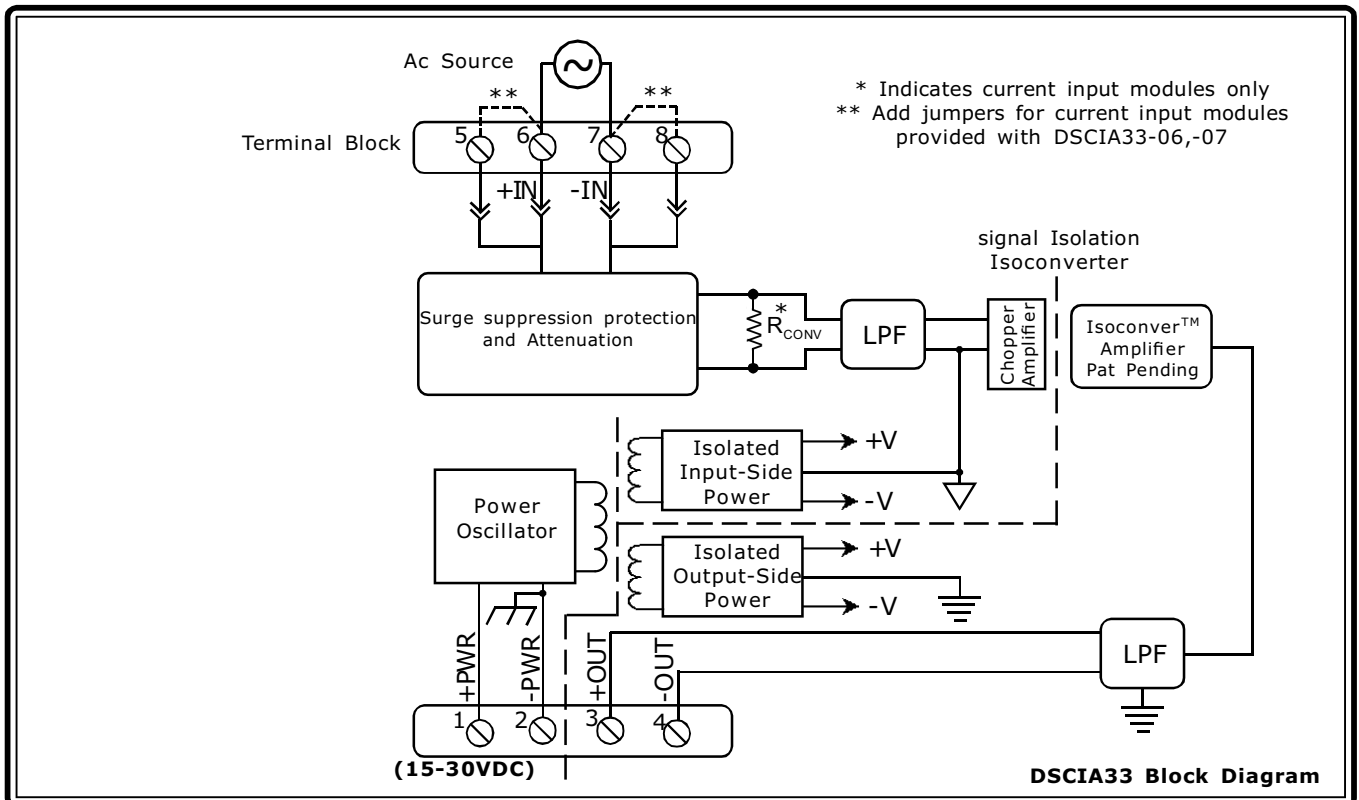
The output of this module is either voltage or current. In the case of current module a dedicated loop supply is provided at the output side. The output signal is isolated from power and input signal, hence it can be either floating or grounded.

Signal input has a input protection for 480V AC accidental connection and transient protection as per ANSI/IEEE C37.90.1. Output is also protected against short circuit, power supply input is protected against terminal reversal and transients. The signal and power wires can be connected directly on to heavy duty screw terminals provided.

These modules are most rugged, reliable and stable over long time and do not require frequent recalibration. However $\pm 5\%$ zero & span adjustment provides flexibility where fine tuning is warranted.

Features

- RMS Voltage (0-300V) or RMS current (0-5A) input
- Standard Operation with Frequencies of 45Hz to 1000Hz. (Extended Range Operation to 20KHz)
- Compatible with Standard current and potential Transformers.
- Standard Output of either 0 to 1mA, 0-20mA, 4-20mA, 0-5V, 1 - 5V or 0-10VDC.
- $\pm 0.25\%$ Factory Calibrated Accuracy (Accuracy Class 0.2)
- $\pm 5\%$ Adjustable Zero and Span
- 1.5KV Isolation
- Input Overload Protection to 480V (Peak AC & DC) or 10A RMS Continuous
- ANSI/IEEE C37.90.1 Transient Protection
- Standard DIN Rail Mountable
- CSA , FM , CE and ATEX Compliant



Specifications Typical at $T_A = +25^{\circ}\text{C}$ and +24V supply voltage

Module	DSCIA33
Input	
Signal Range	100mV to 300Vrms, 0 to 5mA rms
Standard Frequency Range	45Hz to 1000Hz
Extended Frequency Range	1kHz to 20kHz
Impedance	1MΩ ±1% // <100pF (-01 thru -05), 0.10Ω (-06), 0.025Ω (07)
Coupling	AC
Protection	
Continuous (-01 thru -05)	480V peak AC & DC max
Continuous (-06 thru -07)	10A rms max
Transient (-01 thru -05)	ANSI/IEEE C37.90.1
Transient (-06 thru -07)	See note 1
Output	
Signal Range	See Ordering Information
Adjustability	±5% Zero & Span
Load Resistance	10kΩ max.(0-1mA models), 600Ω max. (0/4-20mA models)
Current Limit	1.4mA (0-1mA models), 30mA (0/4-20mA models), 8mA (0-5/10V models)
Protection	
Short to Ground	Continuous
Transient	ANSI/IEEE C37.90.1
Ripple and Noise	<0.025% Span rms
Accuracy (2) (3)	
Sinusoid	
50/60Hz	±0.25% Span
45Hz-1kHz	±0.25% Reading Additional Error
1kHz-20kHz	±0.75% Reading Additional Error
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
Vs. Temperature	±100ppm/°C
Isolation (common mode)	
Input to Output, Input to Power	1500V rms max ANSI/IEEE C37.90.1
Continuous	
Transient	
Output to Power	50VDC max
Continuous	
Response Time (0 to 99%)	<400ms
CMR (50 or 60Hz)	100dB
Power Supply Typical	
Voltage	24V DC(19 to 29VDC)
Power Supply Current	60mA (V_{OUT}), 80mA (I_{OUT})
Power Supply Sensitivity	±0.0002%/%
Power Supply Protection	
Reverse Polarity	Continuous
Transient	ANSI/IEEE C37.90.1
Environmental	
Operating Temp. Range	-40°C to +80°C
Storage Temp. Range	-40°C to +80°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 ±0.83% Span Error
ESD,EFT, Surge, Voltage Dips	Performance B
Mechanical Dimensions	
(h) (w) (d)	2.95" x 0.89" x 4.13" (75mm x 22.5mm x 105mm)
Mounting	DIN EN 50022-35x7.5 or -35x15 rail

Ordering Information

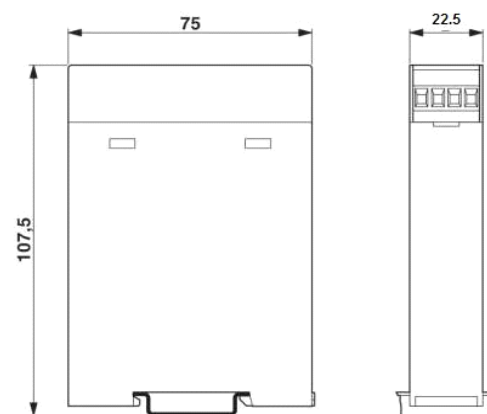
Model	Input Range	Output Range(dc)
DSCIA33-01	0-100mV	2,3,4,5,6,7
DSCIA33-02	0-1V	2,3,4,5,6,7
DSCIA33-03	0-10V	2,3,4,5,6,7
DSCIA33-04	0-150V	2,3,4,5,6,7
DSCIA33-05	0-300V	2,3,4,5,6,7
DSCIA33-06	0-1A	2,3,4,5,6,7
DSCIA33-07	0-5A	2,3,4,5,6,7

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
2. 0V to +10V	NONE	DSCIA33-01
3. 4 to 20mA	C	DSCIA33-01C
4. 0 to 20mA	E	DSCIA33-01E
5. 0V to +5V	A	DSCIA33-01A
6. 0 to 1mA	B	DSCIA33-01B
7. 1 to 5V	F	DSCIA33-01F

Dimensioned drawing



NOTES:

- (1) For 1 to 25 seconds the max allowable transient current rating is $\sqrt{2500}$ /(event time). For less than 1 second ANSI/IEEE C37.90.1 applies with a 0.05E load. For greater than 25 seconds, the 10A max continuous rating applies.
- (2) 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).