

DSCIA36

Potentiometer Input Signal Conditioners

Description

DSCIA36 Potentiometer input module is single channel potentiometer input, which is filtered, isolated, amplified & converted to standard level 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.

Potentiometer excitation is provided from the module using a precision small current source (approx. 0.25mA) which minimizes self-heating of the sensor. Lead compensation is achieved by matching to current paths which cancels the effect of lead resistance.

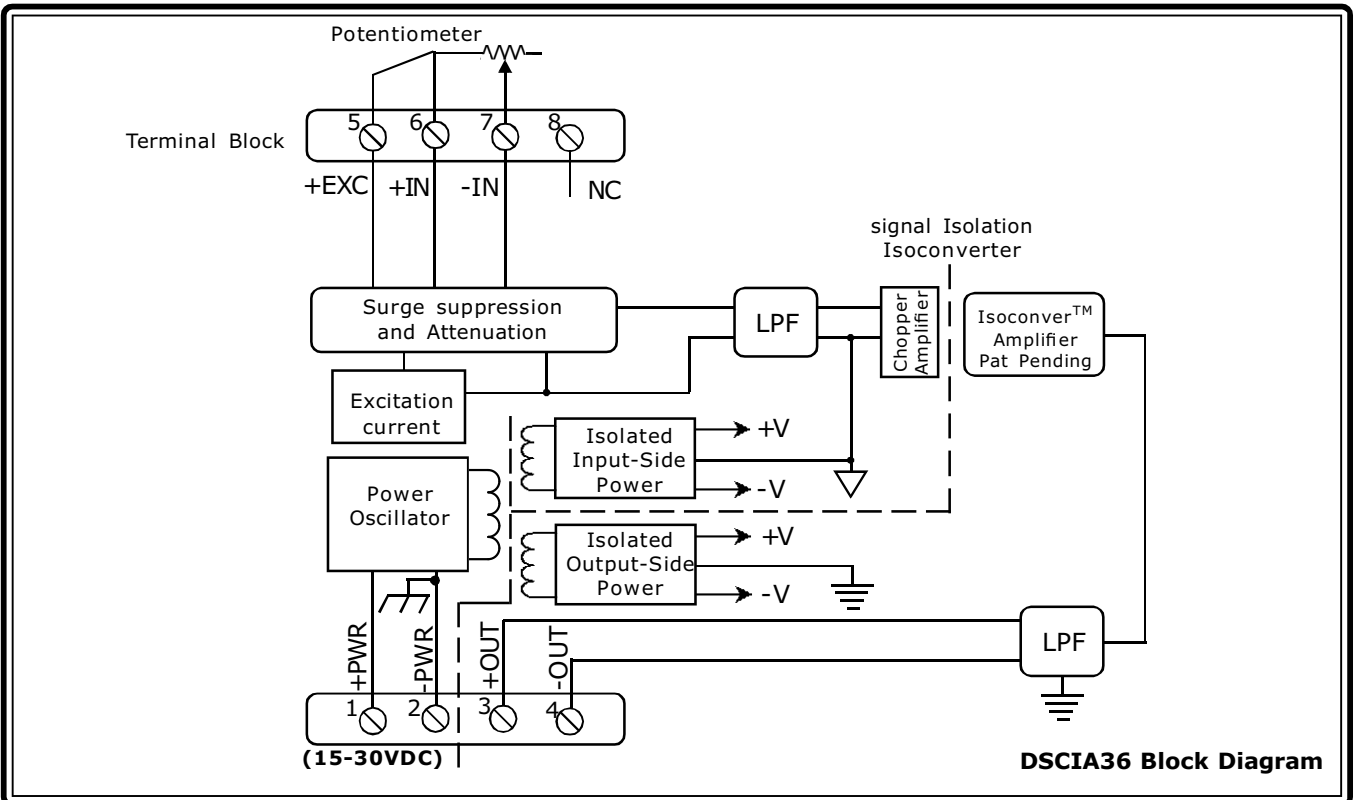
The output of this module is either voltage or current. In the case of current module a dedicated loop supply is provided at the output side. The output signal is isolated from power and input signal, hence it can be either floating or grounded.

Signal input has a input protection for 250V 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

- Potentiometers input up to 10K Ω
- Standard Output of either 0 to 10V/ ± 10 V, 0 to 5V, 1 to 5V, 0 to 20mA, or 4 to 20mA
- 1.5KV Isolation
- ANSI/IEEE C37.90.1 Transient Protection
- Input Protected to 250VAC Continuous
- True 3-way Isolation
- Wide range of supply voltage
- 160dB CMR
- 85dB NMR at 60Hz, 80dB at 50Hz
- $\pm 0.03\%$ Accuracy
- $\pm 0.01\%$ NonLinearity
- Standard DIN Rail Mountable
- CSA , FM , CE and ATEX Compliant



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

Module	DSCIA36
Input Range Limits	0Ω to 10KΩ
Input Protection	250V rms max ANSI/IEEE C37.90.1
Continuous Transient	
Sensor Excitation Current	200μA; 100Ω, 500Ω, 1KΩ sensor 100μA; 10KΩ, sensor
Lead Resistance effect	$\pm 0.01\Omega/\Omega$; 100Ω, 500Ω, 1KΩ sensor $\pm 0.02\Omega/\Omega$; 10KΩ sensor
Output Range	See Ordering Information
Load Resistance (I_{OUT})	600Ω max
Current Limit	8mA (V_{OUT}), 30mA (I_{OUT})
Output Protection	Continuous ANSI/IEEE C37.90.1
Short to Ground Transient	
CMV, I/p to O/p, I/p to power	1500V rms ANSI/IEEE C37.90.1
Continuous Transient	
CMV, Output to Power	50V DC max
Continuous	
CMR (50Hz or 60Hz)	160dB
Accuracy ⁽¹⁾	$\pm 0.03\%$
NonLinearity	$\pm 0.01\%$
Adjustability	$\pm 5\%$ Zero & Span
Stability	
Input offset	$\pm 0.004\Omega/^\circ\text{C}$; 100Ω, 500Ω, 1KΩ sensor $\pm 0.01\Omega/^\circ\text{C}$; 10KΩ, sensor
Output offset	$\pm 6\text{ppm}/^\circ\text{C}$ (V_{OUT}), $\pm 20\text{ppm}/^\circ\text{C}$ (I_{OUT})
Gain	$\pm 60\text{ppm}/^\circ\text{C}$
Output Noise, 100KHz bandwidth	250mV (V_{OUT}), 1μArms (I_{OUT})
Bandwidth, -3dB	3Hz
NMR	85dB at 60Hz, 80dB at 50Hz
Response Time, 90% span	250ms
Open Input response	
'+' Lead	Upscale
'-' Lead	Non-deterministic
'x' Lead	Downscale
Power Supply Typical Voltage	24V DC (15 to 30VDC)
Power Supply Current	25mA (V_{OUT}), 55mA (I_{OUT})
Power Supply Sensitivity	$\pm 0.0001\%/%$
Power Supply Protection	Continuous
Reverse Polarity 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 $\pm 0.05\%$ 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

NOTES:

(1) Includes nonlinearity, hysteresis and repeatability.

Ordering Information

Model	Input Range	Output Range
DSCIA36-01	0 to 100Ω	2,3,4,5,7
DSCIA36-02	0 to 500Ω	2,3,4,5,7
DSCIA36-03	0 to 1KΩ	2,3,4,5,7
DSCIA36-04	0 to 10KΩ	2,3,4,5,7

Output Ranges Available

Output Range	Part No. Suffix	Example
2. 0 to +10V	NONE	DSCIA36-01
3. 4 to 20mA	C	DSCIA36-01C
4. 0 to 20mA	E	DSCIA36-01E
5. 0 to 5V	A	DSCIA36-01A
7. 1 to 5V	F	DSCIA36-01F

Dimensioned drawing

