

DSCIA30/31

Voltage Input Signal Conditioners

Description

DSCIA30 and DSCIA31 voltage input module is single channel analog input, which is filtered, isolated, amplified & converted to standard level output. A Five-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.

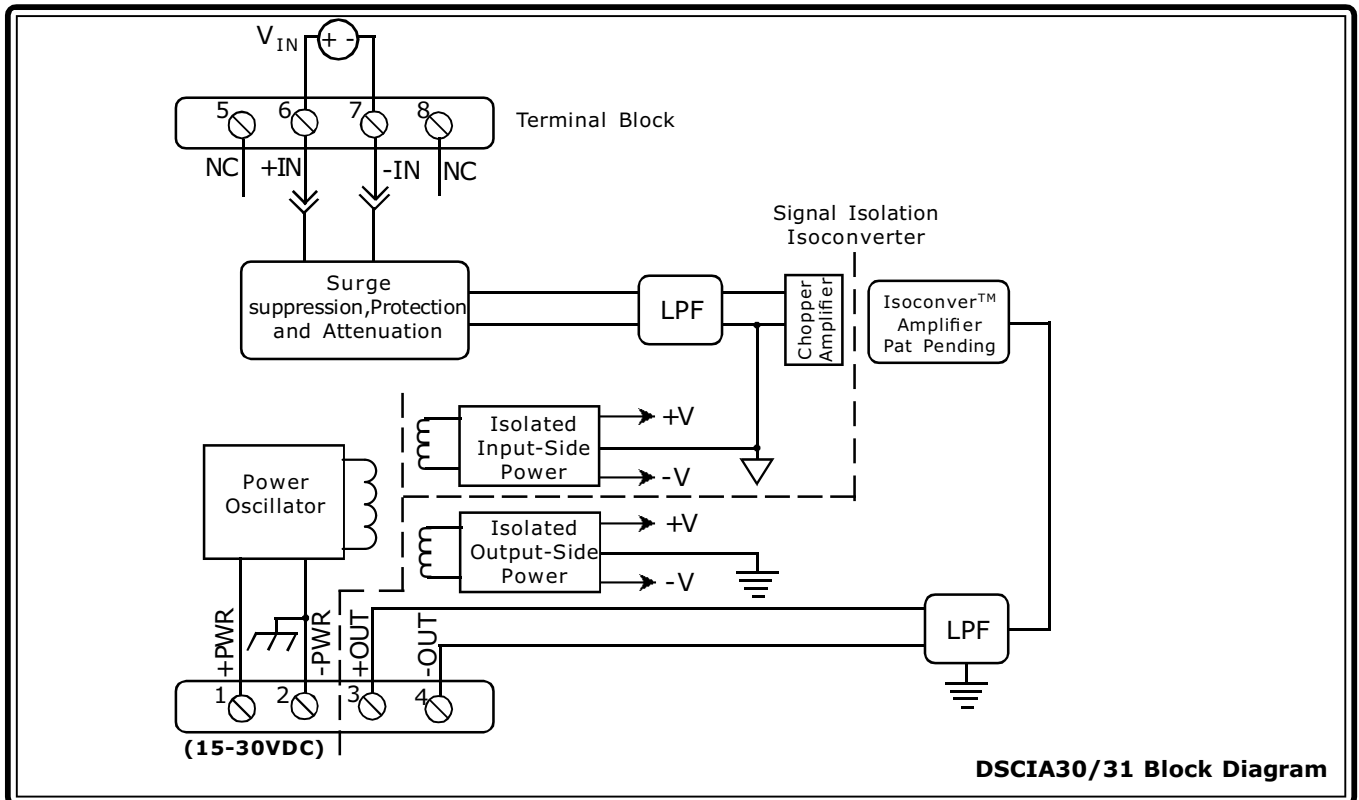
The output of this module is either voltage or current. In the case of current module a dedicated loop supply is provided at the output side. The output signal is isolated from power and input signal, hence it can be either floating or grounded.

Signal input has a input protection for 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

- Wide range of Millivolt and Voltage input Signals
- Standard Output of either 0 to 10V/ $\pm 10V$, 0 to 5V, 1 to 5V, 0 to 20mA, or 4 to 20mA
- 1.5KV Isolation
- ANSI/IEEE C37.90.1 Transient Protection
- 250VAC Continuous Protection on Input
- True 3-Way Isolation
- Wide range of supply voltage(15 to 30V DC)
- 85dB NMR at 60Hz, 80dB at 50Hz
- 160dB CMR
- $\pm 0.03\%$ 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	DSCIA30	DSCIA31
Input Range	$\pm 10\text{mV}$ to $+100\text{mV}$	$\pm 1\text{V}$ to $\pm 40\text{V}$
Input Bias Current	$\pm 0.5\text{nA}$	$\pm 0.05\text{nA}$
Input Resistance		
Normal	50M Ω	500K Ω min
Power Off	65K Ω	500K Ω min
Overload	65K Ω	500K Ω min
Input Protection		
Continuous	250V rms max.	*
Transient	ANSI/IEEE C37.90.1	*
Output Range	See Ordering Information	*
Load Resistance(I_{OUT})	600 Ω max	*
Current Limit	8mA (V_{OUT}), 30mA (I_{OUT})	*
Output Protection		
Short to Ground	Continuous	*
Transient	ANSI/IEEE C37.90.1	*
CMV, I_p to O/p , I_p to Power		
Continuous	1500V rms max	*
Transient	ANSI/IEEE C37.90.1	*
CMV, Output to Power		
Continuous	50VDC max	*
CMR (50Hz or 60Hz)	160dB	*
Accuracy (1)	$\pm 0.03\%$ Span	*
Nonlinearity	$\pm 0.01\%$ Span	*
Adjustability	$\pm 5\%$ Zero and Span	*
Stability		
Input Offset	$\pm 0.5\mu\text{V} / ^{\circ}\text{C}$	$\pm 5\mu\text{V} / ^{\circ}\text{C}$
Output Offset	$\pm 6\text{ppm}/^{\circ}\text{C}(V_{\text{OUT}})$, $\pm 20\text{ppm}/^{\circ}\text{C}(I_{\text{OUT}})$	*
Zero Suppression	$\pm 50\text{ppm}(V_z)^{(2)}/^{\circ}\text{C}$	*
Gain	$\pm 35\text{ppm} / ^{\circ}\text{C}$	$\pm 55\text{ppm} / ^{\circ}\text{C}$
Output Noise, 100kHz BW	250 $\mu\text{Vrms}(V_{\text{OUT}})$, 1 $\mu\text{Arms}(I_{\text{OUT}})$	*
Bandwidth, -3dB	3Hz	*
NMR	85dB at 60Hz, 80dB at 50Hz	*
Response Time, 90% Span	165ms	*
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		
Reverse Polarity	Continuous	*
Transient	ANSI/IEEE C37.90.1	*
Environmental		
Operating Temp. Range	-40°C to $+80^{\circ}\text{C}$	*
Storage Temp. Range	-40°C to $+80^{\circ}\text{C}$	*
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	*
ESD,EFT, Surge, Voltage Dips	Error	*
Performance B		*
Mechanical Dimensions	2.95" x 0.89" x 4.13"	*
(h) (w) (d)	(75mm x 22.5mm x 105mm)	
Mounting	DIN EN 50022-35x7.5 or -35x15 rail	*

NOTES:

* Same specifications as DSCIA30.

(1) Includes nonlinearity, hysteresis and repeatability.

(2) V_z is the nominal input voltage that results in 0V of 0mA output.

Ordering Information

Model	Input Range	Output Range
DSCIA30-01	-10mV to +10mV	1
DSCIA30-02	-50mV to +50mV	1
DSCIA30-03	-100mV to +100mV	1
DSCIA30-04	-10mV to +10mV	2,3,4,5,7
DSCIA30-05	-50mV to +50mV	2,3,4,5,7
DSCIA30-06	-100mV to +100mV	2,3,4,5,7
DSCIA30-07	0 to +10mV	2,3,4,5,7
DSCIA30-08	0 to +50mV	2,3,4,5,7
DSCIA30-09	0 to +100mV	2,3,4,5,6
DSCIA31-01	-1V to +1V	1
DSCIA31-02	-5V to +5V	1
DSCIA31-03	-10V to +10V	1
DSCIA31-04	-1V to +1V	2,3,4,5,7
DSCIA31-05	-5V to +5V	2,3,4,5,7
DSCIA31-06	-10V to +10V	2,3,4,5,7
DSCIA31-07	-20V to +20V	1
DSCIA31-08	-20V to +20V	2,3,4,5,7
DSCIA31-09	-40V to +40V	1
DSCIA31-10	-40V to +40V	2,3,4,5,7
DSCIA31-11	0 to +1V	2,3,4,5,7
DSCIA31-12	0 to +5V	2,3,4,5,7
DSCIA31-13	0 to +10V	2,3,4,5,7
DSCIA31-14	0 to +20V	2,3,4,5,7
DSCIA31-15	0 to +40V	2,3,4,5,7

Output Ranges Available

Output Range	Part No. Suffix	Example
1. -10V to +10V	NONE	DSCIA30-01
2. 0V to +10V	NONE	DSCIA30-04
3. 4 to 20mA	C	DSCIA30-04C
4. 0 to 20mA	E	DSCIA30-04E
5. 0 to 5V	A	DSCIA30-04A
7. 1 to 5V	F	DSCIA30-04F

Dimensional drawing

