DSCA39

Current-output Signal Conditioners

DESCRIPTION

Each DSCA39 current-output module provides a single channel of analog output. The input signal is buffered, isolated, filtered, and converted to a unipolar or bipolar current output (Figure below). Signal filtering is accomplished with a five-pole filter which provides 100dB per decade of attenuation above 1kHz. An anti-aliasing pole is located on the system side of the isolation barrier, and the other four poles are on the field side. After the initial system-side filtering, the input signal is chopped by a proprietary chopper circuit. Isolation is provided by transformer coupling, again using a proprietary technique to suppress transmission of common- mode spikes or surges.

Special output circuits provide protection against accidental connection of power-line voltages up to 240VAC and against transient events as defined by ANSI/IEEE C37.90.1. Protection circuits are also present on the signal input and power input terminals to guard against transient events and power reversal. Signal and power lines are secured to the module using screw terminals which are in pluggable terminal blocks for ease of system assembly and reconfiguration.

The modules have excellent stability over time and do not require recalibration; however, zero and span settings are adjustable up to ±5% to accommodate situations where fine-tuning is desired. The adjustments are made using potentiometers located under the front panel label and are non-interactive for ease of use.

FEATURES

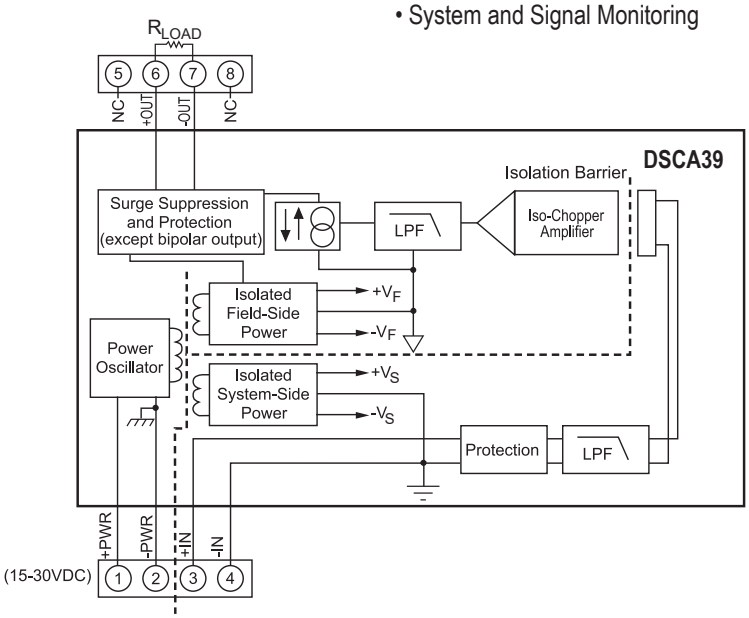
- Accepts High-level Voltage Input
- Provides 4-20mA, 0-20mA, or ±20mA Output
- ANSI/IEEE C37.90.1 Transient Protection
- 1500Vrms Transformer Isolation
- ±0.03% Accuracy
- ±0.01% Linearity
- Output Protected to 240VAC Continuous
- True 3-way Isolation
- Wide Supply Voltage Range
- 100dB CMR
- Easily Mounts on Standard DIN-rail
- UL/cUL Listed
- CE and ATEX Compliant
- Manufactured per RoHS III Directive 2015/863

BENEFITS

- Protects User Equipment from Lightning and Heavy Equipment Power-line Voltage
- Reduces Electrical Noise in Measured Signals
- Convenient System Expansion and Repair
- Reduces EMC Concerns
- Signal Filtering in Noisy Environments
- Simplifies Sensor Interface and Signal Conditioning Design
- Provides Isolation of External Sensors
- Breaks Ground Loops

APPLICATIONS

- Analog Signal Filtering
- Industrial Process Control
- Test and Measurement
- System and Signal Monitoring
- Temperature Measurement
- Torque Measurement
- Civil Engineering
- Geotechnical Monitoring



DSCA39 Block Diagram - For Module Dimensions and Pinouts, See Page 4-35

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Specifications

Typical* at T_A = +25°C and +24VDC Supply Voltage

Module	DSCA39-01, -02, -03, -04	DSCA39-05	DSCA39-07
Output Range	4-20mA or 0-20mA	0-20mA	±20mA
Over Range Capability	10%	10%	5%
Output Compliance Voltage (Open Circuit)	22VDC	22VDC	±15VDC
Load Resistance Range	0 to 750Ω	0 to 750Ω	0 to 500Ω
Output Protection			
Continuous	240Vrms (max)	240Vrms (max)	240Vrms (max)
Transient	ANSI/IEEE C37.90.1	ANSI/IEEE C37.90.1	ANSI/IEEE C37.90.1
Input Range	±10V or 0V to +10V	0-20mA	±10V
Input Resistance			
Normal	2MΩ	<100Ω	2MΩ
Power Off	2MΩ	<100Ω	2MΩ
Overload	2MΩ	65kΩ	2MΩ
Input Protection			
Continuous	±35V (max)	75mA	±35V (max)
Transient	ANSI/IEEE C37.90.1	ANSI/IEEE C37.90.1	ANSI/IEEE C37.90.1
CMV, Output to Input, Output to Power			
Continuous	1500Vrms (max)	1500Vrms (max)	1500Vrms (max)
Transient	ANSI/IEEE C37.90.1	ANSI/IEEE C37.90.1	ANSI/IEEE C37.90.1
CMV, Input to Power			
Continuous	50VDC (max)	50VDC (max)	50VDC (max)
CMR (50Hz or 60Hz)	110dB	110dB	110dB
Accuracy(1)	±0.03% Span	±0.03% Span	±0.05%
Linearity	±0.01% Span	±0.01% Span	±0.01% Span
Adjustability	±5% Zero and Span	±5% Zero and Span	±5% Zero and Span
Stability			
Offset	±20ppm/°C	±20ppm/°C	±20ppm/°C
Gain	±40ppm/°C	±50ppm/°C	±40ppm/°C
Output Noise, 100kHz Bandwidth	4µArms	4µArms	4µArms
Bandwidth, –3dB	1kHz	1kHz	1kHz
NMR	100dB per Decade Above 1kHz	100dB per Decade Above 1kHz	100dB per Decade Above 1kHz
Response Time, 90% Span	475µs	475µs	475µs
Power Supply			
Voltage	15 to 30VDC	15 to 30VDC	19 to 29VDC
Current	65mA	65mA	65mA
Sensitivity	±0.0003%/%	±0.0003%/%	±0.0003%/%
Protection			
Reverse Polarity	Continuous	Continuous	Continuous
Transient	ANSI/IEEE C37.90.1	ANSI/IEEE C37.90.1	ANSI/IEEE C37.90.1
Mechanical Dimensions (h)x(w)x(d)	2.95" x 0.89" x 4.13" (75mm x 22.5mm x 105mm)	2.95" x 0.89" x 4.13" (75mm x 22.5mm x 105mm)	2.95" x 0.89" x 4.13" (75mm x 22.5mm x 105mm)
Mounting	DIN EN 50022 35x7.5 or 35x15 Rail	DIN EN 50022 35x7.5 or 35x15 Rail	DIN EN 50022 35x7.5 or 35x15 Rail
Environmental			
Operating Temperature Range	–40°C to +80°C	–40°C to +80°C	–40°C to +80°C
Storage Temperature Range	–40°C to +80°C	–40°C to +80°C	–40°C to +80°C
Relative Humidity	0 to 95% Noncondensing	0 to 95% Noncondensing	0 to 95% Noncondensing
Emissions EN61000-6-4	ISM, Group 1	ISM, Group 1	ISM, Group 1
Radiated, Conducted	Class A	Class A	Class A
Immunity EN61000-6-2	ISM, Group 1	ISM, Group 1	ISM, Group 1
RF	Performance A ±0.5% Span Error	Performance A ±0.5% Span Error	Performance A ±0.5% Span Error
ESD, EFT	Performance B	Performance B	Performance B

NOTES:
*Contact factory or your local Dataforth sales office for maximum values.
(1) Includes linearity, hysteresis and repeatability.

Ordering Information

Model	Input Range	Output Range
DSCA39-01	0V to +10V	4-20mA
DSCA39-02	–10V to +10V	4-20mA
DSCA39-03	0V to +10V	0-20mA
DSCA39-04	–10V to +10V	0-20mA
DSCA39-05	0mA to 20mA	0-20mA
DSCA39-07	–10V to +10V	±20mA

Installation Notes:

1.) This Equipment is Suitable for Use in Class I, Division 2, Groups A, B,C, D, or Non-hazardous Locations Only.

2.) WARNING - Explosion Hazard - Substitution of Components May Impair Suitability for Class I, Division 2.

3.) WARNING - Explosion Hazard - Do Not Disconnect Equipment Unless Power Has Been Switched Off or the Area is Known to be Non-hazardous.

4.) The Power to These Devices Shall Be Limited by an Over-current Protection Device, UL Certified Fuse (JDYX/JDYX2) Rated 6A Max.

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