DSCA42









2-Wire Transmitter Interface Signal Conditioners with Loop Power

Description

Each DSCA42 2-wire transmitter interface module provides a single channel of 4 to 20mA process current input which is filtered, isolated, amplified, and converted to a high-level voltage output (Figure 1). An isolated 24V power supply is provided to power the 2-wire transmitter. Signal filtering is accomplished with a five-pole filter which is optimized for step response. An anti-aliasing pole is located on the field side of the isolation barrier, and the other four poles are on the system side. After the initial field-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.

Module output is either voltage or current. For current output models a dedicated loop supply is provided at terminal 3 (+OUT) with loop return located at terminal 4 (-OUT). The system-side load may be either floating or grounded.

Special input circuits provide protection against accidental connection of powerline voltages up to 240VAC and against transient events as defined by ANSI/ IEEE C37.90.1. Protection circuits are also present on the signal output 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 $\pm 5\%$ 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 Process Loop Signals
- Industry Standard Output of 0 to +10V, 2 to +10V, 0 to 20mA, or 4 to 20mA
- Provides Isolated Loop Excitation
- 1500Vrms Transformer Isolation
- ANSI/IEEE C37.90.1 Transient Protection
- Input Protection to 240VAC Continuous
- True 3-Way Isolation
- · Wide Range of Supply Voltage
- 105dB CMR
- 5 Poles of Filtering
- ±0.03% Accuracy
- ±0.01% Linearity
- · Easily Mounts on Standard DIN Rail
- · C-UL-US Listed
- CE and ATEX Compliant

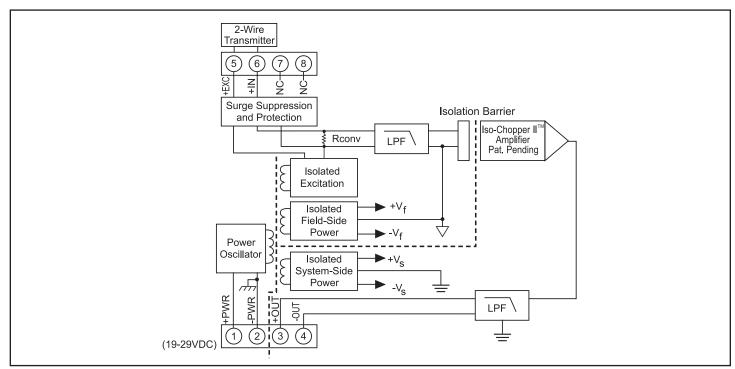


Figure 1: DSCA42 Blok Diagram

Specifications Typical* at T_A = +25°C and +24VDC supply voltage

Input Range Input Resistance Normal Power Off Coverload Input Protection Continuous Transient Continuous Transient Continuous Transient Continuous	Module		
Input Resistance Normal Power Off Overload Input Protection Continuous Transient Loop Supply Voltage Isolated Excitation Protection Continuous Transient Output Range Load Resistance (I _{Out}) Current Limit Output Protection Short to Ground Transient CMV, Input to Output, Input to Power Continuous Transient CMV, Output to Power Continuous CMR (50Hz or 60Hz) Accuracy(1) Linearity Adjustability Offset Gain Output Noise, 100kHz Bandwidth Bandwidth, –3dB NMR (-3dB at 100Hz) Response Time, 90% Span Power Supply Voltage Current Sensitivity Protection Reverse Polarity Transient Mechanical Dimensions (h)(w)(d) Mounting Environmental Operating Temperature Range Storage Temperature Range Relative Humidity Emissions EN61000-6-2 RF ESD, EFT 1200 240Vrms max ANSI/IEEE C37.90.1 See Ordering Information 600Ω max 8mA (V _{out}), 30mA (I _{out}) 240Vrms max ANSI/IEEE C37.90.1 Continuous ANSI/IEEE C37.90.1 240Vrms max ANSI/IEEE C37.90.1 240Vrms max ANSI/IEEE C37.90.1 Continuous ANSI/IEEE C37.90.1 240Vrms max ANSI/IEEE C37.90.1 See Ordering Information 600Ω max 8mA (V _{out}), 30mA (I _{out}) 250Vrms max ANSI/IEEE C37.90.1 240Vrms max ANSI/IEEE C37.90.1 250Vrms max ANSI/IEEE C37.90.1 260Pm/°C (V _{out}), 30mA (I _{out}) 250VPC (Iout) 240Vrms max ANSI/IEEE C37.90.1 250Vrms max ANSI/IEEE C37.90.1 26ppm/°C (V _{out}), 30mA (I _{out}) 250Vrms max ANSI/IEEE C37.90.1 26ppm/°C (V _{out}), 20ppm/°C (I _{out}) 250Vrms max ANSI/IEEE C37.90.1 26ppm/°C (V _{out}), 30mA (I _{out}) 250Vrms max ANSI/IEEE C37.90.1 26ppm/°C (V _{out}), 12ppm/°C (I _{out}) 26ppm/°C (V _{out}), 12ppm/°C (I _{out}) 27ppm/°C (I _{out}) 27	Module	DSCA42	
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Isolated Excitation Protection Continuous Transient Output Range Load Resistance (I _{our}) Current Limit Output Protection Short to Ground Transient CMV, Input to Output, Input to Power Continuous Transient CMV, Output to Power Continuous Transient CMV, Output to Power Continuous CMR (50Hz or 60Hz) Accuracy ⁽¹⁾ Stability Offset Gain Output Noise, 100kHz Bandwidth Bandwidth, -3dB at 100Hz) Response Time, 90% Span Power Supply Voltage Current Sensitivity Protection Reverse Polarity Transient Mechanical Dimensions (h)(w)(d) Mounting Environmental Operating Temperature Range Storage Temperature Range Relative Humidity Emissions EN61000-6-2 RF ESD, EFT See Ordering Information 600Ω max 8mA (V _{our}), 30mA (I _{our}) See Ordering Information 600Ω max 8mA (V _{our}), 30mA (I _{our}) See Ordering Information 600Ω max 8mA (V _{our}), 30mA (I _{our}) Smax ANSI/IEEE C37.90.1 See Ordering Information 600Ω max 8mA (V _{our}), 30mA (I _{our}) Smax ANSI/IEEE C37.90.1 See Ordering Information Continuous ANSI/IEEE C37.90.1 Seo Ordering Information 600Ω max 8mA (V _{our}), 30mA (I _{our}) 1500Vrms max ANSI/IEEE C37.90.1 Seo Ordering Information 600Ω max 8mA (V _{our}), 30mA (I _{our}) 1500Vrms max ANSI/IEEE C37.90.1 \$\frac{2000}{2000} \frac{2000}{2000} \			
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NMR (-3dB at 100Hz) Response Time, 90% Span Power Supply Voltage Current Sensitivity Protection Reverse Polarity Transient Mechanical Dimensions (h)(w)(d) Mounting Environmental Operating Temperature Range Storage Temperature Range Relative Humidity Emissions EN61000-6-4 Radiated, Conducted Immunity EN61000-6-2 RF ESD, EFT 100dB per Decade above 100Hz 5ms 19 to 29VDC 60mA (V _{out}), 80mA (I _{out}) ±0.0002% % PCOntinuous ANSI/IEEE C37.90.1 Continuous ANSI/IEEE C37.90.1 Possion x 22.5mm x 105mm) DIN EN 50022 -35x7.5 or -35x15 rail -40°C to +80°C -40°C to +80°C 0 to 95% Noncondensing ISM, Group 1 Class A ISM, Group 1 Performance A ±0.5% Span Error Performance B	Gain	±40ppm/°C	
Voltage Current Sensitivity Protection Reverse Polarity Transient Mechanical Dimensions (h)(w)(d) Mounting Environmental Operating Temperature Range Storage Temperature Range Relative Humidity Emissions EN61000-6-4 Radiated, Conducted Immunity EN61000-6-2 RF ESD, EFT 19 to 29VDC 60mA (V _{OuT}), 80mA (I _{OuT}) 2.95" x 0.89" x 4.13" (75mm x 22.5mm x 105mm) DIN EN 50022 -35x7.5 or -35x15 rail -40°C to +80°C	NMR (-3dB at 100Hz)	100dB per Decade above 100Hz	
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Environmental Operating Temperature Range Storage Temperature Range Relative Humidity Emissions EN61000-6-4 Radiated, Conducted Immunity EN61000-6-2 RF ESD, EFT Out 0 480°C -40°C to +80°C 0 to 95% Noncondensing ISM, Group 1 Class A ISM, Group 1 Performance A ±0.5% Span Error Performance B			
Operating Temperature Range Storage Temperature Range Relative Humidity Emissions EN61000-6-4 Radiated, Conducted Immunity EN61000-6-2 RF ESD, EFT -40°C to +80°C -40°C to +80°C 0 to 95% Noncondensing ISM, Group 1 Class A ISM, Group 1 Performance A ±0.5% Span Error Performance B	Mounting	DIN EN 50022 -35x7.5 or -35x15 rail	
ESD, EFT Performance B	Operating Temperature Range Storage Temperature Range Relative Humidity Emissions EN61000-6-4 Radiated, Conducted Immunity EN61000-6-2	-40°C to +80°C 0 to 95% Noncondensing ISM, Group 1 Class A ISM, Group 1	
	ESD, EFT		

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
DSCA42-01	4mA to 20mA	0V to +10V
DSCA42-02	4mA to 20mA	2V to +10V
DSCA42-01C	4mA to 20mA	4 to 20mA
DSCA42-01E	4mA to 20mA	0 to 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.