DSCA

High Performance DIN Isolated Analog Signal Conditioners

Description

Each Instrument-Class® DSCA module provides a single channel of isolated analog input or output. Input modules accept analog voltage or current signals from all types of field sensors and sources and filter, isolate, amplify, linearize, and convert these input signals to high-level analog outputs suitable for use in data acquisition, test and measurement, and control system applications. Output modules accept high-level analog voltage signals from a system, then buffer, isolate, filter, and amplify them before providing a current or voltage output to a field device.

▶ Features

- ±0.03% Accuracy (Typical)
- ±0.01% Linearity
- 1500Vrms Transformer Isolation & 240Vrms Field-side Protection
- ANSI/IEEE C37.90.1 Transient Protection
- True 3-Way Isolation
- Wide Supply Voltage, 15 to 30VDC
- Industry Standard Output of 0 to +10V, ±10V, 0 to 20mA, or 4 to 20mA
- 4- to 6-Pole Low-Pass Filtering
- Up to 160dB CMR
- 85dB NMR at 60Hz, 80dB at 50Hz
- –40°C to +80°C Operating Temperature
- Screw Terminals and Plug-in Terminal Blocks Simplify Wiring and Maintenance
- C-UL-US Listed (Class I, Division 2, Groups A, B, C, D)
- CE and ATEX Compliant
- Manufactured per RoHS Directive 2002/95/EC

▶ DSCA Selection Guide

ANALOG VOLTAGE INPUT MODULES, 3Hz BW Page 198

MODEL	INPUT RANGE	OUTPUT RANGE†
DSCA30-01	–10mV to +10mV	1
DSCA30-02	–50mV to +50mV	1
DSCA30-03	–100mV to +100mV	1
DSCA30-04	–10mV to +10mV	2, 3, 4
DSCA30-05	–50mV to +50mV	2, 3, 4
DSCA30-06	–100mV to +100mV	2, 3, 4
DSCA30-07	0 to +10mV	2, 3, 4
DSCA30-08	0 to +50mV	2, 3, 4
DSCA30-09	0 to +100mV	2, 3, 4
DSCA31-01	–1V to +1V	1
DSCA31-02	–5V to +5V	1
DSCA31-03	–10V to +10V	1
DSCA31-04	–1V to +1V	2, 3, 4
DSCA31-05	–5V to +5V	2, 3, 4
DSCA31-06	–10V to +10V	2, 3, 4
DSCA31-07	–20V to +20V	1
DSCA31-08	–20V to +20V	2, 3, 4
DSCA31-09	–40V to +40V	1
DSCA31-10	–40V to +40V	2, 3, 4
DSCA31-11	0 to +1V	2, 3, 4
DSCA31-12	0 to +5V	2, 3, 4
DSCA31-13	0 to +10V	2, 3, 4
DSCA31-14	0 to +20V	2, 3, 4
DSCA31-15	0 to +40V	2, 3, 4

ANALOG CURRENT INPUT MODULES Page 200

MODEL	INPUT RANGE	OUTPUT RANGE†
DSCA32-01	4mA to 20mA	2, 3, 4
DSCA32-02	0mA to 20mA	2, 3, 4
DSCA32-03	–20mA to 20mA	1

ISOLATED TRUE RMS INPUT MODULES Page 202

MODEL	INPUT RANGE (rms)	OUTPUT RANGE (dc)†
DSCA33-01	0 to 100mV	2, 3, 4, 5, 6
DSCA33-02	0 to 1V	2, 3, 4, 5, 6
DSCA33-03	0 to 10V	2, 3, 4, 5, 6
DSCA33-04	0 to 150V	2, 3, 4, 5, 6
DSCA33-05	0 to 300V	2, 3, 4, 5, 6
DSCA33-06	0 to 1A	2, 3, 4, 5, 6
DSCA33-07	0 to 5A	2, 3, 4, 5, 6

LINEARIZED 2- or 3-WIRE RTD INPUT MODULES Page 204

MODEL	INPUT RANGE	OUTPUT RANGE†
100Ω Pt **		
DSCA34-01	–100°C to +100°C (–148°F to +212°F)	2, 3, 4
DSCA34-02	0°C to +100°C (+32°F to +212°F)	2, 3, 4
DSCA34-03	0°C to +200°C (+32°F to +392°F)	2, 3, 4
DSCA34-04	0°C to +600°C (+32°F to +1112°F)	2, 3, 4
DSCA34-05	–50°C to +350°C (–58°F to +662°F)	2, 3, 4
120Ω Ni **		
DSCA34N-01	0°C to +300°C (+32°F to +572°F)	2, 3, 4

▶ DSCA Selection Guide (Continued)

POTENTIOMETER INPUT MODULES Page 206

MODEL	INPUT RANGE	OUTPUT RANGE†
DSCA36-01	100Ω	2, 3, 4
DSCA36-02	500Ω	2, 3, 4
DSCA36-03	1kΩ	2, 3, 4
DSCA36-04	10kΩ	2, 3, 4

THERMOCOUPLE INPUT MODULES Page 208

MODEL	TYPE‡	INPUT RANGE	OUTPUT RANGE†
DSCA37J-01	J	–100°C to +760°C (–148°F to +1400°F)	2, 3, 4
DSCA37K-02	K	–100°C to +1350°C (–148°F to +2462°F)	2, 3, 4
DSCA37T-03	T	–100°C to +400°C (–148°F to +752°F)	2, 3, 4
DSCA37E-04	E	0°C to +900°C (+32°F to +1652°F)	2, 3, 4
DSCA37R-05	R	0°C to +1750°C (+32°F to +3182°F)	2, 3, 4
DSCA37S-06	S	0°C to +1750°C (+32°F to +3182°F)	2, 3, 4
DSCA37B-07	B	0°C to +1800°C (+32°F to +3272°F)	2, 3, 4
DSCA37N-08	N	–100°C to +1300°C (–148°F to +2372°F)	2, 3, 4

STRAIN GAGE INPUT MODULES Page 210

MODEL	INPUT	EXCITATION	OUTPUT RANGE‡
DSCA38-01	±10mV Full Bridge Input, (3mV/V)	+3.333V	1
DSCA38-02	±30mV Full Bridge Input, (3mV/V)	+10.0V	1
DSCA38-03	±10mV Half Bridge Input, (3mV/V)	+3.333V	1
DSCA38-04	±30mV Half Bridge Input, (3mV/V)	+10.0V	1
DSCA38-05	±20mV Full Bridge Input, (2mV/V)	+10.0V	1
DSCA38-06	±33.3mV Full Bridge Input, (10mV/V)	+3.333V	1
DSCA38-07	±100mV Full Bridge Input, (10mV/V)	+10.0V	1
DSCA38-08	±10mV Full Bridge Input, (3mV/V)	+3.333V	2, 3, 4
DSCA38-09	±30mV Full Bridge Input, (3mV/V)	+10.0V	2, 3, 4
DSCA38-10	±10mV Half Bridge Input, (3mV/V)	+3.333V	2, 3, 4
DSCA38-11	±30mV Half Bridge Input, (3mV/V)	+10.0V	2, 3, 4
DSCA38-12	±20mV Full Bridge Input, (2mV/V)	+10.0V	2, 3, 4
DSCA38-13	±33.3mV Full Bridge Input, (10mV/V)	+3.333V	2, 3, 4
DSCA38-14	±100mV Full Bridge Input, (10mV/V)	+10.0V	2, 3, 4
DSCA38-15	0 to +10mV Full Bridge Input, (3mV/V)	+3.333V	2, 3, 4
DSCA38-16	0 to +30mV Full Bridge Input, (3mV/V)	+10.0V	2, 3, 4
DSCA38-17	0 to +10mV Half Bridge Input, (3mV/V)	+3.333V	2, 3, 4
DSCA38-18	0 to +30mV Half Bridge Input, (3mV/V)	+10.0V	2, 3, 4
DSCA38-19	0 to +20mV Full Bridge Input, (2mV/V)	+10.0V	2, 3, 4
DSCA38-20	0 to +33.3mV Full Bridge Input, (10mV/V)	+3.333V	2, 3, 4
DSCA38-21	0 to +100mV Full Bridge Input, (10mV/V)	+10.0V	2, 3, 4

CURRENT OUTPUT MODULES Page 212

MODEL	INPUT RANGE	OUTPUT RANGE
DSCA39-01	0V to +10V	4mA to 20mA
DSCA39-02	–10V to +10V	4mA to 20mA
DSCA39-03	0V to +10V	0mA to 20mA
DSCA39-04	–10V to +10V	0mA to 20mA
DSCA39-05	0mA to 20mA	0mA to 20mA
DSCA39-07	–10V to +10V	-20mA to +20mA

ANALOG VOLTAGE INPUT MODULES, 3kHz BW Page 214

MODEL	INPUT RANGE	OUTPUT RANGE†
DSCA40-01	–10mV to +10mV	1
DSCA40-02	–50mV to +50mV	1
DSCA40-03	–100mV to +100mV	1
DSCA40-04	–10mV to +10mV	2, 3, 4
DSCA40-05	–50mV to +50mV	2, 3, 4
DSCA40-06	–100mV to +100mV	2, 3, 4
DSCA40-07	0 to +10mV	2, 3, 4
DSCA40-08	0 to + 50mV	2, 3, 4
DSCA40-09	0 to +100mV	2, 3, 4
DSCA41-01	–1V to +1V	1
DSCA41-02	–5V to +5V	1
DSCA41-03	–10V to +10V	1
DSCA41-04	–1V to +1V	2, 3, 4
DSCA41-05	–5V to +5V	2, 3, 4
DSCA41-06	–10V to +10V	2, 3, 4
DSCA41-07	–20V to +20V	1
DSCA41-08	–20V to +20V	2, 3, 4
DSCA41-09	–40V to +40V	1
DSCA41-10	–40V to +40V	2, 3, 4
DSCA41-11	0 to +1V	2, 3, 4
DSCA41-12	0 to +5 V	2, 3, 4
DSCA41-13	0 to +10V	2, 3, 4
DSCA41-14	0 to +20V	2, 3, 4
DSCA41-15	0 to +40V	2, 3, 4

2-WIRE TRANSMITTER INTERFACE MODULES Page 216

MODEL	INPUT RANGE	OUTPUT RANGE†
DSCA42-01	4mA to 20mA	0V to +10V & 3, 4
DSCA42-02	4mA to 20mA	2V to +10V

GENERAL PURPOSE INPUT MODULES, DC EXCITATION Page 218

MODEL	INPUT RANGE	OUTPUT RANGE†
DSCA43-01	–1V to +1V	1
DSCA43-02	–2V to +2V	1
DSCA43-03	–3V to +3V	1
DSCA43-04	–4V to +4V	1
DSCA43-05	–5V to +5V	1
DSCA43-06	–6V to +6V	1
DSCA43-07	–7V to +7V	1
DSCA43-08	–8V to +8V	1
DSCA43-09	–9V to +9V	1
DSCA43-10	–10V to +10V	1
DSCA43-11	–1V to +1V	2, 3, 4
DSCA43-12	–2V to +2V	2, 3, 4
DSCA43-13	–3V to +3V	2, 3, 4
DSCA43-14	–4V to +4V	2, 3, 4
DSCA43-15	–5V to +5V	2, 3, 4
DSCA43-16	–6V to +6V	2, 3, 4
DSCA43-17	–7V to +7V	2, 3, 4
DSCA43-18	–8V to +8V	2, 3, 4
DSCA43-19	–9V to +9V	2, 3, 4
DSCA43-20	–10V to +10V	2, 3, 4

▶ DSCA Selection Guide (Continued)

FREQUENCY INPUT MODULES Page 220

MODEL	INPUT RANGE	OUTPUT RANGE†
DSCA45-01	0 to 500Hz	2, 3, 4
DSCA45-02	0 to 1kHz	2, 3, 4
DSCA45-03	0 to 2.5kHz	2, 3, 4
DSCA45-04	0 to 5kHz	2, 3, 4
DSCA45-05	0 to 10kHz	2, 3, 4
DSCA45-06	0 to 25kHz	2, 3, 4
DSCA45-07	0 to 50kHz	2, 3, 4
DSCA45-08	0 to 100kHz	2, 3, 4

LINEARIZED THERMOCOUPLE INPUT MODULES Page 222

MODEL	TYPE‡	INPUT RANGE	OUTPUT RANGE†
DSCA47J-01	J	0°C to +760°C (+32°F to +1400°F)	2, 3, 4
DSCA47J-02	J	–100°C to +300°C (–148°F to +572°F)	2, 3, 4
DSCA47J-03	J	0°C to +500°C (+32°F to +932°F)	2, 3, 4
DSCA47K-04	K	0°C to +1000°C (+32°F to +1832°F)	2, 3, 4
DSCA47K-05	K	0°C to +500°C (+32°F to +932°F)	2, 3, 4
DSCA47K-13	K	–100°C to +1350°C (–148°F to +2462°F)	2, 3, 4
DSCA47K-14	K	0°C to +1200°C (+32°F to +2192°F)	2, 3, 4
DSCA47T-06	T	–100°C to +400°C (–148°F to +752°F)	2, 3, 4
DSCA47T-07	T	0°C to +200°C (+32°F to +392°F)	2, 3, 4
DSCA47E-08	E	0°C to +1000°C (+32°F to +1832°F)	2, 3, 4
DSCA47R-09	R	+500°C to +1750°C (+932°F to +3182°F)	2, 3, 4
DSCA47S-10	S	+500°C to +1750°C (+932°F to +3182°F)	2, 3, 4
DSCA47B-11	B	+500°C to +1800°C (+932°F to +3272°F)	2, 3, 4
DSCA47N-15	N	–100°C to +1300°C (–148°F to +2372°F)	2, 3, 4

VOLTAGE OUTPUT MODULES Page 224

MODEL	INPUT RANGE	OUTPUT RANGE
DSCA49-04	0V to +10V	–10V to +10V
DSCA49-05	–10V to +10V	–10V to +10V
DSCA49-06	–10V to +10V	0V to +10V

POWER SUPPLIES Page 226

PWR-PS5RA	Power Supply, 24V, 0.3A, 100-240VAC Input
PWR-PS5RB	Power Supply, 24V, 0.6A, 100-240VAC Input
PWR-PS5RC	Power Supply, 24V, 1.3A, 100-240VAC Input
PWR-PS5RD	Power Supply, 24V, 2.1A, 100-240VAC Input
PWR-PS5RE	Power Supply, 24V, 4.2A, 100-240VAC Input

ACCESSORIES Page 227

SCMXRAIL1-XX	DIN EN 50022-35 x 7.5 (slotted steel), length -xx, in meters
SCMXRAIL3-XX	DIN EN 50022-35 x 15 (slotted steel), length -xx, in meters

† OUTPUT RANGES AVAILABLE

Output Range	Part No. Suffix	Example
1. –10V to +10V	None	DSCA30-01
2. 0V to +10V	None	DSCA30-04
3. 4 to 20mA	C	DSCA30-01C
4. 0 to 20mA	E	DSCA30-04E
5. 0 to +5V	A	DSCA33-01A
6. 0 to 1mA	B	DSCA33-01B

‡THERMOCOUPLE ALLOY COMBINATIONS
Standards: DIN IEC 584, ANSI MC96-1-82, JIS C 1602-1981

TYPE	MATERIAL
J	Iron vs. Copper-Nickel
K	Nickel-Chromium vs. Nickel-Aluminum
T	Copper vs. Copper-Nickel
E	Nickel-Chromium vs. Copper-Nickel
R	Platinum-13% Rhodium vs. Platinum
S	Platinum-10% Rhodium vs. Platinum
B	Platinum-30% Rhodium vs. Platinum-6% Rhodium
N	Nickel-14.2% Chromium-1.4% Silicon vs. Nickel-4.4% Silicon- 0.1% Magnesium

**RTD STANDARDS

TYPE	ALPHA COEFFICIENT	DIN	JIS	IEC
100Ω Pt	0.00385	DIN 43760	JIS C 1604-1989	IEC 751
120Ω Ni	0.00672			

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.