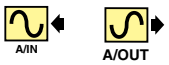
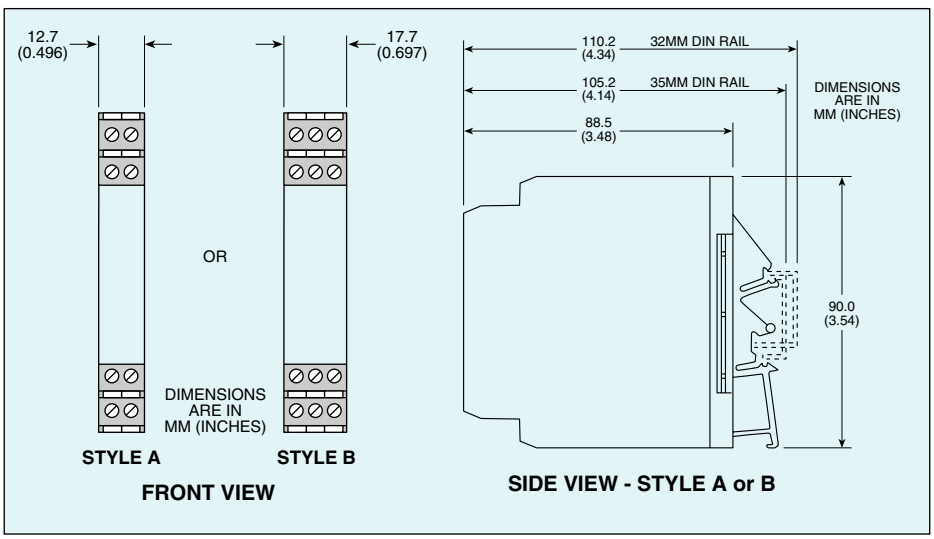
DIN Rail Mount Signal Conditioners

DRG-SC Series

5 YEAR WARRANTY CE



- **Models Available for Thermocouples, RTDs, DC Voltage and Current, Frequency, Strain Gage Bridge, AC Voltage and Current**
- **Field Configurable Input and Output Ranges**
- **Five Field Configurable Output Ranges: 0 to 5 V, 0 to 10 V, 0 to 1 mA, 0 to 20 mA and 4 to 20 mA**
- **Slim Housing Mounts on DIN Rail for High Density Installations**
- **1800 Volts Isolation Between Input, Output and Power Supply**



The DRG Series signal conditioner modules accept a wide variety of input signals such as thermocouples, RTDs, strain gages, DC voltages/currents, AC voltages/currents, frequency and potentiometers and produce a proportional conditioned process output. The inputs and outputs are both field configurable and offer flexible wide ranging capability. The slim housing mounts on a DIN rail and is ideal for high density installation. All modules provide 1800 Vdc isolation between the input, output and power supply.

Field Configurable

One advantage of the DRG series is the field configurable input and output ranges. Each module can be set to a number of ranges by dip switch selection. Wide ranging precision zero and span potentiometers provide even further adjustment. The signal conditioners may be set for an almost limitless number of ranges. Range adjustment requires the use of a calibrator or reference source.

To Order *Visit omega.com/drg-sc for Pricing and Details*

Model No.	Description	Case Style
DRG-SC-AC	AC Voltage and Current	A
DRG-SC-BG	Strain Gage Bridge	B
DRG-SC-DC-B	DC Voltage and Current (bipolar)	A
DRG-SC-DC-U	DC Voltage and Current (unipolar)	A
DRG-SC-FR	Frequency	A
DRG-SC-PT	Potentiometer	A
DRG-SC-RTD	RTD	B
DRG-SC-TC	Thermocouple	B

Specifications

DRG-SC-AC

Range (voltage mode): 100 mV to 200 Vac

Impedance (voltage mode): >100 KΩ

Overload (voltage mode): 300 Vac, max.

Range (current mode): 10 mA to 100 mAAC

Impedance (current mode): 20 Ω, typical

Overcurrent (current mode): 200 mAAC

Overvoltage (current mode): 60V rms

Frequency Range: 40 to 400 Hz, factory calibrated at 60 Hz

Accuracy (including linearity, hysteresis): ±0.1% of span, typical; ±0.5% of span, maximum.

Response Time: (10-90%) 250 mS., typical

Power: 9-30 Vdc, 1.5 W typical, 2.5 W max.

DRG-SC-BG

Range: 10 mV to ±200 mV

Impedance: >1 MΩ

Overvoltage: 400 VRMS max. (intermittent); 264 VRMS, max. (continuous)

Accuracy (including linearity, hysteresis): ±0.1% typical, ±0.2% max. of range @25°C

Bridge Excitation: 1 to 10 Vdc, 120 mA max.

Response Time: (10-90%) <200 mS., typical

Power: 18-30 Vdc, 1.5 W typical, 2.5W max.(one 350Ω bridge), 4 W max.(four 350Ω bridges)

DRG-SC-DC

Range (voltage mode): 10 mV to 100 V

Impedance (voltage mode): > 100 KΩ

Overload (voltage mode): 400 VRMS, max.

Range (current mode): 1 mA to 100 mA

Impedance (current mode): 20 Ω, typical

Overcurrent (current mode): 170 mA RMS max.

Overvoltage (current mode): 60 Vdc

Accuracy (including linearity, hysteresis): <2 mA/20 mV: ±0.35% fs, typical; 0.5% max.; >2 mA/20 mV:±0.1% fs typical, 0.2% max.

Response Time: (10-90%) 200 mS., typical

Power: 9-30 Vdc, 1.5 W typical, 2.5 W max

DRG-SC-FR

Frequency Range: 2Hz to 10,000 Hz

Amplitude Range: 50 mV to 150 VRMS

Accuracy (including linearity, hysteresis): ±0.1% of selected range

Impedance: >10 KΩ

Over-Voltage: 180 V rms, max.

Over-Range: 20 Khz, max.

Response Time: (10-90%): 500 mSec., or 100 times the period of the full scale frequency.

Power: 9-30 Vdc, 1.5 W typical, 2.5 W max

DRG-SC-PT

Resistance (End to End): 100 Ω up to 100 KΩ

Accuracy (including linearity, hysteresis): ±0.1% maximum @25°C

Input Impedance: >1 MΩ

Input Excitation: 500 mV, 5 mA maximum drive

Response Time: (10-90%) <200 mS., typical

DRG-SC-RTD:

Sensor Types: RTD, Pt100, Pt500, Pt1000 (a = 0.00385 or 0.00392); Cu10, Cu25, Cu100

Sensor Connection: 3 wire

Range: See Range Table

Accuracy (including linearity, hysteresis): ±0.1% typical, ±0.2% max. the maximum input temperature range @ 25°C, 0 Ω lead resistance.

Excitation Current: <2 mA for Pt100, Pt500, Pt1000; <5 mA for Cu100; <10 mA for Cu10, Cu25

Leadwire Resistance: 40% of base sensor resistance or 100 Ω (whichever is less), max. per lead.

Leadwire Effect: Less than 1% of the maximum input temperature span.

Response Time: (10-90%) 200 mS., typical

Power: 9-30 Vdc (DRG-SC-BG: 18-30 Vdc), 1.5 W typical, 2.5 W max

DRG-SC-TC

Sensor Types: J, K, T, R, S, E, B

Ranges: See Range Table

Accuracy:

J	±2°C (-200 to 750°C)
K	±5°C (-200 to -140°C) ±2°C (-140 to 1250°C) ±4°C (1250 to 1370°C)
E	±2.5°C (-150 to 1000°C)
T	±3°C (-150 to 400°C)
R & S	±6°C (50 to 1760°C)
B	±5°C (500 to 1820°C)

Bias Current (burnout detection): <1.5 microamp

Impedance: >1 MΩ

Overvoltage: ±10 V differential

Response Time (10 to 90%): 500 mSec. Typical.

Power: 9-30 Vdc, 1.5 W typical, 2.5 W max

SPECIFICATIONS COMMON TO ALL MODULES

Output*

Voltage Output:

Output: 0-5 V, 0-10 V

Impedance: <10 Ω

Drive: 10 mA max.

Current Output

Output: 0-1 mA, 0-20 mA, 4-20 mA

Compliance:

0-1 mA; 7.5 V, max.(7.5 KΩ)

0-20 mA: 12 V, max.(600 Ω)

4-20 mA: 12 V, max.(600 Ω)

Isolation: 1800 Vdc between input output and power.

Mounting: Standard 32 mm or 35 mm DIN rail

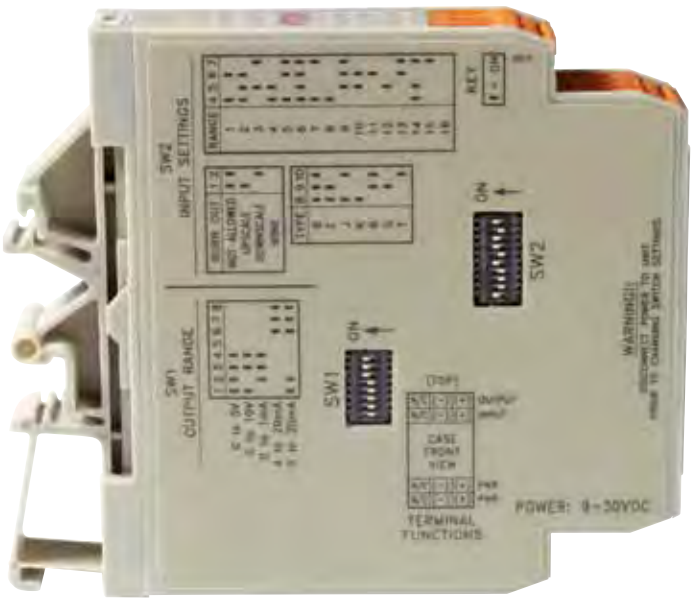
ESD Susceptibility: Meets IEC 801-2, level 2 (4 KV)

Humidity (Non-Condensing):
Operating: 15 to 95% (@45°C),
Soak: 90% for 24 hours (@65°C)

Temperature Range:
Operating: 0 to 55°C (32 to 131°F),
Storage: -25 to 70°C (-13 to 158°F)

**DRG-SC-DC-B has a ±5 V and ±10 V output only*

Thermocouple Input Signal Conditioner



DRG-SC-TC, side view.

DRG-SC-TC, front view.

DRG-SC-TC

5 YEAR WARRANTY

The DRG-SC-TC is a DIN rail mount thermocouple input signal conditioner. It can be field configured for over 60 different thermocouple temperature ranges. The output is linear to temperature and can be set for either 0-5 V, 0-10 V, 0-1 mA, 0-20 mA or 4-20 mA. Zero and span pots allow 50% adjustability of offset and span turn down within each of the ranges. For example the 500-1000°C range could be offset and turned down to provide a 4-20 mA signal representing 750-1000°C.

Input Ranges °C	B	E	J	K	R/S	T
-200 to 0			✓	✓		
-200 to 250			✓	✓		
-200 to 750			✓	✓		
-150 to 0		✓				✓
-150 to -18						
-150 to 250		✓			✓	
-150 to 400						✓
-150 to 750		✓				
-18 to 125		✓	✓	✓		✓
-18 to 250		✓	✓	✓		✓
-18 to 400						✓
-18 to 500		✓	✓	✓		
-18 to 750			✓			
-18 to 1000		✓		✓		
-18 to 1370				✓		
50 to 250					✓	
50 to 500					✓	
50 to 1000					✓	
50 to 1760					✓	
125 to 250		✓	✓	✓	✓	✓
250 to 400						✓
250 to 500		✓	✓	✓	✓	
375 to 400						✓
375 to 500		✓	✓	✓	✓	
500 to 750			✓			
500 to 1000	✓	✓		✓	✓	
500 to 1820	✓					
750 to 1000	✓	✓		✓	✓	
1000 to 1370				✓		
1000 to 1760					✓	
1000 to 1820	✓					
1500 to 1760					✓	
1500 to 1820	✓					

To Order *Visit omega.com/drg-sc for Pricing and Details*

Model No.	Description
DRG-SC-TC	Thermocouple Input Signal Conditioner
DRN-PS-1000	Power supply, 95-240 Vac input, 24 Vdc output @ 1A
RAIL-35-1	35 mm (1.4") DIN rail, 1 m (3.3') length
RAIL-35-2	35 mm (1.4") DIN rail, 2 m (6.6') length

Comes complete with operator's manual.

Ordering Example: DRG-SC-TC *Thermocouple input signal conditioner.*

DC Input Signal Conditioner

DRG-SC-DC

The DRG-SC-DC is a DIN rail mount DC voltage and current input signal conditioning module. The input can be field configured for any one 12 voltage ranges from 10 mV to 100 V or 6 current ranges from 1 mA to 100 mA. The output is linear to the input and can be set to either 0-5 V, 0-10 V, 0-1 mA, 0-20 mA or 4-20 mA for the DRG-SC-DC-U (unipolar outputs) and -5 V to +5 V or -10 V to +10 V for the DRG-SC-DC-B (bipolar outputs). Zero and span pots allow 50% adjustability of offset and span turn down within each of the ranges. For example the 0-2 mA input range could be turned down to 0-1 mA and provide a full scale output signal (e.g. 4-20 mA).

INPUT RANGES (UNIPOLAR AND BIPOLAR)
Voltages: 20 mV, 50 mV, 100 mV, 200 mV 500 mV, 1 V, 2 V, 5 V, 10 V, 25 V, 50 V, 100 V
Current: 2 mA, 5 mA, 10 mA, 20 mA, 50 mA, 100 mA

To Order *Visit omega.com/drg-sc for Pricing and Details*	
Model No.	**Description**
DRG-SC-DC-B	DC voltage/current input signal conditioner with bipolar output ranges
DRG-SC-DC-U	DC voltage/current input signal conditioner with unipolar output ranges
RAIL-35-1	35 mm (1.4") DIN rail, 1 m (3.3') length
RAIL-35-2	35 mm (1.4") DIN rail, 2 m (6.6') length

Comes complete with operator's manual.
***Ordering Example: DRG-SC-DC-U** DC voltage/current input signal conditioner.*

Bridge/Strain Gage Input Signal Conditioner

DRG-SC-BG

The DRG-SC-BG is a DIN rail mount bridge or strain gage input signal conditioning module. The field configurable input and output offers flexible, wide ranging capability for bridge or strain gage applications from 0.5 mV/V to over 50 mv/V. Wide ranging, precision zero and span pots allow 50% adjustability of offset and gain within each of the 11 switch selectable input ranges. The output can be set for either 0-5 V, 0-10 V, 0-1 mA, 0-20 mA or 4-20 mA. This flexibility, combined with an adjustable (1 to 10 Vdc) bridge excitation source, provides the user a reliable, accurate instrument to isolate and condition virtually any bridge or strain gage input.

INPUT RANGES:
0-10 mV, 0-20 mV, 0-50 mV, 0-100 mV, 0-200 mV, ±5 mV, ±10 mV, ±20 mV, ±50 mV, ±100 mV, ±200 mV

To Order *Visit omega.com/drg-sc for Pricing and Details*	
Model No.	**Description**
DRG-SC-BG	Bridge input signal conditioner

Comes complete with operator's manual.
***Ordering Example: DRG-SC-BG** bridge input signal conditioner.*

RTD Input Signal Conditioner

DRG-SC-RTD

5 YEAR WARRANTY CE

The DRG-SC-RTD is a DIN rail mount RTD input signal conditioning module. It accepts a wide variety of RTDs including 100, 500 and 1000 Ohm Platinum RTDs as well as 10, 25 and 100 Ohm copper. It works with RTDs with α = 0.00385Ω/Ω/°C or 0.00392.Ω/Ω/°C

The input can be field configured for any one of up to sixteen temperature ranges. The output is linear to temperature and can be set for either 0-5 V, 0-10 V, 0-1 mA, 0-20 mA or 4-20 mA.

Input Ranges (°C):
PT100, PT500 and PT1000: -200 to 600, -200 to 400, -100 to 400, -200 to 260, -200 to 0, -200 to -100, -100 to 260, -100 to 100, -50 to 50, -18 to 50, -18 to 100, -18 to 260, -18 to 300, -18 to 400, -18 to 500, -18 to 600
Cu10, Cu25 and Cu100: -200 to 260,-200 to 0, -200 to -100, -100 to 260, -100 to 100, -50 to 50, -18 to 50, -18 to 100, -18 to 260

To Order *Visit omega.com/drg-sc for Pricing and Details*

Model No.	Description
DRG-SC-RTD	RTD Input Signal Conditioner
RAIL-35-1	35 mm (1.4") DIN rail, 1 m (3.3') length
RAIL-35-2	35 mm (1.4") DIN rail, 2 m (6.6') length

Comes complete with operator's manual.
***Ordering Example: DRG-SC-RTD** RTD input signal conditioner.*

Frequency Input Signal Conditioner

DRG-SC-FR

5 YEAR WARRANTY CE

The DRG-SC-FR is a DIN rail mount frequency input signal conditioning module. The field configurable input and output offers flexible, wide ranging capability for a variable frequency drives, magnetic pickups, turbine meters and other pulse or frequency output transducers. The output can be set for either 0 to 5 V, 0 to 10 V, 0 to 1 mA, 0 to 20 mA or 4 to 20 mA. The DRG-SC-FR can be configured for virtually any frequency input to DC signal output within the ranges specified. Calibration utilizes technology where the user simply applies minimum and maximum input frequencies, touching a recessed button to configure the minimum and maximum output range.

INPUT RANGE: 2 Hz to 10,000 Hz, 50 mVp to 150 Vrms

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Model No.	Description
DRG-SC-FR	Frequency Input Signal Conditioner

Comes complete with operator's manual.
***Ordering Example: DRG-SC-FR** frequency input signal conditioner.*

Potentiometer Input Signal Conditioner

DRG-SC-PT

5 YEAR WARRANTY CE

The DRG-SC-PT is a DIN rail mount potentiometer input signal conditioning module.

The input provides a constant voltage and is designed to accept any three-wire potentiometer from 100 Ω to 100 KΩ. The field configurable output can be set for either 0-5 V, 0-10 V, 0-1 mA, 0-20 mA or 4-20 mA.

Wide ranging, precision zero and span pots, used in conjunction with DIP switches, allow 80% adjustability of offset and gain to transmit a full scale output from any 20% portion of the potentiometer input.

INPUT RANGE:
100 Ω to 100 KΩ

To Order *Visit omega.com/drg-sc for Pricing and Details*	
Model No.	**Description**
DRG-SC-PT	Potentiometer Input Signal Conditioner
RAIL-35-1	35 mm (1.4") DIN rail, 1 m (3.3') length
RAIL-35-2	35 mm (1.4") DIN rail, 2 m (6.6') length

Comes complete with operator's manual.
Ordering Example: DRG-SC-PT *Potentiometer input signal conditioner.*

AC Input Signal Conditioner

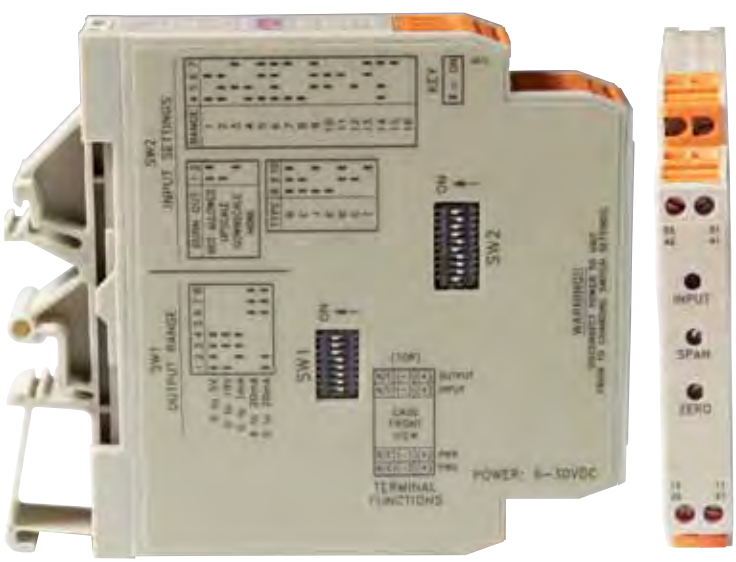
DRG-SC-AC

5 YEAR WARRANTY CE

The DRG-SC-AC is a DIN rail mount AC input signal conditioning module.

The field configurable input and output offers flexible wide ranging capability for scaling, converting or buffering AC inputs ranging from 5 mA to 100 mAAC (for a greater input range, use optional current shunt, DRG-C006) or 50 mV to 200 Vac. The DC output of the DRG-SC-AC is proportional to the average of the fully rectified AC input signal, and is calibrated for sine waves between 40-400 Hz. The field configurable output can be set for either 0-5 V, 0-10 V, 0-1 mA, 0-20 mA or 4-20 mA

The DRG-SC-AC has 15 input range switch settings. Trim potentiometers allow 50% input and span adjustability within each of the 15 full-scale input ranges.



INPUT RANGES (INPUT SIGNAL FREQUENCY: 40 TO 400 HZ)
AC Voltage: 100 mV, 200 mV, 500 mV, 1 V, 2 V, 5 V,10 V, 20 V, 50 V, 100 V, 200 V
AC Current: 10 mA, 20 mA, 50 mA, 100 mA

To Order *Visit omega.com/drg-sc for Pricing and Details*	
Model No.	**Description**
DRG-SC-AC	AC Input Signal Conditioner
DRG-C006	0.1Ω, 5W Shunt Resistor

Comes complete with operator's manual.
Ordering Example: DRG-SC-AC *Potentiometer input signal conditioner.*