

# DRG-SC Series Signal Conditioners

DRG-SC Series

**\$245**

Basic unit

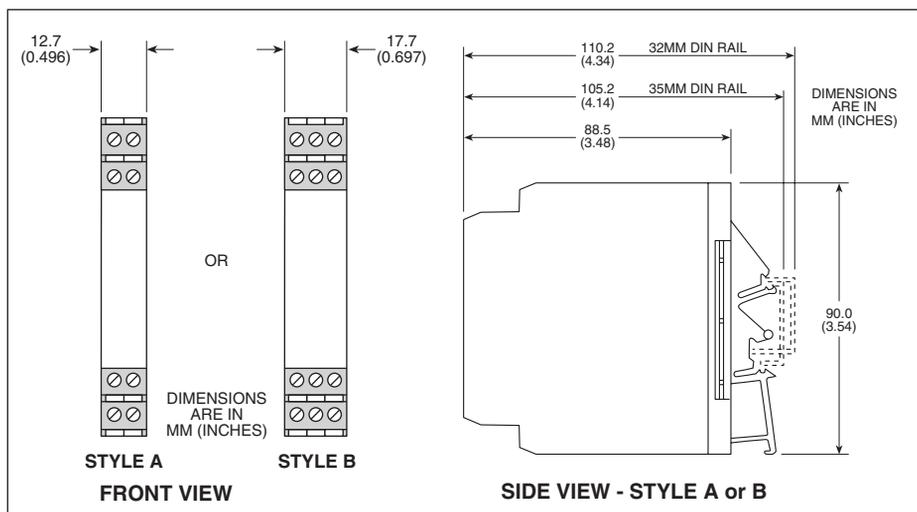
- ✓ Models Available for Thermocouples, RTDs, DC Voltage and Current, Frequency, Strain Gage Bridge, AC Voltage and Current
- ✓ Field Configurable Input and Output Ranges
- ✓ Five Field Configurable Output Ranges: 0-5 V, 0-10 V, 0-1 mA, 0-20 mA and 4-20 mA
- ✓ Slim Housing Mounts on DIN Rail for High 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.

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## MOST POPULAR MODELS HIGHLIGHTED

Model No.	Price	Input Type	Case Style
DRG-SC-AC	\$285	AC Voltage and Current	A
DRG-SC-BG	285	Strain Gage Bridge	B
DRG-SC-DC	245	DC Voltage and Current	A
DRG-SC-FR	285	Frequency	A
DRG-SC-PT	285	Potentiometer	A
DRG-SC-RTD	285	RTD	B
DRG-SC-TC	285	Thermocouple	B

## Specifications

### DRG-SC-AC

**Range (voltage mode):** 100 mV to 200 Vac

**Impedance (voltage mode):**  
>100 K $\Omega$

**Overload (voltage mode):**  
300 Vac, max.

**Range (current mode):** 10 mA to 100 mAAC

**Impedance (current mode):** 20  $\Omega$ , 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):**  $\pm 0.1\%$  of span, typical;  $\pm 0.5\%$  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  $\pm 200$  mV

**Impedance:** >1 M $\Omega$

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

**Accuracy (including linearity, hysteresis):**  $\pm 0.1\%$  typical,  $\pm 0.2\%$  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 350 $\Omega$  bridge), 4 W max.(four 350 $\Omega$  bridges)

### DRG-SC-DC

**Range (voltage mode):** 10 mV to 100 V

**Impedance (voltage mode):**  
> 100 K $\Omega$

**Overload (voltage mode):**  
400 VRMS, max.

**Range (current mode):** 1 mA to 100 mA

**Impedance (current mode):** 20  $\Omega$ , typical

**Overcurrent (current mode):**  
170 mA RMS max.

**Overvoltage (current mode):**  
60 Vdc

**Accuracy (including linearity, hysteresis):** <2 mA/20 mV:  $\pm 0.35\%$  fs, typical; 0.5% max.; >2 mA/20 mV: $\pm 0.1\%$  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):**  $\pm 0.1\%$  of selected range

**Impedance:** >10 K $\Omega$

**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  $\Omega$  up to 100 K $\Omega$

**Accuracy (including linearity, hysteresis):**  $\pm 0.1\%$  maximum @25°C

**Input Impedance:** >1 M $\Omega$

**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):**  $\pm 0.1\%$  typical,  $\pm 0.2\%$  max. the maximum input temperature range @ 25°C, 0  $\Omega$  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  $\Omega$  (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  $\pm 2^\circ\text{C}$  (-200 to 750°C)

K  $\pm 5^\circ\text{C}$  (-200 to -140°C)

$\pm 2^\circ\text{C}$  (-140 to 1250°C)

$\pm 4^\circ\text{C}$  (1250 to 1370°C)

E  $\pm 2.5^\circ\text{C}$  (-150 to 1000°C)

T  $\pm 3^\circ\text{C}$  (-150 to 400°C)

R & S  $\pm 6^\circ\text{C}$  (50 to 1760°C)

B  $\pm 5^\circ\text{C}$  (500 to 1820°C)

**Bias Current (burnout detection):**  
<1.5 microamp

**Impedance:** >1 M $\Omega$

**Overvoltage:**  $\pm 10$  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  $\Omega$

**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 K $\Omega$ )

0-20 mA: 12 V, max.(600  $\Omega$ )

4-20 mA: 12 V, max.(600  $\Omega$ )

**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)

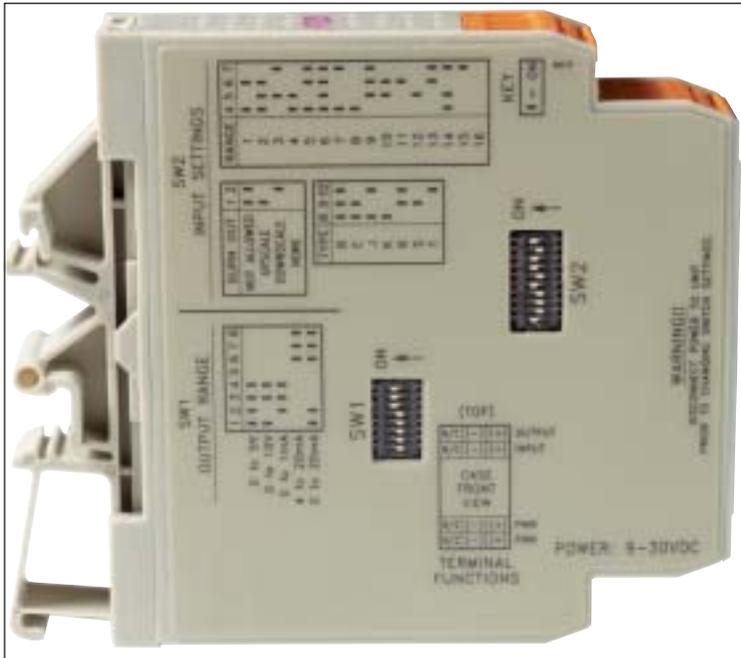
\*DRG-SC-DC-B has a  $\pm 5$  V and  $\pm 10$  V output only

# DRG-SC-TC Thermocouple Input Signal Conditioner

Lifetime  
Warranty



**\$285**



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		✓	✓	✓	v	✓
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	✓					

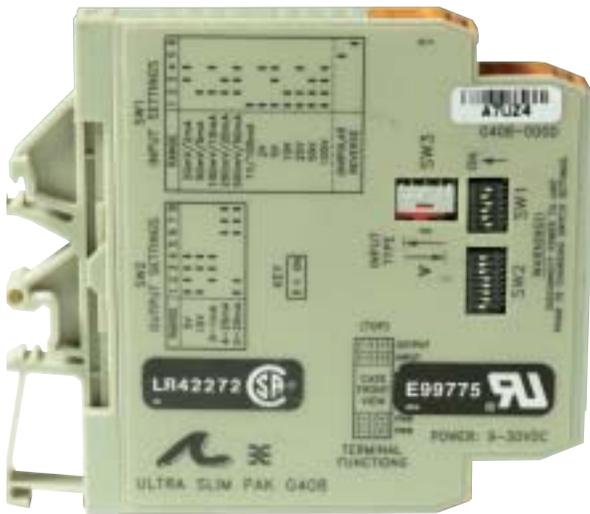
To Order (Specify Model Number)		
Model No.	Price	Description
<b>DRG-SC-TC</b>	<b>\$285</b>	Thermocouple Input Signal Conditioner
<b>DRN-PS-1000</b>	<b>150</b>	Power supply, 95-240 Vac input, 24 Vdc output @ 1A
<b>RAIL-35-2</b>	<b>15</b>	35 mm DIN Rail, 2 meter length

Comes with operator's manual.  
**Ordering Example:** DRG-SC-TC Thermocouple input signal conditioner \$285.

# DRG-SC-DC DC Input Signal Conditioner

**\$245**

**Lifetime  
Warranty**



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 (Specify Model Number)

Model No.	Price	Description
DRG-SC-DC-B	\$245	DC Voltage/Current Input Signal Conditioner with bipolar output ranges
DRG-SC-DC-U	245	DC Voltage/Current Input Signal Conditioner with unipolar output ranges
DRN-PS-1000	150	Power supply, 95-240 Vac input, 24 Vdc output @ 1A
RAIL-35-2	15	35 mm DIN Rail, 2 meter length

Comes with operator's manual.

**Ordering Example:** DRG-SC-DC-U DC voltage/current input signal conditioner \$245.

# DRG-SC-BG Bridge/Strain Gage Input Signal Conditioner

**Lifetime  
Warranty**



**\$285**

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 (Specify Model Number)

Model No.	Price	Description
DRG-SC-BG	\$285	Bridge Input Signal Conditioner

Comes with operator's manual.

**Ordering Example:** DRG-SC-BG bridge input signal conditioner \$285.

# DRG-SC-RTD RTD Input Signal Conditioner



**\$285**

**Lifetime  
Warranty**



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  $\alpha = 0.00385\Omega/\Omega/^\circ\text{C}$  or  $0.00392.\Omega/\Omega/^\circ\text{C}$

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 ( $^\circ\text{C}$ ):

**PT100, PT500 & 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 & 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 (Specify Model Number)

Model No.	Price	Description
<b>DRG-SC-RTD</b>	<b>\$285</b>	RTD Input Signal Conditioner
<b>DRN-PS-1000</b>	<b>150</b>	Power supply, 95-240 Vac input, 24 Vdc output @ 1A
<b>RAIL-35-2</b>	<b>15</b>	35 mm DIN Rail, 2 meter length

*Comes with operator's manual.*

**Ordering Example:** DRG-SC-RTD RTD input signal conditioner **\$285.**

# DRG-SC-FR Frequency Input Signal Conditioner

**Lifetime  
Warranty**



**\$285**

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 0-5 V, 0-10 V, 0-1 mA, 0-20 mA or 4-20 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



### To Order (Specify Model Number)

Model No.	Price	Description
<b>DRG-SC-FR</b>	<b>\$285</b>	Frequency Input Signal Conditioner

*Comes with operator's manual.*

**Ordering Example:** DRG-SC-FR frequency input signal conditioner **\$285.**

# DRG-SC-PT Potentiometer Input Signal Conditioner

**Lifetime  
Warranty**



**\$285**

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 (Specify Model Number)

Model No.	Price	Description
<b>DRG-SC-PT</b>	<b>\$285</b>	Potentiometer Input Signal Conditioner
<b>DRN-PS-1000</b>	<b>150</b>	Power supply, 95-240 Vac input, 24 Vdc output @ 1A
<b>RAIL-35-2</b>	<b>15</b>	35 mm DIN Rail, 2 meter length

Comes with operator's manual.

**Ordering Example: DRG-SC-PT Potentiometer input signal conditioner \$285.**

# DRG-SC-AC AC Input Signal Conditioner

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.

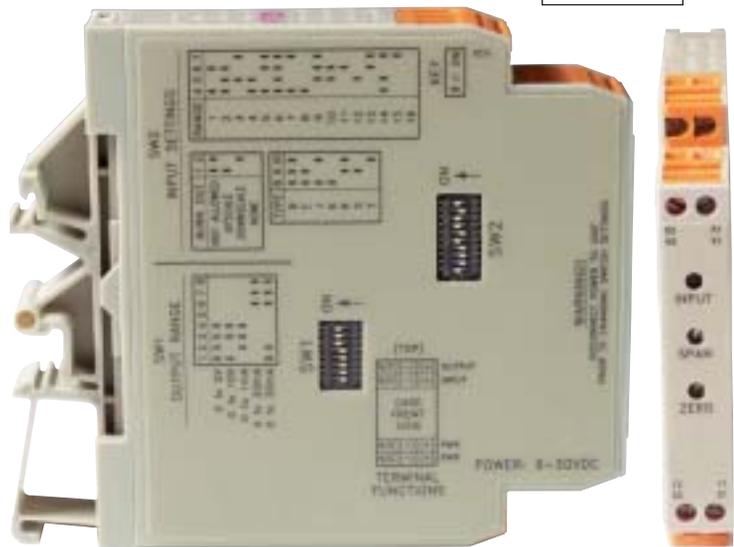
### INPUT RANGES (INPUT SIGNAL FREQUENCY: 40-400 HZ)

**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

**\$285**

**Lifetime  
Warranty**



### To Order (Specify Model Number)

Model No.	Price	Description
<b>DRG-SC-AC</b>	<b>\$285</b>	AC Input Signal Conditioner
<b>DRG-C006</b>	<b>15</b>	0.1Ω, 5W Shunt Resistor

Comes with operator's manual.

**Ordering Example: DRG-SC-AC Potentiometer input signal conditioner \$285.**