SPECIFICATIONS

Input
Sensor Types: Pt100, Pt500, Pt1000 (α: 0.00385Ω/Ω/°C or 0.00392Ω/Ω/°C); Cu10, Cu25, Cu100.
Sensor Connection: 3-wire.
Input Ranges: see table 1.
Common Mode(Input to Ground): 1800VDC, max.
Zero Turn-Up: 50% of full scale range
Span Turn-Down: 50% of full scale range

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

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

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

Output
Voltage Output
Output: 0-5V, 0-10V
Source Impedance: <10Ω
Drive: 10mA, max.
(1KΩ, min @10V)
Current Output
Output: 0-1mA, 0-20mA, 4-20mA
Source Impedance: >100KΩ
Compliance:
0-1mA; 7.5V, max.(7.5KΩ)
0-20mA; 12V, max.(600Ω)
4-20mA; 12V, max.(600Ω)

LED Indication (green)
Input Range (approx.)
>110% input; 8Hz flash
<0% input: 4Hz flash
CAL LED "ON" = OK

Accuracy (Including Linearity, Hysteresis)
±0.1% typical, ±0.2% max. of the maximum input temperature range configurable for the RTD type; @ 25°C ambient and 0Ω lead resistance.

Stability
±0.015% of the max. input temperature range for the RTD type per °C change in ambient temperature, max.

Response Time (10 to 90%)
200mSec., typical.

Common Mode Rejection
DC to 60Hz: 120dB

Isolation
1800VDC between input, output and power.

EMC Compliance (CE Mark)
Emmissions: EN50081-1
Immunity:EN50082-2
Safety: EN50178

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

Temperature Range[1]
Operating: 0 to 55°C (32 to 131°F)
Storage: -25 to 70°C (-13 to 158°F)

Wire Terminations
Screw terminals for 12-22 AWG

Power
Consumption: 1.5W typical, 2.5 W Max.
Range: 9-30VDC

Agency Approvals
CSA certified per standard C22.2, No. 0-M91 and 142-M1987 (File No. LR42272). **UL** recognized per standard UL508 (File No.E99775). **CE** Conformance per EMC directive 89/336/EEC and low voltage 73/23/EEC.

Mounting
32mm or 35mm DIN rail

PIN CONNECTIONS
11 No Internal Connection
12 No Internal Connection
13 No Internal Connection
21 DCPower (+)
22 DC Power (-)
23 No Internal Connection
41 RTD Input (+)
42 RTD Input (-)
43 RTD Return
51 Output (+)
52 Output (-)
53 No Internal Connection

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1. P.O. number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product

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2. Model and serial number of product, and
3. Repair instructions and/or specific problems relative to the product.

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721-0614-00B 8/97

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DRG-SC-RTD
RTD Input, Field Configurable Isolator

Instruction Sheet M2400/0796

DESCRIPTION

The DRG-SC-RTD is a DIN rail mount, RTD input signal conditioner with 1800VDC isolation between input, output and power. The field configurable input and output offers flexible, wide ranging capability for Platinum and Copper RTDs.

The input of the DRG-SC-RTD can be configured for any one of up to sixteen temperature ranges (see Tables 1 & 2). The output is linear to the RTD temperature input and can be set for either 0-5V, 0-10V, 0-1mA, 0-20mA or 4-20mA.

Wide ranging, precision zero and span pots allow 50% adjustablity of offset and span turn-down within each of the sixteen switch selectable ranges. For example, the 0-100°C range could be offset and turned down to provide a 4-20mA signal representing 0-50°C (or 50-100°C).

APPLICATION

The DRG-SC-RTD field configurable RTD input isolator is useful in eliminating ground loops and interfacing RTD sensors to data acquisition and control systems.

Three way isolation completely eliminates ground loops from any source. Isolation protects expensive SCADA systems from ground faults and significantly reduces the effect of high common mode voltages which are prevalent in many RTD applications.

The constant current RTD excitation circuitry uses the third lead of the RTD to sense and compensate for the RTD lead resistance, resulting in an accurate RTD temperature measurement.

High density DIN rail mounting offers an extremely compact solution for saving valuable panel space.

DIAGNOSTIC LED

The DRG-SC-RTD is equipped with a dual function LED signal monitor. The green, front mounted LED indicates both DC power and input signal status. Active DC power is indicated by an illuminated LED. If the input signal is more than 110% of the full scale range, the LED will flash at 8Hz. Below 0%, the flash rate is 4Hz.

CONFIGURATION

A major advantage of the DRG-SC-RTD is its wide ranging capabilities and ease of configuration. The DRG-SC-RTD has 16 input temperature range settings, six RTD type settings and five output range settings. Trim potentiometers allow 50% input zero and span adjustability within each of the 16 full scale input ranges.

Unless otherwise specified, the factory presets the Model DRG-SC-RTD as follows:

Input:	Pt100Ω
Range:	-200 to 600°C
Output:	4-20mA

The DC power input accepts any DC source between 9 and 30V; typically a 12V or 24VDC source is used.

For other I/O ranges, refer to Tables 1 through 6 and reconfigure switches SW1, SW2 and SW3 for the desired input type, range and output.

WARNING: Do not attempt to change any switch settings with power applied. Severe damage will result!

1. Choose the desired temperature range from table 1 or 2 depending on RTD type.

2. With DC power off, position input switches 1 through 5 on "SW2" for the desired temperature range (Table 3).

3. Set position 6 through 8 of input range switch "SW2" for the desired RTD type (Table 4).

4. Set position 1 through 8 of excitation switch "SW3" for the desired RTD type (Table 5).

5. Set position 1 through 8 of output range switch "SW1" for the desired output signal (Table 6).

CALIBRATION

1. After configuring the dip switches, connect the input to a calibrated RTD source or decade resistance box. Connect the output to the actual device load (or a load approximately equivalent to the actual device load value) and apply power.

Note: To maximize thermal stability, final calibration should be performed in the operating installation, allowing approximately 1 to 2 hours for warm up and thermal equalibrium of the system.

2. Set the calibrator to the desired minimum temperature and adjust the zero potentiometer for the desired minimum output.

3. Set the calibrator to the desired maximum temperature and adjust the span potentiometer for the desired maximum output.

4. Repeat steps 2 and 3, as necessary for best accuracy.

Table 1: DRG-SC-RTD Platinum RTD Temperature Ranges

Pt 100, Pt 500, Pt 1000		Range
-200 to 600°C	-328 to 1112°F	1
-200 to 400°C	-328 to 752°F	2
-100 to 400°C	-148 to 752°F	3
-200 to 260°C	-328 to 500°F	4
-200 to 0°C	-328 to 32°F	5
-200 to -100 °C	-328 to -148°F	6
-100 to 260°C	-148 to 500°F	7
-100 to 100°C	-148 to 212°F	8
-50 to 50°C	-58 to 122°F	9
-18 to 50°C	0 to 122°F	10
-18 to 100°C	0 to 212°F	11
-18 to 260°C	0 to 500°F	12
-18 to 300°C	0 to 572°F	13
-18 to 400°C	0 to 752°F	14
-18 to 500°C	0 to 932°F	15
-18 to 600°C	0 to 1112°F	16

Table 2: DRG-SC-RTD Copper RTD Temperature Ranges

Cu 10, Cu 25, Cu 100		Range
-200 to 260°C	-328 to 500°F	4
-200 to 0°C	-328 to 32°F	5
-200 to -100°C	-328 to -148°F	6
-100 to 260°C	-148 to 500°F	7
-100 to 100°C	-148 to 212°F	8
-50 to 50°C	-58 to 122°F	9
-18 to 50°C	0 to 122°F	10
-18 to 100°C	0 to 212°F	11
-18 to 260°C	0 to 500°F	12

Table 3: Temperature Input Range Switch Settings (SW2 -1 through 5)

Range	SW2 1 2 3 4 5
1	▮ ▮ ▮ ▮
2	▮ ▮ ▮
3	▮ ▮ ▮
4	▮ ▮
5	▮ ▮
6	▮ ▮
7	▮ ▮
8	▮
9	▮ ▮ ▮
10	▮ ▮
11	▮ ▮
12	▮
13	▮ ▮
14	▮
15	▮
16	

SW2-1: Has no function

Table 4: RTD Input Type Switch Settings (SW2 - 6 through 8)

	SW2 6 7 8
Pt 100	▮ ▮ ▮
Pt 500	▮ ▮
Pt 1000	▮ ▮
Cu 10	▮
Cu 25	▮ ▮
Cu 100	▮ ▮

KEY ▮ = ON

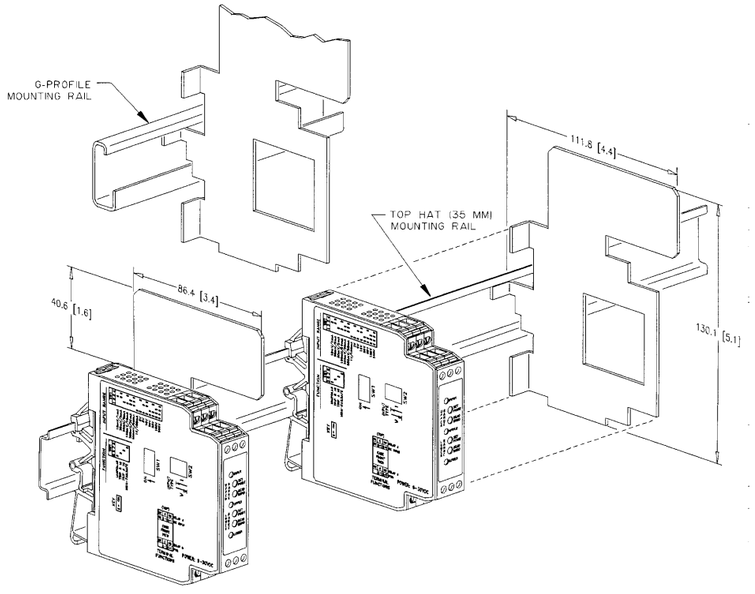
Table 5: Excitation Type Switch Settings (SW3 -1 through 8)

	SW3 1 2 3 4 5 6 7 8
Pt 100, Cu 100	▮
Pt 500	▮
Pt 1000	▮
Cu 10	▮
Cu 25	▮

SW3-8: Has no function

Table 6: Output Switch Settings (SW1 - 1 through 8)

	1 2 3 4 5 6 7 8
0-5V	▮ ▮ ▮ ▮
0-10V	▮ ▮ ▮ ▮
0-1mA	▮ ▮ ▮
4-20mA	▮ ▮ ▮
0-20mA	▮ ▮ ▮ ▮



Note1: All modues are designed and tested to operate in ambient temperatures from 0 to 55° C, when mounted on a horizontal DIN rail. When five or more modules are mounted on a vertical rail, circulating air or model DRG-HS01 Heat Sink is recommended.

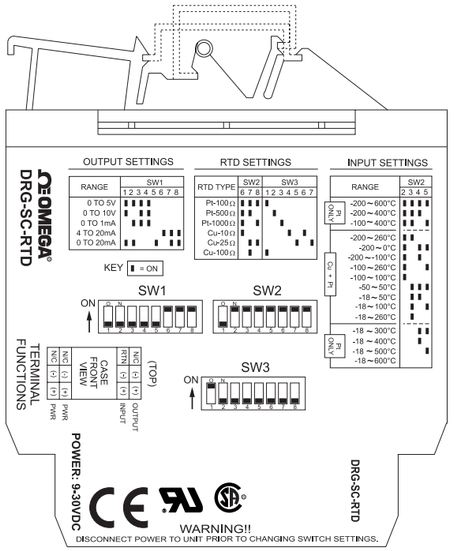


Figure 1:DGR-SC-RTD Factory Calibration: -200 to 600°C (Pt 100) input; 4-20mA output

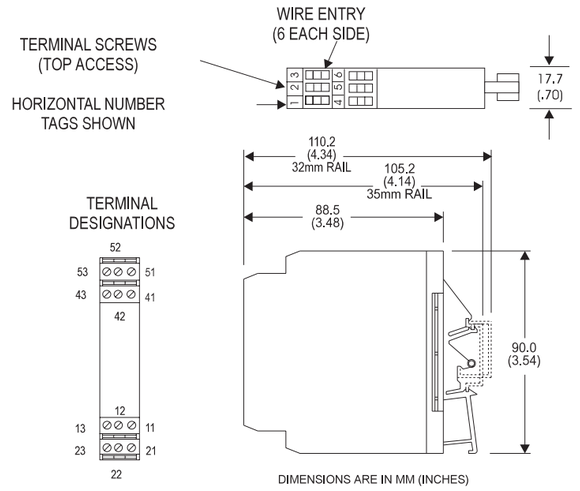


Figure 2: Mechanical Dimensions for DGR-SC-RTD

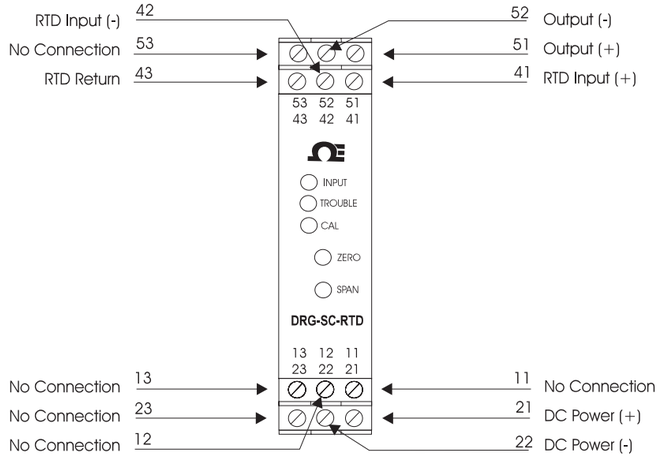


Figure 3: Wiring Diagram for DGR-SC-RTD

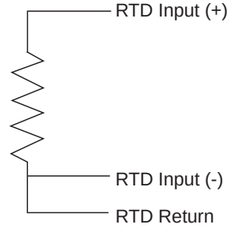


Figure 4: RTD Reference Designations