

DRG-SC-PT

Potentiometer Input, Field Configurable Signal Conditioner

Instruction Sheet M2393/0796

DESCRIPTION

The DRG-SC-PT is a DIN rail mount, potentiometer input signal conditioner with 1800VDC isolation between DC power and the input/output circuitry. The input provides a constant voltage and is designed to accept any three-wire potentiometer from 100Ω to 100KΩ. The field configurable output is switch selectable providing either 0-5V, 0-10V, 0-1mA, 0-20mA or 4-20mA DC signal.

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.

APPLICATION

The DRG-SC-PT field configurable, potentiometer input signal conditioner is useful in transmitting process control setpoints to remote PID controllers or interfacing position sensors to data acquisition and control systems.

The DRG-SC-PT's high density DIN rail mounting offers an extremely compact solution for saving valuable panel space.

CONFIGURATION

A major advantage of the DRG-SC-PT is its wide ranging capabilities and ease of configuration.

For example, in a valve positioning application a potentiometer is sometimes used as a feedback signal. Quite often a wide open valve is only a 25% turn of the feedback potentiometer. In this case the DRG-SC-PT can easily be adjusted with the zero and span to provide a full scale output signal (e.g. 4-20mA) representing 0-25% or even 50-75% of the potentiometer input.

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

Input Range: 0 to 100%
Output: 4 to 20mA

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

For other output ranges, refer to Tables 1 and 2 to reconfigure switches SW1 and SW2 for the desired input and output ranges.

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

CALIBRATION

1. With power disconnected, set the output and input switch selectors (SW1 and SW2) to the desired ranges (Tables 1 and 2).
2. Connect the input and output as shown in Figure 1. 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 equilibrium of the system.

3. Set the input potentiometer to the desired minimum and adjust the zero potentiometer for the desired minimum output.
4. Set the input potentiometer to the desired maximum and adjust the span potentiometer for the desired maximum output.

5. Repeat steps 3 and 4, if necessary, for best accuracy.

Table 1: Input Range Switch Selector (SW2)

Span	SW2*					
	1	2	3	4	5	6
20 - 100%						
45 - 100%	■					
85 - 100%		■				
Offset						
0 - 20%						
20 - 45%					■	
45 - 65%				■		
65 - 80%			■	■		

* SW2-5,6 Not used.

Table 2: Output Range Switch Selector (SW1)

	SW1							
	1	2	3	4	5	6	7	8
0 to +5V	■	■	■	■				
0 to +10V	■		■	■	■			
0 to 1mA		■	■	■				
4 to 20mA						■	■	■
0 to 20mA	■	■				■	■	■

KEY ■ = ON

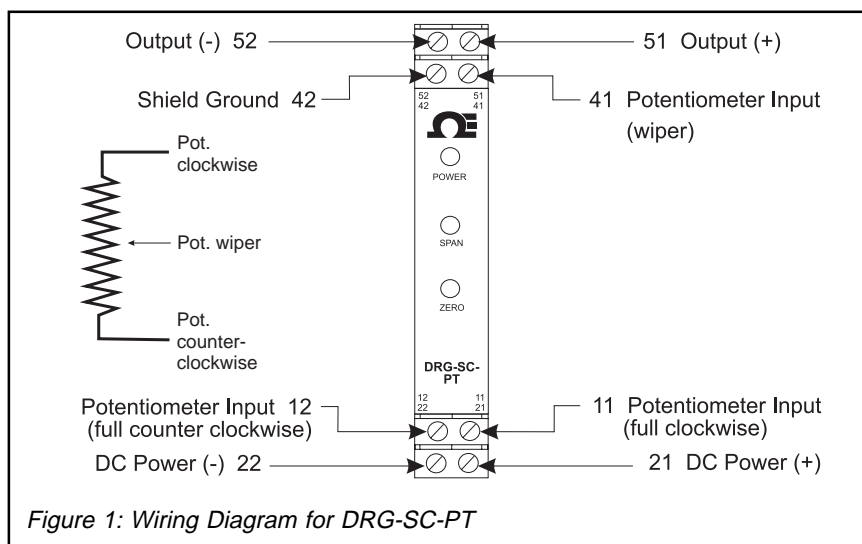
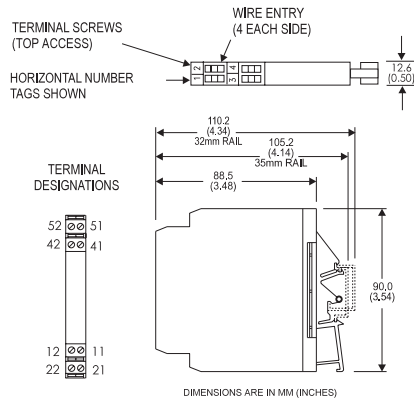


Figure 1: Wiring Diagram for DRG-SC-PT

DIMENSIONS



SPECIFICATIONS

Potentiometer Input

Resistance (End to End):

100Ω up to 100KΩ

Input Impedance: >1MΩ

Input Excitation: 500mV, 5mA maximum drive.

Zero Turn-Up: 80% of full scale input

Span Turn-Down: 80% of full scale input (Table 1)

Common Mode Rejection:

1800VDC (input to ground)

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, max.)

0-20mA; 12V, max. (600Ω, max.)

4-20mA; 12V, max. (600Ω, max.)

Accuracy (Including Linearity, Hysteresis)

±0.1% maximum at 25°C.

Stability

Temperature: <±0.05%/°C

maximum of full scale range.

Line Voltage: <±0.01%/%

maximum of full scale range.

Response Time (10 to 90%)

<200mSec., typical.

Common Mode Rejection

DC to 60Hz: 120dB

Isolation

1800VDC between line power and input, output

EMC Compliance (CE Mark)

Emmissions: EN50081-1

Immunity: EN50082-2

Safety: EN50178

LED Indication (green)

Active DC power

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)

Mounting

Horizontal DIN rail mounting is recommended. Vertical DIN rail mounting requires heat sink (model HS01, included) and circulating air is recommended.

Power

Consumption: 1.5W typical, 2.5W max

Range: 9 to 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 and 35mm DIN Rail

PIN CONNECTIONS

11 Pot. Input (full clockwise)

12 Pot. Input (full counterclockwise)

21 DC Power (+)

22 DC Power (-)

41 Pot. Input (wiper)

42 Shield Ground

51 Output (+)

52 Output (-)



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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
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WARNING: These product are not designed for use in, and should not be used for, patient connected applications.

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