

# SC5000 AND SC5010

## THERMOCOUPLE AND RTD INPUT

### TWO-WIRE TRANSMITTERS



#### FEATURES

- Provides DC Output Proportional to a Thermocouple or Platinum RTD Input
- Linearized for J, K, R, S, T, E, and N Thermocouples or Platinum RTDs
- 2, 3, or 4 Wire RTD Inputs
- Full Galvanic Isolation
- Microprocessor Based
- Field Rangeable (SC5010)
- Displays Temperature in Linear Mode (SC5010)
- Displays Current Output in Nonlinear Mode (SC5010)
- Test Points for Loop Current Monitoring without Breaking Loop Circuit
- On-Board Configuration via Membrane Keyboard (SC5010)
- Upscale or Downscale Burnout Indication
- Permanent Warranty

#### DESCRIPTION

The SC5000 series of products provide a DC output current 4/20 mADC proportional to a thermocouple or RTD, using microprocessor based, digital circuitry in a "hockey puck" case. The output can be linearized for both thermocouples and platinum RTDs, and the SC5010 LCD display indicates temperature in °C or °F when operated in the linearized mode, or output current when in the nonlinearized mode. The input and output are isolated. The user may select thermocouple types J, K, R, S, T, E, N or 100 ohm Pt RTDs as the input sensor. RTD connections for 2-wire, 3-wire and 4-wire sensors are

provided. The transmitter compensates for the lead wire resistance in the 3-wire configuration and provides true measurement of the resistive element without lead wire error in the 4-wire configuration.

The SC5010 4½ digit display is an accurate temperature indicator that functions over the entire range of the selected sensor. Its display capability is independent of the selected temperature range for the 4 to 20 mADC output. Even if the output goes overrange, the display continues to accurately indicate the sensor temperature.

Linearization is accomplished through a 256 point "look up table" program.

The SC5010 can be configured by the user through four different methods.

These are:

1. On-board set-up via membrane keyboard and display in the linearized mode.
2. On-board set-up via membrane keyboard, display and temperature tables in the nonlinearized mode.
3. Set-up via membrane keyboard using a calibrator.

#### SPECIFICATIONS

##### INPUT

Thermocouple

Types J, K, R, S, T, E, & N

Spans

5 mV minimum to maximum usable range

Linearization

Maximum Linearized Range

J -210 °C to +760 °C

K -250 °C to +1372 °C

R -50 °C to +1768 °C

S -50 °C to +1768 °C

T -270 °C to +400 °C

E -260 °C to +1000 °C

N -250 °C to +1300 °C

Reference Junction Compensation

Accuracy

±0.25 °C

Impedance

>1 megohm

Span Adjustment

Continuous from 6.25% to 100% of T/C range (5 mV minimum span)

RTD

100 Ohm Platinum, 0.00385 and 0.00392 alpha, 2, 3, or 4 wire connection

Maximum Usable Range

-200 °C to +850 °C

Minimum Usage Range

45 °C

Zero Adjustment

Continuous from 0% to 90% of temperature sensor range

##### OUTPUT

Range

4/20 mADC

Modes (User Configured)

Normal / Reverse acting

Linear / Non-linear

Burnout Indication

(User Configured)

Upscale / Downscale

Linearity

±0.25 °C of NIST Tables

Accuracy

±0.05% of span

Repeatability

±0.01% of span

Input to Output Linearity

±0.01% of span

Response Time

<1 sec.

Ripple (Peak-to-Peak)

<0.1% of full scale

Power Supply Effect

<0.001% of span / Volt

Ambient Temperature Effect

±0.005% of span / °C

Long Term Stability

±0.0005% of span / 6 months

##### ISOLATION

Output / Input

> 500 megohms

Breakdown, Output / Input

> 1000 Volts RMS sinewave

Resistance

>500 megohms

##### COMMON MODE REJECTION

120 dB, DC to 60 Hz

##### DISPLAY (SC5010)

Digit Size

0.35 inches high,  
4½ digits

Update Rate

3 / second

Operating Temperature

-20 °C to +80 °C / -4 °F to +176 °F

##### OPERATING TEMPERATURE

-40 °F to +176 °F / -40 °C to +80 °C

##### RFI IMMUNITY

Filtering and shielding to reject RFI interference

##### POWER

10-36 VDC, Polarity-Protected  
(current limited to 30 mA max.)

**ORDERING INFORMATION**

**INPUT**

**Select Units**

Deg C  Deg F

**Enter Input**

Zero Scale

Full Scale

**Select Sensor**

- 100 ohm Pt. .00385, 2 Wire Input
- 100 ohm Pt. .00385, 3 Wire Input
- 100 ohm Pt. .00385, 4 Wire Input
- 100 ohm Pt. .00392, 2 Wire Input
- 100 ohm Pt. .00392, 3 Wire Input
- 100 ohm Pt. .00392, 4 Wire Input

**Open Sensor Response**

Upscale  Downscale

**DISPLAY**

**Select Display**

Yes  No

**BURNOUT**

**Select Burnout**

Upscale  Downscale

**TAGS**

**Specify Tag Numbers**

Tag number is typed on product label at no charge.

**Enter Tag Number(s)**

**OUTPUT**

**Select Output Logic**

- Normal Acting
- Reverse Acting
- Linearized Output
- Nonlinearized Output

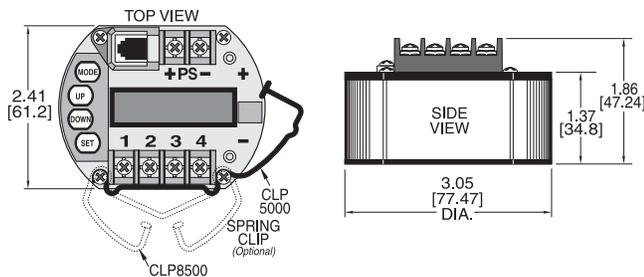
**ACCESSORIES**

**SC5000 AND SC5010**

DMP8500	Mounting Plate, DIN-Rail & Surface (SC5000 & TW8000)	QTY _____
XIHFCX2L	Adalet Explosion-Proof Housing, no Window, (SC5000)	QTY _____
CLP5000	Mounting Clip (Adalet) for SC5000 Series	QTY _____
CLP8500	Mounting Clip (Killark) for SC5000 Series	QTY _____
DR1	DIN-Rail, 35 mm Symmetrical, 39 inches (1 meter)	QTY _____

**DIMENSIONS**

Inches [mm]



**CONNECTIONS**

