

Model SC1000/SC2000

Transducer Display and Signal Conditioning Unit



DESCRIPTION

The SC series models are self-calibrating microprocessor-based transducer signal conditioners when used with sig mod equipped transducers. Indicators are available with several different types of input channels and output channels. When used with unamplified strain gage transducers that have the signature calibration module installed, these instruments will completely self calibrate zero, span, decimal point, and engineering units automatically.

Input channels are available for a variety of transducers. Each input channel includes an excitation power supply and either an isolated voltage or isolated current analog output.

- Unamplified pressure or load
- Pressure or load with internal voltage amplifiers
- Pressure or load with internal or external two-wire current amplifiers
- ac/ac displacement transducer
- dc/dc displacement transducer
- RTD temperature probes (Pt100)

FEATURES

- One to four channels
- ± 6 digit display
- "Sig cal" auto setup
- Up to 800 Hz frequency response, field selectable
- Pressure, load, displacement transducer, voltage, current, strain gage based sensor input
- Alarm outputs
- CE approved

Available output channels for the SC2000 include:

- Contact relays for the four standard limits or additional limits (max. 16 limits/chassis)
- Isolated digital-to-analog voltage (± 5 Vdc or 0 Vdc to 10 Vdc) or current (4 mA to 20 mA)

In addition to the physical input and output channels, up to seven virtual channels can be configured to assist in many potential applications.

Four channel chassis

The models SC1000 and SC2000 can hold up to four physical channels in their 3/8 DIN Aluminum bench-top chassis. A bright, dual-line 16-character display can display 5, 6 or 7 numeric digits; simply press a button to select the next channel to be viewed. If configured for split-screen operation, up to four channel values can be displayed at the same time. The SC2000 includes four open collector limit (alarm) outputs plus peak and valley detection.

Model SC1000/SC2000

GENERAL SPECIFICATIONS

Characteristic	Measure
Model	SC1000/SC2000
Number of physical channels	1 to 4
Number of virtual channels	1 to 7
Case material	Aluminum
Form factor	3/8 DIN
Mounting	Bench (standard)
Size (W x H x D)	142,24 mm x 71,12 mm x 222,25 mm [5.6 in x 2.8 in x 8.75 in]
Weight	1,81 kg [4 lb]

DISPLAY SPECIFICATIONS

Characteristic	Measure
Number of displays	1
Number of lines/display	2
Number of characters/line	16
Scaling	Automatic or manual setup
Max. display count	9999999
Decimal point selection	0 to 5
Display type	Vacuum/Fluorescent

ENVIRONMENTAL SPECIFICATIONS

Characteristic	Measure
Temperature, storage	-29 °C to 93 °C [-20 °F to 200 °F]
Temperature, operating	4 °C to 41 °C [40 °F to 105 °F]

SPECIAL FEATURES (SC2000 ONLY) SPECIFICATIONS

Characteristic	Measure
Limits setup	Front panel
Limits output, standard	Open-collector
Limits output, relay output channel	Contact relays
Limits quantity	4 std., 16 max. (contact relays)
Peak/valley hold on input channels	Yes
Digital, isolated control inputs	4
Approvals	CE approved (except vehicle powered unit)
Interfaces	Signature calibration

COMMUNICATIONS SPECIFICATIONS

Characteristic	Measure
Serial setup and output	RS-232/RS-485
Isolation	500 V
Max. baud rate	38400

POWER SPECIFICATIONS

Characteristic	Measure
Standard ac powered	100 Vac to 230 Vac, 47 Hz to 63 Hz
Excitation drive	120 mA max.

Not RoHS compliant

INPUT AMPLIFIER CARDS

All input cards include non-isolated, open collector control inputs that can be field configured for any one of the following functions: 1) track hold, 2) peak/valley hold, 3) tare on, and 4) tare off.

Input	Strain gage millivolts	High level volts/mA	RTD mil-livolts	ac/ac displacement transducer
Transducer type	Unamplified sensors	Amplified pressure or load, dc/dc displacement transducer	Platinum 100 ohm, alpha = 0.00385	ac/ac displacement transducer
Ranges*	0.5 mV/V to 11 mV/V @ 5 V 0.5 mV/V to 5.5 mV/V @ 10 V	±5 Vdc or ±10 Vdc, 4 mA to 20 mA	-200 °C to 800 °C [-328 °F to 1472 °F]	0.1 VRMS to 15 VRMS
Frequency response	See table below	See table below	See table below	See table below
Resolution	See table below	See table below	See table below	See table below
Calibration type	Shunt; mV/V; 2-, 3-, or 5-point known load	Shunt; 2-, 3-, or 5-point known load	2-, 3-, or 5-point known load	2-, 3-, or 5-point known load
Transducer excitation	5 Vdc or 10 Vdc with sense	±15 Vdc, 28 Vdc, or 12 Vdc	10 Vdc	3 Vac @ 3 kHz
Push button 100 % tare	Yes	Yes	N/A	Yes
Push button shunt test	Yes	Yes	N/A	Yes

* Ranges are field programmable, except for RTD input

Transducer Display and Signal Conditioning Unit

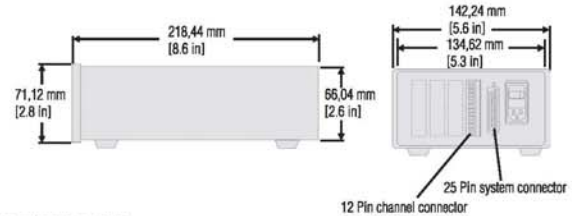
OUTPUT

Output	Strain gage millivolts	High level volts/mA	RTD millivolts	ac/ac displacement transducer
Voltage range (field selectable)	5 Vdc, ±5 Vdc, 10 Vdc, ±10 Vdc	5 Vdc, ±5 Vdc, 10 Vdc, ±10 Vdc	5 Vdc, ±5 Vdc, 10 Vdc, ±10 Vdc	5 Vdc, ±5 Vdc, 10 Vdc, ±10 Vdc
Current range	4 mA to 20 mA	4 mA to 20 mA	4 mA to 20 mA	4 mA to 20 mA
Source	Any channel	Any channel	Any channel	Any channel
Isolation	500 V	500 V	500 V	500 V
Resolution	13 bits	13 bits	13 bits	13 bits
Frequency response	Same as input	Same as input	Same as input	Same as input

Resolution (counts) (not including min. 10 % overrange/underrange capability)

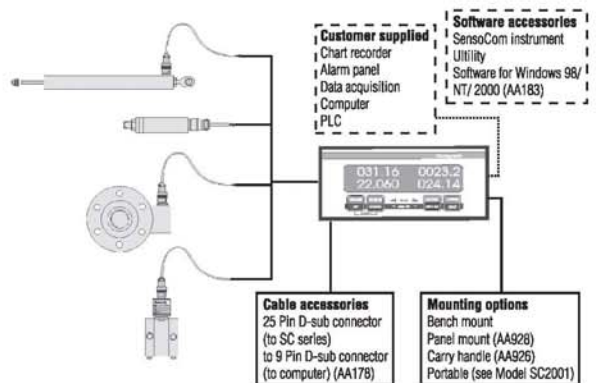
Frequency response (Hz) field selectable	Step response (ms) typical	Strain gage/RTD	High level	ac/ac displacement transducer
2 (fast mode)	40	±50000	±50000	±25000
2	440	±50000	±50000	±25000
8	110	±25000	±25000	±15000
16	55	±20000	±25000	±10000
32	28	±10000	±20000	±10000
50	16	±5000	±15000	±5000
100	8	±5000	±10000	±5000
250	3	±2000	±10000	±2000
500	2	±2000	±4000	±2000
800	2	±2000	±2500	±2000

MOUNTING DIMENSIONS AND CHARACTERISTICS

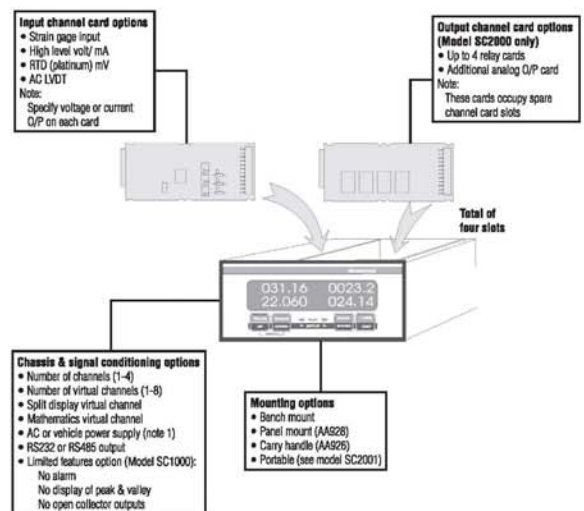


For reference only

TYPICAL SYSTEM DIAGRAM



FLEXIBLE AND EXPANDABLE PLATFORM OPTIONS



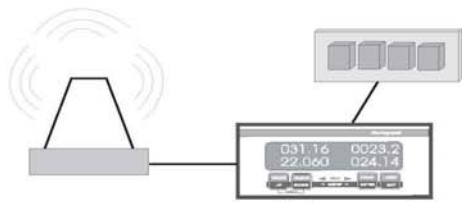
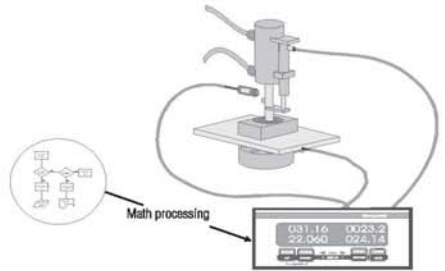
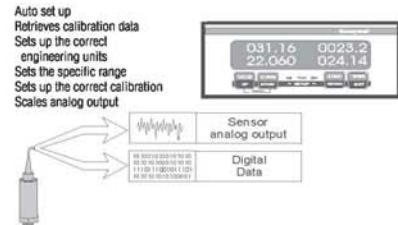
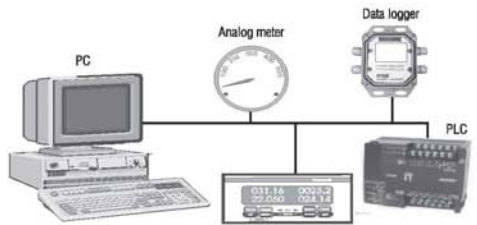
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SC2000 CAPABILITIES

<p>Front panel or remote tare</p>	<p>Flexible user setup</p> <p>Number of channels for display Calibration data</p> <p>Serial communications Number of decimal places</p> <p>Output voltage Engineering units</p> <p>Alarm outputs Display averaging</p> <p>Update signature module</p>																																																																
<p>mV/V or shunt calibration or five-point calibration</p> <p>Shunt calibration</p> <p>mV/V calibration</p> <p>2, 3 or 5 point calibration for applied load, pressure, speed, etc.</p>	<p>Remote setup</p>																																																																
<p>User selectable display options</p> <p>Shows channel on display</p> <p>Valley tracking</p> <p>Peak tracking</p> <p>User selected units</p> <p>Shows status of alarms</p> <p>User selected decimal point</p> <p>6 digit display</p> <p>4 channel display</p>	<p>Different alarm configurations</p> <p>Alarm on when setpoint exceeded and until return point is reached</p> <p>Alarm on when below setpoint and until return point is reached</p> <p>Alarm on when setpoint is reached</p> <p>Alarm on when outside setpoint and return point</p>																																																																
<p>User selectable filtering</p> <p>User selectable filtering</p> <table border="1"> <thead> <tr> <th>Frequency Response (Hz)</th> <th>Ring Response (ms)</th> <th>Bandwidth (Hz)</th> <th>Roll-off (dB/octave)</th> </tr> </thead> <tbody> <tr> <td>0.1</td> <td>1000</td> <td>0.1</td> <td>-20</td> </tr> <tr> <td>1</td> <td>100</td> <td>1</td> <td>-40</td> </tr> <tr> <td>10</td> <td>10</td> <td>10</td> <td>-60</td> </tr> <tr> <td>100</td> <td>1</td> <td>100</td> <td>-80</td> </tr> <tr> <td>1000</td> <td>0.1</td> <td>1000</td> <td>-100</td> </tr> <tr> <td>10000</td> <td>0.01</td> <td>10000</td> <td>-120</td> </tr> <tr> <td>100000</td> <td>0.001</td> <td>100000</td> <td>-140</td> </tr> <tr> <td>1000000</td> <td>0.0001</td> <td>1000000</td> <td>-160</td> </tr> <tr> <td>10000000</td> <td>0.00001</td> <td>10000000</td> <td>-180</td> </tr> <tr> <td>100000000</td> <td>0.000001</td> <td>100000000</td> <td>-200</td> </tr> <tr> <td>1000000000</td> <td>0.0000001</td> <td>1000000000</td> <td>-220</td> </tr> <tr> <td>10000000000</td> <td>0.00000001</td> <td>10000000000</td> <td>-240</td> </tr> <tr> <td>100000000000</td> <td>0.000000001</td> <td>100000000000</td> <td>-260</td> </tr> <tr> <td>1000000000000</td> <td>0.0000000001</td> <td>1000000000000</td> <td>-280</td> </tr> <tr> <td>10000000000000</td> <td>0.00000000001</td> <td>10000000000000</td> <td>-300</td> </tr> </tbody> </table>	Frequency Response (Hz)	Ring Response (ms)	Bandwidth (Hz)	Roll-off (dB/octave)	0.1	1000	0.1	-20	1	100	1	-40	10	10	10	-60	100	1	100	-80	1000	0.1	1000	-100	10000	0.01	10000	-120	100000	0.001	100000	-140	1000000	0.0001	1000000	-160	10000000	0.00001	10000000	-180	100000000	0.000001	100000000	-200	1000000000	0.0000001	1000000000	-220	10000000000	0.00000001	10000000000	-240	100000000000	0.000000001	100000000000	-260	1000000000000	0.0000000001	1000000000000	-280	10000000000000	0.00000000001	10000000000000	-300	<p>Group and individual channel remote inputs</p> <p>System remote Switch inputs:</p> <ul style="list-style-type: none"> Peak/valley clear Tare on Tare off <p>Channel specific remote commands; Each channel can have any two:</p> <ul style="list-style-type: none"> Track hold Peak/valley hold Peak/valley clear Tare on Tare off
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SC2000 CAPABILITIES

Open collector alarms or via optional four-relay cards	Optional math channel can act like PLC
 <p>The diagram shows a sensor with a triangular symbol and radiating lines connected to a display unit. The display unit has four relay cards on top. The display shows two columns of data: 031.16 and 0023.2 in the top row, and 22.060 and 024.14 in the bottom row.</p>	 <p>The diagram shows a sensor connected to a display unit. A circular inset labeled 'Math processing' shows a flowchart of mathematical operations. The display unit shows two columns of data: 031.16 and 0023.2 in the top row, and 22.060 and 024.14 in the bottom row.</p>
Sig cal auto setup	Analog and digital outputs
<p>Auto set up Retrieves calibration data Sets up the correct engineering units Sets the specific range Sets up the correct calibration Scales analog output</p>  <p>The diagram shows a sensor connected to a display unit. The display unit has two output boxes: 'Sensor analog output' and 'Digital Data'. The display shows two columns of data: 031.16 and 0023.2 in the top row, and 22.060 and 024.14 in the bottom row.</p>	 <p>The diagram shows a display unit connected to a PC, an analog meter, a data logger, and a PLC. The display unit shows two columns of data: 031.16 and 0023.2 in the top row, and 22.060 and 024.14 in the bottom row.</p>