

Transducer Indicator/ Conditioner

Model SC1000, SC2000, SC2001, SC3004

AUTOMATIC SET-UP, CALIBRATION
AND SCALING WITH SENSOR

1 TO 14 CHANNELS

± 6 DIGIT DISPLAY (999,999)

12 TO 18 BIT RESOLUTION

FIELD SELECTABLE CALIBRATION:
SHUNT-CAL, MV/V, OR KNOWN LOAD

ISOLATED RS-232 OR RS-485
INTERFACE

EMI AND RFI PROTECTED



Model SC2001



Model SC2000



Model SC3004

The SC series of self-calibrating microprocessor-based Transducer Signal Conditioner/Indicators are available with several different types of chassis, input channels, and output channels. When used with unamplified strain-gage transducers that have the Sensotec *Signature Calibration Module* installed, these instruments will completely **self calibrate** zero, span, linearity, 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 2-wire current amplifiers
- AC/AC LVDT
- DC/DC LVDT
- RTD Temperature probes (Pt100)

Available **Output channels** for the Models SC2000, SC2001 and SC3004 only include:

- Contact relays for the 4 standard limits or an additional 4 limits (max. 16 limits/chassis)
- Isolated digital-to-analog voltage (+/-5 or +/-10VDC) or current (4-20mA)

In addition to the physical input and output channels, up to 8 **Virtual channels** can be configured to assist in many applications:

- Summation for weighing
- Floating-point mathematics
- Split screen display
- Conditional programs
- Timer applications

FOUR CHANNEL CHASSIS

The Models SC1000 and SC2000 can hold up to 4 physical channels in their 3/8 DIN aluminum bench-top chassis. Input amplifier cards are ordered separately. 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 4 channel values can be displayed at the same time. The SC2000 includes 4 limit (alarm) outputs plus peak and valley detection.

FOURTEEN CHANNEL CHASSIS

Model SC3004 can hold up to 14 physical channels in its 19", 2U rack-mount enclosure. Up to three quad-line displays can be installed which will display the values of up to 12 channels.

PORTABLE SINGLE CHANNEL CHASSIS

The Model SC2001 includes all of the features of the SC2000 in a portable, rugged enclosure.

	Bench Mount		Portable	Rack Mount	
GENERAL	Model	SC1000	SC2000	SC2001	SC3004
	# Physical Channels	1 to 4	1 to 4	1 to 4	1 to 14
	# Virtual Channels.....	8	8	8	8
	Case Material	Aluminum	Aluminum	Aluminum	Aluminum
PHYSICAL	Form factor	3/8 DIN		suitcase	2U rack
	Mounting	bench panel or rack		portable	rack
	Size	5.6" wide, 2.8" high, 8.75" deep		13.25"x9.2"x11.5"	19" wide, 3.5" high, 8.75" deep
DISPLAY	# Characters/Line.....	16	16	16	20
	# Line/Display.....	2	2	2	4
	# Displays.....	1	1	1	1, 2 or 3
	Scaling	Automatic or manual setup	Automatic or manual setup	Automatic or manual setup	Automatic or manual setup
	Max. Display Count.....	9,999,999	9,999,999	9,999,999	9,999,999
	Decimal Point Selection	0 to 5	0 to 5	0 to 5	0 to 5
	Display Type	Vacuum	Vacuum	Vacuum	Vacuum
		Fluorescent	Fluorescent	Fluorescent	Fluorescent
ENVIRONMENTAL	Storage Temp	-20°F to 200°F	-20°F to 200°F	-20°F to 200°F	-20°F to 200°F
	Operating Temp	40°F to 105°F	40°F to 105°F	40°F to 105°F	40°F to 105°F
SPECIAL FEATURES	Limits Setup	N/A	Front panel	Front panel	Front panel
	Limits Output (std.).....	N/A	Open-collector	Open-collector	Open-collector
	Limits Output (relay output channel).....	N/A	Contact relays	Contact relays	Contact relays
	Limits Quantity	N/A	4 std., 16 max.	4	4 std., 16 max.
	Peak/Valley hold on input channels.....	N/A	yes	yes	yes
	Digital, isolated control inputs	N/A	4	4	4
COMMUNICATIONS	Serial Setup & Output	RS-232/RS-485	RS-232/RS-485	RS-232/RS-485	RS-232/RS-485
	Isolation	500V	500V	500V	500V
	Max. Baud Rate	38400	38400	38400	38400
POWER	Standard AC Powered	100 to 230 VAC, 47 to 63Hz	100 to 230 VAC, 47 to 63Hz	100 to 230 VAC, 47 to 63Hz	100 to 230 VAC, 47 to 63Hz
	Excitation Drive	120 mA max.	120 mA max.	120 mA max.	315 mA max.

INPUT AMPLIFIER CARDS

All input cards include two non-isolated open-collector control inputs that can be field configured for any one of the following functions: • Track hold • Peak/Valley hold • Peak/Valley clear • Tare on • Tare off

	Strain Gage Millivolts	High Level Volts/mA	RTD Millivolts	AC/AC LVDT
INPUT	Transducer types	unamplified pressure or load sensors	amplified pressure or load DC/DC LVDT	AC/AC LVDT
	Ranges*	.5 to 21 mV/V@5V .5 to 10.5 mV/V@10V	±5 or ±10 VDC 4-20mA	-200°C to +800°C
	Frequency response	see table below	see table below	see table below
	Resolution	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
	Transducer Excitation	5 or 10 VDC w/sense	+/- 15 VDC, +28 VDC, or +12 VDC	10VDC
	Push-button 100% tare	yes	yes	yes
OUTPUT	Push-button shunt test.....	yes	yes	yes
	Voltage range (field selectable)	5,±5,10,±10 VDC	5,±5,10,±10 VDC	5,±5,10,±10 VDC
	Current range	4-20 mA	4-20 mA	4-20 mA
	Source	any channel	any channel	any channel
	Isolation	500V	500V	500V
	Resolution	13 bits	13 bits	13 bits
	Frequency response	same as input	same as input	same as input

Frequency Response (Hz) (field selectable)	Step Response (ms) (typical)	Resolution (counts) (not including minimum 10% overrange/underrange capability)		
		Strain Gage/RTD	High Level	AC-AC LVDT
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	-2000	-2000

OUTPUT CHANNELS

The following output channels are not available on the SC1000 or SC2001 instruments.

Option Code R Relay Output channel (1, 2, 3 or 4 channels)

The first Relay Output channel installed will mirror the standard chassis open-collector limit outputs of limits 1 to 4. Each additional Relay Output channel will add an additional 4 limits to the instrument, up to a maximum of 16. The relays have form C contacts and are rated at 1A @ 30VDC and 0.5A @ 125 VAC.

Option Code O Voltage DAC Output channel

Option Code P Current DAC Output channel

These digital-to-analog converter outputs can be driven by any channel's track, peak or valley value. Both feature 12-bit resolution and are electrically isolated from the rest of the instrument. The voltage DAC Output can be setup in the field as either a +/-5VDC or 0-10 VDC output. The Current DAC Output is 4-20mA.

VIRTUAL CHANNELS

Virtual channels occupy a channel number, but not a physical slot, in an SC instrument.

Option Code T Split Display Virtual channel

Split Display channels allow each display of an SC1000, SC2000 or SC2001 to view two track, peak or valley values from any channel in the instrument. This option is not available on the SC3004.

Option Code S Mathematics Virtual channel

Mathematics channels can be programmed by Sensotec to evaluate mathematical expressions or perform special functions in custom applications.

ACCESSORIES

- Instrument Utility Software (AA183) for Windows 95/98/NT/2000 available soon.
- Adapter to convert computer's male 9-pin RS-232 port to male 25-pin (AA176)
- Molded 25-pin male/female cable (AA168)

For Models SC1000 and SC2000 only:

- Panel mounting hardware (AA928)
- Carrying handle (AA926)
- 19" rack-mount panel (AA934)

HOW TO ORDER

CHASSIS ORDER CODES

First, select the order code for the chassis of your instrument.

Readout	Output	Bench Mount		Portable	Rack Mount
		SC1000	SC2000	SC2001	SC3004
1 Display	RS-232 RS-485	AE600 AE616	AE601 AE617	AE602 AE618	AE606 AE622
2 Display	RS-232 RS-485				AE607 AE623
3 Display	RS-232 RS-485				AE608 AE624
1 Display Vehicle Power	RS-232 RS-485	AE632 AE648	AE633 AE649	AE634 AE650	

CHANNEL INPUT OPTION CODES

Next, select the Channel Input Option Codes and their quantities.

	Strain Gage	High Level	RTD	AC/AC LVDT
Voltage output	A	C	E	G
Current output	B	D	F	H

EXAMPLE

The order code begins with the chassis code, followed by the channel codes and all other options (with quantities), in alphabetical order.

Chassis Order Code	Channel Option Codes with Quantities				
AE606	A4	R2	S1		

For example, order code "AE606, A4, R2, S1" specifies an SC3004 instrument with a single display, RS-232 output, 4 Strain Gage input channels, 2 Relay Output channels and 1 Mathematics channel. Note that the channel option codes are listed in alphabetical order.

Signature Calibration MODULE

For use with Model SC Signal Conditioner. **Signature Calibration (SIG CAL)** is the revolutionary new way to eliminate set-up and calibration headaches forever. By including the SIG CAL (option 53e) on your next sensor, you can save up to 90% of your set-up and calibration time.

WHAT IS SIG CAL? (OPTION 53e)**

A *SIG CAL-Equipped* transducer will save you the time consuming and frustrating task of setting up and calibrating a transducer with an instrument prior to each use. A small memory is installed in the sensor which contains all of the necessary set-up and calibration information for that transducer.

SELF CALIBRATION AND AUTOMATIC SET-UP

After simply connecting the sensor to the instrument and turning on the power, all of these stored characteristics are used to completely set up and calibrate the system - within seconds. This approach also eliminates all of the potential human error that may occur with manual set-ups, assuring accurate measurements and a good overall statistical data base.

USE WITH ANY STRAIN GAGE SENSOR

SIG CAL (option 53e) is available on most sensors as an on-board (internal) option, when the size of the sensor allows it. For smaller sensors, older Sensotec sensors or another manufacturer's sensor, an in-line *SIG CAL MODULE* (accessory code AA180) will provide the same benefits.

SIG CAL IS AVAILABLE ON:

LOAD	
• 11*	• LFH 71*
• 13*	• MBH*
• 31*	• MBL*
• 34*	• MPB
• 41	• RGF
• 43	• RGH
• 45	• RGM
• 53*	• RF
• 73	• RH
• 75	• RM
• 81*	• TG
• 82*	• TH
• D*	• UG
	• WG

PRESSURE	
• 415	• HL-A-5
• 440*	• HP-Z
• 811*	• HP
• 911*	• K
• A-5	• L
• A-105*	• LM
• A-205*	• P-30-P
• F*	• S
• FP 2000*	• STJE
• G	• TJE
• H	• Z

TORQUE	
• QFFH-9	• QWFK-8M
• QSFK-9	• QWLC-8M

ACCELEROMETERS*	
• JTF	• PEC-S
• JTFS	• PA

* In-line module only.

** Not to be used in combination with option 2n; intrinsically safe amplifier

Note: Signature module may change dimensions on some units, consult SENSOTEC

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