Model SC500

Programmable Single-Channel Transducer Indicator/Conditioner

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 an isolated voltage 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

Available output channels for the SC500 include:
- Contact relays for the two form C or three form A optional limits
- Isolated digital-to-analog voltage (0 Vdc to 5 Vdc, ±5 Vdc, 0 Vdc to 10 Vdc, ±10 Vdc)

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

FEATURES

- Choice of transducer inputs
- Small 1/8 DIN form factor
- Automatic setup, calibration via sig cal
- Shunt-cal, mV/V or known load calibration
- Peak/valley capture
- Optional analog output and RS-232/RS-485
- Field selectable frequency response (up to 250 Hz) and calibration
- Up to three virtual channels (optional)
- CE approved

Model SC500

PHYSICAL SPECIFICATIONS

Characteristic	Measure
Form factor	1/8 DIN
Case material	Aluminum

ENVIRONMENTAL SPECIFICATIONS

Characteristic	Measure
Temperature, operating	5 °C to 40 °C [40 °F to 105 °F]
Temperature, storage	-30 °C to 90 °C [-40 °F to 195 °F]

DISPLAY SPECIFICATIONS

Characteristic	Measure
Display type	Vacuum fluorescent
Numeric display format	+999999 to -999999 (0, 1, 2, 3, 4, 5 decimal places)
Digit size, normal mode (H x W)	5 mm x 2,5 mm [0.2 in x 0.1 in] (with engineering units)
Digit size, large mode (H x W)	10 mm x 5 mm [0.4 in x 0.2 in] (no engineering units)
Engineering units display	4 characters, available in normal mode only
Display update per second	4

POWER SPECIFICATIONS

Characteristic	Measure
Power supply type	ac (with included wall-mount adapter) or dc
dc power supply requirements	10 Vdc to 26 Vdc @ 1 A
ac wall-mount adapter (included)	Interchangeable plugs for use in the Americas, Europe, the United Kingdom and Australia (100 Vac to 240 Vac)

COMMUNICATIONS OUTPUT (OPTIONAL)

Characteristic	Measure
Serial setup and output	Isolated RS-232 or RS-485 (factory option)
Max. baud rate	38400 Baud

LIMITS OUTPUT (OPTIONAL) SPECIFICATIONS

Characteristic	Measure
Quantity	2 Form C or 3 Form A (factory option)
Response time	Determined by the scan time of the instrument, typically 16 mS
Relay energized when signal is	Less than, greater than, inside or outside set points
Contact ratings	1 A @ 30 Vdc, 0.5 A @ 50 Vac

Not RoHS compliant

Frequency response (Hz) field selectable	Step response (ms) typical	Resolution (counts) (not including min. 10 % overrange/underrange capability)		
		Strain gage	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

ANALOG OUTPUT (OPTIONAL) SPECIFICATIONS

Characteristic	Measure		
Voltage range	Output	Dac Zero	Dac Full Scale
	0 V to 5 V	2.5 V	5 V
	±5 V	0	5 V
	0 V to 10 V	5 V	10 V
	±10 V	0	10 V
Isolation	500 V		
Digital-to-analog resolution	15 bits		
Frequency response	Same as input		

INPUT

	Strain gage millivolts	High level volts/mA	ac/ac displacement transducer
Order code	AE236	AE237	AE238
Transducer type	Unamplified pressure or load	Amplified pressure or load, dc/dc displacement transducer	Displacement transducer
Range	0.5 mV/V to 21 mV/V	±5 Vdc or ±10 Vdc, 4 mA to 20 mA	0.1 VRMS to 15 VRMS
Freq. response & resolution	See table	See table	See table
Calibration (field selectable)	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 Vdc @ 60 mA max.	12 Vdc, ±15 Vdc, 28 Vdc	3 Vac @ 5 kHz
Push button 100 % tare	Yes	Yes	Yes
Push button shunt test	Yes	Yes	No

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How to order: *(Quick-ship range/options combinations available. See online configurator).*
Enter the order code and option code. For example:

AE23X	**QC**	**53X**	**58X**	**58X**	**SXXX**
Order code	Power input option	Digital option	Relay options	Analog output option	Math function option(s)

ORDERING OPTIONS

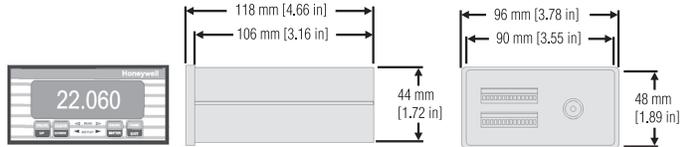| Base Order Code Descriptions	
Option Code	**Description**
AE236	SC500, ac power, strain gage mV/V bridge-based sensors
AE237	SC500, ac power, high-level volts/mA sensors
AE238	SC500, ac power, ac/dc displacement transducers
Power Input Options	
Option Code	**Description**
QC	
Digital Options	
Option Code	**Description**
53a	RS-232 (not available with 53d)
53d	RS-485 (not available with 53a)
Relay Options	
Option Code	**Description**
58a	Two limit set-points with form C contact relays (not available with 58h)
58h	Three limit set-points with form A contact relays (not available with 58a)
Analog Output Options	
Option Code	**Description**
58i	Isolated analog output (0 Vdc to 5 Vdc)
58u	Isolated analog output (±5 Vdc)
58v	Isolated analog output (0 Vdc to 10 Vdc)
58w	Isolated analog output (±10 Vdc)

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MATH FUNCTIONS

The maximum number of math functions allowed for the SC500 is three.

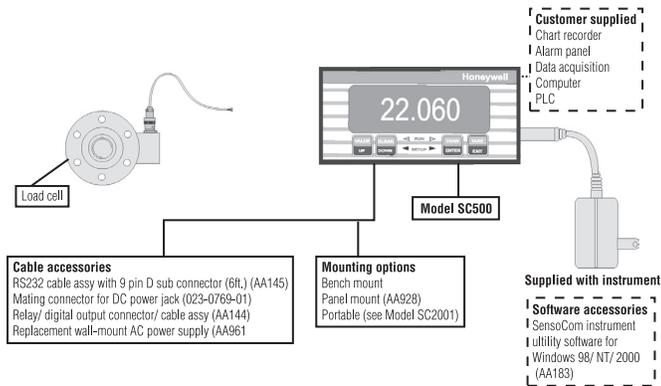| Option	Part Number	Short Description	Description
S8	084-2004-06	Channel 1 divided by constant (set by user)	Channel 1 track Value divided by USER VALUE1. Default User value = 2, Can be updated by user thru the instrument menu or the Serial Communications port. On reset or power up user value is set to 2.
S13	084-2005-04	Execute FL Transmit command when set time elapses (set by user)	Transmits a set of readings as defined by the WL command upon time-out of USER VALUE1 in seconds thru the serial communications port. USER VALUE1 is set thru the instrument menu or Serial Communications port. Please reference the Serial Communications guide for details with the WL command.
S38	084-2008-01	Average channel 1 over time (time period set by user)	Average of channel 1 track value over time. USER VALUE1 sets the time period in seconds. USER VALUE1 is set thru the instrument menu or the Serial Communications port.
S50	084-2010-00	Start Up Instrument Displaying Channel 1 Peak Value	On power up or reset condition initially set display to Channel 1 Peak Value.
S80	084-2067-01	Display channel 1 peak	Function Channel always displays Channel 1 Peak value.
S91	084-2086-01	Absolute Value (channel 1)	Absolute value of Channel 1 Track value.
S96	084-2111-01	Display channel 1 on power up or reset	Read and display Channel 1 Track Value only on power up or reset condition . Displays this value continuously.
S101	084-2007-01	Convert channel 1 from pounds to grams	Channel 1 Track value multiplied by the constant 453.5924. This would be used to convert Channel 1 Track Value in LBS to GRAMS.
S103	084-2012-01	Channel 1 multiplied by constant (set by user)	Channel 1 Track Value multiplied by the constant USER VALUE1. USER VALUE1 is set thru the instrument menu or the Serial Communications port.
S113	084-2057-01	Convert channel 1 from inches of mercury to altitude (feet)	Altitude in feet using the following formula. $a + b(\ln X) + c(\ln X)^2 + d(\ln X)^3 + e(\ln X)^4$, a= 69272.174, b= -14455.994, c= -1394.1419, d= -97.69379, e= -1.3452404, X= USER VALUE1 - Channel 1 track value in INHG. Where USER VALUE1= Current Barometric Pressure in INHG.
S300	084-2032-00	Reset channel 1 peak when channel 1 track > constant (set by user)	Reset Channel 1 Peak value when Channel 1 Track value goes above USER VALUE1. Function Channel Display= Peak clear status, 0= Signal <= User Value1, 1= Signal > user Value1.
S324	084-2045-01	(Constant 1 * channel 1) + constant 2 (constants set by user)	Equation of a line slope-intercept form. Y=mx+b, USER VALUE1= slope (m), USER VALUE2= offset (y intercept), x= channel 1 track value, USER VALUE1 and USER VALUE2 are set thru the instrument menu or the Serial Communications port.
S359	084-2101-00	Channel 1 rate of change per minute (Sample time set by user, default = 60)	Rate of change per minute of time for channel 1 track value. USER VALUE1= Sample Time in seconds between successive readings, default is set to 60 seconds. The following calculation is performed. (60/USER VALUE1)*DIFFERENCE in channel 1 track values. USER VALUE1 is set thru the instrument menu or the Serial Communications port.

MOUNTING DIMENSIONS AND CHARACTERISTICS

118 mm [4.66 in]
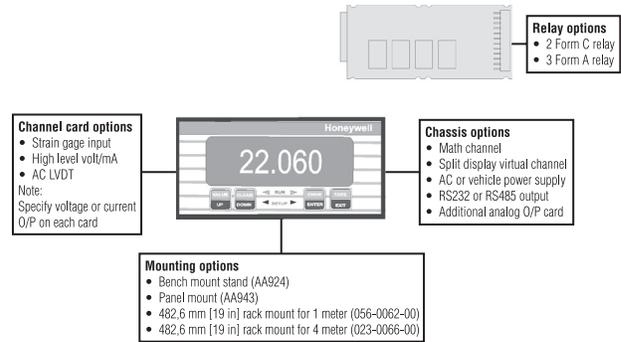106 mm [3.16 in]
44 mm [1.72 in]
96 mm [3.78 in]
90 mm [3.55 in]
48 mm [1.89 in]

22.060

For reference only

TYPICAL SYSTEM DIAGRAM

22.060

Load cell

Model SC500

Customer supplied
Chart recorder
Alarm panel
Data acquisition
Computer
PLC

Cable accessories
RS232 cable assy with 9 pin D sub connector (6ft.) (AA145)
Mating connector for DC power jack (023-0769-01)
Relay/ digital output connector/ cable assy (AA144)
Replacement wall-mount AC power supply (AA961)

Mounting options
Bench mount
Panel mount (AA928)
Portable (see Model SC2001)

Supplied with instrument
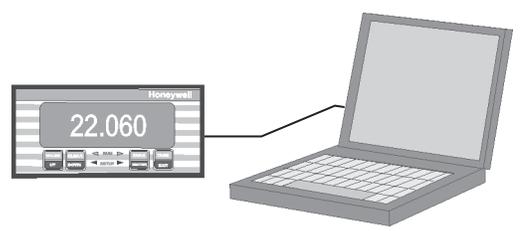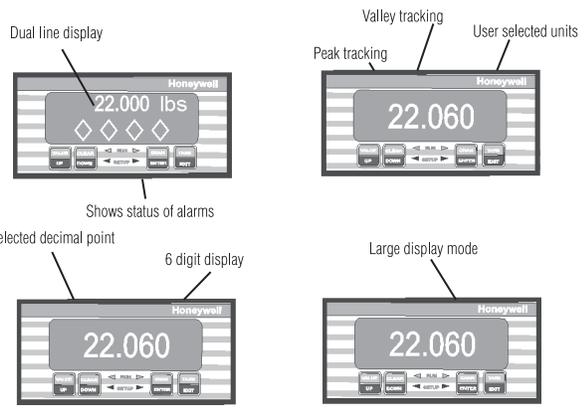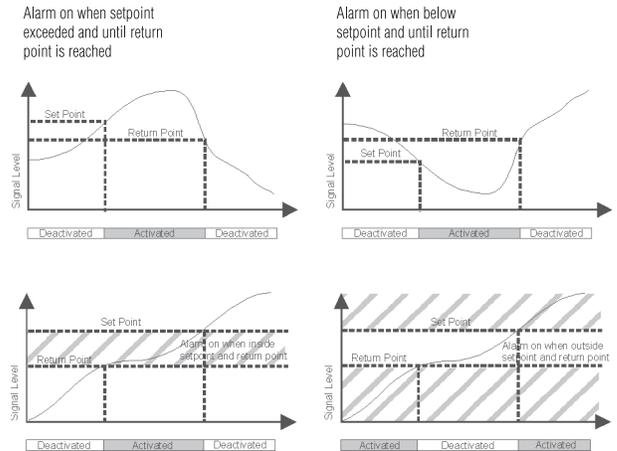
Software accessories
SensoCom instrument
ultility software for
Windows 98/ NT/ 2000
(AA183)

FLEXIBLE AND EXPANDABLE PLATFORM

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Relay options
• 2 Form C relay
• 3 Form A relay

Channel card options
• Strain gage input
• High level volt/mA
• AC LVDT
Note:
Specify voltage or current
O/P on each card

Chassis options
• Math channel
• Split display virtual channel
• AC or vehicle power supply
• RS232 or RS485 output
• Additional analog O/P card

Mounting options
• Bench mount stand (AA924)
• Panel mount (AA943)
• 482,6 mm [19 in] rack mount for 1 meter (056-0062-00)
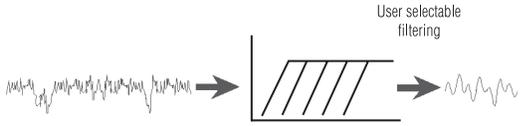• 482,6 mm [19 in] rack mount for 4 meter (023-0066-00)

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SC500 CAPABILITIES

Front panel or remote tare	Flexible user setup
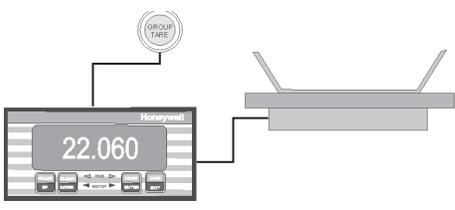
Flexible user setup labels:
Update signature module
Number of decimal places
Serial communications (optional)

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Output voltage (optional)
Engineering units
Alarm outputs (optional)
Display averaging

mV/V or shunt calibration or five-point calibration	Remote setup

mV/V calibration

Shunt calibration

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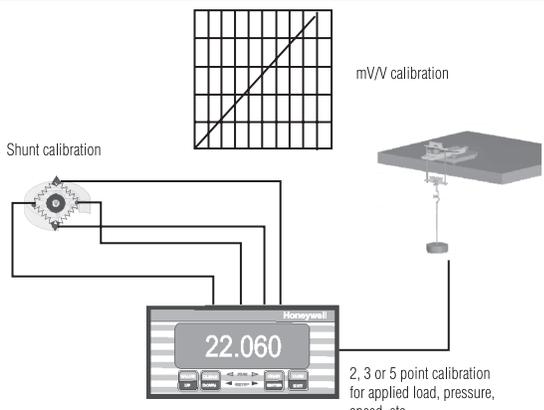
2, 3 or 5 point calibration
for applied load, pressure,
speed, etc.

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User selectable display options	Different alarm configurations (optional)

Dual line display

Valley tracking
Peak tracking
User selected units

22.000 lbs

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Shows status of alarms
User selected decimal point
6 digit display

Large display mode

22.060

22.060

Alarm on when setpoint
exceeded and until return
point is reached

Alarm on when below
setpoint and until return
point is reached

Set Point
Return Point
Signal Level
Deactivated Activated Deactivated

Return Point
Set Point
Signal Level
Deactivated Activated Deactivated

Set Point
Return Point
Alarm on when inside
setpoint and return point
Signal Level
Deactivated Activated Deactivated

Set Point
Return Point
Alarm on when outside
setpoint and return point
Signal Level
Activated Deactivated Activated

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SC500 CAPABILITIES

User selectable filtering	Math channel (optional) can act like PLC
 User selectable filtering	 Math processing 22.060
Sig cal auto setup	**Analog and digital outputs (optional)**
Auto setup Retrieves calibration data Sets up the correct engineering units Sets the specific range Sets up the correct calibration Scales analog output 22.060 Sensor analog output 101 001 01 001 01 010 101 010 1 000 10 1010 111 0111 001 011 101 101 010 1 010 100001 Digital Data	Data logger Analog meter PC PLC 22.060
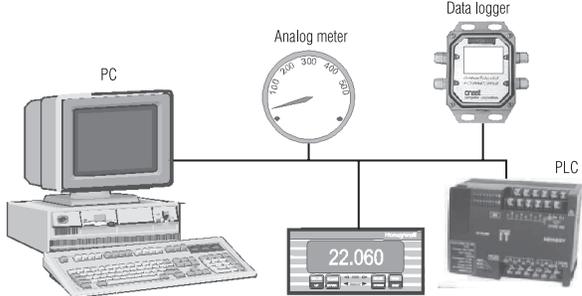
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Programmable Single-Channel Transducer Indicator/Conditioner

Warranty. Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items it finds defective. **The foregoing is buyer's sole remedy and is in lieu of all warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.**

While we provide application assistance personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.

Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.

⚠ **WARNING**

PERSONAL INJURY

- DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

Failure to comply with these instructions could result in death or serious injury.

⚠ **WARNING**

MISUSE OF DOCUMENTATION

- The information presented in this datasheet is for reference only. DO NOT USE this document as product installation information.
- Complete installation, operation and maintenance information is provided in the instructions supplied with each product.

Failure to comply with these instructions could result in death or serious injury.

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