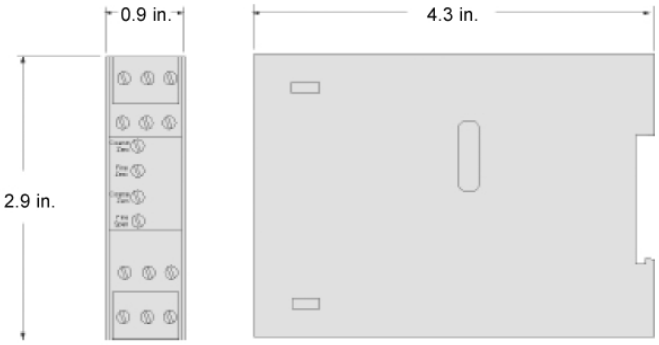
Model DA-05 DIN Rail Mount In-Line Amplifier

Order Code BE153

- DIN Rail Mount
- Strain Gage Transducer Input
- Bridge Based Transducer Input
- 4-20 mA 3-Wire Output
- RFI, ESD Protected CE

Dimensions



General

Number of Channels	One
Case Material	Plastic
Mounting	35 mm DIN
Certification	CE Approved

Environmental

Temperature, Operating	-40° to 200° F
Temperature, Storage	-40° to 200° F

Transducer Interface

Transducer Type	Bridge based sensor
Transducer Excitation	3 or 5 VDC @ 30 mA (Short circuit protection)

Amplifier Characteristics

Supply Voltage	13.5-28 VDC
Current Draw	60 mA
Zero Adjustment Range	+/- 60% coarse adjustment
	+/- 10% fine adjustment
Span Adjustment Range	Switch selectable 0.5 to 13.3 mV/V
	+/- 20% fine adjustment
Linearity	+/- 0.01%
Output	4-20 mA 3 wire
Frequency Response (-3 db)	DC-6,200 Hz with 350 Ohm bridge
	DC-2,300 Hz with 5,000 Ohm bridge
Rise Time (0 to 90%)	63 s with 350 Ohm bridge
	160 s with 5,000 Ohm bridge
Signal to Noise Ratio	70 db
DC Power Supply Rejection Ratio	90 db

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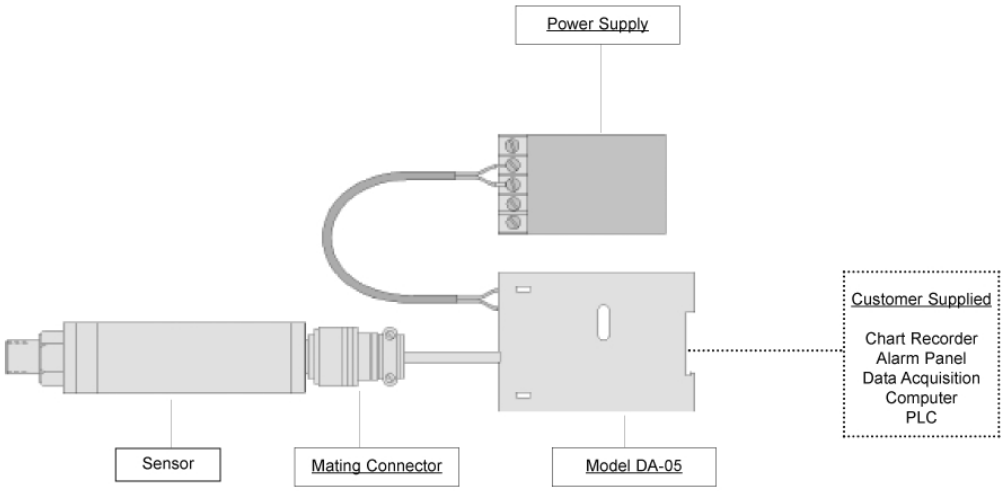
Model DA-05

Electroniques

Typical System Diagram



Options

	Built to Order
58e, 2 Pole Filter Option	1 Hz 3 Hz 5 Hz 10 Hz 20 Hz 30 Hz 50 Hz 100 Hz 300 Hz 500 Hz 1,000 Hz 6200 Hz (350 Ohm bridge) 2300 Hz (5,000 Ohm bridge)

Supplied as standard

CE Approved

-Not RoHS Compliant

How to Order

Combine the order code, the options code and the filter frequency.

Sample Code: BE153 (Order Code) 58e, 50 Hz (Filter with Frequency)

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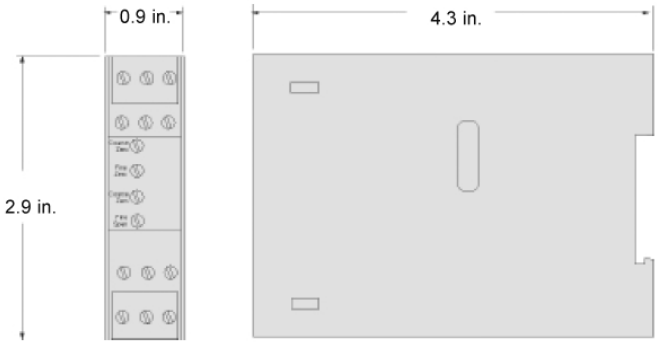
Model DV-10 DIN Rail Mount In-Line Amplifiers

Order Code BE155

- DIN Rail Mount
- Unamplified Transducer Input
- Bridge Based Transducer Input
- 0 to +/-10V 3-Wire Output
- RFI, ESD Protected CE

Dimensions



General	Number of Channels	One
	Case Material	Plastic
	Mounting	35 mm DIN
	Certification	CE Approved
Environmental	Temperature, Operating	-40° to 200° F
	Temperature, Storage	-40° to 200° F
Transducer Interface	Transducer Type	Bridge based sensor
	Transducer Excitation	5.4 or 9 VDC @ 30 mA (Short circuit protection)
Amplifier Characteristics	Supply Voltage	15-28 VDC
	Current Draw	60 mA
	Zero Adjustment Range	+/- 30% coarse adjustment
		+/- 5% fine adjustment
	Span Adjustment Range	Switch selectable 1.75 to 13.3 mV/V
		-8 to +20 fine adjustment
	Linearity	+/- 0.01%
	Output	+/- 10 VDC (3 wire)
	Output Current	2 mA
	Frequency Response	DC- 5,000 Hz

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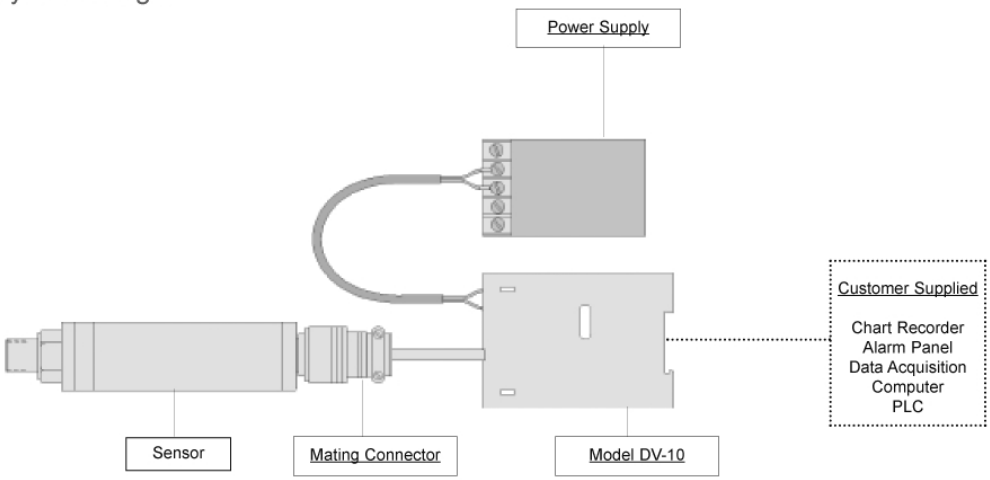
Model DV-10

Electroniques

Typical System Diagram



Options

	Built to Order
58e, 2 Pole Filter Option	1 Hz 3 Hz 5 Hz 10 Hz 20 Hz 30 Hz 50 Hz 100 Hz 300 Hz 500 Hz 1,000 Hz 2,500 Hz (350 Ohm bridge) 7,000 Hz (5,000 Ohm bridge)

Supplied as standard

CE Approved

-Not RoHS Compliant

How to Order

Combine the order code, the options code and the filter frequency.

Sample Code: BE155 (Order Code) 58e, 50 Hz (Filter with Frequency)

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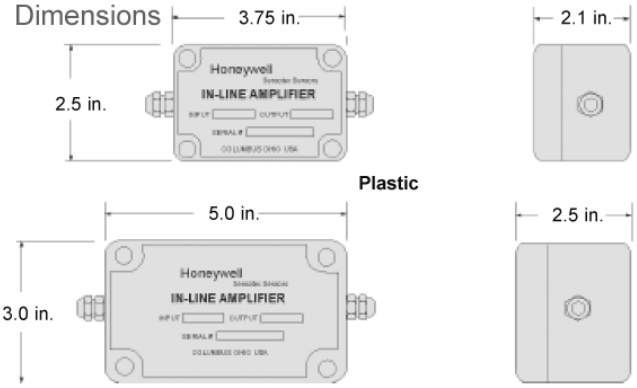
PRESSION

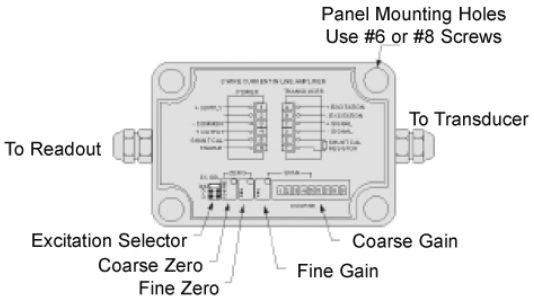
Model U3W Bridge Based Sensor In-Line Amplifier

Order Code BE125

- Strain Gage Sensor Amplifier
- 18-32 VDC Supply Voltage
- NEMA 4 Housing
- Selectable Excitation Voltages
- 4-20 mA Analog Output

Dimensions





General

Number of Channels.....1
Case Material.....Plastic or Painted Aluminum
Mounting.....Use #6 or #8 Screws

Environmental

Temperature, Operating.....5° to 122° F
Sealing.....IP-66 or NEMA-4

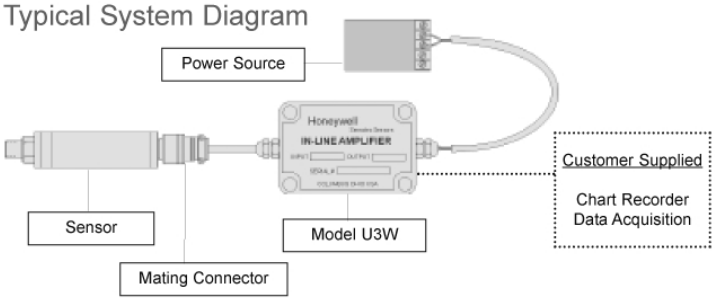
Transducer Interface

Transducer Type.....Bridge based sensor
Transducer Excitation.....3 or 5 VDC @ 70 mA

Amplifier Characteristics

Supply Voltage.....18-32 VDC
Current Draw.....70 mA
Frequency Response (-3db).....DC to 5,000 Hz
Zero Adjustment Range
Coarse.....+/- 70%
Fine.....+/- 25%
Span Adjustment Range.....0.5 - 6.6 mV/V +/- 25% fine adjustment
Linearity.....0.02% of Full Scale
Shunt Calibration.....Solid state relay on board
Signal Output.....4-20 mA (3 wire)
Signal to Noise Ratio.....65 db
DC Power Supply Rejection Ratio.....> 110 db

Typical System Diagram



Options

2 Pole Active Filter	Built to Order		Built from Scratch
Filter Setting	3 Hz 5 Hz 10 Hz 20 Hz 30 Hz	50 Hz 100 Hz 300 Hz 500 Hz 1,000 Hz	User Specified

-Not RoHS Compliant

How to Order

The order code consists of the product model and the available filter setting.

Sample Code BE125 (Model Code) 30Hz (Filter Setting)

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Electroniques

Universal In-Line Amplifiers

Models UBP, UV, UV-10, U3W, And U2W

COMPATIBLE WITH ANY STRAIN GAGE SENSOR

USER PROGRAMMABLE

NEMA-4 & IP-66 WATER RESISTANCE

SELECTABLE EXCITATION VOLTAGES

Applications

Applications that may require an in-line amplifier:

1. In some applications, a transducer must be located in a hostile environment or one which is some distance from the display. If the environment at the sensing site is subject to high temperatures, humidity, or corrosive conditions, it may be necessary to place the amplifier in-line and away from the transducer.
2. In-Line Amplifiers can be shipped from stock for quick delivery.
3. Can be used with miniature transducers or when space is limited.
4. An In-Line Amplifier may be more accessible than the transducer itself, therefore potentiometer adjustments which are located in the amplifier are more convenient.

The SENSOTEC Universal In-Line Amplifier is a highly serviceable, user-programmable unit which meets NEMA-4 and IP-66 ratings for water resistance.

The SENSOTEC Universal In-Line Amplifier is housed in a rugged plastic package, which is connected between the transducer and a readout instrument. The amplifier supplies a highly regulated bridge excitation voltage for the transducer and converts the milivolt signal of the transducer to 0-5, 0-10 VDC or 4-20 mA. The In-Line features include three selectable excitation voltages, programmable gain setting, a wide adjustment range on zero and a buffered solid state shunt cal for quick calibration.

Advantages

Using SENSOTEC's In-Line Amplifier with a strain gage transducer has many advantages:

1. Signal-to-noise ratio is increased.
2. Effects of voltage drops in excitation sources are eliminated.
3. Signals can be sent to the data systems from low-impedance sources.

MODEL UV, UV-10

Connect with power pack or vehicle battery power for field use. This amplifier has a high degree of regulation to accept battery voltage changes plus transient protection. It can drive loads of up to 5 milliamperes at full output. Model UV provides ± 5 VDC output, Model UV-10 provides ± 10 VDC output. New optional metal cable glands are now available.

MODEL U3W, U2W

Model U3W provides 4-20 mA (3-wire) output, and is ideal for applications requiring long signal transmission with minimal signal loss. The U3W is inherently protected against incorrect wiring. Maximum load resistance is 1000 ohms. Model U2W provides 4-20 mA (2-wire) output. New optional metal cable glands are now available.

MODEL UBP

Connect ±15VDC power input to get non-floating output. Model UBP is used when both positive and negative output (±5VDC) or positive only output (0-5VDC) are required.

NEW METAL CASE OPTION

New optional metal case and electrical connections for all universal in-line amplifiers (2½ high x 5" long x 3" wide).

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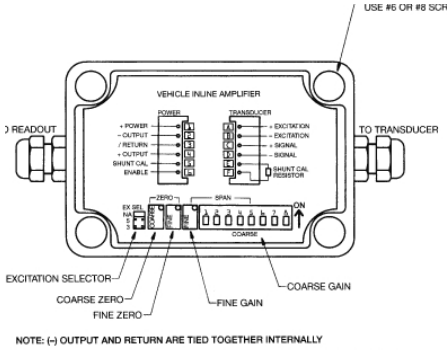
PRESSION

Universal Vehicle Powered

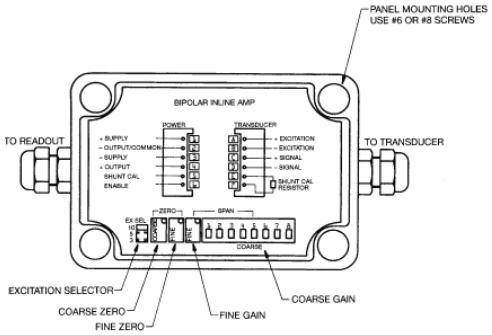


NOTE: (–) OUTPUT AND RETURN ARE TIED TOGETHER INTERNALLY

Dimensions: L; 3.75" x W; 2.50" x H; 2.10"

	Model UV ± 5 VDC Output (Order Code BE124)	Model UV-10 ±10 VDC Output (Order Code BE127)
Operating Voltage	11 - 28 VDC	18 - 32 VDC
Operating Temperature	-20° to 158° F (-30° to 70° C)	-20° to 158° F (-30° to 70° C)
Excitation Voltage	3 or 5, VDC @ 70 mA	3, 5 or 10 VDC @ 50 mA
Output Voltage Range	±5 VDC @ 2.5 mA	± 10 VDC @ 2.5 mA
Zero Adjustment Range	±50% coarse ±15% fine	± 25% Coarse ± 10% Fine
Span Adjustment Range	.75 mV/V to 10 mV/V	1 mV/V to 20 mV/V
Shunt Calibration*	Solid state relay on-board	Solid State Relay On-Board
Frequency Response	DC - 5000 Hz.	DC - 5000 Hz
Environment	IP-66 or NEMA-4	IP-66 or NEMA-4
Linearity	.02% F.S.	.02% F.S.

Universal Bi-Polar

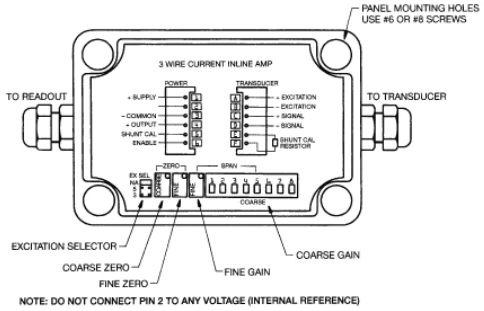


Dimensions: L; 3.75" x W; 2.50" x H; 2.10"

	Model UBP ± 5 VDC Output (Order Code BE123)
Operating Voltage	±15 VDC
Operating Temperature	-20° to 158° F (-30° to 70° C)
Excitation Voltage	3, 5 or 10 VDC @ 70 mA
Output Voltage Range	±5VDC @ 2mA with ±15VDC ±5VDC @ .2mA with 28VDC
Zero Adjustment Range	±50% coarse ±15% fine
Span Adjustment Range	.5 mV/V to 10 mV/V
Shunt Calibration*	Solid state relay on-board
Frequency Response	DC - 5000 Hz.
Environment	IP-66 or NEMA-4
Linearity	.01% F.S.

NOTE: This model is for replacement only, not to be used in new designs

Universal 3-Wire

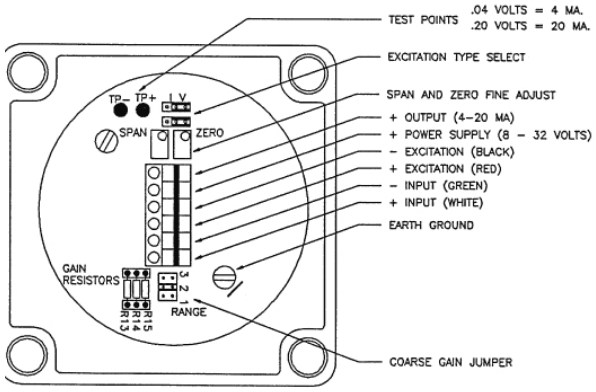


NOTE: DO NOT CONNECT PIN 2 TO ANY VOLTAGE (INTERNAL REFERENCE)

Dimensions: L; 3.75" x W; 2.50" x H; 2.10"

	Model U3W (Order Code BE125)
Operating Voltage	18 - 32 VDC
Operating Temperature	-20° to 158° F (-30° to 70° C)
Excitation Voltage	3 or 5 VDC @ 70 mA
Output Voltage Range	4 - 20 mA
Zero Adjustment Range	± 70% coarse ± 25% fine
Span Adjustment Range	.5 mV/V to 6.6 mV/V
Shunt Calibration*	Solid state relay on-board
Frequency Response	DC - 5000 Hz.
Environment	IP-66 or NEMA-4
Linearity	.02% F.S.

Universal 2-Wire



Dimensions: L; 3.77" x W; 3.7" x H; 2.24"

	Model U2W (Order Code BE128)
Operating Voltage	8 - 32 VDC
Operating Temperature	-20° to 158° F (-30° to 70° C)
Transducer Bridge Excitation and Resistance	
Constant Voltage Mode	5 VDC @ 2 mA max.; 3K to 10 K ohms
Constant Current Mode	0.5 mA w/3 volts compliance; 2K to 6 K ohms
Output	4-20 mA 2-wire
Zero Adjustment Range	± 15% fine
Span Adjustment Range	Jumper selectable and ± 20% fine adjustment
Frequency Response	1 KHz @ 2 mV/V
Environment	IP-66 or NEMA-4
Lightning Protection	Yes

New-Package size available. Same configuration as above models UV or U3W

*Standard Shunt Calibration resistor is 59k.

New Metal Case option: enclosure size: 5" long, 3" wide, 21/2" high. Electrical connection options: 51k Metal Case, 59e Turck output connector 15 ft. cable and Turck molded connector assembly order code AA128

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PRESSION

Model SC1000/ SC2000 Transducer Display & Signal Conditioning Unit

- 1 to 4 Channels
- +/- 6 Digit Display
- "Sig Cal" Auto Set Up
- Pressure, Load, LVDT, Voltage, Current, Strain Gage based Sensor Input
- Alarm Outputs

Electroniques

The SC series models are self-calibrating microprocessor-based Transducer Signal Conditioners when used with Sig Mod eqipped transducers. Indicators are available with several different types of 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, 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 Model SC2000 include:

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

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
- Units conversion

Four Channel Chassis
The models SC1000 and SC2000 can hold up to 4 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 4 channel values can be displayed at the same time. The SC2000 includes 4 open collector limit (alarm) outputs plus peak and valley detection.

General

Model	SC1000/ SC2000
Number of Physical Channels	1 to 4
Number of Virtual Channels	1 to 8
Case Material	Aluminum
Form factor	3/8 DIN
Mounting	Bench (std.)
Size	5.6" W x 2.8" H x 8.75" D
Weight	4 lb.

Display

Number of Displays	1
Number of Lines/ Display	2
Number of Characters/ Line	16
Scaling	Automatic or manual setup
Max. Display Count	9,999,999
Decimal Point Selection	0 to 5
Display Type	Vacuum/ Fluorescent

Environmental

Temperature, Storage	-20° to 200°F
Temperature, Operating	40° to 105° F

Special Features
(for SC2000 only)

Limits Setup	Front panel
Limits Output (std.)	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

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Communications

Serial Setup & Output.....RS-232/ RS-485
Isolation.....500 V
Max. Baud Rate.....38400

Power

Power Consumption.....max. 200 VA (at startup)
Standard AC Powered.....100 to 230 VAC, 47 to 63 Hz
Excitation Drive.....120 mA max.

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: • Track hold • Peak/ Valley hold • Tare on • Tare off

Input	Strain Gage Millivolts	High Level Volts/ mA	RTD Millivolts	AC/AC LVDT
Transducer Types	unamplified sensors	amplified pressure or load, DC/DC LVDT	platinum 100 Ohm, alpha = 0.00985	AC/AC LVDT
Ranges*	0.5 to 11 mV/V @ 5V 0.5 to 5.5 mV/V @ 10V	+/-5 or +/-10 VDC 4-20 mA	-328° to 1472°F	0.1 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	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 or 10 VDCw/ sense	+/- 15 VDC, +28 VDC or +12 VDC	10 VDC	3VAC @ 3kHz
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

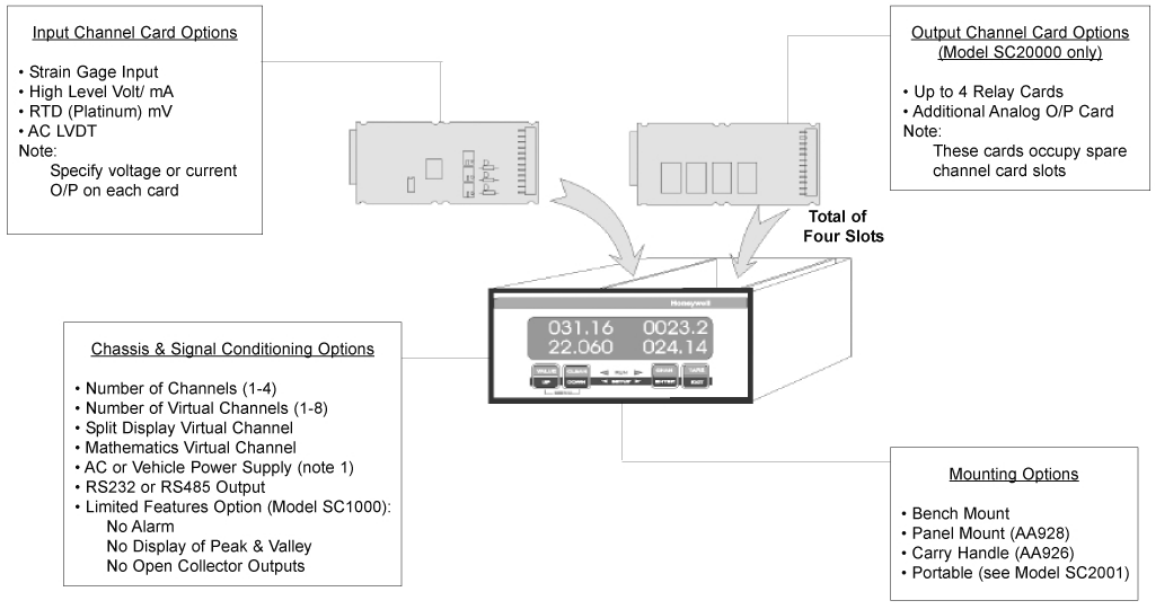
Output	Strain Gage Millivolts	High Level Volts/ mA	RTD Millivolts	AC/AC LVDT
Voltage Range (Field Selectable)	5, +/-5, 10, +/-10 VDC	5, +/-5, 10, +/-10 VDC	5, +/-5, 10, +/-10 VDC	5, +/-5, 10, +/-10 VDC
Current Range	4-20 mA	4-20 mA	4-20 mA	4-20 mA
Source	any channel	any channel	any channel	any channel
Isolation	500V	500V	500V	500V
Resolution	13 bits	13 bits	13 bits	13 bits
Frequency Response	same as input	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 capacity) Strain Gage/ RTD	High Level	AC/AC LVDT
2 (fast mode)	40	+/- 50,000	+/- 50,000	+/- 25,000
2	440	+/- 50,000	+/- 50,000	+/- 25,000
8	110	+/- 25,000	+/- 25,000	+/- 15,000
16	55	+/- 20,000	+/- 25,000	+/- 10,000
32	28	+/- 10,000	+/- 20,000	+/- 10,000
50	16	+/- 5,000	+/- 15,000	+/- 5,000
100	8	+/- 5,000	+/- 10,000	+/- 5,000
250	3	+/- 2,000	+/- 10,000	+/- 2,000
500	2	+/- 2,000	+/- 4,000	+/- 2,000
800	2	+/- 2,000	+/- 2,500	+/- 2,000

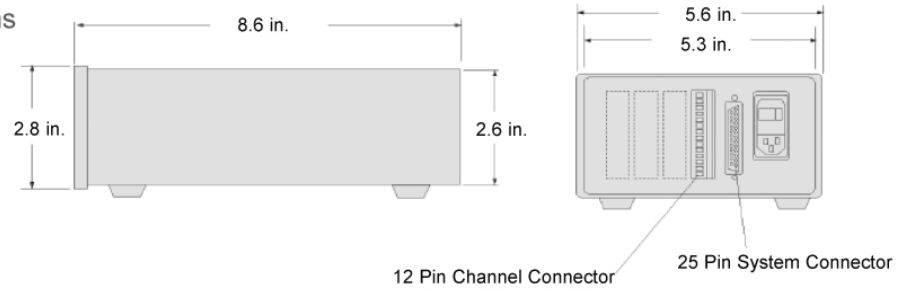
Electroniques

Model SC1000/ SC2000

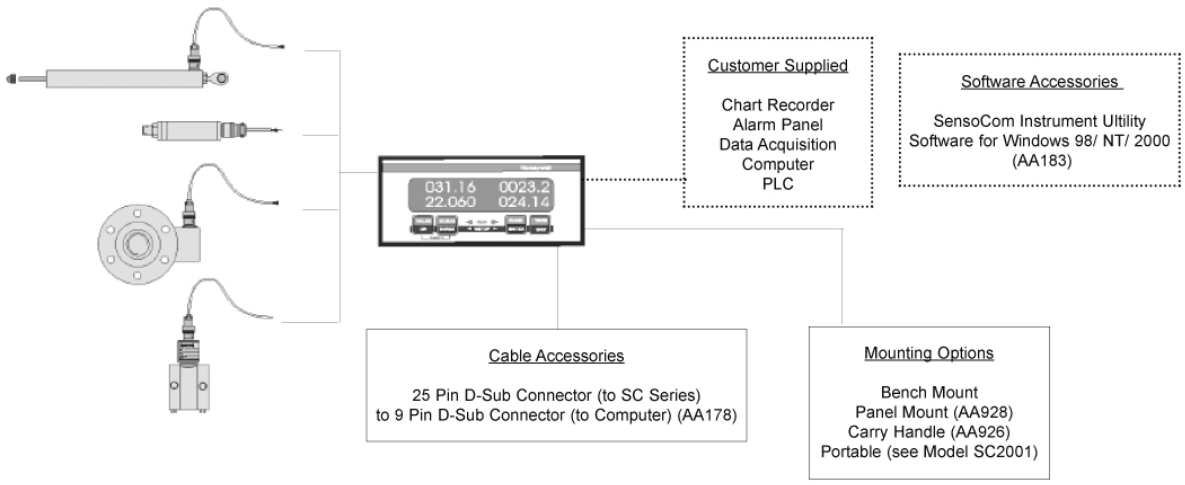
Flexible and Expandable Platform Options



Dimensions



Typical System Diagram



Note:
1. Vehicle power supply is not CE certified.

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Model SC1000/ SC2000

SC2000 Capabilities

Front Panel or Remote Tare

Flexible User Setup

Number of channels for display

Calibration data

Serial communications

Number of decimal places

Output voltage

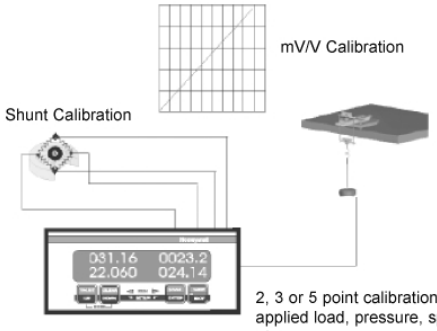
Engineering units

Alarm outputs

Display averaging

Update signature module

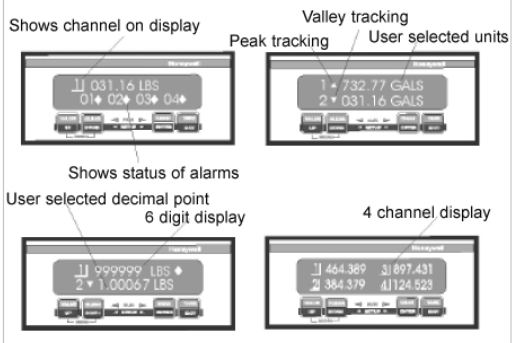
mV/V or Shunt Calibration or 5 Point Calibration



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

Remote Setup

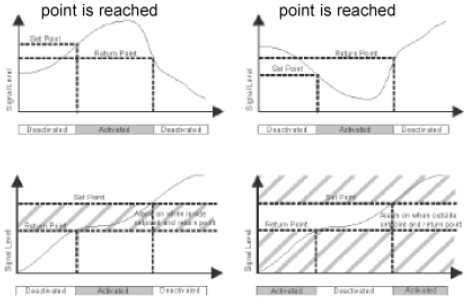
User Selectable Display Options



Different Alarm Configurations

Alarm on when setpoint exceeded and until return point is reached

Alarm on when below setpoint and until return point is reached



Electroniques

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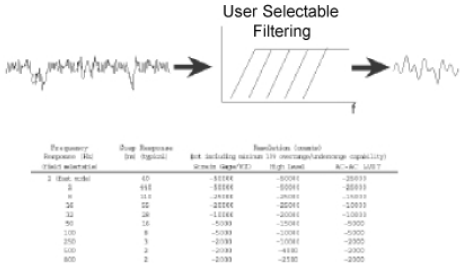
PRESSION

Electroniques

Model SC1000/ SC2000

SC2000 Capabilities

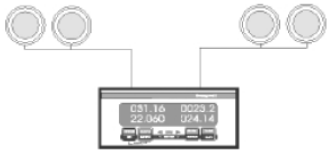
User Selectable Filtering



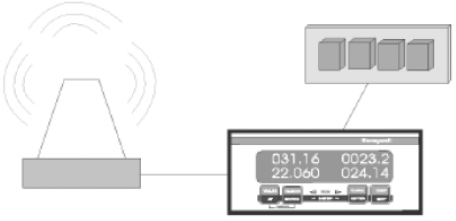
Group and Individual Channel Remote Inputs

System Remote
Switch Inputs:
- Peak/ Valley clear
- Tare on
- Tare off

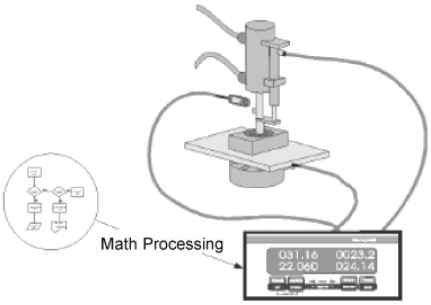
Channel Specific Remote Commands;
Each channel can have any two:
- Track hold
- Peak/ Valley hold
- Peak/ Valley clear
- Tare on
- Tare off



Open Collector Alarms or via Optional Four-Relay Cards

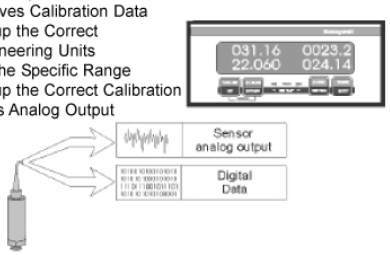


Optional Math Channel Can Act Like PLC

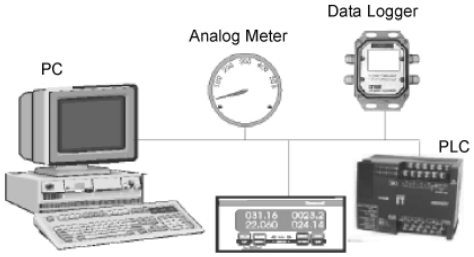


Sig Cal Auto Set Up

Auto Setup
Retrieves Calibration Data
Sets up the Correct
Engineering Units
Sets the Specific Range
Sets up the Correct Calibration
Scales Analog Output



Analog & Digital Outputs



CE Approved

-Not RoHS Compliant

How to Order

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

Readout	Output	SC1000	SC2000
1 Display	RS-232	AE600	AE601
	RS-485	AE616	AE617
1 Display Vehicle Power	RS-232	AE632	AE633
	RS-485	AE648	AE649

Next, select the Channet 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

Then select any additional Option Codes and their quantities.

	Option Code	
Relay Output Channel	R	(SC2000 only)
Voltage DAC Output Channel	O	(SC2000 only)
Current DAC Output Channel	P	(SC2000 only)
Split Display Virtual Channel	T	
Mathematics Virtual Channel	S	

Combine the Chassis code, the Channel codes and all other options (with quantities) in alphabetical order.

Sample Code: AE617 A2 R1 S1

Chassis Code — Channel Option Codes with Quantites

For example, order code AE617,A2,R1,S1 specifies SC2000 instrument with RS485 output, 2 strain gage input channels, 1 relay output card and 1 math channel. Note the options codes are listed in alphabetical order.

Honeywell sensotec

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