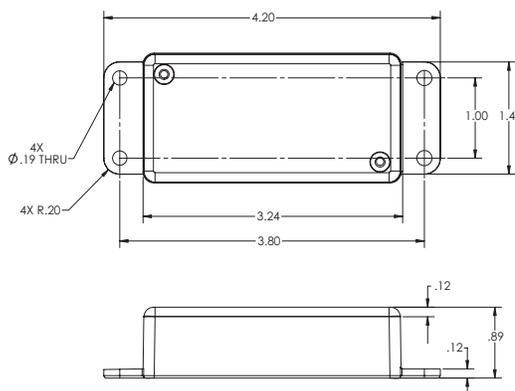


AI-1000 Single Channel Signal Conditioner



Highlights

Technology

- ★ Accepts standard mV/V signals and outputs an amplified DC voltage (0.5—4.5V) signal output

Overview

The Loadstar Sensors' AI-1000 Signal Conditioner is an interface designed to amplify strain gauges arranged in a full Wheatstone bridge configuration, and is suitable for many applications where a bridge or differential input amplifier is required. The AI-1000 may be operated with single or dual power supply to provide single-ended or bipolar output, and includes bridge offset and circuit gain trimmer potentiometers.

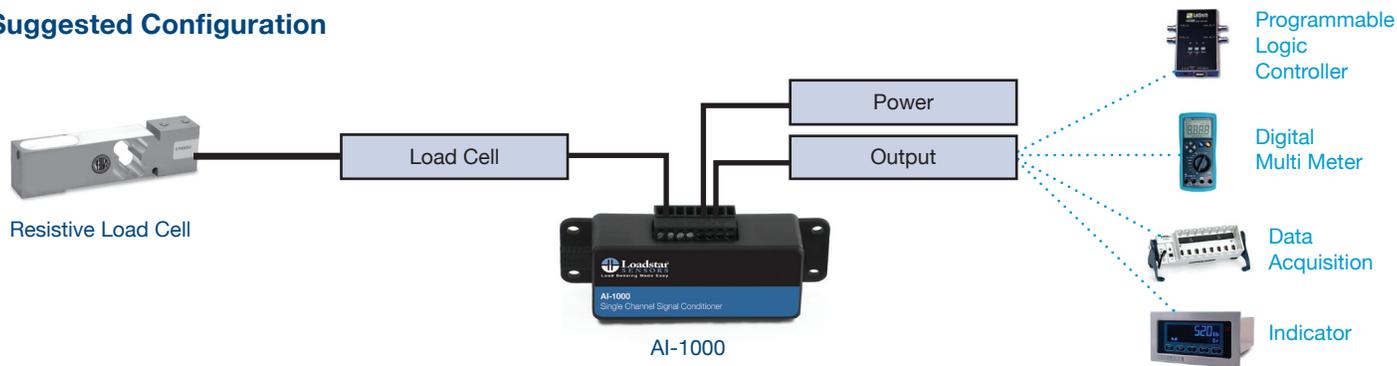
Specifications

Load Cell Connector	Screw Terminal Block
Power	Operating Voltage 8–30V DC regulated or filtered unregulated
Operating Current	5mA, plus bridge current
Excitation	5V
Bridge Input	Full Wheatstone Bridge

Ordering Information

Available Configurations	
Option	Part No.
Basic	AI-1000

Suggested Configuration



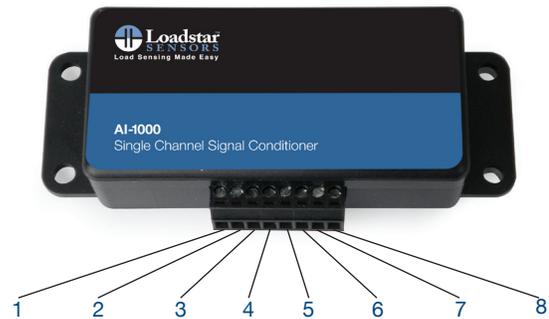
Set-Up Steps

- 1 The AI-1000 was factory calibrated with the load cell that you have purchased. The terminal block is connected as shown on the next page.
- 2 Verify the connection to the terminal block.
- 3 Plug the power adapter to a power outlet.
- 4 The AI-1000 was adjusted to output approximately 0.5V DC (no load) to 4.5V DC (full load), between +V DC (position #5) and -V DC (position #8) terminals.

AI-1000 Quick Start Guide

Wiring Diagram

Position	Signal Name	Description
1	Load Cell: +Excitation	Color Code: Red
2	Load Cell: -Excitation	Color Code: Black
3	Load Cell: +Signal	Color Code: Green
4	Load Cell: -Signal	Color Code: White
5	AI-1000: +VDC Output	Output: 0.5VDC – 4.5VDC
6	AI-1000: +Power Input	Power adapter (Positive; with white stripe)
7	AI-1000: -Power Input	Power adapter (Negative; merged with ground)
8	AI-1000: -VDC Output	Output: Ground



GAIN Adjustment (R2)
 - Clockwise to increase gain
 - Counter-clockwise to decrease gain



OFFSET Adjustment (R1)
 - Counter-clockwise to increase offset
 - Clockwise to decrease offset

Calibration Procedures

- With no load on the load cell, adjust the R1 potentiometer (pot) to read approximately 0.5 V.
- With full load, adjust the R2 (pot) to read approximately 4.5 V. This will also change the offset setting made in step 1, which will now be slightly different from 0.5 V.
- Take the load off and adjust R1 pot.
- You may have to go back and forth a few times to get the desired readings at both zero load and full load.

Pre-Calibrated AI-1000

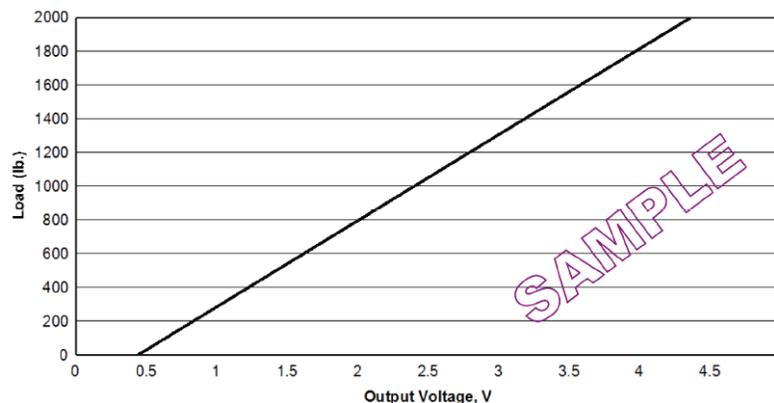
If you have received an AI-1000 pre-calibrated to a load cell, please refer to the calibration sheet indicating the lb/volt (or kg/volt) on how to compute the load from the measured voltage. For example, in the graph shown below for a 2000 lb load cell, if the voltage measured between pins 5 and 8 is 3.0 V, then

$$\text{Load, } L = (3.0 * 509.81) - 223.96 = 1305.47 \text{ lb.}$$

If you have a preload that needs to be zeroed out, simply take the difference in voltages, and multiply by the slope (in this case 509.81). For example, with a preload (to be zeroed out), if the measured voltage is 0.8 V, and with an unknown load L1, the measured voltage is 2.0 V, then

$$L1 = (2.0-0.8)*509.81 = 1.2*509.81 = 611.78 \text{ lb.}$$

Results



Sample AI-1000 calibration graph for a 2000 lb load cell

$$\text{Load (lb.)} = (5.0981e+02)*V - 2.2396e+02$$