AI-1000-CV User Guide

Overview

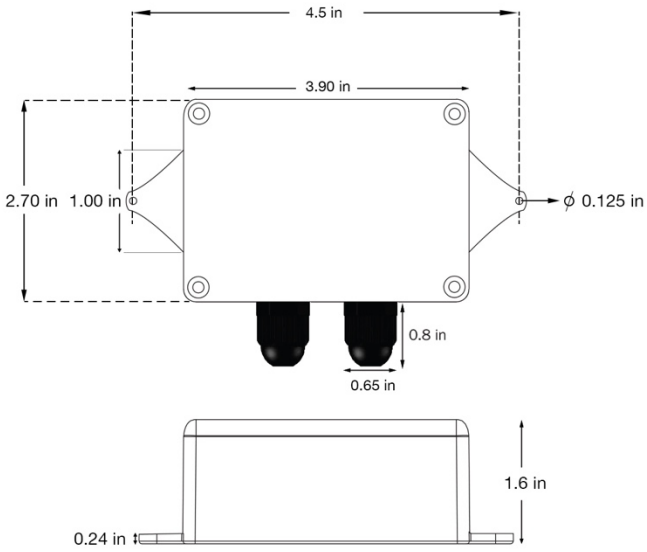
The AI-1000-CV Analog Load Cell Interface is used to capture low level mV/V signals from a resistive bridge type load cell and convert it into a high level 0-5 V DC voltage output and/or a 4-20 mA current output compatible with PLCs and DAQs. It can be used with any resistive load cell. It is similar to the AI-1000 product which only offers the voltage output. This interface offers BOTH voltage and current output options.

Features

- Compatible with all resistive bridge type load cells with mV/V output
- Powered by 24V DC power supply (provided by user)
- Input power to load cell can be set (suggested value is 9V)
- Tunable for easy calibration of your load cell
- Grommets to protect inlet and outlet
- Lid with O-Ring to protect enclosure from the elements
- Two mounting tabs with through holes to fasten unit into your assembly
- One AI-1000-CV needed per load cell
- Load Cell must be calibrated with AI-1000-CV prior to use

Product Dimensions

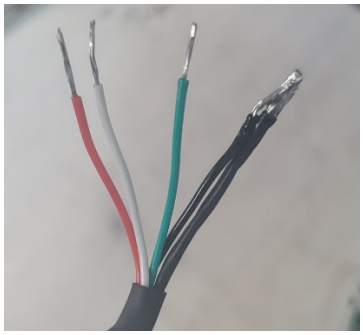
4.5 in x 2.7 in x 1.6 in



Operation

Connecting Load Cell to AI-1000 CV Interface

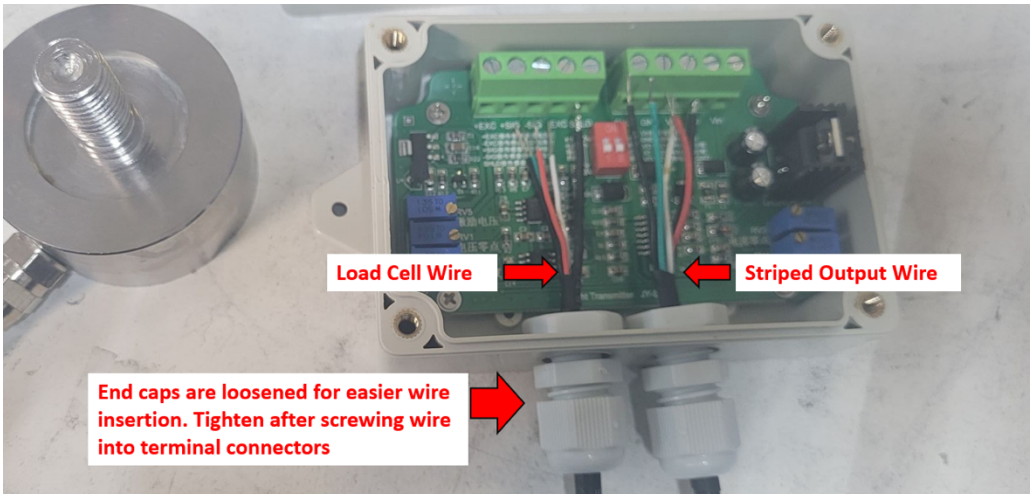
1. Strip any 4-wire cable on both sides and Tin each wire as we will use this wire for the output.
    - It is useful to solder one side of the wire so it is easier to connect the ground cables later



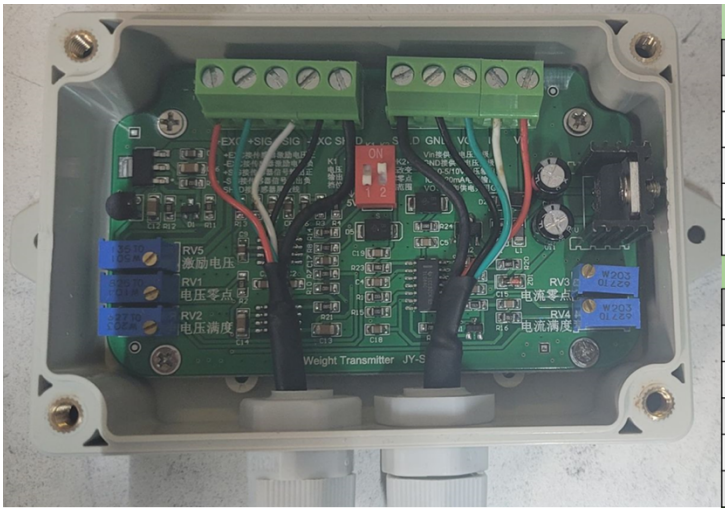
2. Insert the wire for the output through the right hole and insert the wire coming out of the loadcell in the left hole as shown in the picture below.

    - Remove the grommet caps and insert the cables through the caps before inserting it through the hole to fasten into terminal block

3. Connect the wires as show in the image below



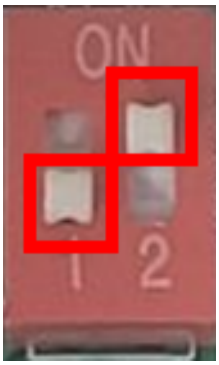
- Note the Load Cell connection is almost always as shown except in special cases such as RRP1. In such a case please refer to the loadcell wiring for the correct colors.



Load Cell Connection	
Terminal Name	Wire
+EXC	Red
+SIG	Green
-SIG	White
-EXC	Black
SHLD	Black/Yellow
Output Connection	
Terminal Name	Wire
SHLD	Black/Yellow
GND	Black
V0	Green
I0	White
Vin	Red

4. Switch the number 2 switch to the on position.

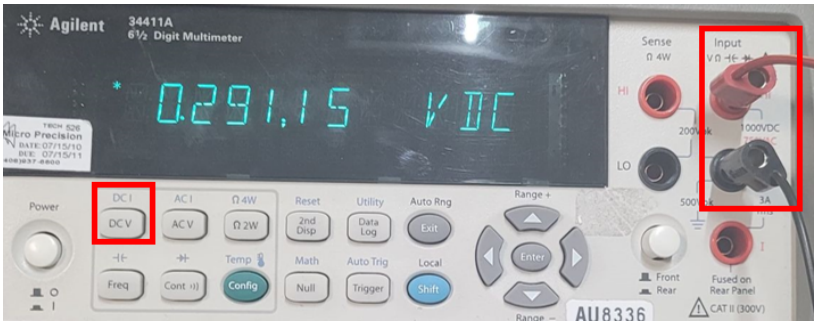
- # 1 Switch – Turn on if you wish the Output to be 0-10 V. By default it is in the 0 -5 V range.
- # 2 Switch On allows the zero level to be adjusted with more resolution. Keep it On.

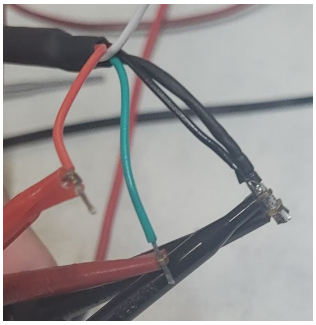


Measuring Current and Voltage from the Interface

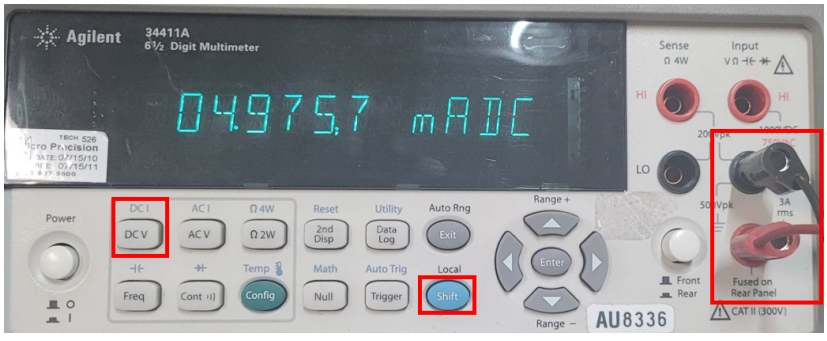
1. Use the power supply to provide **24 Volts exactly**
2. Connect the red output from the power supply to the red wire on the output cable, connect the black output to the soldered black wires on the output cable

3. To measure **voltage**, connect the **Input V** on the multimeter to the **green** wire from the output cable
    - Make sure the Multimeter is set to measure voltage by pressing **DC V**





4. To measure **current**, connect the **Input I** (fused) on the multimeter to the **white** wire from the output cable
    - Make sure the Multimeter is set to measure current by pressing **DC I (Shift + DC V)**

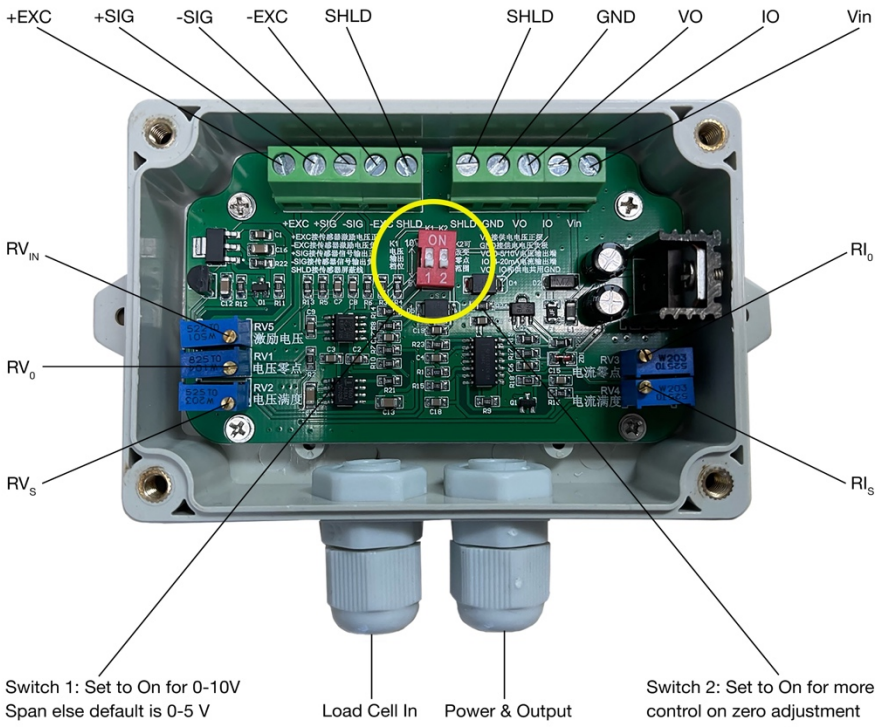


Calibrate your Load Cell with the AI-1000-CV

You must calibrate your sensor with the AI-1000-CV:

- Adjust RV_{IN} to set the excitation voltage to 9 V DC
- Adjust RV_O and/or RI_O to set the initial voltage/current level without any load or zero load
- Adjust RV_S and/or RI_S to max voltage (4.5 V) or max current (20 mA) when full load is applied
- Adjust the RV_O and RVS or the RI_O and RI_S iteratively until the output meets your target outputs

Once calibrated you MUST use the same AI-1000-CV with the same load cell to ensure the accuracy of the signal.



RV_{IN} - RV5 to adjust Voltage Offset (voltage at zero load)

RVo - RV1 to adjust Voltage Span (voltage at full scale)

RIo - RV3 to adjust Current Offset (current at zero load)

RVs - RV2 to adjust Current Span (current at full scale)

RIs - RV4 to adjust Current Span (current at full scale)

To avoid damaging the potentiometers, please be gentle with the potentiometers (“Pots”) turns and don’t overdo it. If changing the Pots does not change the output voltage as expected, then make sure to check your load cell independently of the AI-1000-CV and then try again.