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# **MDE 3400 Analog Input Calibration Procedure**

## **Version 1.0**

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### **Test Equipment needed to calibrate the analog inputs:**

- PC running **SUPERVIEW** software (version 2.10 or higher) connected to 3400 unit.
- For calibrating thermocouple Inputs 1 of the following input sources is required:
  - Thermocouple simulator/calibrator with settings in degrees Celsius..
  - Millivoltage source (0 – 100mV range) .
- For calibrating thermocouple cold junction compensation a Temperature sensor or probe with readout in degrees Celsius is required.
- Two **6-pin plugs** pre-wired as per the attached diagram.

These plugs (same as the removable plugs on the 3400 itself) will provide for an easier and quicker calibration for those units that have the same sensor type (eg. Type T thermocouples) for all inputs.

Contact the factory to order these calibration plugs.

### **Calibration Procedure**

1. Start the **SUPERVIEW** program and navigate to: **Configure->Hardware Inputs->Calibrate Analog Inputs** screen  
then select the controller you wish to calibrate from the drop-down list.
2. If calibration of the Cold Junction is **not** required, go to step 8.
3. To calibrate Cold Junction start by placing the temperature probe near or on input connector which is labeled “Cold Junction” on the **SUPERVIEW** screen.  
  
(Typically this is input 10 on the Control Module, connector P2.)
4. Wait for the temperature reading on the probe device to stabilize.

5. On the **SUPERVIEW** screen, place the cursor on the cell which has the column label “CJ Sensor Adjust” and row label “Cold Junction”.  
This value is typically the only active value in this column.
6. Adjust the number in this cell so that the “Input Value” reading ( 2 columns to the left) matches the temperature probe readout.
7. This completes the Cold Junction calibration. Proceed to step 8.

### ***Analog Input Calibration for the Control Module***

8. Adjust the source output to the **Zero Value** (found on the attached table) for the appropriate input type and source type.  
(Use 0.0 degrees C for simulator, 0.0mv for millivoltage source).
9. Insert the plug labeled Figure A on attached diagram into the receptacle connector labeled P1 lower (indicated by L). on the 3400.
10. On the **SUPERVIEW** screen check the check box labeled “Control Module (P1) Inputs 1-5.”
11. Uncheck any other check boxes that may be checked.
12. If desired, select the “Cal Channels” in the “Display Rows” box to show only the channels that will be calibrated.
13. Attach the source output wires + and - to the wires labeled INPUT+ and INPUT- for the appropriate pre-wired plug.
14. If using a Thermocouple Simulator: click the button in the “Cold Junction Comp” section labeled “All Channels On”
15. If using a Millivoltage Source: click the button in the “Cold Junction Comp” section labeled “All Channels Off”
16. Wait 5 to 10 seconds for the inputs to stabilize.
17. Press the “Calibrate Zero” button on the **SUPERVIEW** screen. This will calibrate the zero for the selected inputs and save the settings in the 3400 non-volatile memory.
18. Adjust the source output to the **Span Value** for the appropriate input type and source type.  
  
(Span value found in the **Span/Zero Table** below.  
Use degrees C for simulator and millivolts for millivolt source).

19. Press the “Calibrate Span” button the **SUPERVIEW** screen.
20. Repeat the above procedure for the Control Module P2 connector, using the appropriate pre-wired plug.

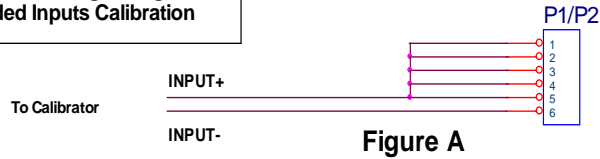
**Analog Input Calibration for the Expansion #1 and Expansion #2 Modules**

21. Repeat the above procedure (step 8 and following) for the Expansion #1 module and/or Expansion #2 module if installed
  - Use the appropriate pre-wired plug(s) found in the attached diagram.
  - Check the appropriate box in step 10 above.
22. Input Calibration Procedure completed.

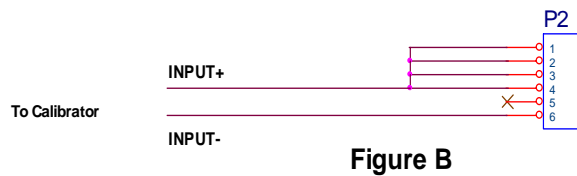
**Span and Zero Table**

Input Type	Range	Zero °C	Zero (mv)	Span °C	Span (mv)	Notes
Type J	-20 to 760 C	0.0 C	0.00 mv	760	42.922 mv	
Type T	-200 to 400 C	0.0 C	0.00 mv	400	20.869 mv	
Type K	-20 to 1371 C	0.0 C	0.00 mv	1371	55.875 mv	
Type S	-20 to 1760 C	0.0 C	0.00 mv	1760	18.612 mv	
Type E	-270 to 1000 C	0.0 C	0.00 mv	1000	76.358 mv	
Type R	-20 to 1760 C	0.0 C	0.00 mv	1760	21.006 mv	
Type C	-20 to 2315	0.0 C	0.00 mv	2318	35.088 mv	
0-156mv	0-156 mv	-	0.00 mv	-	156.000 mv	
0-50mv	0-50mv	-	0.00 mv	-	50.000 mv	
0-10mv	0-10mv	-	0.00 mv	-	10.000 mv	
0-5 volt	0-5 volt	-	0.00 mv	-	5.000 volts	requires Jumper changes on board
0-10 volt	0-10 volt	-	0.00 mv	-	10.000 volts	requires Jumper changes on board

**6 Pin Calibration Plug Wiring for Single-Ended Inputs Calibration**

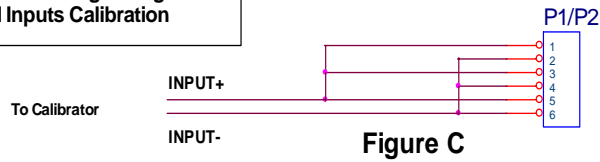


Use for: Control Module P1  
Expansion #1 P1 and P2  
Expansion #2 P1 and P2

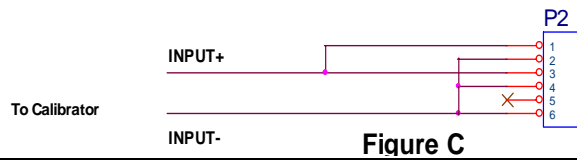


Use for: Control Module P2 if any input is Thermocouple  
(pin 5 no connect)

**6 Pin Calibration Plug Wiring for Differential Inputs Calibration**



Use for: Control Module P1  
Expansion #1 P1 and P2  
Expansion #2 P1 and P2



Use for: Control Module P2 if any input is Thermocouple  
(pin 5 no connect)