



## DIN-A-MITE® Style C with Bias and Gain Adjustments

This procedure describes the adjustment procedure for calibrating bias and gain adjustments of an enhanced DIN-A-MITE power switching device with a process signal input of 0-20mA, 4-20mA, 0-5V, 1-5V or 0-10V. An enhanced DIN-A-MITE can be identified by digit 7 of model number as being 'L, P or S'. The Bias and Gain adjustments are not required when purchased for the application matching the specified range. **Only** adjust the potentiometers when required to change the range of signal input to match a controller not having the required signal outputs.

When the input signal is set to its minimum value, the "Bias" adjustment is set for the minimum power level (power to the load at 0 volts / 0 amps). When the input signal is set to its maximum value, the "Gain" adjustment is set for the maximum power level (power to the load at line voltage / line amperage). Some systems are calibrated to 2% controller power turns the heater completely off and 98% controller power turns the heater 100% on to make sure the full range of the heater power is available.

### **Calibration setup:**

1. Connect line power to the line terminals of the DIN-A-MITE.
2. Connect the actual load (heater) or dummy load (light bulb bank) to the load terminals of the DIN-A-MITE.
3. Connect a monitoring device to measure the power to the load; voltmeter, ammeter, or oscilloscope.
4. Connect the controller's output signal to the input signal terminals of the DIN-A-MITE.
5. Review the controlling device operation to understand how to manipulate the output power from minimum power (i.e. 4mA) to maximum power (i.e. 20mA). Watlow temperature controllers may allow manual operation set point adjustment. Manual set point adjustment manipulates the temperature controller's output from 0% to 100%.
6. DIN-A-MITE models with current limit must have the limit function set to allow desired full current during calibration without current limit interaction. Reset the desired current limit after calibration is complete. The heater may need to be replaced with a load that does not draw excessive current during calibration.

### **Steps to Calibrate:**

**Warning**, if using the actual heater for a load be sure temperature does not get too HOT for the equipment. You may wish to substitute a bank of 60 watt light bulbs wired and rated for the line voltage in place of the heater(s) if that is a concern.

Note: The bias and gain adjustments are approximately 20 turn potentiometers that require a 2.0 mm flat blade screw driver. Turn potentiometers clockwise to increase and counter clockwise to decrease setting. Care should be used when making the adjustments to the calibration potentiometers as they can be damaged if side pressure is applied.

1. Adjust the controller's signal for minimum (0%) output.
2. Adjust the Bias potentiometer adjustment for 0 volts to heater.
3. Adjust the controller's signal for maximum (100%) output. Note warning above.
4. Adjust the Gain adjustment for full voltage to heater.
5. Repeat steps 1 through 4 for proper output levels to the heater as some interaction may be present.



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### Calibration points

<b>INPUT RANGE</b>	<b>0% (BIAS)</b>	<b>100% (GAIN)</b>
<b>4 TO 20mA</b>	4.3mA	19.7mA
<b>CAL RANGE</b>	4.15 to 4.45mA	19.55 to 19.85mA
<b>0 TO 20mA</b>	0.8mA	19.7mA
<b>CAL RANGE</b>	0.8 to 1.1mA	19.55 to 19.85mA
<b>0 TO 5V</b>	0.3V	4.9 V
<b>CAL RANGE</b>	0.25 to 0.35V	4.65 to 4.95V
<b>1 TO 5V</b>	1.1V	4.9V
<b>CAL RANGE</b>	1.05 to 1.15V	4.85 to 4.95V
<b>0 TO 10V</b>	0.3V	9.8V
<b>CAL RANGE</b>	0.2 to 0.4V	9.7 to 9.9V