OPERATING CONSIDERATIONS

The Model M109 flow sensor is a precision liquid mass flow sensor that will precisely measure flow rates of virtually any fluid. The Model M109 is calibrated with DI water. Other liquids can be measured accurately by applying a correction factor for that liquid.

Stainless steel tube fittings provide easy connection and can connect to all external stainless steel wetted parts. This allows the M109 to be used with most fluids, including acids, solvents, and other corrosive chemicals. A pressure rating of 500 psig maximum allows for installation in higher pressure systems.

CAUTION: when connecting tubing to the M109 fittings, flow must be in the direction indicated on the body of the M109 flow sensor. Protect against back flow. Reverse flow will cause the sensor to increase in heat and result in possible overheating and damaging the sensor.

Air dissolved in liquids can cause an error in the output because of bubbles collecting in the sensor tube and thus altering the thermal characteristics of the sensor. Generally this will cause the output to indicate less than the actual flow. Bubbles can be removed by flushing with a higher velocity liquid if practical. A better alternative is to not allow air to dissolve in the liquid by utilizing a bubble removal system. Liquids that are under pressure are less likely to form bubbles.

The M109 can be powered either by a power adapter or by a 12 or 24 vdc power supply. It can also be powered by a lead acid gel cell or automotive battery because the M109 can operate on as low as 9 vdc which is below the operating cutoff knee of most lead acid batteries. The M109 power input is diode protected against reverse polarity and this feature also isolated the unused power connections so that no voltage appears on those unused pins.
When the power adapter is used to power the M109, only pins 2 and 5 of the DB9 connector are needed to obtain a signal output.

DB9 PIN OUT:

1	no connection
2	0-5vdc signal out
3	factory test, do not use
4	factory test, do not use
5	signal common
6	power supply +
7	power supply common
8	zero offset correction
9	no connection

Do not make any connections to pins 3 or 4 in the connector