What is claimed is:

1. A vibrating element meter (5) for meter health verification, the vibrating element meter (5) comprising:

a sensor assembly (10) including a vibrating member (12), a pickoff/detection sensor (17), and a driver (16) configured to vibrate the vibrating member (12);

at least one temperature sensor (112); and

meter electronics (20) coupled to the pickoff/detection sensor (17), the driver (16), and the at least one temperature sensor (112), with the meter electronics (20) being configured to measure a plurality of temperatures using the at least one temperature sensor (112) and a plurality of sensor time periods using the sensor assembly (10), determine an average temperature from the plurality of temperatures, determine an average sensor time period from the plurality of sensor time periods, compensate the average sensor time period using the average temperature to generate a compensated sensor time period, compare the compensated sensor time period to a reference sensor time period, and indicate whether the compensated sensor time period is within a sensor time period error limit of the reference sensor time period.

2. The vibrating element meter (5) of claim 1, wherein measuring the plurality of temperatures (206) using the temperature sensor (112) and the plurality of sensor time periods (207) using the sensor assembly (10) further comprises cleaning the sensor assembly (10).

3. The vibrating element meter (5) of claim 1, wherein measuring the plurality of temperatures (206) using the temperature sensor (112) and the plurality of sensor time periods (207) using the sensor assembly (10) further comprises filling the sensor assembly (10) with ambient air.

4. The vibrating element meter (5) of claim 1, wherein measuring the plurality of temperatures (206) using the temperature sensor (112) and the plurality of sensor time periods (207) using the sensor assembly (10) further comprises placing the sensor assembly (10) under a vacuum.

5. The vibrating element meter (5) of claim 1, wherein measuring the plurality of temperatures (206) using the temperature sensor (112) and the plurality of sensor time periods (207) using the sensor assembly (10) further comprises filling the sensor assembly (10) with or inserting the sensor assembly into a fluid having an accurately known density.

6. The vibrating element meter (5) of claim 1, wherein the meter electronics (20) is further configured to calculate a standard deviation using one of the plurality of temperatures (206) and the plurality of sensor time periods (207), compare the standard deviation to a limit, and indicate whether the standard deviation is greater than the limit.

7. A method for health verification of a sensor, the method comprising the steps of:

measuring a plurality of temperatures (206) using at least one temperature sensor (112) and a plurality of sensor time periods (207) using a sensor assembly (10), the sensor assembly (10) including a vibrating member (12), a pickoff/detection sensor (17), and a driver (16) configured to vibrate the vibrating member (12);

determining an average temperature (208) from the plurality of temperatures (206);

determining an average sensor time period (209) from the plurality of sensor time periods (207);

compensating the average sensor time period (209) using the average temperature (208) to generate a compensated sensor time period (210);

comparing the compensated sensor time period (210) to a reference sensor time period (211); and

indicating whether the compensated sensor time period (210) is within a sensor time error limit (212) of the reference sensor time period (211).

8. The method of claim 7, wherein measuring the plurality of temperatures (206) and the plurality of sensor time periods (207) using the sensor assembly (10) further comprises cleaning the sensor assembly (10).

9. The method of claim 7, wherein measuring the plurality of temperatures (206) and the plurality of sensor time periods (207) using the sensor assembly (10) further comprises filling the sensor assembly (10) with ambient air.

10. The method of claim 7, wherein measuring the plurality of temperatures (206) and the plurality of sensor time periods (207) using the sensor assembly (10) further comprises placing the sensor assembly (10) under a vacuum.

11. The method of claim 7, wherein measuring the plurality of temperatures (206) and the plurality of sensor time periods (207) using the sensor assembly (10) further comprises filling the sensor assembly (10) with or inserting the sensor assembly (10) into a fluid having an accurately known density.

12. The method of claim 7, further comprising the steps of:

calculating a standard deviation using one of the plurality of temperatures (206) and the plurality of sensor time periods (207);

comparing the standard deviation to a limit; and

indicating whether the standard deviation is greater than the limit.