

We claim:

1. A meter electronics (20) for determining a decay characteristic of a meter assembly (10) of a flow meter (5), the meter electronics (20) comprising an interface (201) for receiving a vibrational response from a meter assembly (10), the vibrational response comprising a response to an excitation of the meter assembly (10) at a substantially resonant frequency, and a processing system (203) in communication with the interface (201), the processing system (203) being configured to:
 - receive the vibrational response from the interface (201);
 - determine a response voltage (V) of the vibrational response;
 - determine a decay characteristic (ζ) of the meter assembly (10) based on the response voltage (V); and
 - compensate the decay characteristic (ζ) by using a previously determined decay characteristic-to-response voltage relationship.
2. The meter electronics (20) of claim 1, wherein the previously determined decay characteristic-to-response voltage relationship includes one of a start response voltage and a stop response voltage used to determine the decay characteristic (ζ).
3. The meter electronics (20) of claim 1, wherein the previously determined decay characteristic-to-response voltage relationship relates a previously determined decay characteristic with one of a start response voltage and a stop response voltage.
4. The meter electronics (20) of claim 1, wherein the previously determined decay characteristics-to-response voltage relationship is an error-to-response voltage function.
5. The meter electronics (20) of claim 1, wherein determining the decay characteristic (ζ) further comprises allowing the response voltage (V) of the vibrational response of the meter assembly (10) to decay down to a predetermined stop response voltage.
6. The meter electronics (20) of claim 1, with the processing system (203) being further configured to determine the decay characteristic (ζ) by removing the excitation

of the meter assembly (10) and allowing the response voltage (V) of the vibrational response of the meter assembly (10) to decay down to a predetermined stop response voltage.

- 5 7. A method for determining a decay characteristic of a meter assembly of a flow meter, the method comprising receiving a vibrational response from the meter assembly, the vibrational response comprising a response to an excitation of the meter assembly at a substantially resonant frequency, with the method further comprising:
- 10 receiving the vibrational response;
determining a response voltage of the vibrational response;
determining a decay characteristic of the meter assembly based on the response voltage; and
compensating the decay characteristic by using a previously determined decay characteristic-to-response voltage relationship.
- 15 8. The method of claim 7, wherein the previously determined decay characteristic-to-response voltage relationship includes one of a start response voltage and a stop response voltage used to determine the decay characteristic.
- 20 9. The method of claim 7, wherein the previously determined decay characteristic-to-response voltage relationship relates a previously determined decay characteristic with one of start response voltage and stop response voltage.
10. The method of claim 7, wherein the previously determined decay characteristics-to-response voltage relationship is an error-to-response voltage function.
- 25 11. The method of claim 7, wherein determining the decay characteristic further comprises allowing the response voltage of the vibrational response of the meter assembly to decay down to a predetermined stop response voltage.
- 30 12. The method of claim 7, wherein the decay characteristic is determined by removing the excitation of the meter assembly and allowing the response voltage of the

vibrational response of the meter assembly to decay down to a predetermined stop response voltage.

13. A method of determining a decay characteristic of a meter assembly of a flow meter, the method comprising receiving a vibrational response from the meter assembly, the vibrational response comprising a response to an excitation of the meter assembly at a substantially resonant frequency, with the method further comprising:
- receiving the vibrational response from the interface;
 - allowing the vibrational response to decay from a start response voltage to a stop response voltage;
 - measuring the response voltage from a start response voltage threshold to a stop response voltage threshold; and
 - determining one or more fractional decay characteristics of the meter assembly based on the start response voltage threshold and the stop response voltage threshold, wherein at least one of the start response voltage threshold and the stop response voltage threshold is between the start response voltage and the stop response voltage.

14. The method of claim 13, wherein the start response voltage is a response voltage of the response to the vibration of the meter assembly at the substantially resonant frequency and the stop response voltage is proximate zero volts.

15. The method of claim 13, wherein one of the start response voltage threshold is proximate the start response voltage and the stop response voltage threshold is proximate the stop response voltage.

16. The method of claim 13, wherein determining the one or more fractional decay characteristics of the meter assembly based on the start response voltage threshold and the stop response voltage threshold, wherein at least one of the start response voltage threshold and the stop response voltage threshold is between the start response voltage and the stop response voltage comprises one of:

determining one or more fractional decay characteristics of the meter assembly based on one or more stop response voltage thresholds relative to a start response voltage threshold; and
determining the one or more fractional decay characteristics of the meter
5 assembly based on one or more start response voltage thresholds relative to a stop response voltage threshold.

17. The method of claim 13, further comprising determining a decay characteristic-to-response voltage relationship for compensating a decay characteristic that is based on
10 the start response voltage threshold and the stop response voltage threshold.

18. The method of claim 13, wherein the start response voltage threshold is determined based on the start response voltage.