WHAT IS CLAIMED IS:

1. A method for determining an analyte concentration in a biological sample from a test sensor including a sample interface having a working electrode and a counter electrode, an additional electrode and a measurement device including a processor and a signal generator connected to the processor, the method comprising:

applying a multiple pulse electrical input signal from the signal generator to the biological sample through the working electrode and the counter electrode of the sample interface,

generating from the multiple pulse electrical input signal at least one analytic output signal in response to a redox reaction of an analyte from the biological sample;

generating a secondary output signal from the biological sample from the additional electrode, the secondary output signal in response to the hematocrit content of the sample, the secondary output signal being generated independently from the redox reaction of the analyte from the biological sample;

determining at least one index function responsive to multiple error parameters, the index function including:

a) at least one term of an individual ratio index based on values extracted from the analytic output signal,

b) at least one term of the interaction between at least one of the ratio indices extracted from the analytic output signal, the temperature, the secondary output signal or determined analyte concentration of the sample without compensation, and

c) at least one term including the hematocrit content determined from the secondary output signal; and

determining the analyte concentration in the biological sample from the at least one analytic output signal and a slope compensation equation responsive to the at least one index function, wherein the slope compensation equation including at least one reference correlation between analyte concentrations and output signal values and at least one slope deviation from the reference correlation.

2. The method of claim 1, wherein the at least one index function includes a term determined by an intermediate signal.

3. The method of claim 1, wherein a %-bias of the determined analyte concentration is ±10.4 %.

4. The method of claim 1, wherein a %-bias of the determined analyte concentration is ±5.4 %.

5. The method of claim 1, wherein the determining the analyte concentration in the biological sample includes adjusting a correlation relating the analytic output signal to the analyte concentration in the biological sample with the slope compensation equation.

6. The method of claim 1, wherein the determining the analyte concentration in the biological sample includes determining an analyte concentration without the slope compensation, then correcting the analyte concentration determined without the slope compensation equation with the slope compensation equation.

7. The method of claim 1, wherein the determining the analyte concentration in the biological sample includes adjusting the at least one analytic output signal with the slope compensation equation.

8. The method of claim 1, wherein the slope compensation equation is responsive to an intercept deviation of the at least one error parameter.

9. The method of claim 1, wherein the index function is at least one of a complex index function and a part of a predictor function, where the slope compensation equation is responsive to the complex index function or to the predictor function.

10. The method of claim 9, wherein the predictor function is responsive to the total slope deviation.

11. The method of claim 1, wherein the terms selected for inclusion in the index function are determined by an exclusion test from experimental data.

12. The method of claim 1, wherein the at least one slope deviation is responsive to a %-bias of the analyte concentration otherwise determined from the at least one output signal.

13. The method of claim 1, wherein the temperature is determined via a temperature sensor on the measurement device.

14. A measurement device for determining an analyte concentration in a biological sample comprising:

a sensor interface coupleable to a sample interface of a test sensor having a reservoir for holding the biological sample, a counter electrode projecting into the reservoir, a working electrode projecting into the reservoir and an additional electrode projecting into the reservoir, wherein the sample interface includes conductors connected to the counter, working and additional electrodes;

a signal generator coupled to the sensor interface to generate a multiple pulse electrical input signal through the sensor interface to the counter and working electrodes, and a secondary input signal through the sensor interface to the additional electrode;

a storage medium storing a slope compensation equation,

a processor coupled to the sensor interface and the storage medium, wherein the processor operates to:

receive at least one analytic output signal in response to a redox reaction of an analyte from the biological sample;

receive a secondary output signal from the additional electrode, the secondary output signal in response to the hematocrit content of the sample, the secondary output signal being generated independently from the redox reaction of the analyte from the biological sample;

determine at least one index function responsive to multiple error parameters, the index function including:

a) at least one term of an individual ratio index based on values extracted from the analytic output signal,

c) at least one term of the interaction between at least one of the ratio indices based on values extracted from the at least one analytic output signal, the temperature, secondary output signal or determined analyte concentration of the sample without compensation, and

c) at least one term including the hematocrit content determined from the at least one secondary output signal; and

determine the analyte concentration in the biological sample from the at least one output signal and the slope compensation equation responsive to the at least one index function, the slope compensation equation including at least one reference correlation between analyte concentrations and output signal values and at least one slope deviation from the reference correlation.

15. The measurement device of claim 14, wherein a %-bias of the determined analyte concentration is ±10.4 % or ±5.4 %.

16. The measurement device of claim 14, wherein the index function is at least one of a complex index function and a part of a predictor function, where the slope compensation equation is responsive to the complex index function or to the predictor function.

17. The measurement device of claim 14, wherein the terms selected for inclusion in the index function are determined by an exclusion test from experimental data.

18. The measurement device of claim 14, further comprising a temperature sensor, wherein the temperature is determined via the temperature sensor.