WHAT IS CLAIMED IS:

1. A method for determining an analyte concentration in a biological sample, characterized by:

generating at least one analytic output signal from a biological sample;

generating at least one secondary output signal from the biological sample;

determining at least one index function responsive to at least one error parameter from the at least one 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, where the slope compensation equation includes at least one reference correlation and at least one slope deviation.

2. The method of claim 1, further characterized by determining the at least one index function responsive to the at least one error parameter from the at least one analytic output signal, and preferably from an intermediate signal of the analytic output signal.

3. The method of any one of the preceding claims, where the determining the analyte concentration in the biological sample includes correcting an analyte concentration determined without the slope compensation equation with the slope compensation equation.

4. The method of any one of the preceding claims, further characterized by adjusting a correlation relating the analytic output signal to the analyte concentration in the biological sample with the slope compensation equation.

5. The method of any one of the preceding claims, further characterized by a %-bias of the determined analyte concentration of ± 10.4, and preferably ± 5.4.

6. The method of any one of the preceding claims, further characterized by the slope compensation equation responsive to an intercept deviation of the at least one error parameter.

7. The method of any one of the preceding claims, further characterized by the at least one index function responsive to a slope deviation of the at least one error parameter or to an intercept deviation of the at least one error parameter.

8. The method of claim 7, further characterized by adjusting the slope deviation of the at least one error parameter or the intercept deviation of the at least one error parameter in response to the secondary output signal.

9. The method of any one of the preceding claims, further characterized by the index function being a complex index function or 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, where the predictor function is responsive to a total slope deviation.

11. The method of any one of the preceding claims, further characterized by the at least one slope deviation responsive to a %-bias of the analyte concentration otherwise determined from the at least one output signal.

12. The method of any one of the preceding claims, further characterized by:

generating at least two secondary output signals; and

determining the at least one index function responsive to at least two error parameters from the at least two secondary output signals.

13. The method of claim 12, where

the biological sample is whole blood,

a %-bias of the analyte concentration is from the hematocrit content of the whole blood,

one of the at least two error parameters is from the analytic output signal,

another of the at least two error parameters is from the secondary output signal, and where

the index function is responsive to the at least two error parameters.

14. The method of any one of the preceding claims, further characterized by the slope compensation equation including error parameters from the analytic and secondary output signals.

15. The method for determining the analyte concentration in a biological sample of any preceding claim implemented in a biosensor system.

16. Each and every novel feature herein disclosed.

17. A method for determining an analyte concentration in a biological sample, comprising:

generating at least one output signal from a biological sample;

determining at least one index function responsive to at least one error parameter from the at least one output signal; and

determining the analyte concentration in the biological sample from the at least one output signal and a slope compensation equation responsive to the at least

one index function, where the slope compensation equation includes at least one reference correlation and at least one slope deviation.

18. The method of claim 17, further comprising extracting the at least one index function from at least one of an intermediate signal and a secondary output signal.

19. The method of claim 17, where the determining the analyte concentration in the biological sample includes adjusting a correlation relating the output signal to the analyte concentration in the biological sample with the slope compensation equation.

20. The method of claim 19, where a %-bias of the determined analyte concentration is ± 10.4.

21. The method of claim 19, where the %-bias of the determined analyte concentration is ± 5.4.

22. The method of claim 17, where the determining the analyte concentration in the biological sample includes correcting an analyte concentration determined without the slope compensation equation with the slope compensation equation.

23. The method of claim 22, where a %-bias of the determined analyte concentration is ± 10.4.

24. The method of claim 22, where the %-bias of the determined analyte concentration is ± 5.4.

25. The method of claim 17, where the determining the analyte concentration in the biological sample includes adjusting the at least one output signal with the slope compensation equation.

26. The method of claim 25, where a %-bias of the determined analyte concentration is ± 10.4.

27. The method of claim 25, where the %-bias of the determined analyte concentration is ± 5.4.

28. The method of claim 17, where the slope compensation equation is responsive to an intercept deviation of the at least one error parameter.

29. The method of claim 17, where the at least one index function is responsive to at least one of a slope deviation of the at least one error parameter and an intercept deviation of the at least one error parameter.

30. The method of claim 17, where 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.

31. The method of claim 30, where the predictor function is responsive to the total slope deviation.

32. The method of claim 30, further comprising selecting terms for inclusion in a complex index function responsive to an exclusion test.

33. The method of claim 17, where the at least one slope deviation is responsive to a %-bias of the analyte concentration otherwise determined from the at least one output signal.

34. A method for determining an analyte concentration in a biological sample, comprising:

generating at least one analytic output signal from a biological sample;

generating at least one secondary output signal from the biological sample;

determining at least one index function responsive to at least one error parameter from the at least one secondary output signal;

adjusting a correlation for determining the analyte concentration in the biological sample from the at least one analytic output signal with a slope compensation equation responsive to the at least one index function, where the slope compensation equation includes at least one reference correlation and the at least one slope deviation; and

determining the analyte concentration in the biological sample from the at least one analytic output signal and the correlation.

35. The method of claim 34, further comprising determining the at least one index function responsive to at least one error parameter from the at least one analytic output signal.

36. The method of claim 34, further comprising determining the at least one index function responsive to at least one error parameter from an intermediate signal of the analytic output signal.

37. The method of claim 34, where the %-bias of the determined analyte concentration is ± 10.4.

38. The method of claim 34, where the %-bias of the determined analyte concentration is ± 5.4.

39. The method of claim 34, where the slope compensation equation is responsive to an intercept deviation of the at least one error parameter.

40. The method of claim 34, where the at least one index function is responsive to at least one of a slope deviation of the at least one error parameter and an intercept deviation of the at least one error parameter.

41. The method of claim 40, further comprising adjusting the slope and intercept deviations in response to the secondary output signal.

42. The method of claim 34, where the index function is at least one of a predictor function and a complex index function.

43. The method of claim 42, where the predictor function is responsive to the total slope deviation.

44. The method of claim 42, further comprising selecting terms for inclusion in a complex index function responsive to an exclusion test.

45. The method of claim 34, where the at least one slope deviation is responsive to a %-bias of the analyte concentration otherwise determined from the at least one output signal.

46. The method of claim 34, further comprising:

generating at least two secondary output signals; and

determining the at least one index function responsive to at least two error parameters from the at least two secondary output signals.

47. The method of claim 34, where the slope compensation equation includes error parameters from the analytic and secondary output signals.

48. The method of claim 34, where

the biological sample is whole blood,

a %-bias of the analyte concentration is from the hematocrit content of the whole blood,

one of the at least two error parameters is from the analytic output signal,

another of the at least two error parameters is from the secondary output signal, and where

the index function is responsive to the at least two error parameters.

49. A biosensor system, for determining an analyte concentration in a sample, comprising:

a test sensor having a sample interface adjacent to a reservoir formed by a strip; and

a measurement device having a processor connected to a sensor interface, the sensor interface having electrical communication with the sample interface, and the processor having electrical communication with a storage medium; and

where the test sensor and measurement device generate at least one output signal from a biological sample in the reservoir;

where the processor determines at least one index function responsive to at least one error parameter from the at least one output signal; and

where the processor determines the analyte concentration in the biological sample from the at least one output signal and a slope compensation equation responsive to the at least one index function, where the slope compensation equation includes at least one reference correlation and at least one slope deviation.

50. The biosensor system of claim 49, where the processor further adjusts a correlation relating the output signal to the analyte concentration in the biological sample with the slope compensation equation and determines the analyte concentration in the biological sample from the output signal and the adjusted

correlation relating the output signal to the analyte concentration in the biological sample.

51. The biosensor system of claim 50, where the %-bias of the determined analyte concentration is ±10.4.

52. The biosensor system of claim 50, where the %-bias of the determined analyte concentration is ±5.4.

53. The biosensor system of claim 49, where the processor further corrects an analyte concentration determined without the slope compensation equation with the slope compensation equation to determine the analyte concentration in the biological sample.

54. The biosensor system of claim 53, where the %-bias of the determined analyte concentration is ±10.4.

55. The biosensor system of claim 53, where the %-bias of the determined analyte concentration is ±5.4.

56. The biosensor system of claim 49, where the processor further adjusts the at least one output signal with the slope compensation equation to determine the analyte concentration in the biological sample.

57. The biosensor system of claim 56, where the %-bias of a corrected analyte concentration is ±10.4.

58. The biosensor system of claim 56, where the %-bias of a corrected analyte concentration is ±5.4.

59. The biosensor system of claim 49, where 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.

60. The biosensor system of claim 49,

where the test sensor and measurement device generate at least one analytic output signal and at least one secondary output signal from the biological sample;

where the processor determines the at least one index function responsive to at least one error parameter from the at least one secondary output signal; and

where the processor determines the analyte concentration in the biological sample from the at least one analytic output signal.

61. The biosensor system of claim 60, where the processor determines the at least one index function responsive to at least one error parameter from the at least one analytic output signal.

62. The biosensor system of claim 60, where the processor determines the at least one index function responsive to at least one error parameter from an intermediate signal of the analytic output signal.

63. The biosensor system of claim 60, where the slope compensation equation is responsive to an intercept deviation of the at least one error parameter.

64. The biosensor system of claim 60, where the at least one index function is responsive to at least one of a slope deviation of the at least one error parameter and an intercept deviation of the at least one error parameter.

65. The biosensor system of claim 64, where the processor adjusts the slope and intercept deviations in response to the secondary output signal.

66. The biosensor system of claim 60, where the processor generates at least two secondary output signals, and where the processor determines the at least one index function responsive to the at least two error parameters from the at least two secondary output signals.

67. The biosensor system of claim 60, where

the biological sample is whole blood,

a %-bias of the analyte concentration is from the hematocrit content of the whole blood,

one of the at least two error parameters is from the analytic output signal,

another of the at least two error parameters is from the secondary output signal, and where

the index function is responsive to the at least two error parameters.

68. The biosensor system of claim 60, further comprising a working electrode, a counter electrode, and a third electrode, where the test sensor and measurement device generate the at least one secondary output signal from the third electrode.

WHAT IS CLAIMED IS:

1. A method for determining an analyte concentration in a biological sample using a biosensor system comprising a sample interface having a working electrode and a counter electrode, a processor, and a signal generator connected to the processor, comprising:

generating by the processor, a command to direct the signal generator to provide an electrical input signal;

applying the electrical input signal provided by the signal generator to the biological sample through the working electrode and the counter electrode of the sample interface,

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

generating using the processor a second command to direct the signal generator to provide a second electrical input signal;

applying the second electrical input signal to the biological sample through an electrochemical or optical sensor system;

in response to the second command, generating multiple secondary output signals using the electrochemical or optical sensor system from the biological sample independently from the at least one output signal and redox reaction of the analyte from the biological sample;

determining by the processor at least one index function responsive to at least one error parameter from the at least one output signal and at least two error parameters from the multiple secondary output signals; and

determining by the processor, the analyte concentration in the biological sample from the at least one output signal and a slope compensation equation responsive to the at least one index function, where the slope compensation equation includes at least one reference correlation and at least one slope deviation,

where the at least one index function represents the influence of the error parameters on the slope deviation, and

where the at least one index function is responsive to at least one of a slope deviation of the error parameters and an intercept deviation of error parameters.

2. The method of claim 1 further comprising extracting the at least one index function from at least one of an intermediate signal and the secondary output signal.

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

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

5. The method of claim 3, where the %-bias of the determined analyte concentration is ±5.4 %.

6. The method of claim 1, where 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 6, where a %-bias of the determined analyte concentration is ±10.4 %.

8. The method of claim 6, where the %-bias of the determined analyte concentration is ±5.4 %.

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

10. The method of claim 9, where a %-bias of the determined analyte concentration is ±10.4 %.

11. The method of claim 9, where the %-bias of the determined analyte concentration is ±5.4 %.

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

13. The method of claim 1, where 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.

14. The method of claim 13, where the predictor function is responsive to the total slope deviation.

15. The method of claim 13, further comprising selecting terms for inclusion in a complex index function responsive to an exclusion test.

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

17. A method for determining an analyte concentration in a biological sample using a biosensor system comprising a sample interface having a working electrode and a counter electrode, a processor, and a signal generator connected to the processor, the method comprising:

generating by the processor, a command to direct the signal generator to provide an electrical input signal;

applying the electrical input signal provided by the signal generator to the biological sample through the counter electrode and the working electrode of the sample interface,

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

generating using the processor a second command to direct the signal generator to provide a second electrical input signal;

generating a first secondary output signal from the biological sample in response to the second command;

generating a second secondary output signal in response to the second command;

determining by the processor at least one index function responsive to at least one error parameter from the first secondary output signal and one error parameter responsive to at least one error parameter from the second secondary output signal.

adjusting a correlation for determining the analyte concentration in the biological sample from the at least one analytic output signal with a slope compensation equation responsive to the at least one index function, where the slope compensation equation includes at least one reference correlation and at least one slope deviation; and

determining the analyte concentration in the biological sample from the at least one analytic output signal and the correlation,

where the at least one index function represents the influence of the error parameters on the slope deviation, and

where the at least one index function is responsive to at least one of a slope deviation of the error parameters or an intercept deviation of the error parameters.

18. The method of claim 17, further comprising determining the at least one index function responsive to at least one error parameter from the at least one analytic output signal.

19. The method of claim 17, further comprising determining the at least one index function responsive to at least one error parameter from an intermediate signal of the analytic output signal.

20. The method of claim 17, where the %-bias of the determined analyte concentration is ±10.4 %.

21. The method of claim 17, where the %-bias of the determined analyte concentration is ±5.4 %.

22. The method of claim 17, where the slope compensation equation is responsive to an intercept deviation of the at least one error parameter.

23. The method of claim 17, further comprising adjusting the slope and intercept deviations in response to the secondary output signal.

24. The method of claim 17, where the index function is at least one of a predictor function and a complex index function.

25. The method of claim 24, where the predictor function is responsive to the total slope deviation.

26. The method of claim 24, further comprising selecting terms for inclusion in a complex index function responsive to an exclusion test.

27. The method of claim 17, where the at least one slope deviation is responsive to a %-bias of the analyte concentration otherwise determined from the at least one output signal.

28. The method of claim 17, where the slope compensation equation includes error parameters from the analytic and secondary output signals.

29. The method of claim 17, where
the biological sample is whole blood,

a %-bias of the analyte concentration is from the hematocrit content of the whole blood,
one of the at least two error parameters is from the analytic output signal,
another of the at least two error parameters is from the secondary output signal, and where the index function is responsive to the at least two error parameters.