CLAIMS:

1. A portable electrical connector for use in conjunction with an electrical power source comprising:

a unitary sheath for housing a primary conductor and a second conductor and at least one encapsulated means in electrical communication with a processor for measuring welding parameters in real time, the encapsulated means comprising;

a means for measuring a primary current available to a first electrical tool, which electrically connects the primary conductor to a workpiece;

a means for measuring a primary voltage available to the first electrical tool;

a means for measuring a temperature at the work piece;

a means for measuring a duration of the primary current flow across the work piece;

a display for indicating values of the primary current and voltage available to the first electrical tool, and the temperature and duration of the primary current flow across the work piece; and

a data logging means for capturing and recording the values of the primary current and voltage available to the first electrical tool, and the temperature and duration of the primary current flow across the work piece,

wherein the means are operable in simultaneous or independent mode.

2. The electrical connector of claim 1, wherein the primary conductor comprises a first connecting member for electrical communication with the electrical power source and a second connecting member for electrical communication with the first electrical tool.

3. The electrical connector of claim 2, further comprising a second conductor extending outwardly from the primary conductor for electrical communication with a second electrical tool.

4. The electrical connector of claim 2, further comprising a secondary circuitry in electrical communication with the primary conductor for measuring a primary current at the second connecting member.

5. The electrical connector of claim 1, further comprising a DC power source in electrical communication with the processor, the at least one encapsulated means, the data logging module and the display.

6. The electrical connector of claim 5, wherein the DC power source comprises one or more rechargeable or non-rechargeable disposable batteries.

7. The electrical connector of claim 5, wherein the DC power source is enclosed in a water resistant enclosure formed in the unitary sheath, the enclosure further having a cover to prevent ingress of water.

8. The electrical connector of claim 1, wherein the display comprises a digital LED display having a resettable multi-unit readings for indicating current, voltage, temperature and time duration.

9. The electrical connector of claim 4, wherein the means for measuring the primary current comprises a current transformer disposed at a portion of the second connecting member of the primary conductor.

10. The electrical connector of claim 9, wherein the current transformer induces a secondary current, which secondary current is electrically communicated to the processor for generating a value of the primary current at the display.

11. The electrical connector of claim 2, wherein the means for measuring the primary voltage comprises a first measuring point located on the second connecting member and a second measuring point connectable to the work piece, with the means for measuring the primary voltage is electrically communicated to the processor for generating a value of the voltage at the display.

12. The electrical connector of claim 11, wherein the first measuring point comprises a socket located on the sheath of the connector, while the second measuring point is connected to the work piece via a cable.

13. The electrical connector of claim 1, wherein the means for measuring the temperature at the work piece comprises a data acquisition device in electrical communication with the processor and a thermocouple detachably disposed on the work piece, wherein the thermocouple is in electrically communication with the data acquisition device via a cable.

14. The electrical connector of claim 1, wherein the means for measuring the duration of the primary current flow across the work piece comprises an hour meter mounted within the connector and a relay in electrical communication with the processor.

15. The electrical connector of claim 5, wherein the means for measuring the temperature and the means for capturing the primary current across the work piece are in electrical communication with the DC power source.

16. The electrical connector of claim 1, wherein the display is a digital LED display.

17. The electrical connector of claim 1, wherein the data logging means comprises:

a data logging module connectable to the processor for capturing a set of welding parameters;

a user interface for communicating with a computer via wire or wireless connections; and

a visual aid located at the display for indication of a stored memory capacity.

18. The electrical connector of claim 1, wherein the electrical power source comprises a welding machine.

19. The electrical connector of claim 1, wherein the first electrical tool comprises at least one of a welding electrode holder.

20. The electrical connector of claim 1, wherein the second electrical tool comprises at least one of a welding electrode quiver.

21. The electrical connector of claim 1, wherein the unitary sheath is in immovable close contact to provide a rigid encapsulation of the primary conductor and second conductor, the processor and the display.

22. A system for measuring and recording welding parameters including a current and voltage, weld joint heating temperature and welding duration in real time while a welding tool is being utilized, comprising:

a unitary sheath for housing a primary conductor and a second conductor and at least one encapsulated means in electrical communication with a processor, for measuring the welding parameters in real time, the encapsulated means comprising;

a means for measuring a primary current available to a first electrical tool, which electrically connects the primary conductor to a workpiece;

a means for measuring a primary voltage available to the first electrical tool;

a means for measuring a temperature at the work piece;

a means for measuring the duration of the primary current flow across the work piece;

a display for indicating values of the primary current and voltage available to the first electrical tool, and the temperature and duration of the primary current flow across the work piece; and

a data logging module for capturing and recording the values of the primary current and voltage available to the first electrical tool, and the temperature and duration of the primary current flow across the work piece,

wherein the means are operable in simultaneous or independent mode.

23. The system of claim 22, wherein the means for measuring the primary current comprises a current transformer disposed at a portion of a second connecting member connectable to the primary conductor.

24. The system of claim 23, wherein the means for measuring the primary voltage comprises a first measuring point located on the second connecting member and a second measuring point connectable to the work piece.

25. The system of claim 22, wherein the means for measuring the temperature at the workpiece comprises a data acquisition device in electrical communication with a secondary circuitry and a thermocouple detachably disposed on the work piece, wherein the thermocouple is in electrically communication with the data acquisition device via a cable.

26. The system of claim 25, wherein the means for measuring the duration of the primary current flow across the work piece comprises an hour meter mounted within the unitary sheath and a relay in electrical communication with the secondary circuitry.

27. The system of claim 22, wherein the means for measuring the temperature and the means for measuring the primary current across the work piece are in electrical communication with a DC power source housed within the unitary sheath.

28. The system of claim 22, wherein the data logging means comprises:

a data logging module connectable to the processor for capturing a set of welding parameters;

a user interface for communicating with a computer via wire or wireless connections; and

a visual aid located at the display for indication of a stored memory capacity.

29. The system of claim 22, wherein the unitary sheath is in immovable close contact to provide a rigid encapsulation of the primary conductor and second conductor, the processor and the display.

30. A method for measuring and recording welding parameters including a current and voltage, weld joint heating temperatures and welding duration in real time while a welding tool is being utilized on a work piece, comprising the steps of:

housing a primary conductor and a second conductor in a unitary sheath and enclosing at least one encapsulated means in electrical communication with a processor for measuring the welding parameters in real time, wherein enclosing the encapsulated means comprises;

measuring a primary current available to a first electrical tool, which electrically connects the primary conductor to the workpiece;

measuring a primary voltage available to the first electrical tool;

measuring a temperature at the work piece;

measuring a duration of the primary current flow across the work piece;

indicating on a display values of the primary current and voltage available to the first electrical tool, and the temperature and duration of primary current flow across the work piece; and

data logging to capture and record the values of the primary current and voltage available to the first electrical tool, and the temperature and duration of primary current flow across the work piece,

wherein the at least one encapsulated means are operable in simultaneous or independent mode.

31. The method of claim 30, wherein measuring the primary current comprises connecting a current transformer to a portion of a second connecting member, which is connectable to the primary conductor.

32. The method of claim 31, wherein measuring the primary voltage comprises connecting a first measuring point on the second connecting member and a second measuring point connectable to the work piece.

33. The method of claim 30, wherein measuring the temperature at the work piece comprises connecting a data acquisition device in electrical communication with the processor and a thermocouple detachably located on the work piece, wherein the thermocouple is in electrically communication with the data acquisition device via a cable.

34. The method of claim 30, wherein capturing the duration of the primary current flow across the work piece comprises connecting an hour meter mounted within the unitary sheath and a relay in electrical communication with the processor.

35. The method of claim 30, wherein measuring the temperature and measuring the primary current across the work piece comprise connecting the at least one encapsulated means in electrical communication with a DC power source housed within the unitary sheath.

36. The method of claim 30, wherein data logging comprises:

connecting a data logging module to the processor for capturing a set of welding parameters;

providing a user interface for communicating with a computer via wire or wireless connections; and

providing a visual aid located at the display for indication of a stored memory capacity.